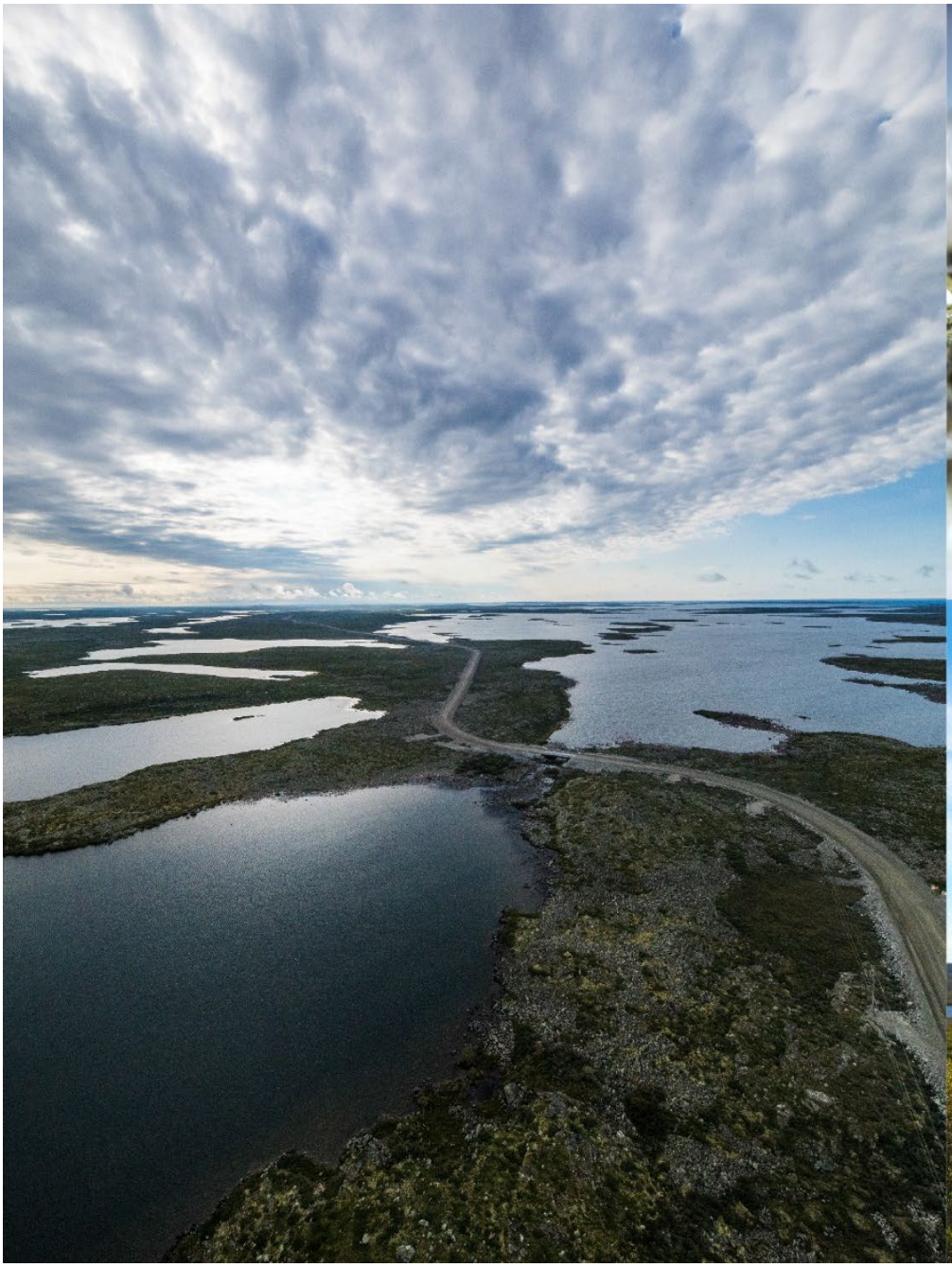
Ekati Diamond Mine

Environmental Agreement and Water Licence
Annual Report 2021



ARCTIC CANADIAN DIAMOND COMPANY

Naturally Beautiful. Mined Right.

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April 30, 2022

LeeAnn Malley
Manager, Environmental Impact Assessment
Conservation, Assessment and Monitoring
Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NT X1A 2L9

Emery Paquin
Chair - Independent Environmental Monitoring Agency
PO Box 1192
Yellowknife, NT X1A 2N8

Michael Roesch
Senior Implementation Negotiator/Senior Policy and Program Analyst
NWT Region
Indigenous and Northern Affairs Canada
4923 52nd Street Gallery Building
Box 1500
Yellowknife, NT X1A 2R3

Mason Mantla
Chair - Wek'èezhìi Land and Water Board
#1, 4905-48th Street
Yellowknife, NT X1A 2P6

Re: Ekati Diamond Mine – Environmental Agreement and Water Licence Annual Report 2021

Arctic Canadian Diamond Company Ltd. (Arctic Canadian) is pleased to submit the attached *Environmental Agreement and Water Licence Annual Report 2021.* This report was prepared in accordance with the annual reporting requirements of Part B Condition 10 and Schedule 1 Condition 1 of Water Licence W2020L2-0004 and Article 5 of the Environmental Agreement. Reviewer comments from the *Environmental Agreement and Water Licence Annual Report 2020* were considered in the preparation of this year's report.

Arctic Canadian trusts that you will find this report to be clear and informative. Please contact Sheila Chernys, Head, Health, Safety, Security, Environment, and Communities at Sheila.Chernys@arcticcanadian.ca or 403-910-1933 ext.2401 should you have any questions.

Sincerely,

S. Chernys

Sheila Chernys
Head, Health, Safety, Security, Environment and Communities

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Abbreviations and Acronyms

ABA	Acid-base Accounting
AP	Acid Potential
AQMP	Air Quality Monitoring Program
AEMP	Aquatic Effects Monitoring Program
Arctic Canadian	Arctic Canadian Diamond Company Ltd.
Board (the)	Wek'èezhìi Land and Water Board
CIRNAC	Crown-Indigenous Relations and Northern Affairs (formerly INAC)
CKR	Coarse Kimberlite Rejects
CKRSA	Coarse Kimberlite Rejects Storage Area
CSCF	Contaminated Snow Containment Facility
DFO	Fisheries and Oceans Canada
Dominion	Dominion Diamond Mines ULC
EFP	Effective Acid Potential
ECCC	Environment and Climate Change Canada
ENP	Effective Neutralization Potential
ENR	Environment and Natural Resources
EQC	Effluent Quality Criteria
ERT	Emergency Response Team
FPK	Fine Processed Kimberlite
GNWT	Government of the Northwest Territories
ha	Hectare
HADD	Harmful Alteration, Disruption or Destruction
HSE	Health, Safety and Environment
IBA	Impact Benefit Agreement
ICRP	Interim Closure and Reclamation Plan
IEMA	Independent Environmental Monitoring Agency
ITI	Department of Industry, Tourism and Investment

KPSF	King Pond Settling Facility
LKDFN	Lutsel K’e Dene First Nation
LLCF	Long Lake Containment Facility
m^3	Cubic metres
MVRMA	Mackenzie Valley Resource Management Act
NP	Neutralization Potential
PAG	Potentially acid generating
PDC	Panda Diversion Channel
PK	Processed kimberlite
PSD	Pigeon Stream Diversion
QA/QC	Quality Assurance / Quality Control
SNP	Surveillance Network Program
TK	Traditional Knowledge
TKEG	Traditional Knowledge Elders Group
TSM	Towards Sustainable Mining
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
VEC	Valued Ecosystem Component
Water Licence	Type A Water Licence W2020L2-0004
WEMP	Wildlife Effects Monitoring Program
wmt	Wet metric tonnes
WRSA	Waste Rock Storage Area
WPKMP	Wastewater and Processed Kimberlite Management Plan
WROMP	Waste Rock and Ore Storage Management Plan
WRP	Waste Rock Pile
ZOI	Zone of Influence

1. Introduction

Arctic Canadian Diamond Company Ltd. (Arctic Canadian) is a Canadian mining company and one of the world's largest producers and suppliers of premium rough diamond assortments to the global market. The company owns a controlling interest in the Ekati Diamond Mine, which it operates. In addition to its mining and exploration operations, Arctic Canadian has offices in Canada and Belgium. For a portion of the 2021 reporting year, the Ekati Diamond Mine was owned and operated by Dominion Diamond Mines ULC (Dominion). Arctic Canadian took ownership of the Ekati Diamond Mine from Dominion on February 3, 2021.

The 2021 Annual Report for the Ekati Diamond Mine has been prepared to meet the annual reporting obligations outlined in the following regulatory documents:

- Type A Water Licence W2020L2-0004 (Water Licence) was issued prior to devolution under the federal *NWT Waters Act* and the *Mackenzie Valley Resource Management Act* (MVRMA), as currently administered by the Wek'èezhìi Land and Water Board (the Board). Post devolution, the Water Licence was amended and issued under the *Waters Act*, a territorial legislation.
- The Environmental Agreement between the Queen in Right of Canada (represented by the Minister of Crown-Indigenous Relations and Northern Affairs [CIRNAC], formerly Indigenous and Northern Affairs Canada [INAC]), the Government of the Northwest Territories (GNWT; represented by the Minister of Resources, Wildlife and Economic Development, presently Environment and Natural Resources [ENR]), and BHP Billiton, executed January 1997. Arctic has assumed the rights and responsibilities of BHP Billiton under the Environmental Agreement.

The following report summarizes activities conducted during the 2021 calendar year to meet the requirements of the Water Licence and Environmental Agreement. Arctic Canadian is pleased to submit this report and welcomes comments from reviewers and recipients.

Graphical summaries of water and liquid Waste management at the Ekati Diamond Mine during the 2021 reporting year are provided in Figure 1, and a graphical summary of solid Waste management is provided in Figure 2.

Figure 1 2021 Ekati Diamond Mine Water and Liquid Waste Summary

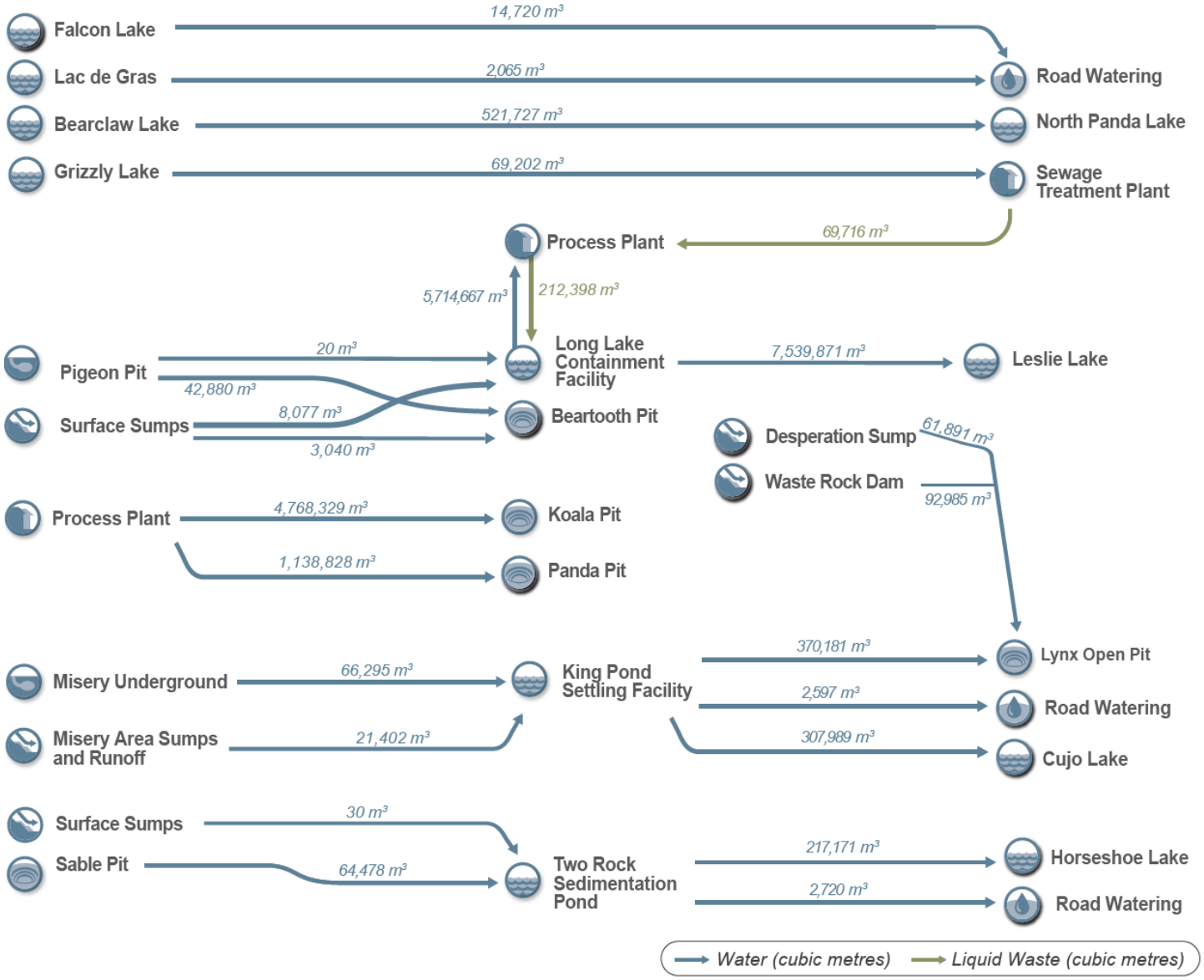
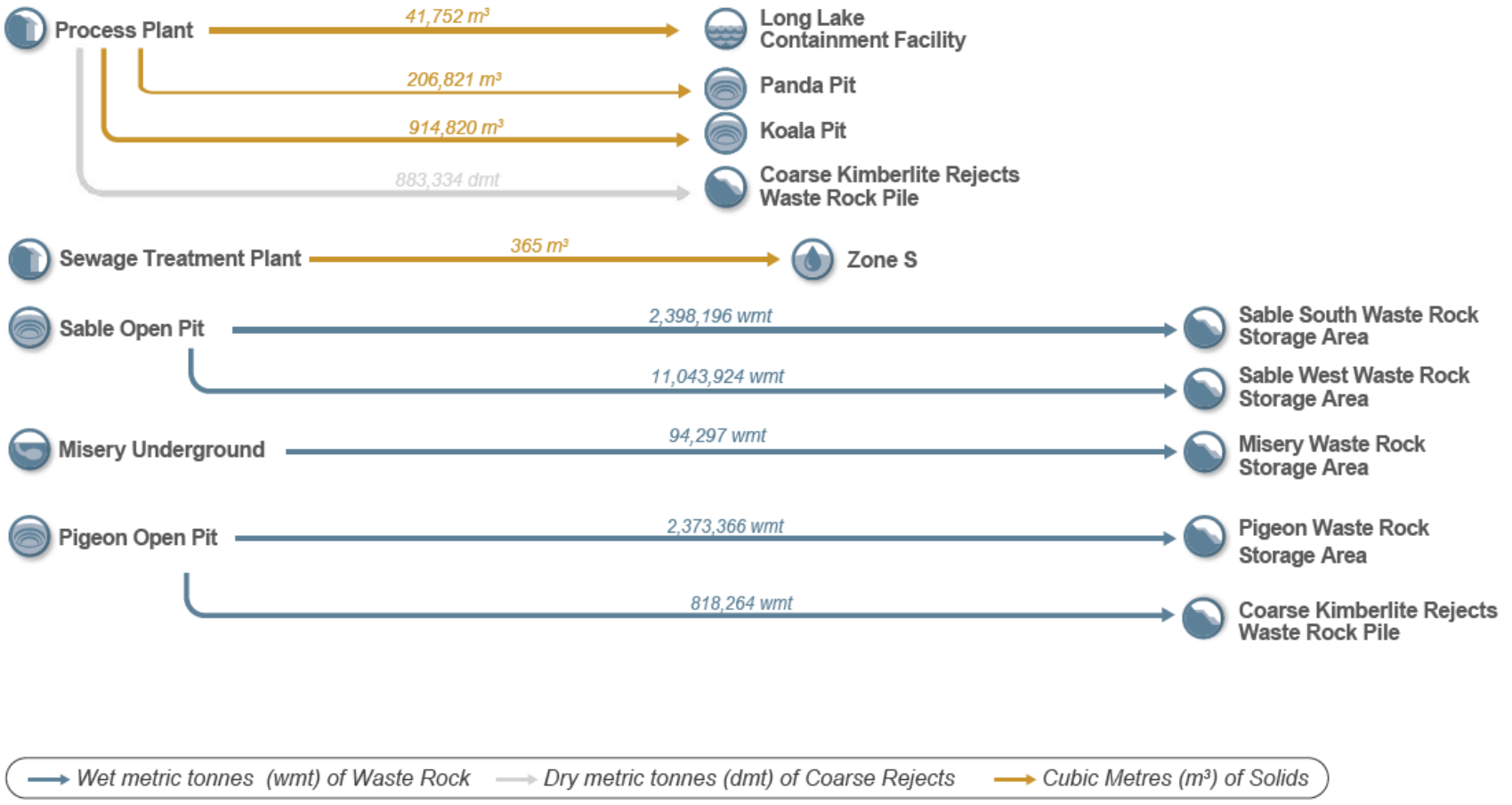


Figure 2 2021 Ekati Diamond Mine Solid Waste Summary



2. Project Overview

2.1 Location

The Ekati Diamond Mine is located approximately 200 km south of the Arctic Circle and 310 km northeast of Yellowknife, NWT, Canada (Figure 3). The mine is situated within the Lac de Gras watershed at the headwaters of the Coppermine River drainage basin, which flows north to the Arctic Ocean. Located 100 km north of the tree line on the Arctic tundra, the local terrain is characterized by boulder fields, tundra, wetlands, and numerous lakes with interconnecting streams. There are more than 8,000 lakes within the claim block. It is an area of continuous permafrost with a shallow active layer (less than 2 metres thick), which thaws during the brief summer.

2.1.1 Sustainable Development Policy

The Sustainable Development Policy (Figure 4) was created as part of the mine's Integrated Health, Safety, and Environment (HSE) Management System to reflect the commitment to sustainability and continuous improvement. The HSE Management System provides a framework to complete tasks consistently, correctly, and effectively that will drive continual improvement in HSE performance. Arctic Canadian is currently working to finalize a sustainable development policy poster. The content of the policy can be seen below in Figure 4.

Towards Sustainable Mining (TSM) is an initiative of the Mining Association of Canada and is designed to improve the performance of the mining industry through continual improvement and alignment with guiding principles. The Ekati Diamond Mine participates in this initiative, subscribes to the guiding principles of TSM, and annually reports key performance indicators that demonstrate alignment and commitment with the guiding principles. These indicators are designed to identify the industry's current performance in key areas, point to improvement, and must be routinely confirmed by independent auditing agencies. Areas for which performance indicators have been developed include Tailings Management, Energy and Greenhouse Gas Emissions Management, Indigenous and Community Relationships, Crisis Management, Safety and Health, Biodiversity Conservation Management, Water Stewardship, and Preventing Child and Forced Labour.

Further information on TSM can be found on www.mining.ca.

Figure 3 Ekati Diamond Mine Location

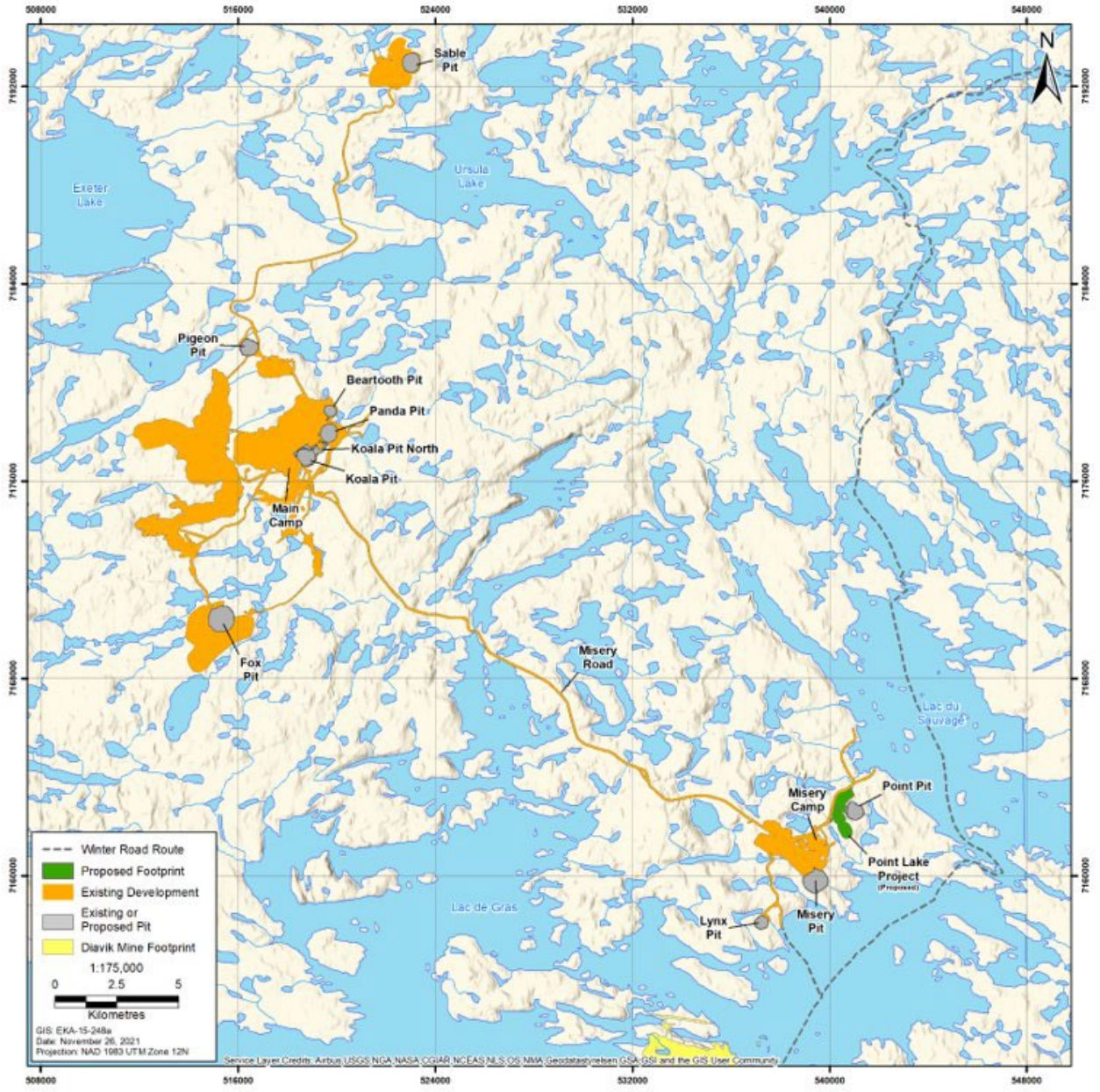


Figure 4 Sustainability Policy

Sustainability Policy

Arctic Canadian Diamond Company is committed to the safety and well-being of our people and the communities in which we operate, mitigating our environmental impact and delivering ethically produced natural diamonds.

Sustainability Pillars

Safety **Our goal**: To continuously improve our safety performance and culture. **Our approach:** To continuously learn, share and improve safety by meaningful worker engagement and safety leadership. We are committed to providing a safe work environment.	***Stakeholder Commitment*** **Our goal:** Establish positive and collaborative relationships with our key internal and external stakeholders. **Our approach:** To communicate openly and honestly, support local programs and contribute to the communities in which we operate.
Health **Our goal:** To enhance the health and well-being of our people. **Our approach:** To promote and deliver occupational health services to our people; ensuring personal health, wellness, and the prevention of workplace related illnesses.	***Compliance*** **Our goal:** To fulfill our obligations, and requirements, as an industry leader. **Our approach:** To maintain integrity with community commitments and regulations and to promote collaboration with our partners and stakeholders.
Environmental Responsibility **Our goal:** To protect the environment, through responsible and innovative resource development. **Our approach:** Foster a culture of environmental stewardship and respect within our workforce, in-line with Indigenous, Government and Regulatory values and expectations.	***Creating Value*** **Our goal:** To maximize profit and opportunities for the benefit of our stakeholders. **Our approach:** To set and achieve business objectives through continuous improvement and innovation.
People **Our goal:** To build and sustain a high-performing workforce. **Our approach:** To commit to a high performance and purpose-led culture, in which everyone demonstrates care and accountability.	***Continual Improvement*** **Our goal:** To achieve excellence in Health Safety and Environmental culture by the implementation of identified best practices. **Our approach:** To set objectives and targets for continuous improvement in areas that include occupational health and safety, prevention of pollution, waste management, processed kimberlite disposal management, progressive reclamation, biodiversity conservation, energy use, greenhouse gas emissions and water use.
Risk Management **Our goal:** To identify and effectively manage risk. **Our approach:** To maintain a working environment where risk management is proactive and integrated into daily operations; following a strong process of assessment, development, and monitoring of critical risks.	

Rory Moore - President and Chief Executive Officer

2.2 Regulatory Instruments and Contractual Agreements

The Ekati Diamond Mine is regulated through licences, permits, and authorizations. These regulatory documents are governed by many parties including federal and territorial agencies and resource management boards. In addition to complying with government regulations, the Ekati Diamond Mine has an Environmental Agreement, which is a contractual obligation between the Government of Canada, the GNWT, and Arctic Canadian.

On April 1, 2014 the GNWT became responsible for managing public land, water, and resources in the NWT. Devolution was the last major transfer of powers from the federal government to the territorial government. The Department of Industry, Tourism and Investment (ITI) became responsible for administration of mineral exploration activities (mineral tenure, royalties) under the modernized Mining Regulations. Mine operation activities (e.g., water and land use) will continue to be regulated under the MVRMA. The MVRMA remains federal legislation, however, devolution gave the GNWT significant delegated authorities.

ITI will continue to have responsibility for the negotiation and administration of socio-economic agreements and facilitating and enabling employment and business development associated with mineral exploration and mine development and operations.

2.2.1 Type A Water Licence W2020L2-0004

Ekati Diamond Mine's Water Licence (W2020L2-0004) was issued by the Board and went into effect on August 19, 2021. The Licence will expire on October 18, 2023 and is a renewal of Water Licence W2012L2-0001. On November 26, 2020 the Water Licence application for renewal to a term of 26 months was submitted to the Board and was issued on June 3, 2021.

2.2.2 Environmental Agreement

The Environmental Agreement (originally signed in 1997) is signed by Her Majesty the Queen in Right of Canada (represented by CIRNAC), the GNWT (represented by the Minister of ENR) and Arctic Canadian. The Environmental Agreement continues in effect until full final reclamation of the Project site is completed.

2.2.3 Authorizations for Works or Undertakings Affecting Fish Habitat

The Ekati mine has five applicable Fisheries Act Authorizations (FAAs). Three of the five FAAs have been closed in 2018 and 2019 (SC99037, 15-HCAA-00266, and SCA96021) with offsetting commitments extending beyond the valid authorization period. Two FAAs (i.e., SC01111 and SC00028) remain active and provide approval to conduct work that results in the harmful alteration, disruption, or destruction (HADD) of fish habitat. These FAAs are summarized in Section 4.1.3 of this report.

In fulfilment of the requirements for the Lynx Lake Dewatering and fish salvage FAA (15-HCAA-00266), Year 1 of monitoring at Pike Creek was planned to be conducted in 2019, 2020, and 2021. However, the spawning migration and the young-of-year (YOY) outmigration monitoring programs were ceased in 2019 due to a community tragedy, and the 2020 and 2021 programs could not be completed due to the COVID-19 pandemic and the Territorial Government restrictions on the incoming travel to the Northwest

Territories. With the inability to complete the first year of post-construction monitoring in 2019, 2020, and 2021, monitoring is planned to be completed in 2022.

In fulfilment of the requirements for the Pigeon Stream Diversion (PSD) FAA (SC99037), Year 7 of monitoring at PSD Channel was scheduled for 2020. However, due to the COVID-19 pandemic and the reduced workforce and Territorial Government restrictions on the incoming travel to the Northwest Territories the program had to be postponed and was completed in 2021 (now referred to as Year 8). The next year of monitoring will be Year 10 in 2023.

3. Type A Water Licence W2020L2-0004 Ekati Mine Site

Effective date: August 19, 2021
Most recent amendment date: N/A
Expiry date: October 18, 2023

Part B: General Conditions

Condition 10 states that the Licencee shall file an Annual Report with the Board not later than April 30 of the year following the calendar year reported. The Annual Report shall contain the following information (see Section 3.1 to 3.5 headings below).

3.1 Measuring and Reporting Water and Waste

a) The monthly and annual quantities in cubic metres of water obtained from any sources for the uses listed in Part D, Condition 3 and 3, where appropriate this is to differentiate between water diverted and water that has been otherwise used

A summary of freshwater use is presented in Table 1. Sable Lake and Pigeon Pond have been removed from Table 1 because both have been dewatered and developed into active pits. Two Rock Lake has been removed from Table 1 because it is now Two Rock Sedimentation Pond (TRSP). No water was obtained from Little Lake, Thinner Lake, or Lac du Sauvage in 2021. Water obtained from Falcon Lake and Lac de Gras was used for road watering, and Grizzly Lake serves as the primary source of fresh water for the Ekati Main Accommodations and the surrounding outbuildings.

Table 1 Fresh Water Use (in cubic metres [m^3])

Month	Grizzly Lake	Little Lake	Thinner Lake	Falcon Lake	Lac de Gras	Lac du Sauvage
January	5,739	0	0	0	72	0
February	5,931	0	0	0	924	0
March	4,373	0	0	0	793	0
April	5,231	0	0	0	216	0
May	6,107	0	0	0	60	0
June	5,806	0	0	3,200	0	0
July	5,829	0	0	10,400	0	0
August	5,365	0	0	1,120	0	0
September	5,344	0	0	0	0	0
October	6,974	0	0	0	0	0
November	6,137	0	0	0	0	0
December	6,366	0	0	0	0	0
Annual total	**69,202**	**0**	**0**	**14,720**	**2,065**	**0**
Maximum limit as per Water Licence	**200,000**	**400,000**	**15,000**	**100,000**	**100,000**	**100,000**

b) The monthly elevations of water during the open-water season for Grizzly Lake, Little Lake, Thinner Lake, Upper Panda Lake, Cell E of the Long Lake Containment Facility, the King Pond Settling Facility, the Two Rock Sedimentation Pond, Misery Pit during its use as the Misery Pit Minewater Facility, and Lynx pit during its use for Misery Underground Development and Jay Minewater management

Lake levels are assessed on a monthly basis during open water by staff gauge readings and and/or surveyed elevations. The open-water season is typically from June through September. Monthly lake levels are summarized in Table 2. Misery Pit is not currently being used as the Misery Pit Minewater Facility and Lynx Pit will not be used for Jay Minewater Management.

Table 2 Lake Level Elevations (metres above sea level)

Month	Lac du Sauvage	Grizzly Lake	Little Lake	Falcon Lake	Thinner Lake	Polar Lake	Upper Panda Lake	Cell E LLCF	King Pond Settling Facility
January	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	[1]447.72	Frozen
February	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	[1]447.40	Frozen
March	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	[1]447.73	Frozen
April	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	[1]447.62	Frozen
May	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	[1]447.70	Frozen
June	417.35	468.17	ND	470.16	451.79	463.11	460.74	448.40	444.94
July	416.68	468.09	449.51	470.04	451.76	462.97	460.66	448.06	444.99
August	416.47	467.94	449.20	469.89	451.65	462.83	460.61	448.07	444.22
September	416.38	467.91	449.12	469.79	451.69	462.89	460.60	448.53	443.88
October	ND	468.01	ND	469.69	ND	462.92	460.59	448.08	ND
November	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
December	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen

Notes:
ND = No Data
[1] Surveyed through the ice

c) The monthly and total quantities in cubic metres of water Dewatered from Sable, Pigeon, Two Rock Lake, and Lac du Sauvage

Table 3 below shows that no water was dewatered from Lac du Sauvage in 2021. Sable Lake and Pigeon Pond have been removed from Table 3 because both have been dewatered and developed into active pits. Two Rock Lake has been removed from Table 3 because it is now the TRSP.

Table 3 Dewatering from Lac du Sauvage

Month	Lac du Sauvage	Month	Lac du Sauvage
January	0	July	0
February	0	August	0
March	0	September	0
April	0	October	0
May	0	November	0
June	0	December	0
		Annual Total	0

d) The monthly and annual quantities in cubic metres of each Waste deposited into the Long Lake Containment Facility, King Pond Settling Facility, Phase 1 Tailings Containment Area, and Two Rock Sedimentation Pond, the Misery Pit Minewater Facility, and Lynx Pit during its use for Misery Underground Development and Jay Minewater management

Minewater Discharged into the containment facilities is expected to fluctuate seasonally with larger volumes being pumped during the spring freshet. Additionally, after significant rain events water collects in the camp sumps and needs to be pumped out. After freeze-up the volumes pumped decrease, with the main contributors being the indoor sumps such as the Truckshop and Washbay sumps. The Phase 1 Containment Area has been reclaimed and no longer receives Waste and Misery Pit is not currently being used as the Misery Pit Minewater Facility. A summary of monthly quantities of solid and liquid Waste to the facilities is presented in Table 4.

e) The monthly and annual quantities in cubic metres of any Discharges of water or Waste by location and nature of the Discharge

A summary of the monthly quantities of water or Waste Discharged by location and nature of Discharge are presented in Table 5. Authorizations for these Discharges, which can all be found on the Board Registry, are outlined below:

- Authorization to Discharge water from Cell E of the Long Lake Containment Facility (LLCF) to Leslie Lake was granted by the Inspector on June 17, 2021.
- Authorization to Discharge water from King Pond Settling Facility (KPSF) to Cujo Lake was granted by the Inspector on July 20, 2021.
- Authorization to Discharge water from TRSP to Horseshoe Lake was granted by the Inspector on October 1, 2021.
- In addition to the Authorization granted on October 1, 2022, Arctic Canadian reported an Emergency Discharge from TRSP to Horseshoe Lake due to dangerously high water levels in TRSP potentially impacting the integrity of the retention dam.

Table 4 Waste Discharged to Containment Facility (m^3)

Month	Long Lake Containment Facility				TRSP		Beartooth		King Pond Settling Facility		Panda Pit		Koala Pit		Lynx Pit[3]
	Process Plant Solids	Process Plant Liquids	Minewater[1]	Other Waste[2]	Minewater[1]	Other Waste[2]	Minewater[1]	Other Waste[2]	Minewater[1]	Other Waste[2]	Process Plant Solids	Process Plant Liquids	Process Plant Solids	Process Plant Liquids	Minewater[1]
January	1,519	11,770	0	5,016	7,520	0	0	0	2,225	0	0	0	26,229	203,305	0
February	3,516	21,030	0	244	0	0	0	0	2,035	0	0	0	73,357	438,829	0
March	962	5,302	0	39	0	0	0	0	4,458	0	0	0	88,350	486,790	0
April	1,511	8,332	0	119	0	0	0	0	4,339	0	0	0	79,747	439,590	0
May	13,275	59,645	0	566	0	0	6,560	0	14,873	0	0	0	107,881	484,716	0
June	7,348	37,335	20	1,185	0	30	15,360	3,040	9,062	0	25,752	130,844	78,171	379,179	0
July	900	6,136	0	80	0	0	8,400	0	27,459	0	51,586	351,568	19,425	132,384	0
August	1,848	9,453	0	70	42,638	0	0	0	13,479	0	93,615	478,818	29,467	150,715	432,072
September	1,349	6,679	0	318	3,760	0	3,600	0	2,806	0	35,868	177,598	71,196	352,520	54,545
October	4,307	20,588	0	278	10,160	0	8,880	0	3,264	0	0	0	120,910	577,922	38,440
November	4,106	20,289	0	17	400	0	80	0	1,848	0	0	0	107,830	532,830	0
December	1,112	5,839	0	146	0	0	0	0	1,848	0	0	0	112,257	589,550	0
Annual Total	**41,752**	**212,398**	**20**	**8,077**	**64,478**	**30**	**42,880**	**3,040**	**87,697**	**0**	**206,821**	**1,138,828**	**914,820**	**4,768,329**	**525,057**

Notes:

[1] Minewater and Process Plant Total Liquids have been separated in Table 4 to improve clarity in reporting. More specific minewater information can be found in Table 6.

[2] "Other Waste" refers to the liquids removed from sumps within the Truck Shop and surface sumps which are not tied into the dewatering system.

[3] Minewater from MUG was pumped directly to King Pond Settling Facility and water from King Pond Settling Facility was pumped to Lynx Pit

Table 5 Discharge of Waste or water by location and nature of Discharge (m^3)

Month	Cell E to Leslie Lake	Fox Berm Pond to Tundra	TRSP to Horseshoe	TRSP for Road Watering	Pigeon Haul Road Pond for Road Watering	Lac de Gras for Road Watering	Falcon Lake for Road Watering	King Pond to Cujo Lake	King Pond for UG Use
January	0	0	0	0	0	72	0	0	0
February	0	0	0	0	0	924	0	0	0
March	0	0	0	0	0	793	0	0	0
April	0	0	0	0	0	216	0	0	0
May	0	0	0	0	0	60	0	0	0
June	930,664	0	0	0	0	0	3,200	0	252
July	3,572,467	0	0	0	0	0	10,400	147,029	1,749
August	1,183,174	0	0	2,720	0	0	1,120	160,960	572
September	965,234	0	0	0	0	0	0	0	0
October	888,332	0	217,171	0	0	0	0	0	24
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
Annual total	**7,539,871**	**0**	**217,171**	**2,720**	**0**	**2,065**	**14,720**	**307,989**	**2,597**

f) The monthly and annual quantities in cubic metres of Minewater pumped from each open pit and underground mine and its deposit location

The monthly and annual quantities of minewater pumped from each pit and underground mine are summarized in Table 6. No minewater was pumped from Fox Pit, Panda or Koala in 2021.

Table 6 Minewater Pumped from Each Open Pit and Underground Mine (m^3)

Month	Pigeon to LLCF	Pigeon to Beartooth	Sable to TRSP	Sumps to King Pond Settling Facility	MUG to King Pond Settling Facility	[1]Sumps to Lynx Pit	King Pond Settling Facility to Lynx Pit
January	0	0	7,520	0	2,225	0	0
February	0	0	0	0	2,035	0	0
March	0	0	0	0	4,458	0	0
April	0	0	0	0	4,339	0	0
May	0	6,500	0	0	14,873	0	0
June	20	15,360	0	9,062	0	0	0
July	0	8,400	0	1,667	25,792	0	0
August	0	0	42,638	10,673	2,806	61,891	38,320
September	0	3,600	3,760	0	2,806	54,545	0
October	0	8,800	10,160	0	3,264	38,440	0
November	0	80	400	0	1,848	0	0
December	0	0	0	0	1,848	0	0
Annual Total	**0**	**42,880**	**64,478**	**21,402**	**66,295**	**154,876**	**38,320**

Notes:
[1] Sumps to Lynx Pit include Desperation Sump and Waste Rock Dam

g) The monthly and annual quantities in cubic metres of treated Sewage effluent Discharged from the Sewage Treatment Facilities

All sewage went through primary and secondary treatment in the central facility at the main Ekati Diamond Mine camp in 2021. Sewage from the underground facilities, Misery Camp, Pigeon office trailer, and Sable Camp was trucked to the central facility. Treated effluent water was piped with the Fine Processed Kimberlite (FPK) slurry to the LLCF, Panda Pit, or Koala Pit. Solids were deposited into Zone S in the Panda/Koala Waste Rock Storage Area (WRSA). A total of 69,716 m^3 of liquid sewage effluent was deposited into containment facilities through the Process Plant. Table 7 provides quantities of both treated sewage effluents and sludge Discharged from the sewage treatment facility.

Table 7 Sewage Effluent (m^3)

Month	Effluent to LLCF	Sewage Solids to Zone S[1]
January	4,787	31
February	5,876	28
March	4,292	31
April	5,568	30
May	6,492	31
June	5,876	30
July	5,863	31
August	5,536	31
September	5,536	30
October	6,496	31
November	6,505	30
December	6,889	31
Annual total	**69,716**	**365**

Note: [1] Values estimated based on the capacity of the trucks hauling the sewage sludge.

h) The monthly and annual quantities in cubic metres of Sewage solids removed from the Sewage Treatment Facilities

There was 365 m^3 of sewage solids removed from the sewage treatment plant in 2021. Sewage solids were deposited into Zone S on the Panda/Koala WRSA. Quantities of sewage effluent and solids removed from the Sewage Treatment Facilities are summarized in Table 7.

i) The monthly and annual quantities in cubic metres of recycled water, identifying both source and use

There was 5,714,667 m^3 of recycled water drawn from Cell D of the LLCF and used in the Process Plant as process water in 2021. No water was withdrawn from Phase 1 Containment Facility for use in processing in 2021; this facility was decommissioned in 2002 and is now reclaimed. Process Plant water use is summarized in Table 8.

Table 8 Recycled Water Used (m^3)

Month	Long Lake Containment Facility	Month	Long Lake Containment Facility
January	490,892	August	550,543
February	411,624	September	469,128
March	439,184	October	537,450
April	390,898	November	508,696
May	442,979	December	564,167
June	470,986	**Annual Total**	**5,714,667**
July	438,120		

j) Tabular summaries of all data and information generated under the *Surveillance Network Program* and graphical summaries of parameters in the effluent quality criteria under Part H at the points of compliance (SNP stations 1616-30, 1616-43, 1616-47, 0008-Sa3, Jay-0005a/b) in an electronic format acceptable to the Board

Surveillance Network Program (SNP) data for 2021 was submitted to the Board monthly. SNP sampling locations are identified in Figure 5. SNP Monthly Reports are publicly available on the Board registry. The frequency, summary of sampling, sample parameters, and Discharge criteria for the SNP are provided in Appendix A. SNP stations Jay-0005a and Jay-0005b were not active, as there is no pumping from Misery Pit to Lac du Sauvage, and the stations were not monitored in 2021.

k) The monthly and annual quantities of overburden removed from diked area

No overburden was removed from the diked area in 2021.

3.2 Management Plans and Activities

l) A summary of Dewatering and Drawdown activities in accordance with part E, Conditions 1-3 of this Licence

From June 25 to September 17 a total of 521,727 m^3 of water was pumped from Bearclaw Lake to North Panda in 2021. From June 18 to November 5 a total of 7,539,871 m^3 was pumped from Cell E of the LLCF to Leslie Lake. From July 22 to August 10, a total of 307,989 m^3 was pumped from King Pond to Cujo Lake. From October 2 to October 25, a total of 217,171 m^3 was pumped from Two Rock Sedimentation Pond to Horseshoe Lake.

All daily inspections during pumping indicated a clear Discharge, there was no erosion of the lake shores for any of the either drawdown locations, and maximum pumping rates were not exceeded with the exception of TRSP as detailed further.

The following pumping summaries were submitted to the Board for the 2021 pumping season:

- 2021 Bearclaw Pumping Summary
- 2021 Cell E Pumping Summary
- 2021 King Pond Pumping Summary
- 2021 Two Rock Sedimentation Pond Pumping Summary

All water movement activities for 2021 are provided in Figure 1 (Ekati Diamond Mine Water and Liquid Waste Summary).

Figure 5 Ekati Diamond Mine SNP Sampling Locations

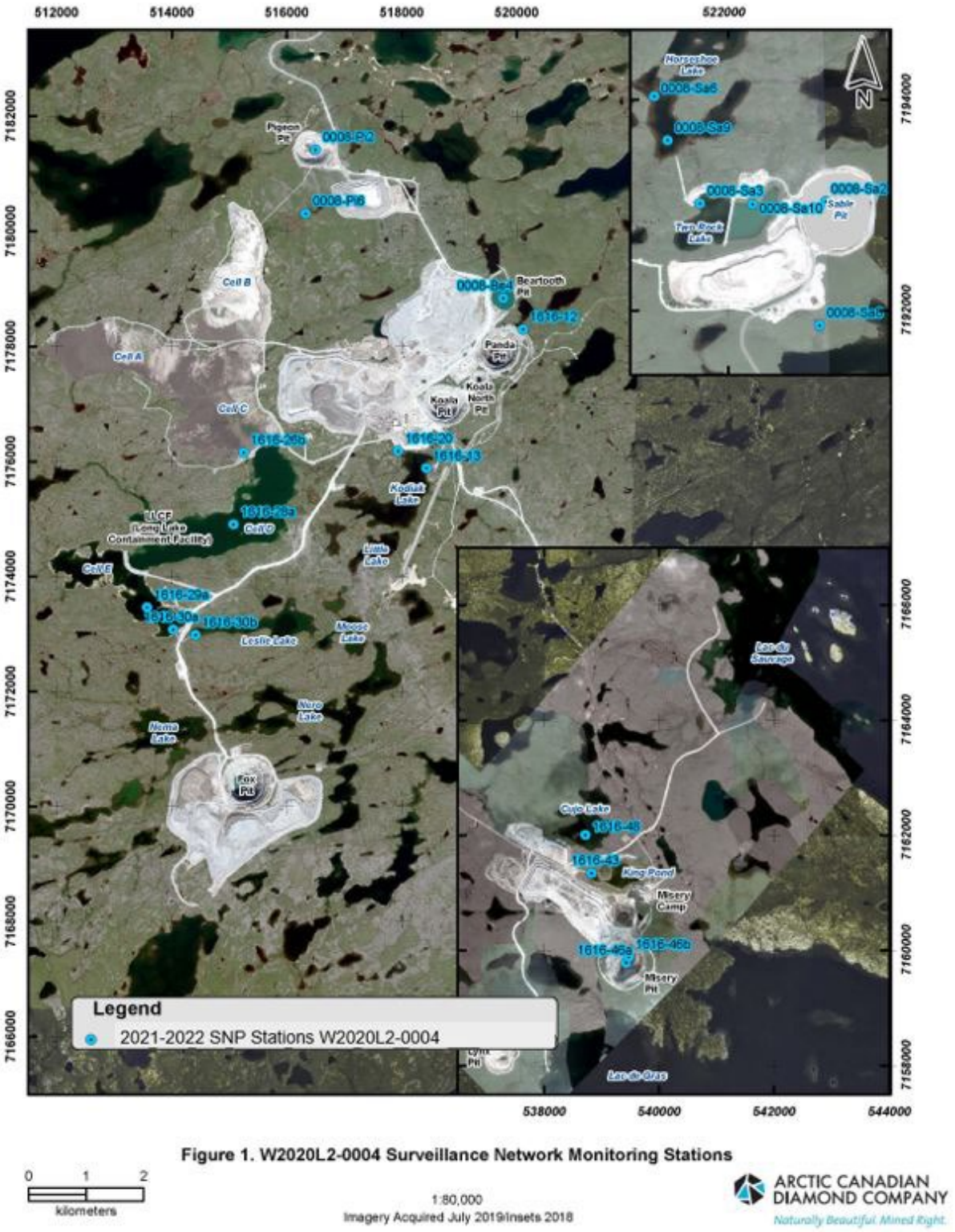


Figure 1. W2020L2-0004 Surveillance Network Monitoring Stations

m) A summary of Construction Activities and an Updated Mine Plan

Various operational construction activities were conducted in 2021.

Misery Underground (MUG) Infrastructure

- Underground compressors completed
- Main underground de-sliming and dewatering stations operation and improvement modifications completed

Point Lake Early Works

Following the issuance of the Point Lake Early Works Land Use Permit (W2021X0004) on October 19th, Arctic Canadian commenced construction of a short access road connecting the existing Lac du Sauvage Road (formerly known as Jay Road) with the Point Lake project area. Construction of the road and of a utility pad were completed between October 31, 2021 and January 31, 2022.

Life of Mine Plan

The Life of Mine Plan is presented in Figure 6. This plan is subject to change as Arctic Canadian continues to evaluate future projects.

n) A summary of all work carried out over the last year under the approved Management Plans referred to in Part H, Conditions 1 through 3 of this Licence including:

I. The quantity of Kimberlite processed through the process plant in 2021

Production in 2021 was 3,547,611 tonnes of kimberlite ore (Table 9).

Table 9 Tonnes of Kimberlite Ore Processed

Month	Volume of Ore Processed (tonnes)	Month	Volume of Ore Processed (tonnes)
January	131,165	August	339,3850
February	226,088	September	305,340
March	261,427	October	378,008
April	270,100	November	342,467
May	372,856	December	343,133
June	341,033	**Annual Total**	**3,547,611**
July	236,608		

II. The quantity of Waste Rock by type from each open pit and underground mine deposited in each of the Waste Rock Storage Areas and a description of construction compared to the Board-approved design for each Waste Rock Storage Area

There were 16,728,047 wet metric tonnes (wmt) of Waste Rock deposited in the various Waste Rock Piles (WRPs) in 2021. The 2021 quantities of Waste Rock produced and deposited is provided in Table 10.

Figure 6 Life of Mine Plan

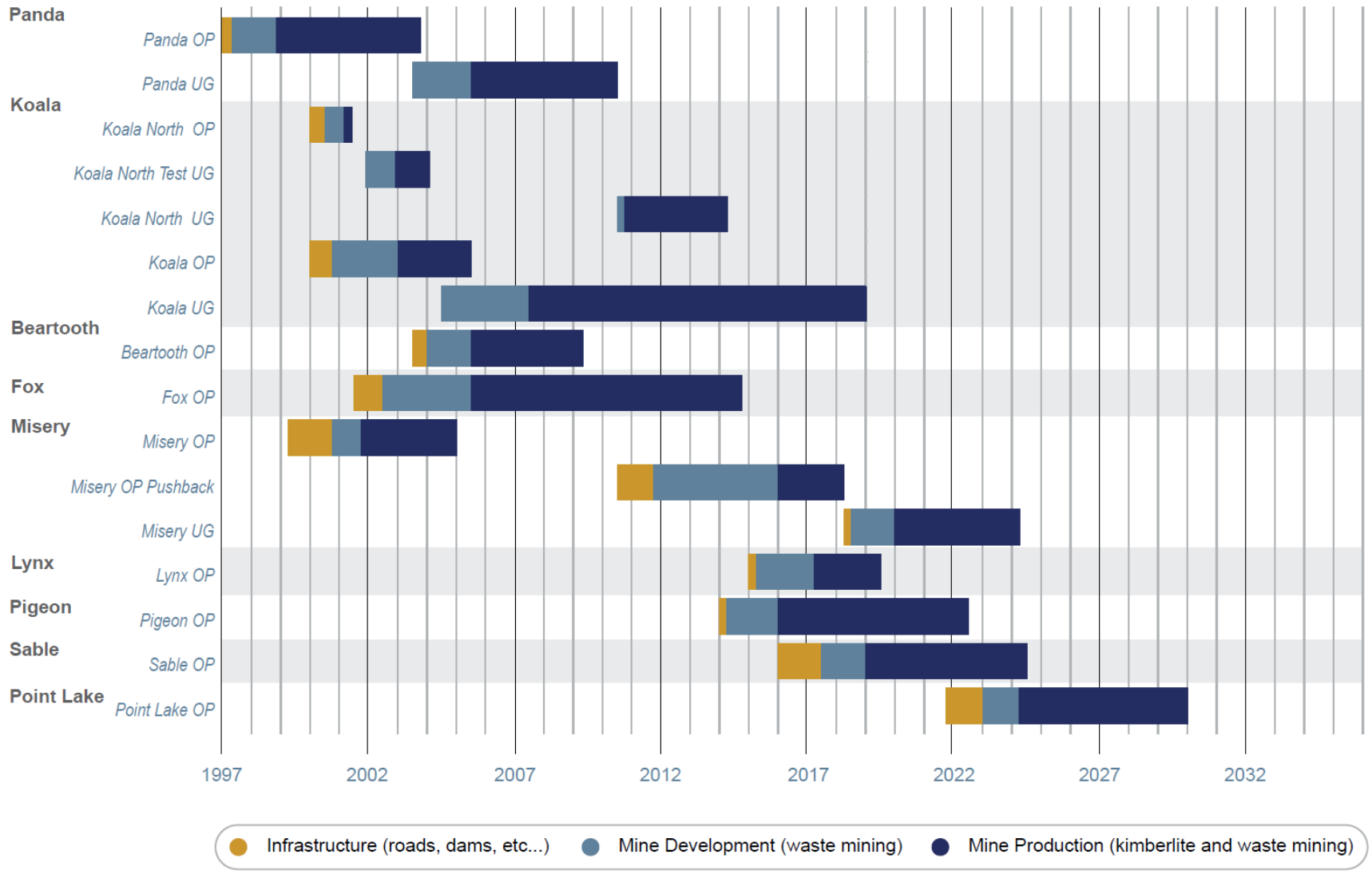


Table 10 Quantity of Waste Rock Produced

Waste Rock Produced	Waste Rock Deposited	Mass (wmt)
Misery Underground	Misery Waste Rock Storage Area	94,297
Pigeon Pit	Pigeon Waste Rock Storage Area	2,373,366
Pigeon Pit	Coarse Kimberlite Rejects WRP	818,264
Pigeon Pit	Pigeon Till Dump	0
Sable Pit	Sable South Waste Rock Storage Area	2,398,196
Sable Pit	Sable West Waste Rock Storage Area	11,043,924
Total		**16,728,047**

Notes:
WRP = Waste Rock Pile
wmt = wet metric tonnes

All WRSAs have been constructed based on approved designs by the Board. More detail on WRSAs can be found in the Arctic Canadian Waste Rock and Ore Storage Management Plan (WROMP) published on the Board public registry.

III. The quantity of Coarse Processed Kimberlite deposited in each deposition location

A total of 883,334 tonnes of coarse kimberlite reject material from the Process Plant was placed in the Coarse Kimberlite Rejects Storage Area (CKRSA) located in the Panda/Koala WRSA in 2021.

IV. The quantity of Fine Processed Kimberlite deposited in each deposition location

Table 4 indicates the monthly volumes of Process Plant Solids – the FPK – deposited in the LLCF, Panda Pit, and Koala Pit.

V. A summary of the results of Seepage surveys conducted in accordance with Part H, Condition 5 of this Licence

Seepage Monitoring

During the 2021 Seepage Monitoring Program, 51 unique seeps were sampled during the freshet (June) and fall (September) surveys at the Panda/Koala, Fox, Misery, Lynx, Pigeon, and Sable WRSAs. Fourteen new seeps were identified and sampled in 2021; REF-005 and REF-040 were the only reference sites sampled in 2021 and are in the Panda/Koala/Beartooth and Misery areas, respectively. Six intra-laboratory duplicates, three travel blanks, and two field blanks were collected as part of the Quality Assurance / Quality Control (QA/QC) procedures.

Several sites were newly identified thus preventing discussion of temporal trends; however, where historical data existed, the reported Seepage chemistry across the WRSAs generally showed similar concentrations and/or similar fluctuating seasonal trends (from freshet to fall) compared to previous results, with the following exceptions:

- Panda/Koala/Beartooth NE
    - Alkalinity appeared to be increasing for the seeps in the area, which is not necessarily a concern in terms of potential effects on the Receiving Environment. Concentrations of chloride, total boron, total magnesium, total potassium, total sodium, dissolved boron, dissolved chromium, dissolved molybdenum, dissolved potassium, dissolved sodium, and dissolved strontium appeared to be increasing for seeps in the area too.
    - Total and dissolved boron exceedances occurred for the first time in seeps in this area and exhibited an increasing trend. Molybdenum also appeared to show an increasing trend, since 2011.

- Panda/Koala SW (including CKRSA)
    - In general, specific conductivity and total suspended solids (TSS) were higher for the south draining seeps than seen historically.
    - SEEP-368 and SEEP-530 (near each other and the WRSA) returned similar concentrations that were much higher than the results seen in other seeps in the area, particularly for specific conductivity, sulphate, and chloride.
    - Several variables returned concentrations greater than their 95th percentiles for the first time within the west draining seeps (total aluminum, total and dissolved arsenic, total chromium, total copper, total iron, total lead, total nickel, total phosphorus, total and dissolved silicon, total titanium) excluding SEEP-317C, SEEP-319 and SEEP-343A; and the total metal concentrations generally showed an increasing trend.
    - No seeps reported detectable BTEX or hydrocarbons for the past three years (2019 to 2021 inclusive).
- Fox
    - Within the west draining seeps, SEEP-390A, a newly monitored seep, recorded several exceedances of the 95th percentile, particularly for total and dissolved metal variables, whilst the other sites generally reported concentrations within the historical range of the Fox dataset.
    - Several concentrations greater than the 95th percentile were reported for the first time within the south draining seeps. SEEP-521 and SEEP-514 (in close proximity to each other) returned comparable concentrations and reported increased metals and major ion concentrations compared to other sites in the area. A peak concentration in several variables was observed in 2019 for SEEPS-391 and 370, but all have since shown a return to historical concentrations.
    - Within the east draining seeps, SEEP-373A generally reported lower concentrations than SEEP-373. SEEP-377 reported a number of exceedances of the 95th percentile; all variables had exceeded the 95th percentile previously at the site. SEEP-520 reported a chloride concentration that exceeded the 95th percentile for the first time and was generally greater than that observed for the surrounding seeps.

- Misery and Lynx
    - For the seeps within the Misery WRSA and Lynx Crusher Pad areas, sulphate and specific conductivity generally showed increasing trends, and water quality variables associated with host rock and kimberlite weathering remained high.
    - One new seep was sampled within the Lynx WRSA, and it was acidic, though consistent with pH values measured in the area. A number of water quality variable concentrations that were greater than their 95th percentiles for the Lynx WRSA dataset were reported, all for dissolved variables. Total aluminum and iron concentrations remained high in the area.
- Pigeon
    - SEEP-531 appeared to have reduced buffering capacity, with high acidity and low alkalinity reported relative to other seeps in the area.
- Sable
    - Several water quality variables exceeded the 95th percentile of the Sable reference dataset across all seeps sampled in this area, and in general, high TSS accompanied by high total metals concentrations was also reported relative to the reference dataset. However, it is important to note that the development of the 95th percentiles for the dataset is ongoing, and this will be used as the screening limits in future reports (not the Sable reference dataset).

In general, the results were considered suitable for reporting. However, there were QA/QC concerns related to molybdenum and aluminum. Dissolved molybdenum results for the June sampling batch could not be commented upon as the relative percent difference (RPD) was greater than 50 percent, indicating potential contamination or lack of sample representativeness. Total aluminum was consistently detected for all the QA/QC blanks, indicating potential contamination with the laboratory supplied water.

Screening for Seeps of Potential Concern

Seepage quality screening is an annual comparison of analytical results with Seepage screening criteria, as described in the WROMP, *Version 11.0*. Analytical results that are greater than the screening criteria will define a seep of potential concern (SoPC) for which further investigation and/or action may be required.

A SoPC was identified as having a constituent concentration during the reporting year which exhibited the following characteristics and had the potential to enter a Receiving Environment:

- For constituents with an effluent quality criteria (EQC), greater than the stated maximum allowable concentration of any grab sample; or
- A constituent concentration greater than the upper 95th percentile value f of the associated WRSAs historical dataset on more than one occasion during the two-year period comprising the reporting year plus preceding year.

The EQC are specified in the current Water Licence, Part H, Condition 21. EQCs applicable to Surveillance Network Program (SNP) Station 0008-Sa3 were used the analysis for all seeps, with the exception of SEEP-081 and SEEP-081A for which EQCs applicable to SNP Station 1616-43 were used.

For hardness dependent EQC the hardness obtained from sampling the relevant Receiving Environment was used in the calculations.

Only seeps that had the potential to enter a Receiving Environment were considered of potential concern. Based on these criteria, a total of twelve (12) SoPC were identified in 2021 and are listed below (with bolded seeps indicating it was a SoPC in 2020 also):

- Panda/ Koala/ Beartooth NE and NW
  - **SEEP-357**
- Fox
  - SEEP-362A
  - SEEP-377
  - SEEP-390A
  - SEEP-519A
- Misery and LCP (Cujo Lake Watershed)
  - **SEEP-081**
  - SEEP-081A
  - SEEP-080A
- Lynx
  - SEEP-538
- Sable
  - SEEP-532
  - SEEP-533
  - SEEP-534

VI. Updated results of ongoing Acid/Alkaline Rock Drainage and related geochemical test work

Waste Rock and Coarse Kimberlite Geochemical Monitoring

In 2021, as part of the waste rock monitoring, 26 samples were collected from five benches (360, 350, 340, 330, 320) in Pigeon Pit, and three samples were collected from Misery Underground (MUG). Two samples of coarse kimberlite rejects (CKR) were obtained and analysed, and FPK samples were also collected monthly, resulting in eight FPK samples collected.

No major changes were noted for waste rock and coarse kimberlite characteristics. The CKR, MUG granite and Pigeon diabase samples were classified as non-potentially acid generating (PAG), whilst 12 Pigeon metasediment (schist) samples were classified as predominantly non-PAG with one sample classified as PAG.

Also of note is that the 2021 waste rock and CKR samples were analysed using the modified Sobek procedure for acid-base accounting (ABA), and ICP-MS following an aqua regia digestion for metals, whilst historic data used the standard Sobek procedure for ABA, and ICP-AES following a four acid digestion for metals.

Sable Waste Rock Storage Areas

Seepage monitoring of the Sable WRSAs commenced in 2018. However, no Seepage was identified in the WRSAs until 2021, when several seeps were sampled for the first time.

Updated results of ongoing Acid/Alkaline Rock Drainage and related geochemical test work

The Geochemical Characterization Management Plan (formerly Acid/Alkaline Rock Drainage) has been incorporated into the WROMP. Data summaries are available in the following tables from the WROMP Version 11.0.

- Table 3.1: Summary of Panda Waste Rock Acid-Base Accounting Data
- Table 3.2: Summary of Elemental Concentrations in Panda Waste Rock
- Table 3.3: Summary of Koala Waste Rock Acid-Base Accounting Data
- Table 3.4: Summary of Elemental Concentrations in Koala Waste Rock
- Table 3.5: Summary of Beartooth Waste Rock Acid-Base Accounting Data
- Table 3.6: Summary of Elemental Concentrations in Beartooth Waste Rock
- Table 3.7: Summary of Fox Waste Rock Acid-Base Accounting Data
- Table 3.8: Summary of Elemental Concentrations in Fox Waste Rock
- Table 3.9: Summary of Misery Waste Rock Acid-Base Accounting Data
- Table 3.10: Summary of Elemental Concentrations in Misery Waste Rock
- Table 3.11: Summary of Pigeon Waste Rock Acid-Base Accounting Data
- Table 3.12: Summary of Elemental Concentrations in Pigeon Waste Rock
- Table 3.13: Pigeon Humidity Cell Samples
- Table 3.14: Summary of Lynx Waste Rock Acid-Base Accounting Data
- Table 3.15: Summary of Elemental Concentrations in Lynx Waste Rock
- Table 3.16: Summary of Sable Waste Rock Acid-Base Accounting Data
- Table 3.17: Summary of Elemental Concentrations in Sable Waste Rock
- Table 3.18: Summary of Coarse Kimberlite Reject Acid-Base Accounting Data
- Table 3.19: Summary of Elemental Concentrations in Coarse Kimberlite Rejects

Over 90% of the waste rock stored at the Ekati Diamond Mine is granite. The remaining waste rock is either metasediment, diabase, or waste kimberlite. The following is a summary of key results of geochemical characterization for the Ekati Diamond Mine:

- The majority of rock types mined at the Ekati mine are not PAG or have low potential to generate acidity.
- Metasediment rock at the Misery and Pigeon pits is classified as PAG.
- Misery metasediment generated acid under laboratory conditions over a time frame of several tens of weeks. It is estimated that this would translate to periods of several years under site conditions.
- The Misery WRSA is of sufficient age that the effects of acidification ought to be apparent if the schist were becoming acidic.
- The Misery WRSA seepage is currently not acidic (see Section 5).
- The draft Pigeon humidity cell results indicate that the diabase, diorite, granite, and mixed granite/metasediments are non-PAG, and not a risk of metal leaching, while the metasediments are PAG and a risk of metal leaching.
- Granite and diabase are classified as non-potential acid generating (non-PAG).

VII. ***Tracking and documenting of Jay Waste Rock placement by rock type***

This requirement was not applicable for 2021.

VIII. Results of Waste Rock sampling within the Jay open pit to confirm geochemical characteristics and geological mapping of the benches sampled

This requirement was not applicable for 2021.

IX. Results of sampling and field inspection program to confirm Jay Waste Rock placement

This requirement was not applicable for 2021.

X. Results of Groundwater monitoring and reporting program for the open pits during operations for the Jay Development in accordance with the approved Wastewater and Processed Kimberlite Management Plan

This requirement was not applicable for 2021.

o) A summary of any Modifications carried out in accordance with Part G of this Licence and/or major maintenance work carried out on any water or Waste management facilities including but not limited to, Water Supply Facilities, Collection and Settling Ponds, Long Lake Containment Facility, King Pond Settling Facility, Sewage Treatment Facilities, Two Rock Sedimentation Pond, Pigeon Diversion Channel, Jay and North Dike, Sub-Basin B Diversion Channel, and associated structures

No modifications or major maintenance work, as defined in Part G of the Water Licence were undertaken in 2021.

p) A summary of the results of the Aquatic Effects Monitoring Program in accordance with Part J of this Licence

A Report has been prepared to summarize results of the 2021 Aquatics Effect Monitoring Program (AEMP). Please refer to Appendix C for a detailed summary of the 2021 AEMP results.

q) A progress report on any studies requested by the Board that relate to Waste management, water use, or mine site Reclamation and a brief description of any future studies planned by the Licensee

No studies were requested by the Board during this reporting period. Reclamation research plans and reclamation engineering studies are described, carried out, and reported under the requirements of the Board-approved Interim Closure and Reclamation Plan (ICRP).

r) A summary of any revisions to the approved:

I. Construction Plan for the Jay and North Dike referred to in Part F, Condition 3

The Construction Plan for the Jay and North Dike will not be submitted to the Board because Jay Project has been cancelled by Arctic Canadian.

II. Waste Management Plan, Wastewater and Processed Kimberlite Management Plan and Waste Rock and Ore Storage Management Plan referred to in part H of this Licence

Version 8.0 of the Waste Management Plan was submitted to the Board on May 31, 2021 as part of the Point Lake Water Licence Amendment application. The Plan was approved as part of the Reasons for Decision for the Point Lake Water Licence Amendment. The Waste Management Plan is the overarching Plan that includes the Landfill Management Plan, Hazardous Wastes Management Plan, Compost Management Plan, Hydrocarbon-Impacted Materials Management Plan, and Incinerator Management Plan an annual review.

Wastewater and Processed Kimberlite Management Plan (WPKMP) Version 9.0 was submitted to the Board on March 22, 2019 and was approved on June 13, 2019. The primary changes to the WPKMP for Version 9.0 were the incorporation of the Metal and Diamond Mining Effluent Regulations (MDMER) and the closure and reclamation of the Panda, Koala, and Koala North Underground mine workings. Version 9.0 also updated containment area operational monitoring to the following:

- Once per 12-hour shift visual inspection of active FPK Discharge spigot locations at the LLCF, and the road-accessible perimeter of Cells A and C to active FPK spigot Discharge locations.
- Once per 12-hour shift visual inspection of the Beartooth and Panda/Koala FPK pipelines when active.

WROMP Version 11.0 was submitted on June 29, 2021 and was not approved by the Board. In their Reasons for Decision, the Board has provided direction for WROMP version 11.1, which is to be submitted May 30, 2022.

The primary change introduced through WROMP Version 11.0 is the addition of a *WRSA Seepage Response Plan*. The purpose of the Seepage Response Framework is “to provide a tool that can be used during mine operations to indicate when additional work (adaptive management) may be required to protect the Receiving Environment (as defined in the Water Licence)”. The Seepage Response Framework achieves its purpose through the definition of relevant seepage thresholds, triggers and

actions that can link forward, where appropriate, to the established procedures defined in the Board approved Aquatic Response Framework. Development of this new plan included engagement on the approach and general content for Version 1 of the Seepage Response Framework.

III. Spill Contingency Plan and Hydrocarbon-Impacted Materials Management Plan referred to in part I of this Licence

Arctic Canadian submitted Version 15.0 of the Spill Contingency Plan to the Board on May 31, 2021 as part of the Point Lake Development application. This version incorporated Point Lake Project into the scope and contained minor administrative updates. This version of the Spill Contingency Plan was approved by the Board on April 8, 2022 with direction from the Board to submit version 15.1 of the Plan within 60 days of issuance of the Point Lake Water Licence amendment to include a figure showing the location of the Point Lake Development.

Arctic Canadian submitted Version 7.0 of the Hydrocarbon-Impacted Materials Management Plan to the Board on December 16, 2020. Due to the administrative nature of the updates, Version 7.0 of the Hydrocarbons-Impacted Materials Management Plan was not distributed for public review and was approved by the Board on February 25, 2021.

s) A summary of the results of the monitoring carried out under the Hydrocarbon-Impacted Materials Management Plan referred to in Part I, Condition 4 of this Licence

Hydrocarbon Impacted Materials Management Plan

Results of monitoring carried out under the Ekati Diamond Mine Hydrocarbon-Impacted Materials Management Plan are as follows:

Volume of treated soil removed from the landfarm each year:

- No soil was removed from the landfarm in 2021.

Volume of water Discharged from the Contaminated Snow Containment Facility (CSCF) to the LLCF:

- 48 m^3 of water was Discharged from the CSCF to the LLCF in 2021. No water was Discharged from the landfarm sump to the LLCF in 2021.

3.3 Spills and Unauthorized Discharges

t) A list and description, including volumes, of all Unauthorized Discharges and summaries of follow-up actions taken

A total of fourteen spills were reported to the NWT Spill Line or the new ENR Online Spill Reporting Tool in 2021. Appendix D provides a summary of 2021 external spill reports. Two spills each from 2019 and 2021 remain open with the NWT Spill Line:

- **Spill 2019127:** A diesel spill of 111,000 L occurred in the Sable Fuel Farm on March 20, 2019. This spill was caused by a faulty High-Level switch in a generator day tank within the berm, which caused fuel to continue to transfer from the bulk tank to the day tank until it overflowed into the containment berm. Timers were incorporated into the programmable logic controller (PLC) to

ensure that the pumps can only transfer fuel from the bulk tanks to the smaller day tanks for a set amount of time before shutting off. An update was provided to the Inspector in Spill Report 2019127 Follow-Up on October 31, 2019. Arctic Canadian continues to conduct daily and more intensive weekly inspections of the fuel system, and Arctic Canadian will continue to remove contaminated water from within the berm once freshet arrives in 2022.

- **Spill 2019456:** A 450 L engine oil spill occurred within the Sable Maintenance Shelter onto the rig-matting flooring on November 6, 2019. While most of the spill was recovered, it is suspected that some of the oil may have leaked between the rig-matting flooring surface and onto the ground beneath the shop. This leaked oil is unlikely to infiltrate the heavily compacted ground beneath the rig-matting. As per the Inspector's direction, Arctic Canadian will address this spill when the Sable Maintenance Shelter is decommissioned and taken down.
- **Spill 2021323:** A berm on the pigeon haul road was opened to release about 10,000L of water onto the tundra that was pooling on the roadway. The Environment Team installed silt fencing downgradient to catch the sediment for collection. Sediment was collected and as much as possible was removed. The spill will be inspected in the spring to confirm closure.
- **Spill 2021497:** Workers in the Health and Safety Building noticed a sewage odor starting September 11th, 2021. The spill was physically identified, and the Environment department was notified on December 19, 2021 at 11:30am. The spill is isolated and frozen and will be cleaned up in the spring when it is accessible.

Externally reported spills at the Ekati Diamond Mine can be found on the ENR database of hazardous material spills at https://www.enr.gov.nt.ca/en/spills.

u) An outline of any spill training and communications exercises carried out

The Ekati Diamond Mine Emergency Response Team (ERT) currently has 76 active members who respond to underground and surface emergencies, including environmental emergencies such as spills. Of those 76 ERT members, 43 are stationed at the Ekati Diamond Mine Main Camp and 33 are stationed at Misery Camp. ERT members must have a valid Standard First Aid certificate and NWT/Nunavut Territorial Surface and Underground Mine Rescue certificate. Practices are held regularly and are documented. Arctic Canadian's minimum requirement of training, per member, is 72 hours in the calendar year. The Worker's Safety and Compensation Commission minimum requirement of training, per member, is 55 hours in the calendar year.

The following is a list of spill response and communications exercises carried out at the Ekati Diamond Mine in 2021:

- **Desktop Exercise**: On July 28th, 2021 two separate desktop Incident Management Team (IMT) mock scenarios were conducted involving a structural fire on the 3rd floor Truckshop, that resulted in multiple fatalities.
- **Spill Response Trailer Inventory Inspections**: The Ekati Diamond Mine Main Camp is outfitted with a Spill Response Trailer that is inspected on a quarterly basis.
- **ERT Practice:** In preparation for the Winter Road and potential spills due to the influx in vehicular traffic, ERT conducted spill response training on December 4th, 2021. The training involved:
    - CANUTEC ERG (Emergency Response Guide – How to use the ERG PowerPoint);

- ERG PowerPoint Scenarios;
- A review of EKA PRO 2104 Spill Emergency Response Plan;
- An inventory check of the Spill Response Trailer (all items laid out in the bay and inspected);
- Function check of applicable equipment (hazmat suits, skimmer pump, etc.); and
- A hands-on practical scenario.

3.4 Closure and Reclamation

v) A summary of the results of the Annual Closure and Reclamation Plan Progress Report referred to in Part K of this Licence

A summary of amendments to the ICRP is presented in Appendix E – 2021 Closure and Reclamation Progress Report (Section 7: ICRP Updates).

A summary of reclamation work conducted in 2021 is presented in Appendix E – 2021 Closure and Reclamation Progress Report (Section 5: Reclamation Activities and Monitoring).

An updated estimate of the current mine reclamation liability is presented in Appendix E – 2021 Closure and Reclamation Progress Report (Section 8: Security and Relinquishment).

3.5 Other Reporting Requirements

w) Any other details on water use or Waste disposal requested by the Board by November 1st of the year being reported

There were no requests made by the Board regarding water use disposal under this clause by November 1, 2021.

x) A description of how Traditional Knowledge, including but not limited to that received from the Traditional Knowledge Elders Group, influence decision making

Arctic Canadian is committed to incorporating oral and recorded Traditional Knowledge (TK) into decision making at the Ekati Diamond Mine. With significant input from communities and the Traditional Knowledge Elders Group (TKEG), Arctic Canadian developed a Traditional Knowledge Management Framework to outline how Arctic Canadian will collect, store, manage, and use TK in a respectful way. The TK Framework was approved by the TKEG in January 2017 and will operate as a living document which can be amended at any time at the TKEG's discretion. A summary of the 2017 TKEG meetings can be found at the following link: Summary Reports and Posters for TKEG Meetings. As per Section 5 of the Framework, Arctic Canadian respects that Indigenous people own and control their TK, and Arctic Canadian will only use their TK with consent, and only as intended in the context of which it was shared. Arctic Canadian maintains that it is not appropriate to disclose TK that has been obtained in a public document not directly related to the aspect of which it was shared. Arctic Canadian has also developed an Engagement Plan which is consistent with the requirements of the *Engagement and Consultation Policy* released by the Land and Water Boards of the Mackenzie Valley in 2013.

Arctic Canadian approaches community engagement and the incorporation of Traditional Knowledge in many ways; though many of Arctic Canadian's regular engagements were put on hold due to the COVID-19 pandemic and entering Care & Maintenance in 2020. The COVID-19 pandemic continued to effect Arctic Canadian's ability to host on-site monitoring programs, larger regional programs, in-person workshops and meetings, and support of community-led TK programs. There are plans to modify and adjust these programs for 2022 to be able to host these activities. Please see Section 4.3.4 of this report for a full list of Traditional Knowledge Projects and TK Preservation Programs conducted in 2021.

y) Any changes to the Engineer of Record for the Jay Dike and North Dike

There were no changes to the Engineer of Record for the Jay Dike and North Dike in 2021.

4. Environmental Agreement Article V Reporting Requirements

The following section details the requirements of Section 5.1 of the Environmental Agreement that came into effect on January 6, 1997.

Section 5.1: Annual Report

a) Arctic Canadian shall prepare and submit a report (the "Annual Report") to the Minister, the GNWT, the Monitoring Agency and the Aboriginal Peoples commencing on April 30, 1998 and on each April 30 thereafter until full and final reclamation of the Project site has been completed in accordance with the requirements of all Regulatory Instruments and the terms of this Agreement. Each Annual Report shall be accompanied by a plain English summary prepared by Arctic Canadian and shall include the results of Arctic Canadian's ongoing compliance with this Agreement and applicable legislation, instruments and agreements for the preceding Reporting Year and providing the Minister, the GNWT, the Monitoring Agency and the Aboriginal Peoples with all supporting information and data from the environmental monitoring programs and all studies and research conducted in accordance with Articles X, XI, and XII of this Agreement. Each Annual Report shall contain, inter alia, the following (see Section 4.1 to 4.7 headings below).

4.1 Compliance Reports with Respect to the Water Licence, the Surface Leases, the Land Use Permits and Other Regulatory Instruments (Clause 5.1.a.i)

Section 3 of this report provides details on compliance with the Type A Water Licence and DFO Authorizations that regulate the Ekati Diamond Mine. Surface Leases and Land Use Permits are inspected regularly by GNWT Department of Lands.

The GNWT Department of Lands Inspector performed Type A Water Licence inspections at the Ekati Diamond Mine throughout 2021. During those inspections the following areas were visited:

- Fuel stations
- Fuel transfer areas
- Underground fresh air raises
- Water and Waste facilities including the incinerator, composter, burn bin and landfill
- Contaminated Snow Containment Facility
- Misery Camp
- King Pond Settling Facility
- Grizzly Road and lake water intake
- Long Lake Containment Facility
- Pigeon Stream Diversion (PSD)
- Panda Diversion Channel (PDC)

- Sable/Pigeon Road
- Sable Development
- Lynx Haul Road
- Laydowns
- Dust suppressant storage area
- Fox Pit
- Misery Pit and Misery Underground
- Pigeon Pit
- Beartooth Pit
- Lynx Pit
- Jay Access Road

The findings for the W2020L2-0004 inspections can be found on the Board Registry at the following links:

- January 28, 2021 GNWT, Department of Lands Water Licence Inspection
- April 13, 2021 GNWT, Department of Lands Water Licence Inspection
- July 29, 2021 GNWT, Department of Lands Water Licence Inspection
- December 7, 2021 GNWT, Department of Lands Water Licence Inspection

The Inspector also conducted Land Use Permit inspections in 2021. The Inspector verified the cleanup of spills reported to the NWT Spill Line and the ENR Online Spill Reporting Tool. Please see Section 3.3(s) above for further details on reported spills. The dates and findings of these inspections can be found at the following links:

- January 28, 2021 W2017D0004 Misery Underground Inspection Report
- January 28, 2021 & February 24, 2021 W2016D0003 Sable Development Inspection Report
- December 7, 2021 W2021X0004 Point Lake Project Inspection Report
- December 7, 2021 W2017D0004 Misery Underground Inspection Report

No aspects of the operation were deemed “Unacceptable” during the inspections listed above.

4.1.1 Surface Leases and Mining Leases

Arctic Canadian holds 228 mineral leases and 10 surface leases which were issued subject to the *Territorial Lands Act*. The surface leases are summarized in Table 11. As of April 1, 2014, the Ekati mine leases became subject to the *Northwest Territories Lands Act* and the *Northwest Territories Lands Regulations*.

Table 11 Surface Leases

Surface Lease	Size (hectares)	Area
76D/9-3-2	1,121.2	Misery Pit - facilities and road
76D/9-4-2	12	Misery Facilities
76D/10-2-2	6,023	Koala, Panda and Fox Pits and facilities
76D/10-3-2	3,701	Long Lake Containment Facility
76D/10-4-2	110	Airstrip and facilities
76D/15-4-4	998	Sable Pit and facilities
76D/10-5-2	155	Main Camp
76D/10-7-2	324.6	Pigeon Pit and facilities
76D/9-10-2	186.4	Lynx Waste Rock Storage Area
76D/9-11-2	173.1	Lynx Pit and road
Total	**12,804.3**	

4.1.2 Land Use Permits

Arctic Canadian currently holds 11 Type A Land Use Permits with the Wek'èezhìi Land and Water Board related to activities at the Ekati Diamond Mine. These Land Use Permits are all listed in Table 12.

Table 12 Land Use Permits

Type A Land Use Permit #	Activity Covered	Issue Date	Expiry Date
W2018C0005	Mineral Exploration, Winter Road Construction, Camp, Fuel Storage, and Associated Activities	October 24, 2018	October 23, 2023
W2021D0002	Lynx Pit and Access Road	April 15, 2021	April 14, 2026
W2015D0005	Lynx Waste Rock Storage Area	June 5, 2015	June 4, 2022
W2021I0006	Misery Powerline	July 23, 2021	July 22, 2026
W2016D0003	Sable Pit and Associated Activities	May 12, 2016	May 11, 2023
W2016D0005	Pigeon Pit and Associated Activities	July 19, 2016	July 18, 2023
W2016F0006	Pigeon and Sable Haul Road	July 19, 2016	July 18, 2023
W2013D0007	Jay Pit	May 29, 2017	May 28, 2022
W2017J0003	Culture Camp	June 20, 2017	June 19, 2022
W2017D0004	Misery Underground Activities	July 12, 2018	July 11, 2023
W2021X0004	Point Lake Early Works	October 19, 2021	October 18, 2026

Throughout 2021, the Ekati Diamond Mine complied with the Land Use Permits and Surface Leases. The GNWT Department of Lands Water Licence and Land Use Permit inspection reports are a matter of public record. In this reporting year, there were updates to thee of the mine's land use permits, listed below:

- W2021D0002 – Lynx Pit and Access Road: renewal application submitted and approved in 2021, permit renewed on April 15, 2021 for a five-year term.
- W2021I0006 – Misery Powerline: renewal application submitted and approved in 2021, permit renewed on July 23, 2021 for a five year term.
- W2016D0003 – Sable Pit and Associated Activities: extension application submitted and approved in early 2021, two-year extension granted on May 6, 2021.
- W2016D0005 – Pigeon Pit and Associated Activities: extension application submitted and approved in early 2021, two-year extension applied on May 6, 2021.
- W2016F0006 – Pigeon and Sable Haul Road: extension application submitted and approved in early 2021, two-year extension applied on May 6, 2021.

On May 31, 2021 Arctic Canadian submitted applications to the Board for a Water Licence Amendment and two Land Use Permits for the Point Lake Development. On October 19, 2021 the Board issued the Point Lake Early Works Land Use Permit, which allowed the commencement of construction of the access road and utility pad. A majority of the Point Lake access road and the utility pad were constructed in Q4 of 2021. The Board has sent a recommendation to the Minister of ENR for approval of the Water Licence Amendment and Point Lake Land Use Permit, and a decision from the Minister is forthcoming.

4.1.3 Fisheries Act Authorizations

Ekati Diamond Mine has five applicable Fisheries Act Authorizations (FAAs; Table 13). These Authorizations provide approval to conduct work that results in the HADD of fish habitat. See Section 2.2.3 of this report for further details on these Authorizations. Three of the five FAAs have been closed in 2018 and 2019 (SC99037, 15-HCAA-00266, and SCA96021) with offsetting commitments extending beyond the valid authorization period for SC99037 and 15-HCAA-00266. Fisheries Act Authorization SCA96021 was closed in 2019 following the completion of works described in the Authorization and confirmation from Fisheries and Oceans Canada (DFO) that conditions described in the FAA have been met (i.e., completion of the corresponding compensation work on the PDC). Two FAAs remain active or are in the process of closure (SC00028 and SC01111).

Fisheries Act Authorization #15-HCAA-00266 was closed-out in January 2019 as per Arctic Canadian's request following completion of works described in the Authorization, specifically, the dewatering of Lynx Lake. The remedial work in Pike Creek was completed in late summer 2018 and the monitoring of the habitat improvement of Pike Creek is the only outstanding requirement under the Authorization. Monitoring at Pike Creek is scheduled for completion in 2022, 2024, 2026 and 2028, respectively. The first year of post-construction monitoring at Pike Creek was originally scheduled for 2019 but was postponed due to a community tragedy, and in 2020 and 2021 due to the COVID-19 pandemic the programs could not be completed. The monitoring program was postponed to 2022 when it is expected that access to Pike Creek will be feasible again.

Fisheries Act Authorization #SC99037 was closed out in December 2018 as per Arctic Canadian's request following completion of works described in the Authorization, specifically the loss of reaches 3 and 4 of Pigeon Stream. The PSD was designed and constructed as compensation for the habitat loss in Pigeon Stream. Years 1, 2, and 4 of the PSD channel monitoring were completed in 2014, 2015, and 2017 with Year 7 scheduled for 2020. However, the reduced workforce and Territorial Government

restrictions on incoming travel to the Northwest Territories due to the COVID-19 Pandemic, Year 7 monitoring could not be completed and was postponed and completed in 2021 (now referred to as Year 8).

Table 13 Department of Fisheries and Oceans Fisheries Act Authorizations

DFO FAA #	Activity Covered
SC00028[1]	• Developing King Pond into a minewater settling facility
SC01111[2]	• Construction of a dike in Desperation-Carrie stream • The use of Desperation Pond for Waste Rock placement, sedimentation, and water management associated with the development of Misery Pit

1 A one-year FAA extension was granted by DFO on January 31, 2022 to allow for a review of offsetting opportunities.
2 FAA closure was requested due to completion of works described in the Authorization, including the dike construction in Desperation-Carrie Stream and the use of Desperation Pond for Waste Rock placement, sedimentation, and water management, associated with the development of Misery pit. The dyke construction in Desperation-Carrie Stream was completed in 2002.

4.2 Results and Findings of Studies and Research Conducted in the Preceding Year (Clause 5.1.a.ii)

In 2021, several studies and research projects were conducted at the Ekati Diamond Mine. A brief summary of the studies is provided in the following sections.

4.2.1 Aquatic Effects Monitoring Program

Please refer to Appendix C for a summary of the results from the 2021 AEMP that is in accordance with Part J of the Water Licence.

4.2.2 Aquatic Response Framework

The Board approved the 2019 AEMP Re-evaluation Report on March 24, 2021 and the 2020-2022 AEMP Version 7.1 Design Plan was approved on January 24, 2022. The following Response Plans or Response Plan updates were submitted or approved during 2021:

- Total Phosphorus Response Plan Version 2.0 (submitted on November 16, 2020; responses to comments provided to the Board on April 5, 2021, approved with additional direction on July 29, 2021 to submit Version 2.1 within 90 days).
- Total Phosphorus Response Plan Version 2.1 (submitted on October 27, 2021).
- Fish Response Plan Version 2.0 (approved with additional Direction on March 24, 2021, requires submitting Version 3.0 within one year of the Reasons for Decision received).
- Plankton and Benthos Response Plan Version 2.0 (submitted on October 22, 2021).

4.2.3 Reclamation Research

A summary of 2021 reclamation and closure research is provided in Section 4.2 of Appendix E – Annual Closure and Reclamation Progress Report. Findings from the reclamation and closure research activities and highlights of ongoing research are provided below.

Long Lake Containment Facility Reclamation Research

The purpose of the LLCF Reclamation research program is to determine the vegetation elements of the LLCF final cover system to physically stabilize processed kimberlite (PK). Reclamation Research at the LLCF continued in 2021 with the following efforts undertaken:

- Establishment of new species trials within Cell A and Cell B of the LLCF;
- Harvest locally available mosses and establish (7) moss transplant transects in Cell B;
- Monitoring of existing species trials and investigation into optimal planting strategies;
- Seeded 3.5 hectares of Cell B with annual grasses as companion crops (Triticale and Fall Rye)
- Surface water management research through trial channel construction and further bioengineering of existing channels;
- Monitoring of rough and loose mounding through depressions previously implemented as erosion mitigation
- Harvest of indigenous mycorrhiza to evaluate their potential to enhance vegetation growth;
- Collecting of native plant seeds around Ekati for future seeding efforts and trials;
- Expanding of trials to evaluate the feasibility of using organic matter generated from the Ekati composter facility;
- Collection of soil samples from Cell A and Cell B for analysis;
- Establishment of enclosed alfalfa pellet transects for slow release of organics and nutrients.

Effective Neutralization Potential Investigation Report

Intervenor comments concerning waste rock classification indicated that the Board required a site-specific investigation of Effective Neutralization Potential (ENP) for Ekati. The ENP Study was designed to help assess the effects of site-specific variables (e.g., temperature, mineralogy, particle size) on acid generation and acid neutralization reaction rates and contextualize existing and ongoing static testing results in the overall Ekati mine dataset.

As part of the historical baseline and ongoing geochemical evaluation for the Ekati mine, ABA is used to determine the acid generation potential of a sample, based on the ratio of neutralization potential (NP) to acid potential (AP). Both NP and AP measured in standard ABA static testing may differ from ENP and effective AP (EAP) under site-specific conditions, where factors such as temperature, mineral exposure, and particle size may differ from laboratory conditions; this may result in either overestimation or underestimation of ENP and/or EAP.

The objective of the ENP study is to conduct a site-specific laboratory-based investigation to identify the factors that influence ENP at the Ekati mine site, including whether ENP/EAP characteristics differ between the fine fraction of run-of-mine blasted rock and samples crushed for standard humidity cell tests, and if so, if there is a means of accounting for the difference(s) when managing waste rock. Arctic Canadian submitted the ENP Investigation Report to the Board on October 26, 2021 as part of the Ekati CRP V3.1 Pre-submission Information Package.

4.2.4 Dust Suppression

With an intent to continually improve environmental practices, and to address comments and concerns received from community members, regulators, and the Independent Environmental Monitoring Agency (IEMA), Arctic Canadian undertook an Envirokleen pilot study in 2015 and expanded on the pilot study from 2016 - 2019 to investigate ways to improve dust suppression practices at the Ekati Diamond Mine. Arctic Canadian is committed to this advanced dust mitigation study through Measure 6.2(a) of the Jay Project Report of Environmental Assessment. 2019 marked the final year of the pilot program and no Envirokleen was applied at Ekati Diamond Mine in 2020 due to the temporary closure.

In 2021, Envirokleen products already in inventory were applied to areas surrounding the camp infrastructure, Airport, and main Ekati haul roads, while water was used as a dust suppressant on the Fox, Misery, and Sable haul roads.

4.3 Results and Findings of Environmental Monitoring Programs (Clause 5.1.a.iii)

4.3.1 Ambient Water, Including Quality, Hydrology, Lake and Stream Ecology, and Groundwater

2021 Aquatic Effects Monitoring Program

Please refer to Appendix C (2021 Aquatic Effects Monitoring Program Summary) in accordance with Part J of this Licence.

4.3.2 Climate at the Permanent Camp

Meteorology

The meteorological monitoring program includes the operation of the Koala automated meteorological station that has been in continuous operation since 1993. The Koala station operates year-round and continuously monitors wind speed and direction (at 10 m height), air temperature, humidity, total precipitation, and snow depth. The 12-month (October 2020 to September 2021) mean air temperatures measured at the Koala and regional meteorological stations are presented in Table 14. The mean precipitation data and snow depths at Koala and regional meteorological stations are presented in Tables 15 and 16.

The Polar Lake evapotranspiration station is operated during the open-water season. However, in 2021 this station was not operational because of the significant resources required for establishing the station and ongoing grizzly bear activity making installation unsafe.

Table 14 Mean Monthly Air Temperature (°C) for the Koala, and Regional Meteorological Stations, 2020/2021

Month	Koala Station	Kugluktuk Airport	Bathurst Inlet Climate Station	Yellowknife Airport
2020				
October	-6.6	-5.2	-3.0	-1.9
November	-19.8	-18.1	-13.9	-15.4
December	-24.2	-23.8	-26.7	-21.1
2021				
January	-25.8	-28.6	-24.2	-21.8
February	-31.3	-31.7	-28.8	-28.5
March	-25.6	-26.9	-24.4	-17.8
April	-16.9	-18.4	-16.9	-8.7
May	-6.4	-6.1	4.3	3.4
June	6.8	7.9	6.7	14.1
July	13.2	11.3	12.3	16.2
August	10.8	9.1	10.6	13.6
September	5.4	3.8	5.7	8.7
Mean[a]	**-10.0**	**-10.6**	**-8.2**	**-4.9**
Normal	**-10.8[b]**	**-10.3[c]**	**-**	**-4.3[c]**

Notes:
Dash (-) indicates not available.
[a] Mean of the October 2020 to September 2021 monthly values.
[b] Data sources: BHP and Dia Met 2000; ECCC 2021a.

Table 15 Monthly Precipitation (mm) for Ekati and Regional Meteorological Stations, 2020/2021

Month	Koala Station (Unadjusted)	Koala Station (Adjusted) [a]	Kugluktuk Airport	Bathurst Inlet Climate Station	Yellowknife Airport
2020					
October	28.9	46.2	18.8	11.3	13.2
November	4.1	6.0	1.1	0	14.3
December	3.3	4.3	5.2	1.4	3.9
2021					
January	2.6	2.9	3.8	6.0	9.1
February	0.9	1.3	1.0	4.8	0.6
March	17.8	34.8	47.3	12.2	9.1
April	5.3	10.0	5.4	3.7	7.6
May	14.2	20.2	0.8	12.0	2.1
June	38.5	43.7	34.6	7.0	31.8
July	39.8	39.8	0	1.9	41.8
August	27.7	27.7	0	9.1	25.6
September	26.1	27.0	2.2	58.4	43.0
12 Month Total or mean	**209.2**	**263.9**	**120.2**	**127.8**	**202.1**
Normal	**345**[c]	**345**[c]	**247.2**[d]	**-**	**288.6**[d]

Notes:
Dashes (-) indicate data not available at time of reporting.
[a] *Adjusted precipitation corrects for wind-induced undercatch. See ERM (2021) for methods.*
[b] *The Koala Station snow depth values are lower than the snow depth of the broader general area due to windswept snow at the station's location.*
[c] *Data sources: BHP and Dia Met 2000; ECCC 2021a.*

Table 16 Snow Depth (cm) for Ekati and Regional Meteorological Stations, 2020/2021

Month	Koala Station (Unadjusted)	Kugluktuk Airport	Bathurst Inlet Climate Station	Yellowknife Airport
2020				
October	4.2	10.9	6.3	24.9
November	4.5	10.1	7.6	19.6
December	4.9	15.2	8.5	16.4
2021				
January	4.4	19.7	6.7	32.4
February	5.0	21.5	6.6	30.0
March	11.0	28.7	9.4	42.2
April	5.2	29.5	9.9	35.3
May	1.2	14.8	3.9	2.3
June	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0
September	0.0	0.0	0.6	0.0
12 Month Total or mean	**3.4**	**12.5**	**5.0**	**16.9**
Normal	**-**	**19.0** [d]	**-**	**13.0** [d]

Notes:
Dash (-) indicates not available.

[a] *Adjusted precipitation corrects for wind-induced undercatch. See ERM (2021) for methods.*
[b] *The Koala Station snow depth values are lower than the snow depth of the broader general area due to windswept snow at the station's location.*
[c] *Data sources: BHP and Dia Met 2000; ECCC 2021a.*

Ambient Air Quality

The Ekati Diamond Mine Air Quality Monitoring Program (AQMP) is comprised of the following components:

- meteorological monitoring
- air contaminant and greenhouse gas (GHG) calculations
- monitoring of total suspended particulate matter (TSP) and particulate matter with aerodynamic diameter less than 2.5 µm ($PM_{2.5}$) as part of the partisol station sampling
- continuous ambient air quality monitoring of sulphur dioxide (SO_2), nitrogen dioxide (NO_2), nitric oxide (NO), and nitrogen oxides (NO_X) as part of the continuous air monitoring (CAM)
- monitoring for dust deposition (dustfall) including total dustfall, acid deposition, and metal deposition
- snow chemistry sampling
- lichen tissue monitoring

Emissions calculations, TSP, and $PM_{2.5}$ monitoring have been conducted yearly since the start of the program in 1998, while snow chemistry and lichen tissue sampling have been conducted every three years. The snow chemistry sampling and the lichen tissue monitoring were completed in 2021. Continuous ambient monitoring has been performed continuously since the beginning of 2008 and is housed within the Continuous Air Monitoring Building (CAMB). The most recent AQMP report was issued in April 2022 and comprises a three-year summary report for the AQMP from 2018-2021 reporting period. A copy of the 2021 three-year AQMP report is provided in Appendix F.

Stationary Emission Sources

Arctic Canadian reports GHG emissions to the Environment and Climate Change Canada (ECCC) Greenhouse Gas Emissions Reporting Program. Reported GHG emissions are based on diesel consumption from the mobile fleet, aviation, power generation, heating, blasting, incineration, and non-motive fuel consumption such as crushers, compressors, and pumps. Arctic Canadian also reports estimated emissions from the sewage treatment plant, the in-vessel composter and used oil consumption. Greenhouse gas emissions for the Ekati Diamond Mine totaled 150,785 tonnes CO_2 equivalent (CO_2 e) in 2021, which is an increase of 68,578 tonnes from what was reported to ECCC for 2020. A breakdown of 2021 emissions as compared to 2020 emissions is provided below in Table 17.

Table 17 2021 Greenhouse Gas Emissions

Emission Source	2021 Emissions (tonnes CO_2 e)	2020 Emissions (tonnes CO_2 e)	% Increase	Reason for Variability
Stationary • Heating • Power • Non-motive • Waste Oil	82,091	59,936	137 %	Increase in fuel demand in 2021 vs. 2020 due to the site emerging from Care and Maintenance to full production starting in February
Industrial • Blasting	925.66	220	421 %	Greatly increased mining activity in 2021 vs. 2020
Transportation • Motive • Helicopter	67,699	22,036	307 %	Increased mining activity due to returning to full production out of Care and Maintenance
Waste • Incinerator biomass **(does not include diesel consumption)** • Composter	41.76	35	119 %	Increased Waste generation due to higher camp occupancy
Wastewater	27.19	12	227 %	Increased camp occupancy, more human Waste generated

4.3.3 Wildlife, Including Caribou and Bears

Wildlife Effects Monitoring Program

The Wildlife Effects Monitoring Program (WEMP) monitors wildlife and documents wildlife effects resulting from mining development and associated activities at the Ekati Diamond Mine. The WEMP also assesses the effectiveness of wildlife mitigation and management efforts. The program focuses on animal species identified as species of greatest concern, termed Valued Ecosystem Components (VEC, e.g., caribou, grizzly bear, wolf, and wolverine).

More information is provided in Appendix G, 2021 WEMP Summary.

Caribou

In 2021, there were incidental observations of 5,203 caribou within the Ekati Diamond Mine study area. Across all observations in calendar year 2021, at least 5,203 animals were counted; however, this count does not indicate that 5,203 different individuals were observed, as many of these observations may have been the same caribou recorded on multiple occasions. The first occurrences of caribou observed during the 2021 reporting period were on March 22nd, 2021 (Appendix L). A group of 200 caribou with unknown sex and age were observed on the west side of Misery Road. The last occurrence of incidental sightings of a caribou in 2021 occurred on November 8th, 2021 with an observation of a group of 7 caribou of unknown sex and age. Observations were made in all seasonal periods. Small groups of caribou with 10 individuals or less were primarily observed in the post-calving and summer periods (82%). Moderately sized groups of caribou (11 to 50) were reported mostly in the winter and spring migration periods (68%). Groups of more than 50 caribou were reported primarily during spring and fall migration periods (69%).

Zone of Influence Monitoring

With the transition to collaborative approaches to regional monitoring of caribou, and concerns over the decline in the Bathurst caribou herd population, regulators, communities, monitoring agencies, and industry partners continue to discuss the potential Zone of Influence (ZOI) for caribou avoidance of mining developments and the factors responsible for caribou population declines. Arctic Canadian has participated or contributed to regional wildlife monitoring initiatives intended for conservation and management, including the GNWT's Barren-ground Caribou Management Strategy (GNWT ENR 2011) and the Bathurst Range Plan Working Group. In addition, Arctic Canadian has provided financial support for the installation of 50 geo fenced collars to provide information on caribou movement specific to the Ekati Diamond Mine. One initiative that is supported, in part, by Arctic Canadian is the Bathurst caribou census surveys used to determine herd composition, cow:calf ratios and population estimates. In November 2019, Arctic Canadian provided in-kind support for caribou surveys conducted by ENR. With the Jay Project continuing to undergo an optimization study, no aerial surveys were conducted at the Ekati Diamond Mine in 2019. Arctic Canadian participated in the GNWT led Diamond Mine Wildlife Monitoring meeting in February 2021.

Arctic Canadian also supports cumulative effects assessment and management initiatives by the GNWT, e.g., in-kind support for caribou population surveys, and through participation in the ZOI Technical Task Group, which is tasked with determining the most effective methods for future monitoring of caribou distribution near mine sites. Additionally, Arctic Canadian has agreed to provide funding ($250,000 of matched funding) for studies to determine the key drivers of the magnitude and spatial extent of the ZOI.

Other initiatives include conducting a pilot study on dust suppressants in 2016 to 2019, with the aim of determining the most effective product for mitigating dust at the Ekati Diamond Mine. Results could apply to other mine sites in the Northwest Territories."

In response to concerns heard during the Jay EA and as directed in Measure 6-2a of the Mackenzie Valley Environmental Impact Review Board Report of Environmental Assessment and Reasons for Decision (MVEIRB 2016) on the Jay Project, Arctic Canadian will provide grant funding towards research to help determine the magnitude and spatial and temporal extents of the key factors limiting the Bathurst herd (i.e., the primary environmental factors that caused the decline of the herd). Arctic Canadian committed to providing $500,000 of funding between 2018 and 2020, and held a workshop in December 2017 in Yellowknife to identify natural factor research priorities. In 2018, Arctic Canadian drafted a research project proposal for this work and reviewed the proposal with IBA Community members during a meeting held on September 12, 2018. Further work was deferred in 2019 while the Jay Project continued to undergo an optimization study. As agreed during Arctic Canadian's caribou-focused workshop for the Point Lake Project, Arctic Canadian will circulate a Request for Proposal for stakeholder review as part of future work on the commitment per Measure 6-2a.

Grizzly Bear

During the 2021 reporting period, there were 170 incidental grizzly bear sightings, totaling 191 grizzly bears on 80 separate days near the Ekati Diamond Mine. The first spring sighting was on May 13th, 2021, and the last grizzly bear sighting prior to winter was recorded on November 19th, 2021. The number of grizzly bear sightings (170) in 2021 is the largest recorded since Arctic Canadian began recording grizzly bear incidental sightings in 2001, and is larger than the average number observed per year (75). It is similar to high numbers recorded in 2016-2019. The number of family groups (16) is lower than the previous years with higher number of observations. The highest family group number was recorded in 2016 with 54 family groups documented. The high number of observations of family groups with two cubs in 2021 is indicative of a healthy grizzly bear population near the Ekati Diamond Mine. The number of incidental observations is not indicative of whether the number of individuals near the mine has remained consistent, as individual bears could have been observed on multiple occasions in previous years. The increase in reports in previous years may be associated with increased awareness and reporting of grizzly bears in the vicinity of the mine site, and with de centralization of mining activity to include new areas that were previously not frequented by mine site personnel. In 2020, fewer staff were on site and fewer areas were frequented by mine personnel and therefore opportunities to observe grizzly bears decreased. Grizzly bear sightings tend to be concentrated around areas of work, personnel, and roads due to an increased probability of bears being seen by personnel when present in these areas.

4.3.4 Traditional Knowledge Projects and Community Outreach

Compared to previous years, minimal TK projects and TK preservation programs occurred throughout 2021. Generally, the programs that Arctic Canadian supports vary year-to-year based on requests from communities and annual reviews. Unfortunately, due to the ongoing COVID-19 pandemic and the company entering *CCAA* protection earlier in 2020, the company was unable to contribute to the same number of TK Projects and Community Outreach programs in 2021. The following is a list of assessments, and the development and implementation of 2021 projects:

- March 2021: *Canadian Championship Dog Derby*. The Canadian Championship Dog Derby is a tradition dating over sixty years, representing the resilience of a sport and trade that shaped the Canadian North. After sixty years of showcasing the skills that dogs acquired on traplines, helping their owners feed and shelter their families, the Derby is now a world-class event celebrating TK, athleticism, and endurance. The Derby challenges dog racers to take on the harsh conditions of the Canadian Arctic in a three-day series of races. Although Arctic Canadian financially supported this event in 2020, the Derby was postponed to and completed in 2021.
- March 2021: *Sable, Lynx, and Pigeon Pit Raptor Surveillance Team*. This program provided the opportunity for local Impact Benefit Agreement (IBA) Community Members to become familiar with the Ekati Diamond Mine environmental monitoring programs. Participants provided surveillance of raptors that attempted to establish nests close to the Misery, Lynx, Pigeon, and Sable Pits.
- March 24-26, 2021*: Closure Objectives Workshop – ICRP V3.1*. The Closure workshop proved to be an effective forum to discuss outstanding issues with the closure objectives as updated from ICRP Version 3.0. Based on feedback from the workshop, Arctic Canadian revised the proposed closure objectives and submitted them to the Board for review on April 13, 2021. Based on the review of revised closure objectives, the Board approved closure objectives as detailed in the July 22, 2021 Reasons for Decision. These approved closure objectives have been included into the ICRP V3.1 Pre-submission Information Package and will be incorporated into the ICRP V3.1 document itself.
- October 7, 2021: *Traditional Knowledge Workshop – Point Lake Project*. TK holders provided important information on the Fisheries Offsetting, Caribou movement, Waste Rock and Overburden management for the Point Lake Project.
- November 12, 2021: *Fisheries Offsetting and Fish-Out Point Lake Project Workshop*. Further to the discussion in October, this workshop was a follow up to specifically discuss the Point Lake Fisheries Offsetting and Fish-Out plans to provide detailed information and obtain TK for the project.
- November 17, 2021: *Fish Consumption Workshop*. Further to the discussion in October, this workshop was a follow up to specifically discuss the Point Lake Fish Consumption plans to provide detailed information and obtain TK for the project.
- November 30 – December 2, 2021: *Closure Criteria Workshop*. The Closure Criteria Workshop proved to be an effective forum to discuss outstanding issues with the closure criteria as presented within the October 26, 2021 ICRP V3.1 Pre-submission Package. Based on input from participants it became clear that there would be value to providing updated closure criteria for review prior to the preparation of ICRP V3.1. On December 13, Arctic Canadian submitted an ICRP V3.1 Extension Request to allow for the submission of Closure Criteria for review on April 15, 2021 and the full submission of ICRP V3.1 to be extended to October 22, 2021.
- December 2021: *Ekati Plus School Partnership Program*. This program allows each IBA Community school to identify areas within their school curriculum that could use additional financial assistance. Some of the schools used funds towards enhancing their educational, extracurricular, and cultural programs by purchasing literature, bookshelves, camping equipment, boats, and snowmobiles for easier access to traditional land use areas.

- December 2021: *Lutsel K'e Dene First Nation (LKDFN) – Cord of Wood Program*. LKDFN took measures to safeguard their members from COVID-19, they encouraged members to live in their cabins or bush camps to limit the spread of COVID-19 in the community. Members were provided cords of wood that used TK to harvest and prepare cords of wood to the community members staying on the land.

4.3.5 Reclamation, Including Re-vegetation Success, Soils Suitability, and the Diversity and Density of Plants

Vegetation Monitoring

In support of vegetation reclamation research, annual vegetation monitoring activities are completed at various sites. Vegetation monitoring activities completed in 2021 are summarized in the Ekati Diamond Mine 2021 Vegetation Annual Report provided in *Appendix C* of the Annual Closure and Reclamation Progress Report (Appendix E of this report) and included the following vegetation reclamation sites:

- Beartooth Topsoil Stockpile
- Koala Topsoil Stockpile
- Fox Topsoil Stockpile
- Pigeon Topsoil Stockpile
- Cell B Topsoil Stockpile
- Misery Topsoil Stockpile
- Old Camp

4.3.6 Esker Disturbances

No eskers were disturbed in 2021.

4.3.7 Vegetation, Including the Loss of Habitat

Habitat loss was calculated from January 2020 to December 2021, as this was not reported in the 2020 WEMP due to no new development occurring as the mine was in Care and Maintenance. The majority of habitat loss from January 2020 to December 2021 resulted from a small expansion of the Sable WRSA in 2021. Total habitat loss in 2020 and 2021 was minimal at 17.7 ha (0.01% of total available habitat in the study area). The amount of direct habitat loss caused by the project footprint from 1997 to 2021 was 3,915.4 ha or 2.5% of the total pre-development habitat in the study area. Some of the habitat loss will be mitigated as reclamation activities will be undertaken following mine closure.

4.3.8 Permafrost

The monitoring of permafrost response to operations at the Ekati Diamond Mine occurred from July 1-4, 2021 as part of the annual geotechnical inspection. The annual geotechnical inspection of the completed water retaining structures on site was conducted, and ten structures were visually assessed: Panda Diversion Dam, Long Lake Outlet Dam, Intermediate Dike B, King Pond Dam, Waste Rock Dam,

Desperation Pond Cofferdams, Bearclaw Diversion Dam, Intermediate Dike C, and Two Rock Dam and Two Rock Filter Dike. Each review consisted of visual observations and collection and review of ground temperature and settlement survey data, where possible. The results of this inspection are presented in Appendix H: 2021 Annual Geotechnical Inspection Executive Summary.

4.4 Summary of Operational Activities during the Reporting Year (Clause 5.1.a.iv)

4.4.1 Koala Watershed

The Koala Watershed contains the majority of the Ekati Diamond Mine infrastructure including the main camp, the process plant, the LLCF, and the airstrip, as well as the Panda, Koala, Koala North, Fox, and Beartooth pits with associated WRSAs and the PDC (an engineered channel constructed to divert water, allowing flow and fish passage between North Panda and Kodiak lakes). The following major activities took place in the Koala Watershed during the 2021 AEMP monitoring period (October 1, 2020 to September 30, 2021):

Mining Activities

- Fox low grade kimberlite was hauled to the process plant to supplement ore feed.

Dewatering and Discharge

- Approximately 9,454,322 m^3 of water was Discharged from the LLCF to Leslie Lake during the 2021 AEMP monitoring year (October 1 to October 25, 2020 and June 18 to September 30, 2021). Discharge continued into November 2021 (the final day of discharge was November 5, 2021); that data will be presented in the 2022 AEMP. Results of the SNP pre-approval and Discharge samples indicate that variable concentrations were within the EQC in Water Licence W2020L2-0004 for all samples.
- Freshwater sourced from Grizzly Lake for use at main camp continued. The total volume of water drawn from Grizzly Lake was approximately 57,558 m^3.
- Approximately 521,727 m^3 of water was pumped from Bearclaw Lake to North Panda Lake from June 25 to September 17, 2021.

4.4.2 King-Cujo Watershed

The King-Cujo Watershed contains the KPSF, as well as a portion of the Misery Camp and Misery WRSA. The following major activities took place in the King-Cujo Watershed during the 2021 AEMP monitoring period:

Mining Activities

- Misery Underground Production mining continued.
- Kimberlite ore was stockpiled at the Misery Ore Storage.
- Stockpiled kimberlite ore from the Misery Ore Storage was transported to the process plant.
- Misery Waste Rock was transported to the Misery WRSA.

Dewatering and Discharge

- Misery Pit water was pumped to the KPSF and Lynx Pit.
- Approximately 76,198 m^3 of Minewater from Misery Underground was pumped to KPSF.
- The permanent dewatering system (mud wizard) became operational in early 2020 in Misery Underground. The mud wizard removes suspended solids from the mine water, improving water quality before pumping to KPSF. In 2021, operation of the mud wizard continued, with dedicated operators responsible for maintaining the system to ensure it ran efficiently.
- Approximately 237,257 m^3 of water was Discharged from the KPSF to Cujo Lake from July 22 to August 10, 2021. Results of the SNP pre-approval and Discharge samples indicate that variable concentrations were within the EQC in Water Licence W2020L2-0004 for all samples.
- Approximately 370,181 m^3 of water was pumped from KPSF to Lynx Pit.

4.4.3 Carrie Pond Watershed

The Carrie Pond Watershed contains a portion of the Misery Pit, the associated WRSA, and Desperation Sump. In 2014, as part of expansion of the Misery WRSA, the majority of Desperation Pond was encapsulated within the WRSA. The small area that remains is currently being utilized as a sump to collect Seepage and runoff from the Misery WRSA.

The Carrie Pond Watershed is no longer monitored as part of the AEMP because Discharge from Desperation Sump no longer occurs. However, if Discharge from Desperation Sump to the Carrie Pond Watershed was to occur in future years, AEMP monitoring at Mossing Outflow would resume in accordance with monitoring protocols for other AEMP streams.

Dewatering and Discharge

- Approximately 61,891 m^3 of water was pumped from Desperation Sump to Lynx Pit to manage water levels and help raise pit water levels for upcoming alternative mining method trials.
- No pumping from Desperation Sump to the Receiving Environment occurred during the 2021 AEMP monitoring period, therefore there was no need to include Carrie Pond Watershed sites in the AEMP as approved by the Board during the 2019 AEMP Re-evaluation.

4.4.4 Pigeon-Fay and Upper Exeter Watershed

The Pigeon-Fay and Upper Exeter Watershed contains Pigeon Pit and the PSD (an engineered channel constructed to divert water, allowing flow and fish passage between Upper Pigeon Pond A and Fay Bay). The following major activities took place in the Pigeon-Fay and Upper Exeter Watershed during the 2021 AEMP monitoring period:

Mining Activities

- Production mining continued at Pigeon Pit.
- Kimberlite ore from Pigeon was transported to the process plant.
- Pigeon Waste Rock was transported to the Pigeon WRSA.

Dewatering and Discharge

- Approximately 20 m^3 of Minewater from Pigeon Pit (sump) was transported to the LLCF, while 33,920 m^3 was transported from the Pigeon Pit Sump to Beartooth Pit.

4.4.5 Horseshoe Watershed and Lower Exeter Lake

The Horseshoe Watershed contains the Sable Pit, Sable South WRSA, Sable West WRSA, and Two Rock Sedimentation Pond (TRSP). The following major activities took place in the Horseshoe Watershed during the 2021 AEMP monitoring period:

Mining Activities

- Production mining continued at the Sable Pit.
- Kimberlite ore from Sable Pit was transported to the process plant.
- Sable Waste Rock was transported to the Sable South WRSA.

Dewatering and Discharge

- Approximately 42,638 m^3 of sump water from Sable Pit was pumped to the upstream portion of TRSP.
- No water was Discharged from the TRSP to the Receiving Environment during the 2021 AEMP monitoring period (October to September). Discharge was initiated in October; that data will be presented in the 2022 AEMP.

4.4.6 Point Lake Watershed

The Point Lake Watershed contains the site of the proposed Point Lake Development.

Activities

- Partial construction of the Point Lake access road and a utility pad were completed in Q4 of the reporting period.

4.4.7 Waste Management

Version 8.0 of the Waste Management Plan was submitted on May 31, 2021 as part of the Point Lake Water Licence Amendment application. The Plan was approved as part of the Reasons for Decision for the Point Lake Water Licence Amendment. The Waste Management Plan is the overarching Plan that includes the Landfill Management Plan, Hazardous Wastes Management Plan, Compost Management Plan, Hydrocarbon Impacted Materials Management Plan, and Incinerator Management Plan.

The in-vessel composter continues to be an effective means of organic Waste management at the Ekati mine. Organic Waste such as food scraps, paper, and cardboard are broken down in an agricultural mixer

and conveyed into the in-vessel composter in batches. The composter completes one full rotation at one revolution per minute at set intervals throughout the day to aerate the organic material and provide optimal conditions for microorganisms.

The incinerators continued to operate as per the approved Incinerator Management Plan in 2021. The incinerators remain on a preventative maintenance plan with the manufacturer to inspect the condition of the chamber refractory, check system settings, and maintain proper fuel-to-air ratios in the burners. The second stack emissions test for the Ekati Diamond Mine incinerators was conducted in late 2016 and the results showed continued excellent performance of the units. Both units had emission concentrations well below Canada-wide standards for mercury and dioxins and furans.

The Waste Management Building continues to operate as a Waste transfer facility, collecting and processing hazardous Waste such as oily rags, aerosol cans, waste grease, waste oil, fuel filters, and other miscellaneous Waste. Hazardous waste transferred off site is sent to KBL Environmental Waste transfer facility in Yellowknife, NT, where it is combined with Waste from other facilities and economies of scale allow for further recycling.

Landfill inspections are conducted daily by the Waste Management technicians, and results of the inspections are reported to the Team Leader - Warehouse. The Environment Department conducts three landfill inspections and one Waste bin survey per week and reports results to the Team Leader – Environment. Inspections are completed for compliance with the Waste Management Plan. The inspection outcomes are twofold: to measure the success of the communication to all Ekati mine staff of the expectations of Waste management, and to address any issues of non-compliance in a timely manner.

4.5 Actions Taken or Planned to Address Impacts or Compliance Problems Which Are Set Out in the Annual Report (Clause 5.1.a.v)

Arctic Canadian utilizes an adaptive management approach to identify potential future issues (through rigorous monitoring programs) and to develop action plans to address these potential future issues before they become impacts and/or compliance concerns. The following discussion is designed to provide an update on current adaptive management programs and highlight new initiatives.

4.5.1 Action Level Exceedances

Action Level exceedances were identified for two AEMP water quality variables in 2021: chloride (low Action Level in Leslie and Moose Lakes under-ice), and potassium (medium Action Level in Leslie Lake and low Action Level in Moose Lake, both under-ice). Low Action Levels were also exceeded in 2021 for plankton variables in Kodiak, Leslie, Moose, and Cujo lakes. Lastly, one low Action Level exceedance occurred for small-bodied fish tissue: selenium in Leslie and Moose lakes.

Response Plans were updated or developed in 2021 in response to those Action Level exceedances. The plans include why the exceedances were observed, and any actions Arctic Canadian can take to address them. For example, in response to low Action Level exceedances, continued monitoring is proposed. For medium Action Level exceedances (e.g., total potassium in Leslie Lake) Arctic Canadian has initiated an increased frequency of under-ice water sample collection.

4.5.2 AEMP Sampling

All monitoring programs planned for the 2021 AEMP (both under-ice and open-water seasons) were completed successfully with the exception of snow surveys and some of the manual flow measurements. The Board was notified of the noncompliance's on August 17, 2021 and November 18, 2021, respectively. The appropriate balance to environmental monitoring, weather and ensuring the health and safety of field staff are considered when managing all programs at Ekati.

4.6 Summary of Operational Activities for the Next Reporting Year (Clause 5.1.a.vi)

Below is a summary of operational activities, as well as Waste and ore movement forecasts in wmt, for 2022.

MUG Development

The following activities are scheduled to take place in 2022:

- Currently in production on 2100 and 2075 level in mine (2nd and 3rd production levels)
- Currently in drawpoint ore development on 2050 level (4th production level)
- Decline waste development well on the way to 2025 level (5th level in mine)
- Production targets at 3000+ tonnes per day

Waste Movement

- Pigeon Waste: 211,244 wmt
- Sable Waste: 26,344,093 wmt
- MUG Waste: 95,006 wmt

Ore Movement

- Pigeon ore: 976,224 wmt
- Sable ore: 2,475,337 wmt
- MUG ore: 1,039,908 wmt

4.7 Lists and Abstracts of All Environmental Plans and Programs (Clause 5.1.a.vii)

Figure 7 provides all environmental plans and programs ongoing at the Ekati Diamond Mine. Arctic Canadian implements several environmental plans and programs at the Ekati mine site, all of which are interrelated (Figure 7). The results and components of environmental programs are driven directly and/or indirectly by the plans in place each with the overarching goal to protect land, air, water, and wildlife.

Below is a list of 2021 environmental plans and programs with brief abstracts. Summaries of the plans can be found in the related appendices. Further detail on the environmental plans and programs can be found in the approved plans and/or published technical reports.

4.7.1 Surveillance Network Program (SNP) W2020L2-0004 (formerly W2012L2-0001)

The SNP required in the Water Licence outlines a series of monitoring stations within the Ekati Diamond Mine claim area. The SNP prescribes a sampling frequency for each station with a specific set of water quality variables that are to be monitored. In addition, it requires monitoring and measurement of water pumping and Discharge volumes, fresh and recycled water use, sewage effluents, waste rock and ore production, and meteorological data. This information can be found in Appendix A of this report as per Schedule 1, Part B, Condition 1(j) of W2020L2-0004C.

4.7.2 2021 Waste Rock and Waste Rock Storage Area Seepage Survey Report

As a condition of the Water Licence, it is required to monitor WRSA seepage quality and characterize Waste Rock at the Ekati Diamond Mine. Findings of these monitoring programs are reported annually in the Waste Rock and WRSA Seepage Survey reports (see Appendix B).

4.7.3 2021 Aquatic Effects Monitoring Program

The AEMP is a requirement specified in the Water Licence. The program is designed to detect changes in the aquatic ecosystem that may be caused by mine activities. The 2021 program included monitoring of the following physical, chemical, and biological components of the aquatic ecosystem: physical limnology, lake and stream water quality, phytoplankton, zooplankton, lake benthos, sediment quality and small-bodied fish. Large-bodied fish sampling did not occur in 2021 as it is scheduled to be completed every six years and the last sampling event was in 2018. Meteorological data are also reported in the AEMP because of their relationship to site hydrology. The 2021 AEMP report was submitted to the Board as per the requirements of Part J, Item 7 in the Water Licence on March 31, 2022. The AEMP Executive Summary of the 2021 AEMP can be found in Appendix C of this report.

4.7.4 2021 Wildlife Effects Monitoring Program

The WEMP (see Appendix G for a summary) monitors wildlife and documents wildlife effects resulting from mining development and associated activities at the Ekati Diamond Mine. The WEMP also assesses the effectiveness of wildlife mitigation and management efforts. The program focuses on wildlife species identified as species of greatest interest, termed VECs. This was submitted March 31, 2021 and distributed to regulators, IEMA, and communities.

4.7.5 Engagement Plan

The Ekati Mine Engagement Plan guides the communication and outreach activities Arctic Canadian undertakes with affected parties. The Engagement Plan addresses how affected parties can develop an understanding of proposed projects and assists Arctic Canadian in developing an understanding of the social, cultural, and environmental conditions in the area. Arctic Canadian has developed and implemented new dispute resolution and community question follow-up procedures for the latest version of this Engagement Plan. Version 4.1 of the Ekati Mine Engagement Plan was submitted to the Board on July 27, 2018 and approved on August 27, 2018.

4.7.6 Spill Contingency Plan

This Spill Contingency Plan was developed to establish and document practices for responsible management of controlled substance spills at the Ekati Diamond Mine. The principle guiding its development and implementation has been that an effective and high-quality Spill Contingency Plan must provide the following:

- A clear chain of command for all spill related emergency activities
- Accountability for the performance of the spill response
- Well-defined expectations regarding spill response and subsequent clean-up programs
- Well-defined task and operational hazards/risk
- Comprehensive hazard prevention and control methods
- Reporting and record keeping requirements to track program progress

This Spill Contingency Plan has been developed with the Ekati mine and area-specific hazard/risk analysis in mind. It outlines the necessary resources, personnel, logistics, and initial actions to facilitate a prompt, coordinated, and rational approach to emergency incidents. This Spill Contingency Plan also contains sufficient detail to enable those who are involved to respond effectively. Each person within the facility must know their role as well as the roles of those with whom they will interact.

See section 3.2 (r) of this report for a summary of recent revisions.

4.7.7 Interim Closure and Reclamation Plan

The ICRP describes the proposed reclamation activities for the Ekati Diamond Mine based on the Life of Mine Plan at the time of submission. The Ekati Diamond Mine is required under the Water Licence and the Environmental Agreement to have a closure plan in place during active mining operations, and to update that plan on a regular basis and/or when there is a significant change to the Life of Mine Plan. A final closure plan will be prepared and submitted to the Board at least two years before the end of active mining.

The ICRP is developed with input from IBA communities and regulatory agencies and incorporates specific reclamation activities and objectives detailed in conformance documents that include Water Licences, the Environmental Agreement, Land Use Permits, Land Leases, and Fisheries Agreements.

Reclamation of the mine site is guided by the Reclamation Goal to return the Ekati Diamond Mine to viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment. Closure objectives are used to guide reclamation activities through closure criteria and performance-based standards that measure how successfully closure activities meet closure objectives.

The ICRP includes Reclamation Research Plans that address key uncertainties related to mine closure, such as water quality, wildlife safety, and sustainability of vegetation cover. A closure monitoring plan is also in place as a method of observing and tracking the performance of reclamation work against closure criteria. Monitoring programs and schedules are tailored to individual criteria, with identified parameters,

methods, evaluation, and response thresholds. Monitoring results indicate when reclamation work has been successful, or if there is a need for further reclamation work.

On February 19, 2020, the Board approved ICRP 3.0 with additional direction. The Board identified the need for additional information, revisions, and further engagement. As a result, the Board did not approve select aspects of Version 3.0, including the proposed closure objectives. A March 24-26, 2021 Closure Objectives workshop proved to be an effective forum to discuss outstanding issues with the closure objectives as updated from ICRP Version 3.0. Based on feedback from the workshop, Arctic Canadian revised the proposed closure objectives and submitted them to the Board for review on April 13, 2021. Based on the review of revised closure objectives, the Board approved closure objectives as detailed in the July 22, 2021 Reasons for Decision 2. These approved closure objectives have been included into the ICRP V3.1 Pre-submission Information Package and will be incorporated into the ICRP V3.1 document itself for a submission on October 31, 2022.

4.7.8 Air Quality Monitoring Program

The AQMP is a requirement under Section VII of the Environmental Agreement. In accordance with the agreement and commitments made in the 1995 Environmental Impact Statement, an AQMP was initiated in 1998 to support the management of air quality throughout the life of the Ekati Diamond Mine's operations.

Program results of the AQMP are reported every three years in concert with the three-year snow and lichen sampling programs. Results for 2018-2021 were reported in the 2021 AQMP report (Appendix F) distributed in April 2021.

The AQMP consists of six components:

- Meteorological monitoring
- Air emissions and GHG calculations
- Ambient air quality monitoring:
    - Partisol TSP monitoring
    - Continuous air monitoring
- Dustfall monitoring
- Snow chemistry monitoring
- Lichen tissue monitoring

The executive summary of the 2021 AQMP can be found in Appendix F of this report.

4.7.9 Waste Management Plan

The objective of the Waste Management Plan is to maintain a safe and healthy workplace at the Ekati Diamond Mine such that potential adverse effects to the environment and wildlife are minimized through sound Waste management practices. The Waste Management Plan provides clear direction to Arctic Canadian staff, contractors and stakeholders on how Waste from the Ekati Diamond Mine is managed through each of the Waste streams to final disposal.

The Waste Management Plan documents the approach to Waste and outlines strategies for dealing with the various Waste streams. As with any other management document, periodic reviews of the plan are necessary. The purposes of these reviews are two-fold:

- To confirm continuing compliance
- To allow the plan to be updated in the light of operational or technical changes

The plan upholds the “Four Rs” of Waste management, namely: reduce, reuse, recycle, and recover. The Waste Management Plan includes a series of supporting plans which include the following:

- The Incinerator Management Plan
- The Compost Management Plan
- The Solid Waste Landfill Management Plan
- The Hazardous Waste Management Plan

See section 3.2 (r) of this report for a summary of recent revisions.

4.7.10 Hydrocarbon-Impacted Materials Management Plan

The management of hydrocarbon-impacted materials at the Ekati mine, in accordance with our legal requirements as stated in the Water Licence, is detailed in the Hydrocarbon-Impacted Materials Management Plan. Activities carried out under this plan are reported to the Board in the Annual Report. Materials generated through operation of the mine are identified, and instructions regarding the management of each hydrocarbon-impacted Waste stream are provided.
See section 3.2 (r) of this report for a summary of recent revisions.

4.7.11 Wastewater and Processed Kimberlite Management Plan

The maintenance of a current WPKMP for the Ekati Diamond Mine is required by the Water Licence. The WPKMP incorporates the placement of PK within the LLCF over the Life of Mine, an update of operations (since 2006), and the site-wide Wastewater management strategy. The WPKMP is a guidance document that allows the Ekati Diamond Mine to adapt to changes in the Life of Mine Plan, processing performance in the plant, and the characterization of kimberlite being mined. The Ekati Diamond Mine is committed to meeting the Water Licence Discharge criteria and cause no significant adverse environmental effects in the Receiving Environment downstream.
See section 3.2 (r) of this report for a summary of recent revisions.

4.7.12 Waste Rock and Ore Storage Management Plan

The maintenance of a current WROMP for the Ekati Diamond Mine is required by the Water Licence. Requirements of the Plan are outlined in Schedule 6, Condition 2 of the Water Licence. The Plan includes acid rock drainage characterization and the overall waste rock and ore storage management strategy for the Ekati Diamond Mine. The WROMP is frequently updated to reflect the current Mine Plan and the characterization of Waste Rock and kimberlite being mined.
See section 3.2 (r) of this report for a summary of recent revisions.

Figure 7 Environmental Protection through Environmental Management Programs and Plans