Rook I Project

Environmental Impact Statement

Section 13 Vegetation

Submitted to:
Canadian Nuclear Safety Commission

Saskatchewan Ministry of Environment

Submitted by:
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November 2024

Executive Summary

Section Purpose

Section 13 of the Environmental Impact Statement (EIS) provides a comprehensive assessment of potential effects of the Rook I Project (Project) on vegetation, including ecosystems and traditional use plants. This assessment included consideration of both potential effects from the Project and cumulative effects from the Project and other reasonably foreseeable developments (RFDs). The vegetation assessment used widely accepted scientific practices and incorporated Indigenous and Local Knowledge.

Three vegetation ecosystems (i.e., upland ecosystems, wetland ecosystems, and riparian ecosystems) and traditional use plants represented valued components (VCs) in the Environmental Assessment (EA). The assessment of vegetation ecosystems and traditional use plants provided information that was used to support VC assessments such as wildlife and wildlife habitat, human health, Indigenous land and resource use, and other land and resource use. Ecosystem services (i.e., the benefits people gain from the environment) provided by traditional use plant species were also assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.

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 local study area (LSA; 2,832 ha) and the anticipated Project footprint (228 ha) are located within the Mid-Boreal Upland Ecoregion of the Boreal Plain Ecozone of Saskatchewan (Acton et al. 1998). The regional study area (RSA) of 107,491 ha overlaps the transition between the Boreal Shield and Boreal Plain ecozones; Patterson Lake also overlaps this ecozone transition.

Existing Conditions (Section 13.3)

The LSA and RSA are broadly composed of upland ecosystems (i.e., deciduous, mixed, and coniferous forests) over most of these study areas (Table ES-1). Wetland ecosystems and anthropogenic (i.e., human-caused) disturbance both account for smaller portions of the study areas.

Table ES-1: Vegetation Ecosystem Type in Local Study Area and Regional Study Area

Vegetation Ecosystem	LSA	RSA
Upland ecosystems	76.7%	69.6%
Wetland ecosystems	19.5%	30.0%
Anthropogenic disturbance	3.7%	0.4%

Note: Numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
LSA = local study area; RSA = regional study area.

Riparian ecosystems, which were identified as a subset of upland and wetland ecosystems, cover 7.3% and 8.9% of the LSA and RSA, respectively.

Over the last 40 years, 65,296 ha (61%) of the RSA has been burned in historical fires. However, historical fire extents overlap each other within the RSA; therefore, the amount of area within the RSA classified as burned is 61,997 ha (58%).

Twenty-eight traditional use plant species were identified from Indigenous Knowledge and Traditional Land Use (IKTLU) Studies and from comments from the Clearwater River Dene Nation (CRDN 2019b) on the Cluff Lake Mine licence renewal. Of these 28 species, the most available traditional use plant species within the LSA and RSA are:

- jack pine;
- mosses;
- blueberry; and
- bog cranberry.

Traditional use plant species are located in various locations across the RSA. Overall, a higher frequency of traditional use plant species was observed within wetland ecosystems.

Potential Effects and Proposed Mitigations (Section 13.4)

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

Project activities that would have the potential to affect vegetation during the Project lifespan include:

- land clearing;
- site preparation;
- construction of facilities and infrastructure;
- handling of ore and waste rock;
- changes to water and air quality; and
- other supporting mining construction, operation, and decommissioning and reclamation activities.

Similar activities that could affect vegetation 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 site road alignment were designed, in part, to minimize the Project's effects on vegetation ecosystems and traditional use plants. In addition, the proposed Project footprint has been optimized and would be limited to the extent practical to minimize disturbance to vegetation. Proposed mitigation measures, such as progressive reclamation and revegetation of disturbed areas where non-permanent Project components have been removed, would reduce effects on vegetation ecosystems and traditional use plants. These mitigations have been used extensively within the mining sector and have been proven effective. Similar mitigation and adaptive management practices would also be expected to be implemented by the Fission Patterson Lake South Property.

After mitigation measures were considered, the pathways analysis determined that many of the potential pathways from the Project to the environment could be removed. However, it was identified that the Project could still adversely affect vegetation from the following pathways:

- direct loss, alteration, and fragmentation of upland, wetland, and riparian ecosystems and traditional use plants; and
- alteration of the final terrain, soil conditions, and/or plant species composition, which could change the types of ecosystems and traditional use plants that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

Therefore, these pathways were carried forward into the residual effects analysis.

Residual Effects Analysis (Section 13.5)

A residual effects analysis was conducted to determine the potential effects on vegetation ecosystems and traditional use plants 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). For upland, wetland, and riparian ecosystems, three measurement indicators were considered:

- ecosystem availability;
- ecosystem distribution; and
- ecosystem condition.

For traditional use plant species, two measurement indicators were considered:

- traditional plant habitat availability; and
- traditional plant distribution.

The residual effects analysis followed a precautionary approach by using an assessment area, referred to as the maximum disturbance area, that assumed disturbance of an area approximately four times larger than the currently anticipated Project footprint.

In the RFD Case, a precautionary approach was used by applying a maximum disturbance area to the Fission Patterson Lake South Property using the same assumptions made for the Project; this approach resulted in a maximum disturbance area approximately six times larger than the footprint presented in the Fission (2019) prefeasibility study.

Similar conservatism was incorporated into the overlapping temporal boundaries for the Project and RFD. The assessment assumed the period of residual effects from the Fission Patterson Lake South Property would completely overlap with similar effects associated with the Project for a maximum duration of 95 years.

Upland Ecosystems

Upland ecosystems would be expected to experience the following residual effects:

- The Project is predicted to contribute to a loss in availability of approximately 868 ha of upland ecosystems, which represents 1.2% of upland ecosystems in the RSA (i.e., low magnitude).
- The Fission Patterson Lake South Property activities are predicted to contribute an incremental loss of 1,450 ha of upland ecosystems availability in the RSA.

- In combination, the Project, Fission Patterson Lake South Property, and existing anthropogenic disturbance (e.g., Highway 955, seismic lines) would account for 2,390 ha (3.1%) of disturbance across upland ecosystem types in the RSA (i.e., low magnitude).

Despite the loss of upland ecosystems that would occur as a result of the Project and the Fission Patterson Lake South Property, the distribution of most upland ecosystems would remain abundant and well connected across the RSA.

Wetland Ecosystems

Wetland ecosystems would be expected to experience the following residual effects:

- The Project is predicted to contribute to a loss in availability of approximately 28 ha of wetland ecosystems (i.e., less than 0.1% of the RSA), which would be limited to the Project's maximum disturbance area (i.e., low magnitude).
- Cumulatively, the Project and the Fission Patterson Lake South Property are predicted to contribute to a loss in availability of approximately 56 ha (i.e., 0.1% of the RSA) of wetland ecosystems (i.e., low magnitude).

Following Decommissioning and Reclamation (i.e., Closure), it is anticipated that wetland ecosystems would be reclaimed to the extent possible in an attempt to achieve no net loss of wetland functions, consistent with the guideline of the Federal Policy on Wetland Conservation (Government of Canada 1991). Although the establishment of functioning wetland ecosystems following the Active Closure Stage was considered possible, restoration of wetland species composition and ecological function similar to the wetland ecosystems observed under existing conditions would be unlikely. As such, the loss of all wetland ecosystems was conservatively assumed to be permanent.

Wetland ecosystem fragmentation from the Project and Fission Patterson Lake South Property would be limited and localized to the area around Patterson Lake and a portion of the RSA already influenced by existing anthropogenic disturbances. Therefore, there would be almost no change to connectivity in wetland ecosystems in most of the RSA.

It is expected that the Fission Patterson Lake South Property would include mitigations similar to the Project to limit cumulative effects.

Riparian Ecosystems

Riparian ecosystems would be expected to experience the following residual effects:

- The Project is predicted to contribute to a loss in availability of approximately 40 ha of riparian ecosystems (i.e., 0.4% of the RSA), which would be limited to the Project's maximum disturbance area (i.e., low magnitude).
- Cumulatively, the Project and the Fission Patterson Lake South Property are predicted to contribute to a loss in availability of approximately 103 ha (i.e., 1.1% of the RSA) of riparian ecosystems (i.e., low magnitude).
- The majority of Project infrastructure would be set back from Patterson Lake, and the final disturbance with riparian ecosystems would be minimized.

Despite the potential for fragmentation due to losses from the Project and the Fission Patterson Lake South Property, most riparian-associated wetland ecosystems would remain abundant and well connected across the RSA. The loss of riparian ecosystems in the RSA would result in localized minor changes in riparian distribution around Patterson Lake, and these effects were assumed to be long term for upland Ecological Land Classification (ELC) units and permanent for wetland ELC units within riparian ecosystems.

It is expected that the Fission Patterson Lake South Property would include mitigations similar to the Project to avoid and limit the cumulative effects on riparian ecosystem availability and distribution.

Traditional Use Plants

Under existing conditions, the total amount of traditional use plant habitat within the LSA is 721.6 ha (25.5%) and within the RSA is 24,988 ha (23.2%). Traditional use plants would be expected to experience the following residual effects:

- The Project is predicted to contribute to a loss in availability of approximately 282 ha (1.1% of the RSA) of traditional use plant habitat, which would be limited to the Project's maximum disturbance area (i.e., low magnitude).
- Cumulatively, the Project and the Fission Patterson Lake South Property are predicted to contribute to a loss in availability of approximately 732 ha (i.e., 2.9% of the RSA) of traditional use plant habitat (i.e., low magnitude).
- Traditional use plant habitat is predicted to remain abundant across the RSA.

Although there has already been some change in connectivity because of previous and existing developments, the connectivity and arrangement of traditional use plant habitat is predicted to remain abundant and well connected across the RSA.

General Considerations

Edge Effects

Edge effects can adversely influence the condition of upland, wetland, and riparian ecosystems due to potential ingress of generalist or invasive species and changes in conditions along the peripherals of the ecosystem. Edge effects on upland, wetland, and riparian ecosystems are predicted to be limited to the maximum disturbance areas for the Project and the Fission Patterson Lake South Property.

Rare Plant Species

The Project mitigation measures would have provisions for the management of rare plant species. One provincially tracked vascular plant species (i.e., beautiful sedge) was observed within the maximum disturbance area and could be lost or removed by the Project. Such rare plant species would be clearly marked and avoided, where feasible. Where disturbance to rare plants was unavoidable, the Saskatchewan Ministry of Environment (ENV) would be consulted to determine the best course of action.

Invasive Plant Species

Project activities and disturbances could create the potential for the introduction or encroachment of designated weed species; weed and invasive species management strategies would be used to prevent, detect, control (i.e., remove), and monitor designated weed species.

Climate Change

Climate change effects on ecosystems and traditional use plant species were considered. Currently, it is unclear whether climate change would positively and/or negatively affect vegetation VCs. Projected future climate extremes indicate a future that is likely to be warmer and wetter on an annual basis. Changes to upland ecosystems would likely be driven by shifts in the fire regime, which is closely related to weather and climate; such changes would be permanent and occur beyond the RSA scale. Wetland ecosystems may be adversely affected by climate change as these ecosystems are considered one of most sensitive to changes in precipitation and temperature.

Effects on Biodiversity

Effects on biodiversity were assessed based on the changes to vegetation ecosystems and habitat for traditional use plants, which provided both finer (i.e., species level) and coarser (i.e., ecosystem level) elements of biodiversity. Effects of the Project on biodiversity are anticipated to be low in magnitude for the Application and RFD cases.

The geographic extent of effects would be restricted to the maximum disturbance area in the Application Case and extend to the RSA in the RFD Case. The residual effects are predicted to be mostly reversible over the long term for all ecosystems and plant communities that would regenerate after reclamation. Changes in the Application Case and RFD Case are expected to increase landscape fragmentation; however, biodiversity in the RSA is predicted to be maintained and similar to existing conditions.

Significance Determination (Section 13.5)

The weight of evidence from the analysis predicts that changes to the availability, distribution, and condition of upland, wetland, and riparian ecosystems that overlap the RSA would be within the resilience and adaptability limits for these VCs. Similarly, the analysis predicts that changes to the availability and distribution of traditional use plant habitat within the RSA would also be within the resilience and adaptability limits for this VC. The residual effects on vegetation VCs in the Application Case are predicted to be **not significant**.

The incremental and cumulative effects resulting from the Project, previous and existing developments, and the Fission Patterson Lake South Property on the vegetation ecosystems and traditional use plants are also predicted to be **not significant**.

Prediction Confidence and Uncertainty (Section 13.6)

Overall, there was a moderate to high degree of confidence in the predictions related to the assessment of the vegetation ecosystems and traditional use plants. 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 13.7)

The Environmental Protection Program, Environmental Monitoring Plan, and associated environmental monitoring would be implemented to verify effects predictions and effectiveness of mitigation on vegetation, identify unanticipated effects (i.e., manage the residual uncertainty in the effects prediction), and apply adaptive management, if required. A noxious and nuisance weeds follow-up study would be carried out for weed management to monitor the establishment of designated weed species within the disturbance area and apply appropriate mitigation to avoid the unintended spread of such species.

The Preliminary Decommissioning and Reclamation Plan would be implemented to establish vegetation ecosites that contribute to the maintenance of self-sustaining and ecologically effective ecosystems, including traditional use plants and biodiversity. Monitoring and follow-up actions would be implemented to verify that reclamation was trending towards the successful regeneration and succession of vegetation ecosystems that are functionally similar to natural plant communities in the region. Results from monitoring would be used to modify or apply different reclamation procedures through the process of adaptive management.

Abbreviations and Units of Measure

Abbreviation	Definition
BNDN	Birch Narrows Dene Nation
BRDN	Buffalo River Dene Nation
CNSC	Canadian Nuclear Safety Commission
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRDN	Clearwater River Dene Nation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ELC	Ecological Land Classification
ENV	Saskatchewan Ministry of Environment
IKTLU	Indigenous Knowledge and Traditional Land Use
JWG	Joint Working Group
LSA	local study area
NexGen	NexGen Energy Ltd.
NPAG	non-potentially acid generating
PAG	potentially acid generating
PEM	Predictive Ecosite Map
PM_{10}	particulate matter with a diameter of 10 microns or less
Project	Rook I Project
RFD	reasonably foreseeable development
RSA	regional study area
SARA	*Species at Risk Act*
TSD	technical support document
UGTMF	underground tailings management facility
VC	valued component
WRSA	waste rock storage area
YNLR	Ya'thi Néné Lands and Resources

Unit	Definition
%	percent
°C	degrees Celsius
µm	micron
$\mu g/m^3$	micrograms per cubic metre
cm	centimetre
$g/m^2/d$	grams per square metre per day
ha	hectare
km	kilometre
km/km^2	kilometres per square kilometre
km/m^2	kilometres per square metre
km^2	square kilometre
m	metre
$mg/cm^2/30$ d	milligrams per square centimetre per 30 days
mg/L	milligrams per litre

Table of Contents

13 VEGETATION 13-1
13.1 Introduction 13-1
13.1.1 Project Summary 13-4
13.1.2 Purpose and Approach to the Assessment 13-6
13.2 Component Methods 13-7
13.2.1 Incorporation of Indigenous and Local Knowledge 13-7
13.2.2 Valued Components, Measurement Indicators, and Assessment Endpoints 13-9
13.2.3 Spatial Boundaries 13-15
13.2.4 Temporal Boundaries 13-20
13.2.5 Assessment Cases 13-21
13.2.6 Existing Conditions 13-24
13.2.7 Project Interactions and Mitigations 13-37
13.2.8 Residual Effects Analysis 13-38
13.2.9 Residual Effects Classification and Determination of Significance 13-39
13.2.10 Prediction Confidence and Uncertainty 13-41
13.2.11 Monitoring, Follow-Up, and Adaptive Management 13-42
13.3 Existing Conditions 13-42
13.3.1 Upland Ecosystems 13-43
13.3.2 Wetland Ecosystems 13-52
13.3.3 Riparian Ecosystems 13-60
13.3.4 Traditional Use Plant Species 13-66
13.4 Project Interactions and Mitigations 13-76
13.4.1 No Pathways 13-85
13.4.2 Secondary Pathways 13-86
13.4.3 Primary Pathways 13-97
13.5 Residual Effects Analysis 13-98
13.5.1 Upland Ecosystems 13-99
13.5.2 Wetland Ecosystems 13-117
13.5.3 Riparian Ecosystems 13-132
13.5.4 Traditional Use Plant Species 13-147
13.5.5 Effects on Biodiversity 13-164
13.6 Prediction Confidence and Uncertainty 13-166
13.7 Monitoring, Follow-Up, and Adaptive Management 13-167
13.8 Key Findings 13-169
13.9 References 13-171

List of Figures

Figure 13.1-1: Location of the Rook I Project 13-2
Figure 13.1-2: Regional Area of the Rook I Project 13-3
Figure 13.1-3: Linkage Diagram of Project Effects on Vegetation Valued Components and Influence on other Valued Components 13-4
Figure 13.1-4: Layout of Infrastructure and Facilities for the Rook I Project 13-5
Figure 13.2-1: Vegetation Baseline and Assessment Study Areas 13-18
Figure 13.2-2: Spatial Boundaries for the Vegetation and Traditional Plant Use Assessments 13-19
Figure 13.2-3: Reasonably Foreseeable Development in the Regional Study Area 13-23
Figure 13.2-4: Baseline Vegetation Survey Locations 13-25
Figure 13.2-5: Existing Fire Disturbance in the Local Study Area and Regional Study Area 13-32
Figure 13.2-6: Existing Anthropogenic Disturbance in the Local Study Area and the Regional Study Area 13-34
Figure 13.3-1: Upland Ecosystems and Rare Plant Species in the Regional Study Area, Base Case 13-46
Figure 13.3-2: Upland Ecosystems and Rare Plant Species in the Local Study Area, Base Case 13-47
Figure 13.3-3: Wetland Ecosystems and Rare Plant Species in the Regional Study Area, Base Case 13-56
Figure 13.3-4: Wetland Ecosystems and Rare Plant Species in the Local Study Area, Base Case 13-57
Figure 13.3-5: Riparian Ecosystems and Rare Plant Species in the Regional Study Area, Base Case 13-63
Figure 13.3-6: Riparian Ecosystems and Rare Plant Species in the Local Study Area, Base Case 13-64
Figure 13.3-7: Traditional Use Plant Species Occupancy in the Regional Study Area, Base Case 13-71
Figure 13.3-8: Traditional Use Plant Species Occupancy in the Local Study Area, Base Case 13-72
Figure 13.5-1: Upland Ecosystems and Rare Plant Species in the Regional Study Area, Application Case 13-103
Figure 13.5-2: Upland Ecosystems and Rare Plant Species in the Local Study Area, Application Case 13-104
Figure 13.5-3: Upland Ecosystems and Rare Plant Species in the Regional Study Area, Reasonably Foreseeable Development Case 13-111
Figure 13.5-4: Wetland Ecosystems and Rare Plant Species in the Regional Study Area, Application Case 13-121
Figure 13.5-5: Wetland Ecosystems and Rare Plant Species in the Local Study Area, Application Case 13-122

Figure 13.5-6: Wetland Ecosystem and Rare Plant Species in the Regional Study Area, Reasonably Foreseeable Development Case 13-127
Figure 13.5-7: Riparian Ecosystemsand Rare Plant Species, Regional Study Area, Application Case 13-135
Figure 13.5-8: Riparian Ecosystems and Rare Plant Species, Local Study Area, Application Case .. 13-136
Figure 13.5-9: Riparian Ecosystems and and Rare Plant Species Regional Study Area, Reasonably Foreseeable Development Case 13-141
Figure 13.5-10: Traditional Use Plant Species Occupancy in the Regional Study Area, Application Case 13-150
Figure 13.5-11: Traditional Use Plant Species Occupancy in the Local Study Area, Application Case 13-151
Figure 13.5-12: Traditional Use Plant Species Occupancy in the Regional Study Area, Reasonably Foreseeable Development Case 13-158

List of Tables

Table 13.2-1: Valued Components, Rationale, Measurement Indicators, and Assessment Endpoints 13-15
Table 13.2-2: Spatial Boundaries for Assessment of Vegetation Valued Components 13-17
Table 13.2-3: Upland Ecological Land Classification Units within the Local and Regional Study Areas 13-28
Table 13.2-4: Wetland Ecological Land Classification Units within the Local and Regional Study Areas 13-28
Table 13.2-5: Riparian Ecological Land Classification Units within the Local and Regional Study Areas 13-30
Table 13.2-6: Fire Disturbance Ecological Land Classification Units within the Local and Regional Study Areas 13-31
Table 13.2-7: Existing Anthropogenic Disturbance Types within the Local and Regional Study Areas 13-33
Table 13.2-8: Traditional Use Plant Species Identified through Indigenous and Local Knowledge 13-35
Table 13.2-9: Definitions Applied to Effects Criteria Classifications for the Assessment of Vegetation Valued Components 13-39
Table 13.3-1: Upland Ecosystem Availability in the Local and Regional Study Areas in the Base Case 13-43
Table 13.3-2: Existing Anthropogenic Disturbance in the Local and Regional Study Areas in the Base Case 13-45

Table 13.3-3: Wetland Ecosystem Availability in the Local and Regional Study Areas in the Base Case 13-53
Table 13.3-4: Riparian Ecosystems Availability in the Local and Regional Study Areas in the Base Case 13-61
Table 13.3-5: Traditional Use Plant Species Recorded during Baseline Surveys 13-67
Table 13.3-6: Traditional Use Plant Species Availability in the Local and Regional Study Areas in the Base Case 13-69
Table 13.3-7: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit 13-74
Table 13.4-1: Potential Effects Pathways for Vegetation 13-78
Table 13.4-2: Annual Criteria Air Contaminant Emissions as a result of the Rook I Project during Construction and Operations 13-90
Table 13.5-1: Changes to Upland Ecosystem Availability in the Application Case 13-100
Table 13.5-2: Changes to Upland Ecosystem Availability in the Reasonably Foreseeable Development Case 13-108
Table 13.5-3: Classification of Residual Effects on Upland Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case 13-114
Table 13.5-4: Changes to Wetland Ecosystem Availability in the Application Case 13-119
Table 13.5-5: Changes to Wetland Ecosystem Availability in the Reasonably Foreseeable Development Case 13-125
Table 13.5-6: Classification of Residual Effects on Wetland Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case 13-130
Table 13.5-7: Changes to Riparian Ecosystem Availability in the Application Case 13-133
Table 13.5-8: Changes to Riparian Ecosystem Availability in the Reasonably Foreseeable Development Case 13-139
Table 13.5-9: Classification of Residual Effects on Riparian Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case 13-144
Table 13.5-10: Changes to Traditional Use Plant Species Availability in the Application Case 13-148
Table 13.5-11: Changes to Traditional Use Plant Species Habitat Availability per ELC Unit in the Application Case 13-152
Table 13.5-12: Changes to Traditional Use Plant Species Availability in the Reasonably Foreseeable Development Case 13-156
Table 13.5-13: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit in the Reasonably Foreseeable Development Case 13-160

Table 13.5-14: Classification of Residual Effects on Traditional Use Plant Species Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case 13-162

List of Appendices

Appendix 13A Vegetation Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Appendix 13B Traditional Use Plant Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

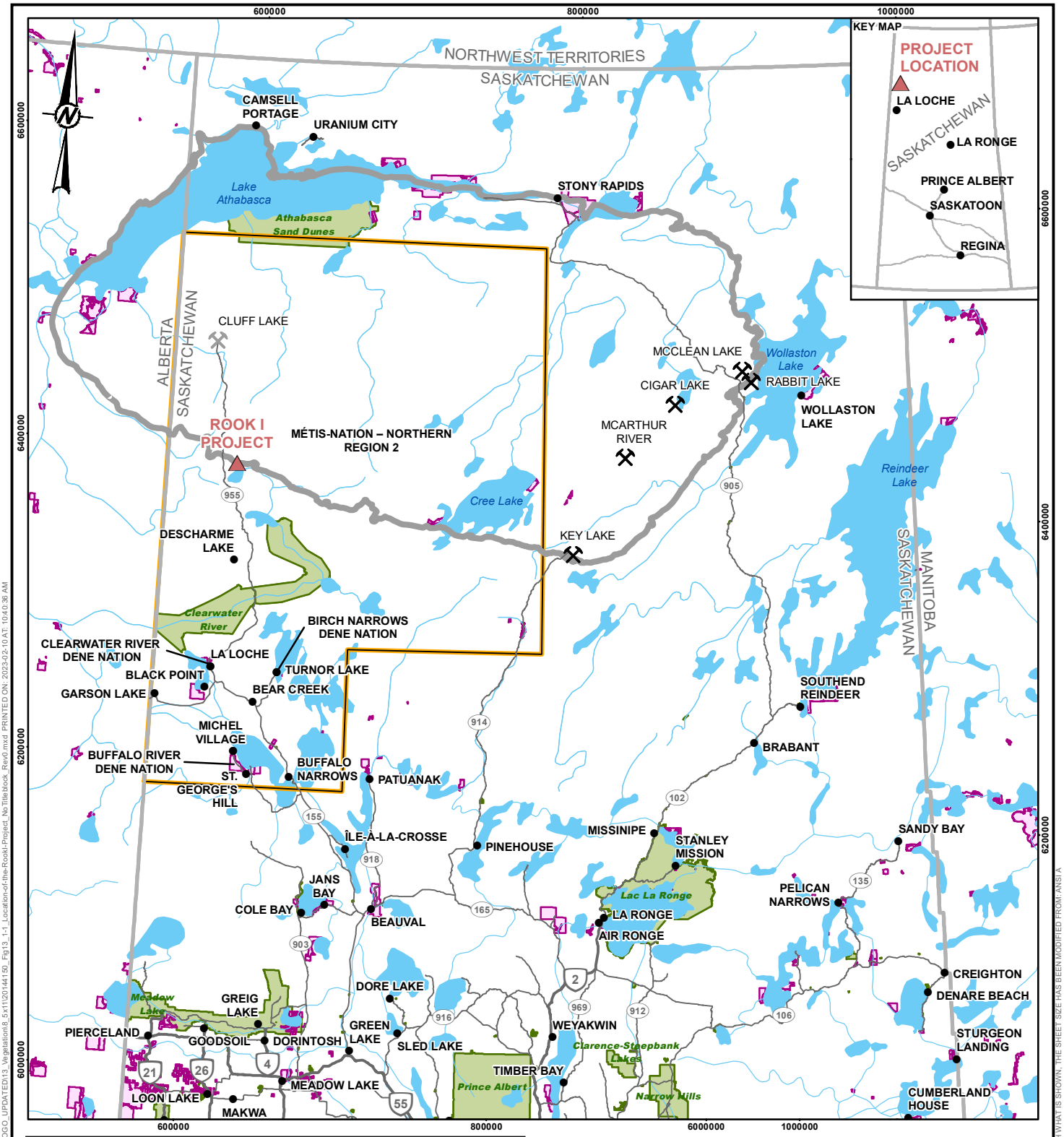
13 VEGETATION

13.1 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 13.1-1). 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 13.1-2), with on-site worker accommodation serviced by fly-in/fly-out access.

Section 13, Vegetation, of the Environmental Impact Statement (EIS) characterizes the potential residual effects of the Project on vegetation ecosystems and traditional use plants, which are attributes or components of the biophysical environment. Vegetation ecosystems (i.e., upland, wetland, and riparian) and traditional use plants represent valued components (VCs) for the Environmental Assessment (EA). The Project has the potential to cause adverse effects on vegetation ecosystems and traditional use plants primarily through removing existing natural vegetation or altering terrain and soil conditions (Section 12, Terrain and Soils), and plant species composition during Construction, the effects of which would continue through Operations and Decommissioning and Reclamation (i.e., Closure) until vegetation is restored. Deposition of dust and fossil fuel emissions (Section 7.2, Air Quality) may also influence vegetation. Changes to groundwater (Section 8, Hydrogeology), hydrology (Section 9, Hydrology), and surface water quality (Section 10, Surface Water Quality and Sediment Quality) could affect vegetation ecosystems and traditional use plants. Changes in vegetation ecosystems could influence wildlife habitat and wildlife, and potentially fish and fish habitat (e.g., vegetation adjacent to streams).

Changes in vegetation ecosystems and traditional use plants could influence ecological services (e.g., availability of plants) for people who use these resources. For this reason, the vegetation assessment provides information that is used to support the assessments of other VCs such as wildlife and wildlife habitat (Section 14, Wildlife and Wildlife Habitat), human health (Section 15, Human Health), Indigenous land and resource use (Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use), and other land and resource use (Section 17, Other Land and Resource Use). A simplified linkage diagram, Figure 13.1-3, illustrates how anticipated Project activities could result in a direct or indirect effect on vegetation ecosystems and traditional use plants, and the associated VCs that could be influenced through changes to vegetation ecosystems and traditional use plants.



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- ATHABASCA BASIN BOUNDARY
- INDIAN RESERVE
- PROVINCIAL PARKS
- WATERBODY
- PROJECT LOCATION
- MÉTIS NATION-SASKATCHEWAN NORTHERN REGION 2

0 100 200
1:3,500,000 KILOMETRES

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

PROJECT: NexGen Energy Ltd. — ROOK I PROJECT

TITLE: LOCATION OF THE ROOK I PROJECT

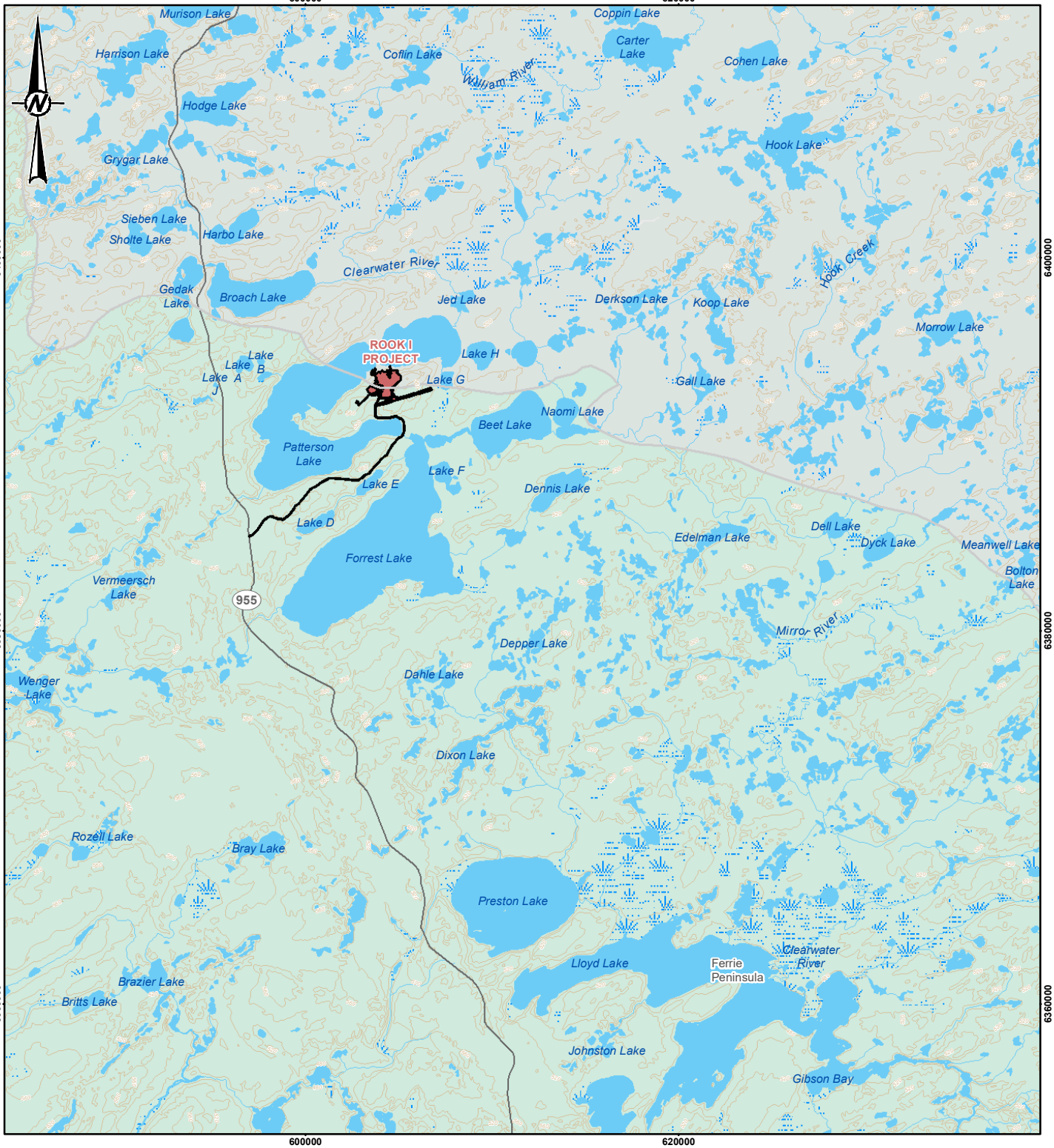
CONSULTANT: wsp

PROJECT 20144150 | SCALE AS SHOWN | REV. 0

FIGURE 13.1-1

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

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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- SECONDARY HIGHWAY
- WATERCOURSE
- ATHABASCA BASIN
- WATERBODY
- WETLAND
- WOODED AREA
- PROPOSED PROJECT FOOTPRINT

0 5 10
1:300,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

wsp

PROJECT	20144150	SCALE AS SHOWN	REV. 0

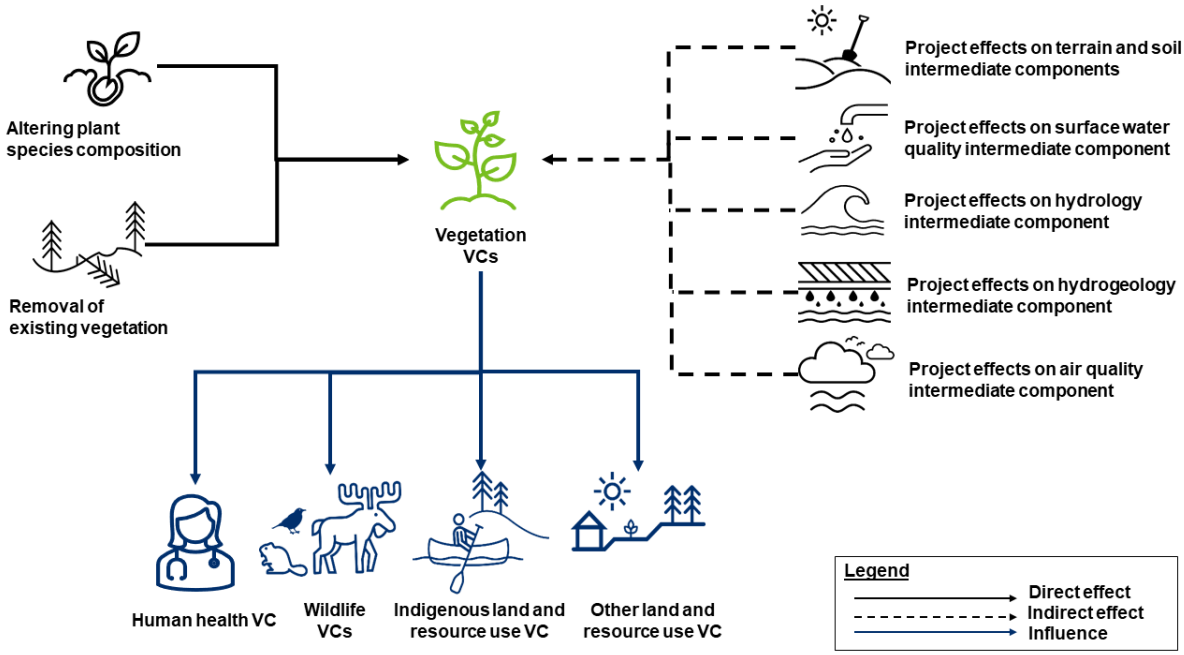
FIGURE 13.1-2

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Figure 13.1-3: Linkage Diagram of Project Effects on Vegetation Valued Components and Influence on other Valued Components



VC = valued component

13.1.1 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 13.1-4):

- underground mine development;
- process plant buildings, including uranium concentrate packaging facilities;
- paste tailings distribution system;
- underground tailings management facility (UGTMF);
- potentially acid generating (PAG) waste rock storage area (WRSA);
- non-potentially acid generating (NPAG) WRSA;
- special waste rock[1] and ore storage stockpiles;
- surface and underground water management infrastructure, including water management ponds, effluent treatment plant, and sewage treatment plant;
- 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.

603000 604000 605000 606000 607000

6394000 6393000 6392000 6391000

Patterson Lake

Treated Effluent Pipe and Diffuser

Fresh Water Intake Pipe and Pumphouse

Underground Mine Access

Contact Water Pond #1

Treated Sewage Pipe and Outfall

Sewage Treatment Plant (STP)

Mine Terrace

PAG Runoff Collection Area

Process Plant

Ore Storage Stockpile

Effluent Treatment Plant (ETP)

Monitoring Ponds

Potentially Acid Generating (PAG) Waste Rock Storage Area

Mill Terrace

Fuel Storage Area

Special Waste Rock Stockpile

Camp

Contact Water Pond #2

Non-Potentially Acid Generating (NPAG) Waste Rock Storage Area

Communication Tower

West Bermed Runoff Collection Area

Domestic/Industrial Waste Management Area

Omni-Directional Approach Lighting (ODAL) Corridor

Airstrip

Explosives Magazine Storage

Batch Plant Sand and Aggregate Storage Area

Omni-Directional Approach Lighting (ODAL) Corridor

Gatehouse

Patterson Lake

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

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

LAYOUT OF INFRASTRUCTURE AND FACILITIES FOR THE ROOK I PROJECT

CONSULTANT

wsp

PROJECT	20144150	SCALE AS SHOWN	REV. 0

FIGURE 13.1-4

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13.1.2 Purpose and Approach to the Assessment

The purpose of Section 13 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 vegetation. 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 vegetation 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 13.2):** presents the specific approaches and methods used to measure and assess the effects of the Project on vegetation 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 13.3):** describes and characterizes existing conditions to provide context and a basis for evaluating potential changes to vegetation caused by the Project.
- **Step 3 – Evaluate Project interactions and mitigations (Section 13.4):** identifies Project components and/or activities with the potential to affect vegetation 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 vegetation by evaluating the different effect 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 13.5):** evaluates and describes the potential Project effects on vegetation 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 13.5.1.3; Section 13.5.2.3; Section 13.5.3.3; Section 13.5.4.3): 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 was determined using the results of the residual effects analysis and classification. Significance was 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 13.6):** 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 13.7):** 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.

13.2 Component Methods

13.2.1 Incorporation of Indigenous and Local Knowledge

Indigenous and Local Knowledge included in the assessment of vegetation was shared by potentially affected First Nations and Métis Groups (collectively referred to as Indigenous Groups) and local priority area (LPA)[2] community members through the Project engagement process. 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 vegetation raised by Indigenous Groups and LPA community members, and how these comments 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 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 Denesųłiné 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 JWGs represent an agreed-upon primary engagement mechanism as outlined in the Study Agreements signed by each Indigenous Group and NexGen. More details regarding the JWGs can be found in Section 2, Indigenous, Regulatory, and Public Engagement

[2] The LPA consists of the local communities closest to the Project that would experience most of the Project effects 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 Section 3, Indigenous and Local Knowledge. There are four JWGs 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 JWGs, 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 (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 vegetation was incorporated into the assessment by considering and viewing the information as complementary and influential alongside scientific information. Where possible, knowledge from each potentially affected local 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 vegetation assessment in the following ways:

- **Component Methods – Valued Components:** Indigenous and Local Knowledge was considered in the selection of the valued component of traditional use plant species and reflects the importance of traditional use plants and plant gathering as a cultural activity that contributes to community well-being. Traditional plants are used for spiritual and ceremonial purposes, are a vital part of traditional diets and health, and play a critical role it plays in the transmission of knowledge and maintenance of culture. Traditional plant gathering and their locations also contribute to sense of place. The selection of traditional use plants was identified by Indigenous Groups and represents a diversity of vegetation species that are used for food, medicinal, spiritual, and ceremonial purposes (Section 13.2.2.1).
- **Component Methods – Existing Conditions – Traditional Use Plants:** Indigenous and Local Knowledge informed the list of traditional use plant species (e.g., medicinal plants, berries, and other plants) used in the description of baseline conditions for traditional use plants (Section 13.2.6.2).

- **Existing Conditions:** Traditional use plant species identified by Indigenous Groups (e.g., medicinal plants, berries, and other plants) were used to inform the baseline conditions for availability and distribution of traditional use plants (Section 13.3.4). Indigenous and Local Knowledge was shared about traditional use plant gathering areas in the regional study area (RSA) (Section 13.3.4.2), existing conditions related to increasing wildfires in northern Saskatchewan in recent years (Section 13.3.1.2), and observations of the existing cumulative effects of air and water pollution on vegetation (Section 13.3.1.3).
- **Project Interactions and Mitigation:** Indigenous and Local Knowledge helped to inform the scoping of Project interactions and pathway analysis and consideration of mitigation measures (Section 13.4). This included observations and experiences of land users related to the existing cumulative effects on vegetation, including traditional use plants, resulting from changes to air and water quality. Indigenous Groups also provided observations related to the successfulness of reclamation activities and recommendations on reclamation, including returning the land to pre-disturbance conditions suitable for traditional land use activities, properly reclaiming disturbed areas with native plants, and conducting reclamation planning and implementation in collaboration with Indigenous Groups.
- **Residual Effects Analysis:** Effects of the Project on traditional use plant habitat availability and habitat distribution were assessed (Section 13.5.4).
- **Monitoring, Follow-Up, and Management:** Feedback provided by Indigenous Groups during engagement, including recommendations, was considered in the development of monitoring and follow-up activities (Section 13.7). 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 Project comments and concerns related to vegetation raised by Indigenous Groups and LPA community members, are included in the applicable subsections of this assessment.

13.2.2 Valued Components, Measurement Indicators, and Assessment Endpoints

13.2.2.1 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;

- species conservation status or concern (e.g., rarity, sensitivity, uniqueness);
- 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 vegetation VCs was based, in part, on Indigenous and Local Knowledge and feedback obtained during community information sessions for the Project in La Loche, Turnor Lake, Buffalo River, and Buffalo Narrows, JWG meetings, (Section 2; Section 3, Indigenous and Local Knowledge) as well as Indigenous and Local Knowledge presented in the IKTLU Studies (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YNLR).

Gathering plants for food, medicinal, spiritual, and ceremonial purposes is an important traditional activity for Indigenous Groups and an important aspect of culture and community well-being (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YNLR). During community information sessions, LPA community members also identified plants as an important valued component of the environment (NexGen 2019). The importance of traditional plants, and gathering activities was highlighted by Indigenous Groups:

> As in the past, harvesting from Mother Earth remains an integral inherited tradition of [the] Métis Nation . . . . MN-S Northern Region 2 members truly live off the land . . . tapping trees for birch syrup and gathering berries, mint and medicine all over the north, especially near Patterson Lake. It is important that this tradition continues. (TSD IV: MN-S)

> And we can have all our medicines on the land too, that we take because I practice medicine . . . . Because it was passed down from my mom and my dad to me . . . when people ask me to make them medicine . . . I go out and I look for medicines and I find them and I help people with it. (TSD II: BNDN)

> There is a lot of medicine, my dad and I use to collect them. Ts'aili Teli (Frog Tail) on the side of the road, it looks like red rose, that is medicine. They pay respect to the lake and plants when they harvested the plants . . . . He used to bring it to mom, and mom would drink it. It is good for body aches, made into tea. She mixed it with another plant, and made it into a tea. (TSD VI: YNLR)

The MN-S considers the Region 2 (i.e., Northern R2) territory as a vital source of food and traditional medicines which provide members "a shared identity, sense of community and permanence" (TSD IV: MN-S). Community members still rely on the land and its resources, and it is estimated that approximately 70% of their food comes from hunting, trapping, fishing, and gathering (TSD IV: MN-S). Members of the MN-S also reported that berries are very important and are harvested and consumed year-round (MN-S-JWG 2019a).

Showing respect for and giving thanks to plant resources through ceremonies is an important aspect of gathering (TSD III BRDN; TSD V.2: CRDN). For example, when a tree is cut down, community members pay respect to it by making an offering to the land for the service the tree is going to provide (e.g., providing shelter) (BRDN-JWG 2020). The importance of trees on the landscape, which are sometimes used as navigational

landmarks, was noted by the CRDN (TSD V.1: CRDN). An MN-S member described the important services that trees provide in terms of producing oxygen and emitting humidity that helps to keep the temperature down (MN-S-JWG 2019a).

Knowledge of traditional medicines, where they are gathered, and how they are prepared and used is considered a specialised knowledge carried by certain individuals in the community (TSD III: BRDN; TSD V.2: CRDN). This knowledge is important for the maintenance of culture that is passed down to younger generations. The intergenerational transmission of knowledge is often experiential, learned from Elders and relatives while out on the land, and requires access to a healthy environment and abundant resources (TSD II: BNDN; TSD III: BRDN; TSD V.2: CRDN). The importance of knowledge transmission was described by members of the CRDN and BRDN:

> My grandpa was a traditional medicine man . . . . Yea [his grandfather taught him], from the bush. But he told us it's not an easy thing . . .you . . .[have to] know something and you . . . [have to] respect it. When I was young, he wanted to give it to me . . . . He . . . [taught] me a lot of things about medicine. (TSD III: BRDN)

> I've always wanted to live in the bush. And, so I could be self-sufficient. And there's a lot of reasons why I wanted to build a cabin. I wanted to teach my kids the traditional cultural lifestyle. Where they can make dry fish, pick berries and all that traditional stuff. (TSD V.2: CRDN)

Locations where berries and medicinal plants have been harvested for generations are also associated with particular stories and teachings (TSD V.2: CRDN). The long history of gathering in the same locations over generations and knowledge acquired of those particular places contributes to sense of place which is "intricately connected to land and place". Sense of places is tied to people's attachment and affiliation with the land and is an expression of identity and familiarity, and "depends on particular places . . . along with their particular features (physical, social, and symbolic) and the values and activities these features foster and enable" (TSD II: BNDN; TSD III: BRDN). These physical features include vegetation ecosystems and distribution of plant species that are found across a particular landscape. For example, the unique environmental features that characterize the region around Patterson Lake were described by a BNDN member:

> It's nice [around Patterson Lake], you know? It's a lot of sand and jack pine and it's not really thick. It's, I think it's old growth, if I could remember. It's a really nice area. Anywhere north is nice. It's kind of the same from Patterson . . . west and east. A lot of sand and nice clear water. (TSD II: BNDN)

Indigenous Groups have noted the inter-relationships between different biophysical components of the environment and the role that air and water quality plays in contributing to a healthy terrestrial environment, including to vegetation (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YNLR). For example, the CRDN described how medicinal properties of plants are related to the quality of the grounds in which they grow, and that medicinal plants are not gathered from areas which have been disturbed (TSD V.1: CRDN; TSD V.2: CRDN). The CRDN noted that they assess the quality of soil, in addition to water and air, based on their close observations of vegetation quality (TSD V.2: CRDN).

The application of both a coarse- and fine-filter approach to the selection of vegetation VCs is consistent with feedback received during engagement regarding the value that Indigenous Groups place both on individual components (e.g., plant species) and ecosystems as a whole.

A coarse-filter approach (i.e., an approach that focuses on protecting the structure of an ecosystem as a whole) was used to select vegetation VCs and determine effects on the different vegetated ecosystems that would be influenced by the Project. At the broadest level, upland, wetland, and riparian ecosystems were selected as VCs to assess the effects on vegetation, wetlands, and overall biodiversity. Assessing and managing biodiversity at the vegetation and wetland ecosystems level means that large numbers of biodiversity elements are addressed together. Analysis of the availability, distribution, and function of upland, wetland, and riparian ecosystems provides an assessment of species richness (i.e., number of species within an ecological community), diversity, and distribution across the landscape. Analysis at the ecosystem level also provides an understanding of natural processes (e.g., disturbance caused by fire, insects, and disease) and existing anthropogenic (i.e., human-caused) disturbances occurring on the landscape, both spatially and temporally.

To complement the assessment of vegetation ecosystems, a fine-filter approach (i.e., an approach that focuses on protecting particular components within an ecosystem) was applied by assessing effects on plant species identified as important by Indigenous Groups (i.e., traditional use plant species). In total, 28 plant species were identified as traditional plant species used for food, medicinal, ceremonial, or other purposes (TSD V.1: CRDN; TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD VI: YNLR; CRDN 2019a). Each traditional use plant species was assessed using the baseline vegetation data (Annex VII.1, Vegetation Baseline Report 1 [Mapping]; Annex VII.2: Vegetation Baseline Report 2 [Inventory, Rare Plants, and Wetlands]) to provide an understanding of species presence and abundance within the Project study areas. This fine-filter level of assessment is important to understand the effects on biodiversity that are sometimes distinct from the effects on ecosystems, and for which targeted mitigation at the species level may be required. The assessment of traditional use plant species outlines how the Project would affect the abundance and distribution of these resources, and if the change is sufficient to significantly influence the ability of a VC to be self-sustaining and ecologically effective. The assessment of traditional use plant species as a vegetation VC is complementary to the assessments in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use and Section 17, Other Land and Resource Use, which include availability of plants as a measurement indicator (i.e., ecological resource), where changes in the abundance and distribution of biological VCs are assessed based on the societal or cultural value of resource, which is as important as biological effects on the ecosystem. The assessments of biological and socio-economic VCs and the connections among them provide an overall holistic evaluation of effects from the Project on the social-ecological system.

The coarse- and fine-filter assessments complement and interact with one another, with each assessment providing context for the other. Combined, the coarse- and fine-filter assessments provide a holistic assessment of the potential effects of the Project on biodiversity.

Selection of vegetation VCs also considered federally and provincially listed and/or tracked vascular plant species (i.e., plants with specialized tissue for transporting water and nutrients) that have the potential to interact with the Project. Collectively referred to as “rare” vascular plant species for this Project, these include the following:

- plants listed as endangered or threatened under The Wild Species at Risk Regulations;
- species included in the Saskatchewan Vascular Plant Tracked Taxa List (SKCDC 2021a);
- species listed in Schedule 1, 2, and 3 as Endangered, Threatened, or of Special Concern under the *Species at Risk Act* (SARA) Public Registry (Government of Canada 2021a); and
- species listed as endangered, threatened, or of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC; Government of Canada 2021a).

Potential for rare plant species to occur in the RSA was determined through review of historical element occurrences on the Hunting, Angling, and Biodiversity of Saskatchewan (HABISask) database (SKCDC 2021b) and the Tracked Vascular Plant Taxa by Ecoregion and Landscape Area (SKCDC 2021c), vegetation data collected during the baseline surveys (Annex VII.1; Annex VII.2), and habitat and distribution data detailed in COSEWIC Assessment and Status Reports (COSEWIC 2002a, COSEWIC 2002b, COSEWIC 2006a, COSEWIC 2006b, COSEWIC 2011a, COSEWIC 2011b, COSEWIC 2012, COSEWIC 2013, COSEWIC 2018), and SARA recovery strategies (Environment Canada 2012).

No COSEWIC- or SARA-listed species have been previously identified within the RSA (SKCDC 2021a) or within the landscape areas overlapped by the RSA (i.e., Firebag Hills Landscape Area, Black Birch Plain Landscape Area, McTaggart Plain Landscape Area, and McFarlane Upland) (SKCDC 2021c). Information provided by COSEWIC Assessment and Status Reports (COSEWIC 2002a, COSEWIC 2002b, COSEWIC 2006a, COSEWIC 2006b, COSEWIC 2011a, COSEWIC 2011b, COSEWIC 2012, COSEWIC 2013, COSEWIC 2018), and SARA recovery strategies (Environment Canada 2012) indicate that the Project occurs outside of known species distribution ranges and there is no critical habitat defined for any federally listed vascular plant species in the RSA. No COSEWIC- or SARA-listed vascular plant species were detected during baseline field surveys (Annex VII.1; Annex VII.2). Seven provincially tracked plant species were observed during the baseline field surveys; however, only a single rare vascular plant occurrence of beautiful sedge (*Carex concinna*) was observed that would be potentially affected by the Project (Annex VII.1; Annex VII.2). Due to the low risk of encountering federally listed vascular plant species and the limited amount of rare vascular plant observations during the baseline field surveys, an ecosystem-based approach was applied to the assessment of rare plants, which examined how the condition of Ecological Land Classification (ELC) units (i.e., discrete unit classification on the basis of vegetation and soil attributes) with rare plant potential may be adversely affected by Project activities (e.g., effects from habitat loss and changes in moisture and light levels).

Habitat requirements for species that are not well known or understood (i.e., tracked bryophytes, such as mosses, and lichens) were excluded as VCs because of the high degree of uncertainty associated with the distribution of these taxa (e.g., species) within the area of the anticipated Project (and generally in Saskatchewan) (DeVries and Wright 2015) and because such organisms often require detailed chemical or taxonomic procedures for their identification (Eldridge et al. 2003).

The following vegetation VCs were selected for the Project:

- **Upland ecosystems:** selected because they are the basis for local biological processes, provide habitat for wildlife, and contribute to overall biodiversity.
- **Wetland ecosystems:** selected because they are of conservation concern, sensitive to development, perform hydrological and biochemical cycling functions, provide habitat for fish and wildlife, and contribute to biodiversity.
- **Riparian ecosystems:** selected because they are of conservation concern and are sensitive to development, perform hydrological and biochemical cycling functions, provide fish habitat and movement corridors for wildlife, and contribute to biodiversity.
- **Traditional use plant species:** selected because they are important to the culture and way of life of Indigenous Peoples. Plant use varies and includes nutritional, ceremonial, medicinal, and other purposes.

13.2.2.2 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 the overall effects on VCs and assessment endpoints (Section 6.3.2, Assessment Endpoints and Measurement Indicators). Several measurement indicators were identified and used for vegetation VC assessments (Table 13.2-1). Importantly, the measurement indicators for vegetation VCs are connected to intermediate components in the EA such as air quality, hydrology, surface water quality, and terrain and soils. Accordingly, the assessments of these intermediate components are fundamental to understanding the total effects of the Project on the vegetation VCs (Section 6.3.3, Intermediate Components). Results from the ecological health risk assessment were also incorporated into the ecosystem condition measurement indicator for vegetation VCs.

The measurement indicators for vegetation VCs are defined as follows:

- **Ecosystem or habitat availability:** refers to the amount of ecosystem or habitat present for each VC. Ecosystem or habitat availability is primarily affected by physical changes (e.g., vegetation clearing). Ecosystem or habitat availability is represented as the amount of area (i.e., hectares) of each VC.
- **Ecosystem or habitat distribution:** refers to the way each ecosystem type or habitat is distributed on the landscape. Availability and distribution are linked; distribution focuses on the spatial configuration and connectivity of ecosystems or habitat, whereas availability focuses on the amount of those ecosystems or habitats. Metrics of distribution include effects on connectivity, changes in size, distribution of ELC units, and linear feature density (e.g., roads). Estimates were supported by the scientific literature and Indigenous and Local Knowledge, where available.
- **Ecosystem condition:** refers to the integrity, or naturalness, of ecosystems on the landscape; the ability of ecosystems to support the community of organisms naturally associated with them; and the ability of ecosystems to perform ecological functions. The condition is typically reduced in human-altered ecosystems due to changes in physical (e.g., water quantity, water quality, soil quality) and biological (e.g., vegetation and wildlife communities) properties. Examples of metrics used to evaluate ecosystem condition include proximity to disturbance, presence and potential of rare species, and number of invasive species. Ecosystem condition is primarily affected by changes in the amount of moisture and sunlight, competition with invasive species, and dust deposition. Ecosystem condition also considers the results from the ecological health risk assessment and the exposure of aquatic and terrestrial plant receptors to constituents of potential concern (COPCs; TSD XXI, Environmental Risk Assessment).

Each measurement indicator was evaluated quantitatively where sufficient information existed to support a numerical assessment and qualitatively where necessary.

13.2.2.3 Assessment Endpoints

Assessment endpoints are qualitative expressions that represent the key properties of VCs that should be protected; as such, assessment endpoints incorporate the concept of sustainability and function as significance thresholds (Section 6.3.2). The significance of effects from the Project and other human developments on vegetation VCs was evaluated by linking changes in measurement indicators to the influence on self-sustaining and ecologically effective ecosystems and self-sustaining traditional use plant populations (Table 13.2-1). Details on the application of self-sustaining and ecologically effective ecosystems and self-sustaining traditional use plant populations as significance thresholds are provided in Section 13.2.9, Residual Effects Classification and Determination of Significance. The compilation and interpretation of the results from analyzing changes in

measurement indicators provides lines of evidence that collectively provide a determination of whether the assessment endpoints are maintained or achieved (Section 6.3.2). Ecosystem services (i.e., the benefits people gain from the environment) provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use, and are not considered during the residual effects classification and determination of significance in this section. The results from the ecological health risk assessment (TSD XXI) provide another important line of evidence in the determination of significance of effects on vegetation VCs (Section 6.3.4, Environmental Risk Assessment Receptors).

Table 13.2-1: Valued Components, Rationale, Measurement Indicators, and Assessment Endpoints

VCs	Rationale	Measurement Indicators	Assessment Endpoints
▪ Upland ecosystems ▪ Wetland ecosystems ▪ Riparian ecosystems	▪ Ecosystems contain plants that represent both traditional and current food sources ▪ Socio-economic/cultural importance ▪ Critical attribute of biodiversity ▪ Provide wildlife habitat ▪ Wetlands provide important hydrological and biochemical functions ▪ Sensitive to disturbance ▪ Federal and/or provincial species at risk protected by legislation	▪ Ecosystem availability (i.e., amount) ▪ Ecosystem distribution (i.e., arrangement and connectivity) ▪ Ecosystem condition (i.e., integrity)	▪ Self-sustaining and ecologically effective ecosystems
▪ Traditional use plant species	▪ Plant species identified during IKTLU Studies and JWG meetings ▪ Social/cultural importance	▪ Habitat availability (i.e., amount of habitat occupied by traditional use plant species) ▪ Habitat distribution (i.e., arrangement and connectivity of habitat occupied by traditional use plant species)	▪ Self-sustaining and ecologically effective traditional use plant populations

Note: Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.
IKTLU = Indigenous Knowledge and Traditional Land Use; JWG = Joint Working Group; VC = valued component.

13.2.3 Spatial Boundaries

The spatial boundaries were different for the baseline field surveys and the EA for the vegetation VCs. The baseline field survey boundaries were selected based on early Project design information, and the study areas for the EA were more refined considering the potential effects from more detailed Project design and additional ecological context as the Project design progressed. The following discussion elaborates further on the rationale for the spatial boundaries for collecting field data and assessing effects from the Project on vegetation.

13.2.3.1 Baseline Survey Boundaries

Field surveys for vegetation and rare plants were completed within specific baseline study areas, which were defined according to knowledge of ore deposit location, preliminary Project site layout, provincial requirements, and surveys completed for other northern mining developments. Canada North Environmental Services (CanNorth) conducted vegetation and rare plant surveys within a baseline site study area that consisted of a 25 km^2 area centred on the preliminary site layout and was selected to capture site-specific effects (Annex VII.2). Omnia Ecological Services (Omnia) conducted vegetation surveys within a baseline local study area (LSA). The baseline LSA (41 km^2) was defined by applying an approximate 1.6 km buffer to the preliminary Project site layout and existing access road, which was intended to capture direct effects from the physical footprint and

indirect effects on wildlife from sensory disturbance associated with construction noise and truck traffic (Annex VII.1).

The baseline study areas were designed to measure and characterize existing environmental conditions on a continuum of scales from the preliminary site layout to the broader, local area. The sampling and survey locations were concentrated adjacent to the preliminary site and existing access road within the baseline site study area and baseline LSA (e.g., listed plant species and vegetation plots [Annex VII.1; Annex VII.2]). Baseline study areas were selected with limited knowledge of the precise location and layout of the Project footprint to be used in the assessment. As a result, the baseline study areas are different than the spatial boundaries or assessment study areas defined for the EA, which were based on more recent and detailed Project design information. The spatial boundaries selected for the vegetation assessment were designed to provide a description of the existing environment in sufficient detail to identify, understand, and assess potential Project-VC interactions and effects, including cumulative effects (Table 13.2-2). Importantly, the vegetation assessment study areas capture the information collected from field studies in the baseline study areas. Specifically, the LSA defined for the EA is overlapped by the CanNorth baseline site study area and the Omnia baseline LSA (Figure 13.2-1). Therefore, the data collected during the baseline field programs is deemed to be sufficient for the purposes of the EA.

13.2.3.2 Environmental Assessment Boundaries

The assessment of vegetation was completed using spatial boundaries complementary to those for terrain and soils (Section 12.2.3, Spatial Boundaries) and wildlife and wildlife habitat (Section 14.2.3, Spatial Boundaries), and consists of a site study area, maximum disturbance area, LSA, and RSA (Figure 13.2-2). The selection of the vegetation assessment study areas considered VC-specific and ecosystem-centred attributes and boundaries, and the predicted spatial extent (i.e., zone of influence) of Project effects and other existing and reasonably foreseeable developments in accordance with CEA Agency guidance (CEA Agency 2018).

The site study area is 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 and facilities. To the degree possible, the Project footprint was minimized to reduce both the effects on the terrestrial environment and the area of restricted access to Indigenous and other land users.

A maximum disturbance area was used for the assessment to address uncertainty in the final design of the Project so that adverse effects on vegetation ecosystems 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 anticipated 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 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 13.2-2).

The LSA for the EA is approximately 2,832 ha (28 km^2) and is defined by a 500 m buffer around the maximum disturbance area. The LSA provides local context for assessing Project effects (Figure 13.2-2). The LSA also includes disturbance from previous and existing anthropogenic activities, such as NexGen's existing exploration camp and core shed, public trails, cutlines, clearings, and the intersection of the access road and Highway 955. The LSA was established to capture the direct effects on vegetation ecosystems and traditional use plants from the physical removal and alteration of soils and vegetation. The 500 m buffer around the maximum disturbance area is expected to capture most of the small-scale indirect effects on vegetation VCs from changes in soil chemistry and plant communities due to dust deposition. For example, the strongest effects from dust on

vegetation are typically near the source, such as from roads (Walker and Everett 1987; Farmer 1993). Walker and Everett (1987) found effects were primarily within 50 m of a road, while Meininger and Spatt (1988) detected stronger effects within 50 m and weaker changes within 50 to 500 m from a road (both studies in Alaska). At the Ekati Mine in the Northwest Territories, dust generated from a high-traffic, 28 km haul road was found to decrease lichen cover up to 1 km away (Chen et al. 2017). However, at the nearby Diavik Mine, measured changes to plant communities were within 500 m of the mine (Watkinson et al. 2021). These studies support the chosen 500 m buffer. Indirect effects that may extend beyond the LSA were also considered in the assessment, as applicable.

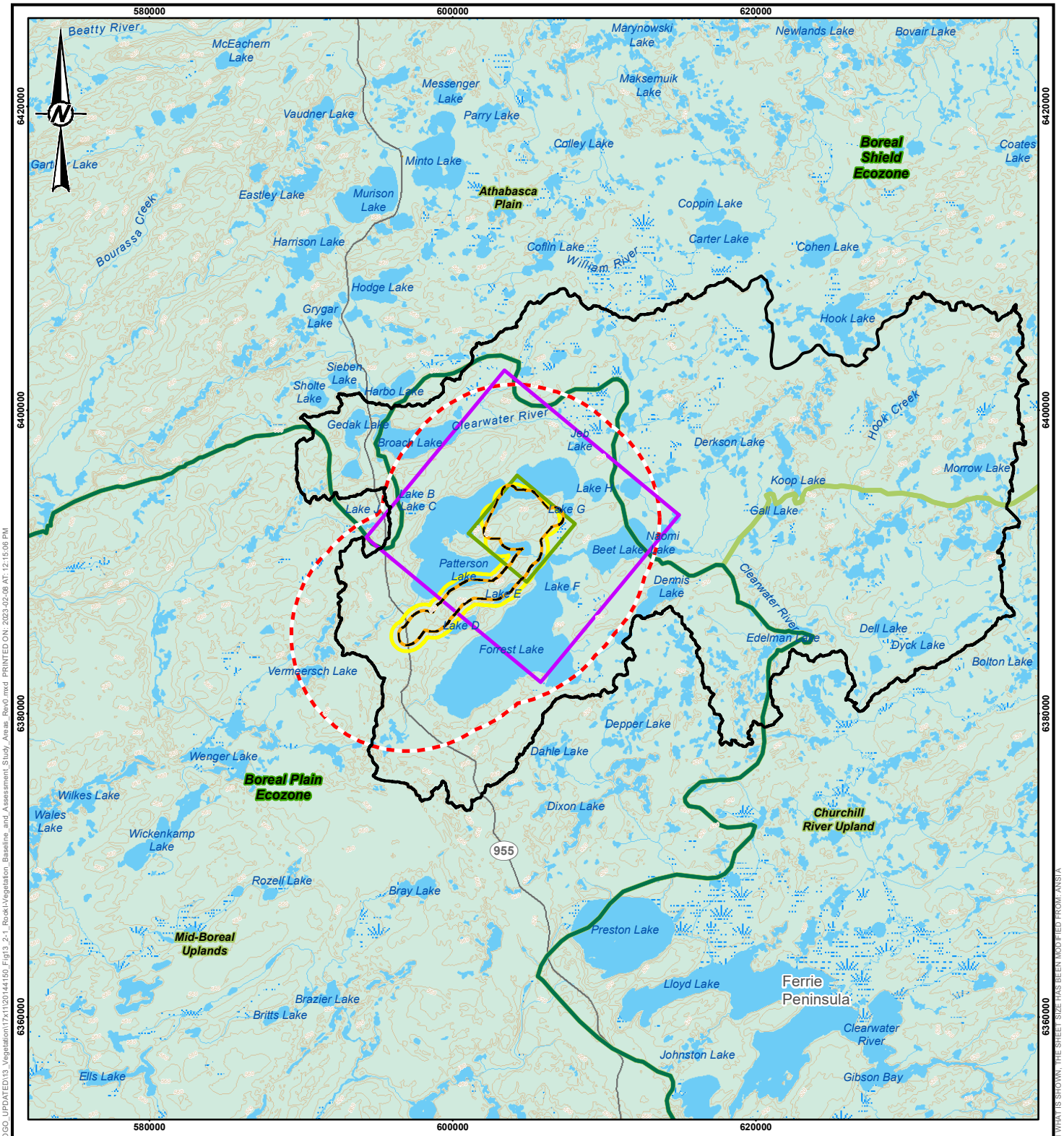
Due to the inter-relationships among physical and biological components in aquatic and terrestrial ecosystems, the RSA for the EA was defined for the aquatic and terrestrial assessments and provides a watershed-based context for interpreting the local effects of the Project. More specifically, the Clearwater River watershed RSA links the pathways of exposure to COPCs in dust, air emissions, soils, and water to vegetation ecosystems in the watershed, which are evaluated through the ecological health risk assessment (TSD XXI). The RSA includes the LSA, Forrest Lake, Beet Lake, Naomi Lake, and the watershed east and north of the confluence of the Clearwater and Mirror rivers as described in the hydrology assessment (Section 9.2.3, Spatial Boundaries). The RSA also overlaps the transition between the Boreal Plain and Boreal Shield ecozones and likely includes any potential variability in diversity between the two ecozones. The combined coarse- and fine-filter approach applied to the assessment of vegetation (Section 13.2.2.1, Valued Components) and wildlife VCs (Section 14.2.2.1, Valued Components) and the assessment of fish and fish habitat (Section 11.2.3, Spatial Boundaries) at the watershed scale and represents the use of both VC- and ecosystem-centred approaches to defining the RSA (CEA Agency 2018) and in determining Project effects on overall biodiversity.

The RSA is the largest scale at which data were collected, compiled, and analyzed and covers approximately 107,491 ha (1,075 km^2; Figure 13.2-2); this area includes indirect effects that may extend beyond the LSA (CEA Agency 2018). The RSA is expected to be at a scale suitable for assessing the significance of effects on upland, wetland, and riparian ecosystems and traditional use plant species distributed inside the RSA. The RSA is considered large enough to provide an ecologically relevant and confident assessment of the direct and indirect effects on vegetation VCs from the Project, and the cumulative effects from the Project as well as those from previous, existing, and approved projects/activities, and RFDs, and in consideration of natural factors.

Table 13.2-2: Spatial Boundaries for Assessment of Vegetation Valued Components

Spatial Boundary	Surface Area	Description
Site study area	228 ha (2.3 km^2)	▪ Equivalent to the 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	2,832 ha (28 km^2)	▪ 500 m buffer around the maximum disturbance area ▪ Defined by the expected extent of the direct and small-scale indirect effects from the Project ▪ Provides local context for assessing the residual effects on vegetation VCs
RSA	107,491 ha (1,075 km^2)	▪ Watershed draining to the Clearwater River above the Mirror River confluence ▪ Provides broader scale context to capture and assess Project effects and is linked to terrestrial and aquatic-related exposure pathways in the ecological health risk assessment ▪ Provides a large enough area to assess the cumulative effects on vegetation VCs and is the scale at which significance is determined

Note: Numbers are rounded for presentation purposes.
LSA = local study area; RSA = regional study area; VC = valued component.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- LOCAL ROAD
- SECONDARY HIGHWAY
- WATERCOURSE
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- WATERBODY
- WETLAND
- WOODED AREA
- ASSESSMENT LOCAL STUDY AREA
- ASSESSMENT REGIONAL STUDY AREA
- CANNORTH BASELINE SITE STUDY AREA
- CANNORTH BASELINE LOCAL STUDY AREA
- OMNIA BASELINE LOCAL STUDY AREA
- OMNIA BASELINE REGIONAL STUDY AREA

0 8 16
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REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE

VEGETATION BASELINE AND ASSESSMENT STUDY AREAS

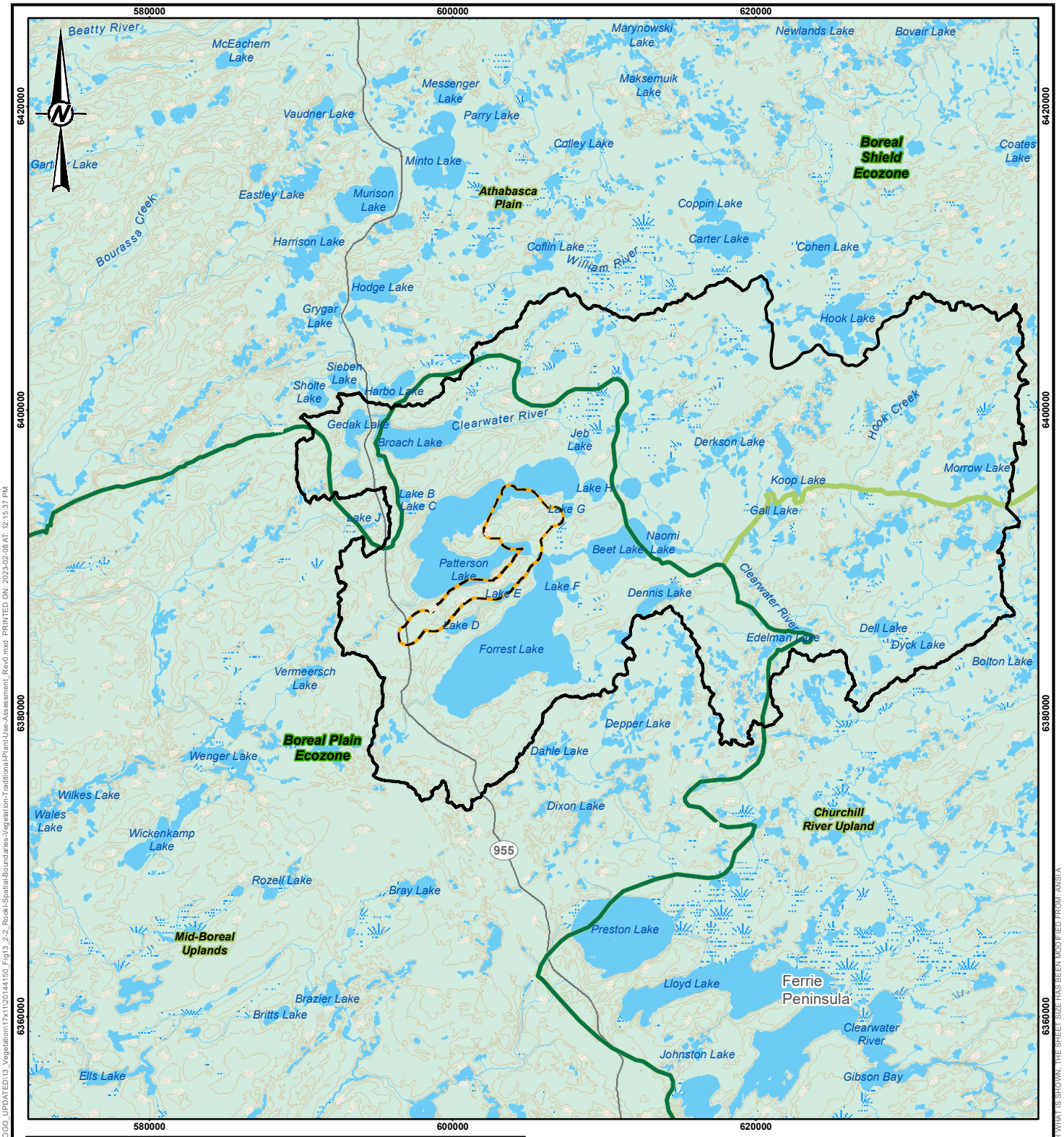
CONSULTANT
wsp

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DESIGN	AS	2023-02-08	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.2-1

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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- LOCAL ROAD
- SECONDARY HIGHWAY
- WATERCOURSE
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- WATERBODY
- WETLAND
- WOODED AREA
- ASSESSMENT LOCAL STUDY AREA
- ASSESSMENT REGIONAL STUDY AREA

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE

SPATIAL BOUNDARIES FOR THE VEGETATION AND TRADITIONAL PLANT USE ASSESSMENTS

CONSULTANT
wsp

PROJECT		20144150	PHASE	3310 - 2
DESIGN	AS	2023-02-08	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
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REVIEW	JV	2023-02-08		

FIGURE 13.2-2

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13.2.4 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 back 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.

Most of the residual effects from the Project on vegetation VCs are predicted to have the largest magnitude and spatial extent at the end of Construction, when the physical footprint is near or at full development and reclamation has not yet started and continue through Operations, Closure, and for a period after Closure until effects are reversed or determined to be permanent (e.g., areas permanently covered by waste rock). In consideration of these factors, effects on vegetation were analyzed and predicted from Construction through to Closure and typically beyond, which generates the maximum potential spatial and temporal extent of effects and provides confident and ecologically relevant effects predictions. Where applicable, residual effects were also assessed in terms of specific temporal snapshots of the Project defined by intermediate components (e.g., air quality, hydrology, and water quality) that may have a linkage to potential effects on vegetation VCs. These temporal snapshots represent phases or periods when adverse effects are predicted to be most pronounced (Section 6.4.2, Temporal Boundaries).

The temporal boundaries applied to the cumulative effects assessments include 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, if applicable.

13.2.5 Assessment Cases

The concept of assessment cases was applied to the vegetation 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 vegetation VCs. Assessment cases for the Project included a Base Case, Application Case, and RFD Case.

Base Case for vegetation is represented by existing conditions. The Base Case describes the existing environment in the LSA and RSA 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 vegetation. As such, existing conditions represent the cumulative effects of historical and current environmental pressures that have influenced the observed condition and patterns of the vegetation VCs (CEA Agency 2018).

Application Case for vegetation 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 vegetation VCs.

Reasonably Foreseeable Development (RFD) Case for vegetation 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 by the VCs.

A key criterion for selecting other projects to include in the RFD Case was that the projects must cause similar effects on vegetation VCs influenced by the Project (Hegmann et al. 1999). The Fission Patterson Lake South Property, which is planned by Fission Uranium Corp. (Fission 2019, 2021), was included in the RFD Case (Figure 13.2-3). Public information describes a projected three-year construction period and seven-year operating period (production and processing) (Fission 2019, 2021). 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, 2021) is the anticipated physical footprint of the Fission Patterson Lake South Property and includes the proposed highway bypass, airstrip, and all proposed Project site infrastructure. A hypothetical maximum disturbance area, as applied in Section 13.2.3 to the Project footprint, was also used for the Fission Patterson Lake South Property to address uncertainty in project design. The CRDN specifically mentioned the potential for of cumulative effects from the Project and the nearby proposed Patterson Lake South Property (CRDN 2019b).

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 vegetation assessment includes a quantitative and qualitative analysis of predicted changes on measurement indicators and associated effects from the Fission Patterson Lake South Property on vegetation VCs. In addition, potential changes from natural disturbance factors and climate change are qualitatively discussed for vegetation VCs.

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Eastley Lake
Murison Lake
Minto Lake
Coppin Lake
Carter Lake
Cohen Lake
Harrison Lake
Coflin Lake
William River
Hodge Lake
Hook Lake
Grygar Lake
955
Sieben Lake
Harbo Lake
Sholte Lake
Clearwater River
Gedak Lake
Broach Lake
Jed Lake
Derkson Lake
Koop Lake
Hook Creek
Gunter Lake
Morrow Lake
Lake B
Lake A
Lake C
Lake H
Lake G
Gall Lake
Beet Lake
Naomi Lake
Lake F
Lake E
Lake D
Dennis Lake
Forrest Lake
Edelman Lake
Dell Lake
Dyck Lake
Meanwell Lake
Bolton Lake
Vermeersch Lake
Boreal Plain Ecozone
Depper Lake
Mirror River
Boreal Shield Ecozone
Dahle Lake
Wenger Lake
Wickenkamp Lake
Dixon Lake
Rozell Lake
Bray Lake
Preston Lake

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- SECONDARY HIGHWAY
- WATERCOURSE
- ECOZONE BOUNDARY
- WATERBODY
- WETLAND
- WOODED AREA
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- PATTERSON LAKE SOUTH PROPERTY HYPOTHETICAL MAXIMUM DISTURBANCE AREA
- LOCAL STUDY AREA
- REGIONAL STUDY AREA

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REFERENCE(S)

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3. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

REASONABLY FORESEEABLE DEVELOPMENT IN THE REGIONAL STUDY AREA

CONSULTANT

wsp

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CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.2-3

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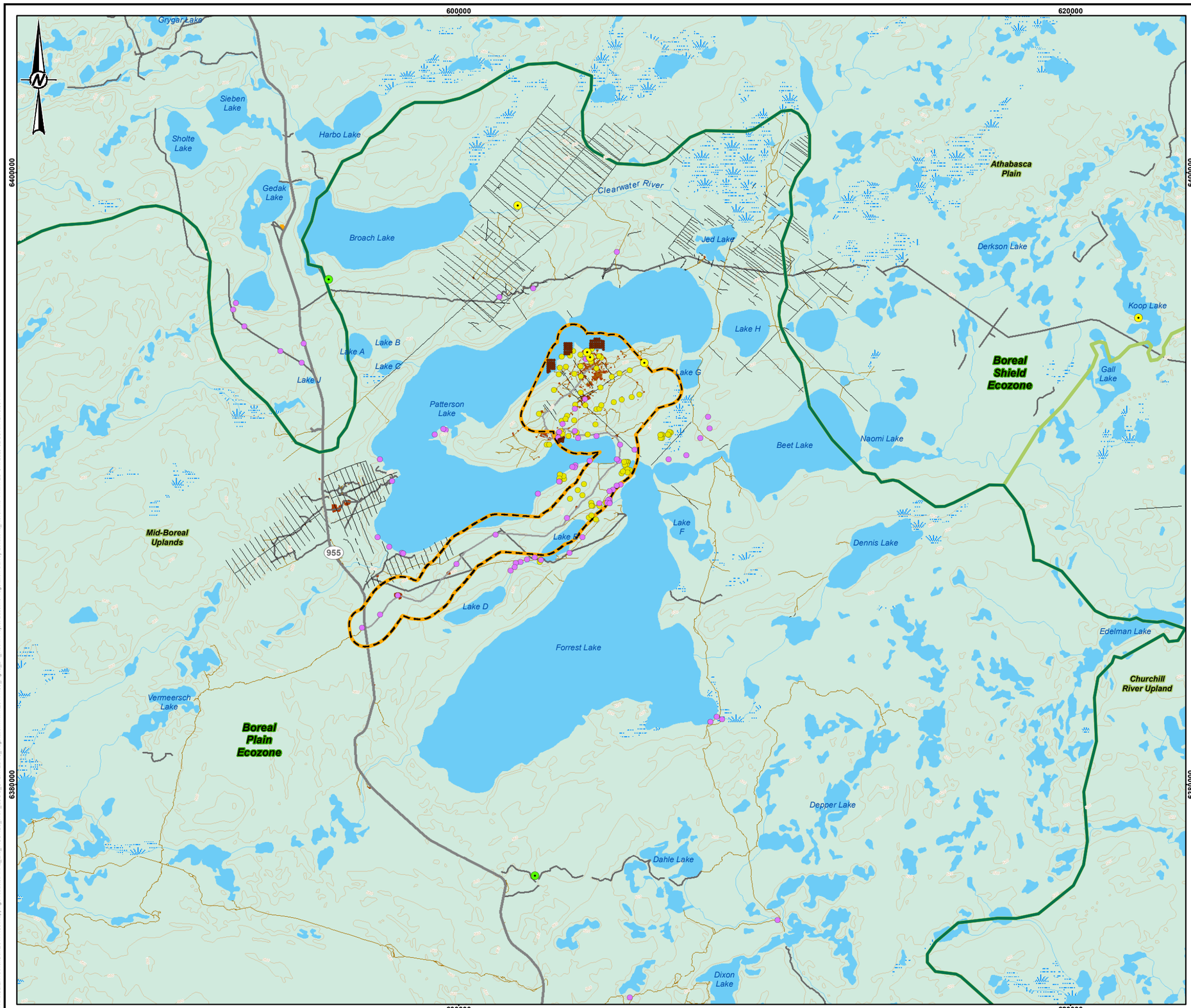
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13.2.6 Existing Conditions

Existing conditions were characterized to provide context for the assessment of incremental and cumulative effects from the Project and other developments in the LSA and RSA. Existing conditions were evaluated quantitatively where information was available and qualitatively where necessary using the most up-to-date information. Data used to characterize existing conditions were collected from the following information sources:

- Annex VII.1, which summarizes baseline conditions for vegetation obtained during field programs completed in 2018 (Annex VII.2):
  - database searches (2018);
  - vegetation inventory and rare plant survey (2018; Figure 13.2-4); and
  - wetland classification (2018).
- Terrestrial Environment Vegetation Baseline Inventory (Annex VII.1), which summarized baseline conditions for vegetation obtained during field programs completed in 2018 and 2019, including:
  - ecosite mapping (2018);
  - fire mapping (2018);
  - anthropogenic mapping (2018);
  - ecosite characterization, structural diversity, and species richness (2018; Figure 13.2-4); and
  - linear feature natural regeneration assessment (2019).
- Species at risk resources including the Saskatchewan Conservation Data Centre (SKCDC 2021a) and the Species at Risk Public Registry (Government of Canada 2021a).
- Federal status reports and recovery strategy documents available through the Species at Risk Public Registry (Government of Canada 2021a).
- Species designated as prohibited, noxious, or nuisance under *The Weed Control Act*.
- Supplemental vegetation inventory and rare plant surveys completed in 2021 to further characterize baseline conditions for vegetation (Dolmage 2021).



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- SECONDARY HIGHWAY
- WATERCOURSE
- ECOZONE BOUNDARY
- WATERBODY
- WETLAND
- WOODED AREA
- LOCAL STUDY AREA

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

- 2018 CANNORTH AQUATIC VEGETAION INVENTORY
- 2018 CANNORTH VEGETATION INVENTORY
- 2018 OMNIA VEGETATION PLOT

GOLDER VEGETATION CHEMISTRY PLOT LOCATIONS

- 2018 VEGETATION CHEMISTRY SAMPLE SITE
- 2019 VEGETATION CHEMISTRY SAMPLE SITE

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PROJECT
NexGen Energy Ltd.
ROOK I PROJECT

TITLE
BASELINE VEGETATION SURVEY LOCATIONS

CONSULTANT
wsp

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REVIEW	JV	2023-02-08		

FIGURE 13.2-4

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13.2.6.1 Ecological Land Classification

An ELC map was developed for the LSA and RSA to provide a basis for understanding the existing conditions for vegetation VCs, as well as supporting the development of wildlife habitat suitability index models (Section 14, Wildlife and Wildlife Habitat; Appendix 14B, Wildlife Habitat Models). Ecological Land Classification unit information classified as per the *Field Guide to the Ecosites of Saskatchewan's Provincial Forests* in McLaughlan et al. (2010) was compiled from a number of sources:

- Omnia Predictive Ecosite Map (PEM) (Annex VII.1);
- the ENV Forest Service Branch (ENV 2014) forest ecosystem classification system for the Boreal Plain (10 m by 10 m pixel; v2.0_rf_f);
- the ENV Forest Service Branch (ENV 2019a) PEM for the Boreal Shield (10 m by 10 m pixel, v1);
- the ENV Forest Service Branch (ENV 2019b) forest ecosite classification for the Boreal Shield and Taiga Shield Ecosite Groups (30 m by 30 m pixel);
- Northern Plant Ecology Lab (NPEL; University of Saskatchewan 2015) PEM for the Boreal Shield (30 m by 30 m pixel);
- the Saskatchewan Research Council's Northern Digital Land Cover (SRC 2000);
- Wildfire Management Branch burn severity mapping for 1988-2018 (ENV 2018);
- SPSA Wildfire History 1945-2020: Wildfires Greater Than 100 ha (SPSA 2020);
- Axiom orthorectified (i.e., processed to correct for distortions and assign accurate coordinates) aerial map (4.88 cm pixel; June 2019) of the existing exploration camp and access road;
- Environment and Climate Change Canada disturbance layer (Environment Canada 2015);
- ENV SK2 West Caribou Administration Unit disturbance layer (ENV 2019c); and
- Topographic Data of Canada Series CanVec 1:50,000 spatial data (NRCan 2019).

An initial ELC dataset of the RSA, which includes the LSA, was completed by combining the Omnia PEM (Annex VII.1), ENV (2014) forest ecosystem classification system for the Boreal Plain, and ENV (2019a) PEM for the Boreal Shield. Classification and delineation completed by Omnia during baseline studies were given priority over the ENV datasets as this information represented the most recent mapping within the Project study areas and is supported by field data collected. The forest ecosystem classification system for the Boreal Plain (ENV 2014) and the PEM for the Boreal Shield (ENV 2019a) were used to complete the ELC for the respective ecozones. Where required, pixel values from the Northern Digital Land Cover dataset were assigned equivalent Boreal Shield ecosite codes based on communications from the Forest Service Branch (Oldford 2019) or supplemented using the Northern Plant Ecology Lab (University of Saskatchewan 2015) predicted ecosite mapping for the Boreal Shield and the forest ecosite classification for the Boreal Shield and Taiga Shield Ecosite Groups (ENV 2019b). Watercourse and waterbody features were added to the dataset using the CanVec 1:50,000 spatial data layer. All available datasets were combined or overlaid to provide consistent classification across the RSA for the Project.

The Project is located within the Boreal Plain Ecozone, near the boundary between Boreal Plain and Boreal Shield Ecozones. The RSA overlaps both the Boreal Shield Ecozone and the Boreal Plain Ecozone. The Boreal Shield Ecozone extends across Canada from the Atlantic coast to northern Alberta (Government of Canada 2019). In Saskatchewan, the Boreal Shield Ecozone is located between the Boreal Plain Ecozone to the south and the Taiga Shield Ecozone to the north (Acton et al. 1998). The Boreal Shield Ecozone consists of boreal forest associated with the Canadian Shield and has two ecoregions: the Athabasca Plain and Churchill River Upland. Where soil conditions allow moderate tree growth, the climax vegetation community is closed black spruce (*Picea mariana)* forest with understory (i.e., vegetation layer below the forest canopy) of feather mosses. Mixed stands of jack pine (*Pinus banksiana*) and black spruce grow on thin upland soils, and tamarack (*Larix laricina*) are typically found within poorly drained lowlands. Fire is the dominant disturbance mechanism. White spruce (*Picea glauca*), balsam fir (*Abies balsamea*), trembling aspen (*Populus tremuloides*), and balsam poplar (*Populus balsamifera* spp. *balsamifera*) grow on more productive sites.

The Boreal Plain Ecozone covers portions of Manitoba, Saskatchewan, and Alberta with minor extensions into British Columbia and the Northwest Territories (Government of Canada 2019). Most of the ecozone is covered by boreal forest, although a portion along the southern boundary has been converted to agricultural cropland (Acton et al. 1998). In Saskatchewan, the Boreal Plain Ecozone has three ecoregions: Mid-Boreal Upland, where the Project is located; Mid-Boreal Lowland; and Mid-Boreal Transition. The climate is warmer than the Boreal Shield Ecozone, and consequently the productivity is higher and the diversity of vegetation is greater. Climax communities include closed-crown mixedwood and coniferous forest with trembling aspen, balsam poplar, and paper birch (*Betula papyrifera*) in the Mid-Boreal Transition Ecoregion and white and black spruce, tamarack, and jack pine in the Mid-Boreal Upland and Mid-Boreal Lowland ecoregions.

Ecosites used for the ELC are described based on their unique classification within each ecozone (e.g., Boreal Plain, Boreal Shield); however, McLaughlan et al. (2010) provide ecozonal synonyms that can be used to identify similar ecosites found in other ecozones. In some cases, ecosites are unique to an ecozone and have no documented equivalent, analogue, or similar condition in other ecozones.

13.2.6.1.1 Upland Ecosystem Mapping

Upland ecosystems consist of graminoid, shrub-dominated, and treed communities containing mainly facultative upland (i.e., species that can grow in either upland or alternate habitats), and obligate upland plant species (i.e., species that grow in upland ecosystems only). The water table is rarely above the substrate surface and vernal pooling (i.e., seasonal depressional wetlands) is minimal. Substrates consist of mineral parent materials, and organic matter accumulation less than 40 cm in depth. Moisture regime refers to the available moisture supply for plant growth estimated in relative or absolute terms. The moisture regime of uplands is moist or drier (McLaughlan et al. 2010). Upland ecosystems (i.e., upland ELC units) were mapped as polygons using the methods described in Section 13.2.6.1, Ecological Land Classification, and are defined in Table 13.2-3.

Table 13.2-3: Upland Ecological Land Classification Units within the Local and Regional Study Areas

Upland Ecosystem ELC Units
Boreal Plain
BP02 - Jack pine/lichen: moderately fresh sand
BP03 - Jack pine/feathermoss: moderately fresh loamy sand
BP04 - Jack pine - trembling aspen/feathermoss: moderately fresh sand
BP06 - Trembling aspen/beaked hazel/sarsaparilla: fresh loamy sand
BP07 - Trembling aspen - white birch/sarsaparilla: fresh loamy sand
BP11 - White birch - white spruce - balsam fir: fresh sandy clay loam
BP12 - Jack pine - spruce/feathermoss: fresh loamy sand
BP14 - Black spruce/Labrador tea/feathermoss: very moist sandy clay loam
BP16 - Balsam poplar - trembling aspen/prickly rose: fresh clay loam
Boreal Shield
BS02 - Lichen/felsenmeer - bedrock: dry nonsoil
BS03 - Jack pine/blueberry/lichen: moderately fresh sand
BS04 - Jack pine - black spruce/feathermoss: moderately dry sand
BS05 - Jack pine - white birch/feathermoss: moderately dry sand
BS06 - Jack pine - trembling aspen/green alder: moderately fresh loamy sand
BS07 - Black spruce/blueberry/lichen: moderately dry sand
BS08 - Black spruce - white birch/lichen: moderately dry sandy loam
BS09 - Black spruce - jack pine/feathermoss: moderately fresh sandy loam
BS10 - Black spruce - white birch/feathermoss: fresh sand
BS13 - White birch - black spruce - trembling aspen: moderately fresh sand
BS14 - White birch/lingonberry - Labrador tea: moderately dry sand
BS15 - Trembling aspen - white birch/green alder: moderately fresh loamy sand

Source: McLaughlan et al. 2010.
ELC = Ecological Land Classification.

13.2.6.1.2 Wetland Ecosystem Mapping

Wetlands are ecosystems containing soils that are saturated with moisture either permanently or seasonally and are further characterized by the presence of hydrophytic (i.e., water-adapted) vegetation (National Wetlands Working Group 1997). Wetlands can be open, shrub-dominated, or treed communities consisting of mainly facultative and obligate wetland plant species. The water table is seasonally or permanently at, near, or above the substrate surface. The soil substrate consists of organic materials greater than 40 cm in depth for peatlands, or saturated, hydric mineral soils, or bedrock with organic matter accumulation less than 40 cm in depth for mineral wetlands. Wetland ecosystems (i.e., wetland ELC units) were mapped as polygons using the methods described in Section 13.2.6.1, and are defined in Table 13.2-4.

Table 13.2-4: Wetland Ecological Land Classification Units within the Local and Regional Study Areas

Wetland Ecosystem ELC Units
Boreal Plain
BP18 - Black spruce - tamarack treed swamp: wet humic organic
BP19 - Black spruce treed bog: moderately wet fibric organic
BP20 - Labrador tea shrubby bog: wet fibric organic
BP21 - Graminoid bog: wet fibric organic
BP22 - Open bog: wet humic organic
BP23 - Tamarack treed fen: wet fibric organic
BP24 - Leatherleaf shrubby poor fen: wet fibric organic
BP25 - Willow shrubby rich fen: wet humic organic

Table 13.2-4: Wetland Ecological Land Classification Units within the Local and Regional Study Areas

Wetland Ecosystem ELC Units
BP26 - Graminoid fen: wet humic organic
BP27 - Open fen: wet fibric organic
BP28 - Seaside arrow-grass marsh: very moist humic organic
Boreal Shield
BS16 - Black spruce/balsam poplar/river alder swamp: very moist mesic organic
BS17 - Black spruce treed bog: very moist mesic organic
BS18 - Labrador tea shrubby bog: moderately wet mesic organic
BS19 - Graminoid bog: very wet humic organic
BS20 - Open bog: moderately wet fibric organic
BS21 - Tamarack treed fen: wet fibric organic
BS22 - Leatherleaf shrubby poor fen: Very wet fibric organic
BS23 - Willow shrubby rich fen: wet fibric organic
BS24 - Graminoid fen: very wet humic organic
BS25 - Open fen: wet mesic organic
BS26 - Rush sandy shore: very moist sand

Source: McLaughlan et al. 2010.
ELC = Ecological Land Classification.

13.2.6.1.3 Riparian Ecosystem Mapping

Riparian ecosystems are zones of interaction between aquatic and terrestrial environments within watersheds that function in linking terrestrial ecosystems to watercourses, stabilizing streambanks and floodplains, regulating stream temperatures, and providing a source of large woody debris and organic matter for aquatic ecosystems (Tschaplinski and Pike 2010). Riparian ecosystems in the RSA, which includes the LSA, were defined as the subset of upland and wetland cover types with riparian potential that intersected buffered watercourses and waterbodies. The identification of riparian ecosystems following this definition was completed spatially in a geographic information system platform. Riparian potential was assigned to the subset of upland forested land cover types with moist or wet soil moisture regimes and dominated by tree species associated with high soil moisture (i.e., balsam poplar, black spruce, and paper birch) and/or with a wet soil moisture regime dominated by white spruce. For upland non-forested cover types, riparian potential was assigned to a subset of land cover types with moist or wet soil moisture regimes that were dominated by shrubs, river sediments, or unspecified cover sub-types. Riparian potential was assigned to the subset of wetland cover types that were vegetated (i.e., excluded non-vegetated exposed land, anthropogenic areas, and water within wetlands).

Land cover types in the RSA with riparian potential were spatially intersected with a buffer surrounding natural watercourses and waterbodies based on the CanVec 1:50,000 spatial data (NRCan 2019) to capture the spatial correlation between land cover types with riparian potential and watercourses and waterbodies. Guidelines from Environment Canada (2013) recommend that streams be buffered by 30 m of naturally vegetated riparian area on both sides. Therefore, a 30 m buffer was applied around natural waterbodies (e.g., ponds) and to each side of watercourse features (e.g., creeks), which resulted in 60 m wide corridors. The ELC units identified within this initial buffer were further refined to more accurately capture the riparian influenced communities such as active floodplains and exclude ELC units that provide limited riparian interaction (i.e., bedrock outcrops, dry upland sandy coniferous sites). Riparian ELC unit distribution was considered continuous for individual ELC unit polygons, even where polygon edges exceeded the buffer width (i.e., polygons were not clipped at a 30 m buffer if riparian influenced vegetation communities extend beyond this distance). Polygons for ELC units with riparian potential were excluded where they were completely outside the buffer. Polygons for ELC units with no riparian

potential that occurred in the buffer were also excluded. The method used to identify riparian ecosystems likely overestimates the outer edge of active floodplains for many of the smallest watercourses and waterbodies in the RSA and appropriately captures the active floodplains for the largest watercourses in the RSA. Vegetated ELC units with riparian potential are listed in Table 13.2-5.

Table 13.2-5: Riparian Ecological Land Classification Units within the Local and Regional Study Areas

Riparian Ecosystem ELC Units
Boreal Plain
BP07 - Trembling aspen - white birch/sarsaparilla: fresh loamy sand
BP11 - White birch - white spruce - balsam fir: fresh sandy clay loam
BP12 - Jack pine - spruce/feathermoss: fresh loamy sand
BP14 - Black spruce/Labrador tea/feathermoss: very moist sandy clay loam
BP16 - Balsam poplar - trembling aspen/prickly rose: fresh clay loam
BP18 - Black spruce - tamarack treed swamp: wet humic organic
BP19 - Black spruce treed bog: moderately wet fibric organic
BP20 - Labrador tea shrubby bog: wet fibric organic
BP21 - Graminoid bog: wet fibric organic
BP22 - Open bog: wet humic organic
BP23 - Tamarack treed fen: wet fibric organic
BP24 - Leatherleaf shrubby poor fen: wet fibric organic
BP25 - Willow shrubby rich fen: wet humic organic
BP26 - Graminoid fen: wet humic organic
BP27 - Open fen: wet fibric organic
BP28 - Seaside arrow-grass marsh: very moist humic organic
Boreal Shield
BS06 - Jack pine - trembling aspen/green alder: moderately fresh loamy sand
BS09 - Black spruce - jack pine/feathermoss: moderately fresh sandy loam
BS10 - Black spruce - white birch/feathermoss: fresh sand
BS13 - White birch - black spruce - trembling aspen: moderately fresh sand
BS15 - Trembling aspen - white birch/green alder: moderately fresh loamy sand
BS17 - Black spruce treed bog: very moist mesic organic
BS18 - Labrador tea shrubby bog: moderately wet mesic organic
BS19 - Graminoid bog: very wet humic organic
BS20 - Open bog: moderately wet fibric organic
BS21 - Tamarack treed fen: wet fibric organic
BS22 - Leatherleaf shrubby poor fen: very wet fibric organic
BS23 - Willow shrubby rich fen: wet fibric organic
BS24 - Graminoid fen: very wet humic organic
BS25 - Open fen: wet mesic organic
BS26 - Rush sandy shore: very moist sand

Source: McLaughlan et al. 2010.
ELC = Ecological Land Classification.

13.2.6.1.4 Fire Mapping

Fire disturbance data were applied to the RSA based on a 40-year fire history period (1981 to 2020; ECCC 2020). Burn severity data were determined by the Wildfire Management Branch (ENV 2018) using a normalized burn ratio calculation to classify burn severity and identify residuals within burned patches. Where available (1988 to 2018), the Wildfire Management Branch burn severity data were used to replace coarse polygon mapping associated with the Wildfire History data (SPSA 2020). Burn severity data used differentiated normalized burn ratio to back-cast fire (i.e., estimating past fire extents through historical remote sensing data)

and post-fire residuals with greater accuracy than Wildfire History mapping. Burn severity data were not available for fire years 1981 to 1987, nor 2019 and 2020. In the absence of burn severity data, Wildfire History data were used to delineate fire extents.

Fire disturbance data were overlaid onto the ELC mapping to provide an estimate of the amount and distribution of burns across the RSA and the types of ELC units affected by fire. Ecological Land Classification units within fire-disturbed areas were assigned a modifier (i.e., BU) to indicate the occurrence of previous fire disturbance. Burned areas five years old or less were grouped within a Recent Burn classification, as baseline surveys indicated post-fire conditions of recent burns were devoid of vegetation and could not be assigned to an ecosite (Annex VII.1). Burned ELC units more than five years old were assigned an additional burn modifier to indicate early-stage (i.e., BU/E; 6 to 20 years post-fire) and late-stage (i.e., BU/L; 21 to 40 years post-fire) regeneration classes based on the year of fire disturbance (Table 13.2-6).

Early- and late-stage modifiers for burned ELC units were used to further describe and inform the habitat suitability index models developed for wildlife VCs as early- and late-stage regeneration ELC units, which can provide habitat of different quality (Section 14; Appendix 14B, Wildlife Habitat Models). However, the approach for the vegetation assessment used two age groups to identify burned ELC units. The Recent Burn classification was used to describe general upland and wetland burns less than five years old (i.e., Recent Burn Upland, Recent Burn Wetland). Early- and late-stage burns were combined into a single burn category (i.e., Burned [BU]) for each affected ELC unit (e.g., BP04[BU]). The ELC for the vegetation assessment is consistent with the *Field Guide to the Ecosite of the Saskatchewan's Provincial Forests* (McLaughlan et al. 2010), which describes ecosites based on the average natural, mature site conditions (i.e., greater than 40 years old). Over the last 40 years, 65,296 ha (61%) of RSA has been burned in historical fires. However, historical fire extents overlap each other within the RSA; therefore, the amount of area within the RSA classified as burned is 61,997 ha (58%) (Figure 13.2-5).

Table 13.2-6: Fire Disturbance Ecological Land Classification Units within the Local and Regional Study Areas

Fire Disturbance ELC Units	ELC Modifier	Year	Fire Name	Extent of Fire within the RSA (ha)
Recent Burn (1-5 years)	n/a	2017	17BN-Vision	2,037
Recent Burn (1-5 years)	n/a	2016	16BN-Koop	0.7
Recent Burn (1-5 years)	n/a	2016	16BN-Brian	0.1
Early-Stage Regeneration (6-20 years)	BU/E	2015	15BN-Eagle	3,381
Early-Stage Regeneration (6-20 years)	BU/E	2012	12BN-Jet	498
Early-Stage Regeneration (6-20 years)	BU/E	2009	09LL-Patterson	670
Early-Stage Regeneration (6-20 years)	BU/E	2006	06LL-Murzin	586
Late-Stage Regeneration (21-40 years)	BU/L	1995	Tocker	6,216
Late-Stage Regeneration (21-40 years)	BU/L	1993	Sheep	225
Late-Stage Regeneration (21-40 years)	BU/L	1990	Jules	2,476
Late-Stage Regeneration (21-40 years)	BU/L	1981	Bigfish	4,688
Late-Stage Regeneration (21-40 years)	BU/L	1981	Sally	38,036
Late-Stage Regeneration (21-40 years)	BU/L	1981	October	6,482

Source: ENV 2018; SPSA 2020.
RSA = regional study area; ELC = Ecological Land Classification; n/a = not applicable.

600000
620000
640000
6400000
6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Hook Lake
Athabasca Plain
Boreal Shield Ecozone
Harbo Lake
Broach Lake
Chipewyan Creek
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Dell Lake
Edelman Lake
Bolton Lake
Forrest Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED AREA
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY AREA
- REGIONAL STUDY AREA

FIRE DISTURBANCE

- RECENT BURN (1-5 YEARS)
- EARLY-STAGE REGENERATION (6-20 YEARS)
- LATE-STAGE REGENERATION (21-40 YEARS)

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

EXISTING FIRE DISTURBANCE IN THE LOCAL STUDY AREA AND THE REGIONAL STUDY AREA

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.2-5

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

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13.2.6.1.5 Anthropogenic Features Mapping

A baseline anthropogenic disturbance layer for the LSA and RSA was constructed from available datasets including:

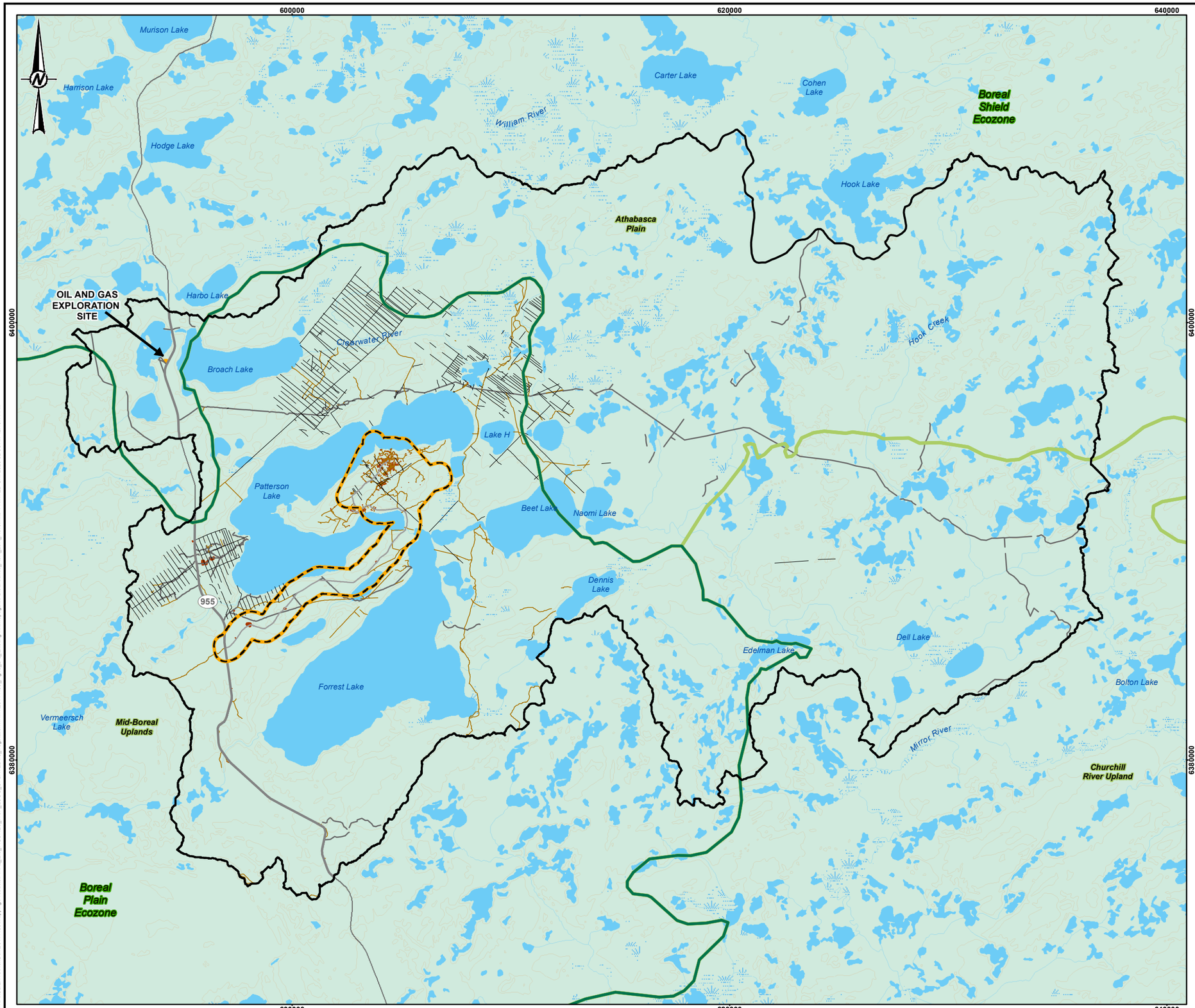
- Axiom orthorectified aerial map (4.88 cm pixel; June 2019) of the existing exploration camp and access road;
- anthropogenic features included in the Omnia baseline PEM (Annex VII.1);
- ENV SK2 West Caribou Administration Unit anthropogenic disturbance layer (2019); and
- Environment and Climate Change Canada anthropogenic disturbance layer (Environment Canada 2015).

Axiom orthorectified aerial mapping was used to complete the delineation of NexGen's existing exploration camp and access road. Visible disturbances were mapped within the exploration lease boundary at a scale of 1:5,000. Disturbance data mapped by Environment and Climate Change Canada, ENV, and Omnia were classified as either linear (e.g., roads and trails) or polygonal (e.g., outfitting camp, and oil and gas development) features. To calculate the amount of human disturbance in the study areas, buffers were applied to create footprints for each linear feature type (Table 13.2-7). The resulting disturbance layer was overlaid on the land cover map to characterize existing anthropogenic disturbance in the LSA and RSA (Figure 13.2-6).

Table 13.2-7: Existing Anthropogenic Disturbance Types within the Local and Regional Study Areas

Type of Disturbance	Feature Type	Footprint Width (m)
Cutlines/seismic lines	Linear/Polygon[a]	2 / Actual[b]
Trail	Linear/Polygon[a]	6 / Actual[b]
Rough road	Linear	12
Existing access road	Linear/Polygon[a]	Actual / Actual[b]
Highway 955	Linear	30
Existing exploration disturbance	Polygon	Actual[b]
Oil and gas development	Polygon	Actual[b]
Clearing	Polygon	Actual[b]
Outfitting (fishing) camp	Polygon	Actual[b]
Unknown disturbance[c]	Linear/Polygon[a]	15 / Actual[b]

a) Includes data from ENV and Environment and Climate Change Canada (i.e., linear) as well as digitized disturbance data (i.e., polygon) taken from the Axiom orthorectified aerial map.
b) Disturbance as identified in the Axiom orthorectified aerial map (4.88 cm pixel; June 2019) of the existing exploration camp and access road. Outside of the Axiom orthorectified aerial map extent disturbance types were assigned footprint widths as indicated.
c) Classified as unknown disturbance according to Environment and Climate Change Canada disturbance layer (Section 13.2.6.1, Ecological Land Classification) and may be characterized by infrastructure, unvegetated areas, and areas adjacent to settlements (e.g., reservoirs next to communities, gravel pits, and adjacent residential dwellings).
ENV = Saskatchewan Ministry of Environment.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED AREA
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY AREA
- REGIONAL STUDY AREA

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 5 10

1:175,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

EXISTING ANTHROPOGENIC DISTURBANCE IN THE LOCAL STUDY AREA AND THE REGIONAL STUDY AREA

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08	**FIGURE 13.2-6**	
REVIEW	JV	2023-02-08		

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13.2.6.2 Traditional Use Plant Species

As noted in Section 13.2.2, traditional use plant species and gathering activities are an important part of the culture and traditional ways of life of Indigenous Groups. Plant use varies and includes food, ceremonial, medicinal, and other purposes. Traditional use plant species were identified in the IKTLU Studies (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR) and comments from CRDN (2019a) on the Cluff Lake Mine licence renewal.

Traditional use plant species included both specific and generic plant references and were cross-referenced against the Saskatchewan Conservation Data Centre vascular taxa list (SKCDC 2021a) to determine appropriate genera and species names. Where multiple potential species names were associated with a single traditional use plant species, the list of traditional use plant species was analyzed against those species observed during baseline surveys (Annex VII.1; Annex VII.2) to identify all related candidate species (Table 13.2-8).

Table 13.2-8: Traditional Use Plant Species Identified through Indigenous and Local Knowledge

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry
	Rubus pubescens	Dewberry
Birch	*Betula glandulosa*	Dwarf birch
	Betula occidentalis	River birch
	Betula papyrifera	Paper birch
	Betula pumila	Swamp birch
Blueberry	*Vaccinium myrtilloides*	Blueberry
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush
	Juncus nodosus var. *nodosus*	Knotted rush
	Schoenoplectus acutus var. *acutus*	Hard-stemmed bulrush
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry
Cloudberry	*Rubus chamaemorus*	Cloudberry
Cranberry	*Vaccinium oxycoccos*	Small cranberry
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry
Cranberry, low bush	*Viburnum edule*	Low-bush cranberry
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High-bush cranberry
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant
Gooseberry	*Ribes americanum*	Wild black currant
	Ribes glandulosum	Skunk currant
	Ribes hudsonianum	Northern black currant
	Ribes oxyacanthoides var. *oxyacanthoides*	Bristly gooseberry
	Ribes triste	Swamp red currant
Jack pine	*Pinus banksiana*	Jack pine
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea
	Rhododendron tomentosum	Labrador tea
Mint	*Mentha canadensis*	Wild mint
Mosses[c]	n/a	n/a
Mushrooms[c]	n/a	n/a

Table 13.2-8: Traditional Use Plant Species Identified through Indigenous and Local Knowledge

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar
	Populus tremuloides	Trembling aspen
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry
Rat root	*Acorus americanus*	Sweet flag
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon
Spruce	*Picea glauca*	White spruce
	Picea mariana	Black spruce
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry
	Fragaria virginiana ssp. *glauca*	Smooth wild strawberry
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass
Tamarack	*Larix laricina*	Tamarack
Willow[d]	*Salix* spp.	Willow species

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR; CRDN 2019a.
b) SKCDC 2021a.
c) Traditional use plant species name reflects a broad group of plant or fungi species; therefore, the scientific name, SKCDC common name, and habitat information are not described.
d) Saskatchewan has over 40 willow species (*Salix* sp.*;* Harms 2017); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
n/a = not applicable.

The availability of traditional use plant species in the LSA and RSA was estimated using the relative frequency and percent cover for each species recorded during baseline field surveys (Annex VII.1; Annex VII.2). For each species, the relative frequency (i.e., the proportion of the total number of observations recorded) was calculated for each upland and wetland ELC unit sampled, which provided an estimate of the potential to encounter a species within an ELC unit. The average percent cover of each traditional use plant species was also calculated based on the percent cover estimated from sample plots (Appendix 13A, Vegetation Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case). The relative frequency was multiplied by the average percent cover to provide an index of the relative availability (i.e., occupancy) for each traditional use plant species for each ELC unit sampled. The total availability of each species was then estimated by multiplying the relative availability by the area of each upland and wetland ELC unit for the Base Case, Application Case, and RFD Case within the LSA and RSA. An example with respect to blueberry (*Vaccinium myrtilloides*) is provided below.

Blueberry was observed 29 times within BS03 ELC units during the baseline surveys, and the average cover of blueberry observed across those plots was 5.7%. In total, 32 vegetation plots were completed in BS03 ELC units during the baseline surveys. Therefore, blueberry was encountered with a relative frequency of 90.6%. The average cover and relative frequency of blueberry in BS03 ELC units were multiplied (i.e., 0.0565 x 0.906) to determine the occupancy index (i.e., the anticipated cover of a species within an ELC unit based on its observed cover and the frequency it was encountered in the field) of blueberry within BS03 ELC units (i.e., 0.051). The occupancy index was then multiplied by the available area of BS03 ELC units within the LSA and RSA to estimate the potential area blueberry may occupy within a specific ELC unit (0.051 x 4,991.4 ha [available BS03 ELC units within the RSA] = 255.6 ha; (Appendix 13B, Traditional Use Plant Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case, Table 13B-2).

13.2.7 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 focus the residual effects assessment for the vegetation VCs (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 considered to have a linkage to potential effects on vegetation VCs.

Potential pathways from Project activities to vegetation VCs were identified using the following:

- review of the Project description (Section 5) and potential effects 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; 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 practical mitigation was applied to avoid, minimize, and/or rehabilitate effects on vegetation VCs (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 the 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., the 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 environmental change relative to existing conditions or guideline values and, therefore, would have no residual effect on vegetation.
- **Secondary pathway:** The pathway could result in a measurable but minor 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 vegetation. 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 an environmental change relative to existing conditions or guideline values that could cause a greater than negligible effect on vegetation.

Project interactions determined as no pathway or secondary pathway 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 vegetation VCs were carried forward to the residual effects analysis and residual effects classification (Section 12.5, Residual Effects Analysis).

Reclamation was considered as a mitigation for removal of natural soils and vegetation. However, the time lag between Project effects and the reclamation of disturbed areas meant that an effect could be present, potentially for a long period of time before reclamation would be effective. Therefore, reclamation mitigation did not lead to a determination of no pathway.

Offsetting aims to achieve no net loss or potentially a net gain for vegetation VCs by addressing residual effects not already mitigated by avoiding, minimizing, and restoring. Offsets can include land purchases or land management decisions that avert loss and other kinds of conservation actions implemented outside of the direct and indirect Project effects, such as off-site ecosystem improvements or restoration. In general, an offset requirement is not expected for vegetation because the Project has been designed to avoid wetlands, and reclamation is anticipated to provide sufficient mitigation. However, if wetlands cannot be sufficiently reclaimed, offsets may be required to meet the *Federal Policy on Wetland Conservation* (Government of Canada 1991). Because offsetting is associated with uncertainty in terms of the specific actions that might be undertaken and, like reclamation, takes time to implement, offsets were not assumed to remove pathways. Instead, offsets, if required, were considered in the follow-up actions identified for each VC after residual effects were analyzed and characterized, and significance was determined (Section 13.7, Monitoring, Follow-Up, and Adaptive Management).

13.2.8 Residual Effects Analysis

The residual effects analysis measures and describes the effects of the Project on vegetation VCs relative to existing conditions. The residual effects analysis was conducted using the spatial boundaries (Section 13.2.3, Spatial Boundaries) and temporal boundaries (Section 13.2.4, Temporal Boundaries) identified for the assessment. Residual effects are described for each of the measurement indicators for the primary pathways identified for vegetation VCs in the LSA and RSA (Section 13.4.3, Primary Pathways). The residual effects analysis was completed for the Application Case and the RFD Case (Section 6.8, Residual Effects Analysis).

The residual effects analysis was completed by quantitively, where possible, and qualitatively, where necessary, predicting changes to vegetation VC measurement indicators in the LSA and RSA.

- **Ecosystem availability:** Changes in ecosystem availability were estimated quantitatively by calculating the change in ELC units associated with each ecosystem.
- **Ecosystem distribution:** Changes in ecosystem distribution, including effects on connectivity, were estimated qualitatively by examining changes to the size and distribution of ecosystem patches, and estimates were supported by the scientific literature.
- **Ecosystem condition:** Changes in the ecosystem condition were estimated qualitatively using the scientific literature on the potential effects of human developments primarily associated with dust deposition, changes in the amount of moisture and sunlight, and competition with invasive species.
- **Habitat availability for traditional use plants:** Changes in habitat availability for traditional use plants were estimated quantitatively by calculating differences in the occupancy of each traditional use plant species.
- **Habitat distribution for traditional use plants:** Changes in habitat distribution for traditional use plants, including the effects on connectivity, were estimated qualitatively by examining changes to the size and distribution of habitat patches, and estimates were supported by the scientific literature.

In addition, ecological health risks were examined for three terrestrial plant species/groups or receptors (i.e., lichen, blueberry, and Labrador tea [*Rhododendron tomentosum*]) and one aquatic receptor (i.e., macrophytes, such as sedges and bulrush) to determine the sensitivity of plants from exposure to COPCs through contact with surface water, soil, and sediment (TSD XXI). Results from the ecological health risk assessment were used to support the assessment of vegetation VCs.

13.2.9 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 is 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 is provided in Table 13.2-9.

Table 13.2-9: Definitions Applied to Effects Criteria Classifications for the Assessment of Vegetation Valued Components

Criterion	Rating	Definition
Direction	Positive	Change in measurement indicator results in net improvement or benefit to the vegetation VC
	Neutral	Change in measurement indicator results in net balance to the vegetation VC
	Negative	Change in measurement indicator results in net degradation or loss to the vegetation VC
Magnitude	Qualitative narrative or numeric quantification	Qualitative narrative or numeric quantification supported by a reasoned narrative (e.g., change in measurement indicator is described by effect size)
Geographic extent	Maximum disturbance area	Change in measurement indicator is confined to the maximum disturbance area
	Local	Change in measurement indicator extends outside the Project footprint but within the LSA
	Regional	Change in measurement indicator extends beyond the LSA but 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, decades, or permanent)
Reversibility	Reversible	Change in measurement indicator is reversible within a clearly defined time period
	Irreversible	Change in measurement indicator is predicted to influence the vegetation VC 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 is 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

LSA = local study area; RSA = regional study area; VC = valued component.

While most criteria could be assigned categorical ratings for vegetation VCs, predicted effect sizes were provided in specific terms (i.e., narrative or numeric quantification) in the residual effects characterization (Table 13.2-9). Similarly, duration was described in specific terms (e.g., 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) for vegetation VCs 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. Ecological context can include ecosystems and plant species status and trends, current threats, the amount of historical disturbance in and beyond the RSA, resilience, and adaptability. Depending on the ecological 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 VC, whereas a 2% change in the study area may be sufficient to cause a high magnitude effect for another VC (Section 6.9.1).

The significance of adverse residual effects on vegetation VCs was evaluated using the assessment endpoints as significance thresholds and followed the approach described in Section 6.9.2, Significance Determination. The significance of effects was predicted as a binary response, with effects classified as significant or not significant. Adverse residual effects were determined to be significant if the vegetation VC is not expected to be self-sustaining or ecologically effective at the scale of the RSA. The RSA was defined using ecological and watershed boundaries and is at a scale suitable for the application of cumulative effects and management strategies for most terrestrial VCs (Section 13.2.3.2, Environmental Assessment Boundaries); it is therefore an appropriate and relevant scale for evaluating ecosystem and population integrity for vegetation VCs.

Self-sustaining ecosystems are ecosystems that will be maintained into the future. They are healthy, functioning, and robust ecosystems that are capable of withstanding environmental change and accommodating stochastic processes (i.e., random or unpredictable changes in variables). Similarly, self-sustaining populations are not populations on the brink of extirpation (i.e., becoming locally extinct); they are healthy, robust populations with an ability to remain viable under changing environmental conditions and population processes (Reed et al. 2003). Ecologically effective ecosystems are those that can support the range of native species and ecological and evolutionary processes normally provided by the ecosystem (Noss 1990). These processes vary by ecosystem type and are not easily quantified.

Most ecosystems can adapt to, or otherwise accommodate, some changes without altering the functional state of the system, and some changes, positive or negative, to ecosystem availability, distribution, or condition would have little effect on self-sustaining and ecologically effective ecosystems at scales typically considered for conservation planning (Swift and Hannon 2010). However, the amount of change required to cause a significant adverse effect is heavily dependent on context, including ecological resilience and the effects of previous and existing developments on ecosystems. Both factors were considered when determining significance of the effects on vegetation VCs.

Ecosystem resilience is the capacity of an ecosystem to cope with disturbances without shifting into a qualitatively different state (Holling 1973). A resilient ecosystem can tolerate change and, if disturbed, can renew itself. This renewal can be accelerated with reclamation practices. If an ecosystem has limited resilience, it is vulnerable to the effects of disturbance such that it may shift into a different state and become functionally different (Folke et al. 2004). Ecosystem resilience can vary by VC, and this variation has important implications for assessing effects on ecosystem function (Peterson et al. 1998; Folke et al. 2004; Thompson et al. 2009).

Like ecosystems, plant populations can also adapt to disturbance through changes in physiology or reproductive characteristics (e.g., increased seed production) such that the integrity of the population remains unchanged. Adaptable species can accommodate substantial disturbance and sometimes thrive in highly modified environments, whereas species with low adaptability can accommodate little or no disturbance (Clarke et al. 2013; Elmqvist et al. 2003). As with ecosystems, plant populations exhibit variation in resilience or the ability to recover or bounce back from disturbance. Highly resilient plant species may recover quickly, whereas species with low resilience recover more slowly or may not recover at all.

Resilience, adaptability, and existing conditions provide important ecological context for the determination of significance. Existing conditions represent the combined effects of previous and current human activities and natural factors that have shaped the observed condition or patterns of each VC in the LSA and RSA. These conditions represent the starting point for assessing Project effects and were considered as context to help define how close each VC may be to its resilience limits when making the significance determination for the Project and RFDs.

Critical thresholds, such as the amount or distribution of ecosystems required to maintain ecosystem function or the ability of an ecosystem to accommodate changes in condition, are rarely known with certainty for ecosystem VCs. Similar challenges exist in defining the threshold for the amount and distribution of habitat required for self-sustaining traditional use plant populations. Moreover, ecological thresholds vary by community composition, landscape type, and spatial scale (Environment Canada 2013; Swift and Hannon 2010).

A detailed and transparent account of whether the predicted effects from the Project and other developments would cause the defined significance threshold to be exceeded was prepared for each VC by combining residual effects criteria, available scientific literature, data collected in the study areas, and logical reasoning (i.e., a weight of evidence or reasoned narrative approach). Using ecological context combined with residual effects criteria in a reasoned narrative, or rationale, to determine significance is a method accepted by the CEA Agency (2018). The determination of significance was also placed in context of how changes from the Project could influence biodiversity (Section 6.3.5, Biodiversity). Vegetation VCs and measurement indicators were reviewed holistically to evaluate potential for effects on biodiversity.

Confidence in the significance threshold prediction was identified and discussed for each VC as part of the reasoned narrative. If the threshold for where a significant effect would occur in the range of potential values had high uncertainty, and if the effect could be assessed as significant or not significant, a precautionary approach was applied, and the effect was identified as significant. The greater the uncertainty, the earlier a significant effect would be identified on the continuum of cumulative change from the Project and RFDs, where applicable.

13.2.10 Prediction Confidence and Uncertainty

The purpose of the assessment is to predict the future conditions for vegetation with the addition of the Project and the Fission Patterson Lake South Property and climate change. 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 vegetation and the way they were addressed are presented as part of this assessment (Section 13.6).

13.2.11 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 for the introduction of invasive species).
- **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.

13.3 Existing Conditions

This subsection characterizes the existing conditions, or the Base Case, of vegetation ecosystems and traditional use plants VCs in the LSA and RSA, which provides context for assessing incremental and cumulative effects from the Project and RFDs (i.e., the Fission Patterson Lake South Property).

13.3.1 Upland Ecosystems

13.3.1.1 Ecosystem Availability

Upland ecosystems provide a diversity of ecological structure and function for plants and wildlife occupying the landscape. In the Base Case, uplands cover 2,172.6 ha (76.7%) within the LSA and 74,821.7 ha (69.6%) within the RSA (Table 13.3-1; Figure 13.3-1; Figure 13.3-2). Over half of upland vegetation ELC units in the LSA and RSA have been burned by forest fires in the last 40 years and are composed of regenerating forest vegetation, which is supported by observations from the CRDN about several forest fires occurring at Patterson and Forrest lakes in recent years (TSD V.2: CRDN). Burned uplands cover 1,803.0 ha (63.7%) of the LSA and 55,663.4 ha (51.8%) of the RSA. Undisturbed (i.e., ELC units that have not been burned in the last 40 years and have not been anthropogenically modified) uplands cover 369.6 ha (13.1%) of the LSA and 19,158.2 ha (17.8%) of the RSA.

The Jack pine/lichen (BP02) ELC unit is the most common undisturbed upland ELC unit within the LSA and covers 199.9 ha (7.1%) of the LSA. The Jack pine - black spruce/feathermoss (BS04) is the most common undisturbed upland ELC unit within the RSA and covers 6,158.9 ha (5.7%) of the RSA. Black spruce/Labrador tea/feathermoss (BP14) covers 19.1 ha (0.7%) and Jack pine - trembling aspen/feathermoss (BP04) covers 16.9 ha (0.6%) of the LSA and are the least abundant undisturbed upland types within the LSA. Several undisturbed upland ELC units within the RSA cover less than 0.1% (33.3 ha or less) of the RSA in the Base Case (Table 13.3-1). The BNDN and BRDN have also noted that jack pine dominates the Patterson Lake area, along with “rock” and “sand”, and around Dyck Lake, the forest is not as thick as in other areas (TSD II: BNDN; TSD III: BRDN).

Early- to late-stage regenerating (i.e., burned in the last 6 to 40 years; Burned) ELC units within the LSA are anticipated to regenerate towards a Jack pine/lichen (BP02) ELC unit. Jack pine/lichen (Burned) (BP02[BU]) ELC units cover 1,641.2 ha (58.0%) of the LSA. Similarly, the burned ELC units within the RSA are associated with jack pine dominant ELC units including Jack pine/blueberry/lichen (Burned) (BS03[BU]), Jack pine - black spruce/feathermoss (Burned) (BS04[BU]), and Jack pine/lichen (Burned) (BP02[BU]), which cover 23,172.8 ha (21.6%), 9,065.2 ha (8.4%), and 8,990.9 ha (8.4%) of the RSA, respectively (Table 13.3-1). These results are supported by observations from the CRDN who noted that a recent forest fire at Patterson and Forrest lakes has removed a stand of large Jack pine that had survived several earlier fires (TSD V.2: CRDN). ELC units disturbed by fire in the last five years (i.e., Recent Burn Upland) are not found in the LSA and represent 6.6% (7,041.6 ha) of the RSA.

Table 13.3-1: Upland Ecosystem Availability in the Local and Regional Study Areas in the Base Case

Upland ELC Unit[(a)]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BP02 - Jack pine/lichen	199.9	7.1	2,791.3	2.6
BP03 - Jack pine/feathermoss	133.6	4.7	3,712.1	3.5
BP04 - Jack pine - trembling aspen/feathermoss	16.9	0.6	1,000.7	0.9
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.0	0.0	0.3	<0.1
BP07 - Trembling aspen - white birch/sarsaparilla	0.0	0.0	5.1	<0.1
BP11 - White birch - white spruce - balsam fir	0.0	0.0	3.2	<0.1
BP12 - Jack pine - spruce/feathermoss	0.0	0.0	219.2	0.2
BP14 - Black spruce/Labrador tea/feathermoss	19.1	0.7	129.8	0.1
BP16 - Balsam poplar - trembling aspen/prickly rose	0.0	0.0	33.3	<0.1

Table 13.3-1: Upland Ecosystem Availability in the Local and Regional Study Areas in the Base Case

Upland ELC Unit[a]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BS02 - Lichen/felsenmeer - bedrock	0.0	0.0	<0.1	<0.1
BS03 - Jack pine/blueberry/lichen	0.0	0.0	4,991.4	4.6
BS04 - Jack pine - black spruce/feathermoss	0.0	0.0	6,158.9	5.7
BS05 - Jack pine - white birch/feathermoss	0.0	0.0	1.1	<0.1
BS06 - Jack pine - trembling aspen/green alder	0.0	0.0	0.3	<0.1
BS07 - Black spruce/blueberry/lichen	0.0	0.0	2.6	<0.1
BS08 - Black spruce - white birch/lichen	0.0	0.0	<0.1	<0.1
BS09 - Black spruce - jack pine/feathermoss	0.0	0.0	23.1	<0.1
BS10 - Black spruce - white birch/feathermoss	0.0	0.0	0.1	<0.1
BS13 - White birch - black spruce - trembling aspen	0.0	0.0	11.9	<0.1
BS14 - White birch/lingonberry - Labrador tea	0.0	0.0	74.0	0.1
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	<0.1	<0.1
Undisturbed upland subtotal	*369.6*	*13.1*	*19,158.2*	*17.8*
BP02(BU) - Jack pine/lichen (Burned)	1,641.2	58.0	8,990.9	8.4
BP03(BU) - Jack pine/feathermoss (Burned)	0.0	0.0	4,846.6	4.5
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	0.0	0.0	1,274.5	1.2
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.0	0.0	0.3	<0.1
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	0.0	0.0	10.4	<0.1
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.0	0.0	0.9	<0.1
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	0.0	0.0	4.4	<0.1
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	25.2	<0.1
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	161.9	5.7	1,070.4	1.0
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	0.0	0.0	0.7	<0.1
BS03(BU) - Jack pine/blueberry/lichen (Burned)	0.0	0.0	23,172.8	21.6
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	0.0	0.0	9,065.2	8.4
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	0.0	0.0	5.1	<0.1
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.0	0.0	0.9	<0.1
BS07(BU) - Black spruce/blueberry/lichen (Burned)	0.0	0.0	5.6	<0.1
BS08(BU) - Black spruce - white birch/lichen (Burned)	0.0	0.0	0.1	<0.1
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	50.1	<0.1
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	57.7	0.1
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	0.0	0.0	39.9	<0.1
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.0	0.0	0.2	<0.1
Recent burn upland	0.0	0.0	7,041.6	6.6
Burned upland subtotal	*1,803.0*	*63.7*	*55,663.4*	*51.8*
Upland total	**2,172.6**	**76.7**	**74,821.7**	**69.6**
Summary				
Upland total	**2,172.6**	**76.7**	**74,821.7**	**69.6**
Wetland total	**553.2**	**19.5**	**32,211.3**	**30.0**
Anthropogenic disturbance	**104.7**	**3.7**	**457.8**	**0.4**
Grand Total	**2,831.6**	**100.0**	**107,490.7**	**100.0**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

a) McLaughlan et al. 2010.

ELC = Ecological Land Classification; LSA = local study area; RSA = regional study area; < = less than.

Existing anthropogenic disturbance covers 104.7 ha (3.7%) of the LSA and 457.8 ha (0.4%) of the RSA and includes Highway 955, a small amount of oil and gas development, the existing exploration camp, and the existing access road, trails, rough roads, and seismic lines/cutlines (Table 13.3-2). Disturbance in the Patterson Lake area by roads and cutlines was noted by the CRDN (TSD V.2: CRDN). Anthropogenic disturbance is discussed within the context of upland and wetland ecosystems; however, it is measured exclusive from either ecosystem (i.e., a cutline is not classified as either a wetland or an upland ecosystem). Highway 955 is an important transportation corridor within the RSA and covers 78.2 ha (0.1%). Clearings are largely adjacent to Highway 955.

Table 13.3-2: Existing Anthropogenic Disturbance in the Local and Regional Study Areas in the Base Case

Disturbance Type	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
Clearing	33.0	1.2	46.1	<0.1
Cutline/seismic line	2.4	0.1	55.1	0.1
Highway 955	4.1	0.1	78.2	0.1
Existing exploration disturbance	2.8	0.1	5.9	<0.1
Oil and gas development	0.0	0.0	0.8	<0.1
Existing access road	23.2	0.8	24.6	<0.1
Rough road	6.6	0.2	136.9	0.1
Outfitting (fishing) camp	0.0	0.0	0.8	<0.1
Trail	32.6	1.2	102.1	0.1
Unknown	0.0	0.0	7.3	<0.1
Total	**104.7**	**3.7**	**457.8**	**0.4**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
LSA = local study area; RSA = regional study area; < = less than.

600000
620000
640000
6400000
6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Hook Lake
Boreal Shield Ecozone
Athabasca Plain
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Dell Lake
Edelman Lake
Bolton Lake
Forrest Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

UPLAND VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

UPLAND ECOLOGICAL LAND CLASSIFICATION UNIT

BP02	BP14	BS07
BP02 (BU)	BP14 (BU)	BS07 (BU)
BP03	BP16	BS08
BP03 (BU)	BP16 (BU)	BS08 (BU)
BP04	BS02	BS09
BP04 (BU)	BS02 (BU)	BS09 (BU)
BP06	BS03	BS10
BP06 (BU)	BS03 (BU)	BS13
BP07	BS04	BS13 (BU)
BP07 (BU)	BS04 (BU)	BS14
BP11	BS05	BS14 (BU)
BP11 (BU)	BS05 (BU)	BS15
BP12	BS06	BS15 (BU)
BP12 (BU)	BS06 (BU)	RECENT BURN (UPLAND)

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE

UPLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, BASE CASE

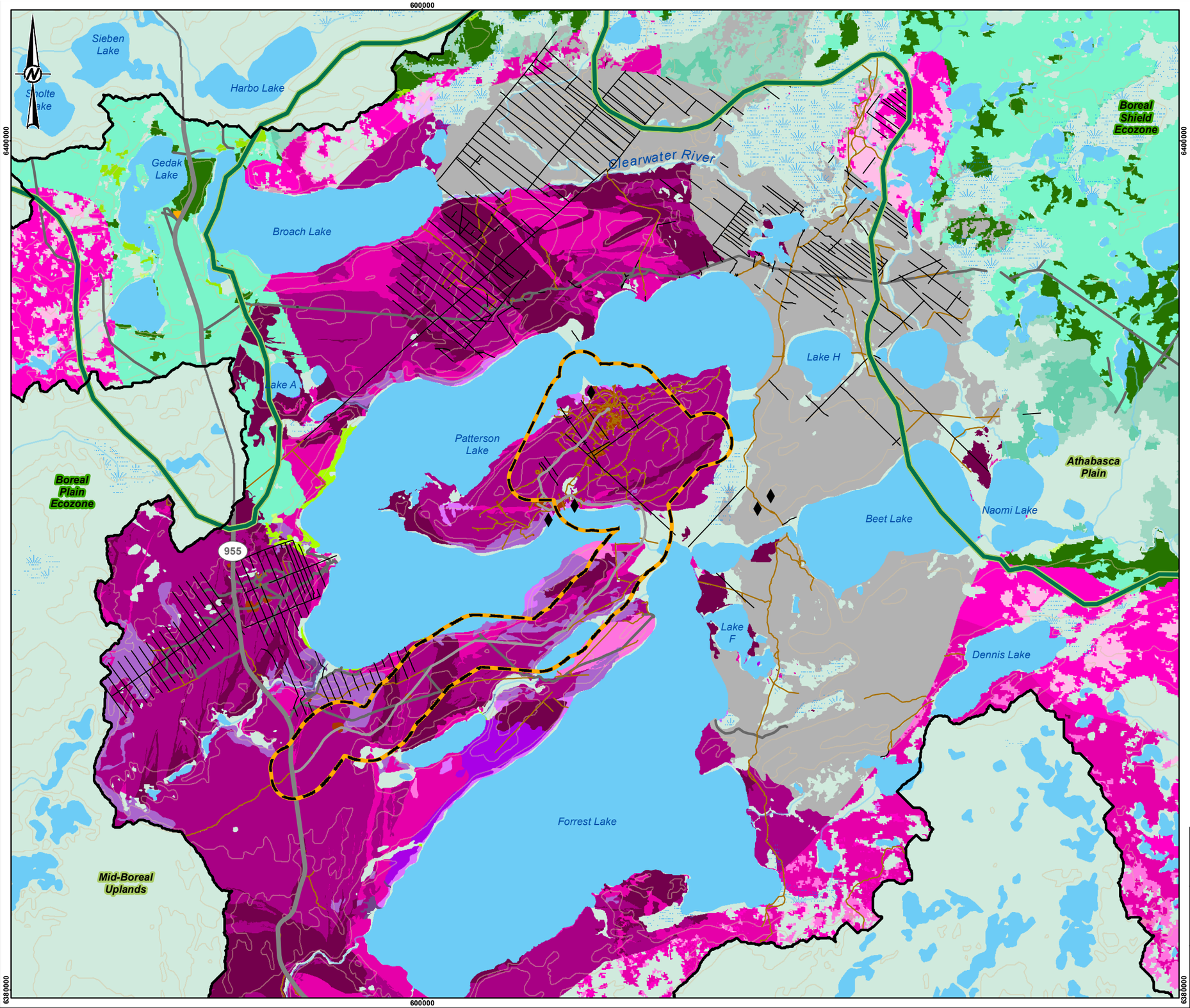
CONSULTANT
wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.3-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25mm
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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

UPLAND VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

UPLAND ECOLOGICAL LAND CLASSIFICATION UNIT

- BP02
- BP02 (BU)
- BP03
- BP03 (BU)
- BP04
- BP04 (BU)
- BP06
- BP06 (BU)
- BP07
- BP07 (BU)
- BP11 (BU)
- BP12
- BP12 (BU)
- BP14
- BP14 (BU)
- BP16
- BP16 (BU)
- BS02 (BU)
- BS03
- BS03 (BU)
- BS04
- BS04 (BU)
- BS06 (BU)
- BS07 (BU)
- BS09
- BS09 (BU)
- BS13
- BS13 (BU)
- BS14
- BS14 (BU)
- RECENT BURN (UPLAND)

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

UPLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, BASE CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE		3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.3-2

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

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13.3.1.2 Ecosystem Distribution

The boreal forest landscape is heterogeneous, having been influenced by a variety of historical natural disturbance regimes, including fire, floods, insects, forest pathogens, and wind (NRCan 2020). Wildfire is considered the most important factor driving broad-scale forest patterns within the boreal forest (Urquizo et al. 2000; NRCan 2020). Large fires leave portions of the landscape unburned, resulting in a mosaic of burned and unburned areas and a complex arrangement of seral (i.e., intermediate successional community) stages or habitats that are fragmented and disconnected. Fires have played a dominant role structuring landscape patterns in the RSA and the Boreal Shield north of the Project site (Kansas et al. 2016; Skatter et al. 2017), and are representative of the conditions within the LSA.

Forests within the Boreal Shield Ecozone are mostly in a natural state, affected mainly by fire disturbance, whereas human activities, such as timber harvesting, road construction, and fire suppression, are greater in the Boreal Plain Ecozone. In Saskatchewan, forest management practices, including suppression practices, over the last number of decades have shifted the distribution of forested ELC units towards undisturbed or mature ELC units relative to what is expected under natural boreal forest conditions (ENV 2019d). In the Boreal Shield Ecozone, where fire suppression has been less intensive, the distribution of burned and early-stage regenerating ELC units is more common. Overall, the area burned in Canadian forests has increased over the past several decades because of various factors, including climate change (Gillett et al. 2004; Girardin et al. 2013).

Indigenous Groups have observed an increase in the frequency and magnitude of wildfires across their traditional lands in northern Saskatchewan in recent years (TSD V.1: CRDN; TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S). Birch Narrows Dene Nation reported that wildfires have played a role in decreasing wildlife populations and availability for hunting and trapping because of the removal of vegetation and availability of food sources for wildlife (TSD II: BNDN).

> Too many roads and lots of activity going on . . . . Plus, on top of that, they just let the fires burn in the north. And moose move on. They came back when they get some plants grow back to a certain height for new growth. Some areas don't – because all this area here, lots of it burned, like maybe four or five times. It keeps on burning and there's nothing that will grow back. The trees growing so tall before they get seedlings and they burn. And there's no topsoil. Just sand. They don't regenerate. And up north there, it takes forever to grow – trees to grow, eh? Because it's so far north . . . . So, that's why lots of animals don't go back to that kind of area. (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)

> This used to be good trap line country before fires . . . . Now that's all burnt out. Larson Lake, Moss Lake, all those areas . . . . It burned over and over every year. (TSD II: BNDN)

> Yeah [ability to trap has changed over time]. Because of all the exploration and that, I have to switch routes once in a while or all the burns that are happening up there. . . . Less animals. Gas prices are going higher. Weather is unpredictable nowadays . . . . (TSD II: BNDN)

Over 80% of the upland ecosystems within the LSA are regenerating from forest fires that occurred in the last 40 years (Table 13.3-1; Figure 13.3-1; Figure 13.3-2). As a result of the fires, there are four undisturbed upland ELC units within the LSA. The Jack pine/lichen (BP02) and the Jack pine/feathermoss (BP03) ELC units are moderately well distributed within the LSA. In contrast, the Jack pine - trembling aspen/feathermoss (BP04) and the Black spruce/Labrador tea/feathermoss (BP14) ELC units are uncommon on the landscape (i.e., each covering less than 0.7% [19.1 ha]), which is a consequence of the frequent wildfires in the region, as fires favour the spread of jack pine (Acton et al. 1998). This predominance in the LSA of young, pine-leading forests aligns with knowledge shared by members of the BNDN, and their observations of the long-term effects of wildfires on vegetation and food sources for wildlife because of the slow rate of vegetation regrowth and lack of topsoil for plants to re-establish (TSD II: BNDN).In the absence of fire, the forest will tend to transition towards a black spruce dominated cover type, as the jack pine component eventually decreases (McLaughlan et al. 2010). Due to the high fire disturbance, black spruce forest is a less common or abundant cover type and is generally limited to islands, peninsulas, and other areas less prone to wildfire effects.

Natural fire regimes have the largest influence on ELC unit distribution in the RSA in the Base Case. Similar to the LSA, most upland ecosystems within the RSA are regenerating from forest fires that occurred within the last 40 years (Table 13.3-1; Figure 13.3-1; Figure 13.3-2). This is consistent with the wider Boreal Shield Ecozone (i.e., 47.0% being burned in the last 40 years; McLoughlin et al. 2019). Despite the presence of frequent and widespread fire events, other more common and well-distributed undisturbed upland ELC units in the RSA include Jack pine/lichen (BP02), Jack pine/feathermoss (BP03), Jack pine/blueberry/lichen (BS03), and Jack pine - black spruce/feathermoss (BS04). Undisturbed black spruce ELC units and many upland burned and undisturbed ELC units are not abundant on the landscape (i.e., each covering less than 0.1% [about 50 ha] of the RSA) and may be susceptible to further disturbance and fragmentation.

The RSA and Boreal Shield Ecozone to the north of the Project have some of the lowest levels of anthropogenic disturbance in the Canadian boreal forest (Kansas et al. 2016). Within the LSA, there are disturbances such as small roads, trails, and seismic lines that contribute to fragmentation of forest uplands. Linear disturbance within the LSA was determined to be 2.9 km/km^2, and 0.6 km/km^2 for the RSA. McLoughlin et al. (2019) describe the overall density of linear features within Saskatchewan's Boreal Shield as very low (0.1 km/km^2). In the RSA, existing human disturbance is aggregated in the northwest portion of the study area and includes infrastructure and activities such as Highway 955, oil and gas development, the existing exploration camp, and the existing access road, trails, and seismic lines / cutlines (Figure 13.3-1). In addition, a seasonal trail (i.e., rough road) to the Bolton Lake Wilderness Retreat Resort Lodge passes through the RSA in an east–west direction originating from Highway 955 and extending east on the north side of Patterson Lake, following the Cree Lake Trail, before turning south to extend to the lodge, which is located outside of the RSA (Bolton Lake Wilderness Retreat 2021). Access to the lodge via this trail occurs during the winter season (Figure 13.3-1).

Overall, fire is the primary driver of existing conditions on the landscape and has resulted in relatively few common well-distributed undisturbed ELC units across the LSA and RSA (i.e., 17.8% of the RSA has been undisturbed by fire in last 40 years). Approximately 7% (7,000 ha) of upland ELC units in the RSA have been disturbed by fire in the last 5 years, and about 45% (48,000 ha) have burned in the previous 6 to 40 years. Some common early- to late-stage regenerating ELC units (e.g., Jack pine/lichen [Burned] and Jack pine/feathermoss [Burned]) are well distributed in the RSA, but most of the burned ELC units within the RSA (i.e., 34,784.4 ha; 32.4%) is composed of small patches of regenerating ELC units with immature vegetation (i.e., average patch size of less than 13.7 ha).

13.3.1.3 Ecosystem Condition

In addition to direct loss of upland ecosystems, previous and existing anthropogenic disturbances (as discussed in Section 13.3.1.2) may have affected upland composition through adjacency or edge effects (e.g., ingress of invasive species and changes in moisture and sunlight; Foley et al. 2005). Dust deposition from road traffic can negatively affect surrounding vegetation by physically smothering the plant and altering processes such as photosynthesis, transpiration, growth, and germination (Farmer 1993). Dust deposition can also negatively affect vegetation by changing the soil chemistry, inhibiting the ability for plants to grow in the soil (Farmer 1993; Chen et al. 2017). Bryophytes and lichen are particularly sensitive to road dust, as the dust particles are readily trapped on their surfaces (Farmer 1993; Chen et al. 2017). Vehicles contribute to airborne pollutants, including metals and nitrogen, that are eventually deposited onto soils and plants (Bobbink et al. 1998; Peachey et al. 2009). The deposition of nitrogen from airborne pollutants can alter species composition and species diversity by changing soil nutrient availability and soil pH (Bobbink et al. 1998).

Indigenous Groups indicated that they are experiencing the effects of air and water pollution from existing or previous industrial developments, including from the Alberta oilsands region and the Cluff Lake Mine, which have impacted the health of the landscape and vegetation in the region (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; CRDN-JWG 2020a; MN-S-JWG 2019b). A BRDN member commented on how half the trees are different colours now, and every time it rains the trees look different, which was attributed to acid rain from Alberta (BRDN-JWG 2019b). Another BRDN member noted that the trees are dying from the “top down” which was perceived as a sign of poor air quality (BRDN-JWG 2019a). The MN-S described how fewer wildflowers, butterflies, and grasshoppers are observed now, which they attribute to pollution from the oil sands region near Fort McMurray (MN-S-JWG 2019b). The CRDN commented that they consider the area around the historic Cluff Lake Mine, and Patterson Lake where exploration activities have occurred in the past to have “unclean conditions” because of contamination, which has affected their ability to gather plants and berries in these areas (TSD V.2: CRDN).

NexGen understands the concerns of Indigenous Groups regarding existing air and water quality on vegetation and would implement environmental design features and mitigation to minimize potential Project effects (Section 13.4, Project Interactions and Mitigations). The EA approach for the Project includes predicted changes to air and water quality within the vegetation assessment in consideration of Indigenous Group concerns.

Existing edge effects from existing anthropogenic disturbances recorded at baseline provide an opportunity for changes in microclimate and non-native species to influence and degrade ecosystem condition (Haddad et al. 2015).

Fire is a widespread and common natural disturbance in the boreal forest, with fire cycles shorter than the lifespan of the dominant trees (Johnson et al. 2001). Large, stand-replacing crown fires (i.e., fires that spread through the forest canopy) are common in the boreal forest and are intense enough to burn through young and old stands (Johnson et al. 2001). A large proportion of the upland ELC units within the RSA have been burned within the last 40 years, reflecting a natural fire regime with little human involvement in fire suppression. The Jack pine/blueberry/lichen (BS03) and the Jack pine - black spruce/feathermoss (BS04) ELC units are the most common undisturbed upland ELC units with mature jack pine trees that are at least 60 years old (Annex VII.1). The Jack pine/blueberry/lichen (BS03) ELC units located within the RSA are composed of an average of 21 plant and lichen species and the Jack pine - black spruce/feathermoss (BS04) ELC unit was composed of an average of 18 plant and lichen species (Annex VII.1).

Baseline surveys found that the undisturbed Jack pine/blueberry/lichen (BS03) ELC unit has a characteristically pure canopy of jack pine, a scattered ericaceous (i.e., plants belonging to the *Ericaceae* family) shrub understory, a near continuous carpet of green reindeer and other lichens, and a substantial cover of needle litter (Annex VII.1). The Jack pine - black spruce/feathermoss (BS04) ELC unit was dominated by pure stands of jack pine or jack pine stands with small inclusions of trembling aspen and spruce. The understory consists mainly of ericaceous shrubs and green alder. The forest floor is predominantly feathermoss (Schreber's moss [*Pleurozium schreberi*]). This ELC unit is approximately 70 years old (Annex VII.1).

Mature deciduous-dominant ELC units (White birch/lingonberry - Labrador tea [BS14]) were observed during baseline surveys having a characteristically pure canopy of white birch. However, black spruce, white spruce, jack pine, and trembling aspen were also observed as part of the canopy. The understory consisted of ericaceous shrubs and scattered green alder, and sometimes willow, rose, and pin cherry. A moderate herbaceous layer was usually observed in combination with patches of Schreber's moss and scattered lichens. Generally, leaf litter tended to be high due to the abundance of birch in the overstory. This ELC unit is approximately 50 years old (Annex VII.1).

All undisturbed upland ELC units within the RSA were classified as mature (i.e., greater than 40 years old) based on tree core data from Annex VII.1 or McLaughlan et al. (2010). The age of undisturbed forested stands within the RSA varies from a minimum observed age of 50 years (BS14; BP11) to a maximum of 142 years (BS02), with an average age of undisturbed upland ELC units of 72 years. The most common ELC unit types (i.e., Jack pine/blueberry/lichen [BS03] and Jack pine - black spruce/feathermoss [BS04]) were observed to be 60 to 70 years old.

The most common burned ELC units within the RSA are Jack pine/blueberry/lichen (BS03[BU]) and Jack pine - black spruce/feathermoss (BS04[BU]). These results are supported by observations by the CRDN who noted that a recent forest fire at Patterson and Forrest lakes has removed a stand of large Jack pine that had survived several earlier fires (TSD V.2: CRDN). Baseline surveys observed that these sites were either early pioneer regenerating stage forest following a forest fire and dominated by low shrub understory or were late-stage regenerating forest dominated by a thick cover of tall jack pine shrubs (Annex VII.1). Blueberry and jack pine were the most common low shrub species observed, although leatherleaf was found in some plots. Scattered tall shrubs or residual stands of jack pine may be present within these sites. The ground cover was generally characterized by a high percentage cover of bare soil and litter (i.e., greater than 70%). Forbs, graminoids, mosses, and lichens were virtually absent in early-stage regenerating sites. Blueberry and reindeer lichen were more commonly observed in late-stage regenerating forests (Annex VII.1). Late-stage regeneration deciduous ELC units (e.g., BS13[BU]) were observed to be predominantly led by white birch. Low shrub layers supported blueberry, green alder, or Labrador tea, and ground cover consisted largely of litter and a sporadic distribution of a variety of lichen and bryophyte species (Annex VII.1).

No federally listed plant species (SARA or COSEWIC) were observed during the baseline plant community surveys conducted in 2018 by Omnia (Annex VII.1) and CanNorth (Annex VII.2). Five observations of one provincially tracked vascular plant species were documented in upland ecosystems (Annex VII.1; Annex VII.2; SKCDC 2021b), namely, beautiful sedge, an S3 ranked species (i.e., vulnerable - at moderate risk of extinction or elimination due to a restricted range, relatively few populations, or recent and widespread declines; NatureServe 2012). Beautiful sedge was found at five upland locations during the 2018 terrestrial surveys, including two individuals within a Black spruce/Labrador tea/feathermoss (BP14) ELC unit, 50 individuals within a Jack pine/lichen (BP02[BU]), and one individual within a Balsam poplar - trembling aspen/prickly rose

(BP16[BU]) ELC unit. Two observations without occurrence data were recorded within Recent Burn Upland ELC units (Annex VII.1; Annex VII.2; Figure 13.3-2).

Human-disturbed areas are susceptible to the introduction and establishment of invasive or non-native plant species (Andrews 1990; Bradley and Mustard 2006). No prohibited weed species designated under *The Weed Control Act* were identified within upland ecosystems in the LSA during the 2018 terrestrial baseline surveys (Annex VII.1; Annex VII.2). One nuisance species, dandelion (*Taraxacum officinale*), and one noxious species, narrow-leaved hawk's beard (*Crepis tectorum*), were observed in areas associated with existing or reclaimed anthropogenic disturbances (e.g., road rights-of-way) during 2018 field surveys (Annex VII.1). The distribution and infestation rank of the occurrences were not recorded (Annex VII.1). Additional introduced species (i.e., non-native species not designated under *The Weed Control Act*) were observed in association with anthropogenic disturbances and areas that have been actively seeded during reclamation (Annex VII.1). American mistletoe (*Arceuthobium americanum*), a widespread parasitic flowering plant of Saskatchewan's provincial forests, was observed by CanNorth (Annex VII.2) in several locations within and adjacent to the LSA. This species parasitizes trees and causes widespread stand death, which can increase the likelihood of fire and affect the ecological balance of the forest (Government of Saskatchewan 2016).

13.3.2 Wetland Ecosystems

13.3.2.1 Ecosystem Availability

Wetlands are ecosystems containing soils that are saturated with moisture either permanently or seasonally and are further characterized by the presence of hydrophytic (i.e., water-adapted) vegetation (National Wetlands Working Group 1997). Wetlands contribute to fish and wildlife habitat and recreational activities such as birding, store carbon from the atmosphere, and act as natural filters. Several different types of wetlands are mapped within the LSA and RSA, including swamps, bogs, fens, and water.

Medicinal plants, and some types of berries, are often found near wetlands or open water where traditional plant gathering takes place, as noted by a member of Ya'thi Néné Lands and Resources (YNLR): "I picked Labrador tea. It is all over in this area, in the country, in the muskegs, and eskers" (TSD VI: YNLR). The CRDN also commented on the importance of wetlands for supporting medicinal plants (TSD V.2: CRDN).

Although the amount of wetland ecosystems available before any human-related development in the LSA and RSA is not precisely known, minor changes to wetland ecosystem availability has likely occurred due to disturbances such as roads, trails, and seismic activity. In the Base Case, wetlands, including open water, cover 553.2 ha (19.5%) of the LSA and 32,211.3 ha (30.0%) of the RSA (Table 13.3-3; Figure 13.3-3; Figure 13.3-4). Open water covers 395.3 ha (14.0%) within the LSA and 18,821.8 ha (17.5%) within the RSA. Excluding open water, undisturbed wetlands represent 122.5 ha (4.3%) and 7,056.4 ha (6.6%) of the LSA and RSA, respectively. The Labrador tea shrubby bog (BP20) ELC unit is the most common or abundant undisturbed wetland ELC unit within the LSA and covers 57.6 ha (2.0%). The Black spruce treed bog (BP19) is the most abundant undisturbed wetland ELC unit within the RSA and covers 1,708.0 ha (1.6%). Most of the RSA consists of small patches of undisturbed wetlands, with an average patch size of 6.0 ha or less.

Over half of the LSA and RSA have been burned by forest fires in the last 40 years and are composed of regenerating forest vegetation. ELC units disturbed by fire in the last five years (i.e., Recent Burn Wetland) are not found in the LSA and represent 96.8 ha (0.1%) of the RSA. Early- to late-stage regenerating (i.e., burned in the last 6 to 40 years; Burned) wetland ELC units cover 35.5 ha (1.3%) of the LSA and 6,236.3 ha (5.8%) of the RSA. Some common early- to late-stage regenerating ELC units (e.g., Jack pine/lichen [Burned] and Jack

pine/feathermoss [Burned]) are well distributed in the RSA, but most of the RSA is composed of small patches of regenerating ELC units with immature vegetation (i.e., average patch size of less than 9.0 ha).

Table 13.3-3: Wetland Ecosystem Availability in the Local and Regional Study Areas in the Base Case

Wetland ELC Units[a]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BP18 - Black spruce - tamarack treed swamp	0.0	0.0	21.9	<0.1
BP19 - Black spruce treed bog	52.9	1.9	1,708.0	1.6
BP20 - Labrador tea shrubby bog	57.6	2.0	1,254.7	1.2
BP21 - Graminoid bog	0.0	0.0	25.2	<0.1
BP22 - Open bog	0.0	0.0	7.8	<0.1
BP23 - Tamarack treed fen	0.8	<0.1	40.4	<0.1
BP24 - Leatherleaf shrubby poor fen	6.2	0.2	54.5	0.1
BP25 - Willow shrubby rich fen	4.5	0.2	317.1	0.3
BP26 - Graminoid fen	0.2	<0.1	263.3	0.2
BP27 - Open fen	0.0	0.0	32.8	<0.1
BP28 - Seaside arrow-grass marsh	0.0	0.0	64.3	0.1
BS17 - Black spruce treed bog	0.0	0.0	1,517.3	1.4
BS18 - Labrador tea shrubby bog	0.0	0.0	1,481.3	1.4
BS19 - Graminoid bog	0.0	0.0	0.2	<0.1
BS20 - Open bog	0.0	0.0	0.9	<0.1
BS21 - Tamarack treed fen	0.0	0.0	0.3	<0.1
BS22 - Leatherleaf shrubby poor fen	0.0	0.0	205.0	0.2
BS23 - Willow shrubby rich fen	0.0	0.0	4.5	<0.1
BS24 - Graminoid fen	0.0	0.0	41.8	<0.1
BS25 - Open fen	0.0	0.0	<0.1	<0.1
BS26 - Rush sandy shore	0.2	<0.1	15.2	<0.1
Undisturbed wetland subtotal	*122.5*	4.3	*7,056.4*	*6.6*
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	0.0	0.0	49.9	<0.1
BP19(BU) - Black spruce treed bog (Burned)	35.5	1.3	2,240.8	2.1
BP20(BU) - Labrador tea shrubby bog (Burned)	0.0	0.0	82.2	0.1
BP21(BU) - Graminoid bog (Burned)	0.0	0.0	0.3	<0.1
BP23(BU) - Tamarack treed fen (Burned)	0.0	0.0	25.3	<0.1
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	11.6	<0.1
BP25(BU) - Willow shrubby rich fen (Burned)	0.0	0.0	142.0	0.1
BP26(BU) - Graminoid fen (Burned)	0.0	0.0	401.6	0.4
BP28(BU) - Seaside arrow-grass marsh (Burned)	0.0	0.0	109.9	0.1
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	0.0	0.0	<0.1	<0.1
BS17(BU) - Black spruce treed bog (Burned)	0.0	0.0	1,540.3	1.4
BS18(BU) - Labrador tea shrubby bog (Burned)	0.0	0.0	1,052.9	1.0
BS19(BU) - Graminoid bog (Burned)	0.0	0.0	0.1	<0.1
BS20(BU) - Open bog (Burned)	0.0	0.0	2.2	<0.1

Table 13.3-3: Wetland Ecosystem Availability in the Local and Regional Study Areas in the Base Case

Wetland ELC Units[a]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BS21(BU) - Tamarack treed fen (Burned)	0.0	0.0	7.0	<0.1
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	411.4	0.4
BS23(BU) - Willow shrubby rich fen (Burned)	0.0	0.0	33.1	<0.1
BS24(BU) - Graminoid fen (Burned)	0.0	0.0	89.1	0.1
BS25(BU) - Open fen (Burned)	0.0	0.0	0.1	<0.1
BS26(BU) - Rush sandy shore (Burned)	0.0	0.0	36.6	<0.1
Recent burn wetland	0.0	0.0	96.8	0.1
Burned wetland subtotal	*35.5*	1.3	*6,333.1*	*5.9*
Water	395.3	14.0	18,821.8	17.5
Wetland total	**553.2**	**19.5**	**32,211.3**	**30.0**
Summary				
Wetland total	**553.2**	**19.5**	**32,211.3**	**30.0**
Upland total	**2,172.6**	**76.7**	**74,821.7**	**69.6**
Anthropogenic disturbance	**104.7**	**3.7**	**457.8**	**0.4**
Grand total	**2,831.6**	**100.0**	**107,490.7**	**100.0**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
a) McLaughlan et al. 2010.
LSA = local study area; RSA = regional study area; < = less than.

13.3.2.2 Ecosystem Distribution

Wetland ecosystems are limited in distribution within the LSA but are well distributed across the RSA (Figure 13.3-3; Figure 13.3-4). It is probable that wetland ecosystems within the LSA had greater connectivity prior to human development activities and disturbances such as roads, trails, and seismic activity. The effects of human development activities on wetland ecosystem distribution are associated with water flow interception and culverts for roads and with changes in water quantity, which may have caused smaller wet areas to dry out, thereby reducing wetland connectivity. The RSA and Boreal Shield Ecozone to the north of the Project site have some of the lowest levels of anthropogenic disturbance in the Canadian boreal forest (Kansas et al. 2016). As a result, most wetlands within the RSA are distributed naturally across the landscape and have had minimal reductions in connectivity associated with human development activities. Environment Canada (2013) states that priorities should be made to maintain wetlands in close proximity to one another and to reduce fragmentation of wetland habitat. Fragmentation of wetlands can lead to reduced habitat for species that require contiguous patches and may inhibit effective dispersal (Environment Canada 2013).

Two undisturbed wetland ELC units are common and more frequently distributed within the LSA: the Black spruce treed bog (BP19) and the Labrador tea shrubby bog (BP20) ELC units. There are five additional wetland ELC units found within the LSA (i.e., Tamarack treed fen [BP23], Leatherleaf shrubby poor fen [BP24], Willow shrubby rich fen [BP25], Graminoid fen [BP26], and Rush sandy shore [BS26]) and though they are uncommon on the landscape, these five wetland ELC units are distributed in close proximity to each other and to lakes.

Fire is a widespread and common natural disturbance within the RSA. However, wetland ELC units are generally less prone to wildfire compared to uplands. Within the LSA, 35.5 ha (1.3%) has been affected by previous wildfire events and is limited to Black spruce treed bog (BP19[BU]) ELC units. Within the RSA, fire has affected a wider diversity of wetland ELC units and a greater proportion of the total wetland area (i.e., 6,331 ha; 5.9%). Following wildfire disturbance, many wetland ELC units will typically return to their former condition (McLaughlan et al. 2010) and are anticipated to be structurally and compositionally similar to their undisturbed counterparts.

Common and well-distributed undisturbed wetland ELC units in the RSA include the Black spruce treed bog (BP19), Labrador tea shrubby bog (BP20), Black spruce treed bog (BS17), and Labrador tea shrubby bog (BS18). These observations align with knowledge shared by a member of YNLR about the abundance of Labrador tea in the area, particularly in the muskegs and eskers (TSD VI: YNLR). Members of the BRDN also described a large muskeg area approximately 50 square miles in size just outside of Dillon, and muskeg near Patterson Lake (TSD III: BRDN). However, similar to upland ELC units, most of the RSA is composed of small patches of regenerating wetland ELC units with immature vegetation (i.e., each covering less than 1.0% [about 1,000 ha] of the RSA), which may make these ELC units susceptible to further disturbance and fragmentation.

600000 620000 640000

6400000

6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Boreal Shield Ecozone
Athabasca Plain
Hook Lake
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Forrest Lake
Edelman Lake
Dell Lake
Bolton Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

WETLAND VASCULAR RARE PLANT SPECIES

- ENGLISH SUNDEW
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

WETLAND ECOLOGICAL LAND CLASSIFICATION UNIT

- BP18
- BP18 (BU)
- BP19
- BP19 (BU)
- BP20
- BP20 (BU)
- BP21
- BP21 (BU)
- BP22
- BP23
- BP23 (BU)
- BP24
- BP24 (BU)
- BP25
- BP25 (BU)
- BP26
- BP26 (BU)
- BP27
- BP28
- BP28 (BU)
- BS16 (BU)
- BS17
- BS17 (BU)
- BS18
- BS18 (BU)
- BS19
- BS19 (BU)
- BS20
- BS20 (BU)
- BS21
- BS21 (BU)
- BS22
- BS22 (BU)
- BS23
- BS23 (BU)
- BS24
- BS24 (BU)
- BS25
- BS25 (BU)
- BS26
- BS26 (BU)
- RECENT BURN (WETLAND)

0 5 10

1:175,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WETLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, BASE CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08	FIGURE 13.3-3	
REVIEW	JV	2023-02-08		

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

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600000

6400000

6380000

Sieben Lake

Sholte Lake

Harbo Lake

Gedak Lake

Broach Lake

Clearwater River

Lake A

Patterson Lake

Lake H

Beet Lake

Laomi Lake

Lake F

Dennis Lake

Forrest Lake

955

Boreal Shield Ecozone

Athabasca Plain

Boreal Plain Ecozone

Mid-Boreal Uplands

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

WETLAND VASCULAR RARE PLANT SPECIES

- ENGLISH SUNDEW
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

WETLAND ECOLOGICAL LAND CLASSIFICATION UNIT

BP18	BP24 (BU)	BS18
BP18 (BU)	BP25	BS18 (BU)
BP19	BP25 (BU)	BS21
BP19 (BU)	BP26	BS21 (BU)
BP20	BP26 (BU)	BS22
BP20 (BU)	BP27	BS22 (BU)
BP21	BP28	BS23
BP22	BP28 (BU)	BS23 (BU)
BP23	BS16 (BU)	BS24
BP23 (BU)	BS17	BS26
BP24	BS17 (BU)	BS26 (BU)
		RECENT BURN (WETLAND)

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WETLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, BASE CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08	**FIGURE 13.3-4**	
REVIEW	JV	2023-02-08		

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13.3.2.3 Ecosystem Condition

The hydrological regime is one of the most important factors determining wetland ecosystem function and the health of associated wetland plants (Welsh et al. 1995; Carter 1997; Sheldon et al. 2005). The composition and richness of species in a wetland plant community is influenced by the duration, timing, and frequency of saturation and the depth of water (Sheldon et al. 2005). Disturbance to one or all of these factors can result in changes to the distribution and richness of plant and wildlife species in wetlands, although individual species will respond differently to changes in the hydrological regime.

Natural disturbance events such as fires and floods are the primary factors affecting wetland condition within the LSA and RSA. Some wetland types do not burn regularly because of their inherent wet nature and a lack of flammable materials. However, peatlands and other forested wetlands can accumulate organic fuels and can burn, particularly where black spruce and lichen are dominant portions of the community (Smith and D'Eon 2006; Whitman et al. 2010).

Construction of transportation routes, including seasonal roads and trails, has likely degraded a small number of wetland ecosystems in the LSA and RSA through clearing vegetation, removing riparian forests, destabilizing banks, and altering upstream and downstream geomorphology. Additionally, vehicle traffic can contribute to airborne nitrogen pollutants, which are eventually deposited onto soil and vegetation adjacent to transportation routes (Bobbink et al. 1998). Wetland ecosystems such as bogs are particularly sensitive to nitrogen pollutants since the plant species that grow within them are adapted to low levels of nitrogen and a change in nitrogen availability may cause a shift in the species composition (Bobbink et al. 1998). However, anthropogenic disturbances cover only 104.7 ha (3.7%) within the LSA and 457.8 ha (0.4%) within the RSA and have not likely resulted in ecologically measurable changes to wetland condition.

Existing anthropogenic disturbance (as discussed in Section 13.3.1.2) and edge effects likely result in reduced ecosystem condition, as forest and wetland edges are typically exposed to more sunlight and are drier, windier, and warmer than the forest interior (Chen et al. 1999). Edge effects from existing anthropogenic disturbances recorded at baseline provide an opportunity for changes in microclimate and non-native species to influence and degrade the ecosystem condition (Haddad et al. 2015).

The Black spruce treed bog (BP19) ELC unit accounts for the largest proportion of both burned and unburned wetland ELC units in the RSA. The Black spruce treed bog (BP19) ELC units found within the RSA are characterized by mature black spruce stands, which are at least 80 years old, and a Labrador tea (*Rhododendron groenlandicum*) and sphagnum moss (*Sphagnum* spp.) understory; these ELC units are, on average, composed of 21 plant and lichen species (Annex VII.1).

Baseline surveys found that the Black spruce treed bog (BP19) ELC unit has low tree and shrub species richness but often contains a high diversity of moss and lichen species (Annex VII.1). Overall structural diversity is moderate. Black spruce on these sites usually represents all ages as the sphagnum moss layer encourages vegetative reproduction by branch layering. Sphagnum is also a suitable seed bed for black spruce germination provided that the moss is not Girgensohn's (*Sphagnum girgensohnii*) or another fast-growing peat moss that can outcompete and smother black spruce seedlings. Despite the wet conditions, black spruce can remain free from rot for long periods. In the absence of disturbance, these sites would likely remain a treed bog (Annex VII.1).

Stand age for wetland ELC units within the RSA was based on tree core data from Omnia (Annex VII.1) or McLaughlan et al. (2010). Tree age of undisturbed wetland ELC units within the RSA varies from a minimum observed age of 27 years (BP25, BS23) to a maximum of 168 years (BS25), with an average age of undisturbed wetland ELC units of 67 years. However, age for wetland ELC units was restricted to forested wetland ELC units,

as some wetlands support only limited tree or shrub cover (e.g., Graminoid bog [BP21]). The most common treed wetland ELC units (i.e., Black spruce treed bog [BP19] and Black spruce treed bog [BS17]) were observed to be 80 years old.

A review of the provincial HABISask database (SKCDC 2021b) identified one element occurrence of the provincially tracked species heart-leaved twayblade (*Listera cordata* var. *cordata*) in a wetland ELC unit within the RSA, with 17 individuals observed (Figure 13.3-4). Heart-leaved twayblade is an S2 ranked species (i.e., imperiled - at high risk of extinction or elimination due to restricted range, few populations, or steep declines; NatureServe 2012).

No federally listed plant species (SARA or COSEWIC) were observed in wetland ecosystems during the baseline surveys conducted in 2018 (Annex VII.1; Annex VII.2). However, six observations of five provincially tracked vascular plant species were documented in wetland ecosystems (Annex VII.1; Annex VII.2). The provincially tracked vascular plant species documented within wetland ecosystems were English sundew (*Drosera anglica*), Hudson Bay sedge (*Carex heleonastes*), northern lady-fern (*Athyrium filix-femina* var. *angustum*), Scheuchzer cotton-grass (*Eriophorum scheuchzeri*), and water lobelia (*Lobelia dortmanna*). English sundew, Hudson Bay sedge, northern lady-fern, and water lobelia are ranked as S3 species (i.e., vulnerable - at moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors; NatureServe 2012). Scheuchzer cotton-grass is ranked as an S2 species (i.e., imperiled - at high risk of extinction or elimination due to restricted range, few populations, or steep declines).

Provincially tracked vascular plant species were observed within three different ELC units as well as in open water during the 2018 baseline surveys (Annex VII.1[3], Annex VII.2) (Figure 13.3-4). English sundew was documented in two Open fen (BP27) ELC units. An individual Hudson Bay sedge plant was found by CanNorth (Annex VII.2) within a Willow shrubby rich fen (BP25) ELC unit. Omnia (Annex VII.1) recorded an observation of northern lady-fern in a Willow shrubby rich fen (BP25) ELC unit. Scheuchzer cotton-grass was documented within a Black spruce treed bog (BP19) ELC unit. A single water lobelia plant was observed floating on the shoreline of Patterson Lake during an aquatic vegetation inventory survey point (Annex VII.2).

Disturbance can lead to an increase in invasive species abundance and distribution on the landscape (Environment Canada 2013). Wetland ecosystems can be particularly sensitive to invasive species and changes in species composition can affect local wetland structure and function (Zedler and Kercher 2004). However, no prohibited, noxious, or nuisance weed species designated under *The Weed Control Act* were identified within wetland ecosystems within or adjacent to the LSA during the 2018 baseline surveys (Annex VII.1; Annex VII.2). The wetland habitats in the LSA and RSA are predicted to have maintained overall function in terms of ability to perform hydrological functions and support regional biodiversity in the Base Case.

[3] Lesser duckweed (*Lemna minor*) was recorded as observed in Section 6.3 of Annex VII.1 (Vegetation Baseline Report 1 [Mapping]). However, taxonomic changes to the *Lemna* genus have resulted in most, if not all, lesser duckweed observations in Saskatchewan to now be recognized as common duckweed (*Lemna turionifera*), a species that is not provincially tracked (Harms et al. 2018; SKCDC 2023). Lesser duckweed has not been verified as occurring in the province (Harms et al. 2018); therefore, the species recorded in Annex VII.1 is assumed to be common duckweed.

13.3.3 Riparian Ecosystems

13.3.3.1 Ecosystem Availability

Riparian habitat is a transition zone between aquatic and terrestrial ecosystems (Austin et al. 2008). Riparian habitat is defined as areas adjacent to rivers and lakes, or ephemeral, intermittent, or perennial streams that differ from the surrounding uplands in plant and animal diversity and productivity (Environment Canada 2013). Indigenous Groups have identified several gathering sites for berries, medicines, and other traditional plants near lakes and along creeks and rivers in the RSA (TSD V.1: CRDN; TSD II: BNDN; TSD IV: MN-S; TSD VI: YNLR).

> There is a lot of medicine, my dad and I use to collect them. Ts'aili Teli. (Frog Tail) on the side of the road, it looks like red rose, that is medicine. They pay respect to the lake and plants when they harvested the plants . . . . He used to bring it to mom, and mom would drink it. It is good for body aches, made into tea. She mixed it with another plant, and made it into a tea. (TSD VI: YNLR)

Several lakes were identified in the RSA by Indigenous Groups where berries, medicines and other traditional plants are gathered (TSD V.1: CRDN; TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD VI: YNLR). Indigenous Groups described the importance of the Patterson Lake area in particular for traditional activities, including plant gathering.

For the purposes of the assessment, riparian ecosystems were defined as the subset of upland and wetland cover types with riparian potential that intersected buffered watercourses and waterbodies (i.e., disturbance to riparian ecosystems are inclusive of effects to upland and wetland ecosystems).

Riparian ecosystems are distributed throughout the LSA and RSA, and are associated with watercourses and waterbodies. In the Base Case, the total area of riparian habitat within riparian buffers covers 205.4 ha of the LSA (7.3%) and 9,612.5 ha of the RSA (8.9%; Table 13.3-4; Figure 13.3-5; Figure 13.3-6). Undisturbed riparian habitat covers 116.6 ha (4.1%) of the LSA and 5,456.3 ha (5.1%) of the RSA. The most common undisturbed riparian ELC unit in the LSA is the Black spruce treed bog (BP19) ELC unit, which covers 51.4 ha (1.8%). Labrador tea shrubby bog (BS18) is the most abundant undisturbed riparian ELC unit in the RSA, covering 1,302.8 ha (1.2%). This classification aligns with observations from a member from YNLR who commented on the abundance of Labrador tea in the region: "I picked Labrador tea. It is all over in this area, in the country, in the muskegs, and eskers" (TSD VI: YNLR). Riparian habitat disturbed by fire in the last five years (i.e., Recent Burn Wetland) is not found in the LSA and represents less than 0.1% (23.7 ha) of the RSA. Early- to late-stage regenerating (i.e., burned in the last 6 to 40 years; Burned) riparian areas cover 88.8 ha (3.1%) of the LSA and 4,132.5 ha (3.9%) of the RSA.

Overall, riparian habitats are uncommon on the landscape relative to upland and wetland ecosystems, and all riparian ELC units represent less than 10% of the LSA and RSA. Generally, less abundant riparian ELC units are also uncommon in their respective upland and wetland ecosystems (e.g., Trembling aspen – white birch/sarsaparilla [BP07]), several (n=16) of which cover less than 1.0 ha in the RSA.

Previous and existing human disturbances such as roads, and trails have likely been the primary factors contributing to changes in riparian habitat availability. The construction of roads, culverts, and access trails would have altered riparian habitat in the RSA through vegetation clearing and the removal of riparian forests.

Table 13.3-4: Riparian Ecosystems Availability in the Local and Regional Study Areas in the Base Case

Riparian ELC Unit[a]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BP07 - Trembling aspen - white birch/sarsaparilla	0.0	0.0	<0.1	<0.1
BP12 - Jack pine - spruce/feathermoss	0.0	0.0	216.2	0.2
BP14 - Black spruce/Labrador tea/feathermoss	17.3	0.6	96.7	0.1
BP16 - Balsam poplar - trembling aspen/prickly rose	0.0	0.0	32.4	<0.1
BP18 - Black spruce - tamarack treed swamp	0.0	0.0	3.6	<0.1
BP19 - Black spruce treed bog	51.4	1.8	822.2	0.8
BP20 - Labrador tea shrubby bog	35.1	1.2	1,003.6	0.9
BP21 - Graminoid bog	0.0	0.0	12.3	<0.1
BP22 - Open bog	0.0	0.0	3.6	<0.1
BP23 - Tamarack treed fen	0.7	<0.1	27.3	<0.1
BP24 - Leatherleaf shrubby poor fen	6.2	0.2	36.8	<0.1
BP25 - Willow shrubby rich fen	4.5	0.2	216.5	0.2
BP26 - Graminoid fen	1.2	<0.1	97.5	0.1
BP27 - Open fen	0.0	0.0	15.6	<0.1
BP28 - Seaside arrow-grass marsh	0.0	0.0	46.0	<0.1
BS06 - Jack pine - trembling aspen/green alder	0.0	0.0	0.3	<0.1
BS09 - Black spruce - jack pine/feathermoss	0.0	0.0	23.1	<0.1
BS10 - Black spruce - white birch/feathermoss	0.0	0.0	0.1	<0.1
BS13 - White birch - black spruce - trembling aspen	0.0	0.0	0.5	<0.1
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	<0.1	<0.1
BS17 - Black spruce treed bog	0.0	0.0	1,281.4	1.2
BS18 - Labrador tea shrubby bog	0.0	0.0	1,302.8	1.2
BS19 - Graminoid bog	0.0	0.0	0.2	<0.1
BS20 - Open bog	0.0	0.0	0.7	<0.1
BS21 - Tamarack treed fen	0.0	0.0	<0.1	<0.1
BS22 - Leatherleaf shrubby poor fen	0.0	0.0	171.9	0.2
BS23 - Willow shrubby rich fen	0.0	0.0	2.7	<0.1
BS24 - Graminoid fen	0.0	0.0	30.8	<0.1
BS25 - Open fen	0.0	0.0	<0.1	<0.1
BS26 - Rush sandy shore	0.2	<0.1	11.9	<0.1
Undisturbed riparian subtotal	*116.6*	*4.1*	*5,456.3*	*5.1*
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	64.4	2.3	729.1	0.7
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	0.0	0.0	6.8	<0.1
BP19(BU) - Black spruce treed bog (Burned)	24.4	0.9	871.2	0.8
BP20(BU) - Labrador tea shrubby bog (Burned)	0.0	0.0	25.2	<0.1
BP23(BU) - Tamarack treed fen (Burned)	0.0	0.0	12.2	<0.1
BP25(BU) - Willow shrubby rich fen (Burned)	0.0	0.0	20.7	<0.1
BP26(BU) - Graminoid fen (Burned)	0.0	0.0	105.8	0.1

Table 13.3-4: Riparian Ecosystems Availability in the Local and Regional Study Areas in the Base Case

Riparian ELC Unit[a]	LSA		RSA	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
BP28(BU) - Seaside arrow-grass marsh (Burned)	0.0	0.0	98.5	0.1
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.0	0.0	0.7	<0.1
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	0.0	0.0	5.3	<0.1
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.0	0.0	0.5	<0.1
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	0.0	0.0	0.5	<0.1
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	<0.1	<0.1
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	47.8	<0.1
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	26.6	<0.1
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.0	0.0	0.1	<0.1
BS17(BU) - Black spruce treed bog (Burned)	0.0	0.0	1,189.3	1.1
BS18(BU) - Labrador tea shrubby bog (Burned)	0.0	0.0	665.0	0.6
BS19(BU) - Graminoid bog (Burned)	0.0	0.0	0.1	<0.1
BS20(BU) - Open bog (Burned)	0.0	0.0	1.3	<0.1
BS21(BU) - Tamarack treed fen (Burned)	0.0	0.0	3.3	<0.1
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	266.1	0.2
BS23(BU) - Willow shrubby rich fen (Burned)	0.0	0.0	16.4	<0.1
BS24(BU) - Graminoid fen (Burned)	0.0	0.0	37.4	<0.1
BS25(BU) - Open fen (Burned)	0.0	0.0	0.1	<0.1
Recent burn wetland	0.0	0.0	23.7	<0.1
Burned riparian subtotal	*88.8*	*3.1*	*4,156.2*	*3.9*
Total Riparian	**205.4**	**7.3**	**9,612.5**	**8.9**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values. Riparian ecosystems are a subset of upland and wetland ecosystems. ELC units described as riparian do not match upland or wetland ecosystem totals.

a) McLaughlan et al. 2010.

ELC = Ecological Land Classification; LSA = local study area; RSA = regional study area; < = less than.

600000 620000 640000

6400000

6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Hook Lake
Athabasca Plain
Boreal Shield Ecozone
Harbo Lake
Broach Lake
Clearwater River
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Dell Lake
Edelman Lake
Bolton Lake
Forrest Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

RIPARIAN VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

RIPARIAN ECOLOGICAL LAND CLASSIFICATION UNIT

BP07	BP24	BS18
BP07 (BU)	BP25	BS18 (BU)
BP11 (BU)	BP25 (BU)	BS19
BP12	BP26	BS19 (BU)
BP12 (BU)	BP26 (BU)	BS20
BP14	BP27	BS20 (BU)
BP14 (BU)	BP28	BS21
BP16	BP28 (BU)	BS21 (BU)
BP16 (BU)	BS06	BS22
BP18	BS06 (BU)	BS22 (BU)
BP18 (BU)	BS09	BS23
BP19	BS09 (BU)	BS23 (BU)
BP19 (BU)	BS10	BS24
BP20	BS13	BS24 (BU)
BP20 (BU)	BS13 (BU)	BS25
BP21	BS15	BS25 (BU)
BP22	BS15 (BU)	BS26
BP23	BS17	RECENT BURN (WETLAND)
BP23 (BU)	BS17 (BU)	

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE
RIPARIAN ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, BASE CASE

CONSULTANT
wsp

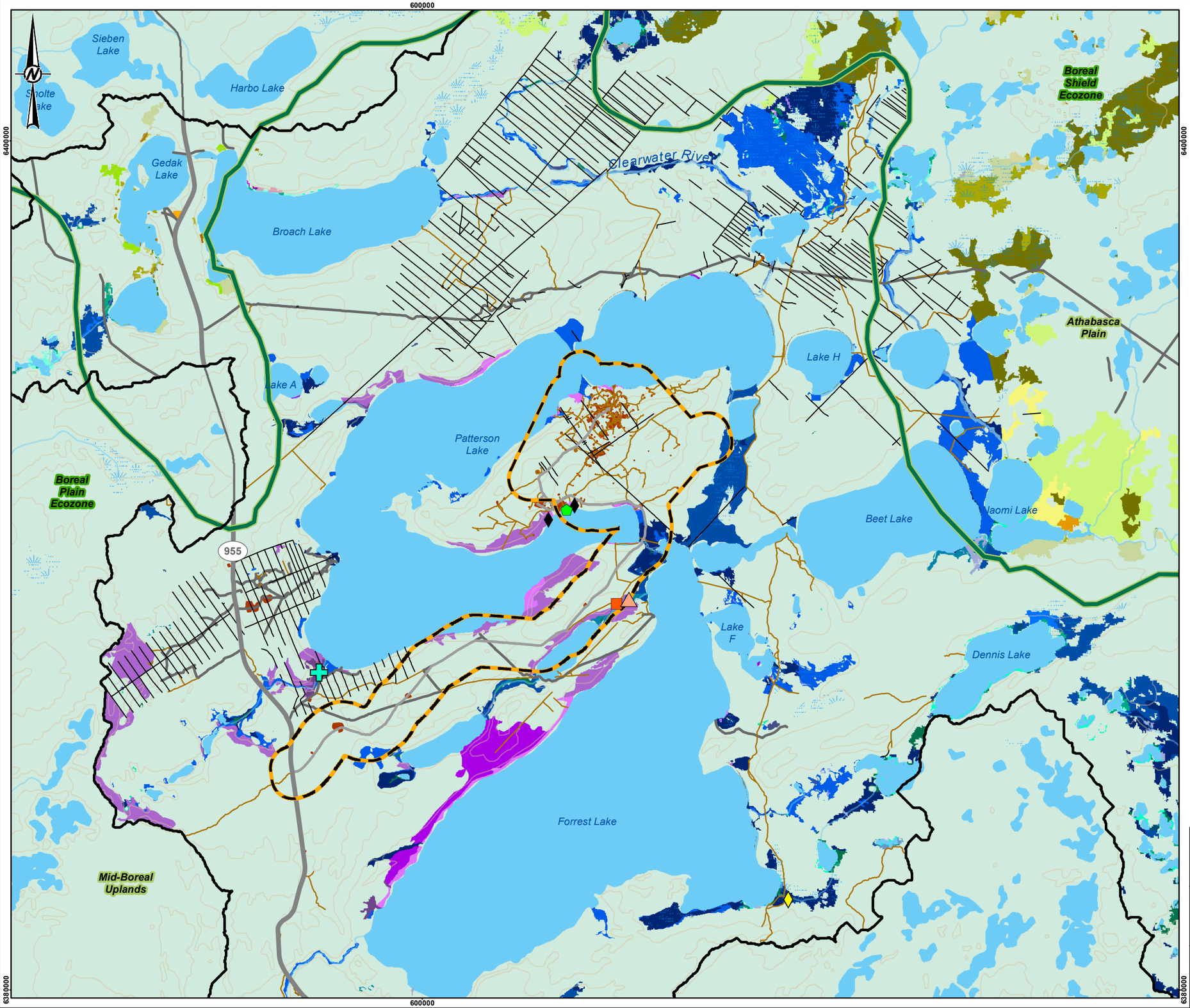
PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.3-5

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

0 25mm

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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

RIPARIAN VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

RIPARIAN ECOLOGICAL LAND CLASSIFICATION UNIT

BP07	BP22	BS13 (BU)
BP07 (BU)	BP23	BS17
BP11 (BU)	BP23 (BU)	BS17 (BU)
BP12	BP24	BS18
BP12 (BU)	BP25	BS18 (BU)
BP14	BP25 (BU)	BS21
BP16	BP26	BS21 (BU)
BP16 (BU)	BP26 (BU)	BS22
BP18	BP27	BS22 (BU)
BP18 (BU)	BP28	BS23
BP19	BP28 (BU)	BS23 (BU)
BP19 (BU)	BS06 (BU)	BS24
BP20	BS09	BS26
BP20 (BU)	BS09 (BU)	RECENT BURN (WETLAND)
BP21	BS13	

0 3 6
1:90,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

RIPARIAN ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, BASE CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.3-6

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

25mm

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13.3.3.2 Ecosystem Distribution

Changes to riparian distribution are caused by the same disturbances as those described above for availability. Regional connectivity of riparian habitat is important for dispersal of plants and for movement of fish and wildlife species (Environment Canada 2013). A member of the BRDN also commented on the importance of the interconnectedness of lakes for facilitating travel during the winter to access traditional use areas, and particularly the Dyck Lake area, which is in the RSA (TSD III: BRDN).

> Yeah, it's really good trapping areas [around Dyck Lake] because of the terrain, the lakes, they are close, interconnected, and you can get trails into them as you go along without really doing any kind of major trail cutting. You can get around obstacles and keep going instead of just cutting that tree down, cutting that tree down and it's [not] thick forest as here, it's a lot more spread out. (TSD III: BRDN)

The distribution of riparian habitat in the LSA and RSA is likely within the range of natural historical conditions (i.e., where natural events such as flooding would have caused regular shifts in distribution), except in areas affected by roads and trails, where riparian systems have been lost or permanently altered (Figure 13.3-5; Figure 13.3-6). Overall, riparian ecosystems are well distributed and connected over the LSA and RSA in the Base Case.

13.3.3.3 Ecosystem Condition

Riparian trees provide habitat for wildlife and shade to buffer temperature within watercourses. Riparian habitat also maintains water quality of watercourses by filtering out nutrients and contaminants. Human disturbances have the potential to accelerate the establishment of invasive plant species in native ecosystems through the introduction of seeds or disturbance of soils (Mack et al. 2000; Bradley and Mustard 2006). Disturbances such as roads, trails, and seismic lines have likely caused habitat fragmentation, barriers, or partial barriers to wildlife movement and can lead to increased invasive species on the landscape (Parendes and Jones 2000; Reichard and White 2001; Lafortezza et al. 2010).

No federally listed plant species (SARA or COSEWIC) were observed in riparian ecosystems during the baseline plant community surveys conducted in 2018 (Annex VII.1; Annex VII.2). However, there were five recorded occurrences of four provincially tracked vascular plant species in riparian ecosystems (Annex VII.1[4], Annex VII.2; Figure 13.3-6). The provincially tracked vascular plant species documented within riparian ecosystems were beautiful sedge, Hudson Bay sedge, northern lady-fern, and water lobelia. All these occurrences, except water lobelia, are also classified in the upland or wetland ELC units (Sections 13.3.1.3 and 13.3.2.3, Ecosystem Condition). A single water lobelia plant was observed floating on the shoreline of Patterson Lake (Annex VII.2). Additionally, the Saskatchewan Conservation Data Centre (SKCDC 2021b) historical element occurrence of heart-leaved twayblade occurs within ELC units classified as riparian ecosystem in the RSA.

No prohibited, noxious, or nuisance weed species designated under *The Weed Control Act* were identified in riparian ecosystems within the LSA during the 2018 baseline terrestrial surveys (Annex VII.1; Annex VII.2). The

[4] Lesser duckweed was recorded as observed in Section 6.3 of Annex VII.1 (Vegetation Baseline Report 1 [Mapping]). However, taxonomic changes to the *Lemna* genus have resulted in most, if not all, lesser duckweed observations in Saskatchewan to now be recognized as common duckweed, a species that is not provincially tracked (Harms et al. 2018; SKCDC 2023). Lesser duckweed has not been verified as occurring in the province (Harms et al. 2018); therefore, the species recorded in Annex VII.1 is assumed to be common duckweed.

riparian habitats in the LSA and RSA are predicted to have maintained overall function in terms of ability to perform hydrological functions and support regional biodiversity in the Base Case.

13.3.4 Traditional Use Plant Species

13.3.4.1 Traditional Use Plant Species Availability

Traditional use plant species are used by Indigenous Groups for food, medicinal, spiritual, and ceremonial purposes, and plant gathering is an important cultural activity that contributes to well-being. The CRDN and MN-S have described the importance of berries, medicinal and other traditional plants for the promotion of health and community wellbeing (TSD IV: MN-S; TSD V.2 CRDN):

> Berries, such as blueberries, strawberries and raspberries, are another important traditional food source, as they are full of antioxidants and promote heart and brain health. The Patterson Lake area provides a bounty for harvest which is also important for the collection of natural medicines . . . . Rat root and birch bark are collected and used for medicine, as is birch syrup, the harvesting of which continues to be passed down in the area. In early spring, the men tap the trees and collect the sap; the women boil and bottle the syrup. Some members make tea for medicine. Members, for example, makes medicinal green tea and cranberry tea which promote bladder health. When sick, some members visit the medicine people for remedy because they know every plant and their medicinal use. There is also sweet grass that grows in the territory and most lake water is used for drinking. (TSD IV: MN-S)

> We've got all kinds of berries there. They are all used for medicine. Even the leaves from the trees are used for medicine, you know. We get rat root from there. Rat root is used for everything from mental illness to physical pain . . . . In the summer there's beautiful blueberries, raspberries, all kinds of berries there. And if somebody had kidney problems or something, my mom said "You just go out in the bush, grab some cranberries." And now the mainstream society is figuring it out . . . . And gooseberries, you know, is good for your eyes. Like all these things. We know that stuff. (TSD V.2: CRDN)

Indigenous Groups have reported that plant gathering activities have, and continue to occur, in the Patterson Lake area (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN). The CRDN reported that the Patterson Lake has historically, and is currently "recognized as good for everything harvesting grounds which have sustained CRDN members through time, beyond living memory" because of its abundance of resources, including berries and medicines (TSD V.1: CRDN; TSD V.2: CRDN). The YNLR identified the Patterson Lake area as an important area for plants in general (TSD VI: YNLR).

Twenty-eight traditional use plant species were identified in the IKTLU Studies (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR) and from comments from CRDN (2019a) on the Cluff Lake Mine licence renewal. Baseline surveys (Annex VII.1; Annex VII.2) recorded 1,214 observations of 34 species or genera that can be potentially described as one of the identified traditional use plant species (Table 13.3-5).

Table 13.3-5: Traditional Use Plant Species Recorded during Baseline Surveys

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	Habitat[c]	Number of Observations during Baseline[d]
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	Moist-wet woods, shrub thickets, muskegs, and meadows	10
	Rubus pubescens	Dewberry	Moist rich woods, stream banks, bogs, and swamps	7
Birch	*Betula glandulosa*	Dwarf birch	Muskegs, peat bogs and fens, stream banks, and rocky slopes	5
	Betula occidentalis	River birch	Stream and lake shores, marsh edges, wet swales, bluff slopes, ridges, and moist open woods	1
	Betula papyrifera	Paper birch	Often codominant trees in moist, mostly riparian, deciduous and mixedwood forest	87
	Betula pumila	Swamp birch	Moist woods, muskegs, swamps, bogs, fens, and shore thickets	15
Blueberry	*Vaccinium myrtilloides*	Blueberry	Dry-moist, often sandy, coniferous (often jack pine) woods, forest edges and clearings	124
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	Wet meadows, sandy or gravelly, often calcareous shores and fens	1
	Juncus nodosus var. *nodosus*	Knotted rush	Sandy or muddy shores of lakes, rivers and streamlets, swamps, fens marshes, and wet fields, often calcareous or saline	1
	Schoenoplectus acutus var. *acutus*	Hard-stemmed bulrush	Wet depressions, fens, and marshy lake and stream margins, often emergent aquatics to 1.5 m depths	1
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	Sandy stream banks, open woods and borders, prairie shrub thickets, and roadsides	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	Moist-wet mossy spruce woods and muskegs, sphagnum bogs and fens, and wet meadows	57
Cranberry	*Vaccinium oxycoccos*	Small cranberry	Sphagnum hummocks in wet bogs, fens, and muskegs	55
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	Dry-fresh pine and spruce woods, exposed slopes, drier bogs, and various habitats	129
Cranberry, low bush	*Viburnum edule*	Low-bush cranberry	Woods	1
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High-bush cranberry	Moist, rich woods, shrub thickets, open or semi-shaded shores	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	Rich shore woods on river-bank alluvium and lower bluff slopes	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	Peaty fens and bogs	n/o
Gooseberry	*Ribes americanum*	Wild black currant	Mesic-moist shrub-thickets, open woods, woodland edges, ravine-slopes, and stream banks	1
	Ribes glandulosum	Skunk currant	Moist woods, clearings, shrubland, and rocky shores	2
	Ribes hudsonianum	Northern black currant	Rich moist woods	7
	Ribes oxyacanthoides var. *oxyacanthoides*	Bristly gooseberry	Mesic-moist woods, shrub-thickets, and clearings	4
	Ribes triste	Swamp red currant	Moist-wet woods and boggy sites	2

Table 13.3-5: Traditional Use Plant Species Recorded during Baseline Surveys

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	Habitat[c]	Number of Observations during Baseline[d]
Jack pine	*Pinus banksiana*	Jack pine	Dominant or codominant trees in dry-mesic, sandy-gravelly, coniferous or mixedwood forests	151
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	Dry(-moist), sandy, open woods, forest clearings, and exposed rocky areas	72
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	Moist-wet, spruce woods, acidic peat bogs, meadows, stream margins, and talus slopes	115
	Rhododendron tomentosum	Labrador tea	Wet black spruce woods, muskegs, and treed/open bogs	11
Mint	*Mentha canadensis*	Wild mint	Marshy shores, moist sedge meadows, and other damp places	1
Mosses[e]	n/a	n/a	Various habitats	113
Mushrooms[e]	n/a	n/a	Various habitats	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	Moist, lake/river/stream shores, often dominant or codominant trees in rich, riparian woods	5
	Populus tremuloides	Trembling aspen	Usually dominant or codominant trees in dry-mesic (-moist) woodlands	11
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	Dry-mesic, open woods (especially after fire), forest clearings, roadsides, and disturbed open sites	3
Rat root	*Acorus americanus*	Sweet flag	River and stream banks, lake shores, woodland margins, mesic woods, and shrub-thickets	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	Dominant or codominant trees in coniferous and mixedwood forest	n/o
Spruce	*Picea glauca*	White spruce	Dominant or codominant trees in moist-wet woods, muskegs, fens, and bogs	30
	Picea mariana	Black spruce	Rocky woods, riparian forests, forest edges, clearings, along trails and roadsides, and sandy/gravelly shores	72
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	Mesic-moist, open riparian, and upland deciduous/mixed/coniferous woods, forest edges and clearings, sandy shores, roadsides, and disturbed sites	1
	Fragaria virginiana ssp. *glauca*	Smooth wild strawberry	Moist-wet open marshes, swales, and edges of quiet water	1
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	Mesic-wet meadows, semi-open shores, sloughs, and marsh edges	n/o
Tamarack	*Larix laricina*	Tamarack	Dominant or codominant trees with black spruce in wet woods, treed bogs, and some fens	25
Willow[f]	*Salix* spp.	Willow species	Various habitats	93

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR; CRDN 2019a.
b) SKCDC 2021a.
c) Harms 2017.
d) Annex VII.1; Annex VII.2.
e) Traditional use plant species name reflects a broad group of plant or fungi species; therefore, the scientific name, SKCDC common name, and habitat information are not described.
f) Saskatchewan has over 40 willow species (*Salix* sp.; Harms 2017); therefore, the scientific name, SKCDC common name, and habitat information of all potential willow species are not described.
n/a = not applicable; n/o = not observed.

The availability of traditional use plant species in the LSA and RSA was determined using the relative frequency and percent cover (Section 13.2.6.2, Traditional Use Plant Species) for each species recorded during baseline field surveys (Annex VII.1; Annex VII.2). The most available traditional use plant species within both the LSA and RSA are jack pine, mosses, blueberry, and bog cranberry (*Vaccinium vitis-idaea*) (Table 13.3-6; Figure 13.3-7; Figure 13.3-8). The prevalence of jack pine in the LSA and RSA aligns with knowledge shared by the BNDN and the BRDN (TSD II: BNDN; TSD III: BRDN) of jack pine dominating the Patterson Lake area. The CRDN also commented on the availability of jack pine in the Patterson Lake area (TSD V.2; CRDN). The relatively high availability of blueberry in the LSA and RSA was reflected by the three blueberry gathering sites identified by the BNDN in the RSA and the blueberry harvesting sites identified by the YNLR in the LSA and RSA (TSD II: BNDN; TSD VI: YNLR). The availability of several species is low within the RSA as they were observed infrequently during baseline surveys (e.g., strawberry) or are generally smaller species with limited cover (e.g., small cranberry [*Vaccinium oxycoccos*]).

Table 13.3-6: Traditional Use Plant Species Availability in the Local and Regional Study Areas in the Base Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	LSA		RSA	
			Area (ha)	Percent (%)	Area (ha)	Percent (%)
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	<0.1	<0.1	2.2	<0.1
	Rubus pubescens	Dewberry	<0.1	<0.1	1.4	<0.1
Birch	*Betula glandulosa*	Dwarf birch	<0.1	<0.1	5.8	<0.1
	Betula occidentalis	River birch	0.1	<0.1	0.6	<0.1
	Betula papyrifera	Paper birch	30.8	1.1	764.9	0.7
	Betula pumila	Swamp birch	1.7	0.1	70.8	0.1
Blueberry	*Vaccinium myrtilloides*	Blueberry	225.3	8.0	6,230.4	5.8
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	<0.1	<0.1	0.6	<0.1
	Juncus nodosus var. *nodosus*	Knotted rush	0.0	0.0	0.8	<0.1
	Schoenoplectus acutus var. *acutus*	Hard-stemmed bulrush	<0.1	<0.1	0.5	<0.1
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	2.6	0.1	176.7	0.2
Cranberry	*Vaccinium oxycoccos*	Small cranberry	3.3	0.1	230.0	0.2
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	72.2	2.5	3,148.3	2.9
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.4	<0.1
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	<0.1	<0.1	0.8	<0.1
	Ribes glandulosum	Skunk currant	0.0	0.0	0.2	<0.1
	Ribes hudsonianum	Northern black currant	<0.1	<0.1	2.7	<0.1
	Ribes oxyacanthoides var. *oxyacanthoides*	Bristly gooseberry	<0.1	<0.1	2.4	<0.1
	Ribes triste	Swamp red currant	0.0	0.0	0.2	<0.1
Jack pine	*Pinus banksiana*	Jack pine	203.4	7.2	8,931.3	8.3
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	36.7	1.3	1,225.4	1.1
Labrador Tea	*Rhododendron groenlandicum*	Common Labrador tea	40.8	1.4	2,036.5	1.9

Table 13.3-6: Traditional Use Plant Species Availability in the Local and Regional Study Areas in the Base Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	LSA		RSA	
			Area (ha)	Percent (%)	Area (ha)	Percent (%)
	Rhododendron tomentosum	Labrador tea	2.2	0.1	111.7	0.1
Mint	*Mentha canadensis*	Wild mint	0.5	<0.1	13.0	<0.1
Mosses[c]	n/a	n/a	40.2	1.4	3,439.5	3.2
Mushrooms[c]	n/a	n/a	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	13.3	<0.1
	Populus tremuloides	Trembling aspen	24.8	0.9	530.5	0.5
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	1.1	<0.1
Rat root	Acorus americanus	Sweet flag	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	22.3	0.8	981.0	0.9
	Picea mariana	Black spruce	31.0	1.1	1,171.8	1.1
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.3	<0.1
	Fragaria virginiana ssp. *glauca*	Smooth wild strawberry	0.0	0.0	<0.1	<0.1
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.5	<0.1	35.5	<0.1
Willow[d]	*Salix* sp.	Willow species	10.6	0.4	318.5	0.3
Total			**748.9**	**26.4**	**29,449.0**	**27.4**

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR; CRDN 2019a.
b) SKCDC 2021a.
c) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
d) Saskatchewan has over 40 willow species (*Salix* sp.; Harms 2017); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
LSA = local study area; RSA = regional study area; < = less than; n/a = not applicable; n/o = not observed during baseline surveys.

Members of the CRDN noted that tree clearing in some areas has removed navigational landmarks for land users, (TSD V.1: CRDN). Indigenous Groups have commented that previous and existing developments have affected traditional use plants in the region, which they attribute to dust settling on plants and berries and from the effects of forestry activities and clearing for other industrial developments and exploration activities (TSD III BRDN; TSD II: BNDN; TSD IV: MN-S; TSD V.2: CRDN). NexGen understands the concerns of Indigenous Groups regarding effects from air quality changes to traditional plants and would implement environmental design features and mitigation to minimize potential Project effects (Section 13.4, Project Interactions and Mitigations).

600000 620000 640000

6400000

6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Hook Lake
Boreal Shield Ecozone
Athabasca Plain
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Dell Lake
Edelman Lake
Forrest Lake
Bolton Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

TRADITIONAL USE PLANT SPECIES OCCUPANCY

- 0.00 TO 0.16
- 0.17 TO 0.32
- 0.33 TO 0.48
- 0.49 TO 0.64
- 0.65 TO 0.80
- 0.81 TO 0.96
- 0.97 TO 1.12
- 1.13 TO 1.28

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE
TRADITIONAL USE PLANT SPECIES OCCUPANCY IN THE REGIONAL STUDY AREA, BASE CASE

CONSULTANT
wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.3-7

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

0 25mm

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600000

6400000

6380000

Sieben Lake

Sholte Lake

Harbo Lake

Gedak Lake

Broach Lake

Clearwater River

Lake A

Patterson Lake

Lake H

Beet Lake

Naomi Lake

Lake F

Dennis Lake

Forrest Lake

955

Boreal Plain Ecozone

Mid-Boreal Uplands

Boreal Shield Ecozone

Athabasca Plain

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- LOCAL STUDY
- REGIONAL STUDY

TRADITIONAL USE PLANT SPECIES OCCUPANCY

- 0.00 TO 0.16
- 0.17 TO 0.32
- 0.33 TO 0.48
- 0.65 TO 0.80
- 0.81 TO 0.96
- 0.97 TO 1.12
- 1.13 TO 1.28

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

TRADITIONAL USE PLANT SPECIES OCCUPANCY IN THE LOCAL STUDY AREA, BASE CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.3-8

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

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13.3.4.2 Traditional Use Plant Species Distribution

Indigenous Groups have described the importance of the Patterson Lake area for traditional activities in general, including for plant gathering. The MN-S reported that the Patterson Lake area has both historic and current value and was noted as providing “a bounty for harvest which is also important for the collection of natural medicines” (TSD IV: MN-S). The MN-S continue to live off the land “tapping trees for birch syrup, and gathering berries, mint and medicine all over the north, especially near Patterson Lake” (TSD IV: MN-S).

Several areas in the LSA and RSA were identified by Indigenous Groups as gathering sites for medicines, berries, and other plants (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YNLR). In the RSA, the CRDN have mapped “other harvesting areas” south of Patterson Lake, south of Forrest Lake, and west of Gedak lake (TSD V.2: CRDN, Figure 17). The MN-S identified several areas in the RSA where berries, medicines and other traditional plants are gathered, including Gedak Lake and Dennis Lake (TSD IV: MN-S, Table 1), as well as general harvesting areas east of Patterson Lake (TSD IV: MN-S, Figure C).

The BRDN have identified two sites in the RSA that are used for firewood gathering, one of which is mapped at Dyck Lake (TSD III: BRDN, Figure 2). A BRDN member also noted that there is good access to wild rice areas near Patterson Lake (BRDN-JWG 2021b). The BNDN have identified three blueberry gathering sites in the RSA, two of which are within 250 m of the proposed Project footprint (TSD II: BNDN). The YNLR identified the entire RSA as an important plant area, though plant gathering is not currently practiced in the RSA (TSD VI: YNLR, Figure 13).

Traditional use plant species are associated with a variety of ELC units depending on species-specific habitat requirements. Some species are able to occupy a wide ecological niche or are found within common ELC units and terrain features (e.g., jack pine on upland sandy soils), while other species have limited distribution or grow under restricted habitat requirements (e.g., pitcherplant [*Sarracenia purpurea* ssp. *gibbosa*]). In the Base Case, traditional use plant species are associated with several ELC units in the LSA. The greatest distribution of traditional use plant species is associated with the burned Jack pine/lichen (BP02[BU]) ELC unit as some common species were frequently observed in these sites (i.e., jack pine and blueberry). The Black spruce - tamarack treed swamp (BP18), burned Black spruce - tamarack treed swamp (BP18[BU]), and burned Black spruce/balsam poplar/river alder swamp (BS16[BU]) ELC units supported the highest diversity of traditional use plant species (24 species each) but within the LSA only account for total occupancy of 21.9 ha, 49.9 ha, and <0.1 ha, respectively. Overall, a higher frequency of traditional use plant species was observed within wetland ecosystems; however, species within wetland habitats were generally observed with lower percent cover and therefore occupy a small area within those ELC units.

Species such as blueberry are common in most upland ELC units within the LSA and RSA (i.e., BP02, BP03, BP04, BP12, BP14, BS03, BS04, and BS13) (Section 13.3.1.1, Ecosystem Availability; Appendix 13A). Berries, including low bush-cranberry (*Viburnum edule*), raspberries (*Rubus* spp.), and strawberries (*Fragaria* spp.), are common within deciduous or mixedwood ELC units (i.e., BP06, BP07, BP11, BP16, BS13, BS14), which are not present in the LSA and not abundant in the RSA (Table 13.3-7). ELC units associated with birch trees (i.e., BP07, BP11, BS13, and BS14) are not present in the LSA and are uncommon in the RSA (Section 13.3.1.1).

Wetland and riparian areas within the LSA and RSA are used as gathering sites by Indigenous Groups for medicines and berries (TSD II: BNDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YNLR). Black spruce treed bog (BP19) ELC units are commonly associated with berries (e.g., cranberry [*Vaccinium* spp.] and cloudberry [*Rubus chamaemorus*]; McLaughlan et al. 2010; Annex VII.1). Berries are common within most

wetland ELC units (i.e., BP18, BP19, BP20, BP21, BP22, BP23, BP24, and BP27); however, these ELC units have low abundance in the LSA and RSA (Section 13.3.2.1, Ecosystem Availability).

Shoreline habitat associated with lakes is abundant in the LSA and RSA, but riparian ELC units with open water (e.g., BP22, BP24, and BP25), where medicinal shoreline and aquatic plants could be found, are relatively uncommon (Section 13.3.3.1, Ecosystem Availability). Berries are common within most riparian ELC units (e.g., BP14, BP19, BP20, and BP24); however, these ELC units are uncommon in the LSA and RSA. Nevertheless, Indigenous Groups have identified several gathering sites for berries, medicines, and other traditional plants near lakes and along creeks and rivers in the LSA and RSA, including Patterson Lake; however, it is unknown how close to the shoreline these plants are gathered and it is possible that plants are gathered farther upland in these areas (TSD V.1: CRDN; TSD II: BNDN; TSD IV: MN-S; TSD VI: YNLR).

Table 13.3-7: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit

Traditional Use Plant Habitat ELC Unit[a]	Traditional Use Plant Species Richness	Habitat Availability LSA (ha)	ELC Unit Area LSA (ha)	Habitat Availability RSA (ha)	ELC Unit Area RSA (ha)
BP02 - Jack pine/lichen	8	24.2	199.9	337.6	2,791.3
BP03 - Jack pine/feathermoss	13	89.4	133.6	2,483.4	3,712.1
BP04 - Jack pine - trembling aspen/feathermoss	7	1.9	16.9	113.0	1,000.7
BP06 - Trembling aspen/beaked hazel/sarsaparilla	14	0.0	0.0	0.3	0.3
BP07 - Trembling aspen - white birch/sarsaparilla	14	0.0	0.0	5.8	5.1
BP11 - White birch - white spruce - balsam fir	14	0.0	0.0	1.3	3.2
BP12 - Jack pine - spruce/feathermoss	10	0.0	0.0	90.7	219.2
BP14 - Black spruce/Labrador tea/feathermoss	16	17.3	19.1	117.7	129.8
BP16 - Balsam poplar - trembling aspen/prickly rose	12	0.0	0.0	31.3	33.3
BS02 - Lichen/felsenmeer - bedrock	3	0.0	0.0	<0.1	<0.1
BS03 - Jack pine/blueberry/lichen	11	0.0	0.0	1,625.0	4,991.4
BS04 - Jack pine - black spruce/feathermoss	10	0.0	0.0	2,549.1	6,158.9
BS05 - Jack pine - white birch/feathermoss	8	0.0	0.0	0.8	1.1
BS06 - Jack pine - trembling aspen/green alder	9	0.0	0.0	0.3	0.3
BS07 - Black spruce/blueberry/lichen	5	0.0	0.0	1.5	2.6
BS08 - Black spruce - white birch/lichen	8	0.0	0.0	<0.1	<0.1
BS09 - Black spruce - jack pine/feathermoss	9	0.0	0.0	8.2	23.1
BS10 - Black spruce - white birch/feathermoss	8	0.0	0.0	<0.1	0.1
BS13 - White birch - black spruce - trembling aspen	14	0.0	0.0	12.2	11.9
BS14 - White birch/lingonberry - Labrador tea	14	0.0	0.0	23.2	74.0
BS15 - Trembling aspen - white birch/green alder	14	0.0	0.0	<0.1	<0.1
BP02(BU) - Jack pine/lichen (Burned)	14	527.5	1641.2	2,889.7	8,990.9
BP03(BU) - Jack pine/feathermoss (Burned)	10	0.0	0.0	2,005.9	4,846.6
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	14	0.0	0.0	409.6	1,274.5
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	14	0.0	0.0	0.4	0.3
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	14	0.0	0.0	11.7	10.4
BP11(BU) - White birch - white spruce - balsam fir (Burned)	14	0.0	0.0	0.4	0.9
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	10	0.0	0.0	1.8	4.4
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	16	0.0	0.0	23.2	25.2

Table 13.3-7: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit

Traditional Use Plant Habitat ELC Unit[a]	Traditional Use Plant Species Richness	Habitat Availability LSA (ha)	ELC Unit Area LSA (ha)	Habitat Availability RSA (ha)	ELC Unit Area RSA (ha)
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	11	38.4	161.9	253.8	1,070.4
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	3	0.0	0.0	<0.1	0.7
BS03(BU) - Jack pine/blueberry/lichen (Burned)	14	0.0	0.0	7,447.7	23,172.8
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	10	0.0	0.0	3,752.0	9,065.2
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	8	0.0	0.0	3.7	5.1
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	14	0.0	0.0	0.3	0.9
BS07(BU) - Black spruce/blueberry/lichen (Burned)	14	0.0	0.0	1.8	5.6
BS08(BU) - Black spruce - white birch/lichen (Burned)	14	0.0	0.0	<0.1	0.1
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	9	0.0	0.0	17.8	50.1
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	14	0.0	0.0	59.4	57.7
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	11	0.0	0.0	9.5	39.9
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	14	0.0	0.0	0.2	0.2
Recent burn upland	11	0.0	0.0	1,823.3	7,041.6
BP18 - Black spruce - tamarack treed swamp	24	0.0	0.0	2.7	21.9
BP19 - Black spruce treed bog	10	23.6	52.9	763.1	1,708.0
BP20 - Labrador tea shrubby bog	11	15.1	57.6	329.6	1,254.7
BP21 - Graminoid bog	9	0.0	0.0	9.0	25.2
BP22 - Open bog	4	0.0	0.0	2.5	7.8
BP23 - Tamarack treed fen	14	0.3	0.8	13.0	40.4
BP24 - Leatherleaf shrubby poor fen	6	0.9	6.2	8.0	54.5
BP25 - Willow shrubby rich fen	19	0.9	4.5	65.8	317.1
BP26 - Graminoid fen	11	0.0	0.2	19.8	263.3
BP27 - Open fen	4	0.0	0.0	6.5	32.8
BP28 - Seaside arrow-grass marsh	2	0.0	0.0	13.1	64.3
BS17 - Black spruce treed bog	10	0.0	0.0	433.3	1,517.3
BS18 - Labrador tea shrubby bog	14	0.0	0.0	270.2	1,481.3
BS19 - Graminoid bog	6	0.0	0.0	0.1	0.2
BS20 - Open bog	7	0.0	0.0	0.3	0.9
BS21 - Tamarack treed fen	14	0.0	0.0	0.1	0.3
BS22 - Leatherleaf shrubby poor fen	6	0.0	0.0	30.1	205.0
BS23 - Willow shrubby rich fen	19	0.0	0.0	0.9	4.5
BS24 - Graminoid fen	11	0.0	0.0	3.1	41.8
BS25 - Open fen	4	0.0	0.0	<0.1	<0.1
BS26 - Rush sandy shore	3	<0.1	0.2	0.3	15.2
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	24	0.0	0.0	6.2	49.9
BP19(BU) - Black spruce treed bog (Burned)	11	9.2	35.5	580.2	2,240.8
BP20(BU) - Labrador tea shrubby bog (Burned)	14	0.0	0.0	15.0	82.2
BP21(BU) - Graminoid bog (Burned)	9	0.0	0.0	0.1	0.3

Table 13.3-7: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit

Traditional Use Plant Habitat ELC Unit[a]	Traditional Use Plant Species Richness	Habitat Availability LSA (ha)	ELC Unit Area LSA (ha)	Habitat Availability RSA (ha)	ELC Unit Area RSA (ha)
BP23(BU) - Tamarack treed fen (Burned)	14	0.0	0.0	8.1	25.3
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	6	0.0	0.0	1.7	11.6
BP25(BU) - Willow shrubby rich fen (Burned)	19	0.0	0.0	29.5	142.0
BP26(BU) - Graminoid fen (Burned)	11	0.0	0.0	30.3	401.6
BP28(BU) - Seaside arrow-grass marsh (Burned)	2	0.0	0.0	22.4	109.9
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	24	0.0	0.0	<0.1	<0.1
BS17(BU) - Black spruce treed bog (Burned)	11	0.0	0.0	398.8	1,540.3
BS18(BU) - Labrador tea shrubby bog (Burned)	14	0.0	0.0	192.1	1,052.9
BS19(BU) - Graminoid bog (Burned)	6	0.0	0.0	0.1	0.1
BS20(BU) - Open bog (Burned)	7	0.0	0.0	0.8	2.2
BS21(BU) - Tamarack treed fen (Burned)	14	0.0	0.0	2.4	7.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	6	0.0	0.0	60.4	411.4
BS23(BU) - Willow shrubby rich fen (Burned)	19	0.0	0.0	6.9	33.1
BS24(BU) - Graminoid fen (Burned)	11	0.0	0.0	6.6	89.1
BS25(BU) - Open fen (Burned)	4	0.0	0.0	<0.1	0.1
BS26(BU) - Rush sandy shore (Burned)	3	0.0	0.0	0.7	36.6
Recent burn wetland	5	0.0	0.0	1.3	96.8
Total		**748.8**	**2,330.6**	**29,449.0**	**88,211.2**

Note: Traditional use plant habitat totals do not include disturbance or water ELC units.
a) McLaughlan et al. 2010.
ELC = Ecological Land Classification; LSA = local study area; RSA = regional study area.

13.4 Project Interactions and Mitigations

The pathways analysis identifies potential adverse effects of the Project on vegetation VCs, identifies practicable mitigation for these potential effects, and determines whether any of the potential effects could be sufficiently mitigated such that they are not expected to cause a residual adverse effect. As described in Section 13.2.7, Project Interactions and Mitigations, the pathways analysis assigned each potential effect as:

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

The pathway analysis is summarized in Table 13.4-1. The subsections following the table provide the rationale used to assign potential effects to the no pathway and secondary pathway categories and list the primary pathways. Each Project interaction identified as a primary pathway was carried forward for detailed assessment in Section 13.5, Residual Effects Analysis. Effects pathways apply to all Project phases and all vegetation VCs unless otherwise noted.

The environmental design features and mitigations in Table 13.4-1 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 effects 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 13.7, Monitoring, Follow-Up, and Adaptive Management). 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 to influence biophysical or human environments are discussed in Section 21, Accidents and Malfunctions.

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-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 ▪ additional infrastructure (e.g., roads, airstrip, camp, maintenance shop, and offices) ▪ handling and storage of waste rock, special waste rock, and ore ▪ sewage treatment plant and water storage and effluent monitoring ponds ▪ removal of infrastructure ▪ restoration and revegetation of facilities and infrastructure	**Direct loss:** ▪ Direct loss, alteration, and fragmentation of upland, wetland, and riparian ecosystems and traditional use plants as a result of the Project	▪ **Site access road** between gatehouse and mine terrace realigned during Project design **to avoid a wetland** ▪ **Limit the Project footprint** to the extent practical using practices such as: o optimizing the use of cleared areas for Project activity o using existing road infrastructure, including existing access road and bridge crossing o storing tailings underground o designing an efficient infrastructure footprint (i.e., buildings clustered together) ▪ **Minimize areas of vegetation clearing** and soil disturbance ▪ **Minimize steepness and length of slopes of disturbed areas** and stockpiled soils ▪ Mark clearly with an applicable **set-back distance and avoid known rare plants**, where feasible. Where disturbance to rare plants is unavoidable, compensation would be considered following discussion with and guidance from regulators ▪ To the extent practical, **work in sensitive areas** (i.e., erosive soils, wetland features, and fish habitats) would be scheduled **to avoid periods that may result in high flow volumes and/or increase erosion and sedimentation** (e.g., spring freshet) ▪ **Use clearing equipment that minimizes surface disturbance, soil compaction, and topsoil loss** (e.g., equipment with low ground pressure tracks or tires, blade shoes, and brushes), where feasible ▪ Implement **progressive reclamation and revegetation** of disturbed areas no longer required ▪ **Reclaim and revegetate areas** where non-permanent Project facilities have been decommissioned ▪ Implement a Project-specific **Environmental Protection Program** that includes actions to avoid and limit invasive plant species ▪ Develop and implement a **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program	Primary pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-02	Project components or activities that alter soil conditions or final terrain (i.e., topography) conditions during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ additional infrastructure (e.g., roads, airstrip, camp, maintenance shop, and offices) ▪ handling and storage of waste rock, special waste rock, and ore ▪ sewage treatment plant and water storage and effluent monitoring ponds ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure	**Terrain alteration:** ▪ Alteration of final terrain, soil conditions, and/or plant species composition could change the types of ecosystems and traditional use plants that can be reclaimed on the landscape and adversely affect vegetation ecosystem availability, distribution, and condition	▪ **Minimize areas of vegetation clearing** and soil disturbance ▪ **Minimize steepness and length of slopes of disturbed** areas and stockpiled soils ▪ As part of reclamation activities, complete **contouring of disturbed areas** to minimize erosion, re-establish drainage, and encourage the growth of vegetation ▪ Use stockpiled overburden and NPAG mine rock as fill to meet decommissioning requirements ▪ Fill and **contour the site to blend with the natural surrounding topography**, to the extent practical ▪ Use **native species** or non-aggressive, non-native species appropriate for the conditions for revegetation ▪ To the extent practical, **work in sensitive areas** (i.e., erosive soils, wetland features, and fish habitats) would be scheduled **to avoid periods that may result in high flow volumes and/or increase erosion and sedimentation** (e.g., spring freshet) ▪ Implement a Project-specific **Environmental Protection Program** that includes actions to avoid and limit invasive plant species ▪ 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 **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program ▪ Adhere to the *Federal Policy on Wetland Conservation* (Government of Canada 1991) to have **no net loss of wetland functions**	Primary pathway
V-03	Project activities that change access for Indigenous and other land users during **all Project phases**: ▪ development and improvement of access road and site roads ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure	**Public access affecting vegetation:** ▪ Changes in public access to gathering areas and increased density of people (i.e., Project staff and contractors) in the area may alter traditional use plant availability and distribution	▪ **Use existing road** infrastructure, including existing access road and bridge crossing to further develop access road to meet Project requirements ▪ **Install a gate at the site entrance** (i.e., gatehouse) to control public access ▪ 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 **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program	Secondary pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-04	Project components or activities that contribute to deposition of fugitive dust and radon emissions during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ underground shaft and mine development ▪ handling and storage of waste rock, special waste rock, and ore ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure ▪ site traffic ▪ transportation of personnel and material to and from the site	**Fugitive dust and constituent emissions:** ▪ Deposition of fugitive dust emissions and associated constituents (e.g., metals and radionuclides) may adversely change soil quality and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants	▪ Establish and enforce **speed limits** on site and access roads to reduce dust production ▪ **Limit vehicle speed** on unpaved site roads to reduce fugitive dust during Construction and Operations ▪ **Optimize haul routes** to reduce fuel consumption and emissions from equipment ▪ Limit total suspended particulate emissions during Construction by enforcing a **25 km/h speed limit for heavy equipment** involved in material movement and earthworks on the mine/mill terrace. This speed limit does not apply to site road traffic or the haul route from the headworks to the waste rock piles ▪ **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 ▪ Implement a Project-specific **Environmental Monitoring Plan** that includes soil quality and ambient air monitoring ▪ Implement a Project-specific **Environmental Protection Program**	Secondary pathway
V-05	Project components or activities that contribute to criteria air contaminant emissions during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ underground shaft and mine development ▪ power generation ▪ process plant buildings and underground operations ▪ handling and storage of waste rock, special waste rock, and ore ▪ additional infrastructure (e.g., camp, maintenance shop, and offices) ▪ waste incineration ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure ▪ site traffic ▪ transportation of personnel and materials to and from the site	**Particulates and acid emissions:** ▪ Deposition of criteria air contaminant emissions (e.g., particulates, potential acid inputs) may change soil chemistry or plant physiology and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants	▪ Evaluate opportunities to **reduce fuel combustion** requirements of infrastructure and equipment, to the extent practical, during detailed design ▪ **Optimize haul routes** to reduce fuel consumption and emissions from equipment ▪ Primarily **use liquified natural gas for power** generation ▪ Identify and implement **procurement criteria** to confirm stationary and mobile engines meet applicable performance standards ▪ Use and **maintain emissions control devices** on combustion-based equipment ▪ **Limit idling** of vehicles to the extent practical ▪ **Maintain mobile mining equipment and vehicles** and operate the equipment within parameters for engine exhaust system design ▪ Conduct **regular equipment maintenance** ▪ Implement a Project-specific **Environmental Monitoring Plan** that includes air monitoring ▪ Implement a Project-specific **Environmental Protection Program**	Secondary pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-06	Project components or activities that alter vegetation ecosystems during **Construction**: ▪ fibre optics line	**Loss from fibre optic line:** ▪ Direct loss, alteration, and fragmentation of upland, wetland, and riparian ecosystems and traditional use plants due to the installation of the fibre optic line	▪ Align the fibre optic line **right-of-way adjacent to existing highway and access road** ▪ **Clearing of vegetation** would be kept to the existing highway and site access road, to the extent possible ▪ Implement **sedimentation and erosion control** best practices and standard mitigation (e.g., temporary sediment ponds, silt curtains, sediment traps) during all Project phases ▪ Implement best management practices and mitigation such as **spill prevention** ▪ **Promote natural propagation and regeneration** to enhance reclamation along the access road and other Project rights-of-way	Secondary pathway
V-07	Project components or activities that contribute to the introduction of designated weed species during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ roads and airstrip ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure	**Invasive species:** ▪ Introduction of weed species can affect the condition of upland, wetland, and riparian ecosystems and traditional use plants	▪ Use **native species** or non-aggressive, non-native species appropriate for the conditions for revegetation ▪ **Inspect construction equipment** prior to arriving at site and clean, if required o Utilize maintenance shop to support cleaning, once constructed and as required ▪ Procure clean construction materials and procure seed mixes that work to **avoid the introduction of noxious weeds** ▪ Implement a Project-specific **Environmental Protection Program** that includes actions to prevent, detect, control (i.e., remove), and monitor areas with prohibited, noxious, and nuisance weed / invasive species (e.g., along the access road, airstrip, and loading or staging site), following best practice guidance	Secondary pathway
V-08	Project components or activities that contribute to changes in site surface water quality and affect soil chemistry and vegetation during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ handling and storage of waste rock, special waste rock, and ore	**Surface water flow changes:** ▪ Changes in surface water levels and flows can affect soils and alter waterbodies and watercourses and affect the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants	▪ Implement **progressive reclamation and revegetation** of disturbed areas no longer required ▪ **Reclaim and revegetate areas** where non-permanent Project facilities have been decommissioned ▪ Implement a Project-specific **Mine Waste Management Plan** ▪ Implement a Project-specific **Environmental Protection Program** ▪ Develop and implement a **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program	Secondary pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-09	▪ additional infrastructure (e.g., roads, airstrip, camp, maintenance shop, and offices) ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure	**Surface water quality from runoff:** ▪ Changes in surface water quality from contact with surface facilities and additional infrastructure could adversely affect the condition of upland, wetland, and riparian ecosystems and traditional use plants		Secondary pathway
V-10	Project components or activities that may change surface water and sediment quality through treated effluent release during **all Project phases**: ▪ underground shaft and mine development ▪ process plant buildings and underground operations ▪ handling and storage of waste rock, special waste rock, and ore ▪ effluent treatment plant and treated effluent discharge ▪ sewage treatment plant and treated effluent discharge ▪ additional infrastructure (e.g., roads, airstrip, and camp) ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure	**Treated effluent discharge:** ▪ Release of treated effluent can alter surface water and sediment quality in Patterson Lake and farther downstream and adversely affect aquatic plants, traditional use plants, and the condition of wetland and riparian ecosystems	▪ Site-specific **effluent treatment** plant designed to reduce constituents of potential concern ▪ Design the treated effluent diffuser and treated sewage outfall to **provide effective mixing and dilution of the effluent** to limit the area of the receiving environment affected by mine discharge ▪ Design outfall(s) such that **discharged flow does not interact with sediment** ▪ Design discharge points to **avoid sensitive or unique habitats**, to the extent practical ▪ Collect, store, and routinely **monitor contact water** to confirm discharge water meets water quality criteria appropriate for release ▪ **Monitor treated effluent and treated** sewage flow and quality ▪ Implement a Project-specific **Environmental Monitoring Plan** that includes monitoring water quality and sediment quality and applying adaptive management if necessary ▪ Implement a Project-specific **Mine Waste Management Plan** ▪ Implement a Project-specific **Environmental Protection Program** ▪ Develop and implement a **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program	Secondary pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-11	Project components or activities that potentially change groundwater quality **following Closure**: ▪ WRSAs ▪ the UGTMF and backfilled stopes	**Surface water quality from WRSAs and UGTMF after Closure:** ▪ Runoff and seepage from the WRSAs and groundwater flow from the UGTMF may alter surface water quality in Patterson Lake after Closure and adversely affect the condition of wetland and riparian ecosystems and traditional use plants	▪ Use **engineered cemented paste backfill and tailings** to control source concentrations ▪ **Apply binder** to reduce permeability in backfill and tailings ▪ Install **engineered cover system** on PAG and NPAG material during reclamation ▪ Implement site water management procedures under an **Environmental Protection Program** that include monitoring seepage from WRSAs and applying adaptive management, if necessary	Secondary pathway
V-12	Project components or activities that contribute to deposition of fugitive dust and radon emissions during **all Project phases**: ▪ land clearing, site preparation, and construction of facilities and infrastructure ▪ underground shaft and mine development ▪ handling and storage of waste rock, special waste rock, and ore ▪ removal of infrastructure ▪ reclamation and revegetation of facilities and infrastructure ▪ site traffic ▪ transportation of personnel and material to and from the site	**Radon emissions:** ▪ Radon emissions may adversely change soil quality and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants	▪ Implement a Project-specific **Environmental Monitoring Plan** that includes monitoring ambient air	No pathway

Table 13.4-1: Potential Effects Pathways for Vegetation

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
V-13	Project components or activities that potentially change groundwater quality during **all Project phases**: ▪ handling and storage of waste rock, special waste rock, and ore	**Groundwater and soil quality changes from seepage:** ▪ Seepage and runoff from the WRSAs may cause changes in groundwater quality and soil quality, and adversely affect the condition of upland, wetland, and riparian ecosystems and traditional use plants	▪ Design, maintain, and monitor a mine dewatering system to manage the flow of **groundwater inflow** ▪ **Segregate PAG material** from NPAG material and store separately ▪ **Contain and divert runoff and seepage from PAG** waste rock, special waste rock, and ore to the effluent treatment plant ▪ Implement a Project-specific **Mine Waste Management Plan** ▪ Implement site water management procedures under an **Environmental Protection Program** that include monitoring seepage from WRSAs and applying adaptive management, if necessary ▪ Develop and implement a **Detailed Decommissioning and Reclamation Plan** to decommission and transfer the site to the province under the Institutional Control Program	No pathway

Bolded text represents the key topic of the environmental design features and mitigation.
WRSAs = waste rock storage areas; NPAG = non-potentially acid generating; PAG = potentially acid generating; UGTMF = underground tailings management facility.

13.4.1 No Pathways

The following Project interactions were predicted to result in no pathway to vegetation VCs and were not carried forward in the assessment.

V-12: Radon emissions:

- Radon emissions may adversely affect soil quality and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants.

Radon emissions would be released as a gas from the process plant, underground operations, ore stockpiles, and WRSAs. The CRDN, BNDN, and YNLR expressed concerns related to radiation from the Project on the environment in general, which are in part, based on their observations and experiences from previous mining developments (i.e., the Cluff Lake Mine) and their belief that the Cluff Lake Mine was not properly decommissioned (TSD II: BNDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; CRDN 2019a; CRDN 2019b). For example, members of the BNDN expressed concerns about controlling radon gas and how far chemical emissions (e.g., radon) from the Project travel, as well as the effects of radon gas on terrestrial resources and how it would be monitored (BNDN-JWG 2020; BNDN-JWG 2021a; BNDN-JWG 2021c).

Soils in the maximum disturbance area are not expected to absorb radon gas and cause measurable changes to soil quality (Section 12.4.1, No Pathways). Radon atoms are released through radium decay and, once released into soil pore space, are able to emanate into the atmosphere. Once released, radon atoms travel via air or water within soil pore space and are dispersed to the atmosphere, and do not reabsorb into the soil particle. Radon emissions are not expected to change soil quality (Section 12.4.1, No Pathways) and are predicted to have no effect on the vegetation ecosystems and traditional use plants; the pathway is removed from the assessment.

V-13: Groundwater and soil quality changes from seepage:

- Seepage and runoff from the WRSAs may cause changes in groundwater quality and soil quality, and adversely affect the condition of upland, wetland, and riparian ecosystems, and traditional use plants.

Indigenous Groups expressed concerns related to the effects of Project activities in general, including of mine waste materials on underground water quality and environmental health (TSD II: BNDN; TSD V.2: CRDN; BRDN-JWG 2020; MN-S-JWG 2019a). NexGen understands the concerns raised by Indigenous Groups and recognizes the importance of designing the UGTMF and the PAG WRSA in a manner that minimizes potential effects to groundwater and soils. The effects of mine waste and tailings on underground water quality is assessed in Section 8, Hydrogeology, and effects to soil quality are assessed in Section 12, Terrain and Soils.

Extracted ore, special waste rock, and waste rock would be stored at surface in designated areas or WRSAs (Section 5.4.4 Mine Rock Management). Seepage and runoff from these storage areas during all Project phases could cause changes to groundwater quality, which has the potential to change soil quality and adversely affect vegetation VCs.

Seepage from the WRSAs during the Project lifespan would be mitigated by a number of proven engineering design features and techniques. Management of waste rock would begin when materials are hoisted from the underground mine to the surface. Ore, special waste rock, PAG and NPAG material would be separated and stored separately. Ore stockpiles, special waste stockpiles and the PAG WRSA would be lined with high density polyethylene to prevent seepage (Mine Waste Management Plan). The NPAG WRSA would be unlined and

used for short- and long-term storage of NPAG waste rock. Runoff from the ore stockpiles, special waste stockpiles, and PAG WRSA would be contained and diverted to the effluent treatment plant and released to the environment after meeting discharge criteria. Runoff from the NPAG WRSA would be collected for containment and if it meets discharge criteria would be released to the environment. Water not meeting discharge criteria would be considered mineralized contact water and diverted to the effluent treatment plant prior to release. As part of the Environmental Protection Program, WRSAs would be monitored for seepage to support groundwater protection and to confirm the Mine Waste Management Plan is effective. A Detailed Decommissioning and Reclamation Plan would also be developed to decommission and transfer the Project to the Province under the Institutional Control Program.

Groundwater potentially affected by seepage from WRSAs is not expected to interact with the top layers of soils that support the establishment and growth of vegetation. Any changes to groundwater from the WRSAs would occur below the surficial soil layers (Section 12.4.1, No Pathways). In the ecological health risk assessment, direct contact or uptake exposure pathways associated with groundwater were predicted to be incomplete, as it was assumed that groundwater is inaccessible to ecological receptors (e.g., terrestrial plants and earthworms) or negligible relative to other pathways (TSD XXI, Section 6.1.4 Selection of Exposure Pathways). Therefore, there are no predicted residual effects on the condition of vegetation ecosystems and traditional use plants and the pathway was removed from further assessment.

13.4.2 Secondary Pathways

The following Project interactions were predicted to result in secondary pathways to vegetation VCs and were not carried forward in the assessment.

V-03: Public access affecting vegetation:

- Changes in public access to gathering areas and increased density of people (i.e., Project staff and contractors) in the area may alter traditional use plant species availability and distribution.

Indigenous Groups expressed concerns about being displaced from their traditional lands because of the Project, and about the ability to continue accessing areas in the vicinity of the Project site to practice traditional activities, including gathering medicinal plants or berries (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN). Increased density of people on the Project site may lead to changes in the availability of traditional use plant species and limit opportunities for Indigenous Group members to gather and harvest. Access roads provide increased opportunities for humans to use an area, which can result in increased harvesting pressure since linear features facilitate ease of movement into previously inaccessible areas. However, given that existing roads already provide public access, improvement of the access road to the Project is unlikely to affect traditional use plant species through additional harvest. The access road would also have a gatehouse to restrict public vehicle access to the main mine and process plant area.

Alternatively, employees and contractors working on the Project may use the opportunity to harvest plants and berries adjacent to the Project site, which could decrease the availability and distribution of traditional use plants relative to existing conditions. However, the changes are expected to be minor and localized and have a negligible residual effect on traditional use plants, and so the pathway was determined to be secondary and not carried forward in the assessment. Ecosystem services (i.e., the benefits people gain from the environment) provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use, and are not considered during pathway analysis in this section.

V-04: Fugitive dust and constituent emissions:

- Deposition of fugitive dust emissions and associated constituents (e.g., metals and radionuclides) may adversely change soil quality and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants.

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 reclamation during Closure, would generate fugitive dust. Indigenous Groups expressed concerns about the effects of dust from Project activities on vegetation, including on berry patches. Concerns were raised specifically related to uranium dust generated from Project activities affecting the air, water, soil, and vegetation, which are based in part on their experience with other mining developments (i.e., Cluff Lake Mine) (TSD II: BNDN; TSD IV: MN-S; TSD V.2: CRDN). For example, the MN-S commented that uranium dust 'covers everything' because of its ability to "travel hundreds of kilometres with the wind" (TSD IV: MN-S). Accumulation of airborne dust produced by the Project may result in local and direct changes to vegetation. Dust can have a physical effect on plants by smothering plant leaves or blocking stomata openings (i.e., pores in the epidermis of the leaf of a plant) (Farmer 1993). Crusts that form on leaves can reduce net photosynthesis (Brandt and Rhoades 1973). After many cycles of crusting, the annual growth rate of plants can be reduced or cease and may lead to plant death (Brandt and Rhoades 1973). Decreased photosynthetic rates and less ground coverage in sphagnum moss (*Sphagnum* spp.) were observed when dust deposition from an adjacent gravel road was from 1.0 to 2.5 g/m^2/d (Farmer 1993).

Plant community changes can result if dustfall upsets the competitive balance among plants (Brandt and Rhoades 1973; Farmer 1993). For example, the abundances of tolerant species such as haircap moss (*Polytrichum* spp.), Bryum moss (*Bryum* spp.), cotton-grass (*Eriophorum* spp.), and willow (*Salix* spp.) increase, whereas sensitive species such as sphagnum moss and conifer species decrease in areas of high dustfall (Farmer 1993; Auerbach et al. 1997). Walker and Everett (1987) reported that few vascular plant species showed physiological effects from dust, except where vegetation was subject to high dust loading (e.g., 2.4 g/m^2/d or 7.2 mg/cm^2/30 d), in which case ericaceous shrubs and conifers were more affected.

In terms of spatial extent, Walker and Everett (1987) found effects on vegetation from dust were primarily within 50 m of a road in one Alaskan study, while in another study, Meininger and Spatt (1988), detected stronger effects within 50 m and weaker changes within 50 to 500 m from a road. At the Ekati Mine in the Northwest Territories, dust generated from a high-traffic, 28 km haul road was found to decrease lichen cover up to 1 km (Chen et al. 2017). At the nearby Diavik Mine, measured changes to plant communities were within 500 m of the mine and coincided with annual dust deposition rates of 0.283 to 0.848 mg/cm^2/30 d during underground and open pit mining (Watkinson et al. 2021). Therefore, spatial extents for the deposition of fugitive dust emissions are anticipated to be concentrated within 500 m of the Project footprint.

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 was higher during Operations than Construction, which is a function of the type of dust, the height that dust is released, and the fraction of coarse particulate matter in total suspended particulates (i.e., particulate matter greater than PM_{10} [particulate matter with a diameter of 10 µm or less]). Rates of dust deposition and accumulation 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 0.095 mg/cm^2/30 d at the boundary of the maximum disturbance area, which is well below the Ontario human health guideline of 0.46 mg/cm^2/30 d (MECP 2020) (Section 7.2; Appendix 7A). The dust deposition rate equivalent to the Ontario guideline value was located a minimum of 314 m inside the boundary of the maximum disturbance area. Dust deposition rates during Construction (i.e., 0.072 mg/cm^2/30 d) and Operations are also much lower than the rates reported above (i.e., 0.3 to 7.2 mg/cm^2/30 d); therefore, vegetation community changes are anticipated be localized, with negligible effects beyond the maximum disturbance area. Changes to soil chemistry from dust containing metals and radionuclides were also predicted to result in negligible effects on soil quality (Section 12.4.2).

Metals in dust can also affect plants, either indirectly through the soil (Section 12.4.2, Secondary Pathways) or directly through the surface of the plant (Farmer 1993; Rusek and Marshall 2000). The indirect responses of vegetation to changes in soil quality depend on the chemical compositions of dust and its source (Grantz et al. 2003). The toxicity of metals absorbed through leaves (i.e., from dust) varies with the type of metals present and with plant species tolerance (Shahid et al. 2017). In some cases, plant exposure to metals can cause oxidative stress, damage plant tissues and DNA (deoxyribonucleic acid), impede plant metabolism (e.g., photosynthesis and respiration) and growth, or lead to plant death (John et al. 2009; Li et al. 2016; Rahul and Jain 2016). However, plant species display various tolerances due to specific defense mechanisms by which they cope with metals toxicity (Shahid et al. 2017). These mechanisms can lead instead to accumulation of metals in living plant tissues (Ghori et al. 2019).

Uranium radionuclides may cause toxicity to plants and inhibit photosynthesis (Weiersbye et al. 1999). However, plants can store uranium radionuclides in the roots, with little accumulation in plant shoots, which may protect against toxicity effects (Mitchell et al. 2013). Radionuclide concentrations are generally high in bryophyte and lichen species because these species have high dust interception and retention periods, but fungi have been observed to have the highest concentrations of radionuclides from dust (IAEA 1996). For vascular plants, ericaceous dwarf shrubs appear to have the highest uptake of radionuclides from dust, followed by herbs, grasses, and then shrubs and trees (IAEA 1996).

Mitigation in the Environmental Protection Program is expected to be effective at reducing the magnitude and spatial extent of fugitive dust deposition (Table 13.4-1). Water and/or dust suppressants would be applied to the airstrip, site roads, and the access road as necessary (i.e., during dry conditions in the non-winter period). Speed limits would be enforced and are expected to reduce the production of dust emissions. After implementing mitigation, dust deposition is expected to result in minor changes in the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants. However, these changes are predicted to be confined to the maximum disturbance area and have a negligible residual effect on vegetation VCs, so the pathway was not carried forward in the assessment.

V-05: Vegetation changes from particulates and acid emissions:

- Deposition of criteria air contaminant emissions (e.g., particulates, potential acid inputs) may change soil chemistry or plant physiology and affect the availability, distribution, and condition of vegetation ecosystems and traditional use plants.

Deposition of criteria air contaminants emissions associated with Project activities are expected to occur from the combustion of fossil fuels in large equipment, aircraft, trucks, vehicles, power generation, and the burning of non-hazardous waste materials (e.g., food garbage). Criteria air contaminants include particulate matter less than 2.5 µm in diameter ($PM_{2.5}$) and less than 10 µm in diameter (PM_{10}), total suspended particulates, carbon monoxide, sulphuric acid, sulphur dioxide, and nitrogen dioxide.

Air particulate emissions can change soil quality and subsequently lead to effects on vegetation by altering soil pH, nutrient content, and the composition of soil organisms (Rusek and Marshall 2000; Jung et al. 2011; Chen et al. 2017). Air particulates may also affect cation and anion exchange in soil, nutrient uptake by vegetation, decomposition rate of organic matter, and nutrient cycling (John et al. 2009; Jung et al. 2011). Deposition of sulphur dioxide and nitrogen dioxide could lead to acidification of soils (Holowaychuck and Fessenden 1987; Bobbink et al. 1998).

Indigenous Groups and LPA community members have expressed concerns about changes in air quality from Project activities and effects to terrestrial environmental health (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; BRDN-JWG 2020; CRDN-JWG 2021; NexGen 2019). For example, a member of the CRDN commented that they will not eat berries from the Cluff Lake Mine area because of their belief that the area is contaminated (TSD V.2; CRDN; CRDN-JWG 2020a), and the MN-S stated that the trees on the side of the road were dying near the Cluff Lake Mine, which they attributed to carbon emissions or dust from increased traffic, and that plants are dying from what they attributed to the effects of oil sands mining (MN-S-JWG 2019a). MN-S also raised concerns about the effects of dust from Project activities on vegetation, including berry patches (TSD IV: MN-S).

NexGen understands the concerns of Indigenous Groups regarding existing air quality on vegetation and would implement environmental design features and mitigation to minimize potential Project effects (Section 13.4, Project Interactions and Mitigations).

Short-term exposures (e.g., 24-hour) to high concentrations of sulphur dioxide may also result in dead or chlorotic (i.e., nutrient deficient) plant tissue. However, long-term exposures (e.g., annual) to lower concentration levels of sulphur dioxide may or may not result in visible injury to plants (Alberta Environment 2004). Mineral (i.e., clay) and organic matter colloid content (i.e., particle size of 2 µm in diameter or less) of soil and pH level affect the sensitivity of soil to acidification (Holowaychuck and Fessenden 1987) and therefore can also affect the sensitivity of vegetation ecosystems to acidification.

Air quality modelling was used to predict maximum ground-level concentrations of criteria air contaminant emissions during Construction and Operations (Section 7.2.2.8, Residual Effects Analysis). Cumulative concentrations were calculated by adding values for the Base Case to maximum predicted values for Construction and Operations. The Saskatchewan Ambient Air Quality Standards (ENV 2021) were developed to minimize human health and ecosystem health risks. Results indicate that concentrations of criteria air contaminants beyond the maximum disturbance area are well within Saskatchewan Ambient Air Quality Standards (ENV 2021) during Construction and Operations (Table 13.4-2), including carbon monoxide and sulphuric acid (Section 7.2.5, Residual Effects Analysis). The exception is PM_{10}, which exceeds the air quality

guideline value during both Project phases. During Construction, most of the area of exceedance (279 ha) overlaps Patterson Lake North Arm and extends north from the boundary of the maximum disturbance area to approximately 1.2 km (Section 7.2.5). In contrast, during Operations, the area of exceedance is substantially reduced (9 ha) and extends north 203 m from the boundary of the maximum disturbance area. Since exceedances would occur mostly over Patterson Lake North Arm, it is anticipated that there would be minimal changes to terrestrial vegetation VCs.

Table 13.4-2: Annual Criteria Air Contaminant Emissions as a result of the Rook I Project during Construction and Operations

Criteria Air Contaminant	Construction (µg/m^3)	Operations (µg/m^3)	Guideline (Annual)[a]
Total suspended particulates	13.2	11.2	60
PM_{10}	**147.0**	**65.4**	50[b]
$PM_{2.5}$	4.1	3.7	10
Nitrogen dioxide	9.7	6.7	45
Sulphur dioxide	0.0	0.1	20

Bold values indicate exceedance of guideline.
a) ENV 2021.
b) 24-hour average period.
PM_{10} = particulate matter 10 µm or less in diameter; $PM_{2.5}$ = particulate matter 2.5 µm or less in diameter.

The World Health Organization has established that vegetation growth and community composition characteristics may be altered with sulphur oxide emissions of 20 µg/m^3 as an annual mean (WHO 2000). The critical level for lichens and bryophytes is species dependent. Sensitive lichen and bryophyte species are damaged or eradicated by annual average levels of sulphur dioxide of 8 µg/m^3 to 30 µg/m^3, and few lichens can tolerate levels exceeding 125 µg/m^3 (Blett et al. 2003). The World Health Organization has established a critical level for lichens of 10 µg/m^3 because community changes have been observed at these levels (WHO 2000). Results of the air quality modelling indicate that annual sulphur dioxide emissions as a result of the Project are predicted to be 0.0 µg/m^3 and 0.1 µg/m^3 for Construction and Operations, respectively (Section 7.2.5), which are well below levels believed to be harmful to vegetation.

Changes in the amount of nitrogen in an ecosystem can affect soil nutrient balance through the amount of litter produced and the rates of ammonification (i.e., release of ammonia from the soil surface) and nitrification (i.e., conversion of ammonia to nitrate) (Grantz et al. 2003). Oxidization of nitrogen dioxide can produce nitrate, which is typically limited in nutrient-poor environments and can be taken up by vegetation. Nitrogen dioxide at low concentration can stimulate plant growth, while higher concentrations may adversely effect plants (WHO 2000). Biological uptake can reduce effects of nitrogen deposition on other components of the environment by storing nitrogen compounds in plants (WHO 2000).

The World Health Organization has established annual critical levels at which vegetation growth and community composition characteristics may be altered due to nitrogen oxide emissions (WHO 2000). The critical level where direct effects are anticipated on plant species or ecosystems is 30 µg/m^3 as an annual mean (WHO 2000). Air quality modelling for the Project predicted that nitrogen dioxide emissions would be 9.7 µg/m^3 and 6.7 µg/m^3 during Construction and Operations, respectively (Section 7.2.5), which are below the values expected to be harmful to vegetation.

Environmental protection and monitoring plans developed for the Project, which include adaptive management, are expected to limit the emissions of criteria air contaminants and the associated effects on soils, vegetation ecosystems, and traditional use plants (Effluent and Emissions Plan, Environmental Monitoring Plan). Project designs and mitigation measures include the primary use of liquid natural gas for power generation, emission control devices on combustion-based equipment and vehicles, regular maintenance of equipment, and procurement criteria specifying that stationary and mobile equipment are to meet applicable performance standards (Table 13.4-1).

After implementation of environmental design features, mitigation, and monitoring changes to soil quality (i.e., productivity), effects from criteria air contaminants are predicted to be minor and confined to the maximum disturbance area for all criteria air contaminants, except particulate matter less than 10 µm, which would extend into the LSA (Section 12.4.2). Emissions of sulphur dioxide and sulphuric acid were predicted to have no effect on soil quality. Deposition of criteria air contaminant emissions could result in a minor change to the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants within the maximum disturbance area, but most changes are likely to be not measurable relative to existing conditions. Any changes were predicted to have a negligible residual effect on vegetation VCs, and the pathway was not carried forward in the assessment.

V-06: Loss from fibre optic line;

- Direct loss, alteration, and fragmentation of upland, wetland, and riparian ecosystems and traditional use plants due to installation of the fibre optic line.

Depending on final Project design, an approximately 155 km fibre optic line may be installed from La Loche, Saskatchewan, to the Project. Should the development of a fibre optic line progress, all construction is expected to occur in previously disturbed road allowances of Highway 955 and the Project access road, which would avoid loss and fragmentation of natural vegetation ecosystems and traditional use plants that occupy those habitats. Given that plough-in construction methods are anticipated to be used, the disturbance width would be minimal (i.e., approximately 1 m based on existing construction practices), and natural plant regeneration is expected to adequately reclaim the disturbance. Dust deposition would be limited to the installation of the fibre optic line and is predicted to result in small changes to the condition of natural ecosystems and to be reversible shortly after construction. It is expected that best management practices would be implemented to mitigate effects on the environment during construction (e.g., erosion control practices and spill prevention measures). Therefore, changes to the availability and distribution of upland, wetland, and riparian ecosystems and habitats for traditional use plant species from installation of the fibre optic line are predicted to be minor relative to existing conditions and result in negligible residual effects on vegetation VCs, and the pathway was not carried forward in the assessment.

V-07: Invasive species:

- Introduction of weed species can affect the condition of upland, wetland, and riparian ecosystems and traditional use plants.

In Saskatchewan, weeds are designated as prohibited, noxious, or nuisance species under *The Weed Control Act*. Weed species primarily have the potential to alter ecosystem condition in areas adjacent to new disturbances, particularly where the edge-to-interior ratio is high (Honnay et al. 2002). Ecosystems with undisturbed soils that occur away from disturbances are relatively resistant to invasion by weed species. However, habitat edges are prone to invasion in part because of the increased likelihood of soil disturbance.

Anthropogenic activities have the potential to accelerate the invasion of native ecosystems by weeds through the introduction of seeds or disturbance of soils (Hobbs and Humphries 1995).

An Environmental Protection Program would be implemented to prevent, detect, control (i.e., remove), and monitor areas with prohibited, noxious, and nuisance weed species (e.g., along the access road, airstrip, and loading or staging site). Construction equipment would be cleaned prior to arriving on site, if required. Once the maintenance shop is built, vehicles would be cleaned in a wash bay with containment and a sump. Clean construction materials and seed mixes would be procured that work to avoid the introduction of noxious weeds.

The implementation of best management practices and mitigation is expected to avoid and minimize the introduction and spread of weed species in the maximum disturbance area of the Project and result in minor changes to the condition of upland, wetland, and riparian ecosystems and traditional use plants. Any changes are predicted to have a negligible residual effect on vegetation VCs, and so the pathway not carried forward in the assessment.

V-08: Surface water flow changes:

- Changes in surface water levels, flows, and drainage areas can affect soils and the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants.
- Changes in surface water levels and flows can alter waterbodies and watercourses and affect the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants.

Changes in the volume or rate of surface water flows due to the Project may adversely affect vegetation ecosystems and traditional use plants through desiccation or inundation (van der Valk 1994; Hudon et al. 2005). Wetland and riparian ecosystems experience water level fluctuations as part of natural variability, and riparian ecosystems can recover relatively quickly from flooding (van der Valk 1994; Drinkard 2012; Vale et al. 2015). Fluctuating water levels typically influence plant species composition, community structure, and species richness (van der Valk 1994; Drinkard 2012; Vale et al. 2015). Preventing changes in wetland water levels can cause a decrease in aquatic plant community diversity (Nielsen et al. 2013). Alternatively, changes in the amplitude, frequency, and timing of flood or drought compared to historical levels can cause adverse effects on wetlands (Hudon et al. 2005). For example, Drinkard (2012) found that unpredictable short-term flooding of small-order riparian floodplain systems resulted in lower plant biodiversity. If wetland plants experience a reduction in water input leading to dehydration, they may die (Sheldon et al. 2005).

Changes in water flow regimes that persist for many successive years can also facilitate the invasion of introduced and exotic species while reducing the growth and survival of native aquatic macrophytes, with conditions favouring generalist species that could form highly resilient monocultures (i.e., growth consisting of a single species) (van der Valk 1994; Bunn and Arthington 2002; Zedler and Kercher 2004; Vale et al. 2015). Indigenous Groups raised concerns over potential effects on vegetation from changes in surface water and they indicated the importance of connections between waterways, rivers, and peatland vegetation communities (BRDN-JWG 2019a; BRDN-JWG 2019b). Further, several riparian and wetland traditional use plant species (i.e., willow, bulrush, and Labrador tea), which were identified in the IKTLU Studies (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR) and in comments from CRDN (2019a) on the Cluff Lake Mine licence, may be susceptible to changes to surface water within wetland and riparian ecosystems.

Sediment in surface runoff also has the potential to affect vegetation. The effects of surface runoff sedimentation on vegetation may be similar to the effects of dust deposition on vegetation, which can have physical and

chemical effects indirectly through the soil or directly through the surface of the plant (Farmer 1993; Rusek and Marshall 2000). Effects may include reduced net photosynthesis, reduced or stagnated growth, or plant death (Brandt and Rhoades 1973; Rahul and Jain 2016). Relative to the existing conditions, the potential for erosion, surface water runoff, and sediment release to wetland and riparian ecosystems from Project activities is expected to be highest during Construction and the Active Closure Stage and then decrease with the establishment of vegetation through the Transitional Monitoring Stage.

A regional hydrological model was used to characterize and predict changes from Project activities to water surface levels and watercourse flow rates for the RSA (Section 9.6, Residual Effects Analysis). Outputs from the regional hydrological model were used as inputs to stream channel relationships and a fluvial sediment transport model. The model predicted surface water flows and levels from the start of Construction to the end of Closure. The results indicate that the net discharge of water to Patterson Lake from Project activities is expected to create small changes such as increasing water surface elevation by 5 cm, increasing flows in the Clearwater River downstream of Patterson Lake by less than 5%, and changing stream channel parameters (i.e., wetted area) by less than 1%. Erosional losses in the Clearwater River Upper Reach and subsequent sediment deposition in the lower reach may increase by a non-detectable margin and the net balance of sediment transported to Forrest Lake is expected to remain unchanged. Changes in surface water patterns as a result of the Project are predicted to have a negligible residual effect on soils in the LSA (Section 12.4.2).

Surface water in the receiving environment downstream of the Project would be protected and managed through the Environmental Monitoring Plan. Site contact water would be intercepted and managed in ways to reduce effects on the surrounding environment in accordance with the Environmental Protection Program. The Project footprint is designed to minimize areas of vegetation clearing and soil disturbance and optimize the use of the existing access road and disturbed areas. The tailings management facility (i.e., UGTMF) would be located underground, which avoids permanent disturbance to vegetation (i.e., natural control for soil erosion) and considers the concerns raised by Indigenous Groups regarding surface deposition of mine wastes (Section 2).

In addition, work required in areas that may be more prone to erosion from surface water runoff and changes in surface water levels, flows, and drainage areas would be scheduled to avoid the time of year when erosion is most likely (e.g., spring freshet). The rate of discharge from the effluent treatment plant would be managed by having adequate surface water storage capacity to allow for controlled release rates if required. A minimum 150 m buffer between soil stockpiles and waterbodies or drainages would be maintained (unless temporary soil storage is required) and all containment and conveyance structures (i.e., ditches and culverts) would be routinely inspected and maintained to limit the risk of road washout or sediment release. Progressive reclamation and revegetation would also be implemented as disturbed areas are no longer required, and non-permanent features would be reclaimed and revegetated as they are removed. The Environmental Monitoring Plan includes monitoring surface water levels and flows. A Detailed Decommissioning and Reclamation Plan would also be developed with the provincial government and Indigenous Groups to decommission and transfer the Project site to the Province per the Institutional Control Program.

Overall, environmental design features, mitigation, and monitoring are anticipated to minimize changes in surface water levels and flows, drainage areas, and channel parameters (Section 9.5, Project Interactions and Mitigations) and result in a minor increase in soil erosion within the maximum disturbance area and LSA relative to existing conditions (Section 12.4.2). The predicted changes in surface water patterns and soil erosion as a result of the Project could result in minor alterations to the availability, distribution, and condition of upland, wetland, and riparian ecosystems and traditional use plants. However, the changes are predicted to have a negligible residual effect on vegetation VCs, and so the pathway was not carried forward in the assessment.

V-09: Surface water quality from runoff:

- Changes in surface water quality from contact with surface facilities and additional infrastructure could adversely affect the condition of upland, wetland, and riparian ecosystems and traditional use plants.

Rain and snowfall that contacts Project facilities and infrastructure (e.g., WRSAs, the process plant, and roads) may alter surface water quality through collection of metals and radionuclides in dust deposited on infrastructure and soils. Precipitation runoff from ore, NPAG, PAG, and special waste rock would also alter surface water quality. Changes in surface water quality have the potential to alter soil chemistry (i.e., quality) and affect vegetation ecosystems and traditional use plants.

Indigenous Groups and LPA communities have expressed concerns related to effects of the Project to water quality in general and subsequent effects on the aquatic and terrestrial environment. This includes concerns about Project-related contaminants entering the food chain within the Clearwater River watershed through effects to water quality in Patterson Lake, and adversely affecting the health of vegetation and wildlife (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; BNDN-JWG 2019; BRDN-JWG 2019a; BRDN-JWG 2020; MN-S-JWG 2019b; NexGen 2019).

Mitigation in the Environmental Protection Program is expected to be effective at reducing the amount and spatial extent of fugitive dust deposition (Table 13.4-1). Concentrations of metals and radionuclides in dust are predicted to be well below soil quality guideline values (Section 12.4.2). Dust deposition (i.e., total suspended particulates) is predicted to be largely confined to the maximum disturbance area, as discussed previously in the secondary pathway analysis for the effects of radon emissions and the deposition of fugitive dust emissions on soil quality and the availability, distribution, and condition of vegetation ecosystems and traditional use plants.

A Mine Waste Management Plan and Environmental Protection Program would be implemented to avoid and minimize changes in surface water quality during all Project stages, which would also mitigate effects on vegetation VCs. Site precipitation events (e.g., rain and snowmelt) that occur and contact Project facilities and infrastructure (i.e., contact water) would be captured, collected, and directed to respective site runoff ponds or collection areas. Contact water would be collected from the mine terrace, mill terrace, NPAG and PAG WRSAs, ore storage stockpile, special waste rock stockpile, camp area, and conventional waste management area (Section 5.4.5, Site Water Management).

Diversion ditches and perimeter berms are designed to divert clean non-contact water away from any disturbed areas, facilities, or works where that water may become contaminated. Design of water management facilities, processes, and activities that enable safe, secure, and environmentally responsible contact and non-contact water management through the Project lifespan would be determined by water characteristics. Present design focuses on modelled characteristics of contact water that would be confirmed or adjusted through monitoring if the Project is approved and developed. To maintain integrity, diversion ditches and collection ditches would be provided with erosion control measures reflective of ditch slopes and flow rates, where required. Swales (i.e., broad, shallow depressions that facilitate drainage) would be constructed on surface-graded pads where ditches are not possible, and where the initial anticipated contributing precipitation would not warrant a full ditch (Section 5.15). Surface water quality would also be monitored using the principles of adaptive management (Environmental Monitoring Plan). Disturbed areas that are no longer needed would be progressively reclaimed and revegetated, which would reduce the areas generating site contact water.

Environmental design features, mitigation, and monitoring are anticipated to minimize changes in surface water quality. Changes in surface water quality as a result of the Project could result in a measurable minor change to the condition of upland, wetland, and riparian ecosystems and traditional use plants relative to existing conditions. However, any changes would be limited to the maximum disturbance area and have negligible residual effects on wetland and riparian ecosystems, and would be considered reversible following the Active Closure Stage, so the pathway was not carried forward in the assessment.

V-10: Treated effluent discharge:

- Release of treated effluent can alter surface water and sediment quality in Patterson Lake and farther downstream and adversely affect aquatic plants and traditional use plants and the condition of wetland and riparian ecosystems.

Water from site runoff (i.e., contact water) and the UGTMF would be collected, contained, controlled, treated (if necessary), and monitored to protect the receiving environment (i.e., Patterson Lake). Similarly, domestic waste water would be treated and discharged to Patterson Lake after meeting discharge criteria. The release of treated effluent may alter surface water and sediment quality and affect aquatic plants and traditional use plants and the condition of wetland and riparian ecosystems.

As noted above, Indigenous Groups raised concerns about potential Project-related effects on the water quality of Patterson Lake, which could affect other nearby lakes, and by extension, downstream the Clearwater River and the entire Clearwater River watershed, including aquatic and terrestrial health (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; BNDN-JWG 2019; BRDN-JWG 2019a; BRDN-JWG 2020; MN-S-JWG 2019b; NexGen 2019).

Surface water quality changes in Patterson Lake and lakes farther downstream of the aquatic LSA from the start to the end of Operations were assessed using a nearfield model and regional receiving environment model. Operations represents the period of maximum expected changes to surface water quality from the discharge of treated effluent and treated sewage as a result of the Project. The expected magnitude, spatial extent, and duration of Project effects in the aquatic LSA was assessed using the regional model, while the nearfield model was used to assess potential effects in the immediate areas of the effluent treatment plant diffuser and sewage treatment plant outfall (Section 10.2.6.1, Surface Water Quality). Water quality thresholds were developed based on the Canadian Environmental Quality Guidelines for the Protection of Aquatic Life (CCME 2021) and provincial or federal objectives when no Canadian Council of Ministers of the Environment guidelines were available (Section 10.2.6.1).

Results indicate that no modelled water quality constituents or parameters exceeded their respective threshold values during Operations for the nearfield and regional assessments (Section 10.5, Residual Effects Analysis). Results for the upper bound scenario (i.e., a more conservative, or precautionary, model) for the regional assessment indicate that most modelled constituents were below threshold values during Operations. The exception was chloride, which showed a slight localized exceedance (approximately 10 mg/L) for a brief period (i.e., approximately two years) and was limited to the Patterson Lake North Arm – West Basin.

An ecological risk assessment was completed to determine the health risks to aquatic plant receptors from changes in surface water quality due to the Project. The risk assessment applied the modelled concentrations of water quality constituents as input values for the toxicological exposure model for each receptor during Operations and for the upper bound scenario. Results indicated that predicted changes in surface water quality

for the upper bound scenario would not cause adverse effects on the health of aquatic plants (i.e., macrophytes, such as sedges and bulrush, and phytoplankton) (TSD XXI).

An Environmental Protection Program would be implemented to avoid and minimize changes in surface water quality during all Project phases, which would also mitigate effects on aquatic plants and vegetation VCs (Table 13.4-1). Routine monitoring of water quality parameters would be conducted to confirm discharge criteria are met before release into Patterson Lake. The outfalls for the effluent treatment and sewage treatment plants would be designed to provide effective initial mixing and avoid sensitive aquatic habitat. The designs would also avoid direct interactions with lake sediments.

With the implementation of environmental design features, mitigation, monitoring, and adaptive management, water quality in Patterson Lake and farther downstream is expected to result in minor or non-measurable influences on aquatic plant health and diversity and have negligible residual effects on wetland and riparian ecosystems. Thus, the pathway was not carried forward in the assessment.

V-11: Surface water quality from WRSAs and UGTMF after Closure:

- Runoff and seepage from the WRSAs and groundwater flow from the UGTMF may alter surface water quality in Patterson Lake after Closure and adversely affect the condition of wetland and riparian ecosystems and traditional use plants.

Indigenous Groups expressed concerns related to the effects of mine waste and tailings on surface and underground water quality, and risks to terrestrial environmental health (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; BNDN-JWG 2019; BNDN-JWG 2020; BNDN-JWG 2021b; BRDN-JWG 2021b; CRDN-JWG 2020b; CRDN-JWG 2021; MN-S-JWG 2019a). These concerns are based, in part, on observations from Indigenous Groups of the effects of contamination from previous mining developments (i.e., Cluff Lake Mine) on the health of the landscape (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; CRDN-JWG 2020a; MN-S-JWG 2019b; BRDN-JWG 2021a). NexGen understands the concerns of Indigenous Groups regarding changes in surface water quality from runoff and seepage from the WRSAs and groundwater flow from the UGTMF on vegetation and would implement environmental design features and mitigation to minimize potential Project effects (Section 13.4, Project Interactions and Mitigations).

Following Closure, runoff and seepage from the WRSAs and groundwater flow from the UGTMF may alter surface water quality in Patterson Lake and affect wetland and riparian ecosystems and traditional use plants. Proven engineered designs would be applied to the Project to limit runoff and seepage from WRSAs, such as installing a cover on PAG and NPAG material. Potentially acid generating waste rock would be separated from NPAG waste rock. Special waste rock would also be stored separately. Special waste stockpiles and the PAG WRSA would be lined with high density polyethylene to prevent seepage (Mine Waste Management Plan). Alternating lifts of PAG waste rock and engineered source control layers would be placed at the PAG WRSA. The engineered source control design concept includes the use of prescribed waste rock and control layer placement such that oxygen ingress to the waste rock is reduced compared to conventional construction. Engineered paste tailings would be used in the UGTMF to control sources of constituents of potential concern (Table 13.4-1). A Detailed Decommissioning and Reclamation Plan would also be developed with the provincial government and Indigenous Groups to decommission and transfer the Project site to the Province per the Institutional Control Program.

Surface water quality changes in Patterson Lake and lakes farther downstream of the aquatic LSA after Closure were assessed using a far-future scenario. The far-future scenario includes two stages totalling 357 years (Section 10.2.4, Temporal Boundaries). The first stage (157 years) includes natural hydrological and hydrogeological processes as a result of the Project during post-Closure, such as seepage from the UGTMF and the WRSAs, and surface runoff from the covered and reclaimed areas. The first stage continues for at least three climate cycles to examine the effects of climate on water quality. The second stage (200 years beyond the 157 years of the first stage) includes natural hydrological and hydrogeological processes where maximum mass loadings associated with seepage to groundwater are applied to the Patterson Lake North Arm – West Basin to examine maximum potential effects on Patterson Lake and lakes farther downstream until steady-state conditions are achieved.

The far-future scenario was assessed using the regional model and included an upper bound scenario (Section 10.2.8.1, Water Quality Models). Most modelled 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 were predicted for Patterson Lake North Arm – West Basin and Patterson Lake South Arm (Section 10.5.2.1).

An ecological risk assessment was completed to determine the health risks to aquatic plant receptors from changes in surface water quality due to the Project. The risk assessment applied the modelled concentrations of water quality constituents as input values for the toxicological exposure model for each aquatic plant receptor for the far-future and upper bound scenario. Results indicated that predicted changes in surface water quality for the upper bound scenario would not cause adverse effects on the health of aquatic plants (i.e., macrophytes and phytoplankton) (TSD XXI).

Project designs, such as incorporating physical liners and providing a cover for waste rock storage, and the design, maintenance, and monitoring of a mine dewatering system, are anticipated to minimize changes in surface water quality in Patterson Lake due to seepage from the WRSAs and groundwater flow from the UGTMF in the far-future beyond Closure. Cobalt and copper are predicted to exceed their Project thresholds for water quality in the far-future projection (i.e., risk to aquatic and terrestrial life; Section 10.5.1.2, Regional Surface Water Quality Model). Alterations in surface water quality in Patterson Lake could result in a minor change to the condition of wetland and riparian ecosystems and traditional use plants that occupy those ecosystems relative to existing conditions. However, the environmental risk assessment (TSD XXI) showed that in the far future only copper has the potential to exceed the Project hazard quotient threshold of 1, which is limited spatially to the near-field in Patterson Lake and limited in magnitude to just above the benchmark for the upper bound sensitivity scenario. These exceedances of the hazard quotient benchmark were predicted for some groups of aquatic animals (i.e., lake whitefish, aquatic invertebrates, and zooplankton) but not for aquatic plants. Therefore, any minor changes are predicted to have a negligible residual effect on vegetation VCs, and the pathway was not carried forward in the assessment.

13.4.3 Primary Pathways

The following Project interactions were predicted to be primary pathways to vegetation VCs (Table 13.4-1) and were advanced for further assessment in the residual effects analysis (Section 13.5):

V-01: Direct loss:

- Direct loss, alteration, and fragmentation of upland, wetland, and riparian ecosystems and traditional use plants as a result of the Project.

V-02: Terrain alteration:

- Alteration of the final terrain, soil conditions, and/or plant species composition could change the types of ecosystems and traditional use plants that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

13.5 Residual Effects Analysis

Project activities and components would alter upland, wetland, and riparian ecosystems (i.e., availability, distribution, and condition) and traditional use plant species (i.e., availability and distribution); this alteration could subsequently adversely affect vegetation productivity and the types of vegetation communities that can be re-established on the landscape through reclamation. Project activities that would affect ecosystem availability and distribution include: land clearing and site preparation for infrastructure and facilities during Construction; hauling and deposition of ore, waste rock, and other materials during Operations; and removal of infrastructure and facilities and associated restoration and revegetation of non-permanent Project components during Closure.

The residual effects analysis considers the primary pathways expected to result in effects on vegetation after implementing mitigation (Table 13.4-1) and was structured using separate subsections for each of the vegetation measurement indicators in the maximum disturbance area. The measurement indicators for vegetation are:

- ecosystem availability;
- ecosystem distribution;
- ecosystem condition;
- traditional use plant habitat availability; and
- traditional use plant distribution.

Residual effects resulting from the Project have been assessed using the assumption that vegetation in the entire maximum disturbance area would be altered (Section 13.2.3, Spatial Boundaries). The maximum disturbance area is approximately four times larger than the area to be disturbed by the anticipated Project footprint. Therefore, the assessment provides a conservative approach that overestimates Project effects in order to address uncertainty during the assessment.

13.5.1 Upland Ecosystems

The residual effects analysis for upland ecosystems focused on evaluating the following pathways:

- direct loss, alteration, and fragmentation of upland ecosystems as a result of the Project; and
- alteration of final terrain, soil conditions, and/or plant species composition could change the types of ecosystems that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

13.5.1.1 Application Case

13.5.1.1.1 Ecosystem Availability

The assessment of changes to upland ecosystem availability in the Application Case focused on measuring changes from Construction through to Closure and beyond. The Project is predicted to contribute to a loss of 868.4 ha of upland ecosystems in the LSA and RSA (40.0% and 1.2% respectively) from the maximum disturbance area (980.7 ha; Table 13.5-1; Figure 13.5-1; Figure 13.5-2). However, the actual loss is anticipated to be less when considering the Project footprint.

Changes to upland ecosystems are predicted to be limited to five upland ELC units: Jack pine/lichen (BP02), Jack pine/feathermoss (BP03), Black spruce/Labrador tea/feathermoss (BP14), burned Jack pine/lichen (BP02[BU]), and burned Balsam poplar - trembling aspen/prickly rose (BP16[BU]).

The largest absolute change (i.e., difference between calculated values) would be to the burned Jack pine/lichen (BP02[BU]) ELC unit, with a predicted loss of 720.4 ha of 8,270.5 ha (8.0%) within the RSA. The burned Jack pine/lichen (BP02[BU]) ELC unit was the most common ELC unit observed at existing conditions within the LSA (i.e., 1,641.2 ha, or 58% of the LSA). Burned Jack pine/lichen (BP02[BU]) is a frequently encountered ELC unit in both the LSA and RSA, and the change from the Base Case represents an 8.0% change in the ELC unit. Further, an analogous habitat can be found within the unburned Jack pine/lichen habitat, as early- to late-stage regenerating (i.e., burned in the last 6 to 40 years; Burned) ELC units are anticipated to regenerate towards a Jack pine/lichen (BP02) ELC units. Similarly, an analogous habitat can be found in the burned and unburned Boreal Shield synonymous ELC units Jack pine/blueberry/lichen (BS03[BU]; BS03), which occupy a majority of the RSA (i.e., 23,172.8 ha [21.6%] and 4,991.4 ha [4.6%], respectively). Jack pine/lichen (BP02) and Jack pine/feathermoss (BP03) ELC units would also be disturbed, with the maximum disturbance area predicted to remove 52.2 ha and 48.4 ha, respectively. Jack pine communities (i.e., BP02, BP03, and BP02[BU]) are common within both the LSA and RSA. Changes to upland ELC units are predicted to occur primarily within jack pine communities (i.e., BP02, BP03, and BP02[BU]) (821.0 ha of 868.4 ha total upland Project-related alteration).

The largest relative change (i.e., absolute change expressed as a percentage) would be to the Black spruce/Labrador tea/feathermoss (BP14) ELC unit, with a predicted loss of 11.5 ha of 129.8 ha from the Base Case (8.9% change in RSA). Members of CRDN noted that the clearcutting of a stand of large spruce trees from development activities in general at Patterson Lake showed a lack of respect for the trees and for the community who utilize medicines from those same trees (TSD V.1: CRDN). Within the LSA, Black spruce/Labrador tea/feathermoss (BP14) availability would decrease from 19.1 ha to 7.6 ha. The Black spruce/Labrador tea/feathermoss (BP14) ELC unit is uncommon in the LSA and RSA.

A loss of 35.8 ha of burned Balsam poplar - trembling aspen/prickly rose (BP16[BU]) is predicted in the Application Case. Availability within the LSA would decrease from 161.9 to 126.0 ha, and availability within the RSA would decrease 3.3% from 1,070.4 ha to 1,034.6 ha.

Table 13.5-1: Changes to Upland Ecosystem Availability in the Application Case

Upland ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
BP02 - Jack pine/lichen	2,791.3	2,739.1	-52.2
BP03 - Jack pine/feathermoss	3,712.1	3,663.7	-48.4
BP04 - Jack pine - trembling aspen/feathermoss	1,000.7	1,000.7	0.0
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.3	0.3	0.0
BP07 - Trembling aspen - white birch/sarsaparilla	5.1	5.1	0.0
BP11 - White birch - white spruce - balsam fir	3.2	3.2	0.0
BP12 - Jack pine - spruce/feathermoss	219.2	219.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	129.8	118.3	-11.5
BP16 - Balsam poplar - trembling aspen/prickly rose	33.3	33.3	0.0
BS02 - Lichen/felsenmeer - bedrock	<0.1	<0.1	0.0
BS03 - Jack pine/blueberry/lichen	4,991.4	4,991.4	0.0
BS04 - Jack pine - black spruce/feathermoss	6,158.9	6,158.9	0.0
BS05 - Jack pine - white birch/feathermoss	1.1	1.1	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.0
BS07 - Black spruce/blueberry/lichen	2.6	2.6	0.0
BS08 - Black spruce - white birch/lichen	<0.1	<0.1	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	23.1	0.0
BS10 - Black spruce - white birch/feathermoss	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	11.9	11.9	0.0
BS14 - White birch/lingonberry - Labrador tea	74.0	*74.0*	0.0
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	0.0
Undisturbed upland subtotal	*19,158.2*	*19,046.1*	*-112.1*
BP02(BU) - Jack pine/lichen (Burned)	8,990.9	8,270.5	-720.4
BP03(BU) - Jack pine/feathermoss (Burned)	4,846.6	4,846.6	0.0
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	1,274.5	1,274.5	0.0
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.3	0.3	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	10.4	10.4	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.9	0.9	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	4.4	4.4	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	25.2	25.2	0.0
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	1,070.4	1,034.6	-35.8
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	0.7	0.7	0.0
BS03(BU) - Jack pine/blueberry/lichen (Burned)	23,172.8	23,172.8	0.0
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	9,065.2	9,065.2	0.0
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	5.1	5.1	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.9	0.9	0.0
BS07(BU) - Black spruce/blueberry/lichen (Burned)	5.6	5.6	0.0
BS08(BU) - Black spruce - white birch/lichen (Burned)	0.1	0.1	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	50.1	50.1	0.0

Table 13.5-1: Changes to Upland Ecosystem Availability in the Application Case

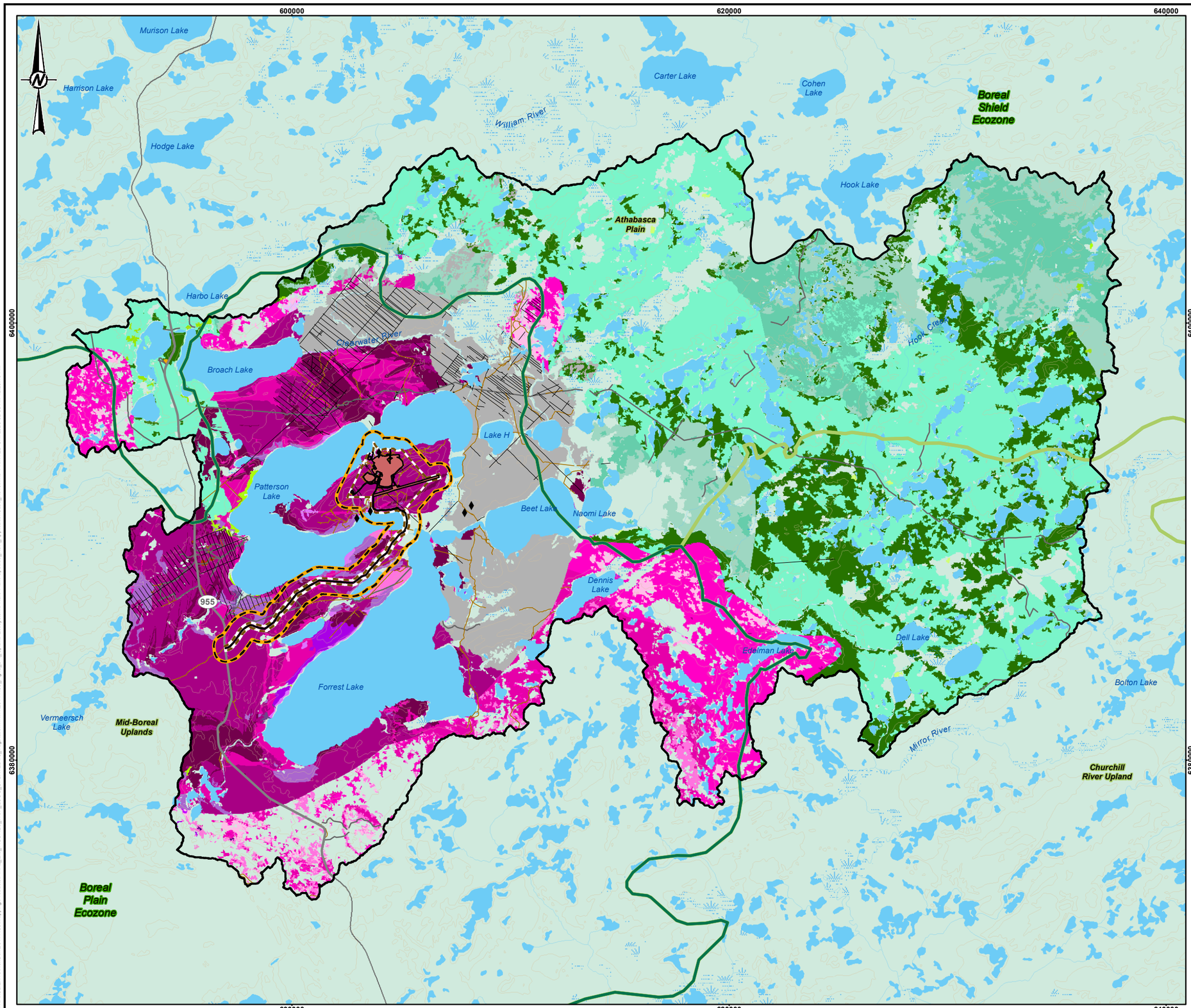
Upland ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	57.7	57.7	0.0
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	39.9	39.9	0.0
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.2	0.2	0.0
Recent burn upland	7,041.6	7,041.6	0.0
Burned upland subtotal	*55,663.4*	*54,907.2*	*-756.2*
Upland total	**74,821.7**	**73,953.3**	**-868.4**
Summary			
Upland total	**74,821.7**	**73,953.3**	**-868.4**
Wetland total	**32,211.3**	**32,181.2**	**-30.1**
Anthropogenic disturbance total[b]	**457.8**	**1,356.3**	**898.5**
Total RSA	**107,490.7**	**107,490.7**	**n/a**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
a) McLaughlan et al. 2010.
b) Anthropogenic disturbance total includes the maximum disturbance area for the Project (980.7 ha) minus the existing anthropogenic disturbance within the maximum disturbance area in the Base Case (82.2 ha).
ELC = Ecological Land Classification; RSA = regional study area; < = less than; n/a = not applicable.

Effects on upland ecosystems from Project-related changes to ecosystem availability are certain as physical changes (e.g., vegetation clearing, placement of facilities) would occur as a result of Project development. Effects would be expected to be confined to the maximum disturbance area and be continuous from the start of Construction through to Closure and beyond. While permanent facilities of the Project (e.g., WRSAs) would be reclaimed, vegetation communities anticipated to establish on these features would likely not be representative of the upland ELC units not influenced by the Project; therefore, effects are conservatively considered permanent and irreversible (i.e., approximately 73.1 ha). Progressive reclamation would occur in areas no longer required for Project activities, as well as decommissioning and reclamation of non-permanent facilities and infrastructure, during the Active Closure Stage until regeneration is complete, which is expected to occur beyond Closure. Reclamation is predicted to reverse effects on disturbed ELC units and provide adequate material for the development of productive soils, which would support the establishment and succession of vegetation communities with similar function to natural ecosystems not influenced by the Project; however, upland ecosystems would likely differ from those present before disturbance but reflect plant communities in the boreal forest.

Indigenous Groups have expressed concerns about reclamation and commented that the land should be returned to its former condition after exploration activities in general and during Project Closure, and planted with native vegetation (TSD IV: MN-S; MN-S-JWG 2020; BRDN-JWG 2021a; YNLRO 2019). Vegetation ecosystems that can be returned to the landscape depend on edaphic (i.e., soil-related) conditions determined by topography, cover type, and depth. Reclaimable upland vegetation ecosystems are assumed to be predominantly dry to fresh upland sites, which would emulate common upland vegetation ELC units in the LSA under the existing conditions. The establishment of reclaimed upland vegetation ecosystems is predicted to occur well beyond the Active Closure Stage, particularly for mature forest types (e.g., 60 to 80 years; Section 13.3.1.3, Ecosystem Condition). However, young seral forest communities are anticipated to be established within 6 to 20 years following the Active Closure Stage.

Additional reclamation activities would be implemented during the Project lifespan and focus on the restoration of existing linear anthropogenic disturbances (Omnia 2020). However, to take a conservative assessment approach, potential net benefits from the reclamation of non-Project facilities (i.e., seismic lines) were not included as mitigation in the residual effects analysis. Reclamation of linear anthropogenic features may include seeding, planting, installation of coarse woody debris, tree tipping, and mounding. Investigations completed during the linear feature natural regeneration assessment program (Annex VII.1) and linear feature reclamation pilot program (Omnia 2020) may be used to inform other on-site reclamation activities.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

UPLAND VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

UPLAND ECOLOGICAL LAND CLASSIFICATION UNIT

BP02	BP14	BS07
BP02 (BU)	BP14 (BU)	BS07 (BU)
BP03	BP16	BS08
BP03 (BU)	BP16 (BU)	BS08 (BU)
BP04	BS02	BS09
BP04 (BU)	BS02 (BU)	BS09 (BU)
BP06	BS03	BS10
BP06 (BU)	BS03 (BU)	BS13
BP07	BS04	BS13 (BU)
BP07 (BU)	BS04 (BU)	BS14
BP11	BS05	BS14 (BU)
BP11 (BU)	BS05 (BU)	BS15
BP12	BS06	BS15 (BU)
BP12 (BU)	BS06 (BU)	RECENT BURN (UPLAND)

0 5 10

1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

UPLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

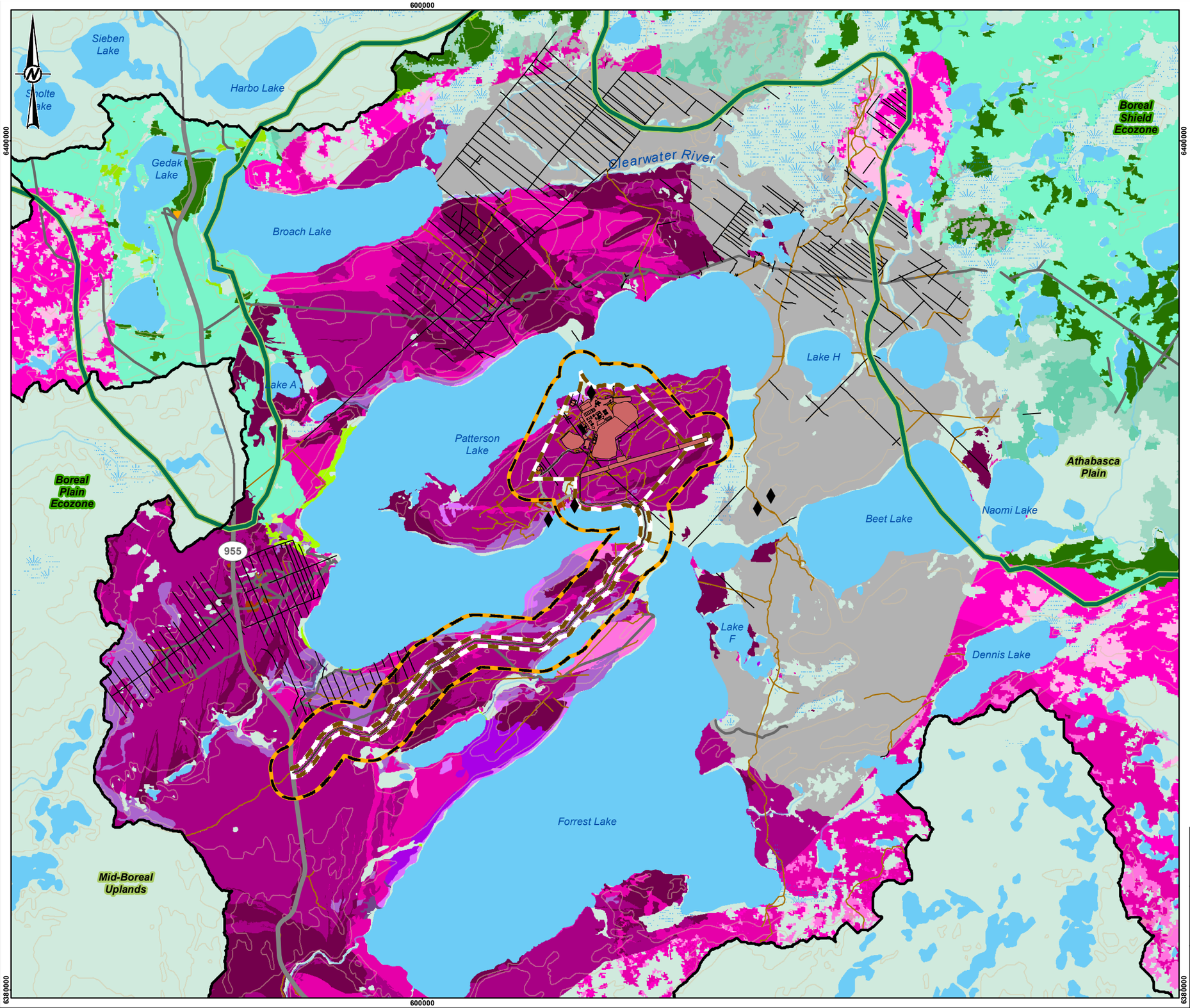
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DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.5-1

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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

UPLAND VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

UPLAND ECOLOGICAL LAND CLASSIFICATION UNIT

- BP02
- BP02 (BU)
- BP03
- BP03 (BU)
- BP04
- BP04 (BU)
- BP06
- BP06 (BU)
- BP07
- BP07 (BU)
- BP11 (BU)
- BP12
- BP12 (BU)
- BP14
- BP14 (BU)
- BP16
- BP16 (BU)
- BS02 (BU)
- BS03
- BS03 (BU)
- BS04
- BS04 (BU)
- BS06 (BU)
- BS07 (BU)
- BS09
- BS09 (BU)
- BS13
- BS13 (BU)
- BS14
- BS14 (BU)
- RECENT BURN (UPLAND)

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

UPLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE		3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.5-2

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

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13.5.1.1.2 Ecosystem Distribution

Decreased connectivity of upland ecosystems in the Application Case would occur at the local scale around the maximum disturbance area (Figure 13.5-2). The existing access road would be upgraded to safely accommodate large vehicles and equipment and site roads would be aligned to avoid the wetland west of the proposed airstrip. Most of the existing trails in the Project footprint would be upgraded for site roads and haul roads within the maximum disturbance area. The Project would be in a portion of the RSA that contains an aggregation of existing linear and non-linear features in proximity of Highway 955 (Figure 13.5-1).

Despite some localized fragmentation as a result of the Project, most upland ecosystems remain abundant and well connected across the LSA and RSA. Disturbance to upland ELC units is limited to five ELC units, most of which are widely available and well distributed. The majority (i.e., 77%) of the maximum disturbance area was disturbed by fire in 1990, which has led to a relatively homogenous community of late-stage regenerating Jack pine/lichen forest (BP02[BU]). Jack pine communities within the maximum disturbance area (e.g., BP02, BP03, and BP02[BU]) are well distributed through the LSA. Further, ecozonal synonyms (BS03 and BS04) are widely distributed within the RSA.

The least common ELC unit disturbed by the Project (i.e., Black spruce/Labrador tea/feathermoss [BP14]) is associated with moist sites. Within the LSA, the ELC unit is distributed around the shores of Patterson Lake. Within the RSA, BP14 ELC units are distributed along the shoreline of Forrest Lake, Patterson Lake, Broach Lake, and two smaller unnamed waterbodies (i.e., Lake E and Lake D) near the existing access road. Ecozonal synonyms, as indicated by McLaughlan et al. (2010; BS09 + BS10), appear to have similar distribution within the RSA and are associated with shorelines along lakes. Disturbance to BP14 ELC units within the maximum disturbance area would slightly increase the inter-patch distance in the LSA (i.e., local geographic extent). These changes would result in a minor reduction in the connectivity of ELC units locally but are not predicted to affect connectivity in the RSA. The current density of linear features in the RSA (0.6 km/km^2) is likely causing negligible adverse effects on upland ecosystems, and the Project would not change the density of linear features in the LSA and RSA. Further, the actual loss is anticipated to be less when considering the Project footprint. Effects on upland ecosystem distribution are anticipated to be minor (i.e., low magnitude) as changes are centred on the LSA, with little to no change in fragmentation at the RSA scale.

Burned Balsam poplar - trembling aspen/prickly rose (BP16[BU]) ELC units appear to be well distributed along the existing access road between Patterson Lake and Forrest Lake and with more scattered distribution to the west of both lakes. Balsam poplar - trembling aspen/prickly rose (BP16) ELC units do not have an ecozonal synonym within the Boreal Shield ecoregion; therefore, distribution is restricted to the southwest portion of the RSA. Changes to the distribution of this ELC unit would be largely limited to the realignment and upgrades to the existing access road; therefore, these changes would result in a minor reduction in connectivity from the Base Case. It is anticipated that the remaining Balsam poplar - trembling aspen/prickly rose (BP16) ELC units within the RSA would be maintained on the landscape.

The incremental contribution of the Project to existing effects on upland ecosystem distribution would be small and is predicted to be reversed well beyond Closure (i.e., 60 to 80 years after the Active Closure Stage). Reclamation could provide partial or full restoration of minor changes in upland ecosystem connectivity at the LSA scale relative to the Base Case. Overall, upland ELC units would remain well connected in the Application Case to support healthy and functioning upland ecosystems.

13.5.1.1.3 Ecosystem Condition

Forested areas in closer proximity to any new development may be affected by removal of trees and other edge effects (e.g., ingress of generalist or invasive species, changes in moisture and sunlight) that can adversely influence conditions of ecosystems. Reduced ecosystem condition is a likely outcome of Project activities because of edge effects related to new disturbances. For example, forest edges are typically exposed to more sunlight, and are drier, windier, and warmer than the forest interior (Chen et al. 1999). Plant responses, such as decreases in moss, increases in downed woody material, or higher regeneration of deciduous species can lead to structural changes within forested stands. However, changes to understory vascular plant cover or diversity were observed to be weakly influenced by edge effects (Harper et al. 2015). Generally, edge effects were limited to within 50 m of the disturbance (Ries et al. 2004). Therefore, changes to the ecosystem condition are anticipated to be limited to well within the LSA boundary (i.e., defined as 500 m from the maximum disturbance area).

Data collected during baseline field surveys indicated that jack pine dominant ELC units (e.g., BP02, BP03, and BP02[BU]) had relatively low values and ratings for unique species (e.g., unique observations within an ELC unit) and provincially tracked species observations (Section 13.3.1.3). Species richness was observed as moderate to high; however, these sites have relatively low vascular plant diversity but relatively high lichen species diversity. Early-stage regenerating ELC units (i.e., burned in the last 6 to 20 years) were characterized by a high percentage cover of bare soil and litter (i.e., greater than 70%) with understory strata virtually absent.

Observations from baseline field surveys indicated that Black spruce/Labrador tea/feathermoss (BP14) ELC unit canopies are predominantly black spruce but may contain jack pine, white spruce, or trembling aspen (Section 13.3.1.3). The understory is generally limited to ericaceous shrubs, but low bush-cranberry and green alder may occasionally be found (Annex VII.1). While a large variety of herbs was associated with this ELC unit, only a few species were consistently present. BP14 ELC units were observed to have moderate species richness and received low overall values and rankings for unique species observations and provincially tracked plant species (Section 13.3.1.3, Ecosystem Condition).

Two occurrences of provincially tracked species were identified in upland ecosystems within the LSA, and an additional three occurrences recorded within the RSA (Figure 13.5-2). One occurrence of beautiful sedge was observed within the maximum disturbance area within a burned Jack pine/lichen (BP02[BU]) ELC unit (Section 13.3.1.3). Beautiful sedge was also recorded in four additional upland ELC units that are not predicted to be disturbed by the maximum disturbance area. Known rare plants would be clearly marked and avoided, where feasible (Section 13.4, Project Interactions and Mitigations; Table 13.4-1). The ENV recommends a 30 m setback distance for high disturbance activities (e.g., mining) for species ranked S1 through S3 (ENV 2017). Where disturbance to rare plants is unavoidable, the ENV would be consulted to determine the best course of action. Measures to limit disturbance to rare vascular plants could include the use of temporary access matting, proper salvage of topsoil and seeds, or changes to Project components, where feasible. Mitigation would be dependent on species tolerance to disturbance, species growth habit (i.e., perennial or annual), and species availability and distribution information (i.e., provincial rank).

One species of noxious weed (i.e., narrow-leaved hawk's beard) and one species of nuisance weed (i.e., dandelion) designated under *The Weed Control Act* were identified in anthropogenically disturbed areas during baseline field surveys (Section 13.3.1.3). Project activities involving the movement of machinery or equipment to and from the Project site could introduce regulated weed and invasive species. Regulated weed and invasive plant species could potentially have an adverse effect on the condition of upland ecosystems. As part of mitigation for Project effects, construction equipment would arrive at the site in a clean condition, and an

Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species. With effective implementation of mitigation, Project-related effects from regulated weed and invasive plants on upland ecosystem condition are predicted to not be ecologically measurable relative to existing conditions.

Effects on upland ecosystems from Project-related changes to ecosystem condition are considered possible, as the small decrease in habitat abundance would produce few edge effects. Although the Project would disturb one occurrence of rare plant species detected during baseline studies, additional populations were observed in the LSA (Section 13.3.1.3). Overall, changes to the condition of upland ecosystems in the Application Case are predicted to be well within the resilience and adaptability limits for this VC.

13.5.1.2 Reasonably Foreseeable Development Case

13.5.1.2.1 Ecosystem Availability

The Fission Patterson Lake South Property is predicted to contribute an incremental loss of 1,449.8 ha of upland ecosystems in the RSA (Table 13.5-2, Figure 13.5-3). The Project, as well as additional trails and roads and facilities from the Fission Patterson Lake South Property and existing anthropogenic disturbance (i.e., Highway 955, Bolton Lake trail, and seismic lines) account for 2,390.1 ha of disturbance across upland ecosystem types in the RSA. Cumulative effects would be continuous and occur at the regional scale. Effects are likely to occur but are uncertain (i.e., probable) given that the Fission Patterson Lake South Property has recently entered the formal regulatory application process.

The Fission Patterson Lake South Property would change 239.4 ha of undisturbed upland ELC units and 1,210.4 ha of late-stage regenerating (i.e., burned in the last 21 to 40 years; Burned) upland ELC units into roads and facilities. The Fission Patterson Lake South Property is located within both the Boreal Shield and Boreal Plain ecozones and therefore changes to the availability of Boreal Shield (BS) ELC units in addition to Boreal Plain (BP) ELC units are anticipated.

Disturbance associated with the Fission Patterson Lake South Property to jack pine ELC units is anticipated to be 172.8 ha of Jack pine/lichen (BP02), 1,041.3 ha of burned Jack pine/lichen (BP02[BU]), 40.8 ha of Jack pine/feathermoss (BP03), and 74.2 ha of burned Jack pine/blueberry/lichen (BS03[BU]). Therefore, the Fission Patterson Lake South Property would disturb a total of 1,329.1 ha of mature and late-stage regenerating jack pine forest ELC units. The cumulative predicted loss of unburned and early- and late-stage regenerating jack pine ELC units in the RFD Case is 2,150.1 ha of 66,012.5 ha (3.3%) of available similar ELC units within the RSA. The Fission Patterson Lake South Property is not anticipated to disturb Black spruce/Labrador tea/feathermoss (BP14).

An additional 91.0 ha of BP16(BU) ELC units would be disturbed by the Fission Patterson Lake South Property, resulting in a cumulative disturbance of 126.8 ha of 1,070.4 ha (11.8%) in the RFD Case. However, disturbance to BP16(BU) ELC units was conservatively overestimated. The actual disturbance would depend on the final design of the Project and the Fission Patterson Lake South Property.

Disturbance to White birch/lingonberry - Labrador tea (BS14) and late-stage regenerating White birch/lingonberry - Labrador tea (BS14[BU]) ELC units are specific to the Fission Patterson Lake South Property, which is predicted to remove 25.7 ha of 74.0 ha and 4.0 ha of 39.9 ha of each ELC unit, respectively. It is anticipated that design elements of the Fission Patterson Lake South Property would be reviewed to minimize

disturbance to ELC units that may be considered moderately sensitive to additional changes in availability because they are uncommon in the RSA.

Table 13.5-2: Changes to Upland Ecosystem Availability in the Reasonably Foreseeable Development Case

Upland ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP02 - Jack pine/lichen	2,791.3	2,566.3	-225.0
BP03 - Jack pine/feathermoss	3,712.1	3,622.8	-89.2
BP04 - Jack pine - trembling aspen/feathermoss	1,000.7	1,000.7	0.0
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.3	0.3	0.0
BP07 - Trembling aspen - white birch/sarsaparilla	5.1	5.1	0.0
BP11 - White birch - white spruce - balsam fir	3.2	3.2	0.0
BP12 - Jack pine - spruce/feathermoss	219.2	219.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	129.8	118.3	-11.5
BP16 - Balsam poplar - trembling aspen/prickly rose	33.3	33.3	0.0
BS02 - Lichen/felsenmeer - bedrock	<0.1	<0.1	0.0
BS03 - Jack pine/blueberry/lichen	4,991.4	4,991.4	0.0
BS04 - Jack pine - black spruce/feathermoss	6,158.9	6,158.9	0.0
BS05 - Jack pine - white birch/feathermoss	1.1	1.1	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.0
BS07 - Black spruce/blueberry/lichen	2.6	2.6	0.0
BS08 - Black spruce - white birch/lichen	<0.1	<0.1	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	23.1	0.0
BS10 - Black spruce - white birch/feathermoss	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	11.9	11.9	0.0
BS14 - White birch/lingonberry - Labrador tea	74.0	48.3	-25.7
BS15 - Trembling aspen - white birch/green alder	<0.1	<0.1	0.0
Undisturbed upland subtotal	*19,158.2*	*18,806.8*	*-351.5*
BP02(BU) - Jack pine/lichen (Burned)	8,990.9	7,229.2	-1,761.7
BP03(BU) - Jack pine/feathermoss (Burned)	4,846.6	4,846.6	0.0
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	1,274.5	1,274.5	0.0
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.3	0.3	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	10.4	10.4	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.9	0.9	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	4.4	4.4	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	25.2	25.2	0.0
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	1,070.4	943.6	-126.8
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	0.7	0.7	0.0
BS03(BU) - Jack pine/blueberry/lichen (Burned)	23,172.8	23,098.6	-74.2
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	9,065.2	9,065.2	0.0
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	5.1	5.1	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.9	0.9	0.0
BS07(BU) - Black spruce/blueberry/lichen (Burned)	5.6	5.6	0.0
BS08(BU) - Black spruce - white birch/lichen (Burned)	0.1	0.1	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	50.1	50.1	0.0

Table 13.5-2: Changes to Upland Ecosystem Availability in the Reasonably Foreseeable Development Case

Upland ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	57.7	57.7	0.0
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	39.9	36.0	-4.0
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.2	0.2	0.0
Recent burn upland	7,041.6	7,041.6	0.0
Burned upland subtotal	*55,663.4*	*53,696.7*	*-1,966.7*
Upland total	**74,821.7**	**72,503.5**	**-2,318.2**
Summary			
Upland total	**74,821.7**	**72,503.5**	**-2,318.2**
Wetland total	**32,211.3**	**32,139.3**	**-72.0**
Anthropogenic disturbance total[b]	**457.8**	**2,847.9**	**2,390.1**
Total RSA	**107,490.7**	**107,490.7**	**n/a**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
a) McLaughlan et al. 2010.
b) Anthropogenic disturbance total includes the maximum disturbance area for the Project (980.7 ha) and the Fission Patterson Lake South Property (1,544.2 ha) minus the existing anthropogenic disturbance within the maximum disturbance areas in the Base Case (134.8 ha).
ELC = Ecological Land Classification; RSA = regional study area; RFD = reasonably foreseeable development; < = less than; n/a = not applicable.

The duration of effects from changes in upland ecosystem availability from the two projects in the RFD Case would be a function of the amount of temporal overlap between the period from the start of Project Construction to the end of the Active Closure Stage and the time required to establish upland ELC units. Incremental effects as a result of the Project were predicted to occur from Construction through the end of the Active Closure Stage and the time required to establish mature upland ELC units (i.e., 60 to 80 years) (Section 13.3.1.3). At a minimum, upland ecosystem loss from the Fission Patterson Lake South Property would occur during a hypothetical or projected three-year construction period, seven-year operating period (production and processing), and active decommissioning (Fission 2019, 2021). 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.

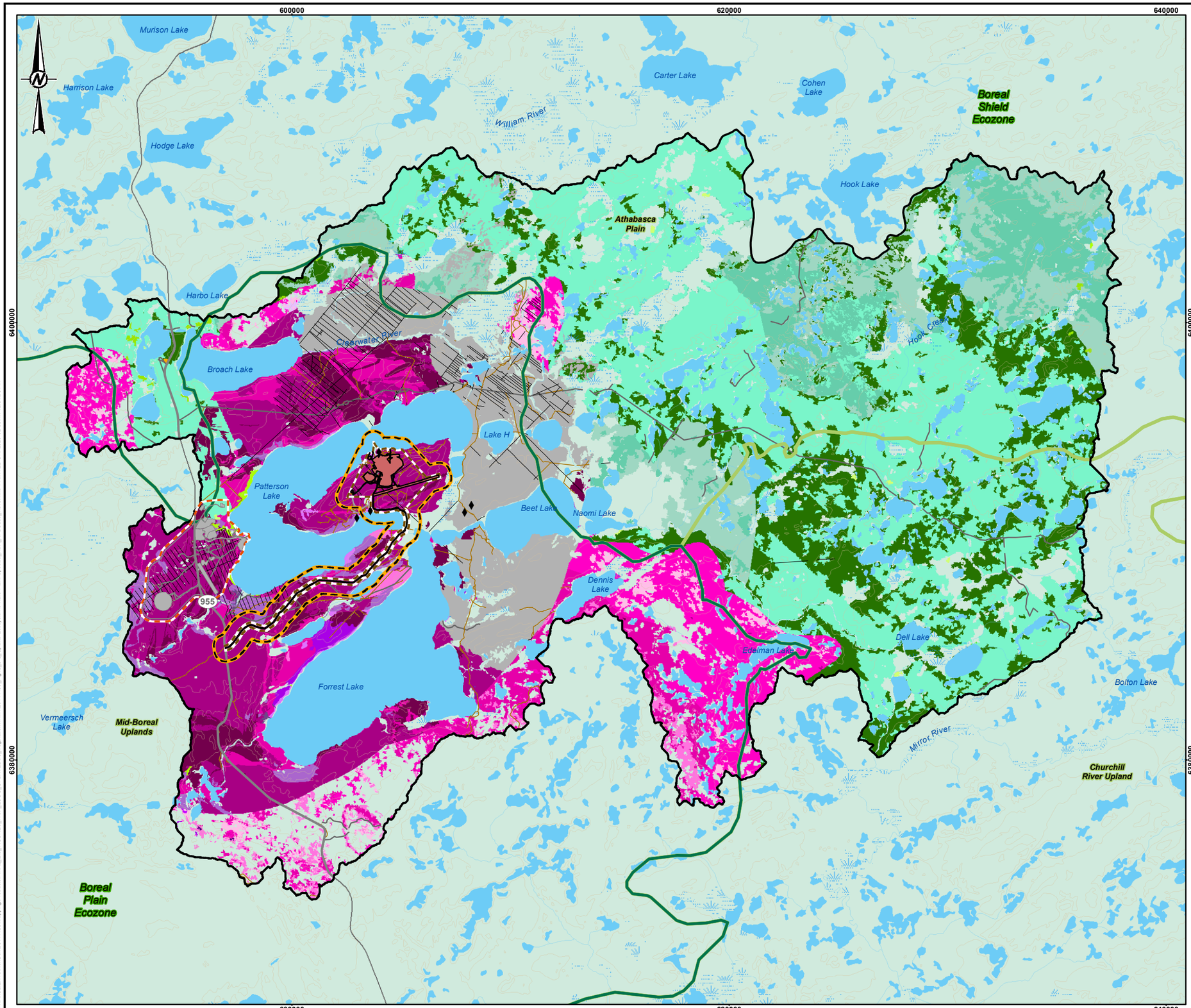
For the assessment, it was assumed that the duration of active decommissioning for the Fission Patterson Lake South Property would be similar to the Active Closure Stage for the Project (i.e., five years). The duration of effects from direct habitat loss for the Fission Patterson Lake South Property was therefore assumed to be from construction to the end of decommissioning (i.e., 15 years) plus 60 to 80 years for mature upland ELC units to be established. If the assumed upland ecosystem loss from the Fission Patterson Lake South Property completely overlapped upland ecosystem loss associated with the Project, the duration of cumulative effects for the RFD Case would be a maximum of 95 years. However, a decrease in temporal overlap of the two projects would result in a shorter duration of cumulative effects.

Climate Change

Section 22, Assessment of Effects of the Environment on the Project, outlines the future climate extreme projections for the Project. From the median (i.e., 50% exceedance probability) values for the 2050s and 2080s, the projected future climate extremes indicate a future that is likely to be warmer and wetter on an annual basis (i.e., increased warm nights and reduced ice and frost days and increased annual total wet-day precipitation, and very wet and extremely wet days). Due to a longer, warmer growing season, forest productivity may increase in the future and alter ecological succession (Sauchyn et al. 2009). Longer growing seasons can increase carbon and nutrient transport to the soil. Increased precipitation can cause groundwater levels to rise, which can increase mobility of solutes and change soil quality (Oni et al. 2017).

Changes to soil quality may alter upland ecosystem availability as ELC units shift to adapt to new nutrient and moisture regimes. Changes are anticipated to be more pronounced within ELC units that are associated with specific nutrient and moisture regimes and therefore may be less resilient to climate change effects (i.e., Black spruce/Labrador tea/feathermoss [BP14], White birch - white spruce - balsam fir [BP11]). Sites with coarse, rapidly drained soils (i.e., jack pine forests [BP02, BP03, BS03, BS04]) are not anticipated to experience large-scale changes from increases in precipitation or nutrient availability. Availability in these ecosystems would likely be driven by changes in the fire regime (i.e., intensity and interval) and would occur beyond the regional (i.e., RSA) scale.

Forest fires occur when fuel, weather, and ignition factors successfully combine. Forest fire characteristics (i.e., frequency and severity) are closely related to weather and climate. Heat waves, droughts, and regional weather patterns (e.g., high-pressure ridges) can increase the risk and alter the behaviour of forest fires and are anticipated to increase fire frequency (Hart et al. 2019). Although projected future climate extremes indicate a future that is likely to be wetter annually (Appendix 22A Climate Change Dataset Summary Report), climate change is still anticipated to increase fire frequency within the RSA (Hart et al. 2019). Changes in climate that affect disturbance regimes and forest resilience would have effects beyond the regional (i.e., RSA) scale. Large, stand-replacing fires are a driver of forest composition, structure, function, and therefore overall availability. However, forests within the RSA may be resilient to fire, particularly with respect to jack pine stands, as self-replacement is the most common post-fire trajectory (Hart et al. 2019). Well-drained black spruce stands (e.g., BP14) tend to be less resilient to fire disturbance and less likely to return to the same state post-fire (Hart et al. 2019). As fire frequency increases, it is predicted that the availability of deciduous ELC units (e.g., BP06 and BP07) would increase as black spruce dominant stands would become less common (Hart et al. 2019).



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- PATTERSON LAKE SOUTH PROPERTY HYPOTHETICAL MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

UPLAND VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

UPLAND ECOLOGICAL LAND CLASSIFICATION UNIT

BP02	BP14	BS07
BP02 (BU)	BP14 (BU)	BS07 (BU)
BP03	BP16	BS08
BP03 (BU)	BP16 (BU)	BS08 (BU)
BP04	BS02	BS09
BP04 (BU)	BS02 (BU)	BS09 (BU)
BP06	BS03	BS10
BP06 (BU)	BS03 (BU)	BS13
BP07	BS04	BS13 (BU)
BP07 (BU)	BS04 (BU)	BS14
BP11	BS05	BS14 (BU)
BP11 (BU)	BS05 (BU)	BS15
BP12	BS06	BS15 (BU)
BP12 (BU)	BS06 (BU)	RECENT BURN (UPLAND)

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
3. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

UPLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, REASONABLY FORESEEABLE DEVELOPMENT CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08	**FIGURE 13.5-3**		
REVIEW	JV	2023-02-08			

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

0 25mm 50mm

13.5.1.2.2 Ecosystem Distribution

Despite fragmentation that would occur as a result of the Project and the Fission Patterson Lake South Property, most upland ecosystems are predicted to remain abundant and well connected across the RSA (Figure 13.5-3). It is anticipated that the RFD Case would have a relatively small direct effect on the loss of upland ELC units with an additional loss of 1,449.8 ha relative to the Application Case (Table 13.5-2). However, disturbance to some of the least common ELC units in the RSA (i.e., BP14, BP16[BU], and BS14) is anticipated in the RFD Case (i.e., regional geographic extent). It is also expected that the Fission Patterson Lake South Property would include mitigation to limit cumulative changes to ecosystem availability and distribution.

These changes would result in a minor reduction in the connectivity of ELC units regionally but are not predicted to affect overall connectivity in the RSA. Minor changes in the fragmentation of upland ecosystems would be restricted to the northwest boundary of the RSA, which has an existing aggregation of linear and non-linear disturbances in proximity to Highway 955 (e.g., rough roads, trails, seismic lines / cutlines; Figure 13.5-3). Therefore, the magnitude of changes to ecosystem distribution is anticipated to be low (i.e., little to no change in connectivity in most of the RSA).

Planned mitigation of direct disturbance to upland ecosystems from the Fission Patterson Lake South Property includes minimizing land clearing, reclaiming unused areas, and remediating the site at closure (Fission 2019). The duration effects from direct ecosystem loss for the Fission Patterson Lake South Property was therefore assumed to be from construction to the end of decommissioning (i.e., 15 years) plus 60 to 80 years for mature upland ELC units to be established (Section 13.5.1.2.1, Ecosystem Availability). Therefore, the duration of cumulative effects for the RFD Case would be a maximum of 95 years.

Climate Change

Saskatchewan's Boreal Shield Ecozone is known for a naturally short fire-return interval (Neufeld et al. 2020; Parisien et al. 2004), and species tend to be well adapted to this disturbance regime, as self-replacement of forested stands is the most common post-fire trajectory (Hart et al. 2019). However, where burns are severe enough to remove the organic layer and expose mineral soils, post-fire recovery favours the establishment of deciduous species. Therefore, fire can have a large influence on the distribution of ELC units.

Although projected future climate extremes indicate a future that is likely to be wetter annually (Appendix 22A), climate change is still anticipated to increase fire frequency within the RSA (Hart et al. 2019). As the fire-return interval decreases, forest resilience is reduced, which may potentially lead to changes in structure and composition of forested stands, as well as the overall distribution of forest types (e.g., ELC units). However, fire-return intervals may be limited by self-regulation as young stands burn less frequently due to fuel limitations in early successional vegetation that inhibit ignition (Hart et al. 2019).

13.5.1.2.3 Ecosystem Condition

Five occurrences of beautiful sedge were identified in upland ELC units within the RSA (Figure 13.5-3). One occurrence was observed within the Project maximum disturbance area within a burned Jack pine/lichen (BP02[BU]) ELC unit (Section 13.3.1.3). The four remaining occurrences of beautiful sedge within upland ELC units within the RSA are not predicted to be disturbed by the Project or the Fission Patterson Lake South Property. It is anticipated that rare vascular plant surveys would be completed for the Fission Patterson Lake South Property and that planning would include mitigation to limit disturbance to beautiful sedge and other federally listed or provincially tracked vascular plant species.

Forested areas in close proximity to any new development may be affected by removal of trees and other edge effects (e.g., ingress of generalist or invasive species and changes in moisture and sunlight) that can adversely influence conditions. One nuisance and one noxious weed species designated under *The Weed Control Act*, dandelion and narrow-leaved hawk's beard, respectively, were identified during the field surveys (Section 13.3.1.3). Additional disturbance associated with the proposed RFD Case activities can create increased potential for the introduction or encroachment of designated weed species. Construction equipment for the Project would arrive at the site in a clean condition, and an Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species. No weed management actions were identified in the Fission Patterson Lake South Property prefeasibility study (Fission 2019), but it is anticipated that appropriate mitigation would be implemented to avoid and minimize the introduction of weeds. None of the documented occurrences of rare plant species outside of the Project footprint would be disturbed by activities in the RFD Case. Activities outlined in the Fission Patterson Lake South Property prefeasibility study and project description include designing the project to minimize the amount of area disturbed and remediate the area at decommissioning (Fission 2019, 2021). It is expected that after remediation, the Fission Patterson Lake South Property would have minor, localized, reversible residual effects on ecosystem condition.

Climate Change

Climate-related temperature changes could result in shifts in species composition. The northern boreal forest may experience increased productivity due to warmer temperatures (Sauchyn et al. 2009; Urquizo et al. 2000). Changes to forest structure may occur from increased intensity of fire, insects, and disease, which may cause a loss in forest cover in the boreal forest (Sauchyn et al. 2009). Effects from climate change would likely be permanent. It is uncertain whether climate change would positively or negatively affect the condition of upland ecosystems, but it is unlikely to have a large influence on the predicted small magnitude of Project and RFD-related effects.

Changes in temperature may lead to increased potential for insect invasion, particularly mountain pine beetle (*Dendroctonus ponderosae*). The population dynamics of the mountain pine beetle are driven by the availability of hosts and suitable climatic conditions, with the species' range limited by cold winter temperatures and cool summers (Government of Canada 2021b). To date, there have been no mountain pine beetle detected in the boreal forest monitoring area of Saskatchewan (Government of Saskatchewan 2021). Current pine beetle populations in Alberta are distributed in areas south of Grand Prairie, northwest of Rocky Mountain House, and north of Whitecourt (Government of Alberta 2020). However, mountain pine beetle was observed as far east as Wandering River, Alberta in 2019 (Government of Alberta 2019), approximately 300 km southwest of the Project site. Mountain pine beetles prefer large trees that are typically greater than 80 years old because tree diameter is associated with thicker bark and conductive tissue, which provide protection from weather and predators, and equates to a better mountain pine beetle food source (Safranyik and Carroll 2006). Therefore, jack pine forests within the RSA may be less susceptible to mountain pine beetle infestation due to the short fire-return interval observed within the RSA (i.e., availability of large, mature jack pine stands is limited).

13.5.1.3 Residual Effects Classification and Determination of Significance

13.5.1.3.1 Classification Summary

Residual effects were classified for the Application Case and the RFD Case after the implementation of effective mitigation (Table 13.5-3). Residual effects were summarized according to the direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of the effect occurring following the methods described in Section 13.2.9. Effective implementation of mitigation is summarized in Section 13.4, Project Interactions and Mitigations, (Table 13.4-1), and progressive reclamation and revegetation is expected to reduce the magnitude and duration of residual effects on upland ecosystems. Following the summary of residual effects, the significance of residual effects for the Application Case and the RFD Case was determined according to the methods described in Section 13.2.9.

Table 13.5-3: Classification of Residual Effects on Upland Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Upland ecosystem availability	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Direct physical loss of 868.4 ha (1.2% of the RSA) from the Base Case to the Application Case (i.e., low magnitude)	▪ Loss of 2,318.2 ha (3.1% of RSA) from the Base Case to the RFD Case (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for ELC units covered by permanent facilities (e.g., WRSAs) ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: ELC units covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units, depending on the extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and Fission Patterson Lake South Property) ▪ Possible (climate change)
Upland ecosystem distribution	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Minor net change in upland ecosystem distribution centred on the LSA. Almost no change in fragmentation at the RSA scale (i.e., low magnitude)	▪ Minor increase in fragmentation of upland ecosystems in the RSA near the western boundary in proximity to existing disturbance. Almost no change to connectivity in most of the RSA (i.e., low magnitude)
	Geographic extent	▪ Local to regional	▪ Regional (Project and Fission Patterson Lake South Property) ▪ Beyond regional (climate change)

Table 13.5-3: Classification of Residual Effects on Upland Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Upland ecosystem distribution	Duration	▪ Permanent: for ELC units covered by permanent facilities (e.g., WRSAs) ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: ELC units covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units, depending on the extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and Fission Patterson Lake South Property) ▪ Possible (climate change)
Upland ecosystem condition	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Potential loss of one occurrence of beautiful sedge ▪ Edge effects would result in a minor change in ecosystem structure (i.e., low magnitude)	▪ Potential loss of rare vegetation species ▪ Potential introduction of weed species ▪ Minor change in ecosystem structure from edge effects (i.e., low magnitude)
	Geographic extent	▪ Local	▪ Regional (Project and Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for ELC units covered by permanent facilities (e.g., WRSAs) ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: ELC units covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units, depending on the extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (ELC units covered by permanent facilities) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Possible	▪ Possible (Project, Fission Patterson Lake South Property) ▪ Possible (climate change)

RFD = reasonably foreseeable development; RSA = regional study area; WRSAs = waste rock storage areas; LSA = local study area; ELC = Ecological Land Classification.

13.5.1.3.2 Significance Determination

Upland ecosystems are considered to have ecological resilience and adaptive capacity to changes in abundance, distribution, and condition in the Base Case. Most upland ecosystems are common and well distributed and connected within the LSA and RSA. Previous and existing linear disturbances have resulted in some fragmentation of habitats in the LSA and RSA, but upland ecosystems remain intact on the landscape. Existing human disturbance is largely distributed in the northwest portion of the RSA in proximity to Highway 955. Natural fire disturbance has the largest influence on ELC unit availability, distribution, and condition in the RSA in the Base Case, with 55,663.4 ha (51.8%) of upland ELC units burned within the last 40 years, which is consistent with conditions in the rest of the Boreal Shield Ecozone (i.e., 47.0% being burned in the last 40 years; McLoughlin et al. 2019). Overall, the weight of evidence indicates that upland ecosystems in the RSA are self-sustaining and ecologically effective in the Base Case.

Application Case

In the Application Case, changes in upland ecosystem availability, distribution, and condition as a result of the Project are predicted to be certain, local, long term, and continuous (Table 13.5-3). The exception is for changes to the ecosystem condition, which are classified as possible since the small decrease in habitat abundance may produce few new edge effects. A single rare plant species was detected during baseline studies; however, if possible, the occurrence would be flagged for avoidance. Designated weed species were detected during baseline surveys; however, the Project would implement an Environmental Protection Program that includes actions to avoid and limit the risk of introducing invasive plant species.

The establishment of reclaimed upland vegetation ecosystems is predicted to occur well beyond the Active Closure Stage, particularly for mature forest types (e.g., 60 to 80 years). The loss of 868.4 ha of available uplands as a result of the Project is predicted to have a small influence on ecological structure and function. Disturbance associated with the Project would be limited to five ELC units, three of which are associated with common jack pine forest types (i.e., BP02, BP03, and BP02[BU]). Disturbance to less common ELC units (i.e., BP14 and BP16[BU]) is anticipated to be 47.3 ha (i.e., less than 5% of the maximum disturbance area). The importance of these ELC units were raised by CRDN, as they felt that the clearcutting of large spruce trees (e.g., BP14) from previous development activities in general at Patterson Lake showed a lack of respect for the trees and for the CRDN members who utilize medicines from those trees (TSD V.1: CRDN). Although they comprise a small portion of the maximum disturbance area, disturbance to these ELC units would be minimized to the extent possible. The effects on upland ecosystems are anticipated to be less when considering the smaller size of the anticipated Project footprint relative to the maximum disturbance area applied in the assessment.

One occurrence of beautiful sedge is located in an upland ecosystem within the maximum disturbance area and could be lost or removed by the Project. Four occurrences of the same species were observed outside of the maximum disturbance area where no direct effects are anticipated. Rare plants would be clearly marked and avoided, where feasible. Where disturbance to rare plants is unavoidable, the ENV would be consulted to determine the best course of action. It is anticipated that measures to limit disturbance to rare vascular plants would include the use of temporary access matting, proper salvage of topsoil and seed bank, and/or changes to Project components, where feasible. Mitigation would be dependent on species tolerance to disturbance, species growth habit (i.e., perennial or annual), and species availability and distribution information (i.e., provincial rank). Overall, upland ecosystems are predicted to remain self-sustaining and ecologically effective in the Application Case.

RFD Case

For the RFD Case, the combined effects from the Project and planned Fission Patterson Lake South Property are expected to be regional. Cumulative effects are predicted to be long term, mostly reversible, and continuous (Table 13.5-3). Effects on ELC units covered by permanent facilities (e.g., WRSAs) would be irreversible but localized within the RSA and not predicted to disrupt ELC unit distribution and connectivity. The Project and the Fission Patterson Lake South Property would result in a direct loss of 2,390.1 ha to upland ecosystems, but the implementation of effective mitigation, including reclamation and revegetation, is expected to limit cumulative changes to ecosystem availability, distribution, and condition. Approximately 97% of upland ecosystems would remain intact in the RFD Case and are well connected and distributed across the RSA. Species with upland ecosystems are well adapted to the existing fire disturbance regime, with ELC units generally self-replaced post-fire (Hart et al. 2019). Changes to structure and species composition due to burn frequency and intensity may also be moderated through self-regulation as young stands burn less frequently due to fuel limitations in early successional vegetation that inhibit ignition (Hart et al. 2019). Overall, upland ecosystems are predicted to remain self-sustaining and ecologically effective in the RFD Case.

Climate Change

Climate change is expected to affect ecosystem availability, distribution, and condition continuously at a beyond regional extent (Table 13.5-3). Effects from climate change would likely be permanent, but not certain (i.e., possible) due to the inherent low level of confidence in predicting the magnitude, frequency, and geographic extent of climate-related changes to measurement indicators. However, upland ecosystems are expected to remain resilient, abundant, and well distributed within and adjacent to the RSA and self-sustaining and ecologically effective.

Overall Significance

Based on several lines of evidence, incremental and cumulative effects associated with the Project, previous and existing developments, and the Fission Patterson Lake South Property on upland ecosystems are predicted to be not significant. Effects related to climate change are not expected to significantly influence upland ecosystems and do not alter the assessment of no significant cumulative effects from the Project and Fission Patterson Lake South Property.

13.5.2 Wetland Ecosystems

The residual effects analysis for wetland ecosystems focused on evaluating the following pathways:

- direct loss, alteration, and fragmentation of wetland ecosystems as a result of the Project; and
- alteration of final terrain, soil conditions, and/or plant species composition could change the types of ecosystems that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

13.5.2.1 Application Case

13.5.2.1.1 Ecosystem Availability

The Project is predicted to contribute to a loss of 26.0 ha (i.e., 21.2% in the LSA; 0.3% in the RSA) of undisturbed wetland ecosystems, 1.8 ha of early- and late-stage regeneration (i.e., burned in the last 6 to 40 years; Burned) wetland ecosystems, and 2.4 ha of disturbance in open water. Therefore, the combined loss of burned and unburned wetland ELC units in the RSA is 27.8 ha (0.4%; Table 13.5-4; Figure 13.5-4; Figure 13.5-5). In total, the Project is anticipated to affect only 4 of 42 wetland ELC units in the RSA: Black spruce treed bog (BP19); Labrador tea shrubby bog (BP20); Willow shrubby rich fen (BP25); and burned Black spruce treed bog (BP19[BU]). The largest absolute change (ha) and relative change to a single wetland ELC unit is to the Labrador tea shrubby bog (BP20) ELC unit with a loss of 16.6 ha (i.e., 28.8% change from LSA in the Base Case; 1.3% change from RSA in the Base Case). Because uncertainty was addressed by making assumptions that overestimated the effects (e.g., the maximum disturbance area), the amount of wetland ecosystems lost is expected to be less than estimated. Where avoidance of wetland ELC units is not possible, disturbance would be minimized to the extent possible and additional mitigation would be implemented (i.e., use of erosion control measures, soil handling techniques, and setbacks for soil stockpiles; Section 12.4, Project Interactions and Mitigation). Disturbance associated with permanent facilities of the Project (e.g., WRSAs) is not anticipated to occur within wetland ecosystems.

It is difficult to recreate and/or restore a wetland to full ecological function once it has been disrupted by human development effects. Bog and fen ELC units are slow to recover from disturbance. With restoration, moss and vascular plants can re-establish in areas of disturbance; however, the time for vegetation to recover and the exact composition of the plant cover is unknown (Lucchese et al. 2010; McCarter and Price 2013).

Once wetlands are removed, the loss is considered continuous until functional habitat is reclaimed or offset (i.e., beyond Closure), and effects would be limited to the LSA (i.e., local). Following Closure, it is anticipated that wetland ecosystems would be reclaimed to the extent possible in an attempt to achieve no net loss of wetland functions, consistent with the guideline of the *Federal Policy on Wetland Conservation* (Government of Canada 1991). Wetland ecosystems are assumed to be reclaimed to mineral wetlands consisting of non-forested structural stages (e.g., herb-, sedge-, or shrub-dominated). Although the establishment of functioning wetland ecosystems following the Active Closure Stage is considered possible, restoration of wetland species composition and ecological function similar to the wetland ELC units observed in the Base Case is unlikely. Therefore, for the purpose of this assessment, the loss of all wetland ecosystems is conservatively assumed to be permanent and irreversible.

Wetland ecosystems are less common within the LSA (i.e., 553.2 ha, 19.5%) relative to the RSA (i.e., 32,211.3 ha, 30.0%). Most wetlands are expected to have the capacity to adapt and be resilient to existing natural and anthropogenic disturbances and associated variations in availability. However, some specific wetland ELC units (e.g., BS25) are less common on the landscape and would be likely less resilient to adverse changes in availability. Resilience in wetlands is also a function of soil type, as mineral-based wetlands can be reclaimed and contribute to reversing adverse effects, while there is less confidence in reclaiming peat-bog type wetlands when soils have been disturbed (Environment Canada 2013).

Table 13.5-4: Changes to Wetland Ecosystem Availability in the Application Case

Wetland ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
BP18 - Black spruce - tamarack treed swamp	21.9	21.9	0.0
BP19 - Black spruce treed bog	1,708.0	1,699.0	-9.0
BP20 - Labrador tea shrubby bog	1,254.7	1,238.1	-16.6
BP21 - Graminoid bog	25.2	25.2	0.0
BP22 - Open bog	7.8	7.8	0.0
BP23 - Tamarack treed fen	40.4	40.4	0.0
BP24 - Leatherleaf shrubby poor fen	54.5	54.5	0.0
BP25 - Willow shrubby rich fen	317.1	316.7	-0.4
BP26 - Graminoid fen	263.3	263.3	0.0
BP27 - Open fen	32.8	32.8	0.0
BP28 - Seaside arrow-grass marsh	64.3	64.3	0.0
BS17 - Black spruce treed bog	1,517.3	1,517.3	0.0
BS18 - Labrador tea shrubby bog	1,481.3	1,481.3	0.0
BS19 - Graminoid bog	0.2	0.2	0.0
BS20 - Open bog	0.9	0.9	0.0
BS21 - Tamarack treed fen	0.3	0.3	0.0
BS22 - Leatherleaf shrubby poor fen	205.0	205.0	0.0
BS23 - Willow shrubby rich fen	4.5	4.5	0.0
BS24 - Graminoid fen	41.8	41.8	0.0
BS25 - Open fen	<0.1	<0.1	0.0
BS26 - Rush sandy shore	15.2	15.2	0.0
Undisturbed wetland subtotal	*7,056.4*	*7,030.4*	*-26.0*
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	49.9	49.9	0.0
BP19(BU) - Black spruce treed bog (Burned)	2,240.8	2,239.0	-1.8
BP20(BU) - Labrador tea shrubby bog (Burned)	82.2	82.2	0.0
BP21(BU) - Graminoid bog (Burned)	0.3	0.3	0.0
BP23(BU) - Tamarack treed fen (Burned)	25.3	25.3	0.0
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	11.6	11.6	0.0
BP25(BU) - Willow shrubby rich fen (Burned)	142.0	142.0	0.0
BP26(BU) - Graminoid fen (Burned)	401.6	401.6	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	109.9	109.9	0.0
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	<0.1	<0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,540.3	1,540.3	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	1,052.9	1,052.9	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.0
BS20(BU) - Open bog (Burned)	2.2	2.2	0.0
BS21(BU) - Tamarack treed fen (Burned)	7.0	7.0	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	411.4	411.4	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	33.1	33.1	0.0
BS24(BU) - Graminoid fen (Burned)	89.1	89.1	0.0
BS25(BU) - Open fen (Burned)	0.1	0.1	0.0
BS26(BU) - Rush sandy shore (Burned)	36.6	36.6	0.0
Recent burn wetland	96.8	96.8	0.0

Table 13.5-4: Changes to Wetland Ecosystem Availability in the Application Case

Wetland ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
Burned wetland subtotal	*6,333.1*	*6,331.3*	*-1.8*
Water	18,821.8	18,819.4	-2.4
Wetland total	**32,211.3**	**32,181.2**	**-30.1**
Summary			
Wetland total	**32,211.3**	**32,181.2**	**-30.1**
Upland total	**74,821.7**	**73,953.3**	**-868.4**
Anthropogenic disturbance total[b]	**457.8**	**1,356.3**	**898.5**
Total RSA	**107,490.7**	**107,490.7**	**n/a**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.
a) McLaughlan et al. 2010.
b) Anthropogenic disturbance total includes the maximum disturbance area for the Project (980.7 ha) minus the existing anthropogenic disturbance within the maximum disturbance area in the Base Case (82.2 ha).
ELC = Ecological Land Classification; RSA = regional study area; < = less than.

600000
620000
640000
6400000
6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Boreal Shield Ecozone
Hook Lake
Athabasca Plain
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Dell Lake
Edelman Lake
Forrest Lake
Bolton Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

WETLAND VASCULAR RARE PLANT SPECIES

- ENGLISH SUNDEW
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

WETLAND ECOLOGICAL LAND CLASSIFICATION UNIT

- BP18
- BP18 (BU)
- BP19
- BP19 (BU)
- BP20
- BP20 (BU)
- BP21
- BP21 (BU)
- BP22
- BP23
- BP23 (BU)
- BP24
- BP24 (BU)
- BP25
- BP25 (BU)
- BP26
- BP26 (BU)
- BP27
- BP28
- BP28 (BU)
- BS16 (BU)
- BS17
- BS17 (BU)
- BS18
- BS18 (BU)
- BS19
- BS19 (BU)
- BS20
- BS20 (BU)
- BS21
- BS21 (BU)
- BS22
- BS22 (BU)
- BS23
- BS23 (BU)
- BS24
- BS24 (BU)
- BS25
- BS25 (BU)
- BS26
- BS26 (BU)
- RECENT BURN (WETLAND)

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)
1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.
ROOK I PROJECT

TITLE
WETLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, APPLICATION CASE

CONSULTANT
wsp

PROJECT	20144150		PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.5-4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25mm
0

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600000

6400000

6380000

Sieben Lake

Sholte Lake

Harbo Lake

Gedak Lake

Broach Lake

Clearwater River

Lake A

Patterson Lake

Lake H

Athabasca Plain

Boreal Shield Ecozone

Boreal Plain Ecozone

Beet Lake

Naomi Lake

Lake F

Dennis Lake

Forrest Lake

Mid-Boreal Uplands

955

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

WETLAND VASCULAR RARE PLANT SPECIES

- ENGLISH SUNDEW
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

WETLAND ECOLOGICAL LAND CLASSIFICATION UNIT

- BP18
- BP18 (BU)
- BP19
- BP19 (BU)
- BP20
- BP20 (BU)
- BP21
- BP22
- BP23
- BP23 (BU)
- BP24
- BP24 (BU)
- BP25
- BP25 (BU)
- BP26
- BP26 (BU)
- BP27
- BP28
- BP28 (BU)
- BS16 (BU)
- BS17
- BS17 (BU)
- BS18
- BS18 (BU)
- BS21
- BS21 (BU)
- BS22
- BS22 (BU)
- BS23
- BS23 (BU)
- BS24
- BS26
- BS26 (BU)
- RECENT BURN (WETLAND)

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WETLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08	**FIGURE 13.5-5**	
REVIEW	JV	2023-02-08		

25mm

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

PATH: I:\CLIENTS\NexGen\20144150\Mapping\Products\FINAL_EIS_FIGURES_WSP_LOGO_UPDATED\13_Vegetation\17x11\20144150_Fig13_5-5_Wetland-Ecosystems-Rare-Plant-Species_LSA_ApplicationCase_Rev0.mxd PRINTED ON: 2023-02-08 AT: 12:32:58 PM

13.5.2.1.2 Ecosystem Distribution

Environment Canada (2013) states that high priority should be given to maintaining wetlands in close proximity to one another. Fragmentation of wetlands can lead to reduced habitat for species that require contiguous habitat and may inhibit effective dispersal (Environment Canada 2013). Decreased connectivity in the Application Case would occur at the local scale around the maximum disturbance area (Figure 13.5-4; Figure 13.5-5). The existing access road would be upgraded to safely accommodate large vehicles and equipment and realigned to avoid the wetland west of the proposed airstrip. Most of the existing trails in the Project footprint would be upgraded for site roads and haul roads within the maximum disturbance area. The Project would be in a portion of the RSA that contains an aggregation of existing linear and non-linear features in proximity to Highway 955 (Figure 13.5-5).

Project components (i.e., camp location) were redesigned or moved to minimize effects on wetland availability and distribution within the Project footprint, to the extent possible. Existing wetland ecosystems within the LSA are mostly distributed along the shoreline of Patterson Lake and along the Clearwater River below Patterson Lake where an extensive organic wetland (i.e., BP19, BP19[BU], and BP20) has developed to the east of the existing bridge crossing on the existing access road. Changes to wetland distribution are anticipated to be limited as the existing access road would be widened to 10 m, but the existing alignment would be maintained between the gatehouse and Highway 955 (NexGen 2021).

Small changes in distribution are anticipated within the RSA due to Project removal; however, because the ecosystems affected are in close proximity to the existing mine disturbance (i.e., the existing exploration disturbance and existing access road), additional ecosystem fragmentation would be limited and localized such that the Project would result in minor changes (i.e., low magnitude) to wetland ecosystem arrangement and connectivity in the LSA and RSA.

13.5.2.1.3 Ecosystem Condition

Edge effects due to the Project may alter wetland species abundance and richness. Edges can change the natural environment by increasing wind and light and causing small changes in microclimate (e.g., humidity changes) (Foley et al. 2005). The Project is predicted to degrade some wetlands in the LSA due to increased edge effects. However, it is anticipated that any edge effects on wetlands would be limited to wetlands within the maximum disturbance area. Further, some wetland species (e.g., swamp horsetail [*Equisetum fluviatile*]) are adapted to linear environments with high edge-to-area ratios (e.g., roadside ditches), such that they are not likely to be negatively affected by habitat fragmentation (Soomers et al. 2013). Overall changes to the wetland ecosystem condition would be influenced by the sensitivity of local native species to fragmentation and edge effects. New disturbances would occur along the periphery of existing anthropogenic disturbance (i.e., the existing access road), limiting the formation of new habitat edges.

Five rare vascular plant species occurrences were recorded in wetland ecosystems within the RSA (Annex VII.1; Annex VII.2; Figure 13.5-5): English sundew, Hudson Bay sedge, northern lady-fern, Scheuchzer cotton-grass, and water lobelia. None of these observations were recorded within the maximum disturbance area. Known rare plants would be clearly marked and avoided, where feasible. The ENV recommends a 30 m setback distance for high disturbance activities (e.g., mining) for species ranked S1 through S3 (ENV 2017). Where disturbance to rare plants is unavoidable, the ENV would be consulted to determine the best course of action. It is anticipated that measures to limit disturbance to rare vascular plants would include the use of temporary access matting, proper salvage of topsoil and seed bank, and/or changes to Project components, where feasible. Mitigation

would be dependent on species tolerance to disturbance, species growth habit (i.e., perennial or annual), and species availability and distribution information (i.e., provincial rank).

No weed species designated under *The Weed Control Act* were identified within wetland ecosystems in the LSA. However, disturbance can create the potential for the introduction or encroachment of designated weed species. Construction equipment would arrive at the site in a clean condition, and an Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species.

Overall, changes in ecosystem condition are likely well within the resilience and adaptability limits for this VC.

13.5.2.2 Reasonably Foreseeable Development Case

13.5.2.2.1 Ecosystem Availability

The RFD Case is predicted to contribute to a loss of 53.9 ha of undisturbed wetland ecosystems and 1.8 ha of early- and late-stage regeneration (i.e., burned in the last 6 to 40 years; Burned) wetland ecosystems (Figure 13.5-5; Figure 13.5-6). Incremental loss is anticipated to Black spruce treed bog (BP19) and Labrador tea shrubby bog (BP20) ELC units as a result of the Fission Patterson Lake South Property, in addition to disturbance to four new wetland ELC units (i.e., Graminoid bog [BP21], Leatherleaf shrubby poor fen [BP24], Graminoid fen [BP26], and Rush sandy shore [BS26]). The actual disturbance would be dependent on the final design of the Fission Patterson Lake South Property. It is estimated that the hypothetical maximum disturbance area used for the Fission Patterson Lake South Property is 6 times larger than the footprint presented in the Fission (2019) prefeasibility study. The largest relative change is to the Leatherleaf shrubby poor fen (BP24) ELC unit, with a 2.9 ha loss from the 54.5 ha available in the Base Case (5.5%). The largest absolute change to the undisturbed wetland ELC units in the RSA is to the Labrador tea shrubby bog (BP20) ELC unit, with 29.3 ha (2.3%) change from the Base Case. Effects are likely to occur but are uncertain (i.e., probable) given that the Fission Patterson Lake South Property has recently entered the formal regulatory application process.

Once wetlands are removed, the loss is considered continuous until functional habitat is reclaimed or offset (i.e., beyond Closure), and effects would be limited to the RSA (i.e., regional) for the RFD Case. Following Closure, it is anticipated that wetland ecosystems would be reclaimed to the extent possible in an attempt to achieve no net loss of wetland functions, consistent with the guideline of the *Federal Policy on Wetland Conservation* (Government of Canada 1991). Although the establishment of functioning wetland ecosystems following the Active Closure Stage is considered possible, restoration of wetland species composition and ecological function similar to the wetland ELC units observed in the Base Case is unlikely. Therefore, the loss of all wetland ecosystems is conservatively assumed to be permanent and irreversible.

Changes to wetland availability by fire are anticipated to be limited as self-replacement of non-forest poorly drained sites is the most common trajectory post-fire (Hart et al. 2019). Further, changes in wetland ecosystem availability due to an increased fire interval under the climate change scenario were also observed to be relatively stable (Hart et al. 2019).

Climate Change

Wetland ecosystem availability may be adversely affected by climate change in the RFD Case. Wetlands are considered one of the ecosystems most sensitive to predicted changes in precipitation, temperature, and the resultant changes in timing and volume of snowmelt. The annual mean temperature and evapotranspiration rate (i.e., rate at which water vapour is released to the atmosphere by plants and soil) are predicted to increase 2.4°C and 9.1%, respectively, under a climate change scenario, with possible changes in surface water elevations in some waterbodies (Section 9.4.1, Water Surface Elevation). However, it is anticipated that increased annual total precipitation would offset potential water deficits within wetland ecosystems associated with increases in temperature and evapotranspiration rate. Although seasonal deficits may occur (i.e., drought), they would be anticipated to occur within the natural variability and resiliency of wetland ecosystems and would not affect overall ecosystem availability. However, because of the large degree of variation in climate change projections, there is uncertainty in predicting climate-related changes to wetland ecosystem availability (Table 13.5-5).

Table 13.5-5: Changes to Wetland Ecosystem Availability in the Reasonably Foreseeable Development Case

Wetland ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP18 - Black spruce - tamarack treed swamp	21.9	21.9	0.0
BP19 - Black spruce treed bog	1,708.0	1,688.6	-19.4
BP20 - Labrador tea shrubby bog	1,254.7	1,225.4	-29.3
BP21 - Graminoid bog	25.2	25.1	-0.1
BP22 - Open bog	7.8	7.8	0.0
BP23 - Tamarack treed fen	40.4	40.4	0.0
BP24 - Leatherleaf shrubby poor fen	54.5	51.6	-2.9
BP25 - Willow shrubby rich fen	317.1	316.7	-0.4
BP26 - Graminoid fen	263.3	261.6	-1.7
BP27 - Open fen	32.8	32.8	0.0
BP28 - Seaside arrow-grass marsh	64.3	64.3	0.0
BS17 - Black spruce treed bog	1,517.3	1,517.3	0.0
BS18 - Labrador tea shrubby bog	1,481.3	1,481.3	0.0
BS19 - Graminoid bog	0.2	0.2	0.0
BS20 - Open bog	0.9	0.9	0.0
BS21 - Tamarack treed fen	0.3	0.3	0.0
BS22 - Leatherleaf shrubby poor fen	205.0	205.0	0.0
BS23 - Willow shrubby rich fen	4.5	4.5	0.0
BS24 - Graminoid fen	41.8	41.8	0.0
BS25 - Open fen	<0.1	<0.1	0.0
BS26 - Rush sandy shore	15.2	15.1	-0.1
Undisturbed wetland subtotal	*7,056.4*	*7,002.6*	*-53.9*
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	49.9	49.9	0.0
BP19(BU) - Black spruce treed bog (Burned)	2,240.8	2,239.0	-1.8
BP20(BU) - Labrador tea shrubby bog (Burned)	82.2	82.2	0.0
BP21(BU) - Graminoid bog (Burned)	0.3	0.3	0.0
BP23(BU) - Tamarack treed fen (Burned)	25.3	25.3	0.0
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	11.6	11.6	0.0

Table 13.5-5: Changes to Wetland Ecosystem Availability in the Reasonably Foreseeable Development Case

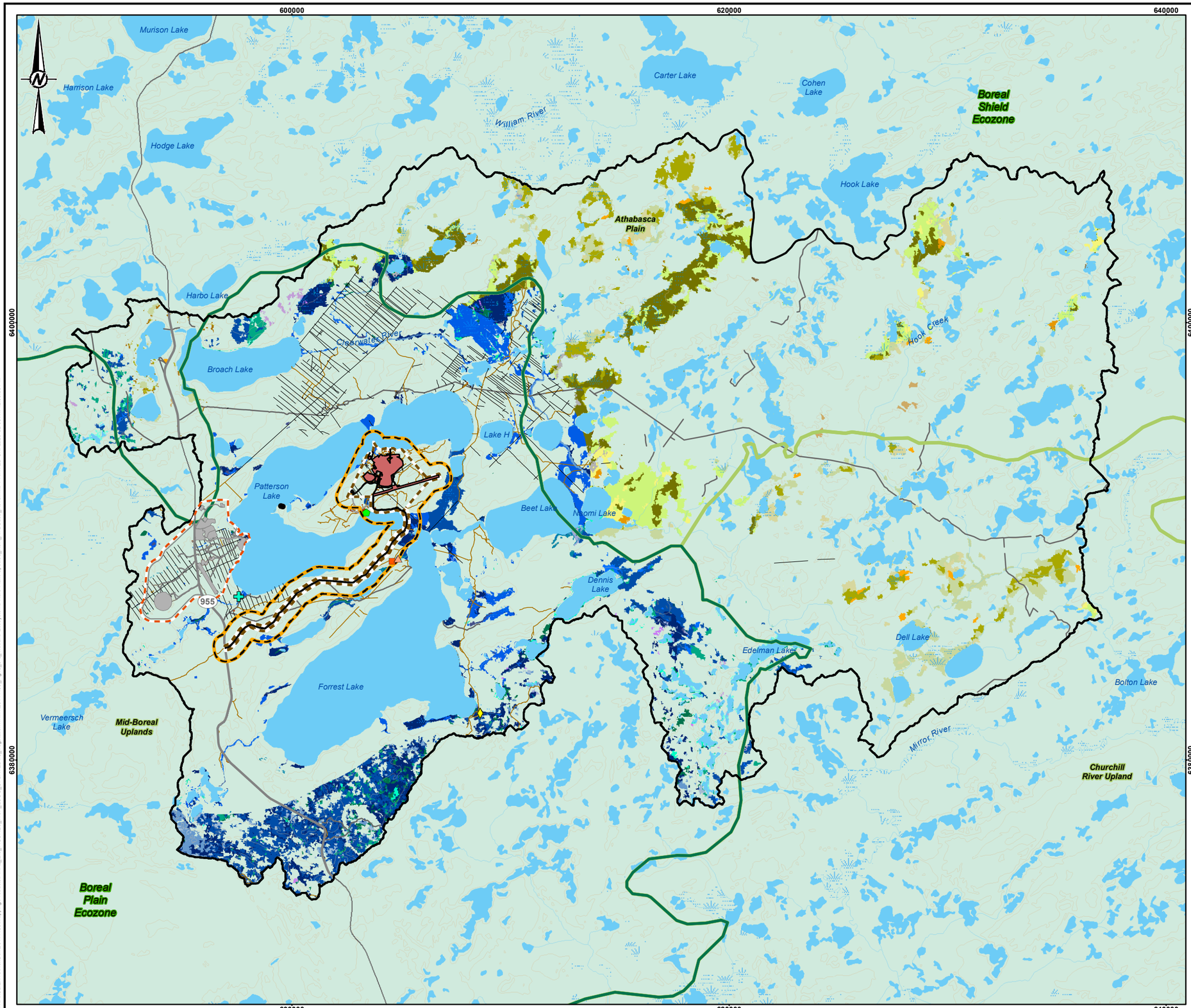
Wetland ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP25(BU) - Willow shrubby rich fen (Burned)	142.0	142.0	0.0
BP26(BU) - Graminoid fen (Burned)	401.6	401.6	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	109.9	109.9	0.0
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	<0.1	<0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,540.3	1,540.3	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	1,052.9	1,052.9	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.0
BS20(BU) - Open bog (Burned)	2.2	2.2	0.0
BS21(BU) - Tamarack treed fen (Burned)	7.0	7.0	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	411.4	411.4	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	33.1	33.1	0.0
BS24(BU) - Graminoid fen (Burned)	89.1	89.1	0.0
BS25(BU) - Open fen (Burned)	0.1	0.1	0.0
BS26(BU) - Rush sandy shore (Burned)	36.6	36.6	0.0
Recent burn wetland	96.8	96.8	0.0
Burned wetland subtotal	*6,333.1*	*6,331.3*	*-1.8*
Water	18,821.8	18,805.5	-16.3
Wetland total	**32,211.3**	**32,139.3**	**-72.0**
Summary			
Wetland total	**32,211.3**	**32,139.3**	**-72.0**
Upland total	**74,821.7**	**72,503.5**	**-2,318.2**
Anthropogenic disturbance total[b]	**457.8**	**2,847.9**	**2,390.1**
Total RSA	**107,490.7**	**107,490.7**	**n/a**

Note**:** Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

a) McLaughlan et al. 2010.

b) Anthropogenic disturbance total includes the maximum disturbance area for the Project (980.7 ha) and the Fission Patterson Lake South Property (1,544.2 ha) minus the existing anthropogenic disturbance within the maximum disturbance areas in the Base Case (134.8 ha).

RFD = reasonably foreseeable development; ELC = Ecological Land Classification; RSA = regional study area; < = less than; n/a = not applicable.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- PATTERSON LAKE SOUTH PROPERTY HYPOTHETICAL MAXIMUM DISTURBANCE AREA

WETLAND VASCULAR RARE PLANT SPECIES

- ENGLISH SUNDEW
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

WETLAND ECOLOGICAL LAND CLASSIFICATION UNIT

BP18	BP25 (BU)	BS20 (BU)
BP18 (BU)	BP26	BS21
BP19	BP26 (BU)	BS21 (BU)
BP19 (BU)	BP27	BS22
BP20	BP28	BS22 (BU)
BP20 (BU)	BP28 (BU)	BS23
BP21	BS16 (BU)	BS23 (BU)
BP21 (BU)	BS17	BS24
BP22	BS17 (BU)	BS24 (BU)
BP23	BS18	BS25
BP23 (BU)	BS18 (BU)	BS25 (BU)
BP24	BS19	BS26
BP24 (BU)	BS19 (BU)	BS26 (BU)
BP25	BS20	RECENT BURN (WETLAND)

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
3. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE
WETLAND ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, REASONABLY FORESEEABLE DEVELOPMENT CASE

CONSULTANT
wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.5-6

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

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13.5.2.2.2 Ecosystem Distribution

It is anticipated that the RFD Case would have a relatively small direct effect on the loss of wetland ELC units, with a total loss of 55.6 ha of wetland ELC units in the RSA (0.4% of 13,333.9 ha in the RSA [excluding open water]) (Figure 13.5-5; Figure 13.5-6). Fragmentation of wetlands can lead to reduced habitat for species that require contiguous habitat and may inhibit effective dispersal (Environment Canada 2013). Small changes in distribution are anticipated within the RSA due to the Project and the Fission Patterson Lake South Property. Changes are assumed to be permanent but are predicted to be limited to the area around Patterson Lake (i.e., regional). Further, wetland ecosystems affected are in close proximity to the existing disturbance (i.e., cutlines, existing exploration disturbance, and existing access road), and therefore additional ecosystem fragmentation is predicted to be limited such that the Project and the Fission Patterson Lake South Property would result in minor changes (i.e., low magnitude) to wetland ecosystem arrangement and connectivity in the RSA.

The distribution of wetland ecosystems may be further affected in the RFD Case because of changes to hydrology and drainage patterns associated with the Fission Patterson Lake South Property and potential hydrological changes brought on by climate change (Section 9.4, Climate Change Scenarios). However, changes from the Fission Patterson Lake South Property are anticipated to be mitigated by similar measures as for the Project to control and manage potential hydrological pathways (i.e., surface drainage and discharge of water).

Climate Change

Climate change scenarios predict a warmer and wetter climate, conditions that may affect wetland distribution positively through the expansion of existing wetlands and creation of new wetland areas through the accumulation of surface water or saturation of soils. It is anticipated that increased annual total precipitation would offset potential water deficits within wetland ecosystems associated with increases in temperature and evapotranspiration rate (Section 9.4.1, Water Surface Elevation). Although seasonal deficits may occur (i.e., drought), they would be anticipated to occur within the natural variability and resiliency of wetland ecosystems and would not affect overall distribution of wetland ecosystems, but there is uncertainty in this prediction due to variation in climate change projections.

13.5.2.2.3 Ecosystem Condition

Similar to the Application Case, edge effects due to the Project and the Fission Patterson Lake South Property may alter wetland species abundance and richness. Edges can change the natural environment by increasing wind and light, causing small changes in microclimate (e.g., humidity changes; Foley et al. 2005). However, edge effects are predicted to be limited to the maximum disturbance areas for the Project and the Fission Patterson Lake South Property. Project infrastructure is planned to use as much existing disturbance as possible (i.e., approximately 8% of the maximum disturbance area would occur within existing anthropogenic disturbance). Much of the hypothetical maximum disturbance area for the Fission Patterson Lake South Property also overlaps existing disturbance.

As stated under the Application Case, there are no documented rare plant species in wetlands that would be affected by the Project. Six occurrences of five provincially tracked species were observed during baseline terrestrial surveys within the RSA (Annex VII.1; Annex VII.2), none of which is anticipated to be disturbed in the RFD Case. It is anticipated that rare vascular plant surveys would be completed for the Fission Patterson Lake South Property and that planning would include mitigation to limit disturbance to any federally listed or provincially tracked vascular plant species.

No weed species designated under *The Weed Control Act* were identified in wetland ecosystems during the 2018 field surveys (Annex VII.1; Annex VII.2). However, disturbance can create the potential for the introduction or encroachment of designated weed species. Construction equipment for the Project would arrive at the site in a clean condition, and an Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species. No weed management activities were identified in the Fission Patterson Lake South Property prefeasibility study (Fission 2019), but it is anticipated that appropriate mitigation would be implemented to avoid and minimize the introduction of weeds.

The reduction in wetland ecosystem condition in the RFD Case relative to the Base Case is not predicted to greatly alter the ecological function of wetlands within the RSA because most wetlands would remain intact. Less than 55.6 ha of wetlands present in the Base Case (i.e., less than 0.1% of wetlands within the RSA) are predicted to be disturbed in the RSA in the RFD Case. Studies have found that water quality improvement, flood tolerance, and other wetland functions do not decline until large portions of historical wetlands have been removed (Zedler and Kercher 2004; Environment Canada 2013).

Climate Change

Changes to wetland ecosystem condition resulting from fire are anticipated to be limited as wetland ELC units are generally expected to return to a similar pre-fire state (Hart et al. 2019; McLaughlan et al. 2010). Changes to vegetation community structure may occur from increased intensity of fire, insects, and disease, which may cause a loss in vegetation cover in the boreal forest (Sauchyn et al. 2009).

Climate change also may alter the processes that influence the condition of wetland ecosystems and effects would occur beyond the RSA. It is predicted that changes to annual temperature, rainfall, and evapotranspiration could lead to varied results including increased pest and disease persistence or potential increases in primary productivity, which could ultimately result in shifts in species composition (Sauchyn et al. 2009). The annual mean temperature and evapotranspiration rate (i.e., rate at which water vapour is released to the atmosphere by plants and soil) are predicted to increase 2.4°C and 9.1%, respectively, under a climate change scenario (Section 9.4.1, Water Surface Elevation). Effects of increased evapotranspiration are anticipated to be offset by wetter annual conditions; however, seasonal distribution of changes is predicted to be variable within these annual trends, potentially causing periods of stress on wetland vegetation (i.e., summer drought), which may adversely affect the composition and overall condition of wetland ecosystems. Consequently, wetland ecosystem condition could be reduced in the RSA due to climate change, although the magnitude of changes is uncertain due the large degree of variation in climate change projections.

13.5.2.3 Residual Effects Classification and Determination of Significance

13.5.2.3.1 Classification Summary

Residual effects were classified for the Application Case and the RFD Case after the implementation of effective mitigation (Table 13.5-6). Residual effects were summarized according to the direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of the effect occurring following the methods described in Section 13.2.9. Effective implementation of mitigation is summarized in Section 13.4, Project Interactions and Mitigations, (Table 13.4-1), and progressive reclamation and revegetation is expected to reduce the magnitude and duration of residual effects on wetland ecosystems. Following the summary of residual effects, the significance of residual effects for the Application Case and the RFD Case was determined according to the methods described in Section 13.2.9.

Table 13.5-6: Classification of Residual Effects on Wetland Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Wetland ecosystem availability	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Direct physical loss of 27.8 ha (<0.1% of the RSA) from the Base Case to the Application Case (i.e., low magnitude)	▪ Loss of 55.6 ha (0.1% of RSA) from the Base Case to the RFD Case (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent	▪ Permanent: Project and the Fission Patterson Lake South Property ▪ Permanent: climate change effects
	Reversibility	▪ Irreversible	▪ Irreversible
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and Fission Patterson Lake South Property) ▪ Possible (climate change)
Wetland ecosystem distribution	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Minor net change in wetland ecosystem distribution centred on the LSA; almost no change in fragmentation at the RSA scale (i.e., low magnitude)	▪ Minor increase in fragmentation of wetland ecosystems in the RSA near the western boundary in proximity to existing disturbance; almost no change to connectivity in most of the RSA (i.e., low magnitude)
	Geographic extent	▪ Local	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent	▪ Permanent: Project and Fission Patterson Lake South Property ▪ Permanent: climate change effects
	Reversibility	▪ Irreversible	▪ Irreversible
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)
Wetland ecosystem condition	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Edge effects would result in a minor change in ecosystem structure (i.e., low magnitude)	▪ Potential loss of rare vegetation species ▪ Potential introduction of weed species ▪ Edge effects would result in a minor change in ecosystem structure (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent	▪ Permanent: Project and the Fission Patterson Lake South Property ▪ Permanent: climate change effects
	Reversibility	▪ Irreversible	▪ Irreversible
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Possible	▪ Possible (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)

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

13.5.2.3.2 Significance Determination

Wetland ecosystems are considered to have ecological resilience and adaptive capacity to changes in abundance, distribution, and condition in the Base Case. Within the LSA, wetland ELC units are encountered infrequently and are distributed mostly along the shorelines of Patterson Lake, Forrest Lake, and Lake E. Wetland ecosystems in the RSA are relatively more abundant and well distributed. Although previous and existing linear disturbances have resulted in some fragmentation of habitats in the RSA, wetland ecosystems remain intact within the LSA and RSA. Overall, the evidence indicates that wetland ecosystems in the RSA are self-sustaining and ecologically effective in the Base Case.

Application Case

For wetland ecosystems, predicted changes in ecosystem availability, distribution, and condition as a result of the Project are predicted to be certain, local, permanent, and occur continuously in the Application Case (Table 13.5-6). The exception is for changes to ecosystem condition, which are possible as the small decrease in ecosystem abundance is anticipated to produce no or few edge effects and would not disturb any known occurrences of rare plant species detected during baseline studies. Designated weed species were not detected in wetland ecosystems during baseline surveys; however, the Project would implement an Environmental Protection Program that includes actions to avoid and limit the risk of introducing invasive plant species.

Once wetlands are removed, the loss is considered continuous and permanent until functional habitat is reclaimed or offset. For the purpose of this analysis, the loss of all wetland ecosystems is assumed to be irreversible because fen and bog type wetlands cannot be restored with confidence (Environment Canada 2013). The loss of 27.8 ha (excluding open water) of available wetlands (i.e., 0.4% of the RSA) as a result of the Project is predicted to have a small influence on ecological structure and function. Disturbance as a result of the Project would be limited to four ELC units (i.e., BP19, BP20, BP25, and BP19[BU]). However, these wetland ELC units remain available in the LSA and RSA and appear to be well distributed outside of the Project footprint. The least common wetland ELC units (e.g., Graminoid bog [BS19], Open bog [BS20], and Tamarack treed fen [BS21]) within the LSA are not predicted to be disturbed by the Project. Overall, wetland ecosystems are predicted to remain self-sustaining and ecologically effective in the Application Case.

RFD Case

For the RFD Case, the combined effects from the Project and the Fission Patterson Lake South Property in the RSA are expected to remove 55.6 ha of wetland ELC units and be regional in geographic extent. Cumulative effects are predicted to be permanent, irreversible, and continuous (Table 13.5-6). The Project and the Fission Patterson Lake South Property would result in a direct loss to wetland ecosystems, but the implementation of mitigation is expected to limit cumulative changes to ecosystem availability, distribution, and condition.

Persistence of wetland ecosystems on the landscape are tied to their ability to accommodate changes in natural variability, specifically fluctuations in water levels (van der Valk 1994; Drinkard 2012; Vale et al. 2015). Changes are driven by a dynamic climate regime (i.e., drought, flooding), and the ability of wetland ecosystems to adapt to a range of variability indicates generally that resilience limits are high. Overall, the weight of evidence from the analysis predicts that changes to the availability, distribution, and condition of wetland ecosystems that overlap the RSA in the RFD Case would be within the resilience and adaptability limits for this VC. Overall, wetland ecosystems are predicted to remain self-sustaining and ecologically effective in the RFD Case.

Climate Change

Climate change is expected to affect ecosystem availability, distribution, and condition continuously at a beyond regional extent (Table 13.5-6). Effects from climate change would likely be permanent, but not certain (i.e., possible) due to the inherent low level of confidence in predicting the magnitude, frequency, and geographic extent of climate-related changes to measurement indicators. However, wetland ecosystems are expected to remain abundant and well distributed within and adjacent to the RSA and self-sustaining and ecologically effective.

Overall Significance

Based on several lines of evidence, incremental and cumulative effects from the Project, previous and existing developments, and the Fission Patterson Lake South Property on the wetland ecosystems are predicted to be not significant. Effects related to climate change are not expected to significantly influence wetland ecosystems and do not alter the assessment of no significant cumulative effects from the Project and Fission Patterson Lake South Property.

13.5.3 Riparian Ecosystems

The residual effects analysis for riparian ecosystems focused on evaluating the following pathways:

- direct loss, alteration, and fragmentation of riparian ecosystems as a result of the Project; and
- alteration of final terrain, soil conditions, and/or plant species composition could change the types of ecosystems that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

13.5.3.1 Application Case

13.5.3.1.1 Ecosystem Availability

The Project is predicted to remove 39.6 ha of riparian ecosystems (i.e., 19.3% of riparian ecosystems in the LSA and 0.4% of riparian ecosystems in the RSA) from the Base Case (Table 13.5-7; Figure 13.5-7; Figure 13.5-8). In total, the Project is anticipated to affect five riparian ELC units: Black spruce/Labrador tea/feathermoss (BP14), Black spruce treed bog (BP19), Labrador tea shrubby bog (BP20), Willow shrubby rich fen (BP25), and burned Balsam poplar – trembling aspen/prickly rose (BP16[BU]). The largest absolute change to a single riparian ELC unit is to the Labrador tea shrubby bog (BP20) ELC unit, with a loss of 10.4 ha from the 35.1 ha available (i.e., 30% of this ELC unit) in the Base Case. Changes of similar magnitude are anticipated for Black spruce/Labrador tea/feathermoss (BP14) (9.8 ha), Black spruce treed bog (BP19) (9.0 ha) and burned Balsam poplar – trembling aspen/prickly rose (BP16[BU]) (10.0 ha). A smaller change is anticipated for the Willow shrubby fen (BP25), where a loss of only 0.4 ha is predicted. The magnitude of ecosystem loss has been conservatively overestimated when considering the Project footprint. Therefore, the effects on riparian ecosystems as a result of the Project could be much less than predicted.

Riparian ecosystems lost in the Application Case would result from the removal of ELC units along the shore of Patterson Lake and adjacent to the existing access road. Changes to these ELC units are anticipated to be less than predicted as access is expected to use the existing access road alignment. Some upgrades to the road would be required (i.e., widening), but the existing alignment would be maintained between the gatehouse and Highway 955 to minimize new disturbances.

Disturbances associated with permanent facilities of the Project (e.g., WRSAs) are not anticipated to occur within riparian ecosystems. Adverse effects on riparian ecosystems from changes to ecosystem availability would be certain from the addition of the Project. Changes to riparian availability would be confined to the maximum disturbance area, and loss is considered continuous until functional ecosystems are reclaimed (i.e., beyond Closure).

Reclamation is predicted to reverse effects on disturbed ELC units and provide adequate material for the development of productive soils, which would support the establishment and succession of riparian ecosystems (i.e., upland and wetland ELC units with riparian potential) and vegetation communities with similar function to natural ecosystems not influenced by the Project; however, upland ELC units with riparian potential would most likely differ from those present before disturbance. It is anticipated that reclaimed upland ELC units associated with riparian ecosystems would emulate existing common upland vegetation in dry to moist upland ELC units within the LSA. Young seral forest communities are predicted to be established within six to 20 years following the Active Closure Stage. However, it would take 60 to 80 years beyond the Active Closure Stage for upland ELC units with riparian potential to establish mature forest types present at existing conditions (Section 13.3.1.3). Wetland ELC units with riparian potential are assumed to be reclaimed to mineral wetlands consisting of non-forested structural stages (e.g., herb--, sedge--, or shrub-dominated-); however, reclamation prescriptions within riparian ecosystems may include river alder (*Alnus incana*) and paper birch. Although the establishment of functioning wetland ELC units within riparian ecosystems following the Active Closure Stage is considered possible, restoration of riparian species composition and ecological function similar to the riparian ecosystems observed in the Base Case is unlikely. Therefore, the loss of all wetland ELC units associated with riparian ecosystems is conservatively assumed to be permanent and irreversible.

The loss of a maximum of 39.6 ha of riparian ecosystems represents less than 1% of riparian ecosystem in the RSA. Although some riparian ecosystems would be lost due to the Project, these changes are predicted to add no to few adverse effects on riparian ecosystems surrounding Patterson Lake and the Clearwater River watershed throughout the RSA.

Table 13.5-7: Changes to Riparian Ecosystem Availability in the Application Case

Riparian ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
BP07 - Trembling aspen - white birch/sarsaparilla	<0.1	<0.1	0.0
BP12 - Jack pine - spruce/feathermoss	216.2	216.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	96.7	86.8	-9.8
BP16 - Balsam poplar - trembling aspen/prickly rose	32.4	32.4	0.0
BP18 - Black spruce - tamarack treed swamp	3.6	3.6	0.0
BP19 - Black spruce treed bog	822.2	813.2	-9.0
BP20 - Labrador tea shrubby bog	1,003.6	993.2	-10.4
BP21 - Graminoid bog	12.3	12.3	0.0
BP22 - Open bog	3.6	3.6	0.0
BP23 - Tamarack treed fen	27.3	27.3	0.0
BP24 - Leatherleaf shrubby poor fen	36.8	36.8	0.0
BP25 - Willow shrubby rich fen	216.5	216.1	-0.4
BP26 - Graminoid fen	97.5	97.5	0.0
BP27 - Open fen	15.6	15.6	0.0
BP28 - Seaside arrow-grass marsh	46.0	46.0	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	23.1	0.0

Table 13.5-7: Changes to Riparian Ecosystem Availability in the Application Case

Riparian ELC Unit[a]	RSA		
	Base Case (ha)	Application Case (ha)	Change in Area (ha)
BS10 - Black spruce - white birch/feathermoss	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	0.5	0.5	0.0
BS15 - Trembling aspen - white birch/green alder	<0.1	<0.1	0.0
BS17 - Black spruce treed bog	1,281.4	1,281.4	0.0
BS18 - Labrador tea shrubby bog	1,302.8	1,302.8	0.0
BS19 - Graminoid bog	0.2	0.2	0.0
BS20 - Open bog	0.7	0.7	0.0
BS21 - Tamarack treed fen	<0.1	<0.1	0.0
BS22 - Leatherleaf shrubby poor fen	171.9	171.9	0.0
BS23 - Willow shrubby rich fen	2.7	2.7	0.0
BS24 - Graminoid fen	30.8	30.8	0.0
BS25 - Open fen	<0.1	<0.1	0.0
BS26 - Rush sandy shore	11.9	11.9	0.0
Undisturbed riparian subtotal	*5,456.3*	*5,426.7*	*-29.6*
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	729.1	719.1	-10.0
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	6.8	6.8	0.0
BP19(BU) - Black spruce treed bog (Burned)	873.3	873.3	0.0
BP20(BU) - Labrador tea shrubby bog (Burned)	25.2	25.2	0.0
BP23(BU) - Tamarack treed fen (Burned)	12.2	12.2	0.0
BP25(BU) - Willow shrubby rich fen (Burned)	20.7	20.7	0.0
BP26(BU) - Graminoid fen (Burned)	105.8	105.8	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	98.5	98.5	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.7	0.7	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	5.3	5.3	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.5	0.5	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	0.5	0.5	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	<0.1	<0.1	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	47.8	47.8	0.0
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	26.6	26.6	0.0
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.1	0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,189.3	1,189.3	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	665.0	665.0	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.0
BS 20(BU) - Open bog (Burned)	1.3	1.3	0.0
BS21(BU) - Tamarack treed fen (Burned)	3.3	3.3	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	266.1	266.1	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	16.4	16.4	0.0
BS24(BU) - Graminoid fen (Burned)	37.4	37.4	0.0
BS25(BU) - Open fen (Burned)	0.1	0.1	0.0
Recent burn wetland	23.7	23.7	0.0
Burned riparian subtotal	*4,156.2*	*4,146.3*	*-10.0*
Total Riparian	**9,612.5**	**9,572.9**	**-39.6**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values. Riparian ecosystems are a subset of upland and wetland ecosystems. ELC units described as riparian do not match upland or wetland ecosystem totals.
a) McLaughlan et al. 2010.
RSA = regional study area; ELC = Ecological Land Classification; < = less than.

600000 620000 640000

6400000

6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Boreal Shield Ecozone
Hook Lake
Athabasca Plain
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Forrest Lake
Edelman Lake
Dell Lake
Bolton Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

RIPARIAN VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

RIPARIAN ECOLOGICAL LAND CLASSIFICATION UNIT

BP07	BP24	BS18
BP07 (BU)	BP25	BS18 (BU)
BP11 (BU)	BP25 (BU)	BS19
BP12	BP26	BS19 (BU)
BP12 (BU)	BP26 (BU)	BS20
BP14	BP27	BS20 (BU)
BP14 (BU)	BP28	BS21
BP16	BP28 (BU)	BS21 (BU)
BP16 (BU)	BS06	BS22
BP18	BS06 (BU)	BS22 (BU)
BP18 (BU)	BS09	BS23
BP19	BS09 (BU)	BS23 (BU)
BP19 (BU)	BS10	BS24
BP20	BS13	BS24 (BU)
BP20 (BU)	BS13 (BU)	BS25
BP21	BS15	BS25 (BU)
BP22	BS15 (BU)	BS26
BP23	BS17	RECENT BURN (WETLAND)
BP23 (BU)	BS17 (BU)	

0 5 10

1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

RIPARIAN ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

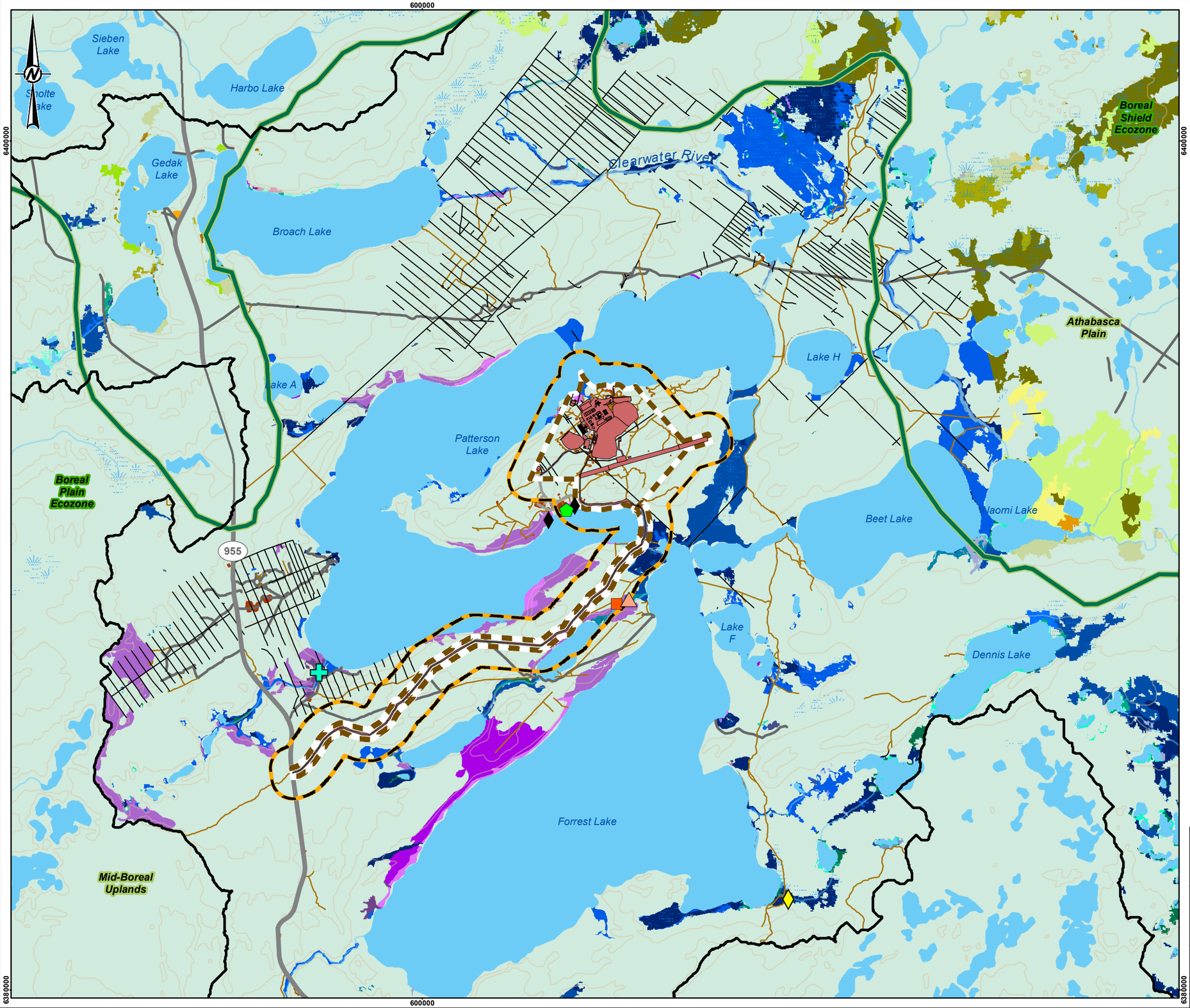
FIGURE 13.5-7

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LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

RIPARIAN VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

RIPARIAN ECOLOGICAL LAND CLASSIFICATION UNIT

BP07	BP22	BS13 (BU)
BP07 (BU)	BP23	BS17
BP11 (BU)	BP23 (BU)	BS17 (BU)
BP12	BP24	BS18
BP12 (BU)	BP25	BS18 (BU)
BP14	BP25 (BU)	BS21
BP16	BP26	BS21 (BU)
BP16 (BU)	BP26 (BU)	BS22
BP18	BP27	BS22 (BU)
BP18 (BU)	BP28	BS23
BP19	BP28 (BU)	BS23 (BU)
BP19 (BU)	BS06 (BU)	BS24
BP20	BS09	BS26
BP20 (BU)	BS09 (BU)	RECENT BURN (WETLAND)
BP21	BS13	

0 3 6
1:90,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

RIPARIAN ECOSYSTEMS AND RARE PLANT SPECIES IN THE LOCAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.5-8

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13.5.3.1.2 Ecosystem Distribution

The Project would result in a 39.6 ha loss in riparian ecosystem availability from the Base Case (Figure 13.5-7; Figure 13.5-8). Loss to riparian ecosystems would result mainly from clearing activities and modifications in topography associated with Construction. Riparian ecosystem loss along Patterson Lake and the Clearwater River are conservatively overestimated as the maximum disturbance area for the Project was selected to follow the shoreline of Patterson Lake; however, the majority of Project infrastructure would be set back from the lake, and the final disturbance as a result of the Project within riparian ELC units would be minimized. Riparian ELC units adjacent to the Clearwater River below Patterson Lake would not be directly disturbed as the existing bridge at this location would be used for future access, though some localized effects may occur from staging material and equipment at the existing bridge location to facilitate crossing (i.e., overweight equipment and material would be lifted by crane). Minor changes in riparian availability may occur as the existing access road would be widened from 5 m to 10 m. Since the ecosystems affected are in close proximity to this existing road, additional ecosystem fragmentation is limited and localized such that the Project would result in minor changes to riparian ecosystem arrangement and connectivity in the LSA and RSA.

Overall, riparian ecosystems would remain well distributed and connectivity across the RSA would be maintained in the Application Case; however, the small changes in the distribution of riparian ecosystems due to the Project are predicted to be permanent and irreversible because restoration of riparian species composition and ecological function similar to the riparian ecosystems observed in the Base Case is unlikely.

13.5.3.1.3 Ecosystem Condition

Edge effects due to the Project may alter vegetation species abundance and richness within riparian ecosystems. Overall, the majority of riparian ecosystem would remain intact in the LSA (80.7%) and RSA (99.6%), and the potential effects on ecosystem condition are expected to be small and localized.

There are six recorded observations of rare plants within riparian areas in the LSA; however, all these plants were observed outside of the maximum disturbance area and consequently would not be affected by the Project.

No weed species designated under *The Weed Control Act* were identified within riparian ecosystems in the RSA. However, disturbance can create the potential for the introduction or encroachment of designated weed species. Construction equipment would arrive at the site in a clean condition, and an Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species.

Changes to water quantity and quality as a result of the Project could have minor, localized effects on riparian ecosystems. However, changes in surface water patterns as a result of the Project were predicted to have a negligible residual effect on vegetation in the LSA (Section 13.4.2, Secondary Pathways).

Overall, the condition of riparian ecosystems in the Application Case is predicted to vary from the Base Case, with changes in availability and distribution; however, changes in ecosystem condition are likely well within the resilience and adaptability limits for this VC.

13.5.3.2 Reasonably Foreseeable Development Case

13.5.3.2.1 Ecosystem Availability

The RFD Case is predicted to remove 102.6 ha (1.1%) of riparian ELC units in the RSA (Table 13.5-8; Figure 13.5-9). The loss of riparian ecosystem in the RFD Case would be due to the direct removal by the Project and the Fission Patterson Lake South Property. When changes because of the Project and planned developments in the RSA are considered in the context of the Base Case, the proportion of remaining naturally vegetated riparian communities (i.e., 98.9%) meets the Environment Canada (2013) recommendation of maintaining natural vegetation communities along 75% of the watercourse length in a given area to protect riparian function. The actual disturbance would be dependent on the final design of the Project and the Fission Patterson Lake South Property. It is estimated that the hypothetical maximum disturbance area used for the Fission Patterson Lake South Property is six times larger than the footprint presented in the Fission (2019) prefeasibility study. Effects are likely to occur but are uncertain (i.e., probable) given that the Fission Patterson Lake South Property has recently entered the formal regulatory application process.

Riparian ecosystems lost in the RFD Case would primarily result from the removal of ELC units along the shore of Patterson Lake and the Clearwater River below Patterson Lake. Changes to these ELC units are conservatively overestimated, as the maximum disturbance areas for the Project and the Fission Patterson Lake South Property were extended up to the shores of Patterson Lake. However, it is anticipated that components for both projects would be set back sufficiently from the water to minimize disturbance to riparian ELC units, except where required (e.g., fresh water intake) and that the actual disturbance would be dependent on the final design of the Fission Patterson Lake South Property.

The duration of effects from changes in riparian ecosystem availability from the Project and the Fission Patterson Lake South Property would be a function of the amount of temporal overlap between the period from the start of Construction to the end of the Active Closure Stage and the time required to establish riparian ELC units (i.e., upland and wetland ELC units with riparian potential). Incremental effects as a result of the Project were predicted to occur from Construction through to the end of the Active Closure Stage and the time required to establish mature upland riparian ELC units (i.e., 60 to 80 years) (Section 13.5.1.2.1, Ecosystem Availability). The duration of effects from direct ecosystem loss for the Fission Patterson Lake South Property was therefore assumed to be from construction to the end of decommissioning (i.e., 15 years) plus 60 to 80 years for mature upland ELC units to be established. If assumed riparian ecosystem loss from the Fission Patterson Lake South Property completely overlapped with the riparian ecosystem loss associated with the Project, the duration of cumulative effects for the RFD Case would be a maximum of 95 years. However, a decrease in temporal overlap of the two projects would result in a shorter duration of cumulative effects. The duration of effects from wetland ELC units associated with riparian ecosystems is conservatively assumed to be permanent (Section 13.5.2.1.1, Ecosystem Availability), as reclaimed wetland ELC units associated with riparian ecosystems may not be restored to an equivalent species composition and ecological function similar to the riparian ecosystems observed in the Base Case. Any permanent facilities associated with the Fission Patterson Lake South Property that disturbed riparian ecosystems would also be considered as permanent and irreversible effects.

Climate Change

Riparian ELC units may be less resilient than upland ecosystems to disturbances associated with fires and climate change. Hart et al. (2019) indicated that poorly drained spruce-dominant sites (e.g., Black spruce/ Labrador tea feathermoss [BP14]) frequently transitioned to a different state post-fire. However, the most likely transition would be to a poorly drained non-forest site (e.g., Graminoid fen [BP21]) and would likely be retained as a riparian ELC unit.

Riparian ecosystem availability may be adversely affected by climate change. Based on a climate change scenario, temperature is projected to increase, resulting in increased warm nights and reduced ice and frost days. Precipitation is also projected to increase, resulting in increased annual total wet-day precipitation and very wet and extremely wet days (Appendix 22A). Overall, it is uncertain if climate change would positively or negatively affect riparian ecosystems availability, but it is expected to have little influence on the small magnitude of Project and RFD-related effects.

Table 13.5-8: Changes to Riparian Ecosystem Availability in the Reasonably Foreseeable Development Case

Riparian ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP07 - Trembling aspen - white birch/sarsaparilla	0.0	0.0	0.0
BP12 - Jack pine - spruce/feathermoss	216.2	216.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	96.7	86.8	-9.8
BP16 - Balsam poplar - trembling aspen/prickly rose	32.4	32.4	0.0
BP18 - Black spruce - tamarack treed swamp	3.6	3.6	0.0
BP19 - Black spruce treed bog	822.2	804.3	-17.8
BP20 - Labrador tea shrubby bog	1,003.6	985.0	-18.6
BP21 - Graminoid bog	12.3	12.2	-0.1
BP22 - Open bog	3.6	3.6	0.0
BP23 - Tamarack treed fen	27.3	27.3	0.0
BP24 - Leatherleaf shrubby poor fen	36.8	35.3	-1.5
BP25 - Willow shrubby rich fen	216.5	216.1	-0.4
BP26 - Graminoid fen	97.5	97.1	-0.5
BP27 - Open fen	15.6	15.6	0.0
BP28 - Seaside arrow-grass marsh	46.0	46.0	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	23.1	0.0
BS10 - Black spruce - white birch/feathermoss	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	0.5	0.5	0.0
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	0.0
BS17 - Black spruce treed bog	1,281.4	1,281.4	0.0
BS18 - Labrador tea shrubby bog	1,302.8	1,302.8	0.0
BS19 - Graminoid bog	0.2	0.2	0.0
BS20 - Open bog	0.7	0.7	0.0
BS21 - Tamarack treed fen	0.0	0.0	0.0
BS22 - Leatherleaf shrubby poor fen	171.9	171.9	0.0
BS23 - Willow shrubby rich fen	2.7	2.7	0.0
BS24 - Graminoid fen	30.8	30.8	0.0

Table 13.5-8: Changes to Riparian Ecosystem Availability in the Reasonably Foreseeable Development Case

Riparian ELC Unit[a]	RSA		
	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BS25 - Open fen	0.0	0.0	0.0
BS26 - Rush sandy shore	11.9	11.8	-0.1
Undisturbed riparian subtotal	*5,456.3*	*5,407.4*	*-48.8*
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	729.1	675.3	-53.8
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	6.8	6.8	0.0
BP19(BU) - Black spruce treed bog (Burned)	871.2	871.2	0.0
BP20(BU) - Labrador tea shrubby bog (Burned)	25.2	25.2	0.0
BP23(BU) - Tamarack treed fen (Burned)	12.2	12.2	0.0
BP25(BU) - Willow shrubby rich fen (Burned)	20.7	20.7	0.0
BP26(BU) - Graminoid fen (Burned)	105.8	105.8	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	98.5	98.5	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.7	0.7	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	5.3	5.3	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.5	0.5	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	0.5	0.5	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	47.8	47.8	0.0
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	26.6	26.6	0.0
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.1	0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,189.3	1,189.3	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	665.0	665.0	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.0
BS20(BU) - Open bog (Burned)	1.3	1.3	0.0
BS21(BU) - Tamarack treed fen (Burned)	3.3	3.3	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	266.1	266.1	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	16.4	16.4	0.0
BS24(BU) - Graminoid fen (Burned)	37.4	37.4	0.0
BS25(BU) - Open fen (Burned)	0.1	0.1	0.0
Recent burn wetland	23.7	23.7	0.0
Burned riparian subtotal	*4,156.2*	*4,102.4*	*-53.8*
Total Riparian	**9,612.5**	**9,509.9**	**-102.6**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values. Riparian ecosystems are a subset of upland and wetland ecosystems. ELC units described as riparian do not match upland or wetland ecosystem totals.

a) McLaughlan et al. 2010.

RFD = reasonably foreseeable development; RSA = regional study area; ELC = Ecological Land Classification.

600000
620000
640000
6400000
6380000

Murison Lake
Harrison Lake
Hodge Lake
Carter Lake
Cohen Lake
William River
Boreal Shield Ecozone
Hook Lake
Athabasca Plain
Harbo Lake
Clearwater River
Broach Lake
Hook Creek
Lake H
Patterson Lake
Beet Lake
Naomi Lake
Dennis Lake
955
Forrest Lake
Edelman Lake
Dell Lake
Bolton Lake
Vermeersch Lake
Mid-Boreal Uplands
Mirror River
Churchill River Upland
Boreal Plain Ecozone

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- PATTERSON LAKE SOUTH PROPERTY HYPOTHETICAL MAXIMUM DISTURBANCE AREA

RIPARIAN VASCULAR RARE PLANT SPECIES

- BEAUTIFUL SEDGE
- HUDSON BAY SEDGE
- NORTHERN LADY-FERN
- SCHEUCHZER COTTON-GRASS
- WATER LOBELIA
- HEART-LEAVED TWAYBLADE

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

RIPARIAN ECOLOGICAL LAND CLASSIFICATION UNIT

BP07	BP24	BS18
BP07 (BU)	BP25	BS18 (BU)
BP11 (BU)	BP25 (BU)	BS19
BP12	BP26	BS19 (BU)
BP12 (BU)	BP26 (BU)	BS20
BP14	BP27	BS20 (BU)
BP14 (BU)	BP28	BS21
BP16	BP28 (BU)	BS21 (BU)
BP16 (BU)	BS06	BS22
BP18	BS06 (BU)	BS22 (BU)
BP18 (BU)	BS09	BS23
BP19	BS09 (BU)	BS23 (BU)
BP19 (BU)	BS10	BS24
BP20	BS13	BS24 (BU)
BP20 (BU)	BS13 (BU)	BS25
BP21	BS15	BS25 (BU)
BP22	BS15 (BU)	BS26
BP23	BS17	RECENT BURN (WETLAND)
BP23 (BU)	BS17 (BU)	

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)
1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
3. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE
RIPARIAN ECOSYSTEMS AND RARE PLANT SPECIES IN THE REGIONAL STUDY AREA, REASONABLY FORESEEABLE DEVELOPMENT CASE

CONSULTANT
wsp

PROJECT		20144150	PHASE	3314 - 6	
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-08			
CHECK	HH	2023-02-08			
REVIEW	JV	2023-02-08			

FIGURE 13.5-9

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13.5.3.2.2 Ecosystem Distribution

The loss of riparian ecosystems in the RSA would result in localized changes in riparian distribution around Patterson Lake, and these effects are assumed to be long term for upland ELC units and permanent for wetland ELC units within riparian ecosystems. It is expected that the Fission Patterson Lake South Property would include mitigation to limit disturbance to riparian ecosystem availability and distribution. Despite some additional fragmentation from the Project and Fission Patterson Lake South Property, most riparian-associated wetland ELC units remain abundant and well connected across the RSA.

Small changes in distribution are anticipated within the RSA due to the Project and the Fission Patterson Lake South Property; however, because the ecosystems affected are in close proximity to the existing disturbance (i.e., the existing exploration disturbance, existing access road, and Highway 955), additional ecosystem fragmentation is limited and localized such that the Project and the Fission Patterson Lake South Property would result in minor changes (i.e., low magnitude) to riparian ecosystem arrangement and connectivity in the RSA.

Climate Change

The distribution of riparian ecosystems may be further affected in the RFD Case because of potential hydrological changes brought on by climate change (Section 9.4). However, changes from the Fission Patterson Lake South Property are anticipated to be mitigated by similar measures to control and manage potential hydrological pathways (i.e., surface drainage and discharge of water). Climate change scenarios predict that the vicinity of the Project site would be warmer and wetter, conditions that may affect riparian distribution positively through the expansion of existing riparian ecosystem and creation of new riparian areas through the accumulation of surface water or saturation of soils. However, increased evapotranspiration rates and more intense rainfall events may inhibit riparian ecosystem development and possibly lead to the reduction of riparian area through persistent drought. The magnitude that riparian ecosystem distribution would be affected by climate change is uncertain due to the large variation in climate change projections.

13.5.3.2.3 Ecosystem Condition

Similar to the Application Case, edge effects due to the Project and the Fission Patterson Lake South Property may alter riparian species abundance and richness. Edges can change the natural environment by increasing wind and light and causing small changes in microclimate (e.g., humidity changes; Foley et al. 2005). However, edge effects are predicted to be limited to the maximum disturbance areas for the Project and the Fission Patterson Lake South Property. Project infrastructure is planned to use as much existing disturbance as possible (i.e., approximately 8% of the maximum disturbance area would occur within existing anthropogenic disturbance). Much of the hypothetical maximum disturbance area for the Fission Patterson Lake South Property also overlaps existing anthropogenic disturbance.

As stated under the Application Case, there are no documented rare plant species in riparian ecosystems that would be affected by the Project. However, six occurrences of provincially tracked species were observed in riparian ecosystems during baseline terrestrial surveys within the RSA (Annex VII.1; Annex VII.2). None of these occurrences are anticipated to be disturbed in the RFD Case. It is anticipated that rare vascular plant surveys would be completed for the Fission Patterson Lake South Property and that planning would include mitigation to limit disturbance to any federally listed or provincially tracked vascular plant species.

No weed species designated under *The Weed Control Act* were identified within riparian ecosystems in the RSA, but disturbance can create the potential for the introduction or encroachment of designated weed species. Construction equipment would arrive at the Project site in a clean condition, and an Environmental Protection Program would be implemented that includes actions to prevent, detect, control (i.e., remove), and monitor designated weed species. No weed management activities were identified in the Fission Patterson Lake South Property prefeasibility study (Fission 2019), but it is anticipated that appropriate mitigation would be implemented to avoid and minimize the introduction of weeds.

The reduction in riparian ecosystem condition in the RFD Case relative to the Base Case is not predicted to greatly alter the ecological function of riparian ecosystems within the RSA because most riparian ELC units would remain intact. Less than 102.6 ha (1.1%) of riparian ecosystems present in the Base Case is predicted to be disturbed in the RSA in the RFD Case, and studies have found that water quality improvement, flood tolerance, and other riparian functions do not decline until large portions of historical habitat (i.e., greater than 60%) have been removed (Zedler and Kercher 2004; Environment Canada 2013).

Climate Change

Climate change may alter the processes that influence the availability, distribution, and condition of riparian ecosystems, and effects would likely occur beyond the RSA. Changes to forest structure and species composition may occur from drought, temperature changes, increased extreme climatic events, increased intensity of fire, and insects and disease (Sauchyn et al. 2009). Overall, it is uncertain whether climate change would positively and/or negatively affect riparian ecosystems.

13.5.3.3 Residual Effects Classification and Determination of Significance

13.5.3.3.1 Classification Summary

Residual effects were classified for the Application Case and the RFD Case after the implementation of effective mitigation (Table 13.5-9). Residual effects were summarized according to the direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of the effect occurring following the methods described in Section 13.2.9. Effective implementation of mitigation is summarized in Section 13.4, Project Interactions and Mitigations, (Table 13.4-1), and progressive reclamation and revegetation is expected to reduce the magnitude and duration of residual effects on riparian ecosystems. Following the summary of residual effects, the significance of residual effects for the Application Case and the RFD Case was determined according to the methods described in Section 13.2.9.

Table 13.5-9: Classification of Residual Effects on Riparian Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Riparian ecosystem availability	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Loss of 39.6 ha (0.4% of the RSA) from the Base Case to the Application Case (i.e., low magnitude)	▪ Loss of 102.6 ha (1.1% of RSA) from the Base Case to the RFD Case (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for wetland ELC units ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: wetland ELC units and ecosystems covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units within riparian ecosystems, depending on extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units within riparian ecosystems)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units and permanent facilities) ▪ Irreversible: climate change effects
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)
Riparian ecosystem distribution	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Minor net change in riparian ecosystem distribution centred on the LSA. Almost no change in fragmentation at the RSA scale (i.e., low magnitude)	▪ Minor increase in fragmentation of riparian ecosystems in the RSA near the western boundary in proximity to existing disturbance; almost no change to connectivity in most of the RSA (i.e., low magnitude)
	Geographic extent	▪ Local	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for wetland ELC units ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: wetland ELC units and ecosystems covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units within riparian ecosystems, depending on extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units within riparian ecosystems)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units and permanent facilities) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)

Table 13.5-9: Classification of Residual Effects on Riparian Ecosystem Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Riparian ecosystem condition	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Edge effects would result in a minor change in ecosystem structure (i.e., low magnitude)	▪ Potential loss of rare vegetation species ▪ Potential introduction of weed species ▪ Minor to moderate change in ecosystem structure from edge effects (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for wetland ELC units ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: wetland ELC units and ecosystems covered by permanent facilities ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units within riparian ecosystems, depending on extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units within riparian ecosystems)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ELC units and permanent facilities) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Possible	▪ Possible (Project, Fission Patterson Lake South Property) ▪ Possible (climate change)

RFD = reasonably foreseeable development; LSA = local study area; RSA = regional study area; ELC = Ecological Land Classification.

13.5.3.3.2 Significance Determination

Riparian ecosystems are considered to have ecological resilience and adaptive capacity to changes in abundance, distribution, and condition in the Base Case. Riparian ELC units are uncommon on the landscape relative to upland and wetland ecosystems. Within the LSA, riparian ELC units have a scattered distribution around the margins of Patterson Lake, Clearwater River, and Forrest Lake. Distribution is similar in the RSA, with ELC units scattered around the margins of waterbodies. Larger contiguous blocks of riparian ecosystem are available where organic wetland ELC units have developed within low-relief or floodplain areas. Although previous and existing linear disturbances have resulted in some fragmentation of habitats in the LSA, riparian ecosystems remain intact within the LSA and RSA. Overall, the evidence indicates that riparian ecosystems in the RSA are self-sustaining and ecologically effective in the Base Case.

Application Case

For riparian ecosystems, the effects as a result of the Project due to changes in ecosystem availability, distribution, and condition are predicted to be certain and local in the Application Case (Table 13.5-9). The exception is for changes to ecosystem condition, which are possible since a small decrease in ecosystem abundance is expected to produce no to few edge effects; the Project would not disturb occurrences of rare plant species detected in riparian ecosystems during baseline studies. Designated weed species were not detected in riparian ecosystems during baseline surveys; however, the Project would implement an

Environmental Protection Program that includes actions to avoid and limit the risk of introducing invasive plant species.

The duration of effects from changes to riparian ecosystems is considered long term and reversible for upland ELC units and permanent and irreversible for wetland ELC units within riparian ecosystems. Permanent facilities (i.e., WRSAs) would not disturb riparian ecosystems. The loss of 39.6 ha in the LSA and RSA of available riparian areas as a result of the Project is predicted to have a small influence on ecological structure and function; 80.7% of undisturbed riparian ecosystems present in the LSA and 99.6% in the RSA in the Base Case are predicted to remain in the Application Case. The least common undisturbed riparian ELC units in the LSA (i.e., BP23, BP24, BP25, and BP26) would either not be disturbed by the Project or disturbance would be limited to less than 0.4 ha per ELC unit. Seven occurrences of rare plant species were observed in riparian ecosystems in the RSA, none of which would be disturbed by the Project. Overall, riparian ecosystems are predicted to remain self-sustaining and ecologically effective in the Application Case.

RFD Case

For the RFD Case, the combined effects from the Project and planned Fission Patterson Lake South Property development on riparian ecosystems in the RSA are expected to be regional. Cumulative effects are predicted to be continuous and long-term for upland ELC units with riparian potential and permanent and irreversible for wetland ELC units within riparian ecosystems (Table 13.5-9). The Project and the Fission Patterson Lake South Property in the RSA would result in a direct loss to riparian ecosystems, but the implementation of mitigation is expected to limit cumulative changes to ecosystem availability, distribution, and condition.

The establishment of reclaimed upland ELC units within riparian vegetation ecosystems is predicted to occur well beyond the Active Closure Stage (i.e., the cumulative effects for the RFD Case would be a maximum of 95 years). A decrease in temporal overlap of the two projects would result in a shorter duration of cumulative effects. The duration of effects from wetland ELC units associated with riparian ecosystems are conservatively assumed to be permanent (Section 13.5.2.1.1, Ecosystem Availability), as reclaimed wetland ELC units associated with riparian ecosystems may not be restored to an equivalent species composition and ecological function similar to the wetland ELC units observed in the Base Case.

Riparian ecosystems are highly resilient and their persistence on the landscape is tied to their ability to adapt to the natural variability of a dynamic climate regime, specifically fluctuations in water levels (i.e., drought, flooding) (van der Valk 1994; Drinkard 2012; Vale et al. 2015). Overall, the weight of evidence from the analysis predicts that changes to the availability, distribution, and condition of riparian ecosystems that overlap the RSA in the RFD Case would be within the resilience and adaptability limits for these VCs. Riparian ecosystems are predicted to remain self-sustaining and ecologically effective in the RFD Case.

Climate Change

Climate change is expected to affect riparian ecosystem availability, distribution, and condition continuously at a beyond regional extent (Table 13.5-9). Effects from climate change would likely be permanent but not certain (i.e., possible) due to the inherent low level of confidence in predicting the magnitude, frequency, and geographic extent of climate-related changes to measurement indicators. However, riparian ecosystems are expected to remain abundant and well distributed within and adjacent to the RSA and self-sustaining and ecologically effective.

Overall Significance

Based on several lines of evidence, incremental and cumulative effects associated with the Project, previous and existing developments, and the Fission Patterson Lake South Property on the riparian ecosystems are predicted to be not significant. Effects related to climate change are not expected to significantly influence riparian ecosystems and do not alter the assessment of no significant cumulative effects from the Project and Fission Patterson Lake South Property.

13.5.4 Traditional Use Plant Species

The residual effects analysis for traditional use plant species focused on evaluating the following pathways:

- direct loss, alteration, and fragmentation of traditional use plants as a result of the Project; and
- alteration of final terrain, soil conditions, and/or plant species composition could change the types of ecosystems and traditional use plants that can be reclaimed on the landscape and adversely affect ecosystem availability, distribution, and condition.

13.5.4.1 Application Case

13.5.4.1.1 Habitat Availability

The total amount of traditional use plant habitat in the Application Case within the LSA is 450.7 ha (15.9%) and within the RSA is 29,152 ha (27.1% of the RSA; Table 13.5-10; Figure 13.5-10; Figure 13.5-11). Availability in the Application Case is expected to be decreased by approximately 298.2 ha (1.0%) in the RSA. The largest predicted changes in availability are associated with common boreal forest plant species (i.e., blueberry [loss of 96.1 ha], jack pine [loss of 83.0 ha], and bog cranberry [loss of 29.4 ha]). Occupancy is most commonly associated with jack pine dominant ELC units BP02, BP03, and BP02(BU) which are widespread throughout the LSA and RSA, as well as black spruce dominant BP14, and balsam poplar dominant BP16(BU) ELC units. Small changes in occupancy were observed within less common ELC units (i.e., Labrador tea shrubby bog [BP20; loss of 4.4 ha]); however, BP20 sites were observed to support a large diversity of traditional use plant species within the LSA (n=11). The largest relative changes in occupancy are river birch (*Betula occidentalis*) and northern green rush (*Juncus alpinoarticulatus*), where less than 0.1 ha of 0.6 ha habitat would be lost in the Application Case (6.9%) for both species. Within the LSA, it is predicted that the occupancy of 24 traditional use plant species would be reduced based on the removal of the maximum disturbance area. Changes to traditional use plant species availability due to the maximum disturbance area have been conservatively overestimated.

Once traditional use plant species habitat is removed, the loss is considered continuous until functional habitat is reclaimed or offset (i.e., beyond Closure). It is anticipated that many traditional use plant species would re-establish quickly following the removal of the disturbance (e.g., raspberry, jack pine). However, where traditional use plant species occupy wetland ELC units (e.g., pitcherplant), loss of habitat due to the Project is assumed to be permanent and irreversible, as the restoration of wetland ecosystems with similar species composition and ecological function to wetland ELC units observed in the Base Case is uncertain. Habitat loss due to permanent features (i.e., WRSAs) would also be irreversible.

Indigenous Groups have expressed concerns related to Project activities and potential effects on traditional use plants, their health, and availability for gathering (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR). Concerns were also expressed about the ability to access habitats in the vicinity of the Project site for collecting medicinal plants or berries and how the ability to harvest traditional use plant species is reduced

by the cumulative effects of existing disturbances and the Project. The assessment endpoints for traditional use plant species are defined as self-sustaining and ecologically effective plant populations. Ecosystem services (i.e., the benefits people gain from the environment) provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use, and are not considered during the residual effects classification and determination of significance in this section.

In the Application Case, the Project would reduce the availability of traditional use plant species by removing habitat that is overlapped by the maximum disturbance area; however, the traditional use plant habitat is predicted to remain abundant across the RSA. Incremental effects as a result of the Project and previous and existing developments are expected to be well within the adaptive and resilience limits of traditional use plant species.

Table 13.5-10: Changes to Traditional Use Plant Species Availability in the Application Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	RSA		
			Base Case (ha)	Application Case (ha)	Change in Area (ha)
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	2.2	2.2	0.0
	Rubus pubescens	Dewberry	1.4	1.4	0.0
Birch	*Betula glandulosa*	Dwarf birch	5.8	5.8	0.0
	Betula occidentalis	River birch	0.6	0.5	-<0.1
	Betula papyrifera	Paper birch	764.9	755.3	-9.6
	Betula pumila	Swamp birch	70.8	70.3	-0.5
Blueberry	*Vaccinium myrtilloides*	Blueberry	6,230.4	6,134.3	-96.1
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.6	0.5	-<0.1
	Juncus nodosus var. *nodosus*	Knotted rush	0.8	0.8	0.0
	Schoenoplectus acutus var. *acutus*	Hard-stemmed bulrush	0.5	0.5	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	176.7	176.1	-0.6
Cranberry	*Vaccinium oxycoccos*	Small cranberry	230.0	229.1	-0.9
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	3,148.3	3,119.0	-29.4
Cranberry, low bush-	*Viburnum edule*	Low bush-cranberry	0.4	0.4	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.8	0.8	-<0.1
	Ribes glandulosum	Skunk currant	0.2	0.2	0.0
	Ribes hudsonianum	Northern black currant	2.7	2.7	-<0.1
	Ribes oxyacanthoides var. *oxyacanthoides*	Bristly gooseberry	2.4	2.4	-<0.1
	Ribes triste	Swamp red currant	0.2	0.2	0.0
Jack pine	*Pinus banksiana*	Jack pine	8,931.3	8,848.3	-83.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	1,225.4	1,209.9	-15.5
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	2036.5	2024.0	-12.5
	Rhododendron tomentosum	Labrador tea	111.7	111.0	-0.7

Table 13.5-10: Changes to Traditional Use Plant Species Availability in the Application Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	RSA		
			Base Case (ha)	Application Case (ha)	Change in Area (ha)
Mint	*Mentha canadensis*	Wild mint	13.0	12.7	-0.2
Mosses[c]	n/a	n/a	3,439.5	3,425.0	-14.4
Mushroom[c]	n/a	n/a	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	13.3	13.3	0.0
	Populus tremuloides	Trembling aspen	530.5	519.7	-10.9
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	1.1	1.1	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	981.0	972.8	-8.2
	Picea mariana	Black spruce	1,171.8	1,160.0	-11.9
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.3	0.3	-<0.1
	Fragaria virginiana ssp. *glauca*	Smooth wild strawberry	<0.1	<0.1	-<0.1
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	35.5	35.3	-0.2
Willow[d]	*Salix* spp.	Willow species	318.5	314.9	-3.6
Total			**29,449.0**	**29,151.0**	**-298.1**

Note: Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.

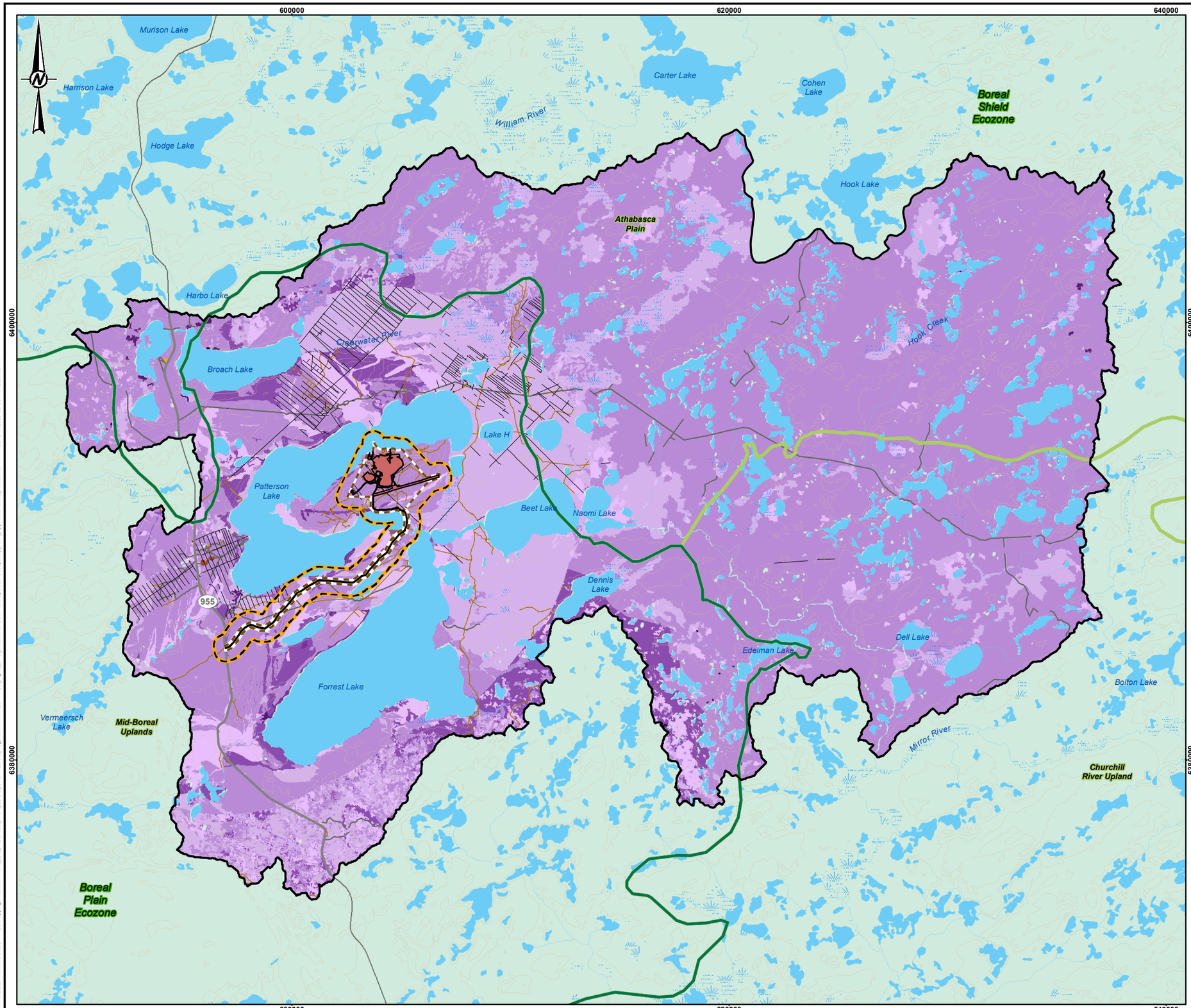
a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR; CRDN 2019a.

b) SKCDC 2021b.

c) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.

d) Saskatchewan has over 40 willow species (*Salix* sp.; Harms 2017); therefore, the scientific name and SKCDC common name of all potential willow species are not described.

RFD = reasonably foreseeable development; RSA = regional study area; < = less than; n/o = not observed during baseline surveys; n/a = not applicable.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

TRADITIONAL USE PLANT SPECIES OCCUPANCY

- 0.00 TO 0.16
- 0.17 TO 0.32
- 0.33 TO 0.48
- 0.49 TO 0.64
- 0.65 TO 0.80
- 0.81 TO 0.96
- 0.97 TO 1.12
- 1.13 TO 1.28

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 5 10
1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

TRADITIONAL USE PLANT SPECIES OCCUPANCY IN THE REGIONAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08	**FIGURE 13.5-10**	
REVIEW	JV	2023-02-08		

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600000

6400000

6380000

Sieben Lake

Sholte Lake

Harbo Lake

Gedak Lake

Broach Lake

Clearwater River

Lake A

Patterson Lake

Lake H

Beet Lake

Naomi Lake

Lake F

Dennis Lake

Forrest Lake

955

Boreal Shield Ecozone

Boreal Plain Ecozone

Athabasca Plain

Mid-Boreal Uplands

LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

TRADITIONAL USE PLANT SPECIES OCCUPANCY

- 0.00 TO 0.16
- 0.17 TO 0.32
- 0.33 TO 0.48
- 0.65 TO 0.80
- 0.81 TO 0.96
- 0.97 TO 1.12
- 1.13 TO 1.28

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 3 6

1:90,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
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PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

TRADITIONAL USE PLANT SPECIES OCCUPANCY IN THE LOCAL STUDY AREA, APPLICATION CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.5-11

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13.5.4.1.2 Habitat Distribution

In the Base Case, habitats that support traditional use plant species are well distributed across the RSA and LSA, and although there has been some change in connectivity because of previous and existing developments and activities, there is sufficient connectivity between occurrences to support healthy traditional use plant habitat in both the RSA and LSA. In the Application Case, the Project would decrease the connectivity and configuration of traditional use plant habitat through removal due to the Project footprint. Changes in distribution to traditional use plant species in the Application Case are most commonly predicted within BP02(BU) and BP03 ELC units (Table 13.5-11), as these sites support traditional use plant species with wide abundant cover (e.g., jack pine and blueberry). However, moderate changes in distribution are also associated with Project disturbance to BP14 and BP16[BU] ELC units. During baseline studies, both ELC units were observed to have a higher traditional use plant occupancy index and therefore support a greater abundance of traditional use plant species, although the BP14 ELC unit is less common within the LSA. Disturbance to ELC units with a higher occupancy index (Appendix 13B) would result in a proportionally greater loss of traditional use plant availability.

The Project would result in increased distance between patches of habitat. Because changes in connectivity are localized and traditional use plant habitat is well distributed across the RSA, these changes in habitat distribution are expected to be well within the resilience and adaptability limits of traditional use plant species.

Table 13.5-11: Changes to Traditional Use Plant Species Habitat Availability per ELC Unit in the Application Case

Traditional Use Plant Habitat ELC Unit[a]	RSA			
	ELC Unit Area (ha)	Habitat Availability Base Case (ha)	Habitat Availability Application Case (ha)	Change in Area (ha)
BP02 - Jack pine/lichen	2,791.3	337.6	331.3	-6.3
BP03 - Jack pine/feathermoss	3,712.1	2,483.4	2,451.0	-32.4
BP04 - Jack pine - trembling aspen/feathermoss	1,000.7	113.0	113.0	0.0
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.3	0.3	0.3	0.0
BP07 - Trembling aspen - white birch/sarsaparilla	5.1	5.8	5.8	0.0
BP11 - White birch - white spruce - balsam fir	3.2	1.3	1.3	0.0
BP12 - Jack pine - spruce/feathermoss	219.2	90.7	90.7	0.0
BP14 - Black spruce/Labrador tea/feathermoss	129.8	117.7	107.2	-10.4
BP16 - Balsam poplar - trembling aspen/prickly rose	33.3	31.3	31.3	0.0
BS02 - Lichen/felsenmeer - bedrock	<0.1	<0.1	<0.1	0.0
BS03 - Jack pine/blueberry/lichen	4,991.4	1,625.0	1,625.0	0.0
BS04 - Jack pine - black spruce/feathermoss	6,158.9	2,549.1	2,549.1	0.0
BS05 - Jack pine - white birch/feathermoss	1.1	0.8	0.8	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.3	0.0
BS07 - Black spruce/blueberry/lichen	2.6	1.5	1.5	0.0
BS08 - Black spruce - white birch/lichen	<0.1	<0.1	<0.1	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	8.2	8.2	0.0
BS10 - Black spruce - white birch/feathermoss	0.1	0.0	0.0	0.0
BS13 - White birch - black spruce - trembling aspen	11.9	12.2	12.2	0.0
BS14 - White birch/lingonberry - Labrador tea	74.0	23.2	23.2	0.0
BS15 - Trembling aspen - white birch/green alder	<0.1	<0.1	<0.1	0.0
BP02(BU) - Jack pine/lichen (Burned)	8,990.9	2,889.7	2,658.1	-231.5
BP03(BU) - Jack pine/feathermoss (Burned)	4,846.6	2,005.9	2,005.9	0.0

Table 13.5-11: Changes to Traditional Use Plant Species Habitat Availability per ELC Unit in the Application Case

Traditional Use Plant Habitat ELC Unit[(a)]	RSA			
	ELC Unit Area (ha)	Habitat Availability Base Case (ha)	Habitat Availability Application Case (ha)	Change in Area (ha)
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	1,274.5	409.6	409.6	0.0
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.3	0.4	0.4	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	10.4	11.7	11.7	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.9	0.4	0.4	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	4.4	1.8	1.8	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	25.2	23.2	23.2	0.0
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	1,070.4	253.8	245.3	-8.5
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	0.7	<0.1	<0.1	0.0
BS03(BU) - Jack pine/blueberry/lichen (Burned)	23,172.8	7,447.7	7,447.7	0.0
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	9,065.2	3,752.0	3,752.0	0.0
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	5.1	3.7	3.7	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.9	0.3	0.3	0.0
BS07(BU) - Black spruce/blueberry/lichen (Burned)	5.6	1.8	1.8	0.0
BS08(BU) - Black spruce - white birch/lichen (Burned)	0.1	<0.1	<0.1	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	50.1	17.8	17.8	0.0
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	57.7	59.4	59.4	0.0
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	39.9	9.5	9.5	0.0
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.2	0.2	0.2	0.0
Recent burn upland	7,041.6	1,823.3	1,823.3	0.0
BP18 - Black spruce - tamarack treed swamp	21.9	2.7	2.7	0.0
BP19 - Black spruce treed bog	1,708.0	763.1	759.0	-4.0
BP20 - Labrador tea shrubby bog	1,254.7	329.6	325.2	-4.4
BP21 - Graminoid bog	25.2	9.0	9.0	0.0
BP22 - Open bog	7.8	2.5	2.5	0.0
BP23 - Tamarack treed fen	40.4	13.0	13.0	0.0
BP24 - Leatherleaf shrubby poor fen	54.5	8.0	8.0	0.0
BP25 - Willow shrubby rich fen	317.1	65.8	65.8	-0.1
BP26 - Graminoid fen	263.3	19.8	19.8	0.0
BP27 - Open fen	32.8	6.5	6.5	0.0
BP28 - Seaside arrow-grass marsh	64.3	13.1	13.1	0.0
BS17 - Black spruce treed bog	1,517.3	433.3	433.3	0.0
BS18 - Labrador tea shrubby bog	1,481.3	270.2	270.2	0.0
BS19 - Graminoid bog	0.2	0.1	0.1	0.0
BS20 - Open bog	0.9	0.3	0.3	0.0
BS21 - Tamarack treed fen	0.3	0.1	0.1	0.0
BS22 - Leatherleaf shrubby poor fen	205.0	30.1	30.1	0.0
BS23 - Willow shrubby rich fen	4.5	0.9	0.9	0.0
BS24 - Graminoid fen	41.8	3.1	3.1	0.0
BS25 - Open fen	<0.1	<0.1	<0.1	0.0
BS26 - Rush sandy shore	15.2	0.3	0.3	0.0
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	49.9	6.2	6.2	0.0
BP19(BU) - Black spruce treed bog (Burned)	2,240.8	580.2	579.8	-0.5

Table 13.5-11: Changes to Traditional Use Plant Species Habitat Availability per ELC Unit in the Application Case

Traditional Use Plant Habitat ELC Unit[a]	RSA			
	ELC Unit Area (ha)	Habitat Availability Base Case (ha)	Habitat Availability Application Case (ha)	Change in Area (ha)
BP20(BU) - Labrador tea shrubby bog (Burned)	82.2	15.0	15.0	0.0
BP21(BU) - Graminoid bog (Burned)	0.3	0.1	0.1	0.0
BP23(BU) - Tamarack treed fen (Burned)	25.3	8.1	8.1	0.0
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	11.6	1.7	1.7	0.0
BP25(BU) - Willow shrubby rich fen (Burned)	142.0	29.5	29.5	0.0
BP26(BU) - Graminoid fen (Burned)	401.6	30.3	30.3	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	109.9	22.4	22.4	0.0
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	<0.1	<0.1	<0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,540.3	398.8	398.8	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	1,052.9	192.1	192.1	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.1	0.0
BS20(BU) - Open bog (Burned)	2.2	0.8	0.8	0.0
BS21(BU) - Tamarack treed fen (Burned)	7.0	2.4	2.4	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	411.4	60.4	60.4	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	33.1	6.9	6.9	0.0
BS24(BU) - Graminoid fen (Burned)	89.1	6.6	6.6	0.0
BS25(BU) - Open fen (Burned)	0.1	<0.1	<0.1	0.0
BS26(BU) - Rush sandy shore (Burned)	36.6	0.7	0.7	0.0
Recent burn wetland	96.8	1.3	1.3	0.0
Total	**88,211.2**	**29,449.0**	**29,151.0**	**-298.1**

Note: Traditional use plant habitat totals do not include disturbance or water ELC units. Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.

a) McLaughlan et al. 2010.

RSA = regional study area; ELC = Ecological Land Classification; < = less than.

13.5.4.2 Reasonably Foreseeable Development Case

13.5.4.2.1 Habitat Availability

Availability of traditional use plant habitat in the RFD Case is predicted to be decreased by approximately 744.0 ha from the Base Case availability (i.e., 2.5%; Table 13.5-12; Figure 13.5-12). The largest changes in availability were associated with common boreal forest species (i.e., blueberry [loss of 244.0 ha], jack pine [loss of 209.6 ha], and bog cranberry [loss of 73.5 ha]). Changes in availability were most pronounced within the burned and unburned white birch/lingonberry – Labrador tea dominant ELC units BS14 and BS14(BU), the burned and unburned jack pine/lichen ELC units BP02(BU), BS04, BS03(BU), and BS04(BU) BP02, burned Balsam poplar - trembling aspen/prickly rose ELC unit BP16(BU), and Black spruce/Labrador tea/feathermoss ELC unit BP14 (Table 13.5-13). Small changes in availability were observed within less common ELC units: Leatherleaf shrubby poor fen (BP24), jack pine/feathermoss (BP03), Labrador tea shrubby bog (BP20), and Black spruce treed bog (BP19). Habitat availability is predicted to decrease for five traditional use plant species (i.e., Nagoon berry [*Rubus arcticus* ssp. *acaulis*, dewberry [*Rubus pubescens*], dwarf birch [*Betula glandulosa*], hard-stemmed bulrush [*Schoenoplectus acutus* var. *acutus*], and swamp red currant [*Ribes triste*l]) in the RFD Case that were not disturbed in the Application Case; however, the change in availability for this species is predicted to be less than 0.1 ha. Changes to traditional use plant species availability due the maximum disturbance area and the Fission Patterson Lake South Property have been conservatively overestimated. Effects are likely to occur but are uncertain given that the Fission Patterson Lake South Property has recently entered the formal regulatory application process.

Once traditional use plant species habitat is removed, the loss is considered continuous until functional habitat is reclaimed or offset (i.e., beyond Closure). It is anticipated that many traditional use plant species would re-establish quickly following the removal of disturbance (e.g., raspberry, jack pine). However, where traditional use plant species occupy wetland ELC units (e.g., pitcherplant), loss of habitat due to the Project is assumed to be permanent and irreversible because wetland ecosystems are not anticipated to be reclaimed to the same wetland species composition and ecological function following Closure (Section 13.5.2.1.1).

In the RFD Case, the Project and the Fission Patterson Lake South Property would reduce the availability of traditional use plant species by direct removal of habitat availability; however, traditional use plant habitat is predicted to remain abundant across the RSA. The magnitude of the effects would be dependent on the specific habitat requirements of each species (i.e., sensitivity to environmental changes); however, the cumulative effects as a result of the Project, the Fission Patterson Lake South Property, and previous and existing developments are expected to be well within the adaptive and resilience limits of traditional use plant species.

The duration of effects from changes in traditional use plant species availability from the two projects would be a function of the amount of temporal overlap between the period from the start of Construction to the end of the Active Closure Stage and the time required to establish ELC units that support traditional use plant species. Incremental effects as a result of the Project were predicted to occur the period from Construction through the end of the Active Closure Stage and the time required to establish mature upland ELC units (i.e., 60 to 80 years) (Section 13.5.1.2.1, Ecosystem Availability). The duration of effects from direct habitat loss from the Fission Patterson Lake South Property was therefore assumed to be from construction to the end of decommissioning (i.e., 15 years) plus 60 to 80 years for mature upland ELC units to be established. If assumed upland ecosystem loss from the Fission Patterson Lake South Property completely overlapped the upland ecosystem loss associated with the Project, the duration of cumulative effects for the RFD Case would be a maximum of

95 years, which is the duration used for the assessment of the RFD Case. However, a decrease in temporal overlap of the two projects would result in a shorter duration of cumulative effects.

Climate Change

Climate change models predict a longer, warmer growing season. Climate change may alter the processes that influence the availability of traditional use plant habitat and effects would likely occur beyond the RSA. Changes to forest structure and species composition may occur from drought, temperature changes, increased extreme climatic events, increased intensity of fire, and insects and disease (Sauchyn et al. 2009). Overall, it is uncertain whether climate change would positively and/or negatively affect traditional use plant species. Niches occupied by individual traditional use plant species may benefit from specific changes (i.e., potential increase in habitat availability for fire-adapted species). Species with specific habitat requirements (e.g., pitcherplant) may be less resilient to changes in habitat availability driven by climate change.

Table 13.5-12: Changes to Traditional Use Plant Species Availability in the Reasonably Foreseeable Development Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	RSA		
			Base Case (ha)	RFD Case (ha)	Change in Area (ha)
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	2.2	2.2	-<0.1
	Rubus pubescens	Dewberry	1.4	1.4	-<0.1
Birch	*Betula glandulosa*	Dwarf birch	5.8	5.8	-<0.1
	Betula occidentalis	River birch	0.6	0.5	-<0.1
	Betula papyrifera	Paper birch	764.9	735.0	-29.8
	Betula pumila	Swamp birch	70.8	69.9	-1.0
Blueberry	*Vaccinium myrtilloides*	Blueberry	6,230.4	5,986.4	-244.0
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.6	0.5	-<0.1
	Juncus nodosus var. *nodosus*	Knotted rush	0.8	0.8	0.0
	Schoenoplectus acutus var. *acutus*	Hard-stemmed bulrush	0.5	0.5	-<0.1
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	176.7	175.7	-1.0
Cranberry	*Vaccinium oxycoccos*	Small cranberry	230.0	228.5	-1.6
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	3,148.3	3,074.8	-73.5
Cranberry, low bush-	*Viburnum edule*	Low bush-cranberry	0.4	0.4	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.8	0.8	-<0.1
	Ribes glandulosum	Skunk currant	0.2	0.2	0.0
	Ribes hudsonianum	Northern black currant	2.7	2.7	-<0.1
	Ribes oxyacanthoides var. *oxyacanthoides*	Bristly gooseberry	2.4	2.4	-<0.1
	Ribes triste	Swamp red currant	0.2	0.2	-<0.1
Jack pine	*Pinus banksiana*	Jack pine	8,931.3	8,721.7	-209.6
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	1,225.4	1,186.7	-38.8
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	2,036.5	2,005.9	-30.5
	Rhododendron tomentosum	Labrador tea	111.7	110.4	-1.4
Mint	*Mentha canadensis*	Wild mint	13.0	12.3	-0.6
Mosses[c]	n/a	n/a	3,439.5	3,400.8	-38.6

Table 13.5-12: Changes to Traditional Use Plant Species Availability in the Reasonably Foreseeable Development Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	RSA		
			Base Case (ha)	RFD Case (ha)	Change in Area (ha)
Mushrooms[c]	n/a	n/a	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	13.3	13.3	0.0
	Populus tremuloides	Trembling aspen	530.5	503.0	-27.5
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	1.1	1.1	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	981.0	965.2	-15.8
	Picea mariana	Black spruce	1,171.8	1,150.6	-21.3
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.3	0.3	-<0.1
	Fragaria virginiana ssp. *glauca*	Smooth wild strawberry	<0.1	<0.1	-<0.1
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	35.5	35.2	-0.2
Willow[d]	*Salix* spp.	Willow species	318.5	309.8	-8.6
Total			**29,449.0**	**28,705.1**	**-744.0**

Note: Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.

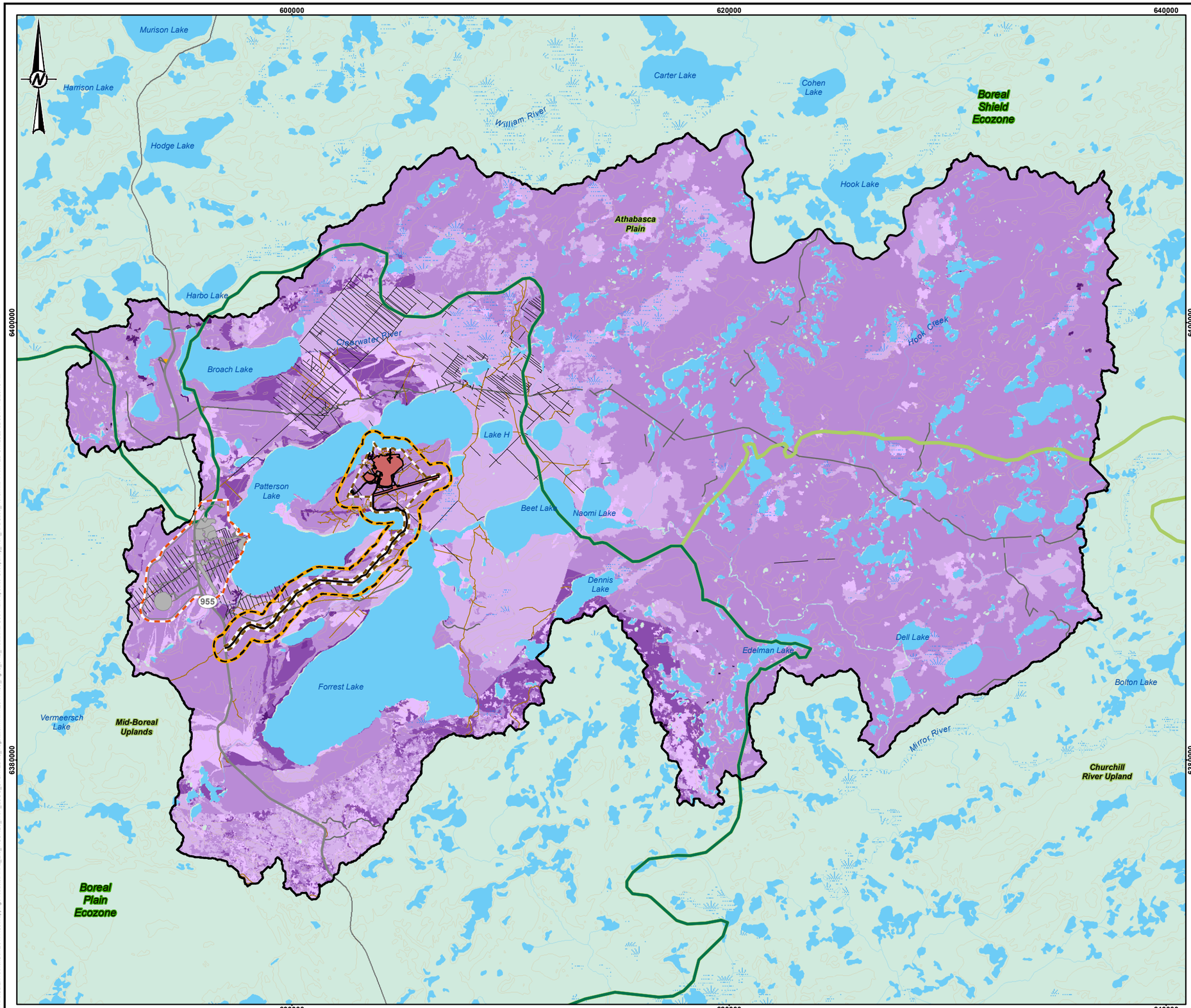
a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLR; CRDN 2019a.

b) SKCDC 2021b.

c) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.

d) Saskatchewan has over 40 willow species (*Salix* sp.; Harms 2017); therefore, the scientific name and SKCDC common name of all potential willow species are not described.

RSA = regional study area; < = less than; n/a = not applicable; n/o = not observed during baseline surveys.



LEGEND

- ELEVATION CONTOUR (20 m INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED
- ECOREGION BOUNDARY
- ECOZONE BOUNDARY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- PATTERSON LAKE SOUTH PROPERTY HYPOTHETICAL MAXIMUM DISTURBANCE AREA
- LOCAL STUDY
- REGIONAL STUDY

TRADITIONAL USE PLANT SPECIES OCCUPANCY

- 0.00 TO 0.16
- 0.17 TO 0.32
- 0.33 TO 0.48
- 0.49 TO 0.64
- 0.65 TO 0.80
- 0.81 TO 0.96
- 0.97 TO 1.12
- 1.13 TO 1.28

DISTURBANCE CLASS

- ACCESS ROAD
- CUTLINE/SEISMIC
- SECONDARY HIGHWAY
- ROUGH ROAD
- TRAIL
- NON-LINEAR DEVELOPMENT (E.G., CLEARING, EXISTING EXPLORATION)
- OIL AND GAS DEVELOPMENT

0 5 10

1:175,000 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021. UPDATED JUNE 8, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. ECOZONES OBTAINED FROM AGRICULTURE AND AGRI-FOOD CANADA (AAFC).
3. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

TRADITIONAL USE PLANT SPECIES OCCUPANCY IN THE REGIONAL STUDY AREA, REASONABLY FORESEEABLE DEVELOPMENT CASE

CONSULTANT

wsp

PROJECT		20144150	PHASE	3314 - 6
DESIGN	AS	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-08		
CHECK	HH	2023-02-08		
REVIEW	JV	2023-02-08		

FIGURE 13.5-12

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

0 25mm

PATH: I:\CLIENTS\NexGen\20144150\Mapping\Products\FINAL_EIS_FIGURES_WSP_LOGO_UPDATED\13_Vegetation\17x11\20144150_Fig13_5-12_TraditionalUse-Plant-Species-Occupancy_RSA_RFDCase_Rev0.mxd PRINTED ON: 2020-02-08 AT: 12:28:18 PM

13.5.4.2.2 Habitat Distribution

In the Base Case, traditional use plant habitat is well distributed across the RSA and LSA, and although there has been some change in connectivity because of previous and existing developments, there is sufficient connectivity to support the traditional use plant species in the RSA and LSA. As noted in Section 13.5.4.2.1, Habitat Availability, the RFD Case results in a loss of 744.0 ha of traditional use plant habitat in the RSA, primarily in jack pine forested stands (BP02[BU], BP03, BP02, BP03[BU]) and a balsam poplar forest stand (BP16[BU]). (Table 13.5-13). The actual disturbance would depend on the final design of the Fission Patterson Lake South Property. It is estimated that the hypothetical maximum disturbance area used for the Fission Patterson Lake South Property is six times larger than the footprint presented in the Fission (2019) prefeasibility study.

Changes to traditional plant habitat distribution in the RFD Case would result in a minor reduction of traditional use plant habitat connectivity regionally but are not predicted to affect overall connectivity in the RSA. Minor changes in the fragmentation of traditional use plant habitat would be restricted to the northwest boundary of the RSA, which has an existing aggregation of linear and non-linear disturbances in proximity to Highway 955 (e.g., rough roads, trails, seismic lines / cutlines) (Figure 13.5-3). Therefore, the magnitude of changes on traditional use plant habitat distribution is anticipated to be low (i.e., little to no change in connectivity in most of the RSA).

Planned mitigation of direct disturbance to upland ecosystems from the Fission Patterson Lake South Property includes minimizing land clearing, reclaiming unused areas, and remediating the site at closure (Fission 2019). The duration of effects from direct habitat loss for the Fission Patterson Lake South Property was therefore assumed to be from construction to the end of decommissioning (i.e., 15 years) plus 60 to 80 years for mature upland ELC units to be established (Section 13.5.1.2.1). Therefore, the duration of cumulative effects for the RFD Case would be a maximum of 95 years. The duration of effects on traditional use plant species that occupy wetland ELC units are conservatively assumed to be permanent (Section 13.5.2.1.1), as reclaimed wetland ELC units may not be restored to an equivalent species composition and ecological function similar to the wetland ELC units observed in the Base Case.

Climate Change

Saskatchewan's Boreal Shield Ecozone is known for a naturally short fire-return interval (Neufeld et al. 2020; Parisien et al. 2004), and species tend to be well adapted to this disturbance regime, as self-replacement of forested stands is the most common post-fire trajectory (Hart et al. 2019). Fire-adapted species include several traditional use plants (e.g., jack pine and blueberry), which are anticipated to occupy newly fire-disturbed areas and may have a positive effect on traditional use plant habitat availability and distribution within the RSA. However, not all traditional use plant species are fire adapted, and some may therefore be negatively affected by increased forest fire frequency and intensity.

In the future, due to predicted longer, warmer growing seasons resulting from climate change, forest productivity may increase alter ecological succession (Sauchyn et al. 2009). Increased productivity could result in a shift in species composition. However, changes in species composition related to climate change are uncertain and may result in negative or positive effects on traditional use plant species.

Table 13.5-13: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit in the Reasonably Foreseeable Development Case

Traditional Use Plant Habitat ELC Unit[a]	RSA			
	ELC Unit Area (ha)	Habitat Availability Base Case (ha)	Habitat Availability RFD Case (ha)	Change in Area (ha)
BP02 - Jack pine/lichen	2,791.3	337.6	310.4	-27.2
BP03 - Jack pine/feathermoss	3,712.1	2,483.4	2423.7	-59.7
BP04 - Jack pine - trembling aspen/feathermoss	1,000.7	113.0	113.0	0.0
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.3	0.3	0.3	0.0
BP07 - Trembling aspen - white birch/sarsaparilla	5.1	5.8	5.8	0.0
BP11 - White birch - white spruce - balsam fir	3.2	1.3	1.3	0.0
BP12 - Jack pine - spruce/feathermoss	219.2	90.7	90.7	0.0
BP14 - Black spruce/Labrador tea/feathermoss	129.8	117.7	107.2	-10.4
BP16 - Balsam poplar - trembling aspen/prickly rose	33.3	31.3	31.3	0.0
BS02 - Lichen/felsenmeer - bedrock	<0.1	<0.1	<0.1	0.0
BS03 - Jack pine/blueberry/lichen	4,991.4	1,625.0	1,625.0	0.0
BS04 - Jack pine - black spruce/feathermoss	6,158.9	2,549.1	2,549.1	0.0
BS05 - Jack pine - white birch/feathermoss	1.1	0.8	0.8	0.0
BS06 - Jack pine - trembling aspen/green alder	0.3	0.3	0.3	0.0
BS07 - Black spruce/blueberry/lichen	2.6	1.5	1.5	0.0
BS08 - Black spruce - white birch/lichen	<0.1	<0.1	<0.1	0.0
BS09 - Black spruce - jack pine/feathermoss	23.1	8.2	8.2	0.0
BS10 - Black spruce - white birch/feathermoss	0.1	0.0	0.0	0.0
BS13 - White birch - black spruce - trembling aspen	11.9	12.2	12.2	0.0
BS14 - White birch/lingonberry - Labrador tea	74.0	23.2	15.2	-8.1
BS15 - Trembling aspen - white birch/green alder	<0.1	<0.1	<0.1	0.0
BP02(BU) - Jack pine/lichen (Burned)	8,990.9	2,889.7	2,323.5	-566.2
BP03(BU) - Jack pine/feathermoss (Burned)	4,846.6	2,005.9	2,005.9	0.0
BP04(BU) - Jack pine - trembling aspen/feathermoss (Burned)	1,274.5	409.6	409.6	0.0
BP06(BU) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.3	0.4	0.4	0.0
BP07(BU) - Trembling aspen - white birch/sarsaparilla (Burned)	10.4	11.7	11.7	0.0
BP11(BU) - White birch - white spruce - balsam fir (Burned)	0.9	0.4	0.4	0.0
BP12(BU) - Jack pine - spruce/feathermoss (Burned)	4.4	1.8	1.8	0.0
BP14(BU) - Black spruce/Labrador tea/feathermoss (Burned)	25.2	23.2	23.2	0.0
BP16(BU) - Balsam poplar - trembling aspen/prickly rose (Burned)	1,070.4	253.8	223.7	-30.1
BS02(BU) - Lichen/felsenmeer - bedrock (Burned)	0.7	<0.1	<0.1	0.0
BS03(BU) - Jack pine/blueberry/lichen (Burned)	23,172.8	7,447.7	7,423.9	-23.8
BS04(BU) - Jack pine - black spruce/feathermoss (Burned)	9,065.2	3,752.0	3,752.0	0.0
BS05(BU) - Jack pine - white birch/feathermoss (Burned)	5.1	3.7	3.7	0.0
BS06(BU) - Jack pine - trembling aspen/green alder (Burned)	0.9	0.3	0.3	0.0
BS07(BU) - Black spruce/blueberry/lichen (Burned)	5.6	1.8	1.8	0.0
BS08(BU) - Black spruce - white birch/lichen (Burned)	0.1	<0.1	<0.1	0.0
BS09(BU) - Black spruce - jack pine/feathermoss (Burned)	50.1	17.8	17.8	0.0
BS13(BU) - White birch - black spruce - trembling aspen (Burned)	57.7	59.4	59.4	0.0
BS14(BU) - White birch/lingonberry - Labrador tea (Burned)	39.9	9.5	8.5	-0.9
BS15(BU) - Trembling aspen - white birch/green alder (Burned)	0.2	0.2	0.2	0.0
Recent burn upland	7,041.6	1,823.3	1,823.3	0.0
BP18 - Black spruce - tamarack treed swamp	21.9	2.7	2.7	0.0
BP19 - Black spruce treed bog	1,708.0	763.1	754.4	-8.7
BP20 - Labrador tea shrubby bog	1,254.7	329.6	321.9	-7.7

Table 13.5-13: Traditional Use Plant Species Habitat Availability per Ecological Land Classification Unit in the Reasonably Foreseeable Development Case

Traditional Use Plant Habitat ELC Unit[a]	RSA			
	ELC Unit Area (ha)	Habitat Availability Base Case (ha)	Habitat Availability RFD Case (ha)	Change in Area (ha)
BP21 - Graminoid bog	25.2	9.0	9.0	0.0
BP22 - Open bog	7.8	2.5	2.5	0.0
BP23 - Tamarack treed fen	40.4	13.0	13.0	0.0
BP24 - Leatherleaf shrubby poor fen	54.5	8.0	7.6	-0.4
BP25 - Willow shrubby rich fen	317.1	65.8	65.8	-0.1
BP26 - Graminoid fen	263.3	19.8	19.7	-0.1
BP27 - Open fen	32.8	6.5	6.5	0.0
BP28 - Seaside arrow-grass marsh	64.3	13.1	13.1	0.0
BS17 - Black spruce treed bog	1,517.3	433.3	433.3	0.0
BS18 - Labrador tea shrubby bog	1,481.3	270.2	270.2	0.0
BS19 - Graminoid bog	0.2	0.1	0.1	0.0
BS20 - Open bog	0.9	0.3	0.3	0.0
BS21 - Tamarack treed fen	0.3	0.1	0.1	0.0
BS22 - Leatherleaf shrubby poor fen	205.0	30.1	30.1	0.0
BS23 - Willow shrubby rich fen	4.5	0.9	0.9	0.0
BS24 - Graminoid fen	41.8	3.1	3.1	0.0
BS25 - Open fen	<0.1	<0.1	<0.1	0.0
BS26 - Rush sandy shore	15.2	0.3	0.3	0.0
BP18(BU) - Black spruce - tamarack treed swamp (Burned)	49.9	6.2	6.2	0.0
BP19(BU) - Black spruce treed bog (Burned)	2,240.8	580.2	579.8	-0.5
BP20(BU) - Labrador tea shrubby bog (Burned)	82.2	15.0	15.0	0.0
BP21(BU) - Graminoid bog (Burned)	0.3	0.1	0.1	0.0
BP23(BU) - Tamarack treed fen (Burned)	25.3	8.1	8.1	0.0
BP24(BU) - Leatherleaf shrubby poor fen (Burned)	11.6	1.7	1.7	0.0
BP25(BU) - Willow shrubby rich fen (Burned)	142.0	29.5	29.5	0.0
BP26(BU) - Graminoid fen (Burned)	401.6	30.3	30.3	0.0
BP28(BU) - Seaside arrow-grass marsh (Burned)	109.9	22.4	22.4	0.0
BS16(BU) - Black spruce/balsam poplar/river alder swamp (Burned)	<0.1	<0.1	<0.1	0.0
BS17(BU) - Black spruce treed bog (Burned)	1,540.3	398.8	398.8	0.0
BS18(BU) - Labrador tea shrubby bog (Burned)	1,052.9	192.1	192.1	0.0
BS19(BU) - Graminoid bog (Burned)	0.1	0.1	0.1	0.0
BS20(BU) - Open bog (Burned)	2.2	0.8	0.8	0.0
BS21(BU) - Tamarack treed fen (Burned)	7.0	2.4	2.4	0.0
BS22(BU) - Leatherleaf shrubby poor fen (Burned)	411.4	60.4	60.4	0.0
BS23(BU) - Willow shrubby rich fen (Burned)	33.1	6.9	6.9	0.0
BS24(BU) - Graminoid fen (Burned)	89.1	6.6	6.6	0.0
BS25(BU) - Open fen (Burned)	0.1	<0.1	<0.1	0.0
BS26(BU) - Rush sandy shore (Burned)	36.6	0.7	0.7	0.0
Recent burn wetland	96.8	1.3	1.3	0.0
Total	**88,211.2**	**29,449.0**	**28705.1**	**-744.0**

Note: Traditional use plant habitat totals do not include disturbance or water ELC units. Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.
a) McLaughlan et al. 2010.
RFD = reasonably foreseeable development; RSA = regional study area; ELC = Ecological Land Classification; < = less than.

13.5.4.3 Residual Effects Classification and Determination of Significance

The assessment endpoints for traditional use plant species are defined as self-sustaining and ecologically effective plant populations. Ecosystem services (i.e., the benefits people gain from the environment) provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use, and are not considered during the residual effects classification and determination of significance in this section.

13.5.4.3.1 Classification Summary

Residual effects were classified for the Application Case and the RFD Case after the implementation of effective mitigation (Table 13.5-14). Residual effects were summarized according to the direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of the effect occurring following the methods described in Section 13.2.9. Effective implementation of mitigation is summarized in Section 13.4 (Table 13.4-1), and progressive reclamation and revegetation is expected to reduce the magnitude and duration of residual effects on traditional use plant species. Following the summary of residual effects, the significance of residual effects for the Application Case and the RFD Case was determined according to the methods described in Section 13.2.9.

Table 13.5-14: Classification of Residual Effects on Traditional Use Plant Species Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Traditional use plant species availability	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Loss of 298.1 ha (1.0% in the RSA) from the Base Case to the Application Case (i.e., low magnitude)	▪ Loss of 744.0 ha (2.5% of RSA) from the Base Case to the RFD Case (i.e., low magnitude)
	Geographic extent	▪ Maximum disturbance area	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for wetland ELC units and permanent features (i.e., WRSAs) ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: wetland ELC units and permanent features ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units, depending on extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ecosystems and permanent features)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ecosystems and permanent features) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)

Table 13.5-14: Classification of Residual Effects on Traditional Use Plant Species Measurement Indicators for the Application Case and Reasonably Foreseeable Development Case

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Traditional use plant species distribution	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Minor net change in traditional use plant habitat distribution centred on the LSA. Almost no change in fragmentation at the RSA scale (i.e., low magnitude)	▪ Minor increase in fragmentation of traditional use plant habitat in the RSA near the western boundary in proximity to existing disturbance. Almost no change to connectivity in most of the RSA
	Geographic extent	▪ Local	▪ Regional (Project and the Fission Patterson Lake South Property) ▪ Beyond regional (climate change)
	Duration	▪ Permanent: for wetland ELC units and permanent features (i.e., WRSAs) ▪ Long term (direct loss): 93 to 113 years = 33 years (start of Construction to the end of the Active Closure Stage), or earlier with progressive reclamation, plus 60 years to 80 years to establish mature upland ELC Units	▪ Permanent: wetlands and habitat covered by permanent features ▪ Permanent: climate change effects ▪ Long term: maximum of 95 years for establishment of mature upland ELC units, depending on extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ecosystems and permanent features)	▪ Reversible (reclaimed ELC units) ▪ Irreversible (wetland ecosystems and permanent features) ▪ Irreversible (climate change effects)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain	▪ Probable (Project and the Fission Patterson Lake South Property) ▪ Possible (climate change)

Note: Ecosystem services provided by traditional use plant species are assessed in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and Section 17, Other Land and Resource Use.
RFD = reasonably foreseeable development; LSA = local study area; RSA = regional study area; ELC = Ecological Land Classification; WRSAs = waste rock storage areas.

13.5.4.3.2 Significance Determination

Application Case

The effects of previous and existing developments and activities in the Base Case have negatively altered habitat availability and habitat distribution, but not to the point where traditional use plant habitat is no longer self-sustaining or ecologically effective. In the Application Case, the Project contributes to adverse changes of low magnitude, local geographic extent and of long-term to permanent duration to traditional use plant habitat availability and distribution in the RSA and LSA. The effects in the Application Case changed little from Base Case conditions, and the traditional use plant habitat is predicted to continue to be self-sustaining and ecologically effective.

RFD Case

For the RFD Case, the combined effects as a result of the Project and planned Fission Patterson Lake South Property development on traditional use plant species in the RSA are expected to be regional. The effects are predicted to be long term, reversible, and continuous for upland habitat and irreversible and permanent for wetland habitat (Table 13.5-14). The weight of evidence from the analysis predicts that changes to the availability and distribution of traditional use plant habitat within the RSA in the RFD Case would be within the resilience

and adaptability limits for this VC. Overall, traditional use plant habitat is predicted to be self-sustaining and ecologically effective in the RFD Case.

Climate Change

Climate change is expected to affect the availability and distribution of traditional use plant species continuously at a beyond regional extent (Table 13.5-14). Effects from climate change would likely be permanent, but not certain (i.e., possible) due to the inherent low level of confidence in predicting the magnitude, frequency, and geographic extent of climate-related changes to measurement indicators. However, traditional use plant species are expected to remain abundant and well distributed within and adjacent to the RSA and self-sustaining and ecologically effective.

Overall Significance

Based on several lines of evidence, incremental and cumulative effects from the Project, previous and existing developments, and the Fission Patterson Lake South Property on traditional use plant species are predicted to be not significant. Effects related to climate change are not expected to significantly influence traditional use plants and do not alter the assessment of no significant cumulative effects from the Project and Fission Patterson Lake South Property.

13.5.5 Effects on Biodiversity

Vegetation biodiversity is inclusive of plant life and the ecosystems plants occupy. It includes all levels of organization, from genes to landscapes, and the ecological processes through which these levels are connected. Effects on biodiversity have been assessed based on the effects on ecosystems (Section 13.5.1, Upland Ecosystems; Section 13.5.2, Wetland Ecosystems; Section 13.5.3, Riparian Ecosystems) and the effects on traditional use plant species (Section 13.5.4) and were meant to encapsulate the effects on most of the biodiversity elements of which ecosystems are comprised. For example, plant communities that depend on very old live trees, standing dead trees, coarse woody debris, and forest gap processes found in mature forests would be captured by the ecosystem-level assessment. Similarly, poorly-known species (e.g., lichens) tend to be better captured by assessing the landscape and ecosystems than individual species (Franklin 1993; Poiani et al. 2000). Key biodiversity indicators at the existing conditions include:

- The LSA and RSA consist of predominantly burned and unburned upland ecosystems, 2,172.6 ha (76.7%) and 74,821.7 ha (69.6%), respectively.
- Approximately 369.6 ha (13.1%) of the LSA and 19,158.2 ha (17.8%) of the RSA is composed of undisturbed upland ecosystems.
- Approximately 122.5 ha (4.3%) of the LSA and 7,056.4 ha (6.6%) of the RSA is composed of undisturbed wetland ecosystems.
- Potential riparian ecosystems cover 205.4 ha of the LSA (7.3%) and 9,612.5 ha of the RSA (8.9%).
- Fires have burned approximately 61,996.5 ha (57.7%) of the RSA between 1981 and 2020.
- Anthropogenic disturbances cover 104.7 ha (3.7%) in the of the LSA and 457.8 ha (0.4%) of the RSA.
- Linear feature density is estimated to be 2.9 km/km^2 in the LSA and 0.6 km/km^2 in the RSA.

Vegetation ecosystems in the LSA and RSA in the Base Case are characteristic of those generally found in the Boreal Plain and Boreal Shield ecozones. The RSA is composed of a heterogeneous patchwork of upland and

wetland ecosystems interspersed among lakes and rivers. Within this patchwork, some ecosystems and communities have higher potential to support biodiversity (e.g., wetlands); however, these ecosystems and communities do not exist in isolation, and it is the interaction of all ecosystems, along with the absence of anthropogenic disturbance, that is important in the maintenance of an intact landscape. In the Base Case, anthropogenic disturbance is low (i.e., 457.8 ha [0.4% of the RSA]).

Upland ecosystems in the Base Case are dominated by jack pine forests (Jack pine/blueberry/lichen [BS03], Jack pine - black spruce/feathermoss [BS04], and Jack pine/lichen [BP02]), which tend to have lower biodiversity (i.e., species richness) for vascular species but support a higher diversity of non-vascular species. Burned ELC units tend to have low biodiversity potential compared to undisturbed ELC units due to reduced structural complexity and species richness (Annex VII.1).

The relative biodiversity potential of riparian ecosystems is intrinsically high, independent of the ELC units within which they occur. Riparian communities are defined as areas adjacent to rivers and lakes, or ephemeral, intermittent, or perennial streams that differ from the surrounding uplands in plant and animal diversity and productivity (Environment Canada 2013). Riparian areas support important biodiversity functions as they provide a unique transition zone between aquatic and terrestrial ecosystems (Austin et al. 2008). Riparian zones often function as regional wildlife movement corridors linking otherwise unconnected habitats (Haddad et al. 2003; Damschen et al. 2006).

Mature forests are recognized for their contribution to biodiversity values, ecological function not found in younger-aged stands, including important habitat for animals, and providing genetic diversity to nearby tree stands. Mature forests create microhabitats for specialist species high in the tree canopy and on the forest floor in the coarse woody debris (Komonen et al. 2021). Mature forests also provide several additional functions, including carbon sequestration and micro-habitat creation. As forests age, there is an increase in genetic diversity and in the ability of tree species to survive and reproduce (Mosseler et al. 2003). Therefore, old-growth patches act like natural reservoirs of genetic diversity and contribute to the successful dispersal, maintenance, and adaptation of species across a fragmented landscape (Mosseler et al. 2003). Species diversity and structural characteristics of mature forests (e.g., large living and dead trees and large gaps) develop slowly and are difficult to replace once lost. Mature forest patches constitute unique and structurally diverse ecosystems that provide some of the highest quality habitat available for plants and animals (Timoney 2001; Harper et al. 2003).

In the Application Case, the Project is predicted to remove 868.4 ha (1.2%) of upland ELC units. However, over 80% of the maximum disturbance area overlaps areas that have been burned in the last 40 years, which tend to have lower biodiversity potential (i.e., structural diversity and species richness) than unburned ELC units. Change in wetland ecosystems is predicted to be limited to 27.8 ha (i.e., less than 0.1%). The use of previously disturbed areas for Construction and Operations of the Project, including 82.2 ha of associated with the existing exploration camp and access road, would help reduce changes to biodiversity. The existing access road would be upgraded to safely accommodate large vehicles and equipment and would be realigned to avoid the wetland west of the proposed airstrip. Most of the existing trails would be upgraded for site roads and haul roads within the maximum disturbance area. The Project would be in a portion of the RSA that contains an aggregation of existing linear and non-linear features in proximity of Highway 955. The current density of linear features in the RSA (i.e., 0.6 km/km^2) is considered low, and the Project is not expected to change the density of linear features in the LSA and RSA.

In the RFD Case, the Project and the Fission Patterson Lake South Property are predicted to remove 2,390.1 ha (3.1%) of upland ELC units. Similar to the Application Case, these changes are predicted to occur within burned ELC units with low structural diversity and species richness (i.e., approximately 84% of upland ELC units). Loss

of wetland ecosystems in the RFD Case is predicted to be 55.6 ha (0.1%), which may disproportionately affect biodiversity even though wetland habitat loss is small compared to the change in upland ecosystems. Disturbance from the projects would be within a portion of the RSA that contains an aggregation of existing linear and non-linear features in the proximity of Highway 955. Use of existing anthropogenic disturbance is predicted to reduce the overall loss of biodiversity but also limit the level of new habitat fragmentation and edge effects.

Reclamation is predicted to reverse effects on disturbed ELC units and provide adequate material for the development of productive soils, which would support the establishment and succession of vegetation communities with a similar function to natural ecosystems not influenced by the Project; however, upland and wetland ecosystems would most likely differ from those present before disturbance in structural complexity and species composition.

Effects of the Project on biodiversity are anticipated to be low in magnitude, with the geographic extent anticipated to be restricted to the maximum disturbance area in the Application Case and regional in the RFD Case. Increased disturbance and the corresponding loss of vegetation ecosystems would be primarily distributed near the western boundary of the RSA in proximity to existing disturbance and habitat fragmentation present in the Base Case. The residual effect is reversible over the long term for some natural ecosystems and plant communities that would regenerate or can be reclaimed but irreversible for others. For example, mature forest would eventually return to the landscape given sufficient time. Organic wetlands with soils disturbance, however, are not predicted to recover within a defined timeframe; therefore, soil disturbance in wetlands is considered irreversible.

Changes in the Application Case and RFD Case are expected to reduce landscape intactness, but biodiversity in the RSA is predicted to recover to equivalent land use and productivity compared to similar undisturbed ecosystems in the RSA.

13.6 Prediction Confidence and Uncertainty

Scientific inference is associated with uncertainty, and prediction confidence (i.e., the level of confidence in assessment results) depends on the level of uncertainty and the way it is addressed. Primary factors affecting confidence in the predictions made in the vegetation assessment include:

- availability and accuracy of baseline data;
- accuracy of ecosystem maps;
- level of understanding of baseline ecosystem conditions, range of natural variation, and ecosystem resilience;
- level of understanding of the strength of primary pathways in terms of the effects they are likely to have on each VC;
- level of certainty associated with the effectiveness of proposed mitigations, where applicable; and
- level of understanding of the cumulative drivers of change in measurement indicators and associated effects on ecosystems, including uncertainty in climate change projections with respect to weather and fire frequency and intensity, and the associated responses of vegetation VCs.

Uncertainty was managed by:

- completing quality assurance and quality control of baseline data;
- reviewing historical data and relevant studies completed in the LSA and RSA;

- using the best available land cover data for mapping upland, wetland, and riparian vegetation ecosystems in the LSA and RSA;
- using data to make inferences about ecological interactions and mechanisms of change;
- assuming that plant species at risk and rare plants would be present in potential habitats where they may occur but were not observed;
- using the maximum disturbance area to enable Project refinements and increase confidence that the effects were not underestimated;
- using the hypothetical maximum disturbance area for the Fission Patterson Lake South Property to increase confidence that the effects were not underestimated;
- comparing assessment results to relevant published scientific literature; and
- addressing climate change in this assessment using a precautionary approach as necessary. Where there was ambiguity in the response of a VC to climate change, the assessment considered a precautionary outcome for each effects criterion (e.g., negative effect of climate change on vegetation VCs). However, where potential effects of climate change were better understood, VC responses were based on available scientific evidence.

Overall, there is a moderate to high degree of confidence in the predictions related to the changes to vegetation VCs, and best management practices during the Project lifespan would be implemented to mitigate effects on upland, wetland, and riparian ecosystem VCs and the traditional use plant species VC. There is some uncertainty regarding the quantity, distribution, and ecological function (i.e., condition) of reclaimed ELC units during and after Closure. Uncertainty was primarily and appropriately addressed by making assumptions that conservatively overestimated rather than underestimated potential effects (i.e., a precautionary assessment), such as expecting that reclaimed vegetation communities would likely not have the same structure as natural ELC units but would be ecologically functional. Further, conservatism was also included into the modelling and analysis completed by intermediate components and VCs such as air quality, hydrogeology, hydrology, surface water quality, and terrain and soils. Monitoring would be used to address residual uncertainty by evaluating the progress of reclamation activities. Different approaches and methods would be implemented, if necessary, to establish a trajectory towards the successful regeneration and succession of vegetation ecosystems that are functionally similar to natural plant communities in the region.

13.7 Monitoring, Follow-Up, and Adaptive Management

Monitoring programs would be used to:

- evaluate the effectiveness of the environmental protection measures (e.g., preventing soil erosion, stockpiling soil for reclamation, preventing the introduction of invasive weeds) and modify or enhance as necessary through monitoring and updating mitigation measures, if needed;
- identify unanticipated negative effects, including possible accidents and malfunctions;
- assess the success of plant community establishment following reclamation; and
- contribute to the overall continual improvement of the Project.

The Environmental Monitoring Plan would be implemented to monitor effects on vegetation. The proposed monitoring programs are outlined in Section 23, Summary of Mitigation, Monitoring, and Follow-Up Programs.

The Preliminary Decommissioning and Reclamation Plan, along with monitoring, would assist in revising or adding mitigation measures to facilitate successful long-term reclamation and establishment of vegetation communities and provision of functional wildlife habitat.

One species of noxious weed (i.e., narrow-leaved hawk's beard) and one species of nuisance weed (i.e., dandelion) designated under *The Weed Control Act* were identified in existing anthropogenically disturbed areas during baseline field surveys (Section 13.3.1.3). Weed species in Saskatchewan are regulated by *The Weed Control Act*. The purpose of this Act is to prevent weeds from being introduced into areas that do not contain these species and prevent the spread of new weeds into and throughout the province. Under *The Weed Control Act*, the following actions are required: eradication of prohibited weeds, eradication of isolated infestations of noxious weeds, and control of established noxious and nuisance weeds. Annual monitoring would be completed to identify and manage new occurrences within the Project footprint.

Eleven provincially tracked vascular plant occurrences were recorded during baseline surveys (Section 13.3.1.3, Ecosystem Condition, and Section 13.3.2.2, Ecosystem Distribution). However, only one occurrence of beautiful sedge was observed within the maximum disturbance area (Section 13.5.1.1.3, Ecosystem Condition). Monitoring and follow-up during Construction would be required to delineate potential activity restriction guideline setbacks (ENV 2017; 30 m setback) to mitigate direct disturbance to this species at this location. Where disturbance to rare plants is unavoidable, the ENV would be consulted to determine the most appropriate course of action.

Cumulative effects in both the Application and RFD cases were predicted to be not significant for traditional use plants. Traditional use plant species are relatively common in parts of the RSA and LSA (Section 13.3.4; Section 13.5.4). Therefore, no specific monitoring actions have been identified for traditional use plant species. However, general monitoring conducted under the Environmental Monitoring Plan would evaluate potential changes or effects to vegetation, including traditional use plant species. Importantly, NexGen is committed to continuing engagement with Indigenous Groups throughout the lifespan of the Project, and providing opportunities for the incorporation of Indigenous and Local Knowledge on the use of traditional plant species as part of reclamation planting prescriptions for the Preliminary Decommissioning and Reclamation Plan.

The Preliminary Decommissioning and Reclamation Plan, along with monitoring, would assist in revising or adding mitigation measures so that there is successful long-term reclamation and establishment of vegetation communities that contribute to overall ecosystem function, wildlife habitat, and biodiversity. Monitoring requirements for reclamation would be outlined in the Preliminary Decommissioning and Reclamation Plan and would include details on reclamation treatments to be used during revegetation, schedules for the frequency of monitoring, and thresholds where adaptive management may be required. The Preliminary Decommissioning and Reclamation Plan would also outline the criteria that would be used to determine reclamation success (i.e., cover and composition of vegetation, and forest health assessment scores). Feedback from reclamation monitoring would be used to develop further actions as required (i.e., planting late seral species not observed to be naturally regenerating, such as white spruce and traditional use plant species; refining vegetation prescriptions; and implementing best management practices to control invasive species).

Wetlands within the maximum disturbance area would be monitored prior to Construction and during Operations to understand the potential Project specific effects to wetland function and to adhere to the *Federal Policy on Wetland Conservation* (Government of Canada 1991) of no net loss of wetland function. Where wetland disturbance cannot be avoided, reclaimed wetlands with similar function would be established following Closure. Post-reclamation wetland surveys would be conducted to understand if reclaimed wetlands are achieving similar functions. Monitoring would provide feedback so that mitigation actions can be modified or added to achieve the

expected trajectory for establishing wetlands in designated reclaimed areas. For example, the area of wetland assumed to be reclaimed for the purposes of this assessment may need to be exceeded to achieve no net loss of wetland functions. The assessment conservatively estimated the effects on wetland ecosystems to be permanent and irreversible as restoration of wetland species composition and ecological function equivalent to the wetland ELC units observed in the Base Case is unlikely.

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 operation of the 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.

13.8 Key Findings

The objectives of Section 13 were to provide a detailed and comprehensive assessment of all potential Project-specific effects and cumulative effects from the Project and RFDs on vegetation; these objectives were met. A summary of key findings for vegetation is outlined below:

- No unique upland ecosystems would be lost by the development of the Project. Changes to availability and distribution of upland ecosystems are predicted to be localized to the Project. Similar changes are predicted for the RFD Case, with changes limited to the Project and Fission Patterson Lake South Property. Localized fragmentation as a result of the Project and the Fission Patterson Lake South Property is anticipated to occur within common upland ELC units (i.e., BP02[BU]) and it is predicted that upland ecosystems would remain abundant and well distributed across the RSA.
- One provincially tracked vascular plant species (i.e., beautiful sedge) was observed in upland ecosystem within the maximum disturbance area and could be lost or removed by the Project. Four occurrences of the same species were observed outside of the maximum disturbance area where no direct effects are anticipated. Rare plants would be clearly marked and avoided, where feasible. Where disturbance to rare plants is unavoidable, the ENV would be consulted to determine the most appropriate course of action.
- No unique wetland ecosystems would be lost by the development of the Project. Changes to availability and distribution of wetland ecosystems are predicted to be localized to the Project. Similar changes are predicted for the RFD Case, with changes limited to the Project and Fission Patterson Lake South Property. Few to no edge effects are predicted to occur to wetland condition. Localized fragmentation as a result of the Project and the Fission Patterson Lake South Property is anticipated to occur within common wetland ELC units (i.e., BP20[BU]) and it is predicted that wetland ecosystems would remain abundant and well distributed across the RSA.

- Changes to availability, distribution, and condition of riparian ecosystems are predicted to be localized to the Project. Similar changes are predicted for the RFD Case, with changes limited to the Project and Fission Patterson Lake South Property. Changes are predicted to produce few to no edge effects on riparian condition.
- No unique traditional use plant species would be lost by the development of the Project. Changes to the availability and distribution of traditional use plant species are predicted to be localized to the Project. Similar changes are predicted for the RFD Case, with changes limited to the Project and Fission Patterson Lake South Property.
- Key information from the vegetation assessment was carried forward to the wildlife, cultural and heritage resources and Indigenous land and resource use, and other land and resource use discipline sections for consideration in the assessment of valued components.

13.9 References

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Appendix 13A Vegetation Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Table 13A-1: Upland Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Upland ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP02 - Jack pine/lichen	199.9	7.1	2,791.3	2.6	199.9	147.7	-52.2	2,791.3	2,739.1	-52.2	2,791.3	2,566.3	-225.0
BP03 - Jack pine/feathermoss	133.6	4.7	3,712.1	3.5	133.6	85.2	-48.4	3,712.1	3,663.7	-48.4	3,712.1	3,622.8	-89.2
BP04 - Jack pine - trembling aspen/feathermoss	16.9	0.6	1,000.7	0.9	16.9	16.9	0.0	1,000.7	1,000.7	0.0	1,000.7	1,000.7	0.0
BP06 - Trembling aspen/beaked hazel/sarsaparilla	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BP07 - Trembling aspen - white birch/sarsaparilla	0.0	0.0	5.1	<0.1	0.0	0.0	0.0	5.1	5.1	0.0	5.1	5.1	0.0
BP11 - White birch - white spruce - balsam fir	0.0	0.0	3.2	<0.1	0.0	0.0	0.0	3.2	3.2	0.0	3.2	3.2	0.0
BP12 - Jack pine - spruce/feathermoss	0.0	0.0	219.2	0.2	0.0	0.0	0.0	219.2	219.2	0.0	219.2	219.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	19.1	0.7	129.8	0.1	19.1	7.6	-11.5	129.8	118.3	-11.5	129.8	118.3	-11.5
BP16 - Balsam poplar - trembling aspen/prickly rose	0.0	0.0	33.3	<0.1	0.0	0.0	0.0	33.3	33.3	0.0	33.3	33.3	0.0
BS02 - Lichen/felsenmeer – bedrock	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS03 - Jack pine/blueberry/lichen	0.0	0.0	4,991.4	4.6	0.0	0.0	0.0	4,991.4	4,991.4	0.0	4,991.4	4,991.4	0.0
BS04 - Jack pine - black spruce/feathermoss	0.0	0.0	6,158.9	5.7	0.0	0.0	0.0	6,158.9	6,158.9	0.0	6,158.9	6,158.9	0.0
BS05 - Jack pine - white birch/feathermoss	0.0	0.0	1.1	<0.1	0.0	0.0	0.0	1.1	1.1	0.0	1.1	1.1	0.0
BS06 - Jack pine - trembling aspen/green alder	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BS07 - Black spruce/blueberry/lichen	0.0	0.0	2.6	<0.1	0.0	0.0	0.0	2.6	2.6	0.0	2.6	2.6	0.0
BS08 - Black spruce - white birch/lichen	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS09 - Black spruce - jack pine/feathermoss	0.0	0.0	23.1	<0.1	0.0	0.0	0.0	23.1	23.1	0.0	23.1	23.1	0.0
BS10 - Black spruce - white birch/feathermoss	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	0.0	0.0	11.9	<0.1	0.0	0.0	0.0	11.9	11.9	0.0	11.9	11.9	0.0
BS14 - White birch/lingonberry - Labrador tea	0.0	0.0	74.0	0.1	0.0	0.0	0.0	74.0	74.0	0.0	74.0	48.3	-25.7
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
Undisturbed upland subtotal	369.6	13.1	19,158.2	17.8	369.6	257.5	-112.1	19,158.2	19,046.1	-112.1	19,158.2	18,806.8	-351.5
BP02(BU/E) - Jack pine/lichen (Burned)	0.0	0.0	176.2	0.2	0.0	0.0	0.0	176.2	176.2	0.0	176.2	176.2	0.0
BP02(BU/L) - Jack pine/lichen (Burned)	1,641.2	58.0	8,814.8	8.2	1,641.2	920.7	-720.4	8,814.8	8,094.3	-720.4	8,814.8	7,053.1	-1,761.7
BP03(BU/E) - Jack pine/feathermoss (Burned)	0.0	0.0	594.9	0.6	0.0	0.0	0.0	594.9	594.9	0.0	594.9	594.9	0.0
BP03(BU/L) - Jack pine/feathermoss (Burned)	0.0	0.0	4,251.7	4.0	0.0	0.0	0.0	4,251.7	4,251.7	0.0	4,251.7	4,251.7	0.0
BP04(BU/E) - Jack pine - trembling aspen/feathermoss (Burned)	0.0	0.0	120.8	0.1	0.0	0.0	0.0	120.8	120.8	0.0	120.8	120.8	0.0
BP04(BU/L) - Jack pine - trembling aspen/feathermoss (Burned)	0.0	0.0	1,153.7	1.1	0.0	0.0	0.0	1,153.7	1,153.7	0.0	1,153.7	1,153.7	0.0
BP06(BU/E) - Trembling aspen/beaked hazel/sarsaparilla (Burned)	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BP07(BU/E) - Trembling aspen - white birch/sarsaparilla (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BP07(BU/L) - Trembling aspen - white birch/sarsaparilla (Burned)	0.0	0.0	10.4	<0.1	0.0	0.0	0.0	10.4	10.4	0.0	10.4	10.4	0.0
BP11(BU/L) - White birch - white spruce - balsam fir (Burned)	0.0	0.0	0.9	<0.1	0.0	0.0	0.0	0.9	0.9	0.0	0.9	0.9	0.0
BP12(BU/L) - Jack pine - spruce/feathermoss (Burned)	0.0	0.0	4.4	<0.1	0.0	0.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0
BP14(BU/E) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	23.4	<0.1	0.0	0.0	0.0	23.4	23.4	0.0	23.4	23.4	0.0
BP14(BU/L) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	1.8	<0.1	0.0	0.0	0.0	1.8	1.8	0.0	1.8	1.8	0.0
BP16(BU/L) - Balsam poplar - trembling aspen/prickly rose (Burned)	161.9	5.7	1,070.4	1.0	161.9	126.0	-35.8	1,070.4	1,034.6	-35.8	1,070.4	943.6	-126.8
BS02(BU/L) - Lichen/felsenmeer - bedrock (Burned)	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BS03(BU/E) - Jack pine/blueberry/lichen (Burned)	0.0	0.0	2,237.8	2.1	0.0	0.0	0.0	2,237.8	2,237.8	0.0	2,237.8	2,237.8	0.0
BS03(BU/L) - Jack pine/blueberry/lichen (Burned)	0.0	0.0	20,935.0	19.5	0.0	0.0	0.0	20,935.0	20,935.0	0.0	20,935.0	20,860.8	-74.2
BS04(BU/E) - Jack pine - black spruce/feathermoss (Burned)	0.0	0.0	1,089.8	1.0	0.0	0.0	0.0	1,089.8	1,089.8	0.0	1,089.8	1,089.8	0.0
BS04(BU/L) - Jack pine - black spruce/feathermoss (Burned)	0.0	0.0	7,975.4	7.4	0.0	0.0	0.0	7,975.4	7,975.4	0.0	7,975.4	7,975.4	0.0
BS05(BU/E) - Jack pine - white birch/feathermoss (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS05(BU/L) - Jack pine - white birch/feathermoss (Burned)	0.0	0.0	5.0	<0.1	0.0	0.0	0.0	5.0	5.0	0.0	5.0	5.0	0.0

Table 13A-1: Upland Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Upland ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BS06(BU/L) - Jack pine - trembling aspen/green alder (Burned)	0.0	0.0	0.9	<0.1	0.0	0.0	0.0	0.9	0.9	0.0	0.9	0.9	0.0
BS07(BU/E) - Black spruce/blueberry/lichen (Burned)	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
BS07(BU/L) - Black spruce/blueberry/lichen (Burned)	0.0	0.0	5.4	<0.1	0.0	0.0	0.0	5.4	5.4	0.0	5.4	5.4	0.0
BS08(BU/L) - Black spruce - white birch/lichen (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS09(BU/E) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BS09(BU/L) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	49.4	<0.1	0.0	0.0	0.0	49.4	49.4	0.0	49.4	49.4	0.0
BS13(BU/E) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	5.9	<0.1	0.0	0.0	0.0	5.9	5.9	0.0	5.9	5.9	0.0
BS13(BU/L) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	51.8	<0.1	0.0	0.0	0.0	51.8	51.8	0.0	51.8	51.8	0.0
BS14(BU/E) - White birch/lingonberry - Labrador tea (Burned)	0.0	0.0	6.3	<0.1	0.0	0.0	0.0	6.3	6.3	0.0	6.3	6.3	0.0
BS14(BU/L) - White birch/lingonberry - Labrador tea (Burned)	0.0	0.0	33.6	<0.1	0.0	0.0	0.0	33.6	33.6	0.0	33.6	29.7	-4.0
BS15(BU/L) - Trembling aspen - white birch/green alder (Burned)	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
Recent burn upland	0.0	0.0	7,041.6	6.6	0.0	0.0	0.0	7,041.6	7,041.6	0.0	7,041.6	7,041.6	0.0
Burned upland subtotal	1,803.0	63.7	55,663.4	51.8	1,803.0	1,046.8	-756.2	55,663.4	54,907.2	-756.2	55,663.4	53,696.7	-1,966.7
Upland total	**2,172.6**	**76.7**	**74,821.7**	**69.6**	**2,172.6**	**1,304.3**	**-868.4**	**74,821.7**	**73,953.3**	**-868.4**	**74,821.7**	**72,503.5**	**-2,318.2**
Wetland total	**553.2**	**19.5**	**32,211.3**	**30.0**	**553.2**	**523.1**	**-30.1**	**32,211.3**	**32,181.2**	**-30.1**	**32,211.3**	**32,139.3**	**-72.0**
Anthropogenic disturbance	**104.7**	**3.7**	**457.8**	**0.4**	**104.7**	**1,003.2**	**898.5**	**457.8**	**1,356.3**	**898.5**	**457.8**	**2,847.9**	**2,390.1**
Grand total	**2,831.6**	**100.0**	**107,490.7**	**100.0**	**2,831.6**	**2,831.6**	**n/a**	**107,490.7**	**107,490.7**	**n/a**	**107,490.7**	**107,490.7**	**n/a**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

a) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.

RFD = reasonably foreseeable development; LSA = local study area; RSA = regional study area; ELC = Ecological Land Classification; < = less than; n/a = not applicable.

Table 13A-2: Wetland Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Wetland ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP18 - Black spruce - tamarack treed swamp	0.0	0.0	21.9	<0.1	0.0	0.0	0.0	21.9	21.9	0.0	21.9	21.9	0.0
BP19 - Black spruce treed bog	52.9	1.9	1,708.0	1.6	52.9	43.9	-9.0	1,708.0	1,699.0	-9.0	1,708.0	1,688.6	-19.4
BP20 - Labrador tea shrubby bog	57.6	2.0	1,254.7	1.2	57.6	41.0	-16.6	1,254.7	1,238.1	-16.6	1,254.7	1,225.4	-29.3
BP21 - Graminoid bog	0.0	0.0	25.2	<0.1	0.0	0.0	0.0	25.2	25.2	0.0	25.2	25.1	-0.1
BP22 - Open bog	0.0	0.0	7.8	<0.1	0.0	0.0	0.0	7.8	7.8	0.0	7.8	7.8	0.0
BP23 - Tamarack treed fen	0.8	<0.1	40.4	<0.1	0.8	0.8	0.0	40.4	40.4	0.0	40.4	40.4	0.0
BP24 - Leatherleaf shrubby poor fen	6.2	0.2	54.5	0.1	6.2	6.2	0.0	54.5	54.5	0.0	54.5	51.6	-2.9
BP25 - Willow shrubby rich fen	4.5	0.2	317.1	0.3	4.5	4.1	-0.4	317.1	316.7	-0.4	317.1	316.7	-0.4
BP26 - Graminoid fen	0.2	<0.1	263.3	0.2	0.2	0.2	0.0	263.3	263.3	0.0	263.3	261.6	-1.7
BP27 - Open fen	0.0	0.0	32.8	<0.1	0.0	0.0	0.0	32.8	32.8	0.0	32.8	32.8	0.0
BP28 - Seaside arrow-grass marsh	0.0	0.0	64.3	0.1	0.0	0.0	0.0	64.3	64.3	0.0	64.3	64.3	0.0
BS17 - Black spruce treed bog	0.0	0.0	1,517.3	1.4	0.0	0.0	0.0	1,517.3	1,517.3	0.0	1,517.3	1,517.3	0.0
BS18 - Labrador tea shrubby bog	0.0	0.0	1,481.3	1.4	0.0	0.0	0.0	1,481.3	1,481.3	0.0	1,481.3	1,481.3	0.0
BS19 - Graminoid bog	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
BS20 - Open bog	0.0	0.0	0.9	<0.1	0.0	0.0	0.0	0.9	0.9	0.0	0.9	0.9	0.0
BS21 - Tamarack treed fen	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BS22 - Leatherleaf shrubby poor fen	0.0	0.0	205.0	0.2	0.0	0.0	0.0	205.0	205.0	0.0	205.0	205.0	0.0
BS23 - Willow shrubby rich fen	0.0	0.0	4.5	<0.1	0.0	0.0	0.0	4.5	4.5	0.0	4.5	4.5	0.0
BS24 - Graminoid fen	0.0	0.0	41.8	<0.1	0.0	0.0	0.0	41.8	41.8	0.0	41.8	41.8	0.0
BS25 - Open fen	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS26 - Rush sandy shore	0.2	<0.1	15.2	<0.1	0.2	0.2	0.0	15.2	15.2	0.0	15.2	15.1	0.0
Undisturbed wetland subtotal	122.5	4.3	7,056.4	6.6	122.5	96.5	-26.0	7,056.4	7,030.4	-26.0	7,056.4	7,002.6	-53.9
BP18(BU/E) - Black spruce - tamarack treed swamp (Burned)	0.0	0.0	36.6	<0.1	0.0	0.0	0.0	36.6	36.6	0.0	36.6	36.6	0.0
BP18(BU/L) - Black spruce - tamarack treed swamp (Burned)	0.0	0.0	13.3	<0.1	0.0	0.0	0.0	13.3	13.3	0.0	13.3	13.3	0.0
BP19(BU/E) - Black spruce treed bog (Burned)	0.0	0.0	22.0	<0.1	0.0	0.0	0.0	22.0	22.0	0.0	22.0	22.0	0.0
BP19(BU/L) - Black spruce treed bog (Burned)	35.5	1.3	2,218.7	2.1	35.5	33.7	-1.8	2,218.7	2,216.9	-1.8	2,218.7	2,216.9	-1.8
BP20(BU/E) - Labrador tea shrubby bog (Burned)	0.0	0.0	0.5	<0.1	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.5	0.0
BP20(BU/L) - Labrador tea shrubby bog (Burned)	0.0	0.0	81.7	0.1	0.0	0.0	0.0	81.7	81.7	0.0	81.7	81.7	0.0
BP21(BU/L) - Graminoid bog (Burned)	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BP23(BU/E) - Tamarack treed fen (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BP23(BU/L) - Tamarack treed fen (Burned)	0.0	0.0	25.2	<0.1	0.0	0.0	0.0	25.2	25.2	0.0	25.2	25.2	0.0
BP24(BU/L) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	11.6	<0.1	0.0	0.0	0.0	11.6	11.6	0.0	11.6	11.6	0.0
BP25(BU/E) - Willow shrubby rich fen (Burned)	0.0	0.0	3.5	<0.1	0.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
BP25(BU/L) - Willow shrubby rich fen (Burned)	0.0	0.0	138.5	0.1	0.0	0.0	0.0	138.5	138.5	0.0	138.5	138.5	0.0
BP26(BU/E) - Graminoid fen (Burned)	0.0	0.0	90.2	0.1	0.0	0.0	0.0	90.2	90.2	0.0	90.2	90.2	0.0
BP26(BU/L) - Graminoid fen (Burned)	0.0	0.0	311.4	0.3	0.0	0.0	0.0	311.4	311.4	0.0	311.4	311.4	0.0
BP28(BU/E) - Seaside arrow-grass marsh (Burned)	0.0	0.0	4.8	<0.1	0.0	0.0	0.0	4.8	4.8	0.0	4.8	4.8	0.0
BP28(BU/L) - Seaside arrow-grass marsh (Burned)	0.0	0.0	105.1	0.1	0.0	0.0	0.0	105.1	105.1	0.0	105.1	105.1	0.0
BS16(BU/L) - Black spruce/balsam poplar/river alder swamp (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS17(BU/E) - Black spruce treed bog (Burned)	0.0	0.0	60.3	0.1	0.0	0.0	0.0	60.3	60.3	0.0	60.3	60.3	0.0
BS17(BU/L) - Black spruce treed bog (Burned)	0.0	0.0	1,480.0	1.4	0.0	0.0	0.0	1,480.0	1,480.0	0.0	1,480.0	1,480.0	0.0
BS18(BU/E) - Labrador tea shrubby bog (Burned)	0.0	0.0	39.1	<0.1	0.0	0.0	0.0	39.1	39.1	0.0	39.1	39.1	0.0
BS18(BU/L) - Labrador tea shrubby bog (Burned)	0.0	0.0	1,013.8	0.9	0.0	0.0	0.0	1,013.8	1,013.8	0.0	1,013.8	1,013.8	0.0

Table 13A-2: Wetland Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Wetland ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BS19(BU/L) - Graminoid bog (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS20(BU/E) - Open bog (Burned)	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
BS20(BU/L) - Open bog (Burned)	0.0	0.0	2.0	<0.1	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
BS21(BU/E) - Tamarack treed fen (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS21(BU/L) - Tamarack treed fen (Burned)	0.0	0.0	7.0	<0.1	0.0	0.0	0.0	7.0	7.0	0.0	7.0	7.0	0.0
BS22(BU/E) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	123.9	0.1	0.0	0.0	0.0	123.9	123.9	0.0	123.9	123.9	0.0
BS22(BU/L) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	287.4	0.3	0.0	0.0	0.0	287.4	287.4	0.0	287.4	287.4	0.0
BS23(BU/E) - Willow shrubby rich fen (Burned)	0.0	0.0	1.1	<0.1	0.0	0.0	0.0	1.1	1.1	0.0	1.1	1.1	0.0
BS23(BU/L) - Willow shrubby rich fen (Burned)	0.0	0.0	32.0	<0.1	0.0	0.0	0.0	32.0	32.0	0.0	32.0	32.0	0.0
BS24(BU/E) - Graminoid fen (Burned)	0.0	0.0	14.5	<0.1	0.0	0.0	0.0	14.5	14.5	0.0	14.5	14.5	0.0
BS24(BU/L) - Graminoid fen (Burned)	0.0	0.0	74.6	0.1	0.0	0.0	0.0	74.6	74.6	0.0	74.6	74.6	0.0
BS25(BU/L) - Open fen (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS26(BU/E) - Rush sandy shore (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS26(BU/L) - Rush sandy shore (Burned)	0.0	0.0	36.5	<0.1	0.0	0.0	0.0	36.5	36.5	0.0	36.5	36.5	0.0
Recent burn wetland	0.0	0.0	96.8	0.1	0.0	0.0	0.0	96.8	96.8	0.0	96.8	96.8	0.0
Burned wetland subtotal	35.5	1.3	6,333.1	5.9	35.5	33.7	-1.8	6,333.1	6,331.3	-1.8	6,333.1	6,331.3	-1.8
Water	395.3	14.0	18,821.8	17.5	395.3	392.9	-2.4	18,821.8	18,819.4	-2.4	18,821.8	18,805.5	-16.3
Wetland total	**553.2**	**19.5**	**32,211.3**	**30.0**	**553.2**	**523.1**	**-30.1**	**32,211.3**	**32,181.2**	**-30.1**	**32,211.3**	**32,139.3**	**-72.0**
Upland total	**2,172.6**	**76.7**	**74,821.7**	**69.6**	**2,172.6**	**1,304.3**	**-868.4**	**74,821.7**	**73,953.3**	**-868.4**	**74,821.7**	**72,503.5**	**-2,318.2**
Anthropogenic disturbance	**104.7**	**3.7**	**457.8**	**0.4**	**104.7**	**1,003.2**	**898.5**	**457.8**	**1,356.3**	**898.5**	**457.8**	**2,847.9**	**2,390.1**
Grand total	**2,831.6**	**100.0**	**107,490.7**	**100.0**	**2,831.6**	**2,831.6**	**n/a**	**107,490.7**	**107,490.7**	**n/a**	**107,490.7**	**107,490.7**	**n/a**

Note**:** Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

a) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.

RFD = reasonably foreseeable development; LSA = local study area; RSA = regional study area; ELC = Ecological Land Classification; < = less than; n/a = not applicable.

Table 13A-3: Riparian Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Riparian ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP07 - Trembling aspen - white birch/sarsaparilla	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BP12 - Jack pine - spruce/feathermoss	0.0	0.0	216.2	0.2	0.0	0.0	0.0	216.2	216.2	0.0	216.2	216.2	0.0
BP14 - Black spruce/Labrador tea/feathermoss	17.3	0.6	96.7	0.1	17.3	7.4	-9.8	96.7	86.8	-9.8	96.7	86.8	-9.8
BP16 - Balsam poplar - trembling aspen/prickly rose	0.0	0.0	32.4	<0.1	0.0	0.0	0.0	32.4	32.4	0.0	32.4	32.4	0.0
BP18 - Black spruce - tamarack treed swamp	0.0	0.0	3.6	<0.1	0.0	0.0	0.0	3.6	3.6	0.0	3.6	3.6	0.0
BP19 - Black spruce treed bog	51.4	1.8	822.2	0.8	51.4	42.4	-9.0	822.2	813.2	-9.0	822.2	804.3	-17.8
BP20 - Labrador tea shrubby bog	35.1	1.2	1,003.6	0.9	35.1	24.7	-10.4	1,003.6	993.2	-10.4	1,003.6	985.0	-18.6
BP21 - Graminoid bog	0.0	0.0	12.3	<0.1	0.0	0.0	0.0	12.3	12.3	0.0	12.3	12.2	-0.1
BP22 - Open bog	0.0	0.0	3.6	<0.1	0.0	0.0	0.0	3.6	3.6	0.0	3.6	3.6	0.0
BP23 - Tamarack treed fen	0.7	<0.1	27.3	<0.1	0.7	0.7	0.0	27.3	27.3	0.0	27.3	27.3	0.0
BP24 - Leatherleaf shrubby poor fen	6.2	0.2	36.8	<0.1	6.2	6.2	0.0	36.8	36.8	0.0	36.8	35.3	-1.5
BP25 - Willow shrubby rich fen	4.5	0.2	216.5	0.2	4.5	4.1	-0.4	216.5	216.1	-0.4	216.5	216.1	-0.4
BP26 - Graminoid fen	1.2	<0.1	97.5	0.1	1.2	1.2	0.0	97.5	97.5	0.0	97.5	97.1	-0.5
BP27 - Open fen	0.0	0.0	15.6	<0.1	0.0	0.0	0.0	15.6	15.6	0.0	15.6	15.6	0.0
BP28 - Seaside arrow-grass marsh	0.0	0.0	46.0	<0.1	0.0	0.0	0.0	46.0	46.0	0.0	46.0	46.0	0.0
BS06 - Jack pine - trembling aspen/green alder	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
BS09 - Black spruce - jack pine/feathermoss	0.0	0.0	23.1	<0.1	0.0	0.0	0.0	23.1	23.1	0.0	23.1	23.1	0.0
BS10 - Black spruce - white birch/feathermoss	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS13 - White birch - black spruce - trembling aspen	0.0	0.0	0.5	<0.1	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.5	0.0
BS15 - Trembling aspen - white birch/green alder	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS17 - Black spruce treed bog	0.0	0.0	1,281.4	1.2	0.0	0.0	0.0	1,281.4	1,281.4	0.0	1,281.4	1,281.4	0.0
BS18 - Labrador tea shrubby bog	0.0	0.0	1,302.8	1.2	0.0	0.0	0.0	1,302.8	1,302.8	0.0	1,302.8	1,302.8	0.0
BS19 - Graminoid bog	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
BS20 - Open bog	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BS21 - Tamarack treed fen	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS22 - Leatherleaf shrubby poor fen	0.0	0.0	171.9	0.2	0.0	0.0	0.0	171.9	171.9	0.0	171.9	171.9	0.0
BS23 - Willow shrubby rich fen	0.0	0.0	2.7	<0.1	0.0	0.0	0.0	2.7	2.7	0.0	2.7	2.7	0.0
BS24 - Graminoid fen	0.0	0.0	30.8	<0.1	0.0	0.0	0.0	30.8	30.8	0.0	30.8	30.8	0.0
BS25 - Open fen	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS26 - Rush sandy shore	0.2	<0.1	11.9	<0.1	0.2	0.2	0.0	11.9	11.9	0.0	11.9	11.8	-0.1
Undisturbed riparian subtotal	116.6	4.1	5,456.3	5.1	116.6	87.0	-29.6	5,456.3	5,426.7	-29.6	5,456.3	5,407.4	-48.8
BP11(BU/L) - White birch - white spruce - balsam fir (Burned)	0.0	0.0	0.5	<0.1	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.5	0.0
BP12(BU/L) - Jack pine - spruce/feathermoss (Burned)	0.0	0.0	0.5	<0.1	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.5	0.0
BP14(BU/L) - Black spruce/Labrador tea/feathermoss (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BP16(BU/L) - Balsam poplar - trembling aspen/prickly rose (Burned)	64.4	2.3	729.1	0.7	64.4	54.4	-10.0	729.1	719.1	-10.0	729.1	675.3	-53.8
BP18(BU/L) - Black spruce - tamarack treed swamp (Burned)	0.0	0.0	6.8	<0.1	0.0	0.0	0.0	6.8	6.8	0.0	6.8	6.8	0.0
BP19(BU/E) - Black spruce treed bog (Burned)	0.0	0.0	2.1	<0.1	0.0	0.0	0.0	2.1	2.1	0.0	2.1	2.1	0.0
BP19(BU/L) - Black spruce treed bog (Burned)	24.4	0.9	871.2	0.8	24.4	24.4	0.0	871.2	871.2	0.0	871.2	871.2	0.0
BP20(BU/L) - Labrador tea shrubby bog (Burned)	0.0	0.0	25.2	<0.1	0.0	0.0	0.0	25.2	25.2	0.0	25.2	25.2	0.0
BP23(BU/L) - Tamarack treed fen (Burned)	0.0	0.0	12.2	<0.1	0.0	0.0	0.0	12.2	12.2	0.0	12.2	12.2	0.0
BP25(BU/L) - Willow shrubby rich fen (Burned)	0.0	0.0	20.7	<0.1	0.0	0.0	0.0	20.7	20.7	0.0	20.7	20.7	0.0
BP26(BU/E) - Graminoid fen (Burned)	0.0	0.0	7.6	<0.1	0.0	0.0	0.0	7.6	7.6	0.0	7.6	7.6	0.0
BP26(BU/L) - Graminoid fen (Burned)	0.0	0.0	98.2	0.1	0.0	0.0	0.0	98.2	98.2	0.0	98.2	98.2	0.0

Table 13A-3: Riparian Ecosystem Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Riparian ELC Unit[a]	Base Case				Application Case						RFD Case		
	LSA		RSA		LSA			RSA			RSA		
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	Application Case	Change in Area (ha)	Base Case (ha)	RFD Case (ha)	Change in Area (ha)
BP28(BU/E) - Seaside arrow-grass marsh (Burned)	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BP28(BU/L) - Seaside arrow-grass marsh (Burned)	0.0	0.0	97.8	0.1	0.0	0.0	0.0	97.8	97.8	0.0	97.8	97.8	0.0
BS06(BU/L) - Jack pine - trembling aspen/green alder (Burned)	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BS07(BU/L) - Black spruce/blueberry/lichen (Burned)	0.0	0.0	5.3	<0.1	0.0	0.0	0.0	5.3	5.3	0.0	5.3	5.3	0.0
BS09(BU/E) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.7	0.7	0.0	0.7	0.7	0.0
BS09(BU/L) - Black spruce - jack pine/feathermoss (Burned)	0.0	0.0	47.1	<0.1	0.0	0.0	0.0	47.1	47.1	0.0	47.1	47.1	0.0
BS13(BU/E) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
BS13(BU/L) - White birch - black spruce - trembling aspen (Burned)	0.0	0.0	26.6	<0.1	0.0	0.0	0.0	26.6	26.6	0.0	26.6	26.6	0.0
BS15(BU/L) - Trembling aspen - white birch/green alder (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS17(BU/E) - Black spruce treed bog (Burned)	0.0	0.0	26.7	<0.1	0.0	0.0	0.0	26.7	26.7	0.0	26.7	26.7	0.0
BS17(BU/L) - Black spruce treed bog (Burned)	0.0	0.0	1,162.6	1.1	0.0	0.0	0.0	1,162.6	1,162.6	0.0	1,162.6	1,162.6	0.0
BS18(BU/E) - Labrador tea shrubby bog (Burned)	0.0	0.0	8.7	<0.1	0.0	0.0	0.0	8.7	8.7	0.0	8.7	8.7	0.0
BS18(BU/L) - Labrador tea shrubby bog (Burned)	0.0	0.0	656.3	0.6	0.0	0.0	0.0	656.3	656.3	0.0	656.3	656.3	0.0
BS19(BU/L) - Graminoid bog (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
BS20(BU/E) - Open bog (Burned)	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.0
BS20(BU/L) - Open bog (Burned)	0.0	0.0	1.2	<0.1	0.0	0.0	0.0	1.2	1.2	0.0	1.2	1.2	0.0
BS21(BU/L) - Tamarack treed fen (Burned)	0.0	0.0	3.3	<0.1	0.0	0.0	0.0	3.3	3.3	0.0	3.3	3.3	0.0
BS22(BU/E) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	81.4	0.1	0.0	0.0	0.0	81.4	81.4	0.0	81.4	81.4	0.0
BS22(BU/L) - Leatherleaf shrubby poor fen (Burned)	0.0	0.0	184.7	0.2	0.0	0.0	0.0	184.7	184.7	0.0	184.7	184.7	0.0
BS23(BU/E) - Willow shrubby rich fen (Burned)	0.0	0.0	0.6	<0.1	0.0	0.0	0.0	0.6	0.6	0.0	0.6	0.6	0.0
BS23(BU/L) - Willow shrubby rich fen (Burned)	0.0	0.0	15.9	<0.1	0.0	0.0	0.0	15.9	15.9	0.0	15.9	15.9	0.0
BS24(BU/E) - Graminoid fen (Burned)	0.0	0.0	11.8	<0.1	0.0	0.0	0.0	11.8	11.8	0.0	11.8	11.8	0.0
BS24(BU/L) - Graminoid fen (Burned)	0.0	0.0	25.6	<0.1	0.0	0.0	0.0	25.6	25.6	0.0	25.6	25.6	0.0
BS25(BU/L) - Open fen (Burned)	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Recent burn wetland	0.0	0.0	23.7	<0.1	0.0	0.0	0.0	23.7	23.7	0.0	23.7	23.7	0.0
Burned riparian subtotal	88.8	3.1	4,156.2	3.9	88.8	78.9	-10.0	4,156.2	4,146.3	-10.0	4,156.2	4,102.4	-53.8
Riparian total	**205.4**	**7.3**	**9,612.5**	**8.9**	**205.4**	**165.8**	**-39.6**	**9,612.5**	**9,572.9**	**-39.6**	**9,612.5**	**9,509.9**	**-102.6**

Note**:** Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

a) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.

RFD = reasonably foreseeable development; LSA = local study area; RSA = regional study area; ELC = Ecological Land Classification; < = less than.

Appendix 13B Traditional Use Plant Availability in the Base Case, Application Case, and Reasonably Foreseeable Development Case

Table 13B-1: Traditional Use Plant Species Occupancy Ratios

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																							
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP02 (BU)	BP03 (BU)	BP04 (BU)	BP06 (BU)	BP07 (BU)	BP11 (BU)	BP12 (BU)	BP14 (BU)	BP16 (BU)	BS02 (BU)	BS03 (BU)	BS04 (BU)	BS05 (BU)	BS06 (BU)	BS07 (BU)	BS08 (BU)	BS09 (BU)	BS13 (BU)	BS14 (BU)	BS15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	<0.01	0.03	<0.01	0.25	0.25	0.16	0.02	0.13	0.0	0.01	<0.01	0.02	0.11	0.05	0.0	0.17	0.01	0.11	0.32	0.16	0.12	<0.01	0.02	<0.01	0.25	0.25	0.16	0.02	0.13	0.11	0.01	<0.01	0.02	0.11	<0.01	<0.01	<0.01	0.01	0.32	0.11	0.12	0.0
Birch	*Betula pumila*	Swamp birch	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	0.01	0.0	0.0	<0.01	0.0	0.0	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.0	<0.01
Blueberry	*Vaccinium myrtilloides*	Blueberry	0.01	0.09	0.01	0.05	0.09	0.02	0.07	0.03	0.0	0.0	0.05	0.07	0.06	0.04	0.07	0.06	<0.01	0.04	0.07	0.02	0.08	0.12	0.07	0.12	0.05	0.09	0.02	0.07	0.03	0.04	0.0	0.12	0.07	0.06	0.12	0.12	0.12	<0.01	0.07	0.04	0.08	<0.01
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus* var. *nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus* var. *acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.01	0.0	0.0	0.01
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	0.02	0.08	0.01	0.08	0.08	0.01	0.06	0.02	0.0	0.0	0.04	0.06	0.07	0.07	0.02	0.05	0.02	0.07	0.11	0.01	0.08	0.03	0.06	0.03	0.08	0.08	0.01	0.06	0.02	0.01	0.0	0.03	0.06	0.07	0.03	0.03	0.03	0.02	0.11	0.01	0.08	0.02
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	0.01	0.01	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	<0.01	0.01	0.0	0.0	0.0	0.01	0.01	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	0.08	0.23	0.03	0.01	0.01	<0.01	0.17	0.13	0.0	0.0	0.21	0.17	0.25	0.27	0.11	0.12	0.01	0.06	0.01	<0.01	0.01	0.09	0.17	0.09	0.01	0.01	<0.01	0.17	0.13	0.03	0.0	0.09	0.17	0.25	0.09	0.09	0.09	0.01	0.01	0.03	0.01	0.02
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	<0.01	0.04	0.0	0.0	0.0	0.01	0.02	0.0	0.0	0.0	0.01	0.02	0.01	0.0	0.0	0.0	0.0	0.01	0.07	0.01	0.0	0.02	0.02	0.02	0.0	0.0	0.01	0.02	0.0	<0.01	0.0	0.02	0.02	0.01	0.02	0.02	0.02	0.0	0.07	<0.01	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	<0.01	<0.01	0.01	0.01	0.05	<0.01	0.09	0.0	0.0	<0.01	<0.01	0.07	0.03	0.0	0.07	0.04	0.11	0.11	0.05	0.01	0.01	<0.01	0.01	0.01	0.01	0.05	<0.01	0.09	0.03	0.0	0.01	<0.01	0.07	0.01	0.01	0.01	0.04	0.11	0.03	0.01	0.06
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	0.01	0.0	0.0	<0.01	0.0	0.0	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.0	0.01
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	0.01	0.0	0.06	0.0	0.0	0.01	0.06	0.0	0.04	0.01	<0.01	0.06	0.0	0.06	0.04	0.02	0.17	0.0	0.0	0.01	0.0	0.02	0.06	0.02	0.0	0.0	0.01	0.06	0.0	0.01	0.01	0.02	0.06	0.0	0.02	0.02	0.02	0.17	0.0	0.01	0.0	0.11
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	<0.01	0.0	0.65	0.46	<0.01	0.0	0.01	0.33	0.0	<0.01	0.0	0.0	0.21	0.0	0.0	0.0	0.0	0.10	<0.01	0.47	0.01	0.0	0.01	0.65	0.46	<0.01	0.0	0.01	<0.01	0.0	0.01	0.0	0.0	0.01	0.01	0.01	0.0	0.10	<0.01	0.47	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	0.02	0.02	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.02	0.0	0.0	0.0	0.02	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.02	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	0.15	0.0	0.13	0.13	0.09	0.02	<0.01	0.12	0.0	<0.01	0.02	0.16	0.0	0.0	0.0	0.0	0.0	0.20	<0.01	0.13	<0.01	0.02	<0.01	0.13	0.13	0.09	0.02	0.01	<0.01	0.0	<0.01	0.02	0.16	<0.01	<0.01	<0.01	0.0	0.20	<0.01	0.13	0.0
Spruce	*Picea mariana*	Black spruce	<0.01	0.03	0.01	0.0	0.0	0.02	0.01	0.42	0.0	0.01	<0.01	0.01	0.0	0.13	0.36	0.54	0.09	0.0	0.0	0.02	0.0	<0.01	0.01	<0.01	0.0	0.0	0.02	0.01	0.42	<0.01	0.01	<0.01	0.01	0.0	<0.01	<0.01	<0.01	0.09	0.0	<0.01	0.0	0.03
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Willow[e]	*Salix* sp.	Willow species	<0.01	0.01	0.0	0.03	0.03	0.02	<0.01	0.03	0.03	0.0	<0.01	<0.01	<0.01	0.01	0.0	0.01	<0.01	0.03	0.01	0.02	0.03	<0.01	<0.01	<0.01	0.03	0.03	0.02	<0.01	0.03	<0.01	0.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.0
		Total	0.12	0.67	0.11	1.28	1.13	0.40	0.41	0.91	0.94	0.04	0.33	0.41	0.73	0.85	0.60	1.03	0.36	0.43	1.03	0.31	1.00	0.32	0.41	0.32	1.28	1.13	0.40	0.41	0.92	0.24	0.04	0.32	0.41	0.73	0.32	0.32	0.32	0.36	1.03	0.24	1.00	0.26

Table 13B-1: Traditional Use Plant Species Occupancy Ratios

SKCDC Common Name[b]	ELC unit[c]																																									Average
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent burn wetland	
Nagoon berry	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	<0.01	0.0	<0.01	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Dewberry	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Dwarf birch	<0.01	0.0	0.0	0.0	0.0	<0.01	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	<0.01	<0.01	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	<0.01	<0.01	<0.01	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	<0.01	<0.01	<0.01	0.0	0.0	0.0	<0.01
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Paper birch	0.04	<0.01	0.01	0.0	0.0	<0.01	0.0	0.01	<0.01	0.0	0.0	<0.01	<0.01	0.0	0.0	<0.01	0.0	0.01	<0.01	0.0	0.02	0.04	0.0	<0.01	0.0	<0.01	0.0	0.01	<0.01	0.0	0.04	0.0	<0.01	0.0	0.0	<0.01	0.0	0.01	<0.01	0.0	0.02	0.0	0.05
Swamp birch	<0.01	0.01	0.0	0.01	0.0	0.01	0.0	0.05	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.05	<0.01	0.0	0.0	<0.01	<0.01	0.0	0.01	0.01	0.0	0.05	<0.01	0.0	<0.01	<0.01	0.0	0.0	0.0	0.01	0.0	0.05	<0.01	0.0	0.0	0.0	<0.01
Blueberry	0.01	0.01	0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.01	<0.01	<0.01	0.0	0.0	0.0	<0.01	0.0	0.0	0.01	<0.01	<0.01	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.01	0.03
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	<0.01
Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.01	0.03	<0.01	<0.01	0.0	0.01	0.0	<0.01	<0.01	0.0	0.0	0.03	<0.01	0.0	0.02	0.01	0.0	<0.01	<0.01	0.0	0.0	0.01	0.01	<0.01	<0.01	0.01	0.0	<0.01	<0.01	0.0	0.01	0.01	<0.01	0.0	0.02	0.01	0.0	<0.01	<0.01	0.0	0.0	0.0	<0.01
Small cranberry	0.01	0.01	0.03	0.03	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.0	0.01	0.02	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.0	0.01	0.01	0.02	0.03	0.02	<0.01	<0.01	<0.01	0.0	0.01	0.01	0.02	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.0	0.0	<0.01
Bog cranberry	<0.01	0.02	0.01	<0.01	0.0	0.01	0.0	<0.01	<0.01	0.0	0.0	0.02	0.01	0.0	<0.01	0.01	0.0	<0.01	<0.01	0.0	0.0	<0.01	0.02	0.01	<0.01	0.01	0.0	<0.01	<0.01	0.0	<0.01	0.02	0.01	0.0	<0.01	0.01	0.0	<0.01	<0.01	0.0	0.0	0.0	0.02
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Skunk currant	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Northern black currant	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Bristly gooseberry	0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01
Swamp red currant	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Jack pine	0.01	0.01	0.01	<0.01	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	<0.01	<0.01	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.01	0.02	<0.01	<0.01	<0.01	0.0	<0.01	0.0	0.0	0.01	0.02	<0.01	0.0	0.0	<0.01	0.0	<0.01	0.0	0.0	0.0	0.0	0.04
Bearberry	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
Common Labrador tea	<0.01	0.20	0.10	0.02	0.09	0.03	<0.01	<0.01	<0.01	0.0	0.0	0.16	0.09	0.0	0.03	<0.01	<0.01	<0.01	<0.01	0.0	0.0	<0.01	0.06	0.09	0.02	0.03	<0.01	<0.01	<0.01	0.0	<0.01	0.06	0.09	0.0	0.03	<0.01	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.03
Labrador tea	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	<0.01	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	<0.01	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Mosses	0.01	0.0	0.0	0.28	0.20	0.05	0.13	0.02	0.05	0.16	0.19	0.05	0.04	0.54	0.21	0.05	0.13	0.02	0.05	0.16	0.0	0.01	0.11	0.04	0.28	0.05	0.13	0.02	0.05	0.19	0.01	0.11	0.04	0.54	0.21	0.05	0.13	0.02	0.05	0.16	0.0	<0.01	0.07
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05
American red raspberry	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.02
Black spruce	<0.01	0.11	0.06	0.02	0.02	0.01	<0.01	<0.01	0.0	0.01	0.0	0.02	0.01	<0.01	0.09	0.01	<0.01	<0.01	0.0	0.01	0.0	<0.01	0.03	0.01	0.02	0.01	<0.01	<0.01	<0.01	0.0	<0.01	0.03	0.01	<0.01	0.09	0.01	<0.01	<0.01	0.0	0.01	0.0	0.0	0.03
American wild strawberry	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Smooth wild strawberry	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	<0.01	0.0	<0.01	0.0	0.0	0.12	<0.01	<0.01	<0.01	0.0	0.0	<0.01	<0.01	0.0	0.0	0.12	<0.01	<0.01	<0.01	0.0	0.0	<0.01	<0.01	<0.01	0.0	0.12	<0.01	<0.01	<0.01	0.0	<0.01	<0.01	<0.01	0.0	0.0	0.12	<0.01	<0.01	<0.01	0.0	0.0	0.0	0.01
Willow species	0.02	0.05	0.01	0.0	0.0	0.07	0.0	0.10	0.01	0.0	0.0	0.0	<0.01	<0.01	0.0	0.13	0.0	0.10	0.01	0.0	<0.01	0.02	0.0	<0.01	0.0	0.07	0.0	0.10	0.01	0.0	0.02	0.0	<0.01	<0.01	0.0	0.13	0.0	0.10	0.01	0.0	<0.01	<0.01	0.02
Total	0.12	0.45	0.26	0.36	0.32	0.32	0.15	0.21	0.08	0.20	0.20	0.29	0.18	0.56	0.38	0.34	0.15	0.21	0.07	0.20	0.02	0.12	0.26	0.18	0.36	0.32	0.15	0.21	0.08	0.20	0.12	0.26	0.18	0.56	0.38	0.34	0.15	0.21	0.07	0.20	0.02	0.01	0.40

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC. 2021b. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.

Table 13B-2: Traditional Use Plant Species Occupancy in the Local Study Area in the Base Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																									
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP 02 (BU)	BP 03 (BU)	BP 04 (BU)	BP 06 (BU)	BP 07 (BU)	BP 11 (BU)	BP 12 (BU)	BP 14 (BU)	BP 16 (BU)	BS 02 (BU)	BS 03 (BU)	BS 04 (BU)	BS 05 (BU)	BS 06 (BU)	BS 07 (BU)	BS 08 (BU)	BS 09 (BU)	BS 13 (BU)	BS 14 (BU)	BS 15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	0.1	3.3	0.1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula pumila*	Swamp birch	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blueberry	*Vaccinium myrtilloides*	Blueberry	2.3	12.4	0.1	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus* var. *nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus* var. *acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	3.0	10.5	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	15.7	30.1	0.5	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	0.7	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	0.3	<0.1	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	1.7	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	20.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spruce	*Picea mariana*	Black spruce	0.5	4.3	0.1	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willow[e]	*Salix* sp.	Willow species	0.1	1.2	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	47.0	45.7	5.8	24.2	89.4	1.9	0.0	0.0	0.0	0.0	17.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	527.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 13B-2: Traditional Use Plant Species Occupancy in the Local Study Area in the Base Case

SKCDC Common Name[b]	ELC Unit[c]																																										Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
Nagoon berry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Dewberry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Dwarf birch	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Paper birch	0.0	0.1	0.6	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.8
Swamp birch	0.0	0.5	0.0	0.0	0.0	<0.1	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Blueberry	0.0	0.3	0.6	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	225.3
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.0	1.8	0.1	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Small cranberry	0.0	0.7	1.6	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Bog cranberry	0.0	1.1	0.7	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.2
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Skunk currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Bristly gooseberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Swamp red currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	0.0	0.3	0.6	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.4
Bearberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.7
Common Labrador tea	0.0	10.6	5.6	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.8
Labrador tea	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Mosses	0.0	0.0	0.0	0.0	0.0	<0.1	0.8	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.1
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8
American red raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3
Black spruce	0.0	5.7	3.3	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.0
American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	0.0	0.0	0.2	0.0	0.0	0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Willow species	0.0	2.6	0.6	0.0	0.0	0.1	0.0	0.4	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6
Total	0.0	23.6	15.1	0.0	0.0	0.3	0.9	0.9	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	748.8

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC (Saskatchewan Conservation Data Centre). 2021. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.

Table 13B-3: Traditional Use Plant Species Occupancy in the Regional Study Area in the Base Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																									
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP02 (BU)	BP03 (BU)	BP04 (BU)	BP06 (BU)	BP07 (BU)	BP11 (BU)	BP12 (BU)	BP14 (BU)	BP16 (BU)	BS02 (BU)	BS03 (BU)	BS04 (BU)	BS05 (BU)	BS06 (BU)	BS07 (BU)	BS08 (BU)	BS09 (BU)	BS13 (BU)	BS14 (BU)	BS15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	1.4	92.8	4.5	0.1	1.3	0.5	3.5	16.9	0.0	<0.1	1.9	98.0	0.1	<0.1	0.0	<0.1	0.2	<0.1	3.8	12.2	<0.1	34.5	77.1	4.9	0.1	2.6	0.1	0.1	3.3	117.6	<0.1	88.8	144.2	0.6	<0.1	<0.1	<0.1	0.5	18.5	4.4	<0.1	0.0
Birch	*Betula pumila*	Swamp birch	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	3.9	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	4.4
Blueberry	*Vaccinium myrtilloides*	Blueberry	31.5	343.4	8.4	<0.1	0.5	0.1	14.7	3.9	0.0	0.0	255.6	414.3	0.1	<0.1	0.2	<0.1	0.1	<0.1	0.8	1.3	<0.1	1,112.6	326.0	157.7	<0.1	0.9	<0.1	0.3	0.8	39.5	0.0	2,867.6	609.8	0.3	0.1	0.7	<0.1	0.2	4.0	1.5	<0.1	3.1
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus* var. *nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus* var. *acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	7.4	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.3	0.0	0.0	38.3
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	14.8	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.6
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	42.1	291.4	7.1	<0.1	0.4	<0.1	12.5	2.6	0.0	0.0	223.8	351.6	0.1	<0.1	<0.1	<0.1	0.5	<0.1	1.3	0.6	<0.1	297.6	276.7	42.2	<0.1	0.8	<0.1	0.3	0.5	9.5	0.0	767.0	517.5	0.4	<0.1	0.2	<0.1	1.0	6.3	0.4	<0.1	128.5
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	<0.1	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	<0.1	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	219.1	835.2	27.5	<0.1	0.1	<0.1	37.4	16.9	0.0	0.0	1,043.9	1,051.2	0.3	0.1	0.3	<0.1	0.2	<0.1	0.1	0.2	<0.1	815.3	827.2	115.6	<0.1	0.1	<0.1	0.8	3.3	28.0	0.0	2,101.2	1,547.3	1.3	0.1	0.5	<0.1	0.5	0.6	1.0	<0.1	147.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	10.0	148.5	0.0	0.0	0.0	<0.1	4.0	0.0	0.0	0.0	70.2	112.0	<0.1	0.0	0.0	0.0	0.0	<0.1	0.8	0.5	0.0	167.1	88.1	23.7	0.0	0.0	<0.1	0.1	0.0	0.6	0.0	430.6	164.8	<0.1	<0.1	0.1	<0.1	0.0	4.0	<0.1	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	9.3	0.2	<0.1	0.1	0.2	0.3	11.7	0.0	0.0	10.9	9.8	0.1	<0.1	0.0	<0.1	1.0	<0.1	1.3	4.0	<0.1	82.6	7.7	11.7	<0.1	0.1	<0.1	<0.1	2.3	34.3	0.0	212.8	14.4	0.4	<0.1	0.1	<0.1	2.2	6.3	1.3	<0.1	437.5
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	43.1
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	24.4	0.0	57.6	0.0	0.0	<0.1	12.6	0.0	1.4	<0.1	6.8	354.3	0.0	<0.1	0.1	<0.1	3.9	0.0	0.0	0.8	0.0	165.4	278.8	23.4	0.0	0.0	<0.1	0.3	0.0	15.8	<0.1	426.2	521.5	0.0	<0.1	0.1	<0.1	8.6	0.0	0.6	0.0	753.4
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	7.4	0.0	0.2	2.4	<0.1	0.0	0.9	10.9	0.0	1.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.2	0.1	<0.1	132.6	0.0	18.8	0.2	4.8	<0.1	0.0	0.3	1.5	0.0	341.8	0.0	0.0	<0.1	0.1	<0.1	0.0	5.8	0.1	0.1	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	564.2	0.0	<0.1	0.7	0.3	3.8	0.4	4.0	0.0	6.2	106.4	0.2	0.0	0.0	0.0	0.0	0.0	2.4	0.3	<0.1	9.0	83.7	1.3	<0.1	1.3	0.1	0.1	0.1	1.9	0.0	23.2	156.6	0.8	<0.1	<0.1	<0.1	0.0	11.5	0.1	<0.1	0.0
Spruce	*Picea mariana*	Black spruce	7.5	120.6	7.6	0.0	0.0	0.1	1.7	54.5	0.0	<0.1	2.1	46.5	0.0	<0.1	0.9	<0.1	2.1	0.0	0.0	1.5	0.0	40.6	36.6	5.8	0.0	0.0	<0.1	<0.1	10.6	2.6	<0.1	104.7	68.4	0.0	<0.1	<0.1	<0.1	4.7	0.0	0.1	0.0	220.0
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Willow[e]	*Salix* sp.	Willow species	1.4	33.4	0.0	<0.1	0.2	0.1	0.2	3.9	1.1	0.0	1.9	5.0	<0.1	<0.1	0.0	<0.1	0.1	<0.1	0.1	1.8	<0.1	25.0	4.0	3.5	<0.1	0.3	<0.1	<0.1	0.8	2.5	0.0	64.5	7.4	<0.1	<0.1	<0.1	<0.1	0.2	0.6	0.1	<0.1	0.0
		Total	655.6	1,269.8	342.3	337.6	2,483.4	113.0	0.3	5.8	1.3	90.7	117.7	31.3	<0.1	1,625.0	2,549.1	0.8	0.3	1.5	<0.1	8.2	<0.1	12.2	23.2	<0.1	2,889.7	2,005.9	409.6	0.4	11.7	0.4	1.8	23.2	253.8	<0.1	7,447.7	3,752.0	3.7	0.3	1.8	<0.1	17.8	59.4

Table 13B-3: Traditional Use Plant Species Occupancy in the Regional Study Area in the Base Case

SKCDC Common Name[b]	ELC Unit[c]																																								Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
Nagoon berry	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.1	0.0	0.3	0.0	0.0	<0.1	0.0	0.2	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	2.2
Dewberry	<0.1	0.0	0.0	0.0	0.0	<0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	1.4
Dwarf birch	<0.1	0.0	0.0	0.0	0.0	<0.1	0.2	0.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.7	<0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.0	<0.1	<0.1	<0.1	1.7	0.0	<0.1	0.0	0.0	0.0	0.0	<0.1	1.4	<0.1	0.4	0.0	0.0	0.0	5.8
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Paper birch	0.9	4.3	12.5	0.0	0.0	0.2	0.0	1.8	0.7	0.0	0.0	0.5	2.5	0.0	0.0	<0.1	0.0	<0.1	0.1	0.0	0.2	2.0	0.0	0.1	0.0	0.1	0.0	0.8	1.0	0.0	<0.1	0.0	1.8	0.0	0.0	<0.1	0.0	0.2	0.2	0.0	0.5	0.0	764.9
Swamp birch	<0.1	17.1	0.0	0.3	0.0	0.3	0.0	14.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.2	0.1	0.0	0.0	<0.1	1.4	0.0	<0.1	0.2	0.0	6.7	0.7	0.0	<0.1	1.0	0.0	0.0	0.0	<0.1	0.0	1.6	0.1	0.0	0.0	0.0	70.8
Blueberry	0.1	8.5	12.5	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.2	1.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.7	1.8	0.0	0.0	0.0	0.0	0.1	0.0	0.0	<0.1	1.1	6,230.4
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.8
Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.5
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.1	58.5	1.7	<0.1	0.0	0.2	0.0	0.5	0.7	0.0	0.0	41.6	1.8	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0	0.0	0.2	12.2	0.1	<0.1	0.1	0.0	0.2	1.0	0.0	<0.1	8.4	1.2	0.0	<0.1	<0.1	0.0	0.1	0.2	0.0	0.0	0.0	176.7
Small cranberry	0.1	22.2	35.1	0.8	<0.1	0.8	0.3	0.5	0.7	<0.1	0.0	15.8	36.9	<0.1	<0.1	<0.1	1.0	<0.1	0.1	<0.1	0.0	0.2	13.9	2.0	<0.1	0.5	0.1	0.2	1.0	0.0	<0.1	9.5	26.2	<0.1	<0.1	<0.1	1.9	0.1	0.1	<0.1	0.0	0.0	230.0
Bog cranberry	<0.1	34.2	14.6	<0.1	0.0	0.5	0.0	1.1	0.7	0.0	0.0	24.3	10.6	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0	0.0	<0.1	40.9	0.6	<0.1	0.3	0.0	0.5	1.0	0.0	<0.1	28.1	7.5	0.0	<0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	3,148.3
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8
Skunk currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Northern black currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.7
Bristly gooseberry	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.4
Swamp red currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Jack pine	0.1	8.5	12.5	0.1	0.0	0.1	0.0	1.1	0.0	0.0	0.0	2.0	2.7	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.2	46.8	0.2	<0.1	0.1	0.0	0.5	0.0	0.0	<0.1	32.2	1.9	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.1	8,931.3
Bearberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	1,225.4
Common Labrador tea	0.1	340.8	123.0	0.4	0.7	1.0	<0.1	<0.1	0.7	0.0	0.0	242.2	129.0	0.0	<0.1	<0.1	<0.1	<0.1	0.1	0.0	0.0	0.2	139.2	7.2	<0.1	0.7	<0.1	<0.1	1.0	0.0	<0.1	95.7	91.7	0.0	0.1	<0.1	0.1	<0.1	0.2	0.0	0.0	0.0	2,036.5
Labrador tea	0.0	0.0	29.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.9	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	1.4	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	111.7
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
Mosses	0.1	0.0	0.0	7.1	1.6	1.8	7.2	7.2	12.6	5.3	12.5	71.2	65.8	0.1	0.2	<0.1	27.0	0.1	2.0	<0.1	0.0	0.3	239.8	3.7	0.1	1.1	1.5	3.2	19.2	21.3	<0.1	164.8	46.8	0.1	0.5	0.3	54.1	0.7	4.3	<0.1	0.0	<0.1	3,439.5
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	530.5
American red raspberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	981.0
Black spruce	<0.1	183.6	71.1	0.4	0.2	0.4	0.3	0.4	0.0	0.4	0.0	31.3	12.8	<0.1	0.1	<0.1	1.0	<0.1	0.0	<0.1	0.0	0.1	70.0	0.7	<0.1	0.3	0.1	0.2	0.0	0.0	<0.1	48.1	9.1	<0.1	0.2	0.1	2.0	<0.1	0.0	<0.1	0.0	0.0	1,171.8
American wild strawberry	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Smooth wild strawberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	<0.1	0.0	4.2	0.0	0.0	4.8	0.1	1.1	0.9	0.0	0.0	4.0	2.5	0.0	0.0	<0.1	0.5	<0.1	0.1	0.0	0.0	<0.1	1.4	0.1	0.0	3.0	<0.1	0.5	1.3	0.0	<0.1	1.0	1.8	0.0	0.0	0.8	0.9	0.1	0.3	0.0	0.0	0.0	35.5
Willow species	0.4	85.4	12.5	0.0	0.0	2.9	0.0	31.6	1.4	0.0	0.0	0.0	0.8	<0.1	0.0	<0.1	0.0	0.4	0.2	0.0	0.1	1.0	0.0	<0.1	0.0	1.8	0.0	14.1	2.1	0.0	<0.1	0.0	0.6	<0.1	0.0	0.9	0.0	3.3	0.5	0.0	0.1	<0.1	318.5
Total	2.7	763.1	329.6	9.0	2.5	13.0	8.0	65.8	19.8	6.5	13.1	433.3	270.2	0.1	0.3	0.1	30.1	0.9	3.1	<0.1	0.3	6.2	580.2	15.0	0.1	8.1	1.7	29.5	30.3	22.4	<0.1	398.8	192.1	0.1	0.8	2.4	60.4	6.9	6.6	<0.1	0.7	1.3	29,449.0

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC (Saskatchewan Conservation Data Centre). 2021. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.

Table 13B-4: Traditional Use Plant Species Occupancy in the Local Study Area in the Application Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																						
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP02 (BU)	BP03 (BU)	BP04 (BU)	BP06 (BU)	BP07 (BU)	BP11 (BU)	BP12 (BU)	BP14 (BU)	BP16 (BU)	BS02 (BU)	BS03 (BU)	BS04 (BU)	BS05 (BU)	BS06 (BU)	BS07 (BU)	BS08 (BU)	BS09 (BU)	BS13 (BU)	BS14 (BU)	BS15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	0.1	2.1	0.1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula pumila*	Swamp birch	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blueberry	*Vaccinium myrtilloides*	Blueberry	1.7	7.9	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus* var. *nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus* var. *acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	2.2	6.7	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	11.6	19.2	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	0.5	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	1.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	13.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spruce	*Picea mariana*	Black spruce	0.4	2.8	0.1	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willow[e]	*Salix* sp.	Willow species	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	34.7	29.2	5.8	17.9	57.0	1.9	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	295.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 13B-4: Traditional Use Plant Species Occupancy in the Local Study Area in the Application Case

SKCDC Common Name[b]	ELC Unit[c]																																								Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
Nagoon berry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Dewberry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Dwarf birch	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Paper birch	0.0	0.1	0.4	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.2
Swamp birch	0.0	0.4	0.0	0.0	0.0	<0.1	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Blueberry	0.0	0.2	0.4	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	129.2
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.0	1.5	0.1	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Small cranberry	0.0	0.6	1.1	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
Bog cranberry	0.0	0.9	0.5	0.0	0.0	<0.1	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.8
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Skunk currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Bristly gooseberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Swamp red currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	0.0	0.2	0.4	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.4
Bearberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.1
Common Labrador tea	0.0	8.8	4.0	0.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.3
Labrador tea	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Mosses	0.0	0.0	0.0	0.0	0.0	<0.1	0.8	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.6
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0
American red raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1
Black spruce	0.0	4.7	2.3	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1
American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	0.0	0.0	0.1	0.0	0.0	0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Willow species	0.0	2.2	0.4	0.0	0.0	0.1	0.0	0.4	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
Total	0.0	19.6	10.8	0.0	0.0	0.3	0.9	0.9	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	450.7

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC (Saskatchewan Conservation Data Centre). 2021. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.

Table 13B-5: Traditional Use Plant Species Occupancy in the Regional Study Area in the Application Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																											
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP02 (BU)	BP03 (BU)	BP04 (BU)	BP06 (BU)	BP07 (BU)	BP11 (BU)	BP12 (BU)	BP14 (BU)	BP16 (BU)	BS02 (BU)	BS03 (BU)	BS04 (BU)	BS05 (BU)	BS06 (BU)	BS07 (BU)	BS08 (BU)	BS09 (BU)	BS13 (BU)	BS14 (BU)	BS15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	1.4	91.6	4.5	0.1	1.3	0.5	3.5	15.4	0.0	<0.1	1.9	98.0	0.1	<0.1	0.0	<0.1	0.2	<0.1	3.8	12.2	<0.1	31.7	77.1	4.9	0.1	2.6	0.1	0.1	3.3	113.6	<0.1	88.8	144.2	0.6	<0.1	<0.1	<0.1	0.5	18.5	4.4	<0.1	0.0
Birch	*Betula pumila*	Swamp birch	0.0	14.7	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	3.9	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	4.4
Blueberry	*Vaccinium myrtilloides*	Blueberry	31.0	338.9	8.4	<0.1	0.5	0.1	14.7	3.5	0.0	0.0	255.6	414.3	0.1	<0.1	0.2	<0.1	0.1	<0.1	0.8	1.3	<0.1	1,023.5	326.0	157.7	<0.1	0.9	<0.1	0.3	0.8	38.2	0.0	2,867.6	609.8	0.3	0.1	0.7	<0.1	0.2	4.0	1.5	<0.1	3.1
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus var. nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus var. acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana var. virginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	7.3	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.3	0.0	0.0	38.3
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	14.7	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.6
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	41.4	287.6	7.1	<0.1	0.4	<0.1	12.5	2.4	0.0	0.0	223.8	351.6	0.1	<0.1	<0.1	<0.1	0.5	<0.1	1.3	0.6	<0.1	273.8	276.7	42.2	<0.1	0.8	<0.1	0.3	0.5	9.2	0.0	767.0	517.5	0.4	<0.1	0.2	<0.1	1.0	6.3	0.4	<0.1	128.5
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus var. americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea ssp. sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	<0.1	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	<0.1	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	215.0	824.3	27.5	<0.1	0.1	<0.1	37.4	15.4	0.0	0.0	1,043.9	1,051.2	0.3	0.1	0.3	<0.1	0.2	<0.1	0.1	0.2	<0.1	749.9	827.2	115.6	<0.1	0.1	<0.1	0.8	3.3	27.0	0.0	2,101.2	1,547.3	1.3	0.1	0.5	<0.1	0.5	0.6	1.0	<0.1	147.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	9.9	146.5	0.0	0.0	0.0	<0.1	4.0	0.0	0.0	0.0	70.2	112.0	<0.1	0.0	0.0	0.0	0.0	<0.1	0.8	0.5	0.0	153.7	88.1	23.7	0.0	0.0	<0.1	0.1	0.0	0.6	0.0	430.6	164.8	<0.1	<0.1	0.1	<0.1	0.0	4.0	<0.1	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	9.2	0.2	<0.1	0.1	0.2	0.3	10.6	0.0	0.0	10.9	9.8	0.1	<0.1	0.0	<0.1	1.0	<0.1	1.3	4.0	<0.1	76.0	7.7	11.7	<0.1	0.1	<0.1	<0.1	2.3	33.2	0.0	212.8	14.4	0.4	<0.1	0.1	<0.1	2.2	6.3	1.3	<0.1	437.5
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	43.1
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	24.0	0.0	57.6	0.0	0.0	<0.1	12.6	0.0	1.4	<0.1	6.8	354.3	0.0	<0.1	0.1	<0.1	3.9	0.0	0.0	0.8	0.0	152.1	278.8	23.4	0.0	0.0	<0.1	0.3	0.0	15.2	<0.1	426.2	521.5	0.0	<0.1	0.1	<0.1	8.6	0.0	0.6	0.0	753.4
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	7.3	0.0	0.2	2.4	<0.1	0.0	0.8	10.9	0.0	1.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.2	0.1	<0.1	122.0	0.0	18.8	0.2	4.8	<0.1	0.0	0.3	1.5	0.0	341.8	0.0	0.0	<0.1	0.1	<0.1	0.0	5.8	0.1	0.1	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	556.9	0.0	<0.1	0.7	0.3	3.8	0.4	4.0	0.0	6.2	106.4	0.2	0.0	0.0	0.0	0.0	0.0	2.4	0.3	<0.1	8.3	83.7	1.3	<0.1	1.3	0.1	0.1	0.1	1.8	0.0	23.2	156.6	0.8	<0.1	<0.1	<0.1	0.0	11.5	0.1	<0.1	0.0
Spruce	*Picea mariana*	Black spruce	7.4	119.1	7.6	0.0	0.0	0.1	1.7	49.7	0.0	<0.1	2.1	46.5	0.0	<0.1	0.9	<0.1	2.1	0.0	0.0	1.5	0.0	37.4	36.6	5.8	0.0	0.0	<0.1	<0.1	10.6	2.5	<0.1	104.7	68.4	0.0	<0.1	<0.1	<0.1	4.7	0.0	0.1	0.0	220.0
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Willow[e]	*Salix* sp.	Willow species	1.4	33.0	0.0	<0.1	0.2	0.1	0.2	3.5	1.1	0.0	1.9	5.0	<0.1	<0.1	0.0	<0.1	0.1	<0.1	0.1	1.8	<0.1	23.0	4.0	3.5	<0.1	0.3	<0.1	<0.1	0.8	2.5	0.0	64.5	7.4	<0.1	<0.1	<0.1	<0.1	0.2	0.6	0.1	<0.1	0.0
		Total	643.4	1,253.2	342.3	331.3	2,451.0	113.0	0.3	5.8	1.3	90.7	107.2	31.3	<0.1	1,625.0	2,549.1	0.8	0.3	1.5	<0.1	8.2	<0.1	12.2	23.2	<0.1	2,658.1	2,005.9	409.6	0.4	11.7	0.4	1.8	23.2	245.3	<0.1	7,447.7	3,752.0	3.7	0.3	1.8	<0.1	17.8	59.4

Table 13B-5: Traditional Use Plant Species Occupancy in the Regional Study Area in the Application Case

SKCDC Common Name[b]	ELC Unit[c]																																										Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
Nagoon berry	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.1	0.0	0.3	0.0	0.0	<0.1	0.0	0.2	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	2.2
Dewberry	<0.1	0.0	0.0	0.0	0.0	<0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.0	1.4
Dwarf birch	<0.1	0.0	0.0	0.0	0.0	<0.1	0.2	0.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.7	<0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.0	<0.1	<0.1	<0.1	1.7	0.0	<0.1	0.0	0.0	0.0	0.0	<0.1	1.4	<0.1	0.4	0.0	0.0	0.0	5.8
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Paper birch	0.9	4.2	12.4	0.0	0.0	0.2	0.0	1.8	0.7	0.0	0.0	0.5	2.5	0.0	0.0	<0.1	0.0	<0.1	0.1	0.0	0.2	2.0	0.0	0.1	0.0	0.1	0.0	0.8	1.0	0.0	<0.1	0.0	1.8	0.0	0.0	<0.1	0.0	0.2	0.2	0.0	0.5	0.0	755.3
Swamp birch	<0.1	17.0	0.0	0.3	0.0	0.3	0.0	14.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.2	0.1	0.0	0.0	<0.1	1.4	0.0	<0.1	0.2	0.0	6.7	0.7	0.0	<0.1	1.0	0.0	0.0	0.0	<0.1	0.0	1.6	0.1	0.0	0.0	0.0	70.3
Blueberry	0.1	8.5	12.4	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.2	1.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.7	1.8	0.0	0.0	0.0	0.0	0.1	0.0	0.0	<0.1	1.1	6,134.3
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.8
Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.1	58.2	1.7	<0.1	0.0	0.2	0.0	0.5	0.7	0.0	0.0	41.6	1.8	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0	0.0	0.2	12.2	0.1	<0.1	0.1	0.0	0.2	1.0	0.0	<0.1	8.4	1.2	0.0	<0.1	<0.1	0.0	0.1	0.2	0.0	0.0	0.0	176.1
Small cranberry	0.1	22.1	34.7	0.8	<0.1	0.8	0.3	0.5	0.7	<0.1	0.0	15.8	36.9	<0.1	<0.1	<0.1	1.0	<0.1	0.1	<0.1	0.0	0.2	13.9	2.0	<0.1	0.5	0.1	0.2	1.0	0.0	<0.1	9.5	26.2	<0.1	<0.1	<0.1	1.9	0.1	0.1	<0.1	0.0	0.0	229.1
Bog cranberry	<0.1	34.0	14.4	<0.1	0.0	0.5	0.0	1.1	0.7	0.0	0.0	24.3	10.6	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0	0.0	<0.1	40.9	0.6	<0.1	0.3	0.0	0.5	1.0	0.0	<0.1	28.1	7.5	0.0	<0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	3,119.0
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8
Skunk currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Northern black currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.7
Bristly gooseberry	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.4
Swamp red currant	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Jack pine	0.1	8.5	12.4	0.1	0.0	0.1	0.0	1.1	0.0	0.0	0.0	2.0	2.7	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	0.2	46.7	0.2	<0.1	0.1	0.0	0.5	0.0	0.0	<0.1	32.2	1.9	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.1	8,848.3
Bearberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	1,209.9
Common Labrador tea	0.1	339.0	121.3	0.4	0.7	1.0	<0.1	<0.1	0.7	0.0	0.0	242.2	129.0	0.0	<0.1	<0.1	<0.1	<0.1	0.1	0.0	0.0	0.2	139.1	7.2	<0.1	0.7	<0.1	<0.1	1.0	0.0	<0.1	95.7	91.7	0.0	0.1	<0.1	0.1	<0.1	0.2	0.0	0.0	0.0	2,024.0
Labrador tea	0.0	0.0	29.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.9	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	1.4	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	111.0
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7
Mosses	0.1	0.0	0.0	7.1	1.6	1.8	7.2	7.2	12.6	5.3	12.5	71.2	65.8	0.1	0.2	<0.1	27.0	0.1	2.0	<0.1	0.0	0.3	239.6	3.7	0.1	1.1	1.5	3.2	19.2	21.3	<0.1	164.8	46.8	0.1	0.5	0.3	54.1	0.7	4.3	<0.1	0.0	<0.1	3,425.0
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	519.7
American red raspberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	972.8
Black spruce	<0.1	182.6	70.2	0.4	0.2	0.4	0.3	0.4	0.0	0.4	0.0	31.3	12.8	<0.1	0.1	<0.1	1.0	<0.1	0.0	<0.1	0.0	0.1	70.0	0.7	<0.1	0.3	0.1	0.2	0.0	0.0	<0.1	48.1	9.1	<0.1	0.2	0.1	2.0	<0.1	0.0	<0.1	0.0	0.0	1,160.0

Table 13B-5: Traditional Use Plant Species Occupancy in the Regional Study Area in the Application Case

SKCDC Common Name[b]	ELC Unit[c]																																										Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
American wild strawberry	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Smooth wild strawberry	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	<0.1	0.0	4.1	0.0	0.0	4.8	0.1	1.1	0.9	0.0	0.0	4.0	2.5	0.0	0.0	<0.1	0.5	<0.1	0.1	0.0	0.0	<0.1	1.4	0.1	0.0	3.0	<0.1	0.5	1.3	0.0	<0.1	1.0	1.8	0.0	0.0	0.8	0.9	0.1	0.3	0.0	0.0	0.0	35.3
Willow species	0.4	85.0	12.4	0.0	0.0	2.9	0.0	31.5	1.4	0.0	0.0	0.0	0.8	<0.1	0.0	<0.1	0.0	0.4	0.2	0.0	0.1	1.0	0.0	<0.1	0.0	1.8	0.0	14.1	2.1	0.0	<0.1	0.0	0.6	<0.1	0.0	0.9	0.0	3.3	0.5	0.0	0.1	<0.1	314.9
Total	2.7	759.0	325.2	9.0	2.5	13.0	8.0	65.8	19.8	6.5	13.1	433.3	270.2	0.1	0.3	0.1	30.1	0.9	3.1	<0.1	0.3	6.2	579.8	15.0	0.1	8.1	1.7	29.5	30.3	22.4	<0.1	398.8	192.1	0.1	0.8	2.4	60.4	6.9	6.6	<0.1	0.7	1.3	29,151.0

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC (Saskatchewan Conservation Data Centre). 2021. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.

Table 13B-6: Traditional Use Plant Species Occupancy in the Regional Study Area in the Reasonably Foreseeable Development Case

Traditional Use Plant Species[a]	Scientific Name[b]	SKCDC Common Name[b]	ELC Unit[c]																																									
			BP 02	BP 03	BP 04	BP 06	BP 07	BP 11	BP 12	BP 14	BP 16	BS 02	BS 03	BS 04	BS 05	BS 06	BS 07	BS 08	BS 09	BS 10	BS 13	BS 14	BS 15	BP02 (BU)	BP03 (BU)	BP04 (BU)	BP06 (BU)	BP07 (BU)	BP11 (BU)	BP12 (BU)	BP14 (BU)	BP16 (BU)	BS02 (BU)	BS03 (BU)	BS04 (BU)	BS05 (BU)	BS06 (BU)	BS07 (BU)	BS08 (BU)	BS09 (BU)	BS13 (BU)	BS14 (BU)	BS15 (BU)	Recent Burn Upland
Berries	*Rubus arcticus* ssp. *acaulis*	Nagoon berry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Berries	*Rubus pubescens*	Dewberry	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Birch	*Betula glandulosa*	Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula occidentalis*	River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	*Betula papyrifera*	Paper birch	1.3	90.6	4.5	0.1	1.3	0.5	3.5	15.4	0.0	<0.1	1.9	98.0	0.1	<0.1	0.0	<0.1	0.2	<0.1	3.8	8.0	<0.1	27.7	77.1	4.9	0.1	2.6	0.1	0.1	3.3	103.6	<0.1	88.5	144.2	0.6	<0.1	<0.1	<0.1	0.5	18.5	3.9	<0.1	0.0
Birch	*Betula pumila*	Swamp birch	0.0	14.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	3.8	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	4.4
Blueberry	*Vaccinium myrtilloides*	Blueberry	29.0	335.1	8.4	<0.1	0.5	0.1	14.7	3.5	0.0	0.0	255.6	414.3	0.1	<0.1	0.2	<0.1	0.1	<0.1	0.8	0.8	<0.1	894.6	326.0	157.7	<0.1	0.9	<0.1	0.3	0.8	34.8	0.0	2,858.5	609.8	0.3	0.1	0.7	<0.1	0.2	4.0	1.3	<0.1	3.1
Bulrushes	*Juncus alpinoarticulatus*	Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Juncus nodosus* var. *nodosus*	Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulrushes	*Schoenoplectus acutus* var. *acutus*	Hard-stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chokecherry	*Prunus virginiana* var. *viriginiana*	Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	*Rubus chamaemorus*	Cloudberry	0.0	7.2	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.3	0.0	0.0	38.3
Cranberry	*Vaccinium oxycoccos*	Small cranberry	0.0	14.5	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.6
Cranberry, bog	*Vaccinium vitis-idaea*	Bog cranberry	38.8	284.4	7.1	<0.1	0.4	<0.1	12.5	2.4	0.0	0.0	223.8	351.6	0.1	<0.1	<0.1	<0.1	0.5	<0.1	1.3	0.4	<0.1	239.3	276.7	42.2	<0.1	0.8	<0.1	0.3	0.5	8.4	0.0	764.6	517.5	0.4	<0.1	0.2	<0.1	1.0	6.3	0.3	<0.1	128.5
Cranberry, low bush	*Viburnum edule*	Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranberry, high bush	*Viburnum opulus* var. *americanum*	High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Dogwood	*Cornus sericea* ssp. *sericea*	Red-osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Frog tail	*Sarracenia purpurea* ssp. *gibbosa*	Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Gooseberry	*Ribes americanum*	Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooseberry	*Ribes glandulosum*	Skunk currant	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes hudsonianum*	Northern black currant	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	<0.1	0.0	0.0	0.0	<0.1	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	<0.1	0.0
Gooseberry	*Ribes oxyacanthoides* var. *oxyacanthoides*	Bristly gooseberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Gooseberry	*Ribes triste*	Swamp red currant	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jack pine	*Pinus banksiana*	Jack pine	201.5	815.1	27.5	<0.1	0.1	<0.1	37.4	15.4	0.0	0.0	1,043.9	1,051.2	0.3	0.1	0.3	<0.1	0.2	<0.1	0.1	0.1	<0.1	655.5	827.2	115.6	<0.1	0.1	<0.1	0.8	3.3	24.6	0.0	2,094.5	1,547.3	1.3	0.1	0.5	<0.1	0.5	0.6	0.9	<0.1	147.0
Kinnikinnick	*Arctostaphylos uva-ursi*	Bearberry	9.2	144.9	0.0	0.0	0.0	<0.1	4.0	0.0	0.0	0.0	70.2	112.0	<0.1	0.0	0.0	0.0	0.0	<0.1	0.8	0.3	0.0	134.3	88.1	23.7	0.0	0.0	<0.1	0.1	0.0	0.5	0.0	429.2	164.8	<0.1	<0.1	0.1	<0.1	0.0	4.0	<0.1	0.0	0.0
Labrador tea	*Rhododendron groenlandicum*	Common Labrador tea	0.0	9.1	0.2	<0.1	0.1	0.2	0.3	10.6	0.0	0.0	10.9	9.8	0.1	<0.1	0.0	<0.1	1.0	<0.1	1.3	2.6	<0.1	66.4	7.7	11.7	<0.1	0.1	<0.1	<0.1	2.3	30.3	0.0	212.1	14.4	0.4	<0.1	0.1	<0.1	2.2	6.3	1.2	<0.1	437.5
Labrador tea	*Rhododendron tomentosum*	Labrador tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	43.1
Mint	*Mentha canadensis*	Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0
Mosses[d]	n/a	Mosses	22.5	0.0	57.6	0.0	0.0	<0.1	12.6	0.0	1.4	<0.1	6.8	354.3	0.0	<0.1	0.1	<0.1	3.9	0.0	0.0	0.5	0.0	133.0	278.8	23.4	0.0	0.0	<0.1	0.3	0.0	13.9	<0.1	424.8	521.5	0.0	<0.1	0.1	<0.1	8.6	0.0	0.5	0.0	753.4
Mushroom[d]	n/a	Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Poplar	*Populus balsamifera* ssp. *balsamifera*	Balsam poplar	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Poplar	*Populus tremuloides*	Trembling aspen	0.0	7.2	0.0	0.2	2.4	<0.1	0.0	0.8	10.9	0.0	1.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.2	<0.1	<0.1	106.6	0.0	18.8	0.2	4.8	<0.1	0.0	0.3	1.3	0.0	340.7	0.0	0.0	<0.1	0.1	<0.1	0.0	5.8	0.1	0.1	0.0
Raspberry	*Rubus idaeus* ssp. *strigosus*	American red raspberry	0.0	0.0	0.0	<0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	<0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1	0.0
Rat root	*Acorus americanus*	Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	*Amelanchier alnifolia* var. *alnifolia*	Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Spruce	*Picea glauca*	White spruce	0.0	550.7	0.0	<0.1	0.7	0.3	3.8	0.4	4.0	0.0	6.2	106.4	0.2	0.0	0.0	0.0	0.0	0.0	2.4	0.2	<0.1	7.2	83.7	1.3	<0.1	1.3	0.1	0.1	0.1	1.7	0.0	23.1	156.6	0.8	<0.1	<0.1	<0.1	0.0	11.5	0.1	<0.1	0.0
Spruce	*Picea mariana*	Black spruce	6.9	117.7	7.6	0.0	0.0	0.1	1.7	49.7	0.0	<0.1	2.1	46.5	0.0	<0.1	0.9	<0.1	2.1	0.0	0.0	1.0	0.0	32.7	36.6	5.8	0.0	0.0	<0.1	<0.1	10.6	2.3	<0.1	104.3	68.4	0.0	<0.1	<0.1	<0.1	4.7	0.0	0.1	0.0	220.0
Strawberry	*Fragaria vesca* ssp. *americana*	American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Strawberry	*Fragaria virginiana* ssp. *glauca*	Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgrass	*Anthoxanthum hirtum* ssp. *arcticum*	Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	*Larix laricina*	Tamarack	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Willow[e]	*Salix* sp.	Willow species	1.3	32.6	0.0	<0.1	0.2	0.1	0.2	3.5	1.1	0.0	1.9	5.0	<0.1	<0.1	0.0	<0.1	0.1	<0.1	0.1	1.2	<0.1	20.1	4.0	3.5	<0.1	0.3	<0.1	<0.1	0.8	2.2	0.0	64.3	7.4	<0.1	<0.1	<0.1	<0.1	0.2	0.6	0.1	<0.1	0.0
		Total	602.8	1,239.2	342.3	310.4	2,423.7	113.0	0.3	5.8	1.3	90.7	107.2	31.3	<0.1	1,625.0	2,549.1	0.8	0.3	1.5	<0.1	8.2	<0.1	12.2	15.2	<0.1	2,323.5	2,005.9	409.6	0.4	11.7	0.4	1.8	23.2	223.7	<0.1	7,423.9	3,752.0	3.7	0.3	1.8	<0.1	17.8	59.4

Table 13B-6: Traditional Use Plant Species Occupancy in the Regional Study Area in the Reasonably Foreseeable Development Case

SKCDC Common Name[b]	ELC Unit[c]																																							Total
	BP 18	BP 19	BP 20	BP 21	BP 22	BP 23	BP 24	BP 25	BP 26	BP 27	BP 28	BS 17	BS 18	BS 19	BS 20	BS 21	BS 22	BS 23	BS 24	BS 25	BS 26	BP18 (BU)	BP19 (BU)	BP20 (BU)	BP21 (BU)	BP23 (BU)	BP24 (BU)	BP25 (BU)	BP26 (BU)	BP28 (BU)	BS16 (BU)	BS17 (BU)	BS18 (BU)	BS19 (BU)	BS20 (BU)	BS21 (BU)	BS22 (BU)	BS23 (BU)	BS24 (BU)	BS25 (BU)	BS26 (BU)	Recent Burn Wetland	
Nagoon berry	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.2
Dewberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Dwarf birch	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.4	0.0	0.0	0.0	5.8
River birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Paper birch	0.9	4.2	12.3	0.0	0.0	0.2	0.0	1.8	0.7	0.0	0.0	0.5	2.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	2.0	0.0	0.1	0.0	0.1	0.0	0.8	1.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.5	0.0	735.0
Swamp birch	0.0	16.9	0.0	0.3	0.0	0.3	0.0	14.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	1.4	0.0	0.0	0.2	0.0	6.7	0.7	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.6	0.1	0.0	0.0	0.0	69.9
Blueberry	0.1	8.4	12.3	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.7	1.8	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.1	5,986.4
Northern green rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Knotted rush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Hard stemmed bulrush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5
Chokecherry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Cloudberry	0.1	57.8	1.6	0.0	0.0	0.2	0.0	0.5	0.7	0.0	0.0	41.6	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	12.2	0.1	0.0	0.1	0.0	0.2	1.0	0.0	0.0	8.4	1.2	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	175.7
Small cranberry	0.1	22.0	34.3	0.8	0.0	0.8	0.2	0.5	0.7	0.0	0.0	15.8	36.9	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.2	13.9	2.0	0.0	0.5	0.1	0.2	1.0	0.0	0.0	9.5	26.2	0.0	0.0	0.0	1.9	0.1	0.1	0.0	0.0	0.0	228.5
Bog cranberry	0.0	33.8	14.3	0.0	0.0	0.5	0.0	1.1	0.7	0.0	0.0	24.3	10.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	40.9	0.6	0.0	0.3	0.0	0.5	1.0	0.0	0.0	28.1	7.5	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.0	3,074.8
Low bush-cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
High bush-cranberry	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Red osier dogwood	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Pitcherplant	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Wild black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8
Skunk currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Northern black currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.7
Bristly gooseberry	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.4
Swamp red currant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Jack pine	0.1	8.4	12.3	0.1	0.0	0.1	0.0	1.1	0.0	0.0	0.0	2.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	46.7	0.2	0.0	0.1	0.0	0.5	0.0	0.0	0.0	32.2	1.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	8,721.7
Bearberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,186.7
Common Labrador tea	0.1	336.9	120.1	0.4	0.7	1.0	0.0	0.0	0.7	0.0	0.0	242.2	129.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	139.1	7.2	0.0	0.7	0.0	0.0	1.0	0.0	0.0	95.7	91.7	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	2,005.9
Labrador tea	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	110.4
Wild mint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3
Mosses	0.1	0.0	0.0	7.1	1.6	1.8	6.8	7.2	12.5	5.3	12.5	71.2	65.8	0.1	0.2	0.0	27.0	0.1	2.0	0.0	0.0	0.3	239.6	3.7	0.1	1.1	1.5	3.2	19.2	21.3	0.0	164.8	46.8	0.1	0.5	0.3	54.1	0.7	4.3	0.0	0.0	0.0	3,400.8
Mushrooms	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Balsam poplar	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3
Trembling aspen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	503.0
American red raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Sweet flag	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Saskatoon	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
White spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	965.2
Black spruce	0.0	181.5	69.4	0.4	0.2	0.4	0.2	0.4	0.0	0.4	0.0	31.3	12.8	0.0	0.1	0.0	1.0	0.0	0.0	0.0	0.0	0.1	70.0	0.7	0.0	0.3	0.1	0.2	0.0	0.0	0.0	48.1	9.1	0.0	0.2	0.1	2.0	0.0	0.0	0.0	0.0	0.0	1,150.6
American wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Smooth wild strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet grass	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o	n/o
Tamarack	0.0	0.0	4.1	0.0	0.0	4.8	0.1	1.1	0.9	0.0	0.0	4.0	2.5	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.0	0.0	1.4	0.1	0.0	3.0	0.0	0.5	1.3	0.0	0.0	1.0	1.8	0.0	0.0	0.8	0.9	0.1	0.3	0.0	0.0	0.0	35.2
Willow species	0.4	84.4	12.3	0.0	0.0	2.9	0.0	31.5	1.4	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.1	1.0	0.0	0.0	0.0	1.8	0.0	14.1	2.1	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.0	3.3	0.5	0.0	0.1	0.0	309.8
Total	2.7	754.4	321.9	9.0	2.5	13.0	7.6	65.8	19.7	6.5	13.1	433.3	270.2	0.1	0.3	0.1	30.1	0.9	3.1	0.0	0.3	6.2	579.8	15.0	0.1	8.1	1.7	29.5	30.3	22.4	0.0	398.8	192.1	0.1	0.8	2.4	60.4	6.9	6.6	0.0	0.7	1.3	28,705.1

a) TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; TSD VI: YLNR; CRDN (Clearwater River Dene Nation). 2019. Clearwater River Dene Nation Comments on Project Description NexGen Energy Ltd.'s Rook I Project. May 31, 2019.
b) SKCDC (Saskatchewan Conservation Data Centre). 2021. HABISask Project Review website. Accessed April 2021. Available at https://gisappl.saskatchewan.ca/Html5Ext/?viewer=habisask#.
c) McLaughlan MS, Wright RA, Jiricka RD. 2010. Field Guide to the Ecosites of Saskatchewan's Provincial Forests. Prince Albert, SK: Saskatchewan Ministry of Environment, Forest Service. 338 p.
d) Traditional use plant species name reflects broad group of plant or fungi species; therefore, the scientific name and SKCDC common name are not described.
e) Saskatchewan has over 40 willow species (Salix sp.; Harms VL. 2017. 2017 Annotated catalogue of Saskatchewan vascular plants. Saskatoon, SK. 240 p); therefore, the scientific name and SKCDC common name of all potential willow species are not described.
< = less than; n/o = not observed during baseline surveys; ELC = Ecological Land Classification; SKCDC = Saskatchewan Conservation Data Centre; n/a = not applicable.; TSD = technical support document; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; MN-S = Métis Nation-Saskatchewan; YLNR = Ya'thi Néné Lands and Resources.