INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

A public watchdog for environmental management at EKATI DIAMOND MINE

ANNUAL REPORT

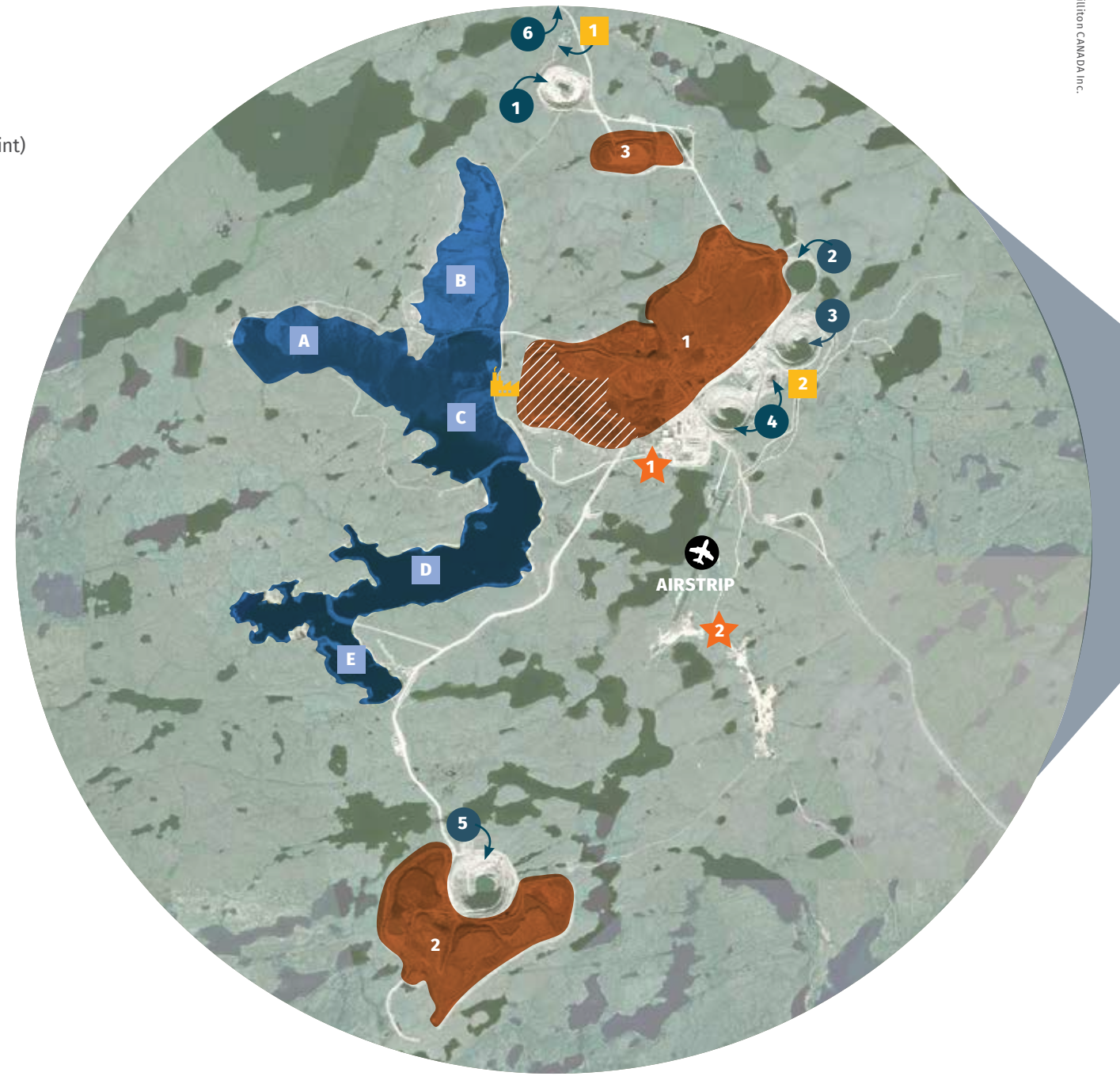
2019-2020

TECHNICAL LANGUAGE

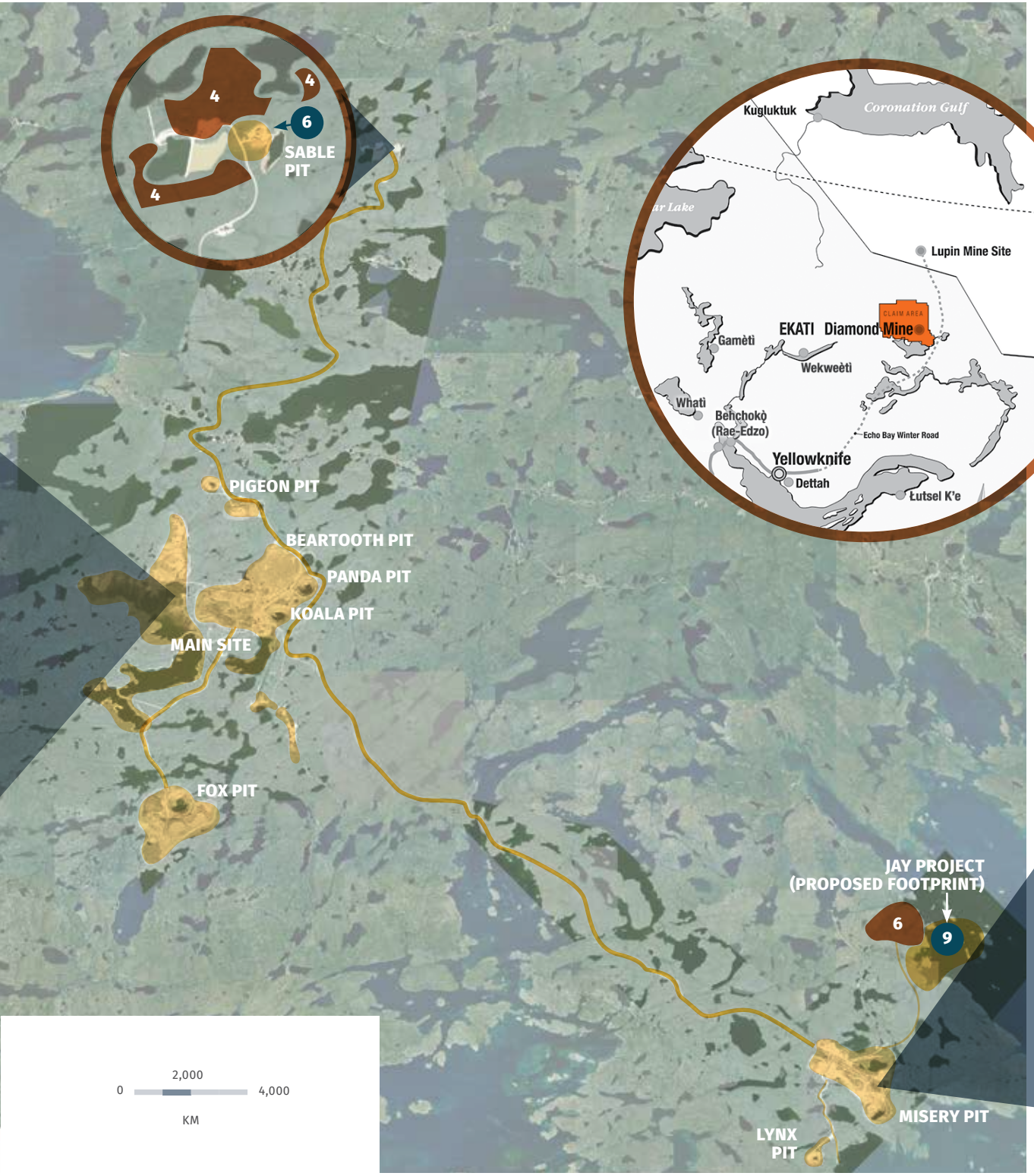
EKATI DIAMOND MINE

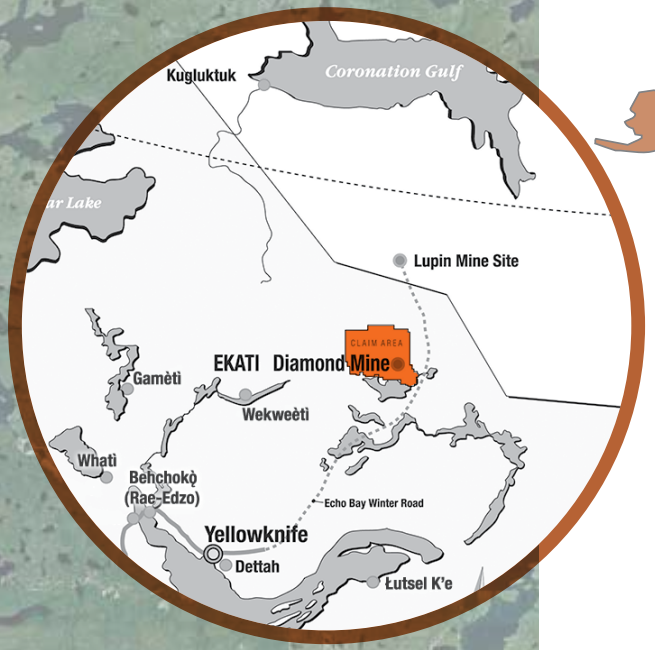
LEGEND

- 1 Waste Rock Pile (Panda-Koala-Beartooth WRSA)
- 2 Waste Rock Pile (Fox WRSA)
- 3 Waste Rock Pile (Pigeon WRSA)
- 4 Waste Rock Pile (Sable WRSA - full extent of footprint)
- 5 Waste Rock Pile (Misery and Lynx WRSA)
- 6 Waste Rock Pile (proposed Jay WRSA)
- Coarse Kimberlite rejects storage area
- Proposed Footprint
- 1 Pigeon pit
- 2 Beartooth pit
- 3 Panda pit
- 4 Koala and Koala North pit
- 5 Fox pit
- 6 Sable pit
- 7 Misery pit
- 8 LYNX pit
- 9 Jay Project (proposed)
- Long Lake Containment Facility (Cells A–E)
- Incinerators
- 1 Pigeon Stream Diversion
- 2 Panda Diversion Channel
- 1 Main SITE
- 2 OLD CAMP
- 3 Misery Camp
- Airstrip



Satellite image 2010/BHP Billiton CANADA Inc.

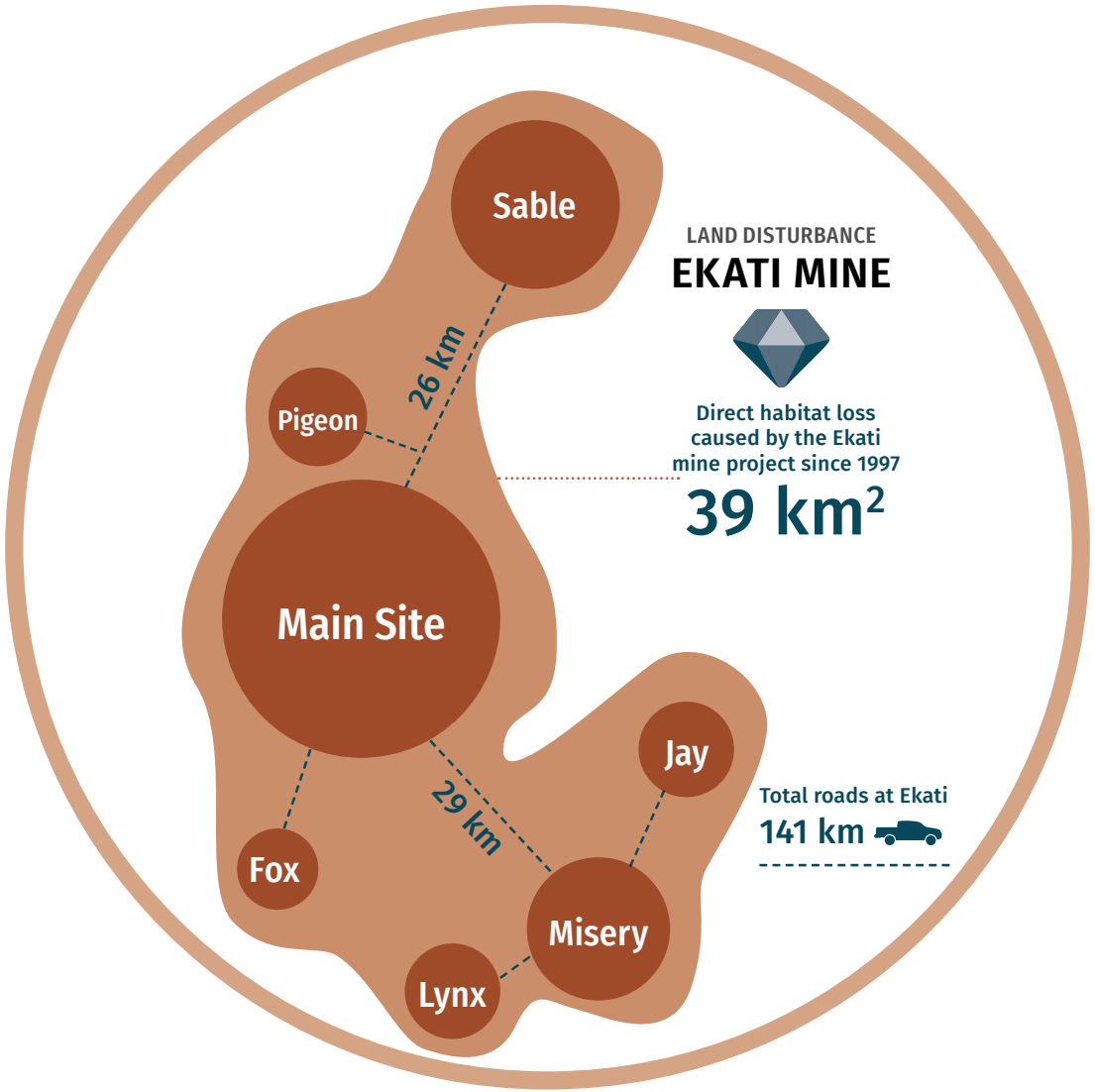




NORTHWEST TERRITORIES

NUNAVUT

LAND DISTURBANCE AND ROAD LENGTH



LAND DISTURBANCE

EKATI MINE

Direct habitat loss caused by the Ekati mine project since 1997

39 km²

Total roads at Ekati

141 km

LAND DISTURBANCE

YELLOWKNIFE

City of Yellowknife estimated footprint (area shaded brown)

30 km²

LAND DISTURBANCE

BEHCHOKǪ̀

Behchokǫ̀ estimated footprint (area shaded brown)

2.4 km²

LAND DISTURBANCE

KUGLUKTUK

Town of Kugluktuk estimated footprint (area shaded brown)

2.5 km²

	Approx Land Disturbance	How much bigger is the Ekati mine?
YELLOWKNIFE	30 km²	x 1.3
KUGLUKTUK	2.5 km²	x 15
BEHCHOKǪ̀	2.4 km²	x 16
CAMBRIDGE BAY	1.6 km²	x 24
ŁUTSELK'E	1.3 km²	x 29
WHATI	0.8 km²	x 47
GAMETI	0.8 km²	x 47
WEKWEETI	0.5 km²	x 76

TABLE OF CONTENTS

MESSAGE FROM THE CHAIR

I am pleased to present the 2019-20 annual report of the Independent Environmental Monitoring Agency (Agency). The Agency is the public watchdog for the Ekati Diamond Mine and our activities continue to increase with modifications and expansions to the project. The Agency's Annual Report summarizes our activities over the past year and offers recommendations for Dominion Diamond Mines ULC (Dominion) and regulators on how they may improve their environmental management.

This past year the Agency continued to review and provide recommendations on Dominion's environmental management and monitoring plans and activities to ensure that there is good environmental performance at the mine site. A greater focus of our monitoring role in the past few years has been on closure planning and on developing more effective communications to inform communities of key monitoring issues at the mine site, and to bring those comments and concerns we hear from our Society Members to the company and regulators. During our community visits in early 2019 we heard from communities that they wished to spend more time together talking about closure. In response to these comments and concerns the Agency facilitated a wildlife and mine closure workshop in February 2020 focusing on how best to close the roads and waste rock piles in relation to wildlife movement and usage. The workshop brought together elders, youth and participants from each of our Aboriginal Society Members. The focus of the workshop was to continue the conversation on closure and allow for discussions that include the incorporation of Traditional Knowledge, Inuit Qaujimaningit and community knowledge into mine closure and reclamation planning.

The Agency considered this a valuable exercise and will forward the workshop findings to all involved in the regulatory process and our Society Members. The discussions and recommendations heard from this workshop will be considered by the Agency when submitting future comments on the closure plans. The Agency does not consider this the end of the conversation. We acknowledge requests from the workshop participants to continue future discussions on closure and reclamation in a format like this workshop at the community and regional levels.

On March 19, 2020 Dominion suspended their operations at the Ekati Diamond Mine in response to Covid-19 and went into care and maintenance. A care and maintenance crew stayed on to maintain the mine and ensure monitoring requirements continue during the interim period. On April 21, 2020 Dominion filed for insolvency protection under the Companies' Creditors Arrangement Act. The Agency continues to communicate with Dominion on a weekly basis for any updates. At the time of writing, Dominion has indicated that they have plans to resume mining operations at Ekati and safely call back workers as the spread of COVID-19 subsides and diamond markets reopen. It should be noted that regulatory and compliance obligations are not dependent on whether the mine is in operation or under care and maintenance. The only exception would be where the regulator provides an exemption from a requirement, recognizing that there are certain unforeseen circumstances and important health and safety considerations that may make usual compliance monitoring difficult.

On behalf of all Agency directors I would encourage you to contact the Agency at any time with your comments and concerns, or if you wish for us to visit your community.

Marsi, mahsi, quiannamik, quana, merci, thank you.

Jaida Ohokannoak
www.monitoringagency.net

RECOMMENDATIONS

HIGHLIGHTS

- Each year the Agency provides recommendations to Dominion Diamond Mines ULC, the Wek'èezhìi Land and Water Board, and applicable federal and territorial government departments based on the review of information and comments from the past 12 months.

- This section includes Agency recommendations from the past year and the responses we received to those recommendations.

Coarse kimberlite rejects pile at Ekati mine.

RECOMMENDATION TO DOMINION

Amalgamation of AQMP with AQEMMP

RECOMMENDATION

1

The Agency recommends that Dominion finalize the amalgamation of the current Air Quality Monitoring Plan with the Air Quality and Emissions Monitoring and Management Plan to improve the monitoring of air quality across the entire mine site.

Photo courtesy of Dominion Diamond Mines ULC.

RESPONSE:

Amalgamation of the Air Quality and Emissions Monitoring and Management Plan (AQEMMP) with the Ekati Air Quality Monitoring Plan (AQMP) is ongoing. Dominion began work on an optimization study for the Jay Project in 2018. Further construction of Jay Project components has been on hold since this time. The Jay Project itself is not yet fully underway. Therefore, the AQEMMP program for the Jay Project has not been started. However, integration of some of the monitoring described in the Jay AQEMMP has been initiated as described in the AQMP.

RECOMMENDATION TO DOMINION

Aquatic Response Framework Benchmarks

RECOMMENDATION

2

Selenium concentrations in the Koala watershed fish tissues have risen, likely due to increasing levels of selenium in sediments in lakes directly downstream of the Long Lake Containment Facility (Leslie Lake and Moose Lake). Given this important AEMP finding, the Agency recommends:

a) Dominion investigate the source(s) (e.g., LLCF discharge) and pathway(s) (e.g., food chain transfer; in-lake processes that increase selenium bioavailability) that are driving increases of selenium in fish tissues; and,

b) Once the sources and pathways have been identified, Dominion should use this information to determine mitigation to reduce selenium concentrations in fish tissues and develop early warning triggers to help prevent effects on fish in lakes downstream of impacted lakes and other watersheds. This work should be incorporated into the Fish Response Plan with triggers to be incorporated into the Aquatic Response Framework.

Response

Dominion understands that selenium concentrations are a concern for many reviewers, and we would like to reassure reviewers that we have been working on this through our current programs. In accordance with Water Licence W2012L2-0001, Schedule 8, Part J, Item 4(c), Dominion has included a description of likely causes of the Action Level exceedance and potential mitigation options, if appropriate, in the corresponding Response Plan. This information can be found in Section 2.3 of the Fish Response Plan, Version 2.0, that is in review with the Wek'èezhìi Land and Water Board (the Board). Dominion will be waiting for the Board's reasons for decision before taking any next actions. Additionally, another set of important information about selenium trends in fish tissue will be collected during the 2021 small-bodied fish sampling program. Dominion believes that this additional data combined with the Fish Response Plan will provide further clarity on the next steps for investigation. The next steps may include, if required, the review of Section 2.3 of the Fish Response Plan and updating the mitigation measures as appropriate.

RECOMMENDATION TO GNWT

Enforceable Air Quality Regulations

RECOMMENDATION

3

There has been lack of progress towards developing enforceable air quality regulations specific to the Northwest Territories. The Agency recommends that the Government of the Northwest Territories make greater efforts to develop enforceable Air Quality regulations.

Response

Environment and Natural Resources (ENR) has committed to enacting air regulations. Currently the GNWT is focusing on a review of the Mackenzie Valley Resource Management Act (MVRMA) post-devolution to accommodate the capacity of the GNWT and partner Indigenous governments and organizations. When this is complete, ENR will shift focus to developing air regulations.

RECOMMENDATION TO GNWT

Standardizing Securities Process

RECOMMENDATION

4

In our 2016 Annual Report the Agency recommended that "the Government of the Northwest Territories, in cooperation with the Wek'ezhii Land and Water Board, develop written policies, guidelines, or directives to standardize the process for determining whether, and what portion of security should be held back for future liabilities upon completion of reclamation activities." In response the GNWT stated that they are aware of the concern and are working towards developing its own policies and guidelines and that they would keep the Agency appraised of any progress. It is now 2020 and there does not appear to be any progress made in this regard. The Agency recommends that the GNWT work with the WLWB on this important topic and provide an update on any progress made since 2016.

Response

Since 2016, the Land and Water Boards, GNWT, and others have worked through requests from diamond mine proponents regarding hold backs against potential future liabilities. These proceedings have provided valuable practical experience in identifying the key questions and issues. As of August 2020, the GNWT and the Wek'eezhii Land and Water Board have agreed to commit resources to jointly develop a standardized process for hold back requests. A work plan is currently under development; the GNWT is available to answer questions from the Agency as needed.

CURRENT CONDITIONS AND EXPLORATION

HIGHLIGHTS

- Drilling continued on various exploration targets on the main Ekati claim block, with a focus on the Point Lake area.

- In late 2019 Dominion applied for Land Use Permits (LUPs) to extend and expand current drill programs at Glowworm Lake and Lac de Gras/Harry Winston Project for another 5 years.

Jay Road, Photo Courtesy of Dominion Diamond Mines ULC.

MINE UPDATE

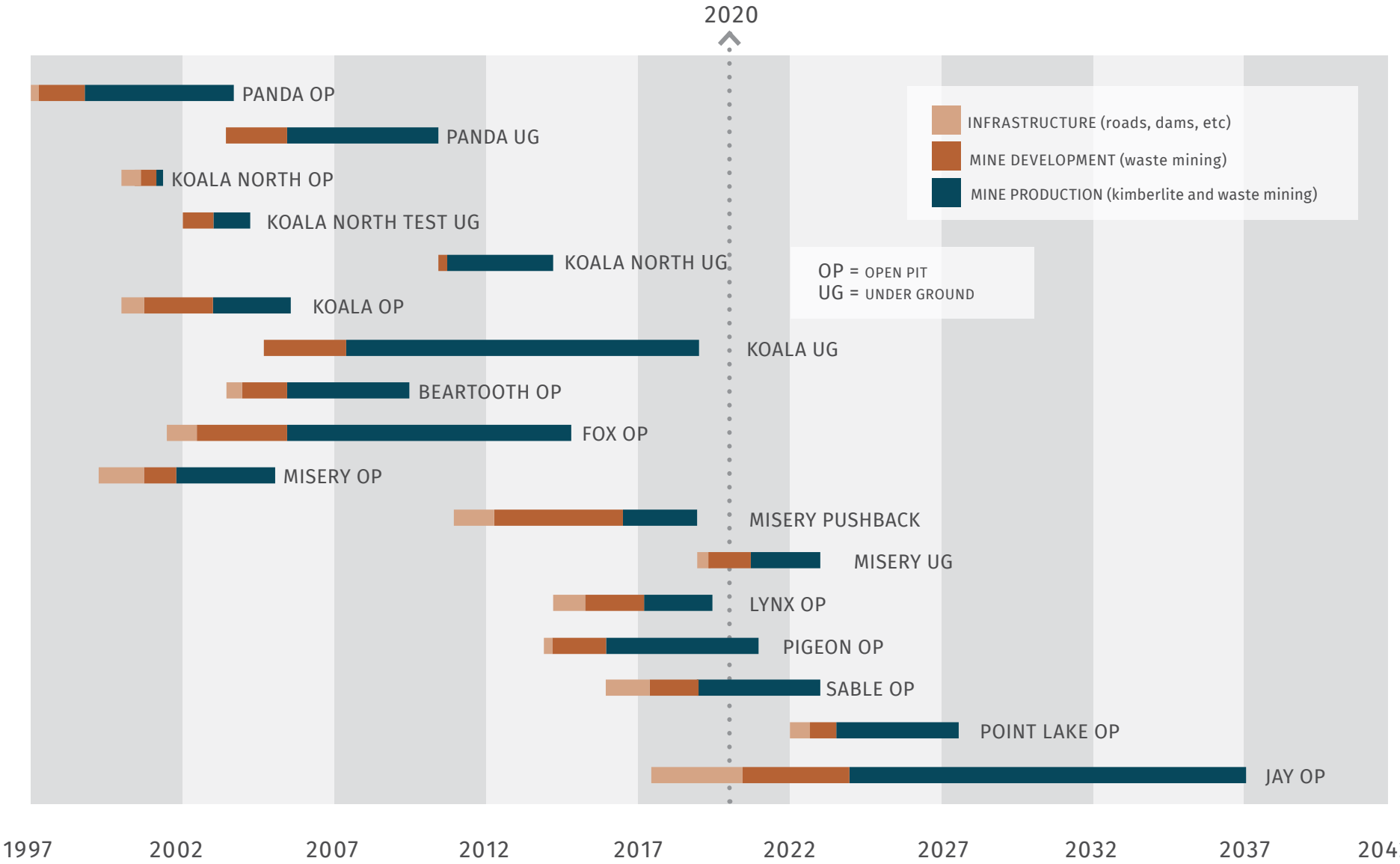


Figure 1: The Ekati Diamond Mine: Life of Mine Plan

EXPLORATION SUMMARY

On the main Ekati lease, 22 large diameter reverse circulation (RC) drill bulk samples and six smaller diameter diamond drill (DD) holes were drilled in late winter 2019 between Misery pit and the Jay pipe to explore the Point Lake project. Seven more DD holes were drilled to test geophysical anomalies associated with Point Lake in summer 2019, four exploration DD holes in May, and six in August-September. Dominion advised that they plan to apply to amend the Water Licence and LUP to include mining of three pipes in a single pit at Point Lake. The Point Lake development is intended to extend mining operations until mining of Jay pit begins (approved in 2018).

Elsewhere on the main Ekati lease, 60 helicopter-based portable RC drill holes were drilled in summer and fall of 2019. This included 40 holes in two large clusters north of the Ekati main camp near Sable road and north of Sable pit, two subgroups of 15 and 20 holes about 10 km north of Sable pit and between Ekati camp and Ursula Lake, and several smaller clusters near Fox pit and west and northwest of Misery pit.

Lac de Gras (Harry Winston) Project

An application to replace the existing 2013-20 LUP was approved by the Mackenzie Valley Land & Water Board for 5 years on February 25, 2020. Permitted exploration activities include: diamond drilling up to 250 holes each year, geotech drilling for country rock characterization, large diameter drilling and trenching for up to 1,200 tonnes annually of bulk sample materials, and small diameter RC drilling for glacial stratigraphy. Other associated activities include: major increases in the storage of diesel fuel, gasoline, aviation fuel, propane, and lubricants, significant changes in the numbers and size of equipment, seasonal access roads to the area from Tibbitt/Contwoyto winter road, and a camp. Four new claims were added to the permitted area (west side of MacKay Lake, southeast corner of the claims block).

Glowworm Lake Project

An application to replace an existing 2017-22 LUP with a new 5-year lease on a large claim block about 70 km east of the Ekati mine was approved by the MVLWB on February 25, 2019. Continuing and new activities are similar to those summarized above for the Lac de Gras project.

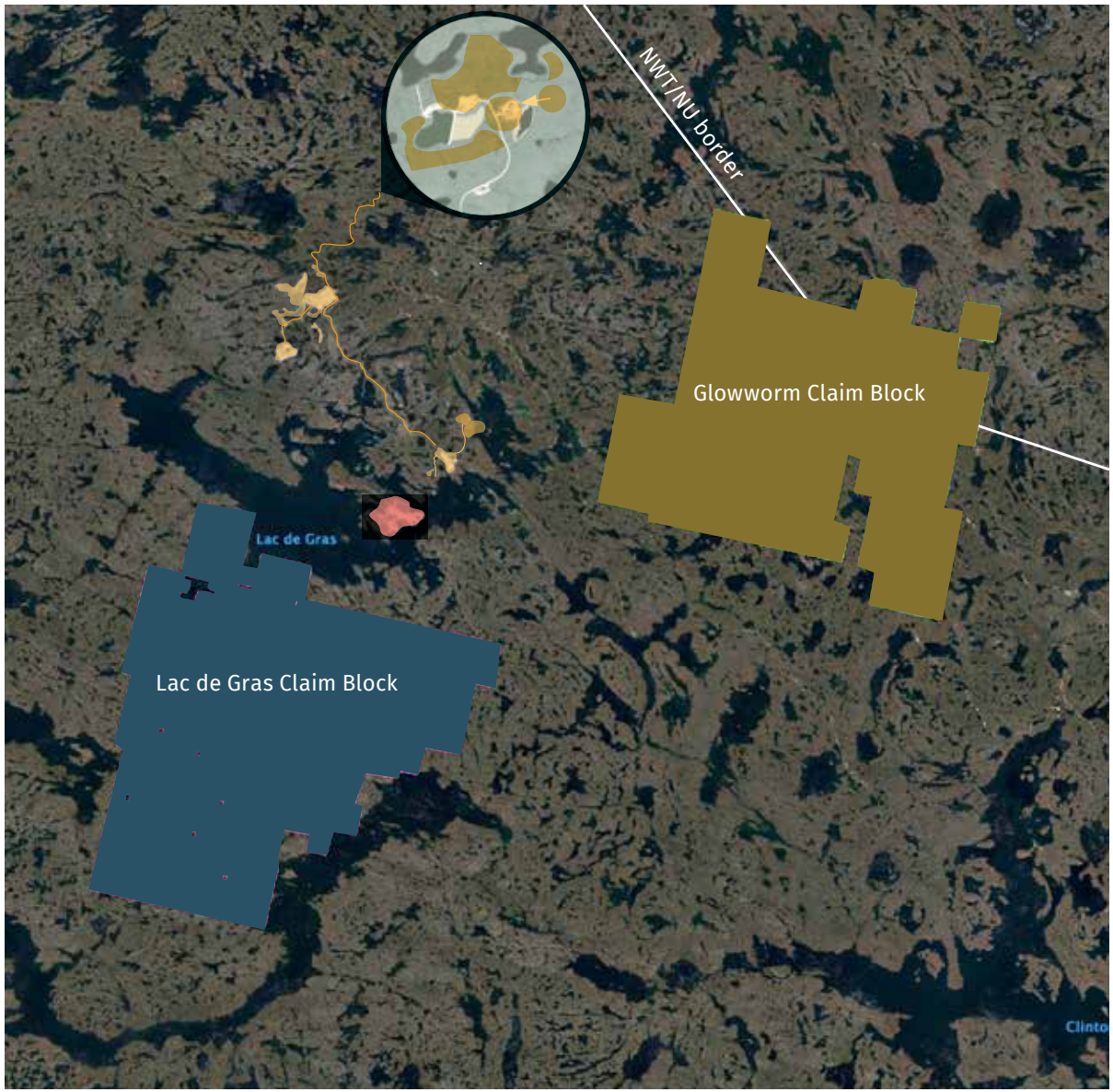
These LUP changes suggest exploration is progressing through more intensive investigation of mining targets in several large mineral claim blocks (roughly equal in size to the Ekati mine claims block) at considerable distances east and south of Ekati.

Misery pit including waste rock pile, camp facilities and King Pond. Photo courtesy of Dominion Diamond Mines ULC.

AGENCY ASSESSMENT

The Agency believes that possible future development of kimberlite pipes in new areas of exploration represents a significant geographical expansion of mine operations. Exploration activities during 2019-20 included widespread drilling in many parts of the main Ekati claim block, particularly near Misery and Jay pipes, where a new pit at Point Lake is proposed, and north of the current mine site, as well as locations east and south of Lac de Gras, near MacKay Lake. The Agency continues monitoring exploration activities in order to track potential future developments.

EKATI MINE SITE AND EXPLORATION CLAIM BLOCKS



LEGEND

- Ekati mine footprint
- Diavik mine footprint

AGENCY ACTIVITIES

HIGHLIGHTS

- Held three board meetings during the year.
- Held a workshop for Aboriginal Society Members to discuss wildlife in relation to closure and reclamation at the mine.
- Provided input into 16 Wek'èezhìı Land and Water Board (WLWB) reviews and many other reports and plans.

IEMA Directors during an Ekati site visit.

ACTIVITIES 2019-20

Meetings

The Agency held three Board meetings in Yellowknife during the 2019-20 fiscal year and our Annual General Meeting (AGM) in December of 2019. As was the case last year, we were unable to meet quorum at the AGM, so a Special Meeting of Society Members was held by conference call on January 24, 2020 to complete official business and approve formal motions. The Agency will be considering a new timeframe for scheduling the AGM to better enable attendance by Society Members.

Annual Ekati Site Visit

Last year the Agency repeated previously expressed concerns to Dominion that a single day at the site per year is not sufficient for our Staff and Directors to observe key components of the Ekati site, which is required for the Agency's ongoing understanding of operations and developments at the mine. The precedent for past Agency site visits was an annual overnight trip, with two full days to tour the site. Dominion compromised by scheduling two separate one-day site visits to Ekati for July 23 and August 20, 2019.

The July 23rd trip included a tour of the Misery area of the site, where we visited the closed Misery pit and observed the entry of the Misery Underground project and the Misery Waste Rock Storage Area (WRSA). After visiting the Lynx pit and area, several Directors were given a tour of the Ekati processing plant, which the Agency has not seen since the early 2000s. A visit to the Panda Diversion Channel wrapped up this site visit, and the Agency was able to see the vegetation beginning to grow around the Channel, as well as fish in the stream.

Unfortunately, due to scheduling conflicts, the second single-day visit in August was cancelled and could not be rescheduled before the winter. The Agency looks forward to working with Dominion in the future to make the preferred two-day, overnight site visits possible once more.

Agency Workshop

On February 12th and 13th, 2020, the Agency held a workshop for Aboriginal Society Members to specifically discuss wildlife in relation to closure and reclamation at the Ekati mine. This workshop was an outcome from feedback the Agency received during our community visits last winter (where we presented Version 3.0 of Dominion's Interim Closure & Reclamation Plan), and reviewer's comments on this interim plan.

Though Agency Staff and Directors were in attendance and provided contextual information to start discussion about the topic at hand, the intention of this workshop was to provide a gathering space where open discussion could happen amongst Aboriginal Society Member attendees. To ensure this was possible, the Agency hired independent facilitators to guide participants in discussion, and develop recommendations based on the knowledge and concerns shared. The Agency listened, and provided answers to participant questions when asked.

A report outlining concerns and recommendations that came out of discussions during this workshop will be the final outcome of this event. This report will be shared with Dominion and the Wek'èezhìi Land and Water Board (WLWB) by the summer of 2020 for their consideration.

For more information on the Agency's community engagement, see the *Traditional Knowledge and Engagement* chapter in this report.

Discussion during the second day of the Agency's February 2020 Wildlife and Closure Workshop.

TECHNICAL REVIEW AND INPUT

The Agency participated in 16 reviews through the WLWB over the last fiscal year. Two significant reviews the Agency took part in are:

Waste Rock and Ore Management Plan Version 10.1 (December 17, 2019) – Agency concerns regarding the uncertainty around automatically classifying diabase as "non-acid generating", and "non-metal leaching" remain in this latest version of the Waste Rock and Ore Management Plan (WROMP). The Agency continues to push for the use of effective neutralizing potential in geochemical testing to determine if rock has the potential to generate acid. There is also concern that WROMP 10.1 does not clearly indicate that only Lynx diabase will be used for construction purposes. On March 30, 2020, the WLWB approved this WROMP, but also directed Dominion to prepare an updated version that is to address some of the Agency's concerns. For more information on this WROMP, see the Waste Rock Management chapter in this report.

Aquatic Effects Monitoring Program Annual Report 2018 (July 3, 2019) – The key concerns the Agency raised regarding the AEMP report included the increase of mercury levels in lake trout sampled in Kodiak Lake, increasing selenium levels in slimy sculpin and whitefish in Leslie Lake, and increases in the diversity and variety of zooplankton sampled in this program. It should be noted that the Agency acknowledged the improvements Dominion continues to make to each new version of their Aquatic Response Framework. Notably in the latest version, Dominion laid out their plans for addressing exceedances of action levels for dissolved oxygen, potassium, chloride, and phosphorus, and the Agency fully supported these plans.

Studies and Reports – The Agency provided comments on numerous other reports and proposed plans at the Ekati mine in the 2019-20 fiscal year, including:

- 2018 Aquatic Effects Monitoring Program Report (July 3, 2019)
- 2018 Seepage Survey Report (June 14, 2019)
- Fish Response Plan (March 2, 2020)
- Jay AEMP Design Plan V 1.1 (January 16, 2020)
- Misery Underground Land Use Permit Application - Request for Ruling (April 5, 2019)
- Potassium Toxicity Study Report (November 26, 2019)
- Wastewater and Processed Kimberlite Management Plan V 9.0 (April 23, 2019)

AGENCY COMMUNICATIONS

Apart from this Annual Report, the Agency communicates with our Society Members and the public using our website, social media, and our biannual newsletter, the *Ekati Monitor*.

The Agency website is a great source of information for all things related to environmental management at the Ekati mine. Resources are added as they become available, and our latest news is easily accessed on our home page. The Agency is always looking for ways to make the website as accessible and up to date as possible, ensuring transparency in the work we do.

Agency presence on social media includes a Facebook page and a Twitter account (@IEMA_NWT). Our followers on both platforms are slowly but steadily increasing as we improve our online presence. As a celebration of surpassing 100 followers on Facebook in October of 2019, the Agency created a giveaway contest on our page. A winner was drawn from Fort Providence, NT who received Agency merchandise. Thank you to all who entered.

The Agency published two issues of our newsletter, the *Ekati* Monitor, this fiscal year. Issue 19 was published in the spring of 2019 and Issue 20 in the fall. Printed copies were distributed to our subscriber list, which ranges from schools to community offices across the NWT and Nunavut. Over the last year, the digital version of the *Ekati* Monitor was successfully formatted, and both issues were e-mailed out to all who have subscribed to the newsletter on our website.

COMMUNICATIONS BY SUBJECT 2019-2020

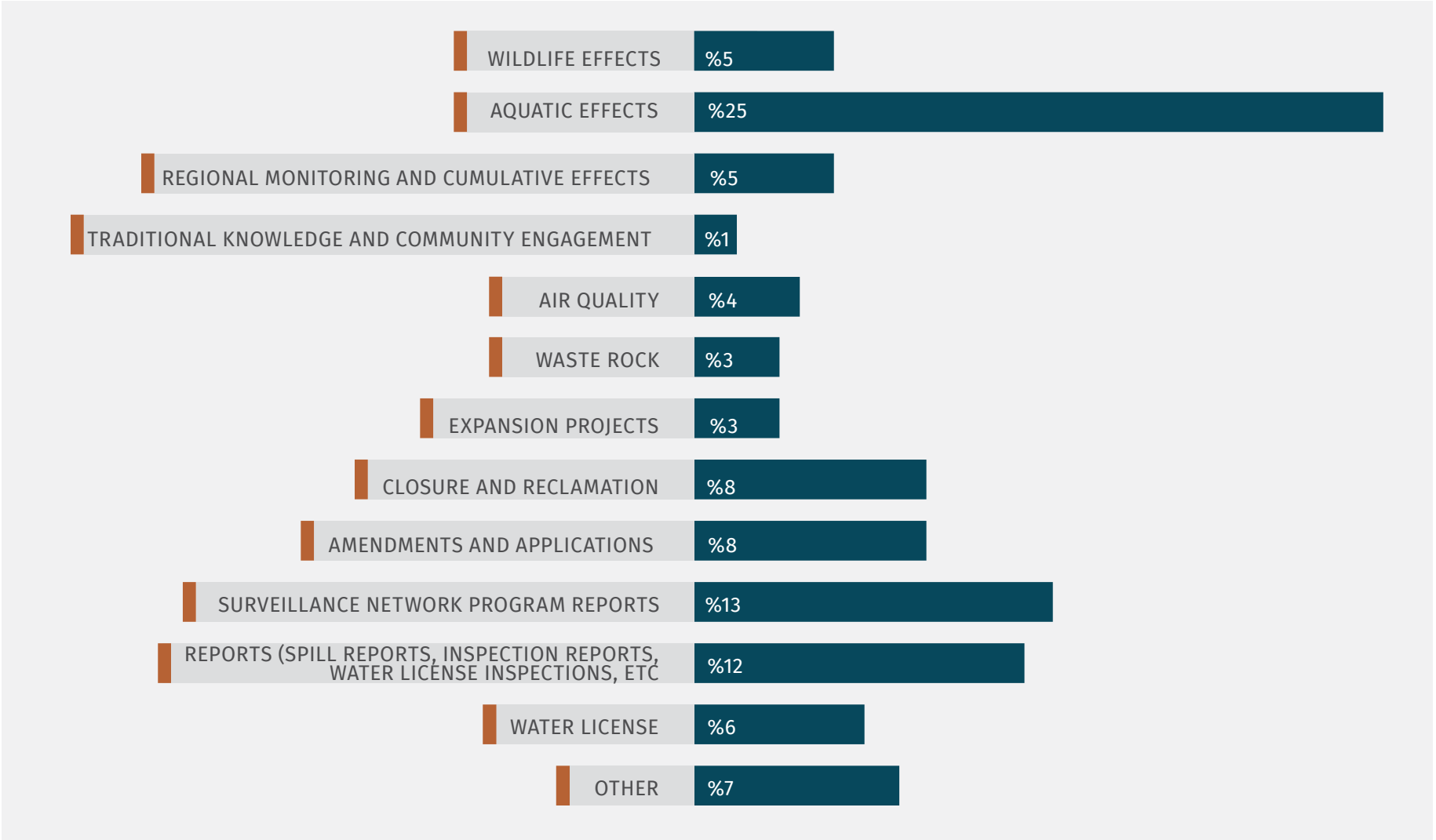
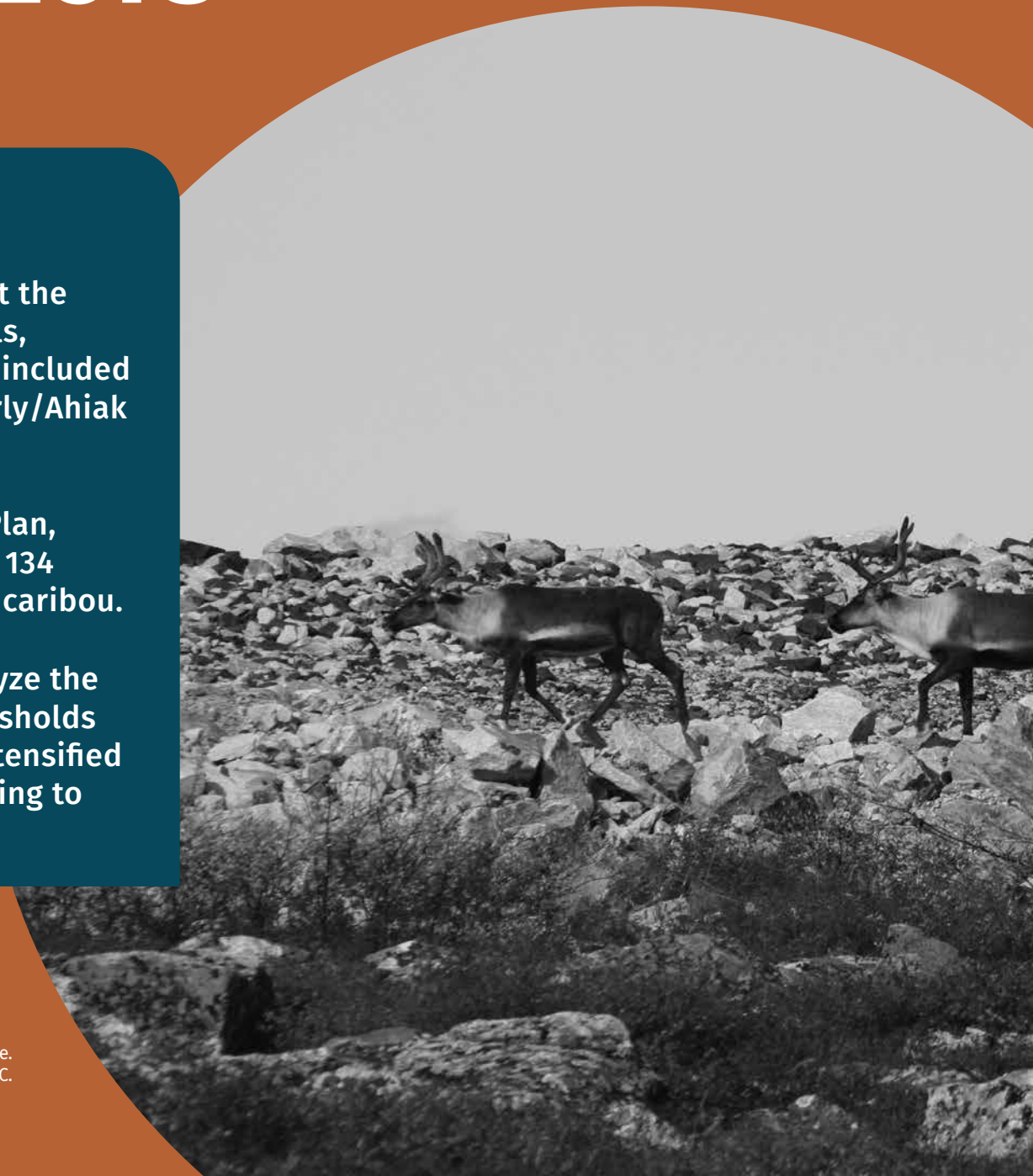


Figure 2: Communications by Subject 2019 - 2020

WILDLIFE EFFECTS

HIGHLIGHTS

- Incidental observations of caribou at the mine in 2019 totaled 9,507 individuals, mainly during winter periods, which included caribou from the Bathurst and Beverly/Ahiak herds.
- Under the Caribou Road Mitigation Plan, traffic and blasting was managed on 134 occasions to reduce disturbances to caribou.
- Dominion should integrate and analyze the monitoring used to link specific thresholds to trigger a management activity (intensified mitigation) and subsequent monitoring to determine effectiveness.



Caribou running along a road at the Ekati mine.
Photo Courtesy of Dominion Diamond Mines ULC.

ACTIVITIES 2019

Dominion's Wildlife Effects Monitoring Program (WEMP) documents wildlife presence and wildlife management responses at the Ekati mine. The year 2019 is the 22nd year Dominion has operated the WEMP. Its annual report focuses on wildlife habitat and caribou, grizzly bears, wolves, wolverines, foxes, raptors and breeding birds. The report has detailed compilations of various surveys, incidental observations, incident reports and management actions. Surveys documented include systematic road and power line surveys, behavioural monitoring, and camera surveys along infrastructure and adjacent areas. Many of the activities are required for management of caribou under the Caribou Road Management Plan (CRMP).

The Ekati Mine Footprint

An additional 79 hectares (ha) of surface area habitat were disturbed at the Ekati mine due to mine development and operations during 2019, including development of the Lynx, Pigeon and Sable pits and associated Waste Rock Storage Areas. The amount of direct habitat loss caused by the project footprint since 1997 is now 3,898 ha (39 km^2). As of 2018, 141 km of roads have been constructed (no update for 2019 provided).

Waste Management

Dominion continues its efforts to improve waste management practices and reduce food-related attractants at landfills, to reduce wildlife incidents, and to deter wildlife from areas of danger (e.g., airstrip, high traffic areas, active pits). Continued efforts to educate employees about the need for effective waste management disposal practices at the mine site has resulted in a general decreasing trend in the amount of misdirected wastes and attractants. Over 100,000 kg of solid waste and over 160,000 L of liquid waste were shipped off site and 125,000 kg of biodegradable material was diverted from the incinerators to the composter, the latter saving over 330,000 L of incineration diesel fuel.

Wildlife Management and Incidents

Wildlife incidents involve direct interaction between wildlife and humans or infrastructure. There were 43 wildlife incidents reported at the Ekati mine during 2019. These included 35 involving grizzly bears, all which required use of deterrents, much higher than the 1–17 reported annually from 2011 to 2018. There were 120 management actions involving caribou, mainly near the Sable Road, that resulted in work stoppages or temporary road closures of from 1 minute to 7.5 hours in length during February, July and August. Vehicles were used on eight occasions to "gently deter caribou from roads" for operational and emergency reasons. Blasting at pits was postponed or cancelled on 14 occasions due to the presence of caribou within 1 km. No caribou mortalities as a result of mine activities have occurred since 2010.

Caribou Monitoring

Caribou monitoring activities for 2019 included distribution from satellite collared cows monitored by Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR), incidental caribou observations, behaviour surveys, Long Lake Containment Facility (LLCF) monitoring, dedicated road and Misery Road power line surveys, and wildlife camera monitoring.

In 2019, 9,507 caribou were recorded during 269 incidental observations on 119 separate days, most (88%) recorded during the two winter periods. Collar data from GNWT-ENR indicated that caribou from both the Bathurst and Beverly/Ahiak herds were present at Ekati during winters 2018-19 and 2019-20. Caribou observations were distributed throughout the mine site with larger groups (>200 individuals) observed near the main mine complex, on the LLCF, near Fox pit and along the Misery Road within 4–5 km of the Misery pit.

For 6 days during late winter and the start of spring migration in 2019, over 1,700 caribou including a group of 1,000 individuals were observed on the LLCF primarily on the edges of Cells A and C. Most caribou observed in 2019 on the LLCF were bedded, feeding or standing, in contrast to observations during 2000 to 2018 during which a total of nearly 700 caribou, mostly solitary individuals, were observed primarily travelling across the LLCF.

Monthly road train and haul truck traffic volume data were presented for 2019 for Misery (approx. 5,300 round trips), Sable (11,000 round trips) and Fox roads (3,700 round trips), but no trend data over time or data for light vehicles (mainly pickup trucks) were presented. Nearly 7,000 caribou in 121 observations were counted over a 39 day period during Road surveys, which appear to be in addition to the 4,430 caribou in 61 observations counted during Misery Road power line surveys. It is not clear but appears likely that the 9,500 'incidental observations' are in addition to these road and power line survey totals. No figure was provided mapping the road survey observations. The section concludes that *"Observations of caribou near and crossing all roads suggest that the roads do not impede caribou movement"*.

Caribou running along a road at the Ekati mine.
Photo Courtesy of Dominion Diamond Mines ULC.

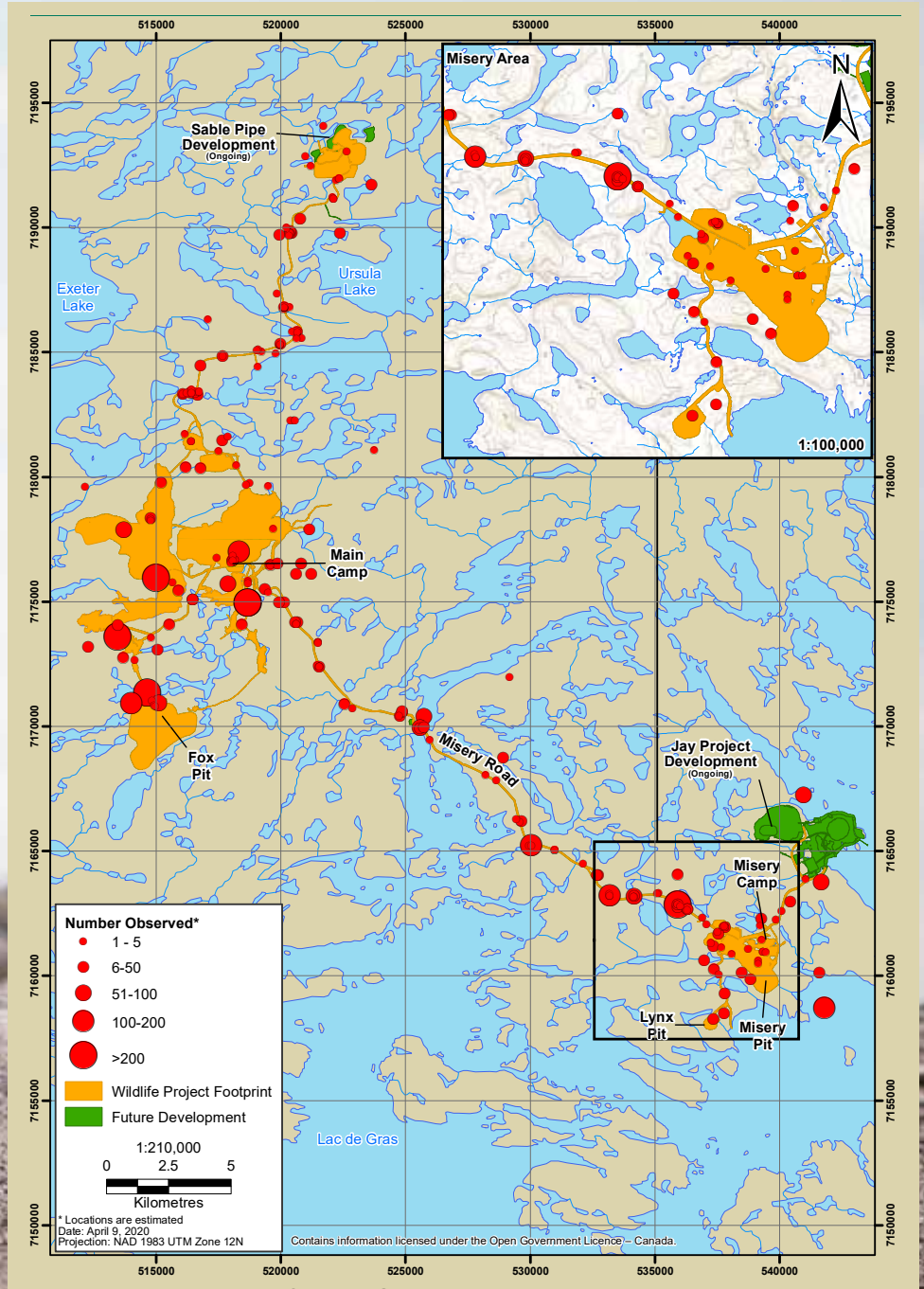


Figure 3. Incidental caribou observations at the Ekati Diamond Mine, 2019

Eight behavioural focal surveys (to quantify the types of behaviours used by individuals) and 34 scan surveys (essentially behaviour at the group level) were conducted within 2 km of mine infrastructure in 2019 to obtain information on the proportion of time an animal or group is engaged in different behaviour (e.g., bedding, feeding, running). These results were compared with 31 scan surveys conducted at Diavik from 0.5–28 km from infrastructure and concluded that caribou showed *"some tolerance for areas in close proximity to the mine"*.

The Wildlife Camera Monitoring Study initiated by Dominion in 2011 uses motion-triggered cameras to better understand how caribou respond to mine infrastructure and in particular to roads. Eighty-nine infrared motion-triggered cameras were deployed in 2019 along Misery, Sable and Jay roads, as well as at the Lac du Sauvage Narrows and the esker near the Jay Road. Due to logistic constraints, no comprehensive analyses were presented from 2017, 2018 or 2019 but a separate report is expected to be distributed during winter 2020-21, at the same time as a long-promised technical report that re-examines the caribou zone of influence (ZOI).

Grizzly Bear Monitoring

Grizzly bears were monitored at Ekati through incidental observations. There were 252 individuals sighted on 161 occasions, including 48 observations of family groups (any group of two or more bears). As with all incidental sightings many observations were likely the same individual(s) recorded on multiple occasions. These are the highest number of sightings since records began in 2001 and follow an annually variable but increasing trend over time. Observations occurred across the mine site except for around Sable pit and the northern 10 km of the Sable Road.

Other Wildlife

In 2019, 212 wolves were sighted on 117 occasions, the highest number recorded since 2001 and following an increasing trend over time. Wolf observations were distributed relatively evenly throughout the mine site. Twenty-three incidental sightings of wolverines occurred in 2019, generally similar to the long-term average. In 2019, 148 foxes were sighted, lower than average. Fox occurrence at Ekati mine is an ongoing concern because of potential attraction to human activity and the risk of transmission of rabies. There were no suspected cases of rabies during 2016-19. Twenty-three incidental moose sightings occurred near mine infrastructure in 2019.

Successful raptor nesting was assumed or confirmed in five inactive or underground pits in 2019. Nesting was also successfully deterred from three active pits to minimize conflict with mining activities. The North American Breeding Bird Survey was conducted for the 17th year with a fairly typical number of species (26), individual birds (409) and species diversity recorded.

Photo courtesy of Dominion Diamond Mines ULC.

AGENCY ASSESSMENT

The 2019 WEMP provides detailed reporting on incidental sightings, monitoring programs, waste management, and wildlife incidents and management actions. Incidental sightings of wildlife at Ekati have trended higher in recent years. The increase in caribou observations is likely related to the shift in the range of the Beverly/Ahiak herd to encompass the mine site and greater occurrence of caribou from both herds during winter. More grizzly bears and wolves were observed, which Dominion attributes to de-centralization of mining activity, personnel travelling over a larger area around site, and increased awareness and reporting. However, observations of wolverines and foxes are relatively stable or declining, an unexpected result with Dominion personnel travelling over larger areas and better reporting. An increasing grizzly bear population and association of wolves with greater caribou occurrence may play a role in recent trends. Unfortunately, the more numerous incidental sightings resulted in a higher number of wildlife incidents involving grizzly bears and wolves.

The monthly data on large truck trips by haul road for 2019 are a welcome addition in the 2019 WEMP. However, some reporting could have been more comprehensive. The use of the caribou collars continues to be limited and the long-delayed camera sighting report is now scheduled for winter 2020-21. Work and road stoppages for caribou conducted under the CRMP are reported only as summed for the entire year. Unfortunately, specific data on triggers for work stoppage or road closures, location and length of road segments affected, and mitigation outcome are not provided. Adaptive management is mentioned but remains incompletely reported. There is limited reporting on the effectiveness of wildlife mitigation; the WEMP does not link specific thresholds from the CRMP (e.g., 0.25% of total cows in the Bathurst herd are within 200 m of the Jay or Misery roads during any season, or one or more caribou crossing or attempting to cross the road during any season) to trigger a management activity and, more importantly, subsequent monitoring to determine effectiveness. As a result there are numerous unsupported claims such as caribou "*tolerating*" disturbance and the suggestion that "*roads do not impede caribou movement*". Other than anecdotal observation, no robust data are presented that support these claims.

Road surveys were conducted nearly daily as part of the monitoring required for the CRMP and contributed to road closures to traffic and delays in blasting, but no daily observations data were presented (either in table or figure). Since sampling effort to conduct these surveys is distributed evenly among major roads on site, the surveys would provide an excellent opportunity to demonstrate caribou distribution within the mine site (such as presented for the Misery Road power line surveys) linked to where enhanced mitigation was implemented, and where monitoring and mitigation could be enhanced. As it is the Agency and others have no ability to evaluate the efficacy of monitoring method to triggering enhanced mitigation, and the efficacy of the applied mitigation, limiting the ability to conduct adaptive management. There is also no apparent integration of datasets from incidental observations, road survey, Misery power line survey data, or LLCF monitoring surveys, integration of which would lead to a more comprehensive picture of caribou distribution at the mine site.

Currently the ENR collar data are only used for broad seasonal characterizations. Ekati has provided financial support for the installation of 50 geo-fenced collars (collars that increase fix rate within 30 km of mine infrastructure and roads) "*to provide information on caribou movement specific to the Ekati Diamond Mine*". There are no evidence that these data were used by Dominion; individual trajectories of movements are not provided and there is no assessment of how the geo-fenced collars improve the resolution of movement thresholds and link into monitoring and mitigation. For example, individual collar trajectory could be used to assess crossing success of the Misery Road/power line complex to quantifiably assess whether indeed the "*power line does not impede caribou movement*".

Wolf at the Ekati site Photo Courtesy of Dominion Diamond Mines ULC.

AQUATIC EFFECTS

HIGHLIGHTS

- The concentration of each water quality variable is higher than baseline levels, though no higher than the previous four years.
- Dominion's aquatic response framework has no sediment benchmarks for selenium, unlike Diavik's framework. Dominion should develop and incorporate sediment quality benchmarks and action levels for all metals.
- The Agency would like Dominion's data collection and analysis to better match methods used at Diavik mine to monitor aquatic effects. Dominion and Diavik need to coordinate methods to monitor Lac de Gras/Lac du Savage.

Sampling at Ekati mine. Photo Courtesy of Dominion Diamond Mines ULC.

BACKGROUND

Each year Dominion Diamond Mines ULC (Dominion) carries out a number of monitoring programs and studies to determine if changes in the aquatic environment downstream of its operations are occurring as a result of mining activities. Five watersheds may be affected by mining operations (Koala-Lac de Gras, King-Cujo, Desperation-Carrie Pond, Pigeon-Fay-Upper Exeter and Horseshoe). Lakes and streams in these systems, as well as background sites, are sampled each year under the Aquatic Effects Monitoring Program (AEMP), as required in Dominion's Water License. Using information collected through the AEMP changes and trends in water and sediment quality, benthic macroinvertebrate communities, phytoplankton and zooplankton, as well as fish populations and health, can be identified.

MAJOR ACTIVITIES AFFECTING WATER QUALITY IN DOWNSTREAM LAKES 2019-20

Fine Processed kimberlite (PK), treated sewage and surface sump water continued to be discharged into the Long Lake Containment Facility (LLCF) in 2019. Once the slurry has settled out and separated, process water is pumped back to Cell C of the LLCF. The process plant recycled over 5 million m^3 of water from Cell D of the LLCF. From July 20 to August 29, 2019, over 3 million m^3 of water was discharged from the LLCF to Leslie Lake. Pumping of PK into Koala and Panda pits began in May 2019.

A second source of effluent discharge from the mine to the receiving environment is from the Misery and Lynx sites into the King-Cujo watershed. No water from the King Pond Settling Facility (KPSF) was pumped into Cujo Lake in 2019.

The first potential water quality impact in the Horseshoe watershed began with the release of wastewater from the new Two-Rock Sedimentation Pond at Sable in August and September 2018, but no discharge occurred in 2019.

AQUATIC EFFECTS MONITORING PROGRAM

This Section provides a summary of the results and trends found in the 2019 AEMP, particular attention is given to increasing trends and areas of concern. It does not include interpretation or opinion on the topics. Please refer to the Agency Assessment section of this Chapter for greater detail regarding the Agency's analysis.

Water Quality

Every year the Agency reviews the annual AEMP data for any changes of note. The results are summarized in Table X. Concentrations of each of the water quality variables remain elevated above baseline levels. However, relative to the four previous years, significant increases in elevated parameters were not evident in 2019. In general, the extent to which concentrations have changed decreases with downstream distance from both the LLCF and King Pond Sedimentation Facility. This supports the conclusion that localized changes in water quality in the receiving environment continue to result from the discharge of effluent from Ekati operations.

2019 was the first monitoring year for the Sable watershed. Measured changes to concentrations of water quality variables downstream of the TRSP were minor relative to baseline concentrations and changes were limited to the first downstream lake — Horseshoe.

Plankton

The taxonomic composition of the phytoplankton community in lakes downstream of the LLCF as far as Lac de Gras has changed somewhat from recent years, reflecting a possible shift back towards baseline community composition. The changing taxonomic composition of the zooplankton community observed in Leslie, Moose, and Nema lakes in recent years seems to have stabilized. Mine-related changes in plankton and benthos variables were also observed in Cujo Lake: an increase in chlorophyll a and densities of both edible phytoplankton and total phytoplankton.

Example of zooplankton.
Photo Credit: The Canadian Encyclopedia.

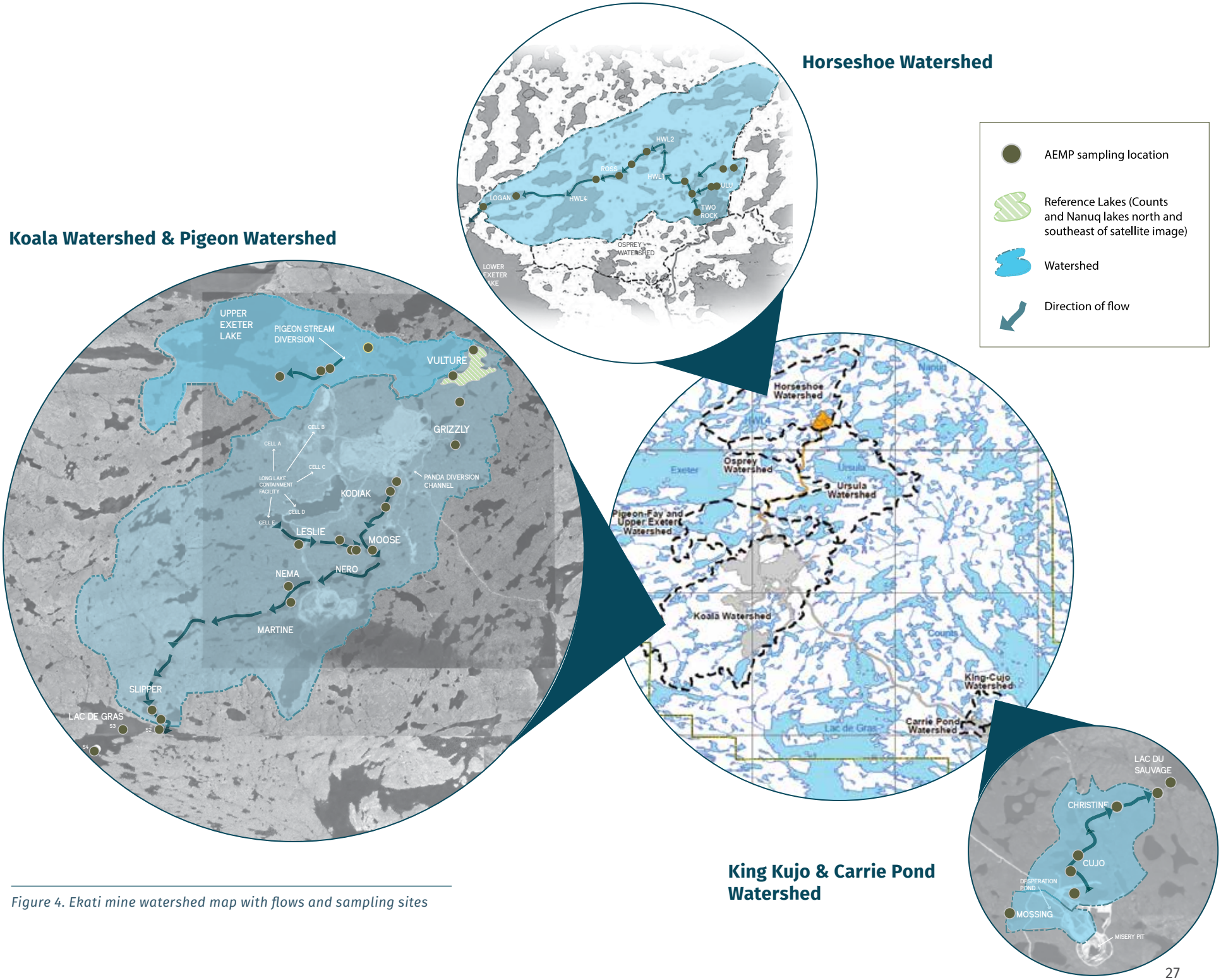


Figure 4. Ekati mine watershed map with flows and sampling sites

3-YEAR AEMP RE-EVALUATION

On December 13, 2019 Dominion submitted their 3-year AEMP Re-evaluation and Redesign. The review has been completed and it is currently with the Wek'eezhii Land and Water Board awaiting a decision. The re-evaluation acknowledges that the AEMP monitoring program is a living document that at times may require changes based on results from previous years. The goal of the AEMP remains to detect and monitor any effects of the Ekati mine on the downstream environment.

As part of the review process for the re-evaluation, a February 2020 workshop was held to obtain constructive feedback on the AEMP Re-Evaluation Report from Indigenous communities and regulators.

The following is a summary of the concerns discussed at the workshop:

Lake Sediment Sampling Methodology

Methods for sampling sediment do not seem adequate for determining contaminant levels in the topmost sediment layers which represent the latest deposition of mine-affected sediments. To address this issue, the company supplemented its standard Ekman dredge, in use since the inception of the AEMP in the late 1990s, with a K-B corer to sample sediment quality of lakes in 2010, 2011, 2014 as well as in Lac du Sauvage baseline sampling in 2017 and 2018. In 2019 coring was done in the Sable watershed only to supplement baseline data. However, the company does not view the corer as practical for taking 1 cm core sections of lake bottom sediments due to concerns over worker health in its use and complications in data comparisons between older dredge-sampled sediment and the more recent years using core sediment samples Dominion proposes to discontinue the use of coring and rely solely on Ekman dredge grabs.

Aquatic Response Framework - Sediment Benchmarks

The AEMP results feed into Ekati's Aquatic Response Framework (ARF). Consequently the ARF is a component of the AEMP Re-Evaluation and reviewers expressed concerns over a lack of sediment benchmarks in the ARF. (See the following section for details)

Sable Project – Fish Monitoring

Dominion is not proposing monitoring of large-bodied (i.e., harvestable) fish species in the Sable watershed because the estimated 8-year mine life for Sable would not provide a long enough time series of data for harvestable fish (which are monitored every 6 years), so slimy sculpin (monitored every three years) would be relied on.

Dust Monitoring in AEMP

The re-evaluation report also recommends terminating the link between dust monitoring and aquatics monitoring by ending the analysis of dust contribution to the water quality of downwind AEMP lakes.

AQUATIC RESPONSE FRAMEWORK

The ARF uses predetermined benchmarks or action levels to provide an early warning to Dominion and regulators about changes in the downstream environment that may be cause for concern. The action levels are set below thresholds that could have a negative impact on the downstream environment. If the action levels are exceeded it triggers a response plan to be developed. There are three tiers of action levels. The three tiers for water quality variables other than dissolved oxygen are Low Action Level (LAL - when the variable exceeds 50% of a benchmark), Medium Action Level (MAL - variable exceeds 70% of a benchmark) and High Action Level (HAL – exceeds 100% of a benchmark).

Sediment Benchmarks

There are no benchmarks in the ARF for sediment quality. In lakes closest to the Long Lake Containment Facility and to the King Pond Settling Facility, increasing selenium concentrations in bottom-feeding fish tissue are more closely correlated with concentrations in sediment than in water. Regulators have argued that sediment benchmarks for selenium should be included in the ARF. Dominion has been reluctant to include sediment sampling to the ARF citing a lack of baseline data for some variables, some variables in reference lake sediments are naturally greater than government guidelines, and challenges in measuring the level of change in each impacted lake due to sediment heterogeneity and a change in sampling method. Despite similar sampling conditions it is worthy of note that Diavik has developed sediment benchmarks for its ARF.

Response Plans

Response Plans describe specific actions to be taken in responding to an exceedance of an action level defined in the ARF. The Response Plan looks at whether there is an imminent adverse impact to aquatic life and investigates ways to halt or reverse the trend that exceeds the action level. Response Plans that were triggered and reviewed in 2019-20 are summarised below.

In 2019, the only water quality variables that exceeded action levels in Koala watershed were both under-ice and in Leslie Lake only — chloride (LAL) and potassium (MAL). In King – Cujo watershed, open-water phosphorus exceeded MAL (updated Response Plan for Total Phosphorus 2.0 is being drafted).

Chloride Response Plan Version 2.1

The Chloride Response Plan version 2.1 was submitted in July 2019 and approved in October. It verified that the source of chloride loading is from underground mining and open pit mine water. It also discussed possible mitigative actions, which are unlikely to be required for the time being since PK, which includes mine water (the source of increased chloride level), is being pumped to the Panda Koala pits and not into the LLCF and ultimately downstream of the LLCF.

Potassium Response Plan Version 3.0

An updated version of the Potassium Response Plan version 3.0 was submitted in August 2019 and approved in December. It described successful mitigative actions that significantly decreased under-ice potassium concentrations in Leslie Lake from a HAL exceedance (60.6 mg/L) in 2018 to a LAL exceedance (49.2 mg/L) in 2019. This decrease was largely due to delaying discharge from the LLCF during the 2018 open-water season.

The main source of potassium in process water comes from the processed ore. The amount of potassium released into the process water varies considerably depending on the source of the ore. Therefore, the potassium levels in the water depends on which pit the ore came from. The majority of ore processed in the process plant in 2018 was from Misery pit. In 2019 the process plant was processing ore from Misery, Pigeon and Sable. By 2020 it is expected that the majority of processed ore will come from the Sable pit. Additional geochemistry testing begun in 2019 focusing on the Sable pit and Misery underground to determine how the cation exchange process influences potassium concentration in the effluent. This will help inform the water quality model update expected for the 2021 Water Licence renewal. This Potassium RP also developed response actions for MAL (increased frequency of under-ice water sampling to monthly) and HAL exceedances. Exceedance of HAL now requires investigations into potassium toxicity to aquatic life (see box to the right) and sodium – potassium ratios in effluent (increased sodium can reduce potassium toxicity). An alternative water source (fresh water from a nearby lake instead of the reclaimed water from LLCF) and effluent deposition into Panda and Koala pits were also investigated.

POTASSIUM TOXICITY STUDY

A 2018 water license amendment dealing with the potassium Effluent Quality Criteria required that additional potassium toxicity testing be done. The resulting 2019 study looked at the toxicity of potassium using a never before tested species, the fingernail clam (*Sphaerium* sp.), as well as increased exposure times for previously tested species. The results of the study indicated that the most sensitive toxicity of any of the 3 species was a LC25 (Lethal Concentration causing death in 25% of test organisms) of 88.8 mg/L, which is higher than the current Site Specific Water Quality Objective (SSWQO) of 64 mg/L. Since the current SSWQO is more sensitive (lower) than the test results the SSWQO remains at 64 mg/L.

Fish Response Plan Version 2.0

Pigeon Stream. Photo Courtesy of Dominion Diamond Mines ULC.

Fish Response Plan Version 2.0

The latest version of the Fish Response Plan version 2.0 was submitted in October 2019 and is currently with the Wek'eezhii Land and Water Board awaiting a decision. The Fish RP establishes MAL for selenium in fish tissue of 50% of the US EPA's Criterion for the Protection of Aquatic Life (11.3 mg/kg dry weight). A HAL of (a) 100% of the same guideline and (b) an as yet undeveloped site-specific screening value for safe human consumption is also proposed. Response actions for exceedance of MAL for selenium in Koala watershed lakes are identified as alterations to mine water management such as the use of alternate areas for PK deposition (Beartooth, Koala and Panda pits), as well as updating the Water Quality Model for lakes downstream of the LLCF to predict on a monthly basis future selenium concentrations. This will provide insight into the performance of water management strategies for mitigating elevated selenium effects in affected Koala watershed lakes.

The Fish RP also establishes MAL for mercury in fish tissue of 70% of a screening value for safe human consumption. Response actions for exceedance of MAL for mercury include investigation of cause as well as potential food web effects through analysis of phytoplankton and zooplankton changes in affected lakes. The need for and type of mitigation measures would also be determined.

The Fish RP states that a safe level of the most toxic form of mercury (methylmercury) in fish tissue eaten by humans is 0.46 mg/kg. This is based on safe mercury consumption guidelines of the US EPA/FDA which assumes that fish are eaten at rates of 0.016 mg/day which would result in a low risk of human health effects. The Fish RP acknowledges that this 0.46 benchmark would not be appropriate if fish harvesters using the AEMP lakes in the future ate fish at higher weekly rates (eg. 3 servings/week rather than the assumed 1 serving) and/or in larger portions if fish per serving (eg, 0.5 kg rather than the assumed 0.2 kg). Fish consumption at these higher but realistic rates would reflect a USEPA/FDA guideline of at most 0.15 mg/kg methylmercury. The BC Health guideline for total mercury in edible fish tissue would be 0.2 mg/kg rather than 0.5mg/kg. This would result in the Fish RP's HAL being exceeded.

Given these considerations, Dominion will conduct a study to investigate consumption rates for consumers of fish in the Ekati receiving environment to enable more accurate benchmarks to be developed for selenium and mercury in fish tissue.

JAY AEMP DESIGN PLAN

The Jay AEMP Design Plan 1.1 was submitted in October 2019, correcting an inadequacy of baseline data identified by the WLWB in the original version. Most of the design for the Jay AEMP is the same as for the site-wide AEMP with the following notable differences:

- Large bodied harvestable fish species (such as lake trout and white fish) would not be monitored. Dominion believes that sampling of small bodied fish (slimy sculpin) alone is adequate to monitor impacts on fish populations in Lac du Sauvage. This is due to metals tending to accumulate in sediments on which slimy sculpin live out their lives. Dominion argues that elevated metals concentrations in slimy sculpin will show up before these same metals start becoming a problem in large bodied fish which are higher up the food chain.
- Another notable difference between the Jay AEMP and the site wide AEMP is that a finer-mesh sampling net will be used as part of the Jay AEMP, addressing a concern raised by reviewers that larger mesh sizes may result in an underestimation of zooplankton diversity.
- After conducting sediment coring during the Lac du Sauvage baseline field program in 2019, Dominion is not in favour of using this method for the Jay AEMP, for the reasons expressed in the 3-Year AEMP Re-Evaluation section above.

CUJO OUTFLOW STUDY

This study confirmed that flows and water levels in streams in the King-Cujo watershed are sufficient for maintaining access to spawning habitats for spring spawning Arctic Grayling without seasonal discharge from the King Pond Settling Facility to Cujo Lake. This information is needed to assess whether the Misery Underground Project would create impediments to fish accessing habitat when discharge from King Pond is reduced or eliminated.

SABLE DIFFUSER/TWO-ROCK OUTFALL

Dominion believes it is unnecessary to use turbidity barriers in Horseshoe Lake to contain sediment disturbed during construction of the effluent outflow pipe from the Two-Rock Lake impoundment. Further, it believes both DFO and ECCC are in agreement with Dominion on this point although it didn't provide any correspondence regarding this to the WLWB. In a November 2019 letter to Dominion, the WLWB rejected this change to the original plan that had been approved in the water license. Dominion also wanted to deposit effluent in a deep part of Horseshoe Lake through a pipe without a diffuser. A diffuser would more efficiently dilute the effluent through the water column.

→ Flow from effluent source to ultimate receiving lake in watershed

● increased over time in comparison to reference lake/stream or different from a constant

○ elevated but not changing through time

◆ upper bound of 95% exceeded the SSWQO, water quality benchmark, or CCME guideline during ice-covered or open water season

★ indicates observed mean exceeded the SSWQO, water quality benchmark or CCME guideline during ice-covered or open water season

Parameters Monitored	Variables elevated in Koala watershed: Long Lake Containment Facility → Lac de Gras									Variables elevated in King-Cujo watershed: King Pond → Lac du Sauvage			
	Leslie	Leslie-Moose	Moose	Moose-Nero	Nema	Nema-Martine	Slipper	Slipper-Lac de Gras	Lac de Gras (S2)	Cujo	Cujo Outflow	Christine-Lac du Savage	Lac du Sauvage
pH	○	●	○	●	○	○	○	○	○	●	●	●	
Alkalinity	●	○	●	○	○	○	○	○	○	●	●	●	
Hardness	○	●	○	○	○	○	○	○	○	○	○	○	
Total Dissolved Solids	○	○	○	○	○	○	○	○	○	●	●	●	
Chloride	★	●	○	○	○	○	○	○	○	●	●	●	
Sulphate	○	○	○	○	○	○	○	○	●	○	○	●	●
Potassium	○ ★	○	○	○	○	○	○	○	○	○	○	●	●
Total Ammonia	○	○	○	○	○					●	○	○	●
Nitrite	○	○	○	○	○	○							
Nitrate	○	○	○	○	○	○				○	○		
Total Phosphate-P	●									◆			
Total Organic Carbon	●	●	●	●	●	●	○	●	●	●	●	●	●
Antimony	○	○	○	○	○	○	○						
Arsenic	○	○	○	○	●	●	●	●		●	○		○
Barium	○	○	○	○	○	○	○	○	○	○	○	○	●
Boron	●	●	●	●	●	●				○	○	○	
Molybdenum	○	○	○	○	○	○	○	○	○	○	○	●	
Nickel	○	○	○	○	○	○	○	○		●	○	●	●
Selenium	○	○	○	○									
Strontium	●	●	○	○	○	○	○	○	○	○	○	●	●
Uranium	○	○	○	○	○	○	○	○	○	●	●		

Table 1 - Mining effects on water quality flowing through the Koala and King-Cujo Watersheds.

AGENCY ASSESSMENT

3-year AEMP Re-evaluation

Sable Project – Fish Monitoring

For mercury and uranium in particular, monitoring has found different temporal trends in metals between sculpin and whitefish. This makes drawing conclusions difficult on the capability of slimy sculpin monitoring to predict contaminants changes in whitefish. As Dominion is not planning to monitor round whitefish in the Sable watershed, we would have no direct or indirect means of gauging the possible downstream impacts on whitefish for the 8-year life of the Sable project. In the face of uncertainty with the ability of slimy sculpin monitoring to act as an early warning of elevated levels of metals in fish species farther up the food chain (lake trout and broad whitefish), as well as Aboriginal Society members concerns about contaminants in fish, these harvestable species should be monitored in Sable watershed lakes. If there is concern about lethal sampling impacting fish populations in those lakes then sampling could be restricted to trout using non-lethal methods as currently employed in the site-wide AEMP.

These concerns and considerations can also be applied to the lack of harvestable fish monitoring planned for the Jay AEMP.

Lake Sediment Sampling Methodology

The Agency is concerned that mixing of distinct sediment layers when an Ekman dredge is raised from the lake bottom can mask the concentrations of metals and other elements in the most recently deposited sediments represented by the uppermost layer. Dominion should evaluate and report possible alternative methods for retrieving discrete layers of sediment from lake bottoms, with a view to implementing any feasible techniques in future sediment sampling.

Aquatic Response Framework

Sediment Benchmark

The 2017 AEMP concluded that the potential exists for adverse effects to aquatic life in Leslie Lake due to sediment selenium concentration being above CCME sediment guidelines. Since this is the case for Leslie lake, the first lake downstream of the LLCF, and given selenium has reached levels of concern in Leslie Lake bottom-dwelling fish, there should be an ARF sediment quality benchmark based on the same guideline, with accompanying action levels, for all lakes downstream of the LLCF. Sediment quality benchmarks and action levels for metals should be developed and incorporated into the ARF.

Fish Response Plan

The Agency has two concerns with the setting of benchmarks for mercury in fish. To better develop human health protection benchmarks for fish tissue metals in the Fish Response Plan the company will be conducting an investigation of the fish consumption rates in its IBA communities. This is a positive initiative to refine the Fish Response Plan action levels, one which the Agency commends. Until that study is completed the Agency believes that Dominion should use the more conservatively protective 0.2 mg/kg total mercury in fish tissue rather than 0.46 mg/kg (explained in the Aquatic Response Framework section of this chapter) as the site-specific screening value for development of MAL and HAL for total mercury in AEMP fish.

The Agency also argues against setting the MAL for mercury at 70% of the benchmark. Dominion states that background concentrations of mercury in fish of AEMP lakes have on occasion exceeded 70% of the screening value (0.46 mg/kg dry weight). It believes MAL exceedances will be more frequent if percentage of the screening value is lowered to 50%. Dominion also argues that a 70% action level makes the fish MAL consistent with the MAL defined for water quality variables. The Agency believes that making fish action levels conform to those developed for water quality has not been properly justified. Water quality response plans use annual water quality monitoring data, while the Fish RP relies on a data set that is collected every 6 years for large-bodied fish and 3 years for small bodied fish. This results in information gaps and a less defined dataset making it harder to identify and predict trends. If Dominion is uneasy that a 50% MAL would be triggered more often, then it is wise to address this more frequently than every 6 years to assure fish harvesters that fish in affected lakes would still be safe to eat in the event of a mine closure.

The Agency believes that the frequency of harvestable fish monitoring should also be re-evaluated to reduce the frequency from every 6 years. The reason for the five year interval between large bodied fish sampling was due to concerns that more frequent sampling would negatively impact fish populations. However, the results of years of population estimates at Ekati show fish populations depressed as a result of years of lethal sampling seem to be rebounding since the change from sampling every 3 years to every 6 years. Also, lethal sampling has been replaced by non-lethal sampling methods, which further reduces the impact of fish populations.

AEMP Annual Report

Under-ice Oxygen in Cujo Lake

Oxygen levels continued to be low (below CCME guideline at depths below 3.4 m.) in Cujo Lake, consistent with its historical DO profiles. The AEMP report states that this is also consistent with DO concentrations at lower depths in reference lakes Counts and Nanuq. However this is somewhat misleading as low-oxygen conditions were measured at much shallower depths in Cujo (which also has a lower total water volume) than in the two reference lakes, thus providing a relatively smaller oxygen-rich habitat for fish than in those reference lakes.

Red fox at the Ekati site Photo Courtesy of Dominion Diamond Mines ULC.

Jay AEMP

The Agency wanted to see how the Jay AEMP would contribute to monitoring of multi-project cumulative effects in Lac de Gras downstream of the Jay Project (eg. using the same detection limits in water quality measurements as Diavik; comparability of sediment quality results when different sampling devices are used). The Jay AEMP Design (1.1) does not directly address how it would coordinate monitoring methods with Diavik's AEMP Design Plan, but simply states that it will provide to the GNWT (Environment and Natural Resources) all AEMP data that can be used in evaluating Ekati's contribution to cumulative impacts on Lac de Gras. DDMI's AEMP provides much greater detail on detection limits for water quality variables measured by the two different mines, as well as the sampling frequencies, depths and locations of both. (see Diavik AEMP Design Plan 5.1, section 6.0 Alignment of AEMPs in Lac de Gras). The Agency would like to see Dominion assess areas of data collection and analysis that may not be compatible at present between the two companies' AEMPs. Also, we haven't learned thus far whether Dominion has taken steps to coordinate AEMP methodologies with DDMI for Lac de Gras/Lac du Savage monitoring.

TRADITIONAL KNOWLEDGE AND ENGAGEMENT

HIGHLIGHTS

- The Agency conducted a Wildlife and Closure Workshop focusing on how best to close the mine roads and waste rock piles in relation to wildlife movement and usage.

View of the main camp at the Ekati mine site.
Photo Courtesy of Dominion Diamond Mines ULC.

ACTIVITIES 2019-20

Wildlife and Closure Workshop

In January 2019, the Agency conducted information sessions on Dominion's Interim Closure and Reclamation Plan Version 3.0 (ICRP V. 3.0) where we heard from communities that they wished to spend more time together talking about closure. In response, the Agency facilitated a two-day wildlife and mine closure workshop in February 2020, that brought together elders, youth and participants from each of our Aboriginal Society Members to share information, ideas, concerns and recommendations unique to each group about the proposed closure of roads and waste rock storage areas in relation to wildlife. The Agency listened to the discussions but only actively participated to provide technical information and answer any questions participants had about the current plan to close the mine.

The workshop enabled a continued conversation on mine closure and reclamation planning including the incorporation of Dene and Metis Traditional Knowledge, Inuit Qaujimaningit and community knowledge. During the workshop, Traditional Knowledge holders frequently reminded the Agency about traditional laws (or ways of knowing) and stressed the importance of their use in closure options and implementation at Ekati. Workshop participants shared many of the lessons learned through working and negotiating with the mining industry and expressed frustration over mining companies' reluctance to incorporate people's recommendations and Traditional Knowledge into mine development and closure. Through discussions participants developed recommendations tied directly to their guiding principles, concerns and lessons learned.

Some the concerns we heard from the workshop participants were of a general nature not tied directly to the specific workshop topics of reclamation of waste rock piles and mine roads, included:

- The mining industry needs to be held responsible and accountable to the communities;
- Dominion should re-evaluate the Traditional Knowledge Elders Group (TKEG) as it is not working as envisioned by the communities, and documentation of their work and how it informed the ICRP cannot be found. The TKEG needs to meet more regularly and Dominion should learn more about the activities of the Diavik Traditional Knowledge Panel which has been functioning for over a decade;
- Concern about the broader issues of industry-generated chemicals, industrial projects' downstream effects, long-range transport of chemicals in the air and cumulative effects from multiple developments and climate change on their communities;
- Concern about the environmental effects of winter roads developed for mineral exploration and development activities and that no agency appears to be taking responsibility for monitoring, regulating and controlling access on winter roads;
- Concern about airstrips being removed upon closure, as the diamond mines are in a remote area and these may be useful for emergency landings;
- Concern that mining companies are impacting traditional food security (i.e., creating conditions contributing to caribou population decline).
- Concern that if the mine changes hands, new owners may not honour the previous commitments or initiate new meetings to build relationships with communities;
- Concern that the financial security currently held will not be enough for ongoing monitoring after the mine closes. Communities require information on how security estimates are calculated for all closure activities;
- Concern about long-term monitoring and the need for communities to be leading programs through guardians and community-based monitoring initiatives;
- Concern that Traditional Knowledge is not being documented and interwoven into the Project in a transparent, respectful and appropriate way. It isn't apparent which information used by the Project is contributed by Traditional Knowledge vs by science; and

Participants of the Agency's Wildlife and Closure Workshop watching the Tłı̨chǫ version of our Agency video.

- The regulatory boards and agencies need to involve community members in the mine exploration phase and find ways to support the use of Traditional Knowledge in decisions.

Participants also developed recommendations for reclamation, tied directly to their guiding principles, concerns and lessoned learned:

Closure and Monitoring:

- The land should be cleaned up to almost what it was like before mining began, that was what BHP (the original Ekati mine owner), promised. Cost should not be an issue;
- Monitoring must continue long after closure and the Ekati owners must not be allowed to leave the site until the communities are satisfied with reclamation;
- Ekati's owners should contribute to the cost of on-going monitoring to be established and done by the communities themselves.

Roads

- Ekati owners should work with community members to look into technologies and options to prevent erosion and keep dust down;
- Caribou ramps must be wider than 30 meters (m) as currently they are much too narrow for large herds if wildlife populations increase again;
- The entire length of the roads should be caribou-friendly and the edges sloped at a minimum of 4:1, except where there are water or drainage features where the culverts should be removed and the natural flow of the water system can be returned to the natural state;
- Roads should not be more than 1.5 m above the adjacent ground;
- Some roads should be kept ATV accessible to enable monitoring;

Agency Executive Director Marc Casas presents to attendees at the Agency's Wildlife and Closure Workshop in February of 2020.

- A caribou-friendly layer of gravel should be lain over the coarse rock on the side of the roads. Rocks used for the road sides should not create any chemical contamination (e.g., not generate acid);
- Why have another 12 years of impacts to caribou that could be avoided? Work to close the roads should start now; and
- The roads need to be monitored after closure to see how the caribou cross and how water is flowing. Community members need to see it with their own eyes, for themselves.

Waste Rock Storage Areas

- Participants remarked that they have requested consistently from the beginning to remove clean waste rock piles and dispose of the material in the pits. This would reduce the depth of pits as well as the size of rock piles above local terrain, which leave huge scars on the land. Participants recognize that waste rock that is contaminated should not be put into pits if water is going to be added. Participants commented that communities have difficulty accepting that mines cannot afford to put waste rock back into pits;
- All future pits should be filled with clean waste rock. Expanding mines as well as new mines must not be permitted without this condition;
- There should not be an assessment of low, medium and high usage by caribou of the rock piles. The area was high usage at one time and caribou go everywhere;
- All waste rock storage areas should be treated the same for caribou by providing a minimum side slope of 4:1; and
- The top of rock piles should be dome-shaped to avoid pond development on top.

In terms of next steps participants also recommended:

- Dominion do more to engage and consult communities so that Traditional Knowledge can have its rightful place in informing operations and closure;

- The Agency hold further sessions at the community and regional levels to discuss the ICRP and waste management at closure;
- The workshop findings should be distributed to all involved in the regulatory process to consider changes;
- Dominion, Wek'eezhii Land and Water Board (WLWB) and governments participate in the next workshop as observers to listen to participants' words; and
- There should be requirements for community hearings when any mine wants to expand their operations beyond their original plan.

Use of Traditional Knowledge in Operations

Traditional Knowledge Elders Group
The TKEG did not hold any meetings in 2019. The Ekati TKEG was originally established to provide Traditional Knowledge input into the design and operations (including closure) of the Jay Project. Since that time however, the scope of the TKEG has expanded and the knowledge gathered is now applied to the entire mine site.

Kugluktuk Traditional Knowledge Seed Project
In 2019 all the seeds and live plants collected by community members from along the coast of the Coronation Gulf near Kugluktuk in 2018 were planted within the vegetation trials being undertaken at the Cell B Long Lake Containment Facility (LLCF) Reclamation Research Area. This is a good example of traditional knowledge being incorporated into reclamation research for closure at the mine site.

Environmental Monitors
Dominion continues to provide opportunities for Indigenous community members to become familiar with Ekati mine environmental monitoring programs. From March to July 2019, community members helped Dominion conduct monitoring of cliff-nesting birds that attempted to establish nests on Misery, Lynx, Pigeon and Sable pit walls.

Community-Based Traditional Knowledge Projects
Dominion supports various community-based traditional knowledge projects that are being implemented by the communities themselves such as the Ekwo Naxoede K'e (Tłı̨chǫ Boots on the Ground), the Lutsel K'e Dene First Nation's Moccasins on the Ground and the Yellowknife Dene First Nation's On-the-Land Caribou Monitoring. These programs are Indigenous driven and monitor the caribou herds, habitat and impacts on caribou. The programs draw on the Traditional Knowledge of elders and harvesters and rely on their ways of travelling and assessing changing conditions on the land.

Engagement Workshops

Fisheries Offsetting Options

Community engagement meetings were held in Fort Smith and with the YKDFN regarding Fisheries Offsetting Options for the Jay Project.

AGENCY ASSESSMENT

The Agency heard during the February 2020 Wildlife and Mine Closure Workshop that participants felt there was not enough time to review the ICRP V. 3.0 and to fully develop their recommendations to improve it. They noted the need for this group of participants to meet with the company and the WLWB to share concerns and explore solutions before the plan is approved. Overall, the participants felt the way in which Ekati has considered Traditional Knowledge is unacceptable and needs to be addressed and that there needs to be a review of the way in which Traditional Knowledge is interwoven into the Project, protected, owned and shared. They also expressed a need to develop a process with Indigenous governments on how Traditional Knowledge should get collected and how it should get used. The Agency would like to see Dominion act on these recommendations from the workshop.

It was also recommended during the workshop that the TKEG needs to meet more regularly, with youth and Indigenous government staff in attendance. Participants noted that without Indigenous government staff being there and without their technical knowledge of how to interpret and present Traditional Knowledge there will be limited understanding of Traditional Knowledge by non-Indigenous observers or participants. These staff will also help elders understand the mining process.

Workshop participants also recommended that the Agency participate as observers in the TKEG meetings. Requests to meet with the TKEG have been made by the Agency to Dominion on several occasions, with a response that they would forward our request to the TKEG.

As we noted in our Annual Report last year, in the past Dominion produced a quarterly newsletter with the goal to keep in touch with the communities and provide updates on their programs. This newsletter was widely distributed and provided updates in plain language for community members and the public. Dominion did not produce their newsletters again in 2019 and the Agency encourages Dominion to re-introduce them as they are a way to reach a larger community audience.

AIR QUALITY

HIGHLIGHTS

- Air quality remains good with no ambient air quality or dustfall standards and guidelines being exceeded.
- Results from the Dust Suppressant Pilot Study Report 2018/2019 indicate EnviroKleen™ is effective dust suppressant when applied over the year.

Dustfall monitoring stations at the Ekati mine site.
Photo Courtesy of Dominion Diamond Mines ULC.

ACTIVITIES 2019-2020

The Ekati Air Quality Monitoring Program (AQMP) was initiated in 1998 and the results are published every three years, together with the snow chemistry and lichen sampling program. The next full report was expected in 2021. However, snow chemistry and lichen tissue monitoring components of the AQMP, which were scheduled to be conducted in 2020, were delayed to 2021 due to the temporary suspension of all mining operations at the Ekati mine site in response to the Covid-19 pandemic.

In 2019 Dominion produced an interim Air Quality Monitoring Report that provides the results of the meteorological, ambient air quality and dustfall monitoring, and air contaminant and greenhouse gas (GHG) calculations in accordance with the approved AQMP. The reporting requirements as outlined in the Air Quality and Emissions Monitoring and Management Plan (AQEMMP) for the Jay Project (January 2017) have not yet been implemented due to the ongoing optimization of the Jay Project and the associated delays in the project timeline.

Air Quality Monitoring Results 2019

Overall, Dominion states that there were no reported exceedances of the Government of Northwest Territories (GNWT) Air Quality standards at the mine site in 2019.

Meteorological Monitoring

Meteorological data at the Ekati mine are collected daily from the airport when personnel are on duty, the Koala meteorological station year-round, and the Polar Lake station during the open water season. Wind data were not collected on 7 out of 364 days during January, April and December due to the wind sensor freezing.

Rock ptarmigan, photo courtesy of Dominion Diamond Mines ULC.

In 2019 the annual average temperature was -9.2°C, which is 0.3°C lower than the historical record average (1995 to 2018). Spring freshet conditions occurred in late June which is relatively late compared to other years where it usually occurs in late May or early June. The annual precipitation amount was 289 millimeters (mm), 12% or 40 mm lower than the historical average of 329 mm. A trend of lower total annual precipitation has been occurring over the last few years with 2017 and 2018 being the driest years on record. Winds at the mine site are from all directions, however the dominant direction is from the northwest.

Ambient Air Quality Monitoring

The Continuous Air Monitoring Building (CAMB) contains analyzers which continuously measure ambient air quality for concentrations of sulphur dioxide, nitrogen oxides (NO, NO2, NOx), total suspended particulates (TSP), and fine particulate matter with aerodynamic diameter less than 2.5 µm ($PM_{2.5}$), as well as ambient temperature, wind speed, and wind direction. Additionally, in 2019 particulates were measured at three Partisol sampling stations: Grizzly (TSP); Cell B (TSP); and a station adjacent to the CAMB ($PM_{2.5}$). Partisol stations are operated for a 24-hour period every six days. The six-day sampling schedule follows the National Air Pollution Surveillance Program sampling schedule for TSP and $PM_{2.5}$.

Total Suspended Particulate

In 2019 Total Suspended Particulate (TSP) concentrations were similar to TSP concentrations during the 2015-2018 monitoring period, and there were no reported exceedances of the GNWT annual standard of 60 µg/m^3, or the 24-hour standard of 120 µg/m^3. TSP concentrations are generally higher between May and September as winter snow acts as a natural dust suppressant.

The 2019 $PM_{2.5}$ concentrations were comparable to 2018 but lower than 2017 and 2015. Dominion reported that on two occasions, one in March and the other in April, the daily $PM_{2.5}$ concentrations at the CAMB (Partisol) station were above the 24-hour GNWT $PM_{2.5}$ standard of 28 µg/m^3. The exceedances were considered to be invalid (not used in the reporting) and explained as localized contamination of the sample as the adjacent CAMB station did not record similar elevated $PM_{2.5}$ values on those dates.

Nitrogen Dioxide and Sulphur Dioxide

The hourly, daily, and annual concentrations of nitrogen dioxide (NO_2) and sulphur dioxide (SO_2) measured at the CAMB in 2019 were below the applicable GNWT standards. NO_2 concentrations were lower compared to the 2015-2018 samples, while SO_2 concentrations were similar to the 2015-2018 samples. SO_2 and NO_x concentrations were higher in the winter (November to April) compared to the summer due to seasonal fuel usage for heating. Data recovery for NO_2, NO, NO_x was only 34% compared to 95% average data recover in the previous years due to equipment failure from December 2018 that was not repaired until June 2019.

Dustfall Monitoring

In 2019, dustfall concentrations at 300 metres (m) from all haul roads were below the GNWT interim dustfall objective of 1.53 mg/dm^2/d. Dustfall concentrations decrease with distance from a haul road and approach background levels at 300 m. At the Lynx haul road stations, the seasonal average dustfall rates were lower than previous years likely due to reduced hauling activities between July and September. Concentrations along the Sable Road were higher than 2018 due to increased vehicle traffic and mining activity at the Sable pit. The airport, Long Lake Containment Facility, and Misery and Jay haul roads all had dustfall concentrations similar to 2018.

In general, all acid deposition concentrations were below the critical soil load established for several provinces. Metal deposition concentrations are proportional to the amount of total dustfall and were highest at locations close to the Lynx, Sable and Misery haul roads.

Air Emissions

Every year Dominion calculates GHG air emissions resulting mainly from burning of diesel fuel and reports them to the National Pollutant Release Inventory and the Greenhouse Gas Emissions Reporting Programs. GHG emissions in 2019 were 25% lower than 2018 mainly due to decreased diesel fuel and waste oil consumption.

Dust Suppression Pilot Study

The Agency reviewed the results of the Dust Suppression Pilot Study Report 2018-2019. Fugitive dust can have a potential effect on vegetation, wildlife and water quality, and dust suppression methods are used on roads at the Ekati mine to minimize the generation of fugitive road dust. Historical dust management practices at the Ekati mine have primarily relied on the use of chemical dust suppressants DL-10 and EK-35 (for the airstrip) in addition to road watering. In response to concerns received regarding whether the current dust suppression practices could be improved and to satisfy Measure 6-2(a) of the Report of Environmental Assessment (EA) for the Jay Project, Dominion researched an alternative dust suppression product called EnviroKleen™. The EnviroKleen application study area focused on the Misery and Sable haul roads and included dustfall monitoring and soil and water sampling. EnviroKleen was chosen as it was previously used in underground operations at site, it had been used locally in two communities in the NWT and is non-toxic and water soluble. The five-year pilot program concluded in 2019.

The study indicated that EnviroKleen appears to be an effective dust suppressant and with proper road maintenance is able to maintain a sustained suppression of dust with repeated applications over the year. In order to maximize its effectiveness, the application of EnviroKleen requires very specific weather and road conditions. Suppression effectiveness appears to be comparable to that of DL-10 as dustfall results showed that there was no clear difference between the years when DL-10 was used versus the years EnviroKleen was used. However, comparisons of dust suppressant efficacy are affected not only by variations in mine activity (e.g., amount and type of traffic) but also by natural factors (e.g., relative humidity, amount and frequency of precipitation, wind speed and direction). Both DL-10 and EnviroKleen are compromised by heavy road use and road surface damage, which increases the likelihood of dust generation and dispersal. Visual qualitative observations show that compared with DL-10, EnviroKleen does not break down as quickly and lasts longer.

In response to concerns expressed by the Łutselk'e Dene, Dominion collected soil and water samples along the Misery and Sable roads to find out the amount that EnviroKleen spreads across the surface of the road and surrounding tundra. For comparison, samples were collected at Nanuq Lake, a reference site used in the Ekati Aquatic Effects Monitoring Program. In 2018 soil samples were collected from the center of the road as well as at 1 m, 5 m, and 10 m from the edge of the road over the summer months. In 2019 soil samples were restricted to the road surface and were collected from the center of the road, and with 1 m, 5 m and 10 m from the centre of the road to determine how the product migrated across the surface of the road with road work. Water quality samples were collected from a waterbody close to the soil sampling locations. All soil and water samples were sent to a laboratory for analysis. Results showed that EnviroKleen concentrations decrease with distance from the road and do not increase cumulatively with each maintenance application. However, EnviroKleen was shown

to be transported to a distance of at least 10 m off the road. No EnviroKleen was detected in the waterbodies located nearest to the Misery or Sable road monitoring stations. Dominion also conducted toxicity testing in a laboratory and demonstrated that EnviroKleen is biodegradable in water and is neither acutely nor chronically toxic to various aquatic species.

AGENCY ASSESSMENT

While the Agency understands the reasons for the delay in the snow chemistry and lichen tissue monitoring, and agrees that rescheduling these sampling components until 2021 will not impact the consistency of the historical dataset, sampling the snow chemistry in a year when the mine was not under typical operating conditions would have provided an interesting dataset for comparison purposes.

The Agency reviewed the AQEMMP for the Jay Project in 2016. At the time Dominion committed to amalgamate the Ekati Air Quality Monitoring Plan with the Jay Project AQEMMP into a single, site-wide plan by 2017. Dominion has noted in the 2019 Air Quality Monitoring Report that it does not include reporting requirements as outlined in the AQEMMP due to the ongoing optimization of the Jay Project and the associated delays in project start-up. The Agency is dissatisfied that the AQEMMP has not been amalgamated with the AQMP and that air quality reporting as part of this program has not started yet. The Agency considers the amalgamation to be important as it would consolidate and ensure consistency between air quality monitoring programs across the mine site. In addition, an amalgamated plan would implement the thresholds and triggers site wide for NOx, PM2.5, and TSP that have been developed as part of an adaptive management framework required under the AQEMMP. The Agency recommends that Dominion finalize the consolidation of the current Air Quality Monitoring Program with the Air Quality and Emissions Monitoring and Management Plan to improve the monitoring of air quality across the entire mine site.

The Agency is encouraged by the lessons learned and the valued information gained about the best practices use of EnviroKleen and encourages Dominion to continue to measure the effectiveness of this dust suppressant. However, based on the Agency's review of the Dust Suppression Pilot Study Report 2018-2019 it appears difficult to get a definitive picture of its effectiveness compared to DL-10 or water. Although it reports that EnviroKleen is effective at reducing dust there seems to be numerous compounding factors that were not considered in the design of the trial, including weather, timing of precipitation, types of equipment, number of applications and traffic volumes.

Sampling showed EnviroKleen concentrations in the soil at 10 m from the Misery Road to be similar or greater than the road concentration. The report, however, does not explain why these concentrations are similar or how long these off-road concentrations are expected to take to biodegrade.

It is also unclear from the report if Dominion prefers EnvioKleen over the other dust suppressants and if they will continue to apply it along the haul roads. The Agency notes that pre-application TSP levels in 2019 along the Sable Road exceed the GNWT average 24 hr standard of 120 ug/m^3 which shows the need for continued dust suppression. Based on the results of the dust suppressant study report, we encourage Dominion to apply EnviroKleen to all roads at Ekati, especially the Sable road where caribou are most abundant.

The Agency is concerned that there are no enforceable air quality standards in the Northwest Territories and no regulatory system to manage air quality. The Agency had reported in its 2017-18 Annual Report that the GNWT was actively working to develop an air quality regulatory Framework and regulations for the Northwest Territories. However, the Agency has received no further updates as to the progress being made to develop either the Framework or air quality regulations. The Agency recommends that the Government of the Northwest Territories make greater efforts to develop enforceable Air Quality regulations.

WASTE ROCK MANAGEMENT

HIGHLIGHTS

- Significant questions persist over the use of ‘Total Neutralization Potential’ to evaluate the ability of waste rock to neutralize acidic conditions.
- Dominion has initiated work on a Seepage Management Framework.

Haul truck at the Ekati mine. Photo Courtesy of Dominion Diamond Mines ULC.

WASTE ROCK STORAGE AREAS

Waste Rock Storage Areas (WRSA) contain the large quantities of waste rock and overburden excavated during mining of kimberlite ore. They are permanent landscape structures that will remain in place following the completion of mining and are designed to be physically stable, both during mine operations and in the long term; promote the establishment of permafrost; and achieve a reasonable balance between surface footprint area and pile height.

There are currently five WRSAs at the Ekati mine: Panda/Koala/Beartooth, Fox, Sable, Pigeon and Misery/Lynx. A sixth WRSA is planned with development of the Jay Project. Another large pile of rock is the Coarse Kimberlite Rejects Storage Area (CKRSA) located adjacent to the Panda/Koala/Beartooth WRSA and is comprised of rejected kimberlite ore from the process plant. A description of the WRSAs and CKRSA is provided in Table 2.

More than 20 million tonnes (mt) of waste rock and coarse kimberlite was deposited at various locations in 2019. This includes 13.8 mt of waste rock deposited at Sable, 4.2 mt at Pigeon, 1.0 mt at Misery/Lynx and 1.2 mt of coarse kimberlite at the CKRSA. In addition, 0.5 mt of waste rock was deposited into the Lynx pit following completion of mining activities.

DESIGN, MANAGEMENT AND STUDIES

Waste Rock Monitoring

Waste rock and course kimberlite rejects are routinely sampled and analyzed for acid base accounting and major and trace element concentrations. Eighty-three samples were collected in 2019 including: 3 from the underground operations at Misery; 23 from Pigeon pit; 26 from Sable pit; 23 from Lynx pit; and 8 samples of course kimberlite reject.

Waste Rock Neutralization Potential

A significant focus of the Agency over the past couple years has been on Dominion's use of **Total Neutralization Potential (NP)** to measure rocks' abilities to neutralize acid from the oxidation of sulphides and other acid-producing minerals. In our previous 2018/2019 Annual Report, the Agency reported that significant questions persist over this practice and suggested using **Effective NP** is a more accurate means of determining the ability of the rock to neutralize acidity. This view was raised again by the Agency in 2019 during reviews related to the use of diabase as a construction material (see below) and the use of diabase as a cover material for the Misery WRSA (see Closure and Reclamation chapter).

This issue continues to be unresolved despite the Wek'eezhii Land and Water Board (WLWB) agreeing that uncertainty exists around the classification of waste rock. In an effort to bring clarity and closure to this subject, Dominion began undertaking material characterization, mineralogical analysis and kinetic humidity cell testing to determine the Effective NP of waste rock. Results are expected to be used to update the Jay Waste Rock Co-placement Study Design and will be included in a broader site-wide study into Effective NP that Dominion has indicated will be provided to the WLWB inlate 2020.

Wall of a pit at the Ekati mine. Photo courtesy of Dominion Diamond Mines ULC.

Table 2 - Ekati Mine Waste Rock and Coarse Kimberlite Rejects Storage Areas.

	Panda/Koala/ Beartooth	Fox	Sable	Pigeon	Misery/Lynx	Jay	Course Kimberlite Rejects
Operational Status	Complete	Complete	Active	Active	Active	Future	Active
Rock Types Contained	Granite, Diabase	Granite, Diabase, Waste Kimberlite	Granite, Diabase	Granite, Diabase, Metasediment, Till	Granite, Diabase, Metasediment	Granite, Diabase, Metasediment	Coarse Processed Kimberlite
Final Designed Area (ha)	428	383	182	66	151	227	115
Final Designed Height (m)	40	50	65	70	65	65	50
Current Volume (million tonnes)	169	214	33.2	11.6	100	155 (planned)	39.4
Other Features	Waste Hydrocarbon Landfarm, Operations Landfill	Hydrocarbon Impacted Soils	None	None	Operations Landfill, Hydrocarbon Impacted Soils	None	None

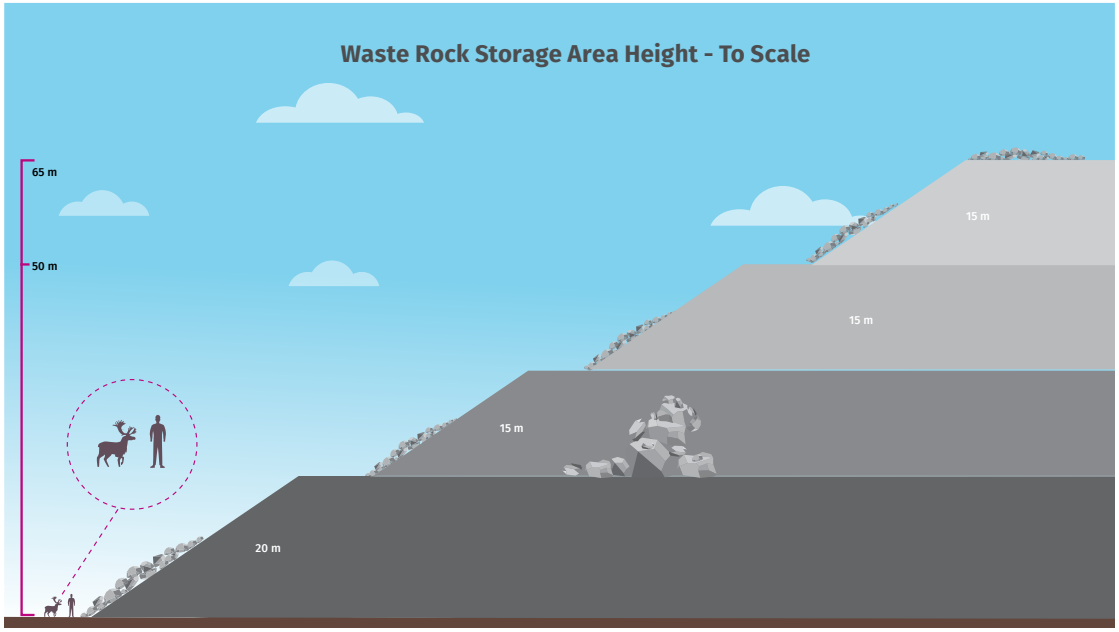


Diagram 1: Waste rock storage area illustration

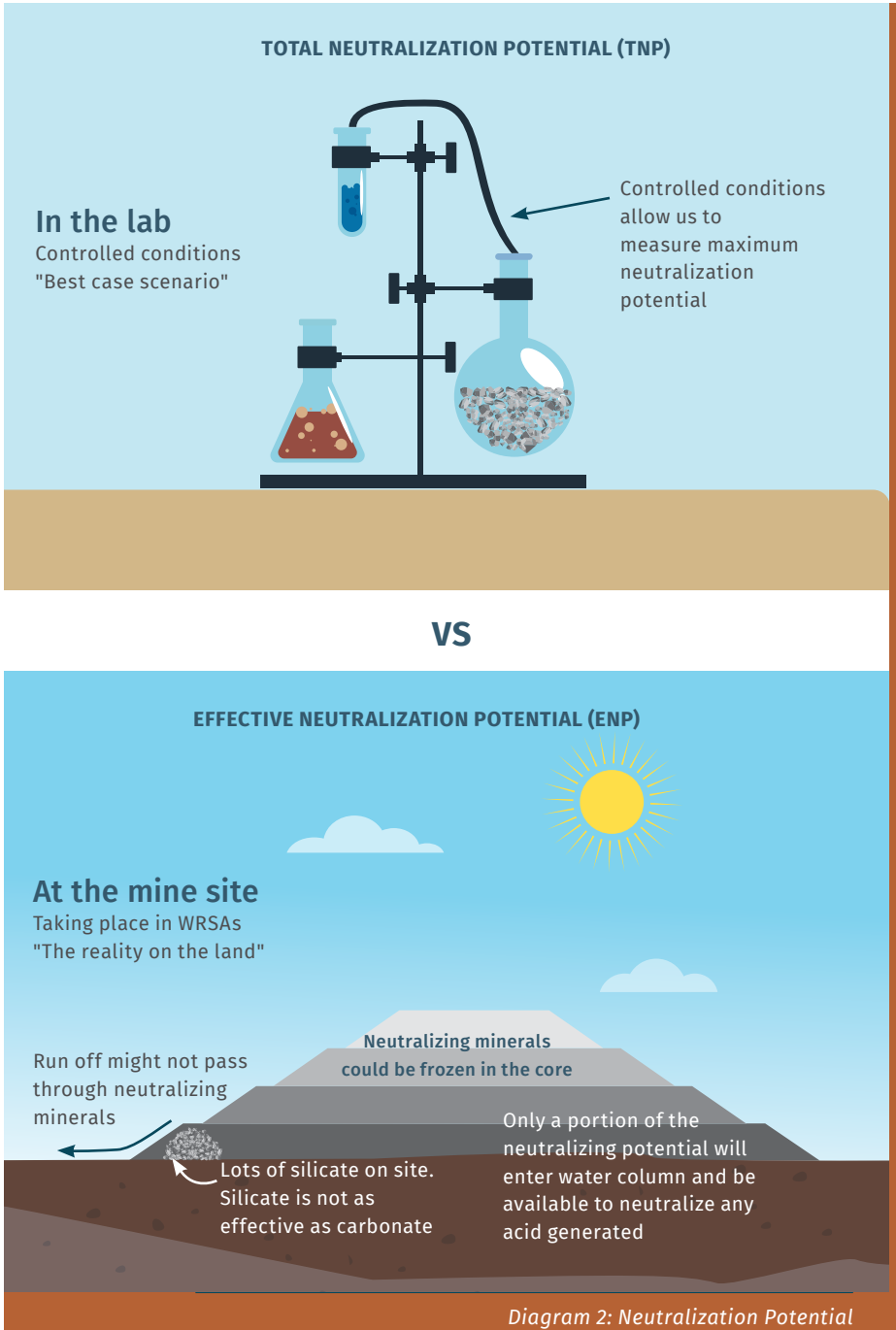


Diagram 2: Neutralization Potential

WHAT IS NEUTRALIZATION POTENTIAL AND WHY IS IT IMPORTANT?

The formation of mine acid drainage and the contaminants associated with it has been described by some as the largest long term environmental problem facing the mining industry. It is a difficult and costly problem as acid generated through oxidation of sulphides and other natural minerals in waste rock can cause metals such as copper and cadmium to leach from WRSAs into adjacent lakes and streams. Fortunately, if sufficient neutralizing minerals are also found in the rock, the acid can effectively be neutralized and the problems associated with acid mine drainage reduced or eliminated.

Carbonate, silicate, aluminium and iron hydroxides and oxides, and aluminosilicate are among the common minerals capable of contributing to the neutralization of acidic solutions, but their reactions and reaction rates vary widely. What specific minerals are present in the rock, their concentrations and the weathering mechanisms taking place under the site specific conditions determine the waste rock's potential to neutralize the cumulative rates of generated acid.

Waste rock at Ekati generally has low amounts of carbonate minerals and relies on silicates to neutralize acid. In general, silicate minerals react slower to acid conditions than carbonate minerals.

Total Neutralization Potential (TNP) is a measure of the total, or cumulative, acid a material is capable of neutralizing. The testing involves dissolving and quantifying all the neutralizing minerals in a rock sample including those that may not contribute similar acid neutralization properties under actual field conditions.

Effective Neutralization Potential (ENP) is a measure of the actual, or effective, neutralization potential residing in rock under the environmental conditions it resides in. Unfortunately, no single available testing method can accurately simulate all the factors that determine actual drainage chemistry under field conditions. This makes the testing difficult, time consuming and more costly.

Diabase Construction Material Risk Mitigation

In 2018, Dominion proposed for the first time that diabase rock be approved for use as a construction material for roads, laydown pads, dykes and berms in the same manner as granite is currently used. They argued that diabase, like granite, has non-existent to low acid generation and metal leaching potential and that its use in construction presents no significant risk to adjacent terrestrial and aquatic environments.

An assessment of the diabase geochemical database by the Agency revealed important differences in neutralization potential and sulphur content between diabase removed from Lynx pit and diabase removed from other pits. In its subsequent decision, the WLWB approved the use of Lynx diabase as a construction material provided there is suitable risk mitigation in place. The use of non-Lynx diabase as a construction material was not approved because of uncertainties related to rock geochemistry.

In response, Dominion submitted a proposed Lynx Risk Mitigation Program in 2019 which consists of additional rock sampling, seepage monitoring and a further analysis of diabase geochemical data. Following review, the Board approved the mitigation program but directed Dominion to implement a revised sampling regime and clarify the trigger for additional seepage sampling of construction material runoff. The Board also confirmed that new geochemical evidence would need to be provided if Dominion wishes to use non-Lynx diabase as a construction material.

Pigeon WRSA Ground Temperature Cable Installation

Dominion has entered into a partnership with the University of Waterloo to examine geothermal properties of the Pigeon WRSA. A single horizontal ground temperature cable (GTC), also known as a thermistor string, was installed running north to south in the rock pile. Once construction of the WRSA has been completed in 2022, the GTC is expected to be covered with approximately 20 m of waste rock. The Pigeon GTC is the first cable at Ekati to be installed horizontally. It should provide much needed information on horizontal variability of geothermal conditions of both the unfrozen active layer and the interface zone located between the active layer and predicted frozen waste rock core.

Seepage Management

As a condition of the current Water Licence, Dominion is required to monitor the quality of seepage from WRSAs and the CKRSA and report the findings annually. In addition, a comprehensive report interpreting the results of all seepage survey data collected since Ekati began operating is to be submitted to the WLWB for review and approval every 3 years. The 2019 Waste Rock and Waste Rock Storage Area Seepage Survey Report (the Seepage Report), which includes this major interpretation of results, was submitted in March 2020.

Monitoring of seepage continued during 2019. All previously documented seeps along with 14 new seepage stations were checked and samples obtained where a measurable flow was observed. Fifty seeps were sampled during spring freshet, 8 following significant rainfall events in July and August, and 17 during the fall survey.

Monitoring indicates that seepage water from WRSAs is being influenced in different ways by the adjacent waste rock. Some samples indicate the heavy influence of sulphide oxidation (acid drainage), weathering and leaching of metals from the waste rock as well as the flushing of explosive residues and fine rock. Other samples indicate these influences are minimal with seepage quality being similar to that of background surface water reference stations.

Trends in seepage quality from the CKRSA are more consistent than from the numerous WRSAs. Overall, monitoring suggests that flushing of fine kimberlite, colloidal material and major and trace elements is taking place. In part this is due to the continuous discharge of waste kimberlite slurry from the processing plant to the area. Unlike seepage from WRSAs, the pH of CKRSA seepage is typically alkaline suggesting that carbonate buffering is taking place within the pile.

The WLWB requires Dominion to report any seeps entering the receiving environment that exceed the Water Licence Effluent Quality Criteria (EQC) along with any corrective action being taken. Four exceedances were reported in 2019: multiple exceedances of EQCs occurred at Seep-081 and 081A (between the Jay Crusher Pad and Cujo Lake); the Total Suspended Particulate EQC was exceeded at Seep-373A (between Fox WRSA and Three Hump Lake) following an early July rainfall event; and the Total Aluminum EQC was exceeded at Seep-019 (between the Panda/Koala/Beartooth WRSA and Bearclaw Lake) although it is unclear whether the WRSA or soils along the flow path was the source of the aluminum.

Waste Rock Seepage Flow Rate Monitoring

A seepage flow monitoring program was initiated in 2018 to evaluate seasonal flow rate variability in the Panda/Koala/Beartooth and Pigeon WRSAs. In-stream weirs were installed at two seeps and monitored through the 2018 and 2019 open water seasons. Preliminary results suggest that, in the case of the older Panda/Koala/Beartooth WRSA, a strong rainfall event triggers a sharp short-term spike in seepage flow rate while, in the case of the newer Pigeon WRSA, a similar rainfall event triggers a longer lasting, but lower seepage flow rate. This effect may be related to the age of the WRSA as the core of older Panda/Koala/Beartooth WRSA is colder and wetter than the newer Pigeon WRSA. It is unclear whether Dominion plans to continue the monitoring program.

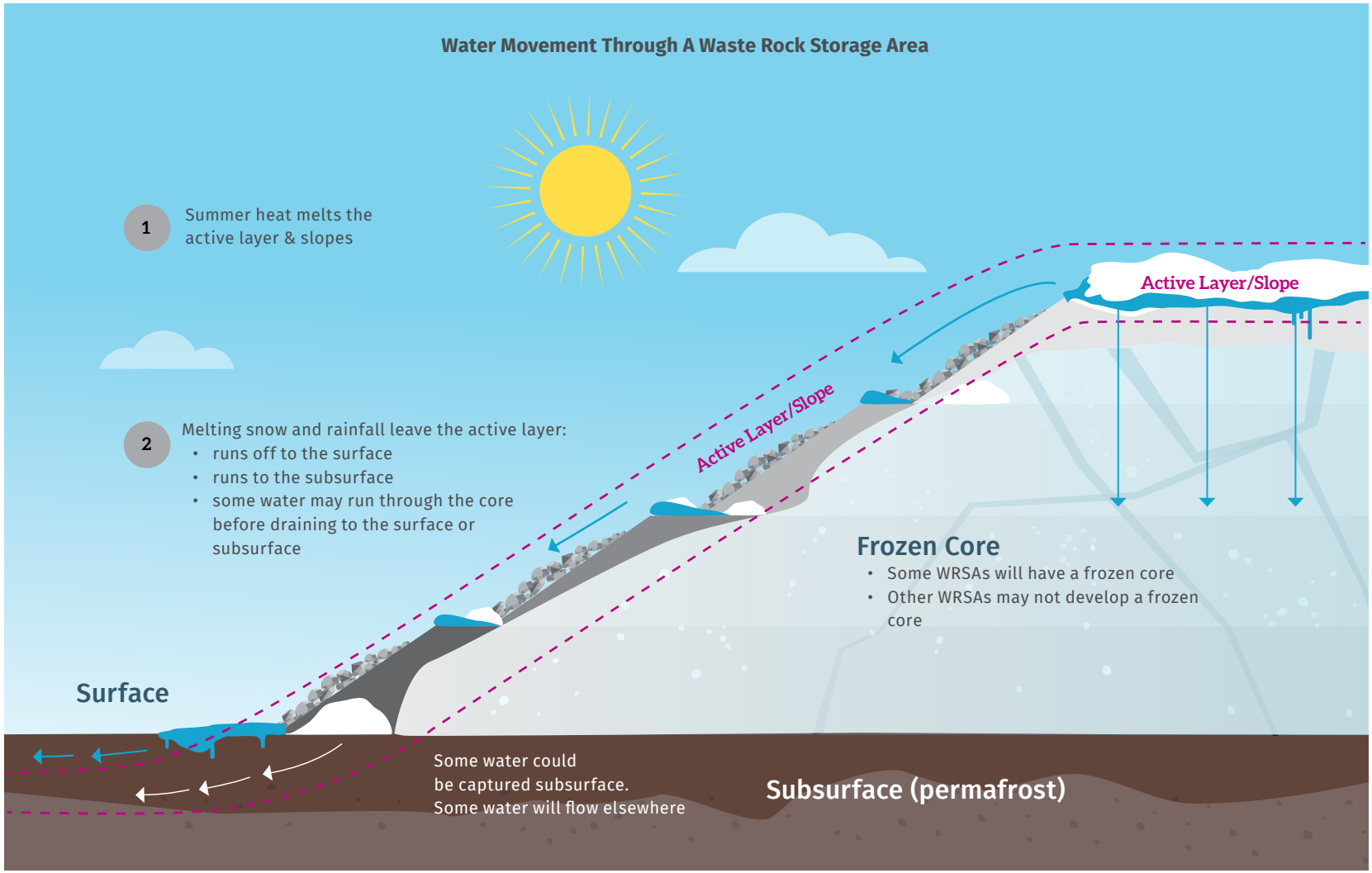


Diagram 3: Seepage

Groundwater Flow Evaluation

In recent years the Agency has questioned whether the current surface seepage monitoring program results accurately reflect the quality and volume of seepage coming from WRSAs or whether a portion of the seepage remains untested in the subsurface flow. In 2019, Dominion completed a 'desktop' review of information (i.e., no field work or analysis were undertaken) related to groundwater processes, particularly as they relate to areas surrounding the WRSAs. The review concluded that surface flow is considered to be the transport mechanism for most seepage from WRSAs with only a limited quantity being transported through subsurface flow.

AGENCY ASSESSMENT

The management of potential for long-term acid drainage and metal leaching requires specific WRSA design and management strategies to be implemented during mine operations as it has significant implications for closure planning.

Little progress was made in 2019 towards resolving outstanding questions related to how best to analyze for and determine the effective neutralization potential of waste rock at Ekati. The Agency notes that the WLWB has increasingly been raising this concern in their formal decisions. The Agency hopes that the geochemical characterization, mineralogical analysis and kinetic humidity cell testing of waste rock currently being undertaken by Dominion will lead to the resolution of this issue.

While eight problem seeps were reported in 2018 compared to only four seeps exceeding the Water Licence EQC in 2019, it is difficult to compare the results as the exceedance screening method used changed.

The Agency suggested in 2019 that Dominion's current method of evaluating risk from seeps using EQCs and developing adaptive management strategies was not satisfactory because EQCs are specifically developed for large points of controlled discharge (e.g., discharge of water from the Long Lake Containment Facility). Seepage fundamentally differs from these point sources in flow volumes, receiving water bodies, point of entry configurations, mixing zones and dilution characteristics. As a result, Dominion has begun developing a new Seepage Management Framework to replace the current method of identifying problem seeps. The Framework is expected to incorporate ecologically-based thresholds, action levels and adaptive management strategies that have been specifically designed for seepage sources. We support Dominion's efforts to develop a Seepage Management Framework and look forward to reviewing the proposed Framework in 2020.

Seepage from WRSAs represents a long-term risk to the environment that needs to be managed while the mine is operating and following closure. The risk from seepage is dependent upon three major factors: the type and concentration of contaminants leaving the WRSAs; the volume of flow; and the sensitivity of the adjacent environment. Dominion's existing seepage monitoring program provides valuable information on the type and concentration of contaminants leaving WRSAs while the Aquatic Effects Monitoring Program assesses the state of the adjacent lakes and streams. However, accurate information on the volume of seepage flow remains unavailable.

The Seepage Flow Monitoring Program and the Subsurface Seepage Flow Evaluation represent welcome, but provisional, measures to begin addressing this issue. The Agency would like to see Dominion continue its efforts to evaluate flow patterns by installing real time surface and subsurface flow instrumentation at selective seepage locations.

WASTEWATER AND PROCESSED KIMBERLITE MANAGEMENT

HIGHLIGHTS

- Dominion began depositing fine processed kimberlite (FPK) into the Panda and Koala pits in May 2019.
- Dominion began storing water from the Misery underground mine and King Pond Settling Facility (KPSF) in Lynx pit.
- Further research is needed to support a decision about the depth of freshwater cap required above FPK in pit lakes.

Dyke between cells of the Long Lake Containment Facility.
Photo Courtesy of Dominion Diamond Mines ULC.

WASTEWATER AND FINE PROCESSED KIMBERLITE

The Wastewater and Processed Kimberlite Management Plan (WPKMP) describes site-wide wastewater management and FPK management. Wastewater management and FPK management are closely linked activities because the diamond recovery process produces large quantities of FPK that leaves the process plant as a slurry of fine ground up rock (sand/silt/clay sized particles) mixed with large amounts of water. Table 3 summarizes the types of wastewater and PK at the Ekati mine site.

Long Lake Containment Facility discharge point in Cell E.

Table 3 – Ekati Mine Wastewater and Processed Kimberlite Types.

Category	Type	Description/Sourcet
Minewater Runoff from facilities and water pumped from mines	Surface Minewater	Water that flows or is pumped from surface mine infrastructure, e.g., roads, waste storage areas, truck wash bays, collection sumps.
	Open Pit Minewater	Water that flows or is pumped from open pits.
	Underground Minewater	Water that flows or is pumped from underground workings.
Sewage Toilet waste and greywater	Sewage – Main Site	Sanitary sewage system at the main site.
	Sewage – Remote Sites	Sewage from remote work sites, e.g., Fox pit, Misery Camp.
Processed Kimberlite Material rejected from the process plant	Coarse Processed Kimberlite	Coarse kimberlite (> 0.5 mm diameter particles) rejected from the process plant. Trucked to waste rock storage areas (See Waste Rock section of this report for more information).
	Material rejected from the process plant	Fine kimberlite (< 0.5 mm diameter particles) discharged from the process plant in a slurry mixture of FPK and water.

WASTEWATER MANAGEMENT

Ekati mine relies on three water management facilities, where Dominion collects and then analyzes water samples to confirm compliance with the Water Licence Effluent Quality Criteria (EQC) before water is discharged to adjacent lakes.

- Two Rock Sedimentation Pond (TRSP) manages water from the Sable site, with discharge to Horseshoe Lake in the Horseshoe watershed.
- Long Lake Containment Facility (LLCF) manages water from the Main Camp, Panda/Koala/Beartooth area, Ammonium Nitrate Storage Facility, Polar Explosive Building, Fox site and Pigeon site, with discharge to Leslie Lake in the Koala watershed. Water management in this area sometimes relies on temporary storage in the Beartooth Processed Kimberlite Containment Area (PKCA) before discharge through the LLCF.
- KPSF at the Misery site manages water from the Misery and Lynx sites, with discharge to Cujo Lake in the King-Cujo watershed.

In future, Dominion plans to use the Misery pit to manage water from the Jay project, with discharge to Lac du Sauvage.

Dominion manages most surface minewater by temporary collection in sumps, followed by pumping or trucking to one of the three primary water management facilities. Surface minewater runoff from some roads, laydowns, and waste rock storage areas follows natural flow paths or is directed into the tundra. The Waste Rock and Ore Storage Management Plan dictates that roads and laydowns can only be constructed using materials that are non-potentially acid-generating with low metal leaching potential.

All sewage wastewater from the site is treated in the sanitary sewage treatment plant located at the main camp. Sewage from washroom facilities elsewhere on the site is also trucked to the sewage treatment plant. Treated effluent from the sewage treatment plant flows through a pipeline to the process plant, where it is mixed with FPK and then discharged to one of the PKCAs. In 2019, Dominion discharged 67,995 m^3 of sewage effluent.

Table 4 – 2019 management of open pit and underground water is summarized.

Mine Area	Source	Water Management	2019 Volumes (m^3)
Panda, Koala, Koala North	Underground	Pumped to LLCF or Beartooth PKCA. Discontinued in early 2019 when mining and underground reclamation completed.	22,791 to LLCF 0 to Beartooth PKCA
Beartooth	Open Pit	Pumped to LLCF. Can be used for FPK storage and temporary storage of water from other sources.	0 79,224 inflow from Panda/Koala Surface Sumps, and Pigeon Open Pit. No FPK placement in 2019.
Fox	Open Pit	Pumped to LLCF during operation. Currently accumulating in pit.	0
Pigeon	Open Pit	Pumped or trucked to LLCF or Beartooth PCKA.	0 to LLCF 74,640 to Beartooth PKCA
Lynx	Open Pit	Pumped or trucked to KPSF. Storage of non-compliant water from KPSF	9,520 to KPSF 377,360 from KPSF
Sable	Open Pit	Pumped or trucked to TRSP.	51,307
	Open Pit	Pumped to KPSF.	207,369
Misery	Underground	Pumped to KPSF or Lynx pit	23,627 to KPSF

FINE PROCESSED KIMBERLITE MANAGEMENT

In March 2019 the Wek'èezhìi Land and Water Board (WLWB) granted approval for Dominion to begin depositing FPK in Panda and Koala pits – the Panda-Koala PKCA – in accordance with conditional approval of WPKMP v8.0. Dominion began depositing FPK into Panda pit in May 2019 and Koala pit in November 2019. It continued to deposit FPK to the LLCF throughout the year, but did not place any FPK in Beartooth PKCA in 2019. Table ???? lists volumes of FPK and process plant water deposited in each storage facility in 2019.

Cell D of the LLCF continued to be the source of water for the process plant in 2019. Dominion pumped more than 5 million m^3 of water from the LLCF for use in the process plant.

The Beartooth PKCA continues to serve as a minewater retention pond when water quality conditions make it beneficial to divert certain minewater sources away from the LLCF. For example, water with elevated nitrate, chloride and potassium concentrations may be directed to Beartooth PKCA where it can mix with other water before discharge to the LLCF. In 2019, Dominion placed water from the Pigeon Open pit and surface sumps in the Panda and Koala area in the Beartooth PKCA.

The LLCF has five cells (A through E) separated by Dikes B, C and D. Dominion monitors compliance with Water Licence Effluent Quality Criteria at the Outlet Dam for Cell E, with discharge to Leslie Lake requiring prior approval by the water licence inspector. Dominion has only deposited PK in Cells A, B and C. Cell B has been filled to capacity while Cells A and C have remaining space for FPK storage.

Table 5 – FPK and water volumes deposited into PK Containment Facilities in 2019.

Facility	Process Plant Solids – FPK (m^3)	Process Plant Liquids (m^3)
LLCF	358,903	3,045,439
Panda pit	480,636	2,978,617
Koala pit	149,393	949,967
Beartooth PKCA	0	0

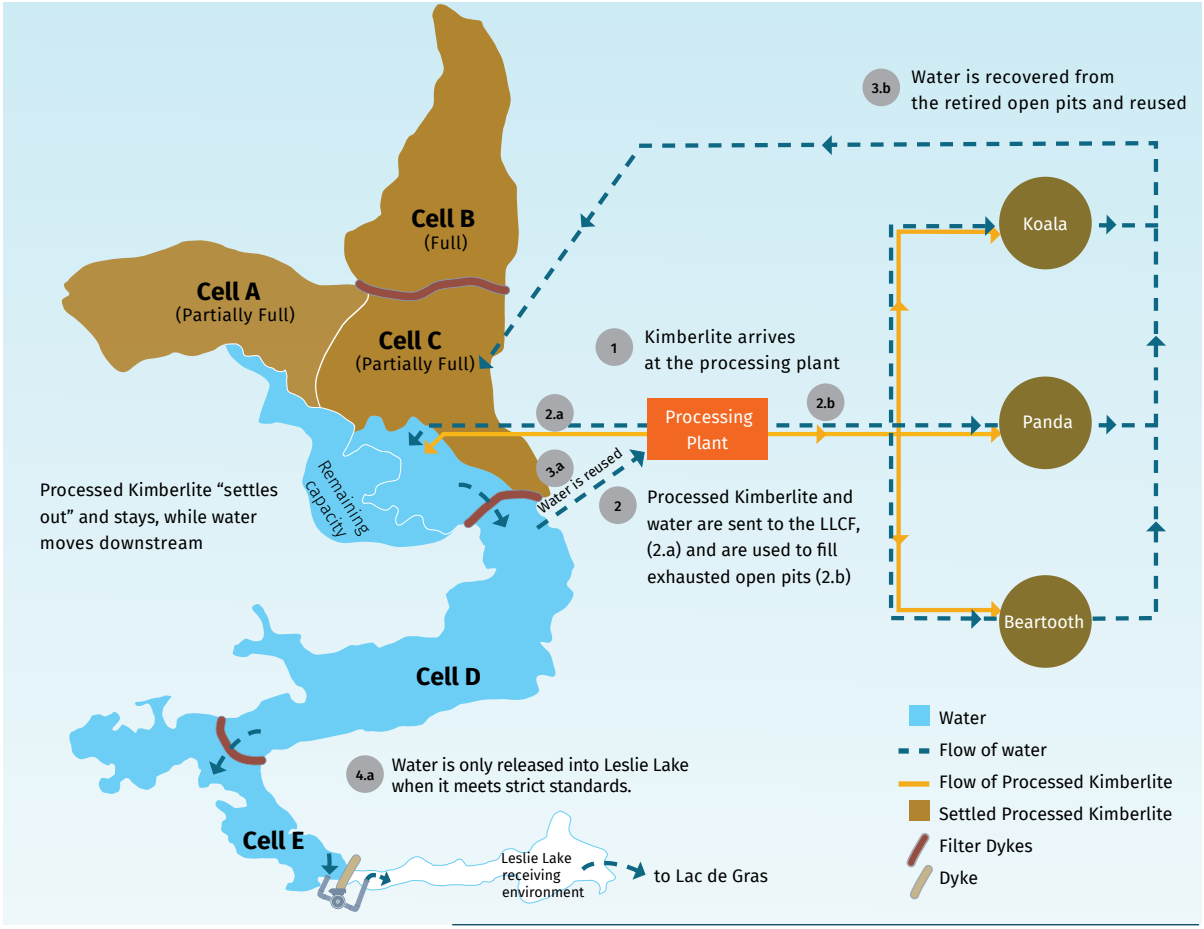


Diagram 4: Wastewater and processed kimberlite at the Ekati mine site

During July and August 2019, Dominion discharged over 3 million m^3 of water from Cell E to Leslie Lake, after confirming that the water met the EQC.

As directed by the WLWB in its February 2019 decision on WPKMP v8.0, Dominion submitted WPKMP v9.0 in March 2019. The revised version included a summary of proposed closure plans for PKCAs. It also clarified that further research and analysis are required to confirm the depth of water cover required for effective closure of pit lakes that contain FPK. The closure and reclamation plan for these pits relies on freshwater caps overlying the FPK to address potential long-term water quality concerns. Dominion's water quality modelling predicts that the proposed 30 m depth of freshwater cap will have long-term concentrations of some parameters that exceed the current operational water quality benchmarks. As part of the Interim Closure and Reclamation Plan Version 3.0 (ICRP v3.0), Dominion proposed a research plan to evaluate the optimal depth for the freshwater cap to achieve acceptable post-closure conditions. In its February 2020 decision on ICRP v.3.0, the WLWB directed Dominion to revise the research plan in the updated ICRP v3.1 that is to be submitted by mid-2021.

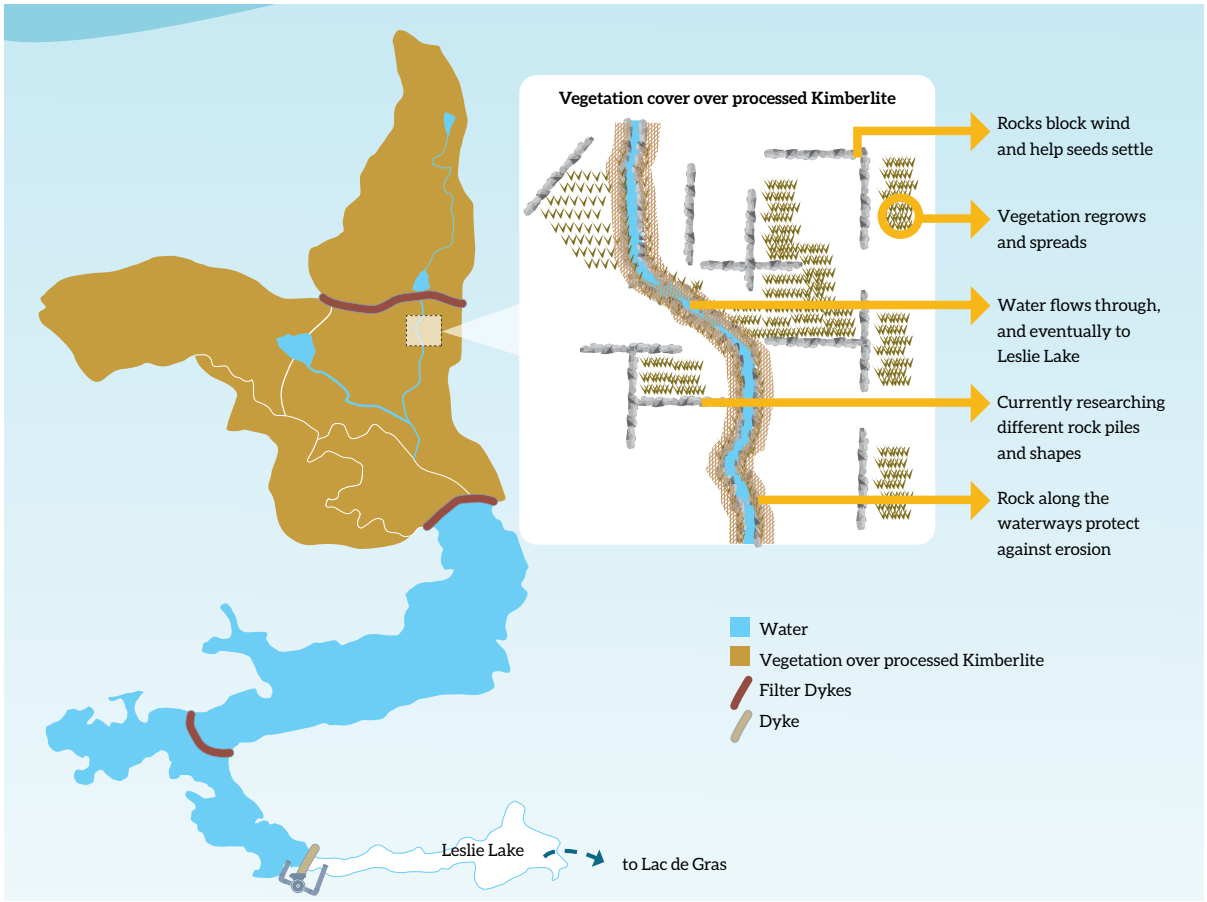


Diagram 5 : LLCF plan closure and reclamation

AGENCY ASSESSMENT

The use of the Panda-Koala PKCA for deposition of FPK began in 2019 and is a fundamental change in the management plan for FPK at the Ekati mine. This change will have implications for long-term water quality in Panda, Koala and Koala North pits and their post-closure pit lakes. Reduced discharge of FPK to the LLCF will lead to changes in water quality and water levels in that facility.

The Agency has previously stated that the water quality modelling for the pit lakes relies on many assumptions and on estimates of loading from a variety of sources including FPK porewater, and WRSA runoff and seepage. There are limited or no data to support estimates of source loading for some contaminant sources, e.g., runoff from disturbed areas like roads and laydowns. The estimates of loading from WRSAs assume that current runoff and seepage conditions are representative of long-term conditions. There is little evidence to support this assumption because Dominion has not completed detailed water and energy balances for WRSAs. Overall, the assumptions and estimates leave significant uncertainty about the long-term predictions of water quality in pit lakes, and may underestimate future loading and concentrations.

The Agency considers timely and robust monitoring and research programs to support future modelling and predictions of pit lake water quality to be critical. This will support further analysis about the adequacy of the proposed freshwater cap depth. The revised version of the research plan that is a requirement for ICRP v3.1 will be an opportunity to address the information needs for future modelling.

CLOSURE AND RECLAMATION

HIGHLIGHTS

- The Wek'èezhìı Land and Water Board (WLWB) approved the Interim Closure and Reclamation Plan Version 3.0 (ICRP v3.0) but identified many shortfalls and excluded some components from the approval.
- Dominion is required to submit an updated ICRP by mid-2021 after convening a workshop in early 2021 and addressing issues raised in the WLWB decision for ICRP v3.0.
- The temporary shut-down of Ekati which began in March 2020 emphasizes the importance of having both a well-developed, comprehensive closure and reclamation plan, and adequate financial security in place.

Photo Courtesy of Dominion Diamond Mines ULC.

CLOSURE PLANNING STATUS

In February 2020, the WLWB conditionally approved the ICRP v3.0 and set out requirements for Dominion to develop and submit ICRP v3.1. Dominion submitted ICRP v3.0, the first comprehensive update of the ICRP since 2011, in August 2018. The overall goal that guides closure and reclamation planning remains unchanged from the 2011 plan:

> *"Return the Ekati mine site to viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment." (ICRP v2.4 and v3.0)*

The WLWB initiated the review process for ICRP 3.0 in late 2018. The Agency provided input during the January 2019 WLWB Technical Workshop and in written comments in March 2019. Dominion responded to comments in July 2019.

The WLWB approval excludes some components of the ICRP, for example, closure objectives and some reclamation research plans. It also establishes requirements for additional information, revisions and further engagement about closure and reclamation. These include a requirement for Dominion and the WLWB to jointly host a workshop primarily focused on closure objectives and criteria. Initially, the workshop was to be held no later than November 2020, but due to the COVID-19 pandemic restrictions on travel and indoor gatherings, the deadline for the workshop has been extended to February 2021. Dominion must submit ICRP v3.1 no later than four months after the workshop. ICRP v3.1 is to address the outcomes of the workshop and incorporate revisions specified in the WLWB approval for ICRP v.3.0.

In December 2019, Dominion submitted its 2019 Closure and Reclamation Progress Report, including information about reclamation research program progress and results, and progressive reclamation activities.

CLOSURE AND RECLAMATION PLANNING ISSUES

In its February 2020 decision approving ICRP v3.0, the WLWB set out requirements for steps to be taken by Dominion as it develops ICRP v3.1. The WLWB considers the further development of certain aspects of the ICRP to be time-sensitive and therefore defined requirements for ICRP v3.1 and set a schedule for its development. Engagement is an important component of the process that the WLWB laid out, including the proposed workshop to address outstanding issues. Several issues that require further discussion and work before submission of ICRP v3.1 are summarized in this section.

CLOSURE OBJECTIVES AND CRITERIA

The WLWB acknowledged that Dominion's framework for closure objectives showed improvement in ICRP v3.0, but excluded the closure objectives from its approval, leaving the objectives from the 2011 ICRP v2.4 as the currently approved objectives. Because the closure criteria are linked to closure objectives, the WLWB was unable to consider the updated closure criteria for approval but it identified the lack of well-defined closure criteria as an impediment to closure planning. Closure objectives and criteria are to be a major focus for the proposed closure and reclamation workshop and the WLWB believes that agreement on objectives, and ideally criteria, is critical to moving the plan forward. To support the workshop, Dominion has to prepare a draft Criteria Work Plan for discussion.

Contingencies, Adaptive Management and Post-closure Monitoring

The WLWB concluded that ICRP v3.0 lacks detail with respect to contingencies, adaptive management and post-closure monitoring. While Dominion identified contingencies for some closure components, the WLWB concluded that the information is not sufficient to meet the requirements of the Closure Guidelines. ICRP v3.1 has to provide additional information about contingency planning and post-closure monitoring.

Land Use Expectations and Re-vegetation

Dominion's proposed closure objectives do not adequately define an expected closure outcome for land use, and therefore do not address the Closure Guidelines principle of future use. Achievement of the future use principle is also related to re-vegetation and the WLWB concluded that additional clarity on the objectives for re-vegetation is required in order to better understand achievement of the future use principle. Land use and re-vegetation closure objectives are to be discussed at the proposed closure and reclamation workshop.

Reclamation Research

Dominion described nine reclamation research plans in ICRP v3.0. The WLWB did not approve four of these plans including:

- Research Plan No. 1 related to wildlife behaviour and use of the site.
- Research Plan No. 4 related to the Pigeon waste rock storage area (WRSA) cover.

- Research Plan No. 5 related to waste kimberlite seepage.
- Research Plan No. 6 related to Jay WRSA rock co-placement.

The WLWB decision requires revisions to these research plans, including engagement especially in relation to the scope of Research Plan No. 1.

Fish Habitat

ICRP v3.0 proposes that establishment of fish habitat (i.e., littoral zones) is only practical in small areas of the Panda, Koala, Koala North and Beartooth pits. This is a substantial reduction from ICRP v2.4 that proposed establishment of littoral zones in all pits. The WLWB did not approve the proposed reduction in establishment of fish habitat, but advised Dominion to discuss the issue at the proposed closure and reclamation workshop.

Freezing of Waste Rock

In ICRP v3.0, Dominion removed the closure objective related to freezing of potentially acid-generating (PAG) waste rock and asserted that PAG waste rock need not be frozen to address long-term water quality concerns. The WLWB concluded that current modelling does not support removal of the freezing objective and required discussion of the objective at the proposed closure and reclamation workshop.

PROGRESSIVE CLOSURE AND RECLAMATION ACTIVITIES

Panda-Koala Underground

In early 2019, Dominion completed reclamation activities for Panda, Koala and Koala North Underground, in preparation for use of the pits for storage of Fine Processed Kimberlite (FPK). Reclamation included removal of salvageable and hazardous materials and equipment from the underground workings and blocking of access. Material and equipment not considered salvageable and that would not adversely affect water quality was left underground. GNWT conducted a final inspection on February 26, 2019. Deposit of FPK into the Panda-Koala pits began in May 2019.

The reclamation activities are described in a Reclamation Completion Report submitted as part of the Reclamation Progress Report in December 2019. The Report notes that 2,310 kg of preloaded emulsion explosives were left underground because they were covered by a rock slide and could not be safely detonated or recovered. Dominion does not plan any further monitoring or reporting related to removal of materials and equipment from the Panda-Koala underground workings because access is no longer possible.

Old Camp

Old Camp reclamation activities began in 2014. The final reclamation activity, conducted in 2018 based on monitoring results, entailed removing 250 m^3 of hydrocarbon contaminated soil from the Old Camp.

Monitoring of water quality at Old Camp is ongoing, to evaluate the success of reclamation activities. September 2019 monitoring results show two exceedances of water licence effluent quality criteria, one for Total Arsenic and one for Dissolved Aluminum. Arsenic exceedances were also observed in September 2018. Dominion plans to continue monitoring the area, but asserts that natural attenuation and dilution along the flow path will reduce concentrations before the water enters Larry Lake.

FINANCIAL SECURITY

To manage public liability and risk, the GNWT needs to hold financial security equal to the total anticipated cost of closure and reclamation of the Ekati mine at that time. The total reclamation security held by the GNWT as of December 31, 2019 was $295.8 million, held predominantly under the water licence as indicated in Table 6. The total security at the end of 2019 represents an increase of $3.8 million from December 2018.

Table 6 – Ekati Mine Reclamation Security Held (December 31, 2019).

Security Item	Amount Held
Water Licence Security W2012L2-0001	$273,875,482
Ekati Environmental Agreement	$19,991,424
Jay Early Works Land Use Permit W2016F0007	$1,480,000
Pigeon Land Use Permit W2016D0005	$427,000
Total:	$295,773,906

In January 2018, Dominion requested adjustments of its reclamation security to address changes in closure liability, including a decrease of $7.9 million for Misery WRSA because Dominion has covered most of the exposed metasediment. In March 2019, Dominion submitted a revised request for adjustment with a proposed reduction of $9.1 million for Misery WRSA, because it had completed additional work on the cover. The WLWB did not approve either of the requested security adjustments. In July 2019 it set out a process and schedule that required Dominion to engage with GNWT with the goal of building consensus about the closure liability and security.

Dominion and GNWT reached consensus about remaining security and liability for Misery WRSA and Dominion provided a revised security adjustment request in October 2019, with a proposed $7.9 million reduction. After seeking input through the online review system, the WLWB approved the security adjustment, while noting that it may re-visit the estimate as part of the ICRP v3.0 review. The consensus security adjustment includes a remaining amount held back for uncertainty about the effectiveness of the Misery cover.

The unapproved use of Misery Diabase for cover construction remains an outstanding uncertainty that was not addressed in the calculation of the hold back. Dominion placed Misery Diabase in the cover along with the granite. Diabase has a greater potential for acid-generating and metal leaching. The WLWB expressed concern about the potential effects on long-term closure outcomes, but did not make any decisions about how to respond.

ICRP v3.0 and responses to comments included several proposed security adjustments that WLWB approved in February 2020. Major reductions and increases are listed in Table 7. The final balance of adjustments resulted in a $2,964,458 decrease in security. In approving the adjustments, the WLWB established requirements for any upcoming requests for adjustment of security: Dominion must submit more detailed information and documentation about inputs and assumptions, and must address several areas where the WLWB is concerned that liability may be underestimated.

Table 7– February 2020 Reclamation Security Adjustments.

Reductions	Rationale	Increases	Rationale
$18,348,713	Reduced cover thickness on Fox WRSA	$5,468,793	Updates costs for infrastructure decommissioning
$550,495	Reduced cover thickness on landfill	$750,000	Post-closure maintenance cost added
$4,869,995	Reduced pumping times for pit filling	$684,026	Increased surface area for re-vegetation
$1,952,106	Updated underground reclamation costs	$1,642,000	Increased duration of active closure monitoring
		$946,400	Increased site access costs for active closure monitoring
		$1,000,000	Helicopter costs for post-closure monitoring
		$11,670,040	Adjustment for inflation

As part of the water licence amendment processes for the Jay Project and Misery Underground (MUG) project, GNWT stated its preference to hold separate securities under the water licence and land use permits. For both projects the WLWB determined that security should be combined and held under the water licence. In an October 2018 Request for Ruling, Dominion asked WLWB to authorize splitting of security for the MUG project land and water related liabilities because GNWT had refused to accept a combined security under the water licence. ICRP v3.0 requested that security be split as requested by the GNWT.

In its February 2020 decision on ICRP v3.0 the WLWB expressed concern about the complexities arising from the proposed security split. Specifically, the WLWB is concerned that the split will make security adjustments more difficult, increasing the administrative burden and potential for error. Despite these concerns the WLWB agreed to split the security between the land use permits and water licence because GNWT will not accept the land portion of security under the water licence.

Water licence and land use permit amendments to incorporate revised security for the Misery WRSA and ICRP v3.0 adjustments had not been completed by March 2020, but Dominion submitted applications for amendments in April 2020 and received approvals in May 2020.

AGENCY'S ASSESSMENT

The 2018 submission of an updated, site-wide ICRP was a positive step in planning for closure of the Ekati mine. The Agency reviewed ICRP v3.0 and provided written comments to the WLWB in March 2019. Overall, the Agency concluded that ICRP v3.0 has several critical flaws that make it inadequate as a closure and reclamation plan for the present stage of mining at the Ekati mine, and therefore the Agency did not recommend approval of ICRP v3.0.

The WLWB's February 2020 decision on ICRP v3.0 acknowledged many of the issues and concerns that the Agency and other parties raised in their comments. The WLWB had substantial outstanding concerns about ICRP v3.0. It did not approve some key ICRP components and acknowledged the need for timely development of a revised plan. To address the shortfalls in a timely way, the WLWB decision set out a process for engaging with parties and developing ICRP v3.1 by mid-2021. The required revisions and topics for discussion at the proposed closure and reclamation workshop in early 2021 touch on many of the issues that the Agency raised. The Agency looks forward to participating in the workshop and engaging with Dominion as it works to develop ICRP v3.1.

With respect to financial security and closure liabilities, the Agency continues to believe that closure liabilities should never be allowed to exceed the posted security. This requires efficient processes for adjusting security as mining and reclamation activities progress, respectively leading to potential increases and decreases in closure liabilities. The Agency agrees with the WLWB's concerns about complexities arising from splitting of security between the water licence and land use permits. The additional complexities could negatively influence the timeliness of security adjustments.

The Agency agrees with the concept of holding back financial security to address monitoring and future performance risks for completed reclamation activities, as proposed and accepted for the Misery WRSA. However, the process for quantifying the hold-back remains ad-hoc. The Agency recommends that the GNWT and WLWB cooperate on the development of policies, guidelines or directives to standardize the process for determining the amount of security to be held back for monitoring and future liabilities.

The temporary shut-down of the Ekati mine beginning in March 2020 highlights the importance of having both a well-developed, comprehensive closure and reclamation plan, and adequate financial security in place. The Agency acknowledges that closure and reclamation planning is an iterative process and ICRPs are expected to evolve and develop as mining progresses. ICRPs should increase in level of detail as the mine moves towards closure, with each version providing increased certainty and understanding about the closure and reclamation. Ekati has now been operating for over 20 years and several mine components are complete. Nonetheless, ICRP v3.0 does not include final closure designs, and even closure objectives and criteria have not been finalized. The Agency believes that it is now critical for Dominion to make substantial progress in the level of detail of its closure and reclamation plans.

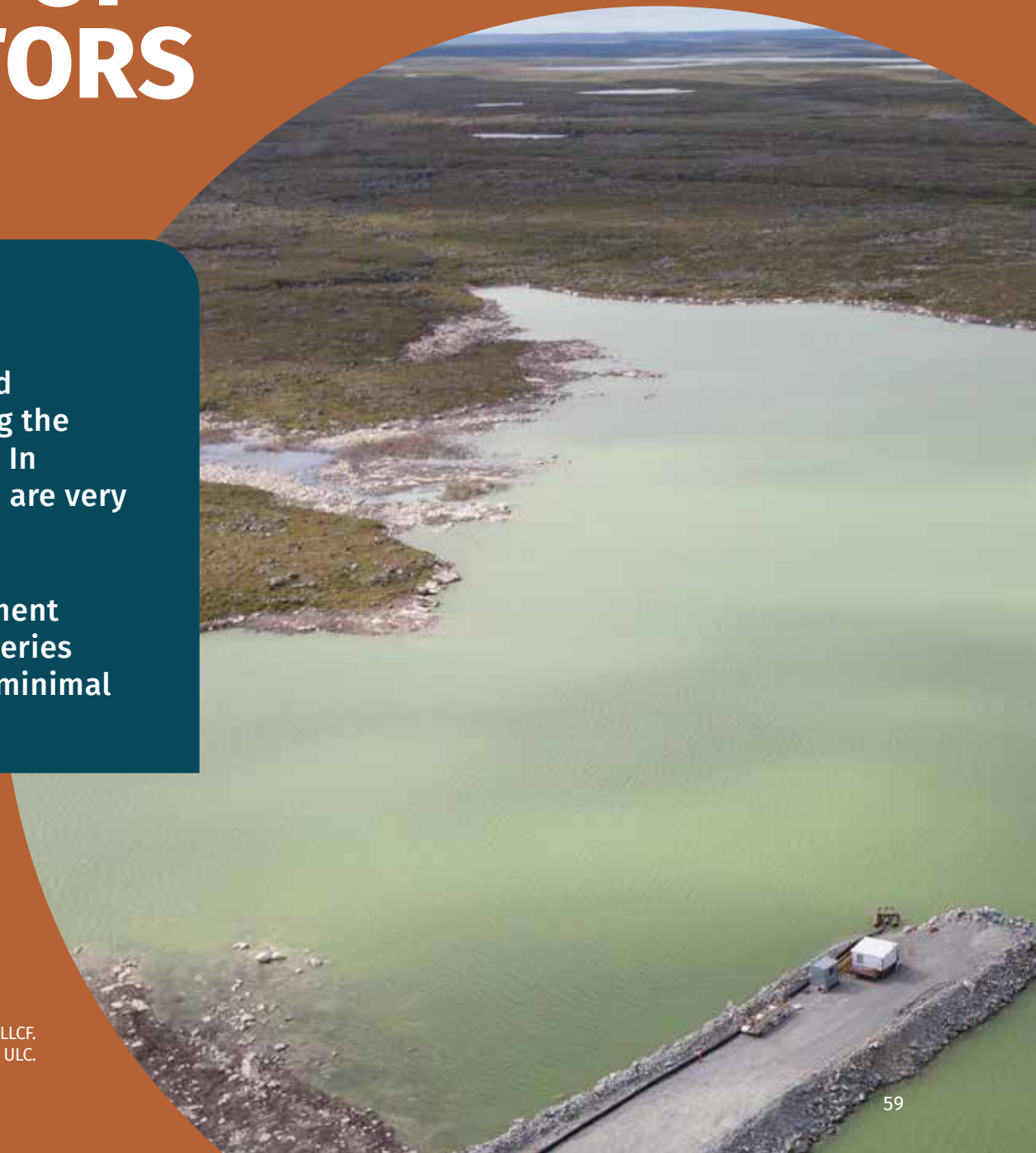
Panda Waste Rock Storage. Photo courtesy of Dominion Diamond Mines ULC.

ASSESSMENT OF THE REGULATORS

HIGHLIGHTS

- The Wek'eezhii Land and Water Board continues to do a good job regulating the Water Licence and Land Use Permits. In particular their Reasons for Decision are very informative;

- The level of engagement by Environment and Climate Change Canada and Fisheries and Oceans Canada continues to be minimal and inconsistent.



Dyke C, looking toward Cell C of the LLCF.
Photo Courtesy of Dominion Diamond Mines, ULC.

THE REGULATORS AND OUR MANDATE

As the public watchdog for environmental management at the Ekati mine, the Agency monitors the performance of the operator as well as agencies that regulate the mine. The following are our comments regarding the regulators' performance in 2019-20.

AGENCY'S OVERALL ASSESSMENT

As in previous years, the regulators as a whole remain effective in ensuring that Dominion operates the Ekati mine in an environmentally sound manner. The majority of regulators' time and expertise during 2019-20 was focused on Waste Rock and Ore Management Plans, Aquatic Effects Monitoring Program Annual Report including various Response Plans, and the security adjustment for the Misery Waste Rock Storage Area. Over the course of the year, the Agency identified some instances where we felt that government agencies and regulators performed well and some instances where their involvement could have been improved.

Government of the Northwest Territories

Department of Lands

The frequency of Water Licence inspections was down from previous years with only three Water Licence inspections conducted compared to roughly one per month in previous years. The number of land use permit inspections was similar to previous years with 6 inspections being conducted. The Agency notes that there were staffing issues with limited personnel available to conduct Water Licence inspections during this time within the department which could have resulted in the low number of Water Licence inspections. Even though staffing has been resolved the Agency expects fewer inspections will occur in 2020 due to the COVID-19 pandemic and with Ekati in care and maintenance during late winter through early summer 2020.

Input and discussion by Inspectors at Agency board meetings has been informative and very helpful in providing the Agency with a better understanding of the day-to-day activities required to ensure compliance with licence and LUP requirements.

Department of Environment and Natural Resources (ENR)

The Agency believes that ENR and the Lands Department need to work with the WLWB to prioritize the need for a clear progressive reclamation return of security and holdback process. The request for the return of security for progressive reclamation work on the cover for the Misery WRSA is the most recent example of the lack of clear policies, guidelines, or directives that need to be in place. Regulators and the public need to be assured that any remaining liability and monitoring costs are accounted for and the proponent needs to be clear of the process and factors effecting hold back of security.

- **Water Resources Division (WRD)**
  The WRD continues to consistently provide detailed comments and analysis including technical consultant review when necessary. In particular, their participation and involvement in the scientific discussion at the AEMP 3-Year Re-evaluation workshop (through its consultant) was valuable and informative.

- **Conservation, Assessment and Monitoring Division**
  This Division is responsible for administering Ekati's Environmental Agreement (EA). The Division has done a reasonable job ensuring Ekati adheres to the overall intent of the EA, however could do more to ensure reporting requirements under the EA are met. For example, the Agency raised concerns with the EA Annual Summary Report (which were acknowledged) but the requested changes were ultimately not made to the document. The latest version of the Environmental Impact Report is now over a year late. While it is understood that the responsibility rests with Dominion to ensure comments are addressed and timelines respected, the Agency feels the Government of the Northwest Territories (GNWT) could be more forceful in ensuring adherence to the requirements of the EA.

  Despite a lengthy delay the updated EA has been finalized, signed and distributed.

- **Wildlife Division**
  The Bathurst Caribou Range Plan was approved in August 2019. It will help provide some guidelines and recommendations for developers and regulators. It remains to be seen what effect this will have, since the recommendations were advisory and non-binding.

- **Environment Division**
  The Northwest Territories lacks a comprehensive territorial air quality management regime. Although not relevant only to the Ekati mine, the Agency was optimistic in 2016 when a draft Air Regulatory Framework was proposed with Regulations anticipated to be in place the following year. Unfortunately, the Agency is not aware of any further progress currently being made on either the Framework or Regulations.

Crown-Indigenous Relations and Northern Affairs Canada

Following devolution of its land and water management responsibilities to the GNWT, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has a much-diminished role in environmental regulatory processes including involvement with the EA. Each year the Agency has an Annual General Meeting (AGM) and an Implementation Meeting in order to meet its obligations under its bylaws and the EA. The Agency was pleased to see that a representative from CIRNAC was able to attend the 2019/20 AGM. We hope to continue to see CIRNAC's participation at future meetings.

Fisheries and Oceans Canada

Fisheries and Oceans Canada (DFO) involvement with the regulatory process continues to be minimal. They provided useful comments on toxicity results from the 2019 Aquatic Effects Monitoring Plan Annual Report, but did not follow up and comment on the related Fish Response Plan. DFO has valuable expertise locally and nationally that could benefit the Ekati regulatory process. Unfortunately, DFO's interpretation of its mandate limits its ability to provide technical expertise that it has in regards to possible effects of the Ekati mine on fish in the downstream environment.

Environment and Climate Change Canada

Environment and Climate Change Canada's (ECCC) involvement in the regulatory processes for the Ekati mine remained similar to previous years, providing detailed comments on some but not all of the Aquatic Effect Monitoring Program submissions. The Agency has noted that the comments it does provide are well thought out and believes that the regulatory system would benefit from ECCC's involvement on all relevant submissions.

Wèk'eezhìı Land and Water Board

The WLWB continues to ensure effective and diligent management of the Water Licence, Land Use Permits and management plans associated with the operation of the Ekati mine. In particular the detailed analysis provided in its Reasons for Decision has proven to be very helpful to the Agency in understanding why decisions were made and clarifying requirements for future revisions. The Agency has noted in the past year that the WLWB has not always released documents submitted by Dominion to reviewers in a timely fashion for example the Fish Response Plan was submitted October 31 2019 uploaded December 17, 2019, on ORS February 3, 2020; Waste Management Plan submitted December 31, 2019 uploaded March 31, 2020. These delays occur in order to conduct conformity checks. While the Agency agrees that conformity checks are beneficial, we feel that the duration of conformity checks could have been reduced in some instances.

The request for the return of security for progressive reclamation work on the cover for the Misery WRSA is the most recent example of the lack of clear policies, guidelines, or directives that need to be in place. Regulators and the public need to be assured that any remaining liability and monitoring costs are accounted for and the proponent needs to be clear of the process and factors effecting hold back of security. The Agency believes that the WLWB needs to work with the GNWT to prioritize the need for a clear progressive reclamation return of security and holdback process.

ASSESSMENT OF DOMINION DIAMOND MINES ULC

HIGHLIGHTS

- The Agency is concerned by late delivery of reports and responses to reviewer comments as well as the level of detail in those responses to support Dominion positions.

Sable waste rock storage area.
Photo Courtesy of Dominion Diamond Mines ULC.

With only minor exceptions, Dominion continues to operate the Ekati mine in compliance with its water and land licences and permits.

As the Agency has noted in the past few years, Dominion's overall responses to technical comments submitted by the Agency have been disappointing, they lack sufficient detail and rationale to support their responses (such as comments on the ICRP 3.0, the AEMP Annual Report, and WROMP 10). In addition, some reports have been submitted late (e.g., EIR, AEMP Annual Report, EA and WL Annual Report, Total Phosphorous and Fish Response Plans) and some of Dominion's response to comments were delayed (ICRP 3.0 responses, 2018 AEMP Annual Report responses). This is a worrying trend that the Agency hopes can be rectified in the future. The Agency continues to believe that a reasonable approach to resolving key issues is through dialogue such as technical sessions or workshops to facilitate open discussion of relevant topics. On a positive note, the Agency is encouraged by the work Dominion has initiated regarding a Seepage Response Framework and we look forward to reviewing it in 2020.

The Agency is disappointed by an apparent lack of regard given to some of the requirements under the Environmental Agreement (EA), in particular the 2019 EA and Water License Annual Summary Report (Summary Report) and the Environmental Impact Report (EIR). The Summary Report is meant to be submitted annually as a plain language summary of the results from various monitoring programs conducted that year. In reviewing the 2019 Summary Report the Agency noted that important results relating to fish toxicity results were not included in the report. The health of fish is a subject of particular interest to Indigenous People and northerners. This concern was raised with Dominion but the requested changes to the Summary Report were not made.

The EIR is an important document required to be submitted every three years as part of the EA. It summarises the results from all the monitoring programs from the last three years and compares it to predictions in the original Impact Statement. A workshop is normally undertaken to allow for discussion of the EIR. The latest version of the EIR was due on April 30, 2019. At the time of writing this annual report Dominion has only submitted a draft of the EIR for review. While the Agency understands that a workshop was originally scheduled and then cancelled due to COVID 19 restrictions, we are concerned that these important documents continue to be delayed. We remain optimistic that the EIR process can continue as soon as it is safe to do so.

In the last few years the Agency has been unable to conduct satisfactory site visits to Ekati. Dominion has explained that this is in large part due to the reduction of flights in and out of site. With several newer developments, including Sable, Misery Underground, and the concerns around waste rock piles, the Agency believes these site visits are critical to our understanding of the on-going mining activities. In an effort to address the reduced flights and the need to see the whole site a compromise was reached with Dominion in 2019 to have two separate one day site visits each year. The July site visit went well and a number of directors were able to attend and see the site. Unfortunately, the second visit was not able to occur and several attempts to reschedule were unsuccessful. The Agency believes that in future years, two separate one day visits is a viable solution, however the preferred approach is still a single two-day overnight visit as it maximizes on-site time and minimizes transit time to/from the site.

In response to discussions and comments made during the technical sessions and review of the Interim Closure and Reclamation Plan version 3.0 (ICRP) the Agency organized a community workshop to further discussions in regard to wildlife movement around the waste rock storage areas and roads after mine closure. The Agency discussed the idea with Dominion and encouraged their involvement and attendance in the workshop. Unfortunately, Dominion chose not to attend the workshop but did agree to review and consider its outcomes. The Agency hopes that Dominion will be able to attend any future workshops and meetings held by the Agency on this important topic.

Photo courtesy of Dominion Diamond Mines ULC.

FINANCIALS

HIGHLIGHTS

The Independent Environmental Monitoring Agency had a financial audit completed for fiscal year 2019-2020 in accordance with Canadian accounting standards for not-for-profit organizations.

Drilling at the Ekati mine Photo Courtesy of Dominion Diamond Mines ULC.

The accompanying financial statements have been prepared by management, which is responsible for the reliability, integrity and objectivity of the information provided. They have been prepared in accordance with Canadian accounting standard for Not-for-Profit Organizations. Where necessary the statements include amounts that are based on informed judgments and estimates by management, giving appropriate consideration to reasonable limits of materiality.

In discharging its responsibility for the integrity and fairness of the financial statements and for the accounting systems from which they are derived, management maintains the necessary system of internal controls designed to provide assurance that transactions are authorized, assets are safeguarded and proper records are maintained. These controls include quality standards in hiring and training employees, written policies and procedures manuals, and accountability for performance within appropriate and well-defined areas of responsibility. The Agency's management recognizes its responsibility for conducting the Agency's affairs in accordance with the requirements of applicable laws and sound business principles, and for maintaining standards of conduct that are appropriate to IEMA.

The Auditor annually provides an independent, objective audit for the purpose of expressing an opinion on the financial statements in accordance with generally accepted auditing standards. The Auditor also considers whether the transactions that come to his notice in the course of this audit are, in all significant respects, in accordance with specified legislation and directives from the Agency.

Kim Poole, Secretary Treasurer
June 20, 2020

Mining of kimberlite ore in a pit at the Ekati mine.
Photo Courtesy of Dominion Diamond Mines ULC.

INDEPENDENT AUDITOR'S REPORT

To the Directors of:

Independent Environmental Monitoring Agency

Opinion

We have audited the accompanying financial statements of Independent Environmental Monitoring Agency (IEMA), which comprise the statement of financial position as at March 31, 2020, and the statement of operations, statement of changes in net assets and statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of IEMA as at March 31, 2020, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of IEMA in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter

We draw attention to Note 11 in the audited financial statements, which indicates that due to Covid-19 Pandemic, the funding organization of the Agency is going through cash flow problems forcing it to seek the creditor's protection. As stated in the note 11, management believes there is no going concern issues for IEMA. Our opinion is not modified in respect of this matter.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing IEMA's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate IEMA or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing IEMA's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of IEMA's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on IEMA's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause IEMA to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

EPR Yellowknife Accounting Professional Corporation Chartered Professional Accountants Yellowknife, NT June 20, 2020

STATEMENT OF FINANCIAL POSITION

For the year ended March 31
See accompanying notes.

Approved on behalf of the board:

Jaida Ohokannoak, Chairperson

Kim Poole, Secretary-Treasurer

	2020	2019
ASSETS		
CURRENT ASSETS		
Cash	$72,361	$69,692
Restricted cash (*Note 5*)	$107,614	$506,528
Prepaid expenses	$1,716	$526
	$181,691	$576,746
Tangible capital assest *(Note 6)*	$1,736	$2,398
TOTAL ASSETS	**$183,427**	**$579,144**
LIABILITIES		
CURRENT LIABILITIES		
Accounts payable and accrued liabilities (*Note 7*)	$63,727	$60,531
Deferred revenue (*Note 8*)	-	$356,875
Contributions repayable (*Note 9*)	$107,614	$149,652
	$171,341	**$567,058**
FUND BALANCES		
Unrestricted Fund	$10,350	$9,688
Tangible Capital Asset Fund	$1,736	$2,398
TOTAL NET ASSETS	$12,086	$12,086
TOTAL LIABILITIES AND NET ASSETS	**$183,427**	**$579,144**

STATEMENT OF OPERATIONS

For the year ended March 31
See accompanying notes.

	2020	2019
REVENUES		
Core fund - Dominion Diamond Mines ULC	$673,750	$657,702
Separate fund - Dominion Diamond Diamond Mines ULC	$40,000	$40,000
Interest income	$3,856	$2,751
Wages subsidy	$745	-
TOTAL REVENUES	**$718,351**	**$700,453**
EXPENSES		
Board meetings, Conference Calls, Follow-up		
Honoraria	$37,824	$37,008
Travel, meals and accomodations	$13,105	$19,208
Other	$2,413	$396
Agency Participation in Document Review		
Honoraria	$55,903	$70,346
Travel, meals and accomodations	$2,630	$2,078
Separate fund		
Honoraria	-	$212
Community Consultation and Communications		
Community visits	$1,850	$31,526
Annual report	$63,450	$51,189
AGM	$4,457	$3,305
Other meetings including workshops	$108,441	$19,591
OUTSIDE CONTRACTS		
Other professional fees	$10,028	-
MANAGEMENT AND ADMINISTRATIONS		
Amortizations	$662	$1,033
Auditing and bookkeeping	$23,374	$15,652
Wages and benefits	$233,579	$238,002
Staff travel	$31	$522
Professional development	$829	($100)
Office rental	$31,500	$31,500
Insurance	$4,690	$4,539
Telephone, internet and email	$4,583	$6,232
Office supplies, printing, postage	$4,393	$4,083
Interest and banks charges	$631	$1,005
Cleaning, repairs and maintenance	$4,883	$5,504
Other	$1,481	$7,970
TOTAL EXPENSES	**$610,737**	**$550,801**
EXCESS OF REVENUES OVER EXPENSES FOR THE YEAR	**$107,614**	**$149,652**
OTHER ITEMS		
Unspent funding-Core	**($67,614)**	**($109,874)**
Unspent funding-Separate Fund	**($40,000)**	**($39,778)**
	($107,614)	**($149,652)**
EXCESS OF REVENUES OVER EXPENSES FOR THE YEAR	**$-**	**$-**

STATEMENT OF CHANGES IN NET ASSETS

For the year ended March 31
See accompanying notes.

	2020		
	Total	Unrestricted Funds	Tangible Capital Asset Fund
BALANCE, BEGINNING OF YEAR	**$12,086**	**$9,688**	**$2,398**
Excess of revenues over Expenditures	$-	$-	$-
Amortization	$-	$662	($662)
Additions	$-	$-	$-
BALANCE, END OF YEAR	**$12,086**	**$10,350**	**$1,736**

	2019		
	Total	Unrestricted Funds	Tangible Capital Asset Fund
BALANCE, BEGINNING OF YEAR	**$12,086**	**$8,655**	**$3,431**
Excess of revenues over Expenditures	$-	$-	$-
Amortization	$-	$1,033	($1,033)
Additions	$-	$-	$-
BALANCE, END OF YEAR	**$12,086**	**$9,688**	**$2,398**

STATEMENT OF CASHFLOWS

For the year ended March 31
See accompanying notes.

	2020	2019
CASH PROVIDED BY (USED IN)		
Operating activities		
Excess of revenue over expenses	$-	$-
Items not affecting cash		
Amortization	$662	$1,033
	$662	**$1,033**
CHANGES IN NON-CASH WORKING CAPITAL BALANCES		
Increase in prepaid expenses	($1,190)	$1,947
Increase (Decrease) in accounts payable and accrued liabilities	$3,196	($57,833)
Increase (Decrease) in deferred revenue	($356,875)	$8,024
Increase (Decrease) in contributions repayable	($42,038)	$121,942
Net change in non-cash working capital balances	($396,907)	$74,080
Net cash provided by (used in) operating activities	($396,245)	$75,113
Increase (Decrease) in cash and cash equivalents	($396,245)	$75,113
CASH, AT BEGINNING OF YEAR	$576,220	$501,107
CASH, AT END OF YEAR	**$179,975**	**$576,220**
Cash consists of:		
Operating cash	$72,361	$69,692
Restricted cash	$107,614	$506,528
	$179,975	**$576,220**

STATEMENT ON FINANCIAL STATEMENTS

For the year ended March 31
See accompanying notes.

1. ORGANIZATION AND JURISDICTION

Independent Environmental Monitoring Agency ("the Agency") is a not-for-profit organization incorporated under the Societies Act of the Northwest Territories. It is exempt from income tax under Section 149(1)(i) of the Income Tax Act.

The mission of the Agency is to oversee environmental management of the Ekati Diamond site in the Northwest Territories.

2. BASIS OF ACCOUNTING

These financial statements have been prepared in accordance with the significant accounting policies set out below. These financial statements are prepared in accordance with Canadian Accounting Standards for not-for-profit organizations.

3. SIGNIFICANT ACCOUNTING POLICIES

The following is the summary of the significant accounting policies used by management in the preparation of these financial statements.

a) Fund accounting

The accounts of the Agency are maintained in accordance with the principle of fund accounting. A fund is a set of accounts established to classify resources according to specific activities. The following funds are maintained and are internally restricted by the Agency.

Unrestricted Fund - to record the general activities of the Agency.

Investment in Equipment - to record the historical cost of equipment acquired less accumulated amortization and disposal.

b) Tangible capital assets

Capital Assets are recorded at cost. Amortization is applied as a reduction to both the asset and net assets invested in Equipment. Amortization is calculated by the declining balance method over their estimated useful lives at the following rates:

Equipment	**20%**
Computer Equipment	**30%**
Computer Equipment-New	**55%**
Website	**30%**

3. SIGNIFICANT ACCOUNTING POLICIES (CONTD ...)

Tangible capital assets (Contd ...)

When tangible capital assets are sold or retired, the related cost and accumulated amortization are removed from the accounts and any gain or loss is charged against earnings in the period.

Tangible capital assets acquired or constructed during the year are not amortized until they are put into use.

One half of the year's amortization is recorded in the year of acquisition. No amortization is recorded in the year of disposal.

c) Financial instruments - recognition and measurement

Independent Environmental Monitoring Agency measures its financial assets and financial liabilities at fair value. The Agency subsequently measures all of its financial assets and financial liabilities at amortized cost, except for investment in equity instruments that are quoted in an active market, which are measured at fair value. Changes in fair value are recognized in the statement of operations.

Financial assets measured at cost include cash and cash equivalents, term deposits and restricted cash. Financial liabilities that are measured at cost include accounts payable and accrued liabilities and contributions repayable.

d) Impairment

Financial assets measured at amortized cost are tested for impairment when there are indicators of possible impairment. At the end of each reporting period, management assesses whether there are any indications that financial assets measured at cost or amortized cost may be impaired. When a significant adverse change has occurred during the period in the expected timing or amount of future cash flows from the financial asset or group of assets, a write-down is recognized in net income. The write down reflects the difference between the carrying amount and the higher of:

- the present value of the cash flows expected to be generated by the asset or group of assets;
- the amount that could be realized by selling the assets or group of assets;
- the net realizable value of any collateral held to secure repayment of the assets or group of assets.

When the events occurring after the impairment confirm that a reversal is necessary, the reversal is recognized in net income to a maximum of the accumulated impairment loss recorded in respect of the particular financial asset.

e) Deferred revenue

Deferred revenue is the unexpended contribution amounts received during the fiscal year that are transferred by agreement into the subsequent year. It is reported as a current liability as it is expected that the program will be completed or funds be repaid within the next fiscal year.

f) Revenue recognition

The Agency follows the deferred method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which related expenses occur. Unrestricted contributions are recognized as revenue when they are received or receivable or if the amount can be reasonably estimated and its collection is reasonably assured.

Interest income is recognised when earned.

g) Use of Estimates

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the balance sheet date and the reported amounts of revenues and expenses during the year. Actual results could differ from those estimates.

4. ADOPTION OF NEW ACCOUNTING POLICIES

On April 1, 2019, IEMA adopted the following new standards in part III (Accounting Standards for Not-for-Profit Organizations) of the CPA Canada Hand Book.

Section 4433 Tangible Capital Assets Held by Not-for-Profit Organizations and Section 4434 Intangibles Assets Held by Not-for-Profit Organizations

Section 4441, Collections held by Not-for-Profit Organizations. Section 4433, 4434 and 4441 (the new standards) replace Section 4431, 4432 and 4440 respectively.

IEMA has assessed the implications of this new policy on their operations and has determined that the new policies has no impact on their financial statement.

5. RESTRICTED CASH

Restricted cash represents cash received from Dominion Diamond Mines ULC that is intended for a specific purpose or represents the amount to repay.

	2020	2019
Cash received in advance for the next fiscal year *(Note 8)*	$-	$356,876
Cash repayable from annual surplus *(Note 9)*	$107,614	$149,652
	$107,614	**$506,528**

6. TANGIBLE CAPITAL ASSETS

	Cost	Accumulated Amortization	2020 Net Book Value	2019 Net Book Value
Equipment	$13,065	$11,988	$1,077	$1,347
Computer equipment	8,521	8,381	$140	$310
Website	15,120	14,601	$519	$741
	$36,706	**$34,970**	**$1,736**	**$2,398**

7. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2020	2019
Accounts payable and accrued liabilities	$28,380	$21,875
Payroll remittances-Canada Revenue Agency	$10,783	$12,560
GNWT-Payroll taxes	$1,529	$ 4,968
Salaries and benefits payable	$23,035	$21,128
	$63,727	**$ 60,531**

8. DEFERRED REVENUE

Deferred revenue consists of payments received in advance and is intended for the upcoming fiscal year expenditures.

	2020	2019
Received from Dominion Diamond Mines ULC	$356,875	$348,851

9. CONTRIBUTIONS REPAYABLE

	2020	2019
Dominion Diamond Mines ULC Core Funding	$67,614	$109,874
Dominion Diamond Mines ULC Separate Funding	$40,000	$39,778
	$107,614	**$149,652**

Contributions repayable arising from one fiscal year are normally deducted from contributions provided by Dominion Diamond Mines ULC in the following fiscal year. In the year, the Agency had excess contributions of $107,614 which is to be deducted from the 2020/2021 contributions.

10. SUBSEQUENT EVENTS

In January 2020, the World Health Organization declared a public health emergency due to the spread of the COVID-19. By March 2020, a series of outbreaks in Canada, led the federal government to implement various restrictive measures designed to curb the spread of the virus. Following suit, the Territorial Government of Northwest Territories enacted measures of similar intent . The impact of the measures has led to widespread economic uncertainty.

Management has assessed the impact of the COVID-19 and the impact of the Federal and Territorial Government's restrictive measures, and has determined that there is no impact on the amounts and information reported in the financial statements as at March 31, 2020 and that subsequent to year end, the impact of the measures to combat the spread of the virus have not caused a significant change to the assets and liabilities of the company or cause doubt to the future operation of the business.

11. GOING CONCERN

These financial statements have been prepared in accordance with accounting standards that apply to a going concern. Under the going concern assumption, an organization is viewed as being able to continue its operations in the foreseeable future and realize its assets and discharge its liabilities in the normal course of business.

IEMA receives all its funding from Dominion Diamond ULC. Due to the Covid-19 pandemic that rocked the global economy and closed the world wide supply chains, Dominion Diamond is left with$180 million worth of diamond inventory that it is unable to sell forcing it to seek creditor protection. Per IEMA Management, the impact has been minimal so far as the funding is protected by the legally binding Environmental Agreement, including steps to protect against bankruptcy and default of payment. Essentially, the burden to pay would fall on the GNWT who may use the $20 million in security to pay for the continued operation of IEMA. However if this pandemic continues for an extended period of time and/or gets worse, there is no assurance on the going concern issue.

These financial statements do not reflect adjustments that would be necessary if the going concern assumption were not appropriate. As described above, management believes that the measures it has taken or intends to take will mitigate the effect of the conditions and events that cast doubt on the appropriateness of this assumption.

12. COMMITMENTS

As at March 31, 2020 the Agency has an operating lease (month-to-month) for office space; there are no immediate plans for changes in rental agreements nor location. The payment for the next year is based on the existing month-to-month contract is $31,500 (2019 - $31,500).

13. ECONOMIC DEPENDENCE

The Agency receives all of its contribution funding from Dominion Diamond Mines ULC. Management is of the opinion that operations would be significantly affected if the funding was substantially curtailed or ceased. The funding arrangement is governed by legislation.

14. FINANCIAL INSTRUMENTS

Financial instruments consist of recorded amounts of cash and cash equivalents, term deposits and restricted cash as well as accounts payable and accrued liabilities, deferred revenue, and contributions repayable which will result in future cash outlays.

The Agency is exposed to the following risks in respect of certain of the financial instruments held:

(a) Credit risk

Credit risk arises from the potential that a counter party will fail to perform its obligations. The Agency does have credit risk in cash, cash equivalents, term deposits, and restricted cash of $ 181,691 (2019 -$576,220) as a result of having funds with one chartered bank in excess of the insurable limit. Furthermore, the Agency has a concentration of credit risk as full balance of cash is held at one financial institution. This risk has not changed from the prior year.

(b) Liquidity risk

Liquidity risk arises from the potential that an entity will have difficulty in meeting its obligation associated with the financial liabilities.The Agency does have a liquidity risk in the accounts payable and accrued liabilities and contributions repayable of $ 171,341 (2019 - $210,183). Liquidity risk is the risk that the Agency cannot repay its obligations when they become due to its creditors. This risk has not changed from the prior year. The Agency manages liquidity risk by continually monitoring actual and forecasted cash flows from operations to ensure, as far as possible, that it will have sufficient liquidity to meet its liabilities when due, without incurring unacceptable losses or risking damage to the Agency's reputation. The Agency has determined that the risk is not significant.

15. COMPARATIVE FIGURES

The financial statements have been reclassified, where applicable, to conform to the presentation used in the current year.

SUMMARY OF WORK PLAN AND CORE BUDGET 2019-20 AND 2020-21

Activity	Forecasted 2019-20	Proposed 2020-21	Proposed 2021-22
Board Meetings	49,610	75,255	76,760
Review of Documents	60,900	70,770	72,185
Separate Fund	0	40,000	40,000
Communications	177,580	193,325	197,190
Outside Contracts	6,720	10,000	10,000
Management and Admin	314,536	336,980	343,720
Total	**609,346**	**726,330**	**739,855**
Approved	713,749	727,310	741,856

Table 8. Core Budgets 2019-20 and 2020-21

The work plan for 2019-20 is based on the direction and feedback received from our Society Members at our annual general meeting (AGM) and the Agency's own initiatives.

The second year of the work plan, 2021-22, will be refined and modified based on direction received during next year's AGM, and any changes or modifications to activities at the Ekati mine.

Dominion Diamond Mines ULC (Dominion), as the owner of the Ekati mine, is solely responsible for funding the Agency in accordance with the 2006 Resolution Agreement. The Agency's budget for 2020-21 is $727,310 while the budget for 2021-22 is projected to be $741,856 which reflects an assumed increase in Canada's Annual Consumer Price Index (CPI) of 2.0%.

MAJOR ACTIVITIES

Board Meetings and Conference Calls

Board meetings are held three to four times per year. They provide an opportunity for Directors to discuss, review, and make recommendations on recent, ongoing and anticipated initiatives. Guests are invited to meetings to provide updates and receive input on their specific activities. Dominion, Wek'èezhìı Land and Water Board (WLWB), and Government of the Northwest Territories (GNWT) inspectors are regular guests.

Proposed Activities
Annually, three to four board meetings, including follow up and administration.

Review of Reports, Plans and Programs, and Implementation of the Environmental Agreement

Directors review and make recommendations on the major reports, programs, studies and plans required under the Environmental Agreement, water licences, and other regulatory approvals.

Proposed Activities
The Agency expects to review the following reports in 2020-21:

- The regular environmental monitoring annual reports for 2019 under the Environmental Agreement and water licence;
- Environmental Impact Report;
- Interim Closure and Reclamation Plan update;
- WROMP 11 and Seepage Response Framework;
- Reclamation and Closure Annual Progress Report;
- Effective Neutralization Potential Report
- Aquatic Response Framework - Response Plans;
- Air Quality Emission Monitoring and Management Plan (consolidated)
- Various management plans and updates including the Caribou Road Management Plan; Wildlife Effects Monitoring Plan.

There is also the Implementation meeting with Dominion, GNWT, Indigenous and Northern Affairs Canada, and the Agency which focuses on the implementation of the Environmental Agreement.

A similar workload is expected in 2021-22.

Separate Fund Activities

The Resolution Agreement establishes a Separate Fund of up to $40,000 per year for Agency expenses where a public hearing is reasonably assured as indicated in approved work plans or budgets, or as confirmed by a regulatory body.

Proposed Activities
There currently is no Public Hearing process expected for 2020-2021.

There may be a public hearing process for the Point Lake Development in 2020-21 but no application has yet been submitted to regulators.

Consultation and Communication

Consultation and communications with our Society Members and the general public is an important part of the Agency's mandate.

Proposed Activities 2020-21
In keeping with advice received from community members to increase our communication efforts, it is the Agency's hope that it will maintain its visits to communities, and host one Board event and an open house in a community in 2020-21. However, in light of the COVID 19 Pandemic we will not risk visiting Communities until the communities are willing host us and it is safe to do so. The Agency will continue to produce the Annual Report (Plain Language and Technical), attend workshops and meetings relevant to its mandate. The Agency will continue maintenance of its website, timeline website and public registry. An additional allocation is included to implement the communications strategy for the Agency.

Similar activities are anticipated in 2021-22.

Outside Contracts

On occasion, the Agency turns to other experts to help review reports, studies, and plans.

Proposed Activities 2020-21
It is difficult to predict what, if any, outside expertise the Agency may commission, but expects the review of upcoming Waste Rock Reports may require some outside expertise.

Management and Administration

The Agency provides the majority of its management and administrative services through its Yellowknife office and staff of an Executive Director and a Communications and Administration Specialist. The Agency manages its own office space and equipment.

Proposed Activities 2020-21
Maintain current staff and benefit levels.

The same activities are anticipated in 2021-22.

ACRONYMS & GLOSSARY

AEMP – Aquatic Effects Monitoring Program

AQMP – Air Quality Monitoring Program

AQEMMP – Air Quality and Emissions Monitoring and Management Plan

ARD – Acid Rock Drainage

ARF – Aquatic Response Framework

CAM – Continuous Air Monitoring

CCME – Canadian Council of Ministers of the Environment

CIRNAC – Crown-Indigenous Relations and Northern Affairs Canada (formally INAC)

CIMP – Cumulative Impact Monitoring Program

CPI – Consumer Price Index

CRMP – Caribou Road Mitigation Plan

CKRSA – Coarse Kimberlite Rejects Storage Area

Dominion – Dominion Diamond Mines, ULC ("the company")

DFO – Fisheries and Oceans Canada

DO – Dissolved Oxygen

EQC – Effluent Quality Criteria

ECCC – Environment and Climate Change Canada

EIR – Environmental Impact Report

EMAB – Environmental Monitoring Advisory Board

ENR – Department of Environment and Natural Resources (GNWT)

EPA – NWT Environmental Protection Act

GNWT – Government of the Northwest Territories

GTC – Ground Temperature Cable

HVAS – High volume Air Samplers

IACT – Inter-Agency Coordinating Team

ICRP – Interim Closure and Reclamation Plan

KIA – Kitikmeot Inuit Association

KPSF – King Pond Settling Facility

LKDFN – Łutsel K'e Dene First Nation

LLCF – Long Lake Containment Facility

LUP – Land Use Permit

MVEIRB – Mackenzie Valley Environmental Impact Review Board

NSMA – North Slave Métis Alliance

NWT – Northwest Territories

PAG – Potential Acid Generating

PDC – Panda Diversion Chanel

PK – Processed Kimberlite

PM – Particulate Matter

PSD – Pigeon Stream Diversion

QA/QC – Quality Assurance/Quality Control

REA – Report of Environmental Assessment

MVEIRB – Mackenzie Valley Environmental Impact Review Board

SLEMA – Snap Lake Environmental Monitoring Agency

SNP – Surveillance Network Program

SSMMP – Suspended Sediment Monitoring and Management Plan

TK – Traditional Knowledge

TKEG – Traditional Knowledge Elders Group

TOC – Total Organic Carbon

TDS – Total Dissolved Solids

TSP – Total Suspended Particulate

TSS – Total Suspended Solids

WEMP – Wildlife Effects Monitoring Program

WLWB – Wek'eezhìi Land and Water Board

WPKMP – Wastewater and Processed Kimberlite Management Plan

WROMP – Waste Rock and Ore Management Plan

WRSA – Waste Rock Storage Area

YKDFN – Yellowknives Dene First Nation

VEC – Valued Ecosystem Component

ZOI – Zone of Influence

Acid Rock Drainage – Outflow of water that has become acidic due to exposure to exposed rock surfaces in waste rock piles, open pits and underground workings.

Action Levels – A predetermined change, to a monitored variable or other qualitative or quantitative measure that requires the Licensee to take appropriate actions that may include, but that are not limited to: further investigations, changes to operations, or enhanced mitigation measures.

Adaptive Management – A management system with continual monitoring so that if initial mitigation measures are ineffective, additional or alternative mitigation is applied to keep the impact within acceptable levels.

Benthos – The sediments and mud at the bottom of rivers, lakes and ponds that can contain living organisms. Benthic invertebrates such as fly larvae and clams are an important food source for small fish.

Cladocera – An order of small crustaceans (i.e., zooplankton) that live in water (commonly called water fleas).

Coarse Kimberlite Rejects – A mixture of sand to gravel-sized, light and dense minerals that are left over after the diamonds have been removed from the kimberlite.

Consultation – Includes meaningful discussion, listening, and the company being prepared to amend proposed plans or programs based on information received in the consultation process.

Contaminants – A substance or material that, when added to an environment, can cause harm to people, fish, wildlife or plants.

Diabase – A fine-grained dark grey to black igneous rock, sometimes known as 'black granite'.

Environmental Agreement – Created as a legally binding instrument to provide monitoring and input into management practices not covered by other authorizations. Parties include Dominion and the federal and territorial governments. Akaitcho Treaty 8 First Nations (LKDFN and YKDFN), Kitikmeot Inuit Association, North Slave Métis Alliance and Tłı̨cho Government were involved in the negotiations.

Granite – Very hard, igneous rock made up mostly of quartz, mica, and feldspar and is often used in the construction of roads and other similar structures.

Hydrocarbons – Organic compounds which contain only hydrogen and carbon. This includes fossil fuels (i.e., coal, petroleum and natural gas) as well as their derivatives, such as plastics, solvents and oils.

Kimberlite – A potentially diamond bearing iron and magnesium rich rock from deep in the earth's mantle. Kimberlites are generally found as vertical pipe-like structures.

Metasediment – Rock with sedimentary origins that is exposed to pressure and heat and recrystallizes.

Mitigate – To make something less harmful. In this case, to make sure environmental impacts the mine causes are as minimal as possible.

Phytoplankton – Microscopic plants (e.g., algae) found in freshwater and ocean environments. They are an important food source for zooplankton.

Processed Kimberlite – The waste material and water mixture that is left over after the mill removes the diamonds from the ore. Also referred to as "tailings".

Progressive Reclamation – Cleaning up areas or reclaiming them as you work. Reclamation carried out during the construction and operation phases of a mine prior to final closure (e.g., rock waste dumps).

Reclamation – The recovery to viable ecosystems of areas of land and water bodies that have been disturbed during mining.

Seepage – Water that drains through or escapes from any structure that is supposed to hold, divert, or retain water (this includes Waste Rock Storage Areas).

Slave Geological Province – Area between the City of Yellowknife and the Arctic coast.

Tailings – See "Processed Kimberlite".

Till – A collection of coarse sediments deposited by glaciers.

Total Suspended Particulates – The fraction of airborne particulates that will remain airborne after their release into the atmosphere.

Valued Ecosystem Component – Environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.

Waste Kimberlite – The waste material that is left over after diamonds are removed from the ore (kimberlite). Also referred to as "tailings".

Waste Rock – Rock that is left over from the process of extracting diamonds from its ore (kimberlite).

Waste Rock Seepage – Water that drains through the waste rock piles. This water may pick up contaminants as it touches the waste rock and may enter the receiving environment.

Wastewater – Water that contains wastes from the mining process.

Zone of Influence – Area of reduced caribou occupancy.

Zooplankton – Small, mostly microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on phytoplankton and small particles in the water. They are an important food source for small fish.

DIRECTOR BIOGRAPHIES

JAIDA OHOKANNOAK | CHAIRPERSON

APPOINTED BY KITIKMEOT INUIT ASSOCIATION IN 2003

For over 20 years, Jaida Ohokannoak has lived and worked in small northern communities. She currently resides in Yellowknife. Jaida has significant experience, knowledge and expertise in environmental assessment, research, monitoring and renewable resource management. She believes mining can be conducted in an environmentally responsible manner to the benefit of both industry and local peoples without long-term adverse impacts to the environment.

EMERY PAQUIN | VICE CHAIRPERSON

APPOINTED JOINTLY BY THE GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2015

Emery Paquin is an independent environmental consultant living in Yellowknife. He has more than 35 years of environmental management experience with the northern mining industry and territorial government, and served six years as a Member on the Inuvialuit Water Board.

KIM POOLE | SECRETARY/TREASURER

APPOINTED BY THE TŁĮCHǪ GOVERNMENT IN 2015

Kim Poole first served as an Agency Director from 2006 – 2015 (jointly appointed by the Governments of Canada and NWT and BHP Billiton), but was reappointed by the Tłı̨chǫ Government in 2015. Kim is an independent wildlife biologist with over 35 years of experience in the Northwest Territories, Nunavut and British Columbia in the areas of wildlife and wildlife habitat research, and assessment and mitigation of environmental impacts related to the mining, forestry, and tourism industries.

BILL SLATER

APPOINTED BY THE NORTH SLAVE MÉTIS ALLIANCE IN 2018

Bill Slater is an independent environmental consultant with an engineering education. He is based in Whitehorse, where he has lived and worked for over 25 years. Most of his work is for First Nation governments, as a technical advisor on mining and mine closure projects. His technical focus areas include environmental effects assessment, mine closure, water quality and water management.

JESSE JASPER

APPOINTED JOINTLY BY GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2016

Jesse Jasper retired in 2011 after 39 years of service. Since 1971 he has worked exclusively in northern Canada, focusing on land and water resource development, water monitoring studies to evaluate impacts on development. He coordinated a number of reviews and technical presentations for environmental impact assessments, including NWT Diamond Project, which is now the Ekati Diamond Mine. Jesse represented INAC and EC on a number of boards, including the Mackenzie River Basin Board, the NWT Water Board, and the Mackenzie Gas Project.

TIM BYERS

APPOINTED BY AKAITCHO TREATY 8 FIRST NATIONS (YKDFN AND LKDFN) IN MAY 2001

Tim Byers is an independent consultant living in Manitoba. He has been working on projects in the Canadian Arctic since 1980. He specializes in studies of fish, Arctic seabirds and marine invertebrates and has assisted Aboriginal communities in documenting their indigenous environmental knowledge. He would like to see more Aboriginal youth engaged in environmental sciences and Traditional Knowledge used more effectively in environmental monitoring, research and impact assessments.

RONALD ALLEN

APPOINTED JOINTLY BY GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2017

Ron Allen has been living and working in a variety of Arctic communities since the 1970s and has worked with community groups and organizations on local cultural values, concerns and aspirations related to renewable resources. Ron moved to the Northwest Territories as a Renewable Resources Officer and transferred to Fisheries and Oceans Canada in the 1980s where he worked as a Fishery Officer and Habitat Inspector. Later, he worked as Area Manager and Area Director, delivering and managing multiple-sector operational programs including Habitat Assessment, Fisheries Management, Conservation and Protection, Science, and Administrative Services.

2019-2020

ANNUAL REPORT

A PUBLIC WATCHDOG FOR ENVIRONMENTAL MANAGEMENT AT THE EKATI DIAMOND MINE

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