DE BEERS GROUP

Gahcho Kué Mine

2022 Water Licence and Land Use Permit Annual Report

Version 1.1

July 2023

PLAIN LANGUAGE SUMMARY

De Beers Canada Inc. (De Beers) operates the Gahcho Kué Mine (Mine), located at Kennady Lake about 280 kilometres (km) northeast of Yellowknife, Northwest Territories. Kennady Lake is north of the East arm of Great Slave Lake and the small community of Lutsle K'e by approximately 140 km. The Mine is situated in a remote location without all season road access or utilities. Materials are transported to site on an annual basis via the Tibbit to Contwoyto Winter Road and the connecting Gahcho Kué Spur Road.

Construction of the mine began in September of 2014, following the issuance of the Type A Water Licence (MV2005L2-0015) and Type A Land Use Permit (MV2005C032) for mining and milling by the Mackenzie Valley Land and Water Board (MVLWB). The water licence most recently underwent a third amendment, which was approved by the responsible Minister on March 10, 2021. On June 29, 2021, the MVLWB issued the renewed Land Use Permit MV2021D0009, replacing Land Use Permit MV2005C0032. During the life of the mine, three pits will be developed. The three pits, called Hearne, 5034, and Tuzo, will be mined in sequence beginning with 5034 pit, followed by Hearne and finally Tuzo. At closure, two of the mined-out pits will be backfilled, and the lake will be refilled with both natural runoff and supplemental water from Lake N11. This refilling period will take a minimum of 12 years. When water quality in the refilled Kennady Lake is acceptable, it will be reconnected to the upstream and downstream to restore natural surface water flow.

The Water licence requires De Beers to submit an Annual Report describing the various construction and mining activities undertaken each year. The information presented in the Annual Report is to be organized as prescribed in Schedule 1, Part B, Item 10 – Annual Water Licence Report of the Mine's Water Licence (Table 1). This report fulfills both that requirement, and the requirement in the Land Use Permit (item 94) to provide an annual land use permit report.

REVISION HISTORY

Version	Date	Notes/Revisions
1.0	March 31, 2023	Full report submission to the MVLWB
1.1	July 28, 2023	Revised full report addressing MVLWB directives for Annual Reporting

Table 1 Annual Water Licence (MV2005L2-0015) and Land Use Permit (MV2005C0032) Report Requirements for the Gahcho Kué Mine Project

Annual Water Licence Report Requirements (as per Schedule 1)	Water Licence Section	Annual Report Section
Schedule 1: Part B, item 10, 1. a) A summary of engagement activities conducted in accordance with the approved Engagement Plan, in Part B, item 11 of this Licence, undertaken during the previous calendar year and shall include a brief description of activities planned for the forthcoming year	Part B, item 10 1. a.)	Section 2
b) A summary of Construction and Project activities, including work carried out under the approved Dyke A Construction and Management Plan and Dyke Construction and Management Plan, conducted in accordance with Parts E and G of this Licence, undertaken during the previous year calendar year	Part B, item 10 1. b.)	Section 3
c) An updated Project schedule	Part B, item 10 1. c.)	Section 4
d) A summary of Modification activities conducted in accordance with Part F of this Licence, undertaken during the previous calendar year	Part B, item 10 1. d.)	Section 5
e) A summary of activities conducted in accordance with the approved Waste Management Plan, required in Part G, item 2 of this Licence, undertaken during the previous calendar year, including a summary of updates or changes to the process or facilities required for the management of Water and Wastewater	Part B, item 10 1. e.)	Section 6
f) A summary of activities conducted in accordance with the approved Water Management Plan, relevant to the appropriate phase of the Project and as required in Part G, items 3, 4, and 5 of this Licence, undertaken during the previous calendar year, including:	Part B, item 10 1. f.)	Section 7
i) A summary of updates or changes to the process or facilities, including Drawdown activities, required for the management of Water and Wastewater	Part B, item 10 1. f). i.	
ii) The monthly and annual quantities in cubic metres (m3) of Water obtained for downstream flow mitigation in Area 8, identified by source location	Part B, item 10 1. f). ii	
iii) The monthly and annual quantities in cubic metres (m3) of Water obtained for downstream flow mitigation in Area 8, identified by source location	Part B, item 10 1. f). iii	
iv) During Drawdown of Kennady Lake, the monthly and annual quantities in cubic metres (m3) of all Water Discharged from Kennady Lake to each Discharge location	Part B, item 10 1. f). iv	
v) During Discharge from the Water Management Pond, the monthly and annual quantities of Discharge from the Water Management Pond to each Discharge location (Lake N11 and Area 8) when Discharge is occurring	Part B, item 10 1. f). v	
vi) A comparison of Water and Wastewater quantities measured in the year to the Water balances predicted for that year in the approved Water Management Plan, and an explanation of any significant differences between predictions and actual measurements	Part B, item 10 1. f). vi	
vii) Monthly elevations of Water in the Water Management Pond, areas 4, 6 and 7, Lakes A1, D2 and D3, and E1, including stage volume curves for each of these waterbodies;	Part B, item 10 1. f). vii	
ix) Monthly and annual quantities in cubic metres (m3) of Water pumped from each Open Pit and Collection Pond, identifying the Discharge location	Part B, item 10 1. f). viii	
x) Monthly and annual quantities in cubic metres (m3) of Water Discharged from each Waste Rock pile	Part B, item 10 1. f). ix	
xi) Monthly and annual quantities in cubic metres (m3) of Water discharging from the processed kimberlite disposal facilities	Part B, item 10 1. f). x	
xii) Monthly and annual estimates and measurements of precipitation and runoff	Part B, item 10 1. f). xi	
xiii) Monthly and annual amount of Water used for dust control	Part B, item 10 1. f). xii	

Table 1 Annual Water Licence (MV2005L2-0015) and Land Use Permit (MV2005C0032) Report Requirements for the Gahcho Kué Mine Project

Annual Water Licence Report Requirements (as per Schedule 1)	Water Licence Section	Annual Report Section
xiv) A summary and interpretation of monitoring results, including any Action Level exceedances described in the approved Water Management Plan	Part B, item 10 1. f). xiii	
xv) A description of actions taken in response to any Action Level exceedances; And	Part B, item 10 1. f). xiv	
xvi) An updated Water balance if required as per the approved Water Management Plan	Part B, item 10 1. f). xv	
g) A summary of activities conducted in accordance with the approved Groundwater Monitoring Program, required in Part G, item 6 of this Licence, undertaken during the previous calendar year, including: i) A summary and interpretation of monitoring results, including an evaluation of trends in Open Pit inflow quantity and quality; ii) A comparison of monitoring results to predictions of Open Pit inflow quantity and quality, with an explanation for any significant differences; iii) A description of any updates to predictions; iv) An assessment of the effects of Open Pit development on Groundwater movement and quality; v) A summary of any Action Level exceedances under the Groundwater Monitoring Program; and vi) A description of actions taken in response to Action Level exceedances.	Part B, item 10 1. g).	Section 8
h) A summary of activities conducted in accordance with the approved Erosion and Sediment Management Plan, required in Part G, item 11 of this Licence, undertaken during the previous calendar year including: i) A description of any erosion susceptible areas encountered and a summary of activities to prevent or mitigate erosion; and ii) A report of the performance of mitigations applied to each area.	Part B, item 10 1. h).	Section 9
i) A summary of activities conducted in accordance with the approved Explosives Management Plan, required in Part G, item 12 of this Licence, undertaken during the previous calendar year; including any Action Level exceedances and a description of actions taken in response to any Action Level exceedances;	Part B, item 10 1. i).	Section 10

Table 1 Annual Water Licence (MV2005L2-0015) and Land Use Permit (MV2005C0032) Report Requirements for the Gahcho Kué Mine Project

Annual Water Licence Report Requirements (as per Schedule 1)	Water Licence Section	Annual Report Section
j) A summary of results of any monitoring and the Seepage surveys conducted in accordance with the approved Geochemical Characterization and Management Plan, required in Part G, item 14 of this Licence, undertaken during the previous calendar year, including: i) A comparison of the annual quantities of the different types of Waste Rock generated to predictions made in the approved Geochemical Characterization and Management Plan; ii) A summary and interpretation of results from the geochemical monitoring required as per Schedule 5, item 7, including analysis results of any Seepage with runoff inputs to the Water Management Pond as well as any outside of the Controlled Area. Results shall be compared to appropriate reference locations in unaffected areas; iii) An overview analysis of major trends, site plans indicating the locations of Seepage, and summary of recommendations for future Seepage monitoring or management actions; iv) An interpretation of the results of all survey data collected since Project inception with site plans indicating the locations of Seepage and the quality assurance and quality control procedures used; v) A summary of results from investigations or activities related to field test cells; vi) A summary and interpretation of Water quality monitoring results for each of the main source areas (Waste Rock piles, Open Pits, camp pad, and airstrip) and how these compare to predicted values; vii) A summary of any exceedances of the Action Levels described in the Geochemical Characterization and Management Plan; viii) A description of actions taken in response to any Action Level exceedances under the Geochemical Characterization and Management Plan; and ix) Any geochemical inspections reports from the preceding year, as appendices to the Annual Water Licence Report.	Part B, item 10 1. j).	Section 11

Table 1 Annual Water Licence (MV2005L2-0015) and Land Use Permit (MV2005C0032) Report Requirements for the Gahcho Kué Mine Project

Annual Water Licence Report Requirements (as per Schedule 1)	Water Licence Section	Annual Report Section
k) A summary of activities conducted in accordance with the approved Processed Kimberlite and Waste Rock Management Plan, required in Part G, item 17 of this Licence, undertaken during the previous calendar year, including: i) A summary of updates or changes to the process or facilities required for the management of Processed Kimberlite, Waste Rock, and Overburden; ii) The monthly and annual quantities in cubic metres (m3) and tonnes (t) of Overburden removed from each Open Pit and its deposition location; iii) The monthly and annual quantities in cubic metres (m3) and tonnes (t) of Waste Rock placed in the South Mine Rock Pile and the West Mine Rock Pile, identifying the classification of quantities of each rock type, geochemical classification and its disposal location; iv) The monthly and annual quantities in cubic metres (m3) of Waste Rock placed for Construction activities, including an updated map or diagram showing the location and Waste Rock classification of the deposited materials; v) The monthly and annual quantities in cubic metres (m3) of Waste Rock placed in the 5034 Open Pit and the Hearne Open Pit; including an updated map or diagram showing the location and Waste Rock classification of the deposited materials; vi) The monthly and annual quantities in cubic metres (m3) and tonnes (t) of Processed Kimberlite placed in each of the Coarse Processed Kimberlite Containment Facility, the Fine Processed Kimberlite Containment Facility, the 5034 Open Pit and the Hearne Open Pit; vii) The monthly and annual quantities in cubic metres (m3) and tonnes (t) of slurry deposited in each of the Fine Processed Kimberlite Containment Facility and the Hearne and 5034 Open Pits; viii) The monthly, annual and cumulative quantities in cubic metres (m3) and tonnes (t), and locations of any Overburden, Processed Kimberlite, Waste Rock or ore stockpiles; ix) The annual quantities in cubic metres (m3) and tonnes (t) of other solid Waste, placed in each of the South Mine Rock Pile and West Mine Rock Pile; x) A summary and interpretation of monitoring results, including any Action Level exceedences; and xi) A description of actions taken in response to any Action Level exceedances.	Part B, item 10 1. k).	Section 12
l) A summary of activities conducted in accordance with the approved Spill Contingency Plan, required in Part H, item 1 of this Licence, undertaken during the previous calendar year, including: i) A list and description for all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e., open or closed), in accordance with the reporting requirements in Part H, item 3 of this Licence; and ii) An outline of any spill training and communications exercises carried out during the previous calendar year.	Part B, item 10 1. l).	Section 13
m) A progress report on any studies or plans, including Aquatic Effects Monitoring Program Response Plans and any Reclamation Research Plans, requested by the Board and undertaken during the previous calendar year, and a brief description of any future studies planned by the Licensee;	Part B, item 10 1. m).	Section 14
n) Any other details on Water Use or Waste disposal requested by the Board by November 30 of the year being reported;	Part B, item 10 1. n).	Section 15
o) A summary of the activities carried out to implement measures and follow-up programs to address Water Use and protection of Water quality as identified by the Minister in the Report of Environmental Impact Review 0607-001;	Part B, item 10 1. o).	Section 16
p) A table detailing all commitments made during Environmental Impact Review 0607- 001 and the subsequent regulatory processes, with descriptions of how each commitment is being, or has been, met;	Part B, item 10 1. p).	Section 17
q) A summary of the calibration and status of the meters and devices referred to in Part B, item 8 of this Licence;	Part B, item 10 1. q).	Section 18

Table 1 Annual Water Licence (MV2005L2-0015) and Land Use Permit (MV2005C0032) Report Requirements for the Gahcho Kué Mine Project

Annual Water Licence Report Requirements (as per Schedule 1)	Water Licence Section	Annual Report Section
r) Tabular summaries of all data and information generated under the Surveillance Network Program (SNP) and graphical summaries of parameters with effluent quality criteria referred to in Part G, at the points of compliance (Surveillance Network Program sites 02 and 04), in excel or an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form to the Board	Part B, item 10 1. r).	Section 19
s) A list of submissions made to the Board during the previous calendar year; and	Part B, item 10 1. s).	Section 20
t) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector	Part B, item 10 1. t).	Section 21
Annual Land Use Permit Report Requirements (as per Item 94)	**Land Use Permit Section**	**Annual Report Section**
Item 94. Beginning March 31, 2015 and no later than every March 31 thereafter, the Permittee shall submit an Annual Land Use Permit Report to the Board, which shall contain a table detailing all commitments listed in the Report of Environmental Impact Review that are related to the content of this Permit, with descriptions of how each commitment is being or has been met.	Part C, item 94.	Section 17

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ACRONYMS

Term	Definition
ABA	Acid Base Accounting
AEMP	Aquatic Effects Management Plan
AEP	Advanced Exploration Program
AL	Action Level
AN	Ammonium Nitrate
ANFO	Ammonimum Nitrate Fuel Oil
AP	Acid Generating Potential
AQEMMP	Air Quality and Emissions Monitoring and Management Plan
ARD	Acid Rock Drainage
BCM	Banked Cubic Metres
CCME	Canadian Council of Ministers of the Environment
CWMP	Construction Water Management Plan
DFO	Department of Fisheries and Oceans
DKFN	Deninu Kué First Nation
DO	Dissolved Oxygen
EC	Electrical Conductivity
EC	Environment Canada
EIS	Environmental Impact Statement
EMS	Environmental Management System
EQC	Effluent Quality Criteria
ERT	Emergency Response Team
FPK	Fine Processed Kimberlite
GK	Gahcho Kué
GNWT	Government of Northwest Territories
HDPE	High Density Polyethylene
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ICRP	Interim Closure and Reclamation Plan
LKDFN	Lutsel K'e Dene First Nation
MAC	Maximum Allowable Concentration
MDL	Method Detection Limit
MGC	Maximum Grab Concentration
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVLWB	Mackenzie Valley Land and Water Board
NAF	Non Acid Forming
Ni Hadi Xa	NHX
NNLP	No-Net Loss Plan
NP	Neutralization Potential
NNP	Net Neutralization Potential
NPR	Neutralization Potential Ratio

Term	Definition
NSMA	North Slave Metis Alliance
NTU	Nephelometric Turbidity Unit
NWT	Northwest Territories
NWTMN	Northwest Territories Metis Nation
PAF	Potentially Acid Forming
PAG	Potentially Acid Generating
PK	Processed Kimberlite
PKC	Processed Kimberlite Containment
ROM	Run of Mine
SFE	Shake Flask Extraction
SHE-OPs	Safety, Health and Environment – Operating Procedures
SSWQO	Site Specific Water Quality Objectives
SNP	Surveillance Network Program
STP	Sewage Treatment Plant
TDS	Total Dissolved Solids
TG	Tlicho Government.
TSS	Total Suspended Solids
WEMP	Wildlife Effects Monitoring Plan
WMP	Water Management Pond
WQ	Water Quality
WSE	Water Surface Elevation
WWHPP	Wildlife and Wildllife Habitat Protection Plan
VSMP	Vegetation and Soil Monitoring Program

UNITS

Term	Definition
bcm	banked cubic metres
CFU/100mL	colony forming units per 100 millilitres
kg	kilogram
km/hr	kilometres per hour
L	litre
m	metre
masl	metres above sea level
m^2	square metre
m^3	cubic metre
mg/L	milligrams per litre
mm	millimetres
mL	millilitre
ML	million litres
Mm^3	million cubic metres
m^3/day	cubic metres per day
MPN/100mL	most probable number per 100 millilitres
m^3/s	cubic metres per second
pH	unitless
T	Metric tonne
%	percent
µm	micron
°C	degrees Celsius
µS/cm	microSiemens per centimetre
#	number
<	less than

1 INTRODUCTION

On August 11 and September 24, 2014, respectively, De Beers was issued a Land Use Permit (MV2005C0032) and a Type A Water Licence (MV2005L2-0015) by the Mackenzie Valley Land and Water Board (MVLWB). Approval of various environmental monitoring and management plans to guide the activities at the Mine were granted concurrently and subsequently. Construction of the mine began in September 2014 and continued for two years. The Mine officially entered production in September 2016. Full production was achieved in 2017.

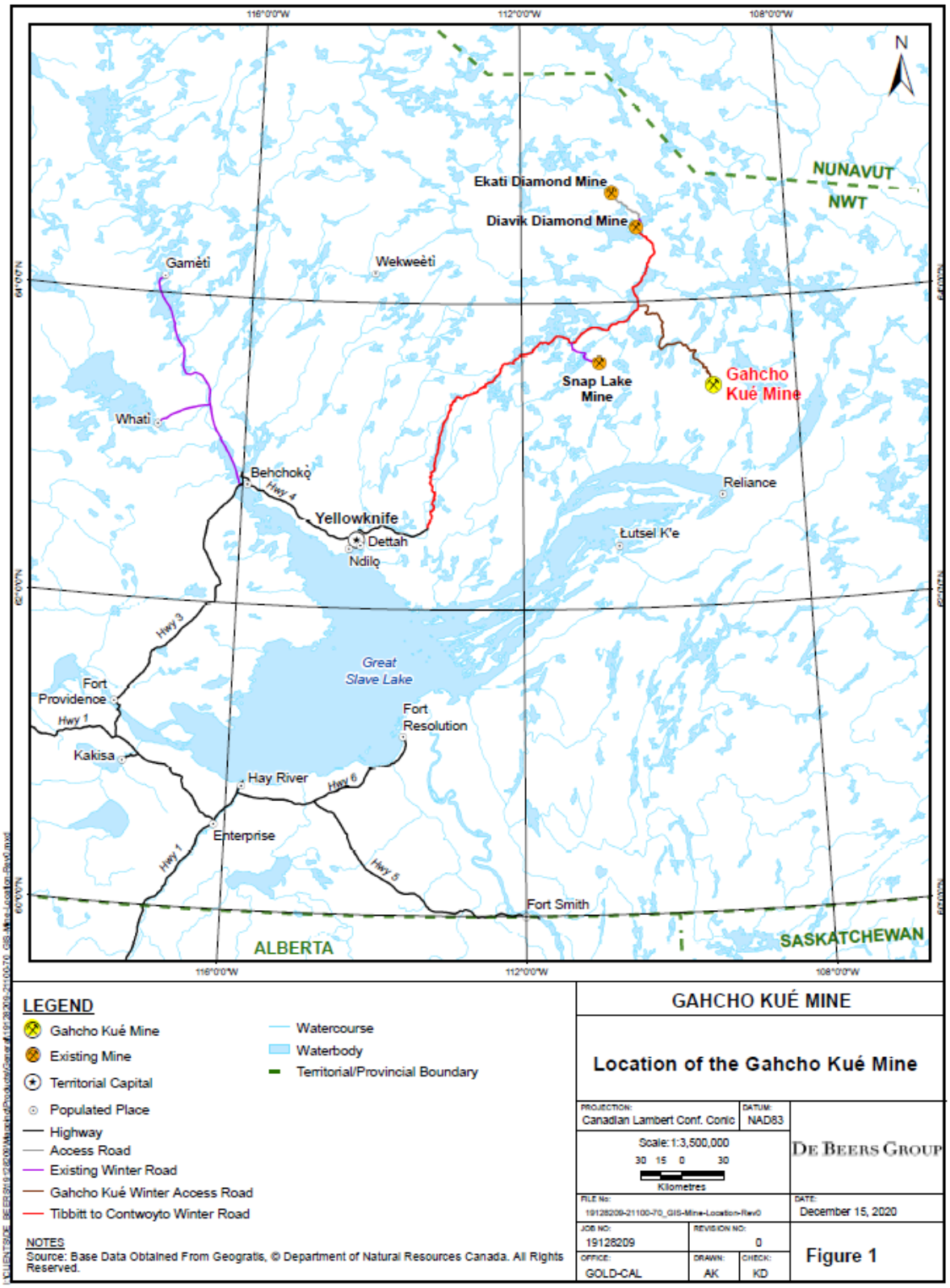
Since issuance of the previous Type A land use permit (August 11, 2014) and Type A water licence (September 24, 2016), various updates and changes to planned activities have been made. Most of these changes are accommodated through updates to the Environmental Monitoring and Management Plans. In two cases, De Beers sought and received land use permit amendments. The first amendment was to add additional fuel storage capacity (LUP amendment #1) and the second amendment was to extend the life and capacity of the Fine PK facility (Land Use Permit Amendment #2, 2017). Both amendments were issued by the MVLWB in 2017.

In 2017, De Beers discovered a geotechnical issue within the pits which required an adjustment of the pit designs. The pit slopes were adjusted outward, leading to an increase in the volume of mine rock that had to be removed and placed on the surface. The west mine rock pile was increased in size, and subsequent adjustments were made to other aspects of the mine plan. In March 2018, De Beers submitted an application for a Type A water licence amendment #1 and a Type A land use permit amendment #3 to accommodate those changes. A second water licence amendment application (WL amendment #2) was submitted in May of 2018 to accommodate a short term increase in water use until such time as amendment #1 could be approved. Water licence amendment #2 was approved in July 2018. Land use permit amendment #3 was approved by the Board on November 7, 2018 and the water licence amendment #1 was approved by the responsible Minister on December 14, 2018 (MVLWB, 2018).

In 2019, additional economically viable ore was defined at the north side of 5034 pit. This ore is an extension of the 5034 ore body. It is located between the 5034 pit and the Tuzo pit. Incorporation of this ore into the mine plan requires removal of additional mine rock and the deposit of additional processed kimberlite. The mine plan has therefore been adjusted to increase the capacity of the fine processed kimberlite containment facility, to incorporate additional mine rock into the current coarse processed kimberlite pile, to adjust the pit footprint and depth, and to extend the life of mine. In March 2020, De Beers submitted a Type A water licence amendment application (WL amendment #3) and Type A land use permit amendment (LUP amendment #5) to the MVLWB. In addition, a Land Use Permit Amendment application (LUP Amendment #4) was submitted for the construction of a walking trail and solar farm. The Land Use Permit Amendment #4 was approved May 12, 2020. The Water Licence amendment #3 was approved by the responsible Minister on March 10, 2021, and the Land Use Permit amendment #5 was approved on February 10, 2021. On June 29, 2021, the MVLWB issued the renewed Land Use Permit MV2021D0009, replacing Land Use Permit MV2005C0032.

Under the Type A Water Licence (the Water Licence) and the Type A Land Use Permit (the Land Use Permit), De Beers is required to submit this Annual Water Licence and Land Use Permit Report. It describes the various construction and mining activities undertaken during 2022 in accordance with the licence conditions and management plans referenced in the Mine's Licences. The information presented has been organized as prescribed in Schedule 1, Part B, Item 10 – Annual Water Licence Report of the Project's Water Licence (MV2005L2-0015) and Item 84 of the Project's Land Use Permit (MV2021D0009).

Figure 1-1 Location of the Gahcho Kué Mine



2 A SUMMARY OF ENGAGEMENT ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED ENGAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.A)

Community engagement conducted throughout 2022 were related to the Water Licence, Land Use Permit, and the various monitoring and management plans associated with the licence and permit. Methods of engagement were consistent with those described in the Gahcho Kué Project Community Engagement Plan – Version 2 (De Beers, 2015), approved by the Board on March 30, 2015.

Due to COVID-19 travel and social gathering restrictions in early 2022, De Beers was not fully able to host all previously scheduled in person engagement events, such as mine site visits and community visits. At the start of 2022 engagement activities were undertaken through virtual platforms. A summary of engagement activities conducted is provided in Appendix A.

In 2022, De Beers developed a tentative schedule of engagement activities at the beginning of the year, consistent with the Approved Engagement Plan. Activities planned for the forthcoming year is expected to be as shown in Table 2-1.

Table 2-1 Community Engagement Plan for 2023

Activity	DKFN	LKDFN	NWTMN	NSMA	TG	YKDFN
Community Visits	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep
Minesite Visits	Jul-Sep	Jul-Sep	Jul-Sep	Jul-Sep	Jul-Sep	Jul-Sep
Meetings	Ad hoc	Ad hoc	Ad hoc	Ad hoc	Ad hoc	Ad hoc
Ni Hadi Xa	At minimum quarterly meeting (in person or through virtual conference)					
Fish Tasting	August	August	August	August	August	August

Note:

DKFN = Deninu Kué First Nation; LKDFN = Łutsel K'e Dene First Nation; NSMA = North Slave Metis Alliance; NWTMN = Northwest Territory Metis Nation; TG = Tłı̨chǫ Government; YKDFN – Yellowknives Dene First Nation

3 SUMMARY OF CONSTRUCTION AND PROJECT ACTIVITIES, INCLUDING WORK CARRIED OUT UNDER THE APPROVED DYKE A CONSTRUCTION AND MANAGEMENT PLAN AND DYKE CONSTRUCTION AND MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.B)

Ongoing construction work occurred on three dyke projects in 2022. This includes Dyke A1, Dyke D and Dyke L. Table 3-1 summarizes the work activities undertaken for each location in 2022 and includes previous construction work for completeness.

Dyke A1 construction continued through the entire year of 2022. Liner installation was completed to 431.5 meters above sea level (masl), with till core and armouring slightly lower at 430.0 masl. This construction is continuing into 2023, including construction of the North Cofferdam and continued Dyke A1 till placement.

Dyke D construction continued in 2022 to continue raising the structure to 428.5 masl throughout the winter. Key trench construction and dental cleaning is ongoing.

Dyke L was raised to 426.1 masl at the north end and 427.7 masl at the south end in 2022. Further work to raise it to 428.5 masl will restart in January 2023. 150mm transition rockfill and filter placement is ongoing.

Table 3-1 Summary of Dyke Construction and Project Activities, 2022

Dyke	Dyke Type	Start Date/Anticipated Start Date	Completion Date/Anticipated Completion Date	Submission of As-built Report to MVLWB	Comments
Dyke A	Water Retention	Feb 25, 2015	May 16, 2015	Submitted to MVLWB on August 18, 2015	Construction completed in 2015.
Dyke A1 (Stage 1)	Water and FPK retention	Apr 30, 2016	Jul 27, 2017	90 days after completion of dyke construction	Stage 1: Completion of cofferdam only
Dyke A1 (Stage 2)		Dec 10, 2017	*Feb 2019*		Liner elevation completed to 425 masl in 2018, upstream armor was completed in Feb 2019
Dyke A1 (Stage 3)		Feb 8, 2019	*Dec 2023*		Stage 3: Full structure to 431.5 masl
Dyke B (Stage 1)	Water Retention	Aug 31, 2017	Dec 18, 2018	90 days after completion of dyke construction	Stage 1: Completed first lift to 420 masl.
Dyke B (Stage 2)		Jul 1, 2019	Nov 19, 2019		Stage 2: Construction completed to 420.8m.
Dyke D (stage 1)	Water diversion and retention	Aug 18, 2017	May 1, 2018	90 days after completion of dyke construction	Cofferdam Construction: Completed till, 20MM, 150MM
Dyke D (Stage 2)		May 2020	Oct 2020		Stage 2: Liner System to 426.5 masl
Dyke D (Stage 3) [1]		Oct 2020	*Dec 2023*		Stage 3: Full structure to 431.5 masl
Dyke F	Water Diversion	Nov 10, 2015	July 2016	Submitted to MVLWB on April 6, 2021.	Dyke construction was complete.

Dyke	Dyke Type	Start Date/Anticipated Start Date	Completion Date/Anticipated Completion Date	Submission of As-built Report to MVLWB	Comments
Dyke G (Stage 1)	Water Diversion	Mar 26, 2016	Jun 12, 2016	Submitted to MVLWB on April 6, 2021.	Cofferdam has been completed.
Dyke H (Stage 1)	Water Retention	Sep 08, 2015	Sep 24, 2015	90 days after completion of dyke construction	Cofferdam has been completed.
Dyke I (Stage 1)	Water Retention	Aug 15, 2015	Sep 24, 2015	90 days after completion of dyke construction	Cofferdam has been completed.
Dyke J (Stage 1)	Water Retention	July 22, 2015	Sep 25, 2015	Submitted to MVLWB on June 28, 2016	Construction completed in 2016.
Dyke J (Stage 2)		Apri 22, 2016	Apri 29, 2016		
Dyke K (Stage 1)	Water Retention	Sep 15, 2015	Oct 15, 2015	Submitted to MVLWB on April 6, 2021.	Construction completed on Dyke K.
Dyke K (Stage 2)		Aug 1, 2016	Jun 26, 2019		
Dyke L (Stage 1)	Filter	Jan 16, 2016	Mar 23, 2017	90 days after completion of dyke construction	Stage 1: Completed to 422.5 m Elevation
Dyke L (Stage 2)	Filter	Sep 4, 2018	Mar 21, 2018		Stage 2: 423.5 m Elevation completed in 2018.
Dyke L (Stage 3)	Filter	Nov 2020	Apr 2021		Stage 3: 426.0 m elevation.
Dyke L (Stage 4)	Filter	May 2021	*Dec 2023*		Stage 3: Full structure to 431.5 masl
CP5 Berm	Water Retention	Mar 19, 2018	Aug 21, 2019	Submitted to MVLWB on April 6, 2021.	Construction completed.

Note:

- The underlined date is anticipated completion date for dyke construction. Completed dykes are shaded in grey.
- 1. De Beers is submitting a Land Use Permit in early 2023 for raising the containment levels of Dyke A1, A2, D, and L. Updated construction plan and schedule will be updated in the 2023 Water Licence Annual Report.

4 PROJECT SCHEDULE (SCHEDULE 1, PART B, ITEM 10, 1.C)

Highlights of the activities that were undertaken in 2022 are listed as follows:

- Shipping of 1,890 loads on the annual winter road to supply the site with fuel, ammonium nitrate and general freight and equipment.
- Mining of 5034, Hearne, and Tuzo Pits continued throughout 2022.
- Continual construction of the West Mine Rock Pile, Coarse PK and Mine Rock Pile, and Fine PK Containment Facility.

Table 4-1 Current Project Schedule provides an overview of the current project schedule that includes construction, operations, and closure activities.

Table 4-1 Current Project Schedule

Progress Year	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22+
Calendar Year 20XX	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38+
Construction																									
Building Site Infrastructure																									
Dyke A																									
De-watering Kennady Lake																									
Peripheral Dykes																									
Internal Dykes																									
Pre-stripping of 5034 and Hearne Pits																									
Pre-stripping of Tuzo Pit																									
5034 Pit																									
Hearne Pit																									
Tuzo Pit																									
South Mine Rock Pile (SMRP)																									
West Mine Rock Pile (WMRP)																									
Fine Processed Kimberlite Facility (FPKC)																									
CPK and Mine Rock Pile (CPKMRP)																									
Process Plant																									
Closure																									
Active Closure; remove buildings																									
Refilling Kennady lake																									
Progressive Reclamation of FPKC																									

Note:

- De Beers is submitting a Land Use Permit to extend the life of the Fine PK Facility to support a potential underground mine life extension in the open pits. The schedule presented in this table will be updated in the 2023 Water Licence Annual Report.

5 SUMMARY OF MODIFICATION ACTIVITIES CONDUCTED IN ACCORDANCE WITH PART F OF THE WATER LICENCE (SCHEDULE 1, PART B, ITEM 10, 1.D)

No modifications to the Water Management Pond, Sewage Treatment Plant or Processing Plant were conducted in accordance with Part F, Section 1 of the Water Licence.

Constructions of the dykes and berms continued throughout 2022. The detailed construction activities and schedule are included in Section 3 of this report.

6 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED WASTE MANAGEMENT PLAN, INCLUDING A SUMMARY OF UPDATES OR CHANGES TO THE PROCESS OR FACILITIES REQUIRED FOR THE MANAGEMENT OF WATER AND WASTEWATER (SCHEDULE 1, PART B, ITEM 10, 1E)

The Waste Management Plan Version 5.5 was updated to Version 5.6 in May 2021. The update was made to describe the landfill location in the Coarse PK and Mine Rock Pile. Highlights of waste management activities undertaken in 2022 are outlined below.

6.1 Waste Management

At the Waste Management Area, the oil-water separator treated and discharged 128,000 L of hydrocarbon contaminated water. Recovered petroleum hydrocarbons captured in the oil-water separator filtering are stored at the Hazardous Waste Management Berm, located within the Waste Management Area and subsequently shipped to Yellowknife during the 2023 winter road campaign for disposal by KBL Environmental Ltd.

A total of 1500 m^3 of non-hazardous waste was deposited at the Gahcho Kué Landfill during 2022.

6.2 Incinerator Management

The average monthly waste incinerated comprised of the following:

- 8091 kg of camp kitchen food waste.
- 162 kg of camp kitchen grease; and
- 9201 kg of general camp waste, composed of soiled paper products, empty food containers, clothes, bedding, and office waste.

A typical burn can generate between 14 and 144 kg of bottom ash, depending on total size and composition of the waste being incinerated. Ash is removed by the Incinerator Operator. After every burn cycle a small ash sample is collected and the remaining bottom ash is deposited into drums and stored as hazardous waste. Once every three months, a leachate test is conducted on the sample ash and, if the sample passes, the stored barrels are deposited directly in the on-site landfill. If a sample fails, it is shipped off-site to a facility specializing in hazardous waste remediation and disposal. In 2022, Incinerator A bottom ash samples from January 1 to March 31, 2022, and Incinerator B from April 1 to June 11, 2022 had exceedances in Antimony. Failed ash were shipped off-site for remediation and disposal. During 2022, the average incinerator burn times is 501 minutes and consumed approximately 11,068 L of diesel for an annual usage of 132,816 L. On June 12th, 2022, a fire occurred at the waste management building rendering the incinerators inoperable. An emergency land use operation was implemented where the incinerator waste stream was stored in Seacans and shipped of site regularly to reduce the potential for wildlife attractants on site. By late June, one of the incinerators was back up and running. The primary chamber walls were relined on Incinerator B in August to September 2022, and secondary in September 2019. Incinerator B 2022 maintenance also included replacing the mortar knee wall

around the bottom of the chamber and installing all new refractory blocks. Incinerator A's primary chamber was relined in October 2021 and secondary August 2019.

Stack emission testing on both incinerators was in 2019, in keeping with the requirements of the approved Incinerator Management Plan – Version 3 (De Beers 2017d). Stack testing was planned for 2022 but was cancelled due to the fire. Stack testing is currently scheduled for August 2023.

6.3 Landfarm

De Beers has operated a Temporary Landfarm at the Gahcho Kué site since 2007. Following early signs of success, a series of multi-layer treatment cells were constructed and the Temporary Landfarm was brought into operation in 2010. An estimated 2,110 m^3 of petroleum hydrocarbon contaminated soils associated with operations at the former Kennady Lake Advanced Exploration Camp (AEP) were placed in the Temporary Landfarm for treatment.

In 2017, before the decommissioning of the Temporary Landfarm, a Temporary Holding Facility consisting of a lined (high density polyethylene liner) and bermed pad was approved for construction at the east side of the South Mine Rock Pile. This Temporary Holding Facility was first utilized in June 2017 to contain approximately 70 m^3 of petroleum hydrocarbon contaminated soil removed during remediation of a former AEP diesel fuel tank farm. Between July 13 and 22, 2017, the Temporary Landfarm was decommissioned, soil excavated from the treatment cells were deposited in the Temporary Holding Facility. A survey conducted on July 26, 2018 indicated a total of 2,370 m^3 of materials was stored in the Temporary Holding Facility. Liner material, piping and various other debris associated with the Temporary Landfarm were sorted and disposed of within the South Mine Rock Pile Landfill.

Currently, hydrocarbon contaminated material dominantly in the form of loose rocks is stored in the hydrocarbon contaminated material zone of the mine rock pile. Construction commenced on a Permanent Landfarm facility at the east side of the South Mine Rock Pile (south of the Temporary Holding Facility) in September 2019. The intent of the permanent landfarm facility is to treat hydrocarbon contaminated material during early stages of the mine life. Due to the dyke construction resource constraint, the landfarm construction is currently on hold and will resume once resources become available following dyke construction.

7 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED WATER MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.F.)

The Operational Water Management Plan Version 6.2 (OWMP) (De Beers, 2021d) was approved by the MVLWB on June 28, 2021 and addresses conditions in the Water Licence referenced in Part G, Item 4 and Schedule 5, Item 2.

The OWMP is focused on the operation phase of the life of mine, beginning with the commissioning of the process plant (Year -1) and continuing for approximately 13.6 years (Year 1 to Year 14). The key activities during the operation phase include open pit mining, ore processing, water management, fine processed kimberlite (PK) deposition, and mine rock piles/coarse PK facility construction. Activities conducted under the OWMP in 2022 are described in the following sections.

7.1 Summary of updates or changes to the process or facilities, including drawdown activities, required for the management of water and wastewater (Schedule 1, Part B, Item 10, 1.f.i)

There was no change to the process or facilities that are required for the management of water and wastewater in 2022.

7.2 Monthly and annual quantities in cubic metres of water obtained from Area 8 (Schedule 1, Part B, Item 10, 1.f.ii)

A summary of the monthly and annual quantities of water obtained from Area 8 is provided in Table 7-1.

Table 7-1 Monthly and Annual Quantities of Water Obtained from Area 8 in 2022

Month	Volume [m³]
January	2,109
February	2,129
March	2,323
April	2,227
May	2,274
June	2,174
July	2,277
August	2,248
September	2,244
October	2,486
November	2,423
December	2,505
Total	**27,417**

7.3 Monthly and annual quantities in cubic metres of water obtained for downstream flow mitigation in Area 8, identified by source location (Schedule 1, Part B, Item 10, 1.f.iii)

Downstream flow mitigation occurred in 2022 from Lake N11 to Area 8 between June 2nd and August 14th, 2022, in accordance with the approved Operational Water Management Plan. The monthly water pumping records are presented in Table 7-2. In addition, to maintain the Lake A1 elevation at 421.2 masl, De Beers pumped 195,418 m^3 water from Area 1 to Area 8 between August 16th and August 31st 2022. The water pumping records are presented in Table 7-3 Water Volumes Pumped from Area 1 to Area 8 in 2022

Table 7-2 Water Volumes Moved from Lake N11 to Area 8 in 2022

Month	Volume [m^3]
June	831,143
July	605,279
August	187,636
Total	**1,624,058**

Note:

1. The DSFM pumping rate doesn't reflect the flowrate from the outlet of Area 8. The Area 8 outlet flow rate is reported under SNP-19 in Section 19 of this report.

Table 7-3 Water Volumes Pumped from Area 1 to Area 8 in 2022

Month	Volume [m^3]
August	195,418
Total	**195,418**

7.4 During drawdown of Kennady Lake, the monthly and annual quantities in cubic metres of all water discharged from Kennady Lake to each discharge location (Schedule 1, Part B, Item 10, 1.f.iv)

No drawdown of the Kennady Lake was conducted since Gahcho Kué entered the operation phase.

7.5 During discharge from the Water Management Pond, the monthly and annual quantities of discharge from the Water Management Pond to the discharge location in Lake N11 when discharge is occurring (Schedule 1, Part B, Item 10, 1.f.v)

Discharge from the Water Management Pond to Lake N11 did not occur in 2022. Due to low snowpack and lower than normal precipitation, no discharge from the Water Management Pond (Area 3) was required.

7.6 Comparison of water and wastewater quantities measured in the year to the water balances predicted for that year in the approved Water Management Plan, and an explanation of any significant differences between predictions and actual measurements (Schedule 1, Part B, Item 10, 1.f.vi)

Cumulative water use at Gahcho Kué in 2022 consisted of taking 27,417 m^3 in Area 8 for use as potable water to service the camp population and about 14,822 m^3 from the Water Management Pond for dust control on access roads, the crusher facility and mining for use in the operation phase. The 27,417 m^3 value was below the allowable limit of 45,000 m^3 per year as permitted by the Water Licence and defined in the Mine's water balance. This volume of water is presented in 7-4 below.

Table 7-4 Volume of Potable Water Use Takings Area 8

Month	Potable Water (Area 8) [m^3]
January	2,109
February	2,129
March	2,323
April	2,227
May	2,274
June	2,174
July	2,277
August	2,248
September	2,244
October	2,486
November	2,423
December	2,505
Total	**27,417**

Wastewater from the Sewage Treatment Plant (STP) was released over land through a discharge line as treated effluent into CP1 (formerly referred as Area 7). In 2022, a total of 27,839 m^3 of wastewater was treated by the STP at an average daily flow rate of 76 m^3/day. These values presented in Table 7-5 below, are within the prescribed operating limits of the plant to treat on maximum 150 m3/day.

Table 7-5 Volume of Treated Effluent Discharged from the STP in 2022

Month	Volume [m^3]	Average Daily Rate [m^3/d]
January	2,170	70
February	2,205	79
March	2,430	78
April	2,287	76
May	2,319	75
June	2,253	75

Month	Volume [m³]	Average Daily Rate [m³/d]
July	2,306	74
August	2,225	72
September	2,313	77
October	2,475	80
November	2,383	79
December	2,473	80
Total	**27,839**	–
Daily Average	**–**	**76**

7.7 Monthly elevations of water in the Water Management Pond, Areas 4, 6 and 7, Lakes A1, D2 and D3, and E1, including stage volume curves for each of these waterbodies (Schedule 1, Part B, Item 10, 1.f.vii)

The water levels at Water Management Pond, CP1 (formerly referred as Area 7), Lake A1, D2/D3 and Lake E1 are presented below in Table 7-6. Area 4 was completely dewatered in July 2020, and is currently occupied by TUZO pit and associated mine infrastructure. Area 6 has been occupied by the mine infrastructure since 2017.

Table 7-6 Water Elevation in Water Management Pond, CP1, Lakes A1, D2/D3, and E1 in 2022

Month	Water Management Pond [masl]	CP1 [masl]	Lake A1 [masl]	Lake D2/D3 [masl]	Lake E1 [masl]
January	417.9	417.3	421.3	426.7	425.6
February	417.7	417.3	421.3	426.7	425.6
March	417.6	417.4	421.3	426.7	425.5
April	417.4	417.4	421.3	426.7	–
May	417.5	417.6	421.4	426.8	425.9
June	417.9	417.8	421.6	426.8	425.6
July	418.0	417.7	421.6	426.8	425.5
August	417.9	417.7	421.5	426.8	425.5
September	417.9	418.0	421.0	426.6	425.6
October	417.9	418.1	421.1	426.4	425.7
November	417.8	418.2	421.1	426.4	425.7
December	417.7	418.2	421.1	426.4	425.7

Note: – no data available

Tables below include summary of the stage volume curves for the Water Management Pond, CP1 (Area 7), Lake A1, D2/D3, and E1.

Table 7-7 Water Storage Capacity for Water Management Pond, CP1 and Lake A1 in 2022

Water Elevation [masl]	Water Management Pond [Mm³]	CP1 [Mm³]	Lake A1 [Mm³]
423	-	-	1.8
422	-	-	1.4
421	-	3.7	1.0
420	-	2.7	0.7
419	9.0	2.0	0.5
418	7.5	1.3	0.3
417	6.1	0.7	0.1
416	4.8	0.4	0.1
415	3.6	-	-

Note: masl = metres above sea level; Mm3 = million cubic metres; - = not applicable.

Table 7-8 Stage Volume Curves Data for Lakes D2, D3 and E1 in 2022

Lake Elevation [masl]	Lake D2 [Mm³]	Lake D3 [m³]	Lake D2/D3 [m³]	Lake E1 [m³]
427.0	-	-	1.6	-
426.8	-	-	1.4	-
426.6	-	-	1.2	-
426.4	-	-	1.0	-
426.2	-	-	0.9	-
426.0	-	-	0.8	0.5
425.8	-	-	0.7	0.4
425.6	-	-	0.6	0.4
425.4	-	0.5	-	0.3
425.2	0.2	0.5	-	0.3
425.0	0.2	0.4	-	0.2

Note: masl = metres above sea level; m³ = cubic metres.

7.8 Monthly and annual quantities in cubic metres, of water pumped from each Open Pit and Collection Pond, identifying the discharge location (Schedule 1, Part B, Item 10, 1.f.viii)

The Hearne, 5034 and Tuzo Open Pits were operational throughout 2022. In 2022, water from Hearne Open Pit was pumped into the Water Management Pond (Area 3/5). Water from the 5034 Open Pit was pumped to CP1. Water from Collection Ponds CP5 were pumped to the Water Management Pond, with volumes summarized in Table 7-9. No water was pumped from Tuzo Open Pit and Collection Pond CP1.

The monthly and annual quantities of water pumped in 2022 from the Open Pits are presented in Section 8.1.

Table 7-9 Monthly and Annual Quantities of Water Pumped from Collection Ponds (CP1 and CP5) to Water Management Pond in 2022

Month	CP1 [m³]	CP5 [m³]
May	–	35,277
Total	**–**	**35,277**

7.9 Monthly and annual quantities in cubic metres of water discharged from each Waste Rock Pile (Schedule 1, Part B, Item 10, 1.f.ix)

No water was discharged from any Mine Rock Pile to the receiving environment. Bi-annual seepage surveys were conducted under the latest Geochemical Characterization Plan. The results are presented in Appendix C of this report.

7.10 Monthly and annual quantities in cubic metres of water discharging from the processed kimberlite disposal facilities (Schedule 1, Part B, Item 10, 1.f.x)

No water was discharged from the processed kimberlite disposal facilities to the receiving environment. The supernatant produced from the deposition of fine processed kimberlite (FPK) in the FPC Containment Facility is filtered through Dyke L (or pumped as a contingency measure) into the Water Management Pond, and re-used in the process plant.

7.11 Monthly and annual estimates and measurements of precipitation and runoff (Schedule 1, Part B, Item 10, 1.f.xi)

Monthly and annual precipitation and runoff data is presented in the tables below. In 2022, the total amount of recorded precipitation for 2022 was 286.7 mm. It should be noted that the precipitation gauge is more reliable for recording rain record during summer season. The snowfall records were collected through annual snowpack surveys in April and reported in the AEMP Annual Reports.

Table 7-10 Summary of Monthly and Annual Precipitation in 2022

Month	Precipitation (mm)
January	0.9
February	3.2
March	10.8
April	17.0
May	51.0
June	7.2
July	68.6
August	36.7
September	22.8
October	55.4

Month	Precipitation (mm)
November	9.6
December	3.6
Total	**286.7**

The volume of runoff water from various areas around the mine in 2022 was estimated under the using Goldsim™ Water Balance Model to be approximately 1.41 million cubic metres (Mm^3) in 2022. Monthly and annual runoff data is presented in 7-11.

Table 7-11 Summary of Estimated Monthly and Annual Runoff for Various Areas in 2022

Month	Monthly Surface Runoff from Area 1 [m^3]	Monthly Surface Runoff from Area 2 [m^3]	Monthly Surface Runoff from Area 3/5 [m^3]	Monthly Surface Runoff from Area 4 [m^3]	Monthly Surface Runoff from Area 6 [m^3]	Monthly Surface Runoff from Area 7 [m^3]	Monthly Total [m^3]
January	0	0	0	0	0	0	-
February	0	0	0	0	0	0	-
March	0	0	0	0	0	0	-
April	0	0	0	0	0	0	-
May	102,853	75,698	264,513	39,656	59,185	239,823	781,728
June	-7,766	-2,479	112,503	59,302	1,651	-4,114	159,097
July	20,043	16,220	70,728	47,515	9,412	75,117	239,034
August	-44	8,516	1,220	35,562	6,720	26,687	78,661
September	180	6,536	4,773	30,864	5,207	14,521	62,082
October	11,068	8,067	32,642	4,493	2,757	26,708	85,735
November	0	0	0	0	0	0	-
December	0	0	0	0	0	0	-
Total	**126,333**	**112,558**	**486,380**	**217,392**	**84,932**	**378,741**	**1,406,337**

7.12 Monthly and annual amount of water used for dust control (Schedule 1, Part B, Item 10, 1.f.xii)

A summary of the monthly and annual amount of water used for dust control in 2022 is provided in Table 7-12.

Table 7-12 Summary Monthly and Annual Water used for Dust Control in 2022

Month	Volume of Water for Dust Suppression [m^3]
January	0
February	0
March	0
April	0
May	384
June	1,528
July	323

Month	Volume of Water for Dust Suppression [m³]
August	371
September	158
October	6
November	0
December	0
Total	**2,770**

7.13 Summary and interpretation of monitoring results, including any Action Level exceedances described in the approved Water Management Plan (Schedule 1, Part B, Item 10, 1.f.xiii)

A summary and interpretation of monitoring results as they relate to the Operational Water Management Plan Version 6.2 are described in applicable sections of this report. Specific results related to dewatering and water levels monitoring are detailed in Section 8. For 2022, there were no Action Level Exceedances associated with any monitoring programs outlined in the Water Management Plan.

7.14 Description of actions taken in response to any Action Level exceedances (Schedule 1, Part B, Item 10, 1.f.xiv)

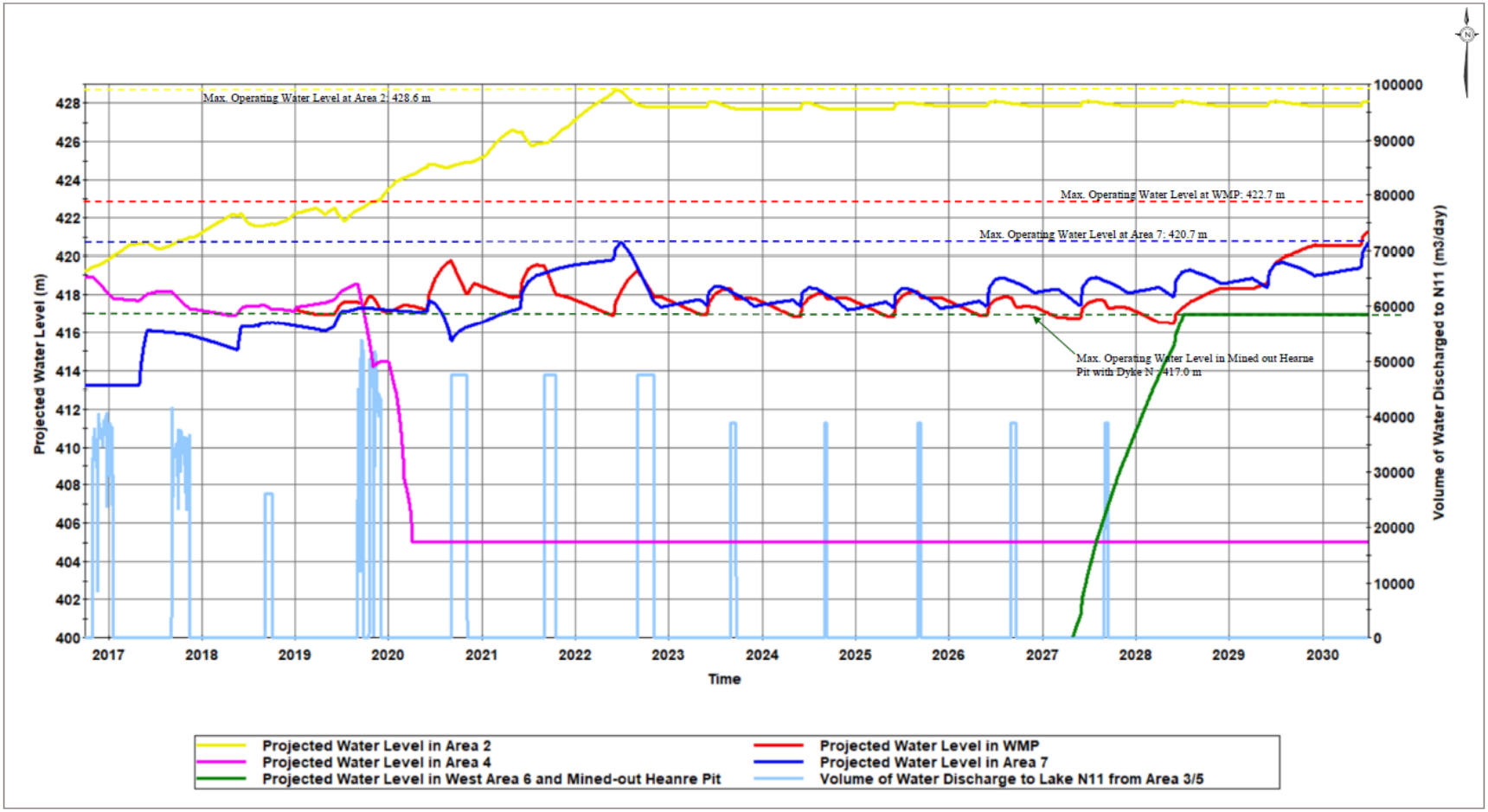
As previously mentioned in Section 7.13, there were no Action Level exceedances as defined in the Water Management Plan in 2022. As a result, no specific management response was needed or taken.

7.15 An updated water balance if required as per the approved Water Management Plan (Schedule 1, Part B, Item 10, 1.f.xv)

The water balance model was developed for the basins in Areas 1 to 7 and the mined-out 5034 and Hearne Pits during the mine operation using Goldsim™. As described in the Operational Water Management Plan Version 6.2, the model was developed under both mean and stochastic conditions.

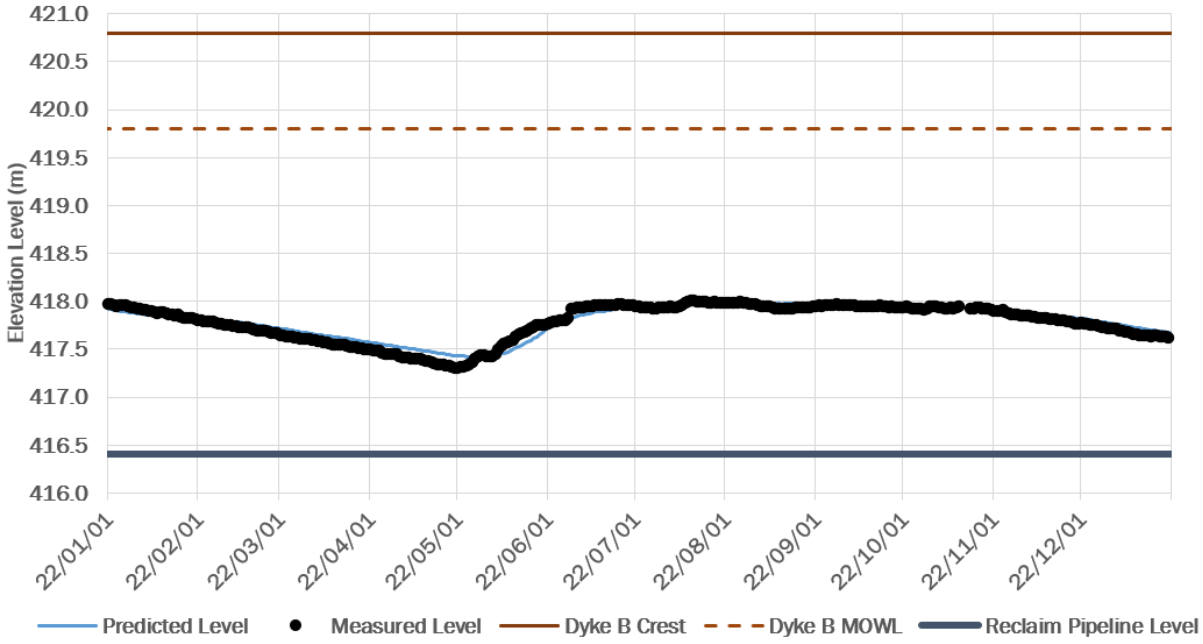
The projected elevations for various areas with time under the mean precipitation year condition is presented in Figure 7-1.

Figure 7-1 Projected Water Levels with Time under Mean Precipitation Years in Each Area during Operation



The water balance model presented in the OWMP Version 6.2 was calibrated by Tetra Tech EBA Inc (Tetra tech) using dewatering pumping data and precipitation data collected in late 2022. Results from the model calibration exhibits a good agreement with the measured water levels in 2022. The calibration curve for the Water Management Pond is presented in Figure 7-2. Subsequent calibration of the model is anticipated in 2023 after completion of the water discharge and the spring freshet.

Figure 7-2 2022 Calibration of WMP – Actual vs. Predictions



8 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED GROUNDWATER MONITORING PROGRAM (SCHEDULE 1, PART B, ITEM 10,1.G)

The Groundwater Monitoring Program (GMP) is designed to provide information that will allow De Beers to assess the quantity and quality of inflows to the open pits and pit seepages to effectively manage mine water during the operation of the mine. The 5034, Hearne and Tuzo open pits are the primary study areas for the GMP as the inflow to these open pits will be the dominant source of groundwater to the water management system. The Hearne, 5034 and Tuzo Open Pits were operational throughout 2022. Dewatering at Tuzo Open Pit did not occur in 2022.

8.1 A summary and interpretation of monitoring results, including an evaluation of trends in Open Pit inflow quantity and quality (Schedule 1, Part B, Item 10, 1.g.i)

Groundwater inflows were managed so that mining can proceed safely. The water is collected in sumps dug according to the mining sequence, and pumped by a HL160M Godwin pump to Area 6; from Area 6, the water was pumped using a variety of pumps including another CD400M HL160M Godwin pump to the Water Management Pond (Area 3/5). From September 2017 to March 2020, water has been pumped directly from the 5034 Pit to the Water Management Pond. On March 29, 2020, water from the 5034 Pit was re-rerouted to pump directly to CP1. The Hearne Pit commenced operations in April 2018 and water has ever since been pumped directly to the Water Management Pond. In 2022, water from the Tuzo Open Pit was not pumped, the pit in its early stages did not require water removal. Any water seeped into Tuzo pit drained into 5034 Pit and was collected in the 5034 pit sump. The monthly inflow quantity during this period at the 5034 Pit Sump (SNP-08), Hearne Pit Sump (SNP-09) and Tuzo (SNP-10) are presented in Table 8-1.

Table 8-1 Groundwater Volumes Discharged in 2022

Month	5034 Pit Volumes [m³]	Hearne Pit Volumes [m³]	Tuzo Pit Volumes [m³]
January	97,442	14,252	–
February	33,878	13,981	–
March	33,439	14,666	–
April	29,669	15,033	–
May	40,797	24,043	–
June	42,232	27,552	–
July	51,567	26,049	–
August	39,345	19,330	–
September	56,343	21,751	–
October	46,053	18,854	–
November	28,379	23,380	–
December	24,919	15,669	–
Total	**524,063**	**234,560**	**–**

Seepage surveys are to be conducted twice during the first year of mining in each open pit, which reduces to annually in each open pit thereafter. The 5034 Pit has been in operation since 2016, the Hearne Pit since 2018, and the Tuzo Pit started initial stripping in July 2020. The 2022 annual seepage survey was conducted in the 5034, Hearne and Tuzo pits on September 26, 2022. The Tuzo Pit still in its early stages of development, was shallow with no evidence of seepage during the September 2022 survey. The results are presented and discussed in Appendix B.

8.2 A comparison of monitoring results to predictions of Open Pit inflow quantity and quality, with an explanation for any significant differences (Schedule 1, Part B, Item 10, 1.g.ii)

The average measured inflow quantity to the 5034 Pit sump from January to December 2022 was approximately 1,460 m^3/day compared to the projected sump inflow quantity of approximately 1,461 m^3/day. The average sump TDS quality over that period was approximately 3405mg/L compared to the model projected value of 5,711 mg/L.

The average measured inflow quantity to the Hearne Pit sump from January to December 2022 was approximately 650 m^3/day compared the sump quantity projected by the models of approximately 773 m^3/day. The average TDS quantity was approximately 2,877 mg/L compared the sump quality projected by the model of 4,101 mg/L.

The average measured inflow quantity to the Tuzo Pit sump from January to December 2022 was 0m^3/day compared to the sump quantity projected by the models of approximately 1483 m^3/day. With no pumping there was no average TDS quantity to compare to the sump quality projected by the model of 3465 mg/L.

It is expected that the accuracy of the predicted pit sump inflows will be improved with an update to the Site Water Quality Model with the inclusion of the results of the 2022 Groundwater Flow Model. In the groundwater model, it was assumed that Tuzo, 5034, and Hearne pits were mined throughout 2022 and all pit sumps were actively dewatered. The assumption that the Tuzo Pit sump would continuously be actively pumped as part of standard operations did not reflect the operating conditions in 2022 where the decision was made to not dewater the sump.

De Beers is in the process of updating the Groundwater Model at the time of preparing this annual report. The comparison of the modelled TDS concentrations in the pit sump waters to the measured TDS data are below:

Measured inflows to the 5034 Pit sump were less than 1% lower than modelled inflows and measured TDS concentrations represented 60% of the modelled values.

Measured inflows to the Hearne Pit sump were approximately 19% lower than modelled inflows and measured TDS concentrations represented 70% of the modelled values.

Measured inflows to the Tuzo Pit sump were 100% lower than the modelled inflows, due to no inflow being observed (i.e., water entered in the Tuzo Pit drained into 5034 pit); TDS concentrations were not measured in 2022 due to no pumping conditions at Tuzo Pit.

8.3 A description of any updates to predictions (Schedule 1, Part B, Item 10, 1.G.iii)

The Site Water Quality Model Update developed for the 2020 Water Licence Amendment (De Beers, 2020a) was used to predict the quantity and quality of inflow to the proposed open pit sumps. As part of De Beers' Groundwater Management Plan, quality and quantity of water collecting in the pit sumps are monitored. The monitored data in 2022 is compared with the latest finalized model projections. Results and interpretations are presented in Appendix B.

8.4 An assessment of the effects of Open Pit development on Groundwater movement and quality; (Schedule 1, Part B, Item 10, 1.G.iv)

An assessment of effects to groundwater movement and/or quality as a result of pit development was undertaken and presented in Appendix B.

8.5 A summary of any Action Level exceedences under the groundwater monitoring program; (Schedule 1, Part B, Item 10, 1.G.v)

The Groundwater Seepage Survey Report is included as Appendix B. There were no exceedances of action levels associated with groundwater in 2022.

8.6 A description of actions taken in response to Action Level exceedances; (Schedule 1, Part B, Item 10, 1.G.vi)

Not applicable. There were no action level exceedances concerning groundwater in 2022.

9 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10.1.H)

The Erosion and Sediment Management Plan – Version 4 (De Beers, 2014b) provides direction for the monitoring and mitigation of erosion and sedimentation. Activities conducted in 2022 were primarily focused on monitoring potential areas of erosion and sedimentation associated with annual discharge. Activities and infrastructure at the Gahcho Kué Mine that had the potential to result in sedimentation and/or erosion in 2022 include:

- Downstream Flow Mitigation (Pumping of water from Lake N11 to Area 8 to supplement natural flow regime);
- Dyke construction;
- Discharge of effluent from the Water Management Pond (WMP) to Lake N11, increasing downstream flow within the N Lakes watershed downstream to Lake 410; and
- Increased water elevation of Lakes D2/D3 and Lake E1 due to diversion Dykes F and G.

Potential erosion and/or sedimentation events associated with the above were actively managed in 2022 and are summarized in the following sections. Monitoring involved looking for evidence of bank instability/erosion and collecting water flow and lake elevation measurements in receiving water bodies.

9.1 A description of any erosion susceptible areas encountered and a summary of activities to prevent or mitigate erosion (Schedule 1, Part B, Item 10, 1.h.i);

The Erosion and Sediment Management Plan identifies seven (7) locations that are at risk for erosion depending on the type of work activities planned for each location. Two (2) additional locations have also been identified by De Beers Environment staff. The nine (9) locations are listed in Table 9-1 below.

Table 9-1 Sediment and Erosion Assessment Locations, 2022

Area	Potential Source	Erosion Susceptibility Class
Shoreline and outlet of Lake D2/D3	Lake water elevation rose due to Dyke F, water diverted from Lake D3 to Lake N14	Low class, although a portion of the shoreline of Lake D3 classified as High to Very High
Shoreline and outlet of Lake N14	Lake N14 will receive water from Lake D2/D3 and E1	Low class, with downstream half of the outlet channel classified as Moderate to High
Shoreline and outlet of Lake B1	Water is currently flowing through its original course into Water Management Pond.	No erosion potential until the construction of Dyke E
Shoreline and outlet of Lake E1	Water diverted to Lake N14 Channel installed to mitigate risks.	Channel to Lake N14 classified as High to Very High, but channel armored to reduce risk
Shoreline of Lake A1	Fluctuating water levels due to construction of Dyke A1 and regular pumping of water to Area 8 to maintain sufficient capacity in Lake A1 for spring freshet	Low class
Shoreline of Area 3 of former Kennady Lake (Water Management Pond)	Fluctuating water levels resulting in potential shoreline erosion	Very Low class for the west shoreline, and a portion of the east shoreline classified as High

Area	Potential Source	Erosion Susceptibility Class
Shoreline and outlet of Area 8	Generally, reduced flow to Area 8, but small water elevation change during Lake A1 and downstream flow mitigation pumping period	Low class
Outlet of Lake N11	Increased water flow during periods of discharge from Water Management Pond	Low class
Outlet of Lake N1	Increased water flow during periods of discharge from Water Management Pond	Low class

Aerial surveys by helicopter were conducted to assess the lake and stream banks for any signs of sediment and erosion along the shorelines and outlets. If shoreline erosion was observed, a Lake/Stream Bank Erosion Shoreline Assessment Field Sheet was completed for the location identified. If no erosion was observed, pertinent field notes in the space provided was recorded.

Surveys were conducted on the following dates:

- June 10, 2022
- July 1-7, 2022
- July 31, 2022
- September 26, 2022

A Summary of the survey results is provided in Table 9-2. Photos of each site were taken along with documentation of erosion concerns and are included in the 2022 Erosion and Sedimentation Report (Appendix F).

Table 9-2 Sediment and Erosion Assessment Survey Results, June to September 2022

Date	Location of Erosion/Sediment Survey	Erosion Present	Comments
10-Jun-22	N1	N	No erosion observed
10-Jun-22	N11	N	No erosion observed
10-Jun-22	Area 8	N	No erosion observed
10-Jun-22	Area 3	N	No erosion observed
10-Jun-22	A1	N	No erosion observed
10-Jun-22	B1	N	No erosion observed
10-Jun-22	N14	N	No erosion observed
10-Jun-22	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
10-Jun-22	D2/D3	N	No flow observed from D2/D3 into N14. Water observed but it was stagnant. No erosion observed
01-07-Jul-22	N1	N	No erosion observed
01-07-Jul-22	N11	N	No erosion observed
01-07-Jul-22	Area 8	N	No erosion observed

Date	Location of Erosion/Sediment Survey	Erosion Present	Comments
01-07-Jul-22	Area 3	N	No erosion observed
01-07-Jul-22	A1	N	No erosion observed
01-07-Jul-22	B1	N	No erosion observed
01-07-Jul-22	N14	N	No erosion observed
01-07-Jul-22	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
01-07-Jul-22	D2/D3	N	No flow observed from D2/D3 into N14 Water observed but it was stagnantr. No erosion observed
31-Jul-22	N1	N	No erosion observed
31-Jul-22	N11	N	No erosion observed
31-Jul-22	Area 8	N	No erosion observed
31-Jul-22	Area 3	N	No erosion observed
31-Jul-22	A1	N	No erosion observed
31-Jul-22	B1	N	No erosion observed
31-Jul-22	N14	N	No erosion observed
31-Jul-22	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
31-Jul-22	D2/D3	N	Overflow from D2/D3 into N14. No erosion observed
26-Sep-22	N1	N	No erosion observed
26-Sep-22	N11	N	No erosion observed
26-Sep-22	Area 8	N	No erosion observed
26-Sep-22	Area 3	N	No erosion observed
26-Sep-22	A1	N	No erosion observed
26-Sep-22	B1	N	No erosion observed
26-Sep-22	N14	N	No erosion observed
26-Sep-22	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
26-Sep-22	D2/D3	N	No flow observed from D2/D3 into N14. Water observed was stagnant. No erosion observed

9.2 Report of the performance of mitigations applied to each area (Schedule 1, Part B, Item 10, 1.h.ii)

No areas requiring mitigation measures were identified, as no erosion or sedimentation was observed during the four aerial surveys conducted in 2022. Potential erosion and/or sedimentation events associated with the

activities and infrastructure at the Gahcho Kué Mine that had the potential to result in sedimentation and/or erosion in 2022 were actively managed.

10 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED EXPLOSIVES MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.I)

The approved Explosives Management Plan – Version 4 (De Beers, 2017e) describes the management practices followed for the storage and use of explosives at the Mine and addresses specific impacts with respect to spill response, water quality and wildlife. De Beers has contractual agreements with the Orica Mining Services & Tli Cho Blasting Services Inc. Joint Venture (Orica) to be the licensed explosives contractor for the Mine.

Orica supplies packaged explosives, bulk explosives (i.e., ammonium nitrate (AN) prill), and explosives accessories (i.e., detonators, primer cord). Orica's services include the on-site manufacturing of an emulsion explosive precursor and the storage and handling of all explosive components and products on site.

In 2022 explosives management infrastructure consisted of licenced explosives storage magazines, a bulk AN storage building, the emulsion plant and an AN operations storage pad. The construction of the Bulk AN Storage Building was completed in 2018. A lined pond with sump was constructed during the summer/fall of 2017 at the AN operational storage pad located at the Emulsion Plant. The pond is located along the southwestern edge of the pad and in line with the drainage pattern which ultimately returns to the water management pond. During spring freshet and heavy rainfall events, water was collected, sampled, and relocated to the Water Management Pond.

The general arrangement of infrastructure associated with explosives usage on-site is illustrated in Figure 10-1.

Figure 10-1 General Arrangement of Explosives Infrastructure at the Gahcho Kué Mine, 2022

Packaged explosive products and blasting accessories are stored inside four explosives magazines. Bulk AN was delivered to the bulk AN storage building through the winter road.

10.1 Action Level exceedances and a description of actions taken in response to any Action Level exceedances (Schedule 1, Part B, Item 10, 1.i) i.)

No action levels in the Explosives Management Plan were triggered in 2022.

10.1.1 Spill Reporting Involving Explosives

There were no spills involving explosives for 2022.

10.1.2 Effects of Blasting Activity on Wildlife

The activity associated with surface blasting (e.g., vehicles, infrastructure, drilling, heavy equipment, people, noise, smells, and lights) tends to deter wildlife. It is established practice that if wildlife were to be observed in the blast area, blasting would be suspended until wildlife have either moved to safe zones or been deterred from the area by Environment staff who maintain direct communication with the Drill and Blast Supervisor and Blaster-in-Charge.

In 2022, a bird nesting deterrent program was completed at the 5034, Hearne and Tuzo open pits, as well as active construction zones. There was a specific focus on deterring raptors such as peregrine falcon (Falco peregrinus) from nesting along the walls of the open pit. The 2022 program was in effect from May 1st to July 18th and consisted of routine monitoring (i.e. visual surveillance) as well as both visual and auditory deterrents (i.e., scarecrows, noise cannons and an electronic noise maker) at various locations throughout the 5034, Hearne and Tuzo open pits. Bird observations continued after demobbing and maintenance of deterrents and were recorded into early August 2022. Deterrents were moved on a regular basis to discourage potential habituation by birds to the noises or movements the deterrents made. Surveillance was conducted continuously during both day shift and night shift by the Environment Department, and consisted of visual surveys of these areas using binoculars. Bird sightings were documented on a daily field sheet.

A total of approximately 1479 individual observations of birds were witnessed at the Mine during the visual surveillance component of the program. These consisted of roughly 42 different species, with the most common species observed being Peregrine Falcon, followed by Bank Swallow and then Cliff Swallow. Bird monitors were deployed throughout the nesting period, and would periodically use bear bangers to deter raptors from spending continual time within the pit area.

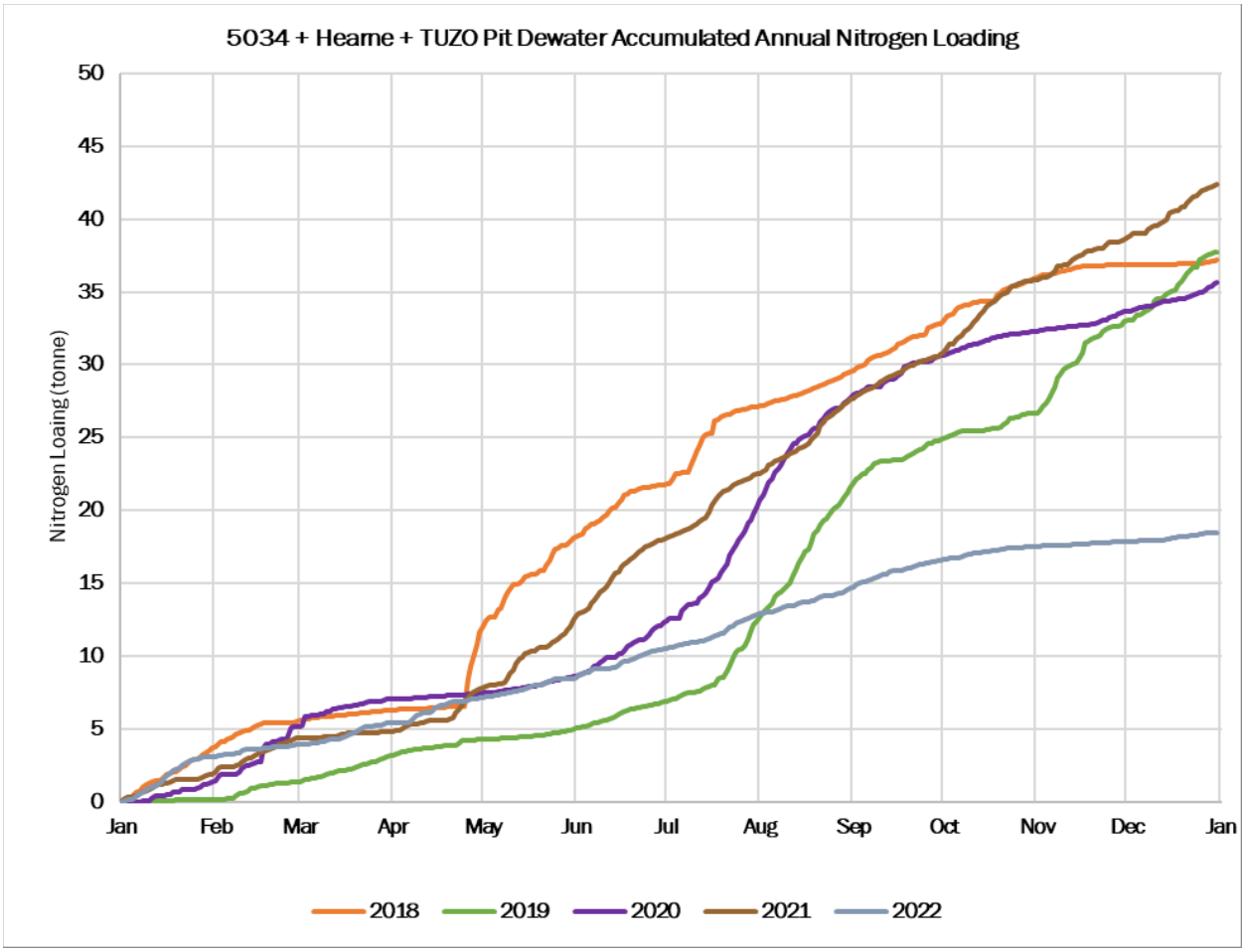
10.2 Updates on the success of management measures undertaken to reduce nitrate loadings to the Water Management Pond (Schedule 1, Part B, Item 10, 1.i) i.)

Ammonia and nitrate concentrations in the mine effluent are primarily associated with blast residue that ultimately makes its way to the Water Management Pond. Consequently, mines are subject to regulations limiting the amount of ammonium and nitrate that can be released into the environment. To reduce the increasing trend of the ammonium and nitrate levels in the Water Management Pond, Gacho Kué established a Nitrate Management Steering Committee in 2018, that continued to be active in 2022, enforcing nitrate measures including following:

- Explosives handling on pattern and blast hole filling
  - Ensuring the emulsions are filled in blast holes from the bottom
  - Additional field audit on the blasting procedures implementation;
  - Assess practices related to on-pattern spillage.
- Explosives Product QA/QC review
  - Review of explosive contractor's emulsion product QA/QC procedures
  - Additional audit on the implementation of the QA/QC procedures.
- Establishing Key Performance Indicator (KPI)
  - Nitrate loading and concentrations are included as a KPI of the explosive contractor's contract
- Communication of Water Management Pond nitrate trends to front line staff
  - Employing on-site nitrate test equipment in allowing for immediate nitrate level monitoring
  - Conducting bi-weekly nitrate management steering committee meeting with all relevant departments with focus on nitrate loading and concentrations and associated mitigation strategies
  - Conducting quarterly water management committee meeting to discuss overall water quality trends
- Initiate a pilot study on new emulsion product to increase blasting efficiency throughout the summer of 2022.

Figure 10-2 illustrates the nitrogen (nitrate, nitrite and ammonium) loading into the Water Management Pond and CP1 from the pit dewatering from 2018 to 2022. The end-of-year cumulative nitrogen loading from pit dewatering were approximately between 36 and 43 tonnes in 2018 through 2021. The nitrogen loading in 2022 was reduced to 19 tonnes. The decrease of the nitrogen loading in 2022 is likely due to the application of the new emulsion product with a better blast efficiency and it was a dry year comparing to 2020 and 2021 with less surface runoff flushing. The nitrogen loading into the Water Management Pond and CP will continue to be monitored in 2023.

Figure 10-2 Accumulative Nitrogen Loading from Pit Dewatering in 2018 to 2022



11 SUMMARY OF RESULTS OF ANY MONITORING AND THE SEEPAGE SURVEYS CONDUCTED IN ACCORDANCE WITH THE APPROVED GEOCHEMICAL CHARACTERIZATION AND MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.J)

Golder Associates Ltd. (Golder) was retained by De Beers to assist with the Bi-Annual Geochemical Audit, as required in the Gahcho Kué Mine Water Licence and the Geochemical Characterization and Management Plan – Version 4.4 (De Beers. 2021e).

As part of the Gahcho Kué Mine Geochemical Characterization and Management Plan, Version 4.4 (De Beers 2021e) under Section 8.1 "Bi-Annual Geochemical Audit", De Beers committed to completing a visual inspection and laboratory analysis of construction material, mine roads, rock pads, water management structures, mine rock piles, the Coarse Processed Kimberlite (CPK) Pile, and the Fine Processed Kimberlite (FPK) Containment Facility. Samples are collected for geochemical characterization to confirm that rock is being placed according to the protocols in the Processed Kimberlite and Mine Rock Management Plan – Version 7.2 (De Beers 2021e). De Beers also committed to monitor storage facilities of all solid phase mine waste materials including observed seepage and runoff water in the surrounding vicinity for contaminants.

A detailed summary of the geochemical characterization screening that occurred at Gahcho Kué in 2022 was prepared as a technical report and is provided as Appendix C (De Beers, 2022).

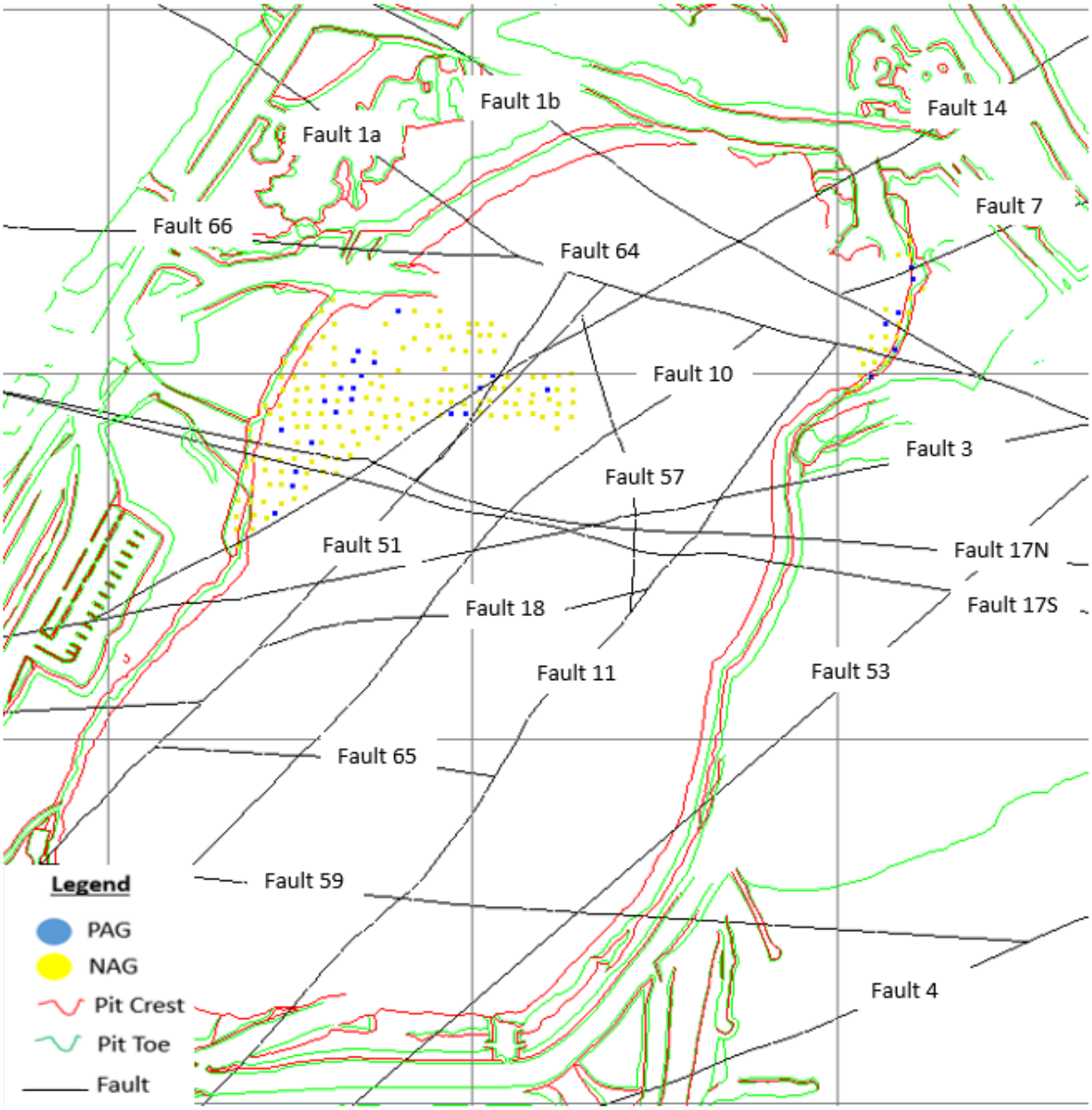
Potentially acid generating (PAG) rock was defined for the Project according to site specific criteria developed during the Environmental Impact Study (EIS) (De Beers 2010) and is based on the historical geochemical testing of 1,236 samples of mine rock. The site specific criterion for classification of acid rock drainage (ARD) potential is presented and discussed in detail in the Gahcho Kué Project 2013 Update – Metal Leaching and Acid Rock Drainage Report (Golder 2014). It states that material with less than 0.1% total sulphur is classified as non-acid generating (NAG), and material with measured values of greater than 0.1% total sulphur is classified as PAG.

Field samples were collected from chip samples from blast locations in a regular pattern designed to conform to the requirement of a minimum of eight samples per 100,000 tonnes of material, as defined in the Preliminary Standard Operating Procedure – Geochemical Classification for Segregation of Mine Rock (Appendix A of the Geochemical Characterization and Management Plan – Version 4.1).

At drill locations where samples tested positive for PAG, the maximum potential PAG area was treated as PAG segregated and placed according to the approved Processed Kimberlite and Mine Rock Management Plan – Version 7.2 (De Beers 2021e) (see also Section 12).

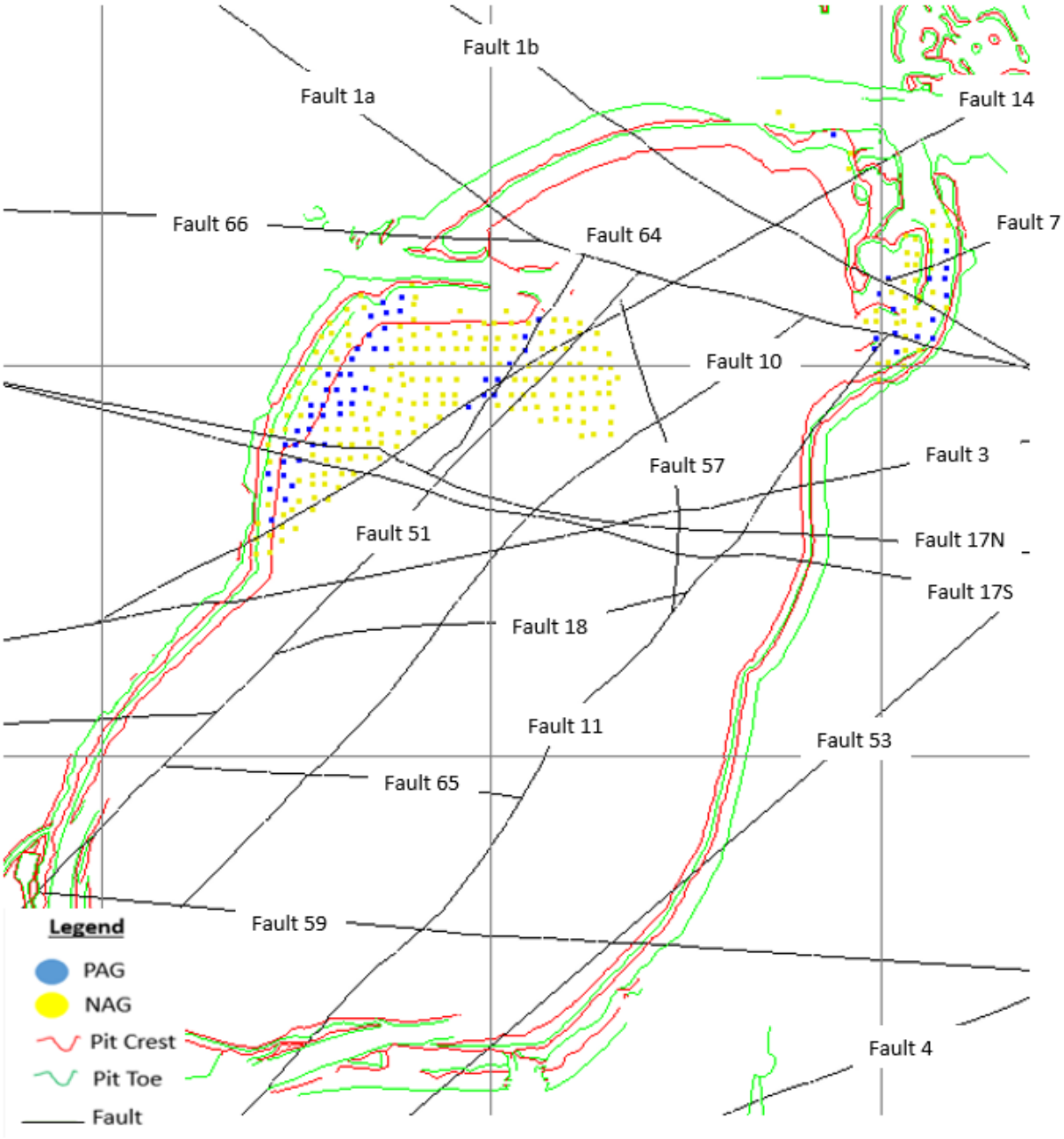
Based on the ongoing sampling, in 2022, fault areas within the Tuzo Pit that have been identified as containing PAG material are shown in Figure 11-1 to 11-7, broken out by bench. Areas that have been identified in 5034 as containing PAG material are shown in Figure 11-8 to 11-13 broken out by bench. Areas that have been identified in Hearne Pit as containing PAG material are shown in Figure 11-14 to 11-17, broken out by bench.

Figure 11-1 Figure 2022 PAG Sample Locations in Tuzo Pit, 411 Bench



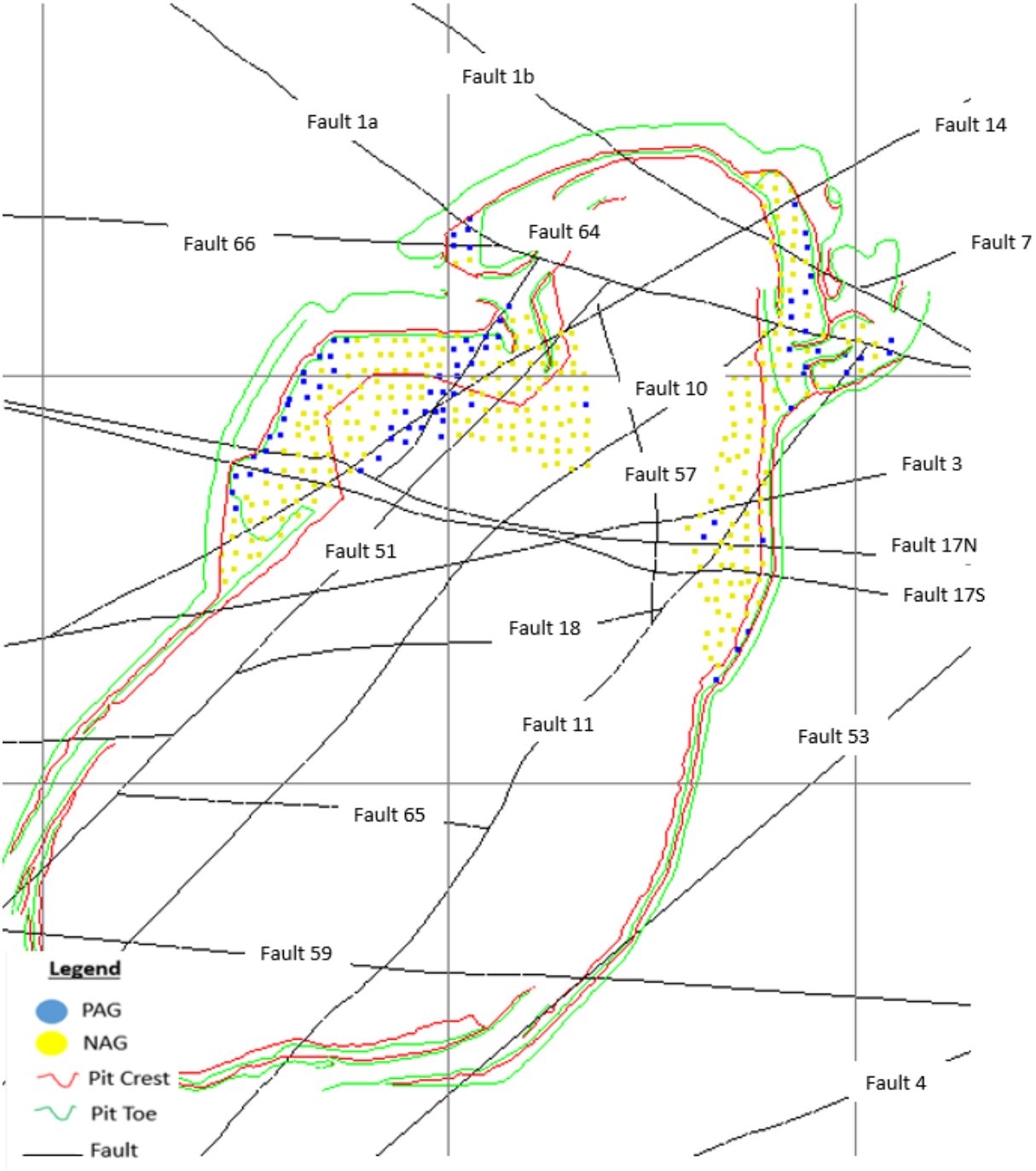
NAG = Non-acid generating

Figure 11-2 2022 PAG Sample Locations in Tuzo Pit, 397 Bench



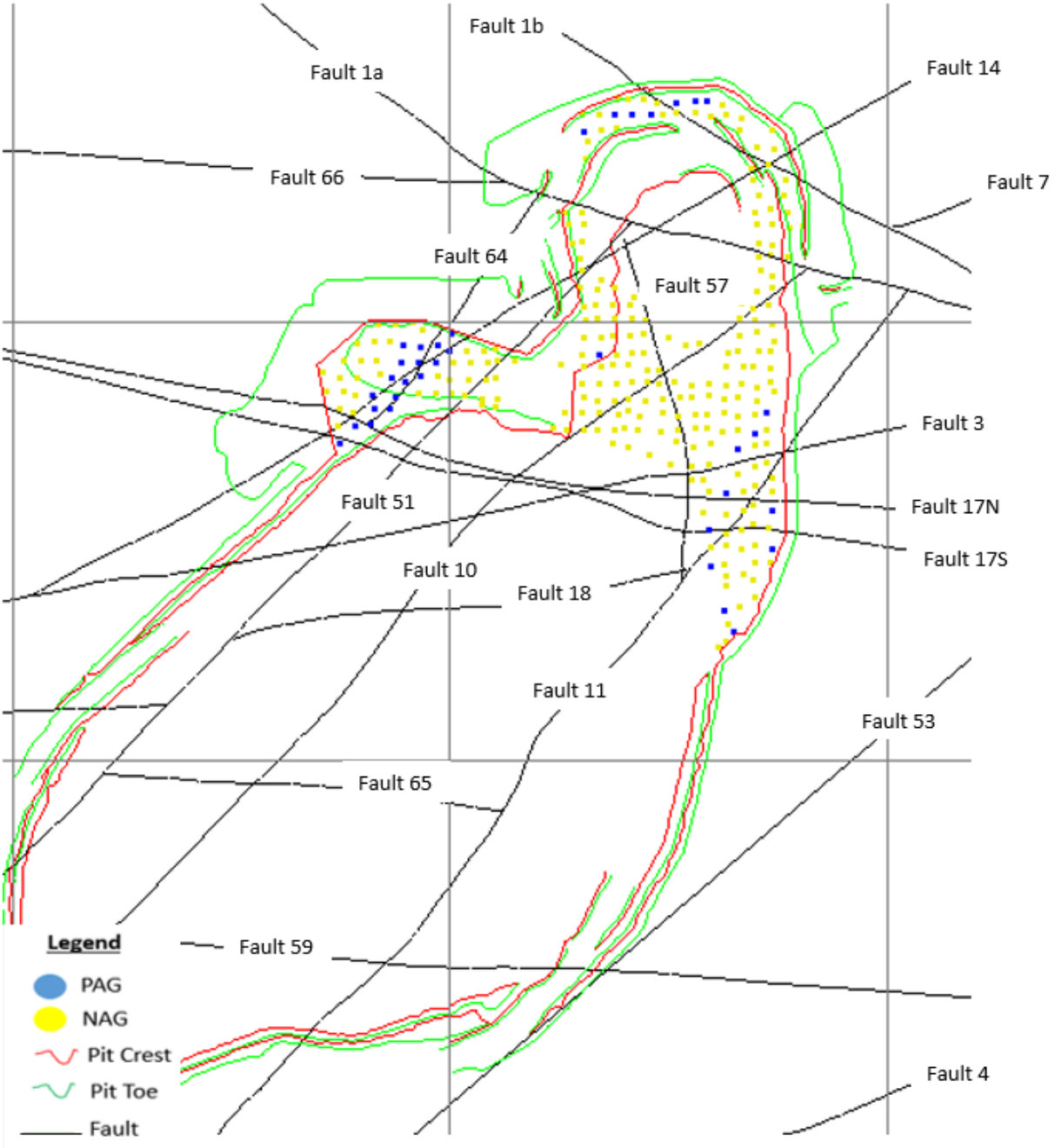
NAG = Non-acid generating

Figure 11-3 2022 PAG Sample Locations in Tuzo Pit, 383 Bench



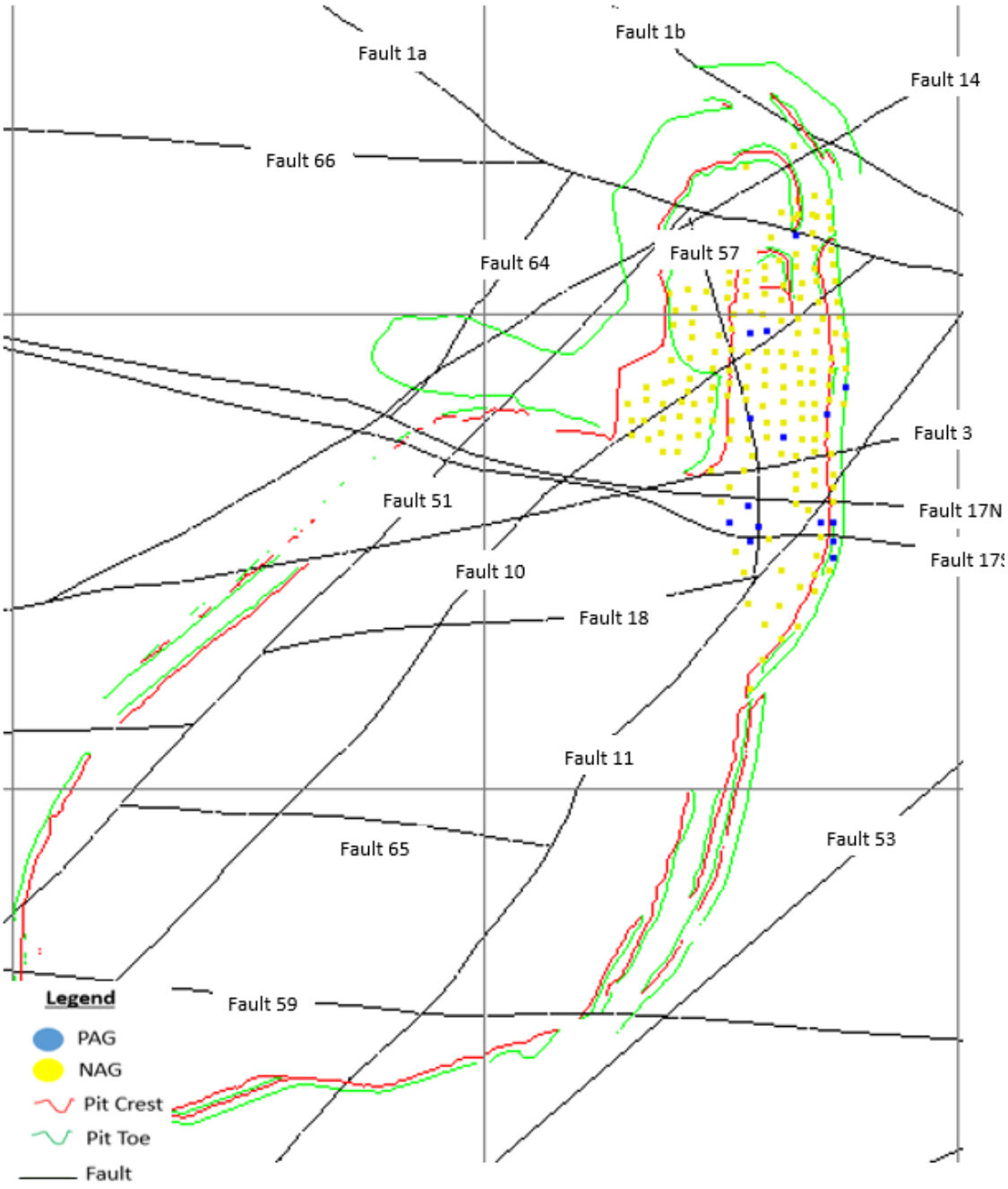
NAG = Non-acid generating

Figure 11-4 2022 PAG Sample Locations in Tuzo Pit, 369 Bench



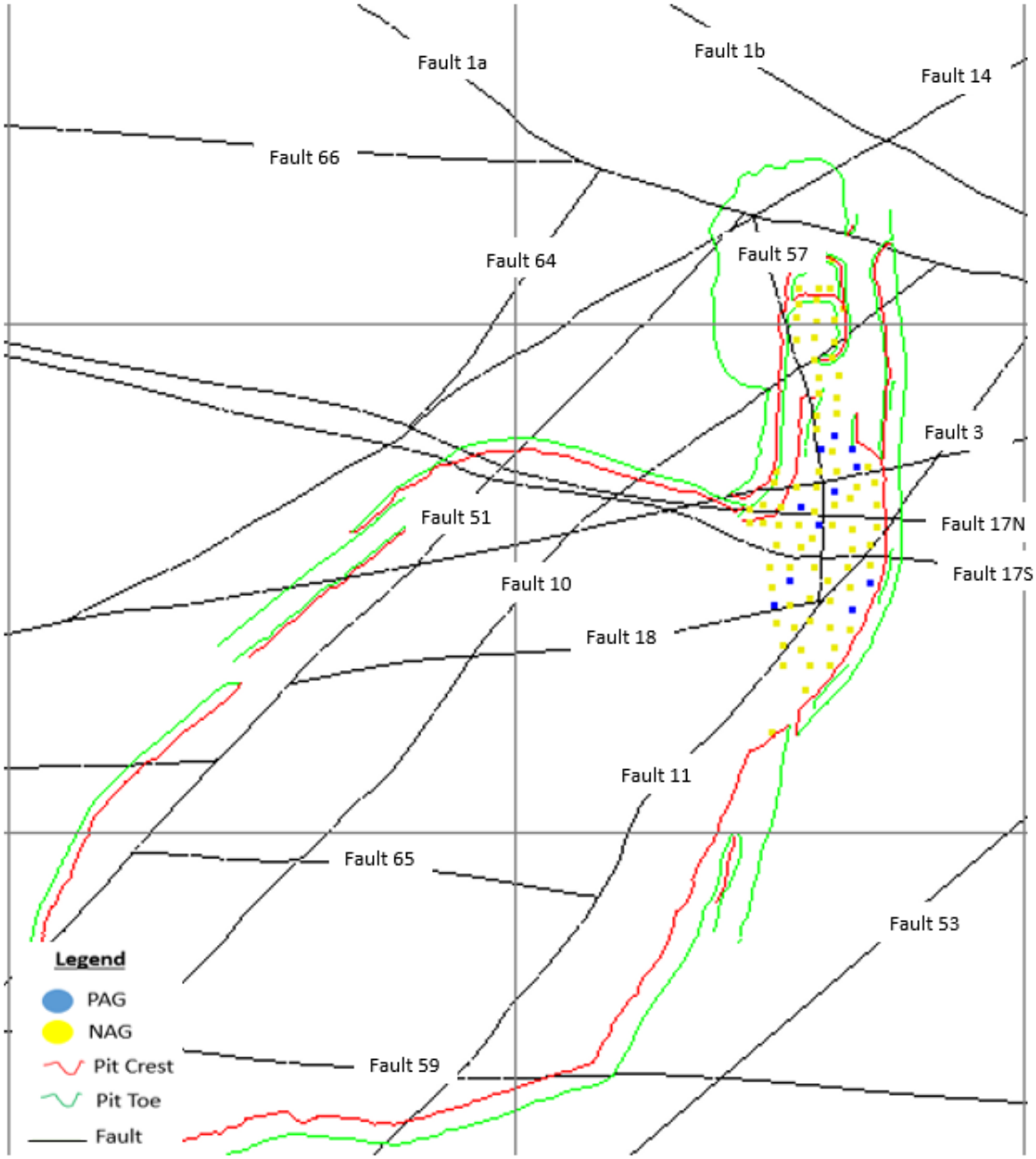
NAG = Non-acid generating

Figure 11-5 2022 PAG Sample Locations in Tuzo Pit, 355 Bench



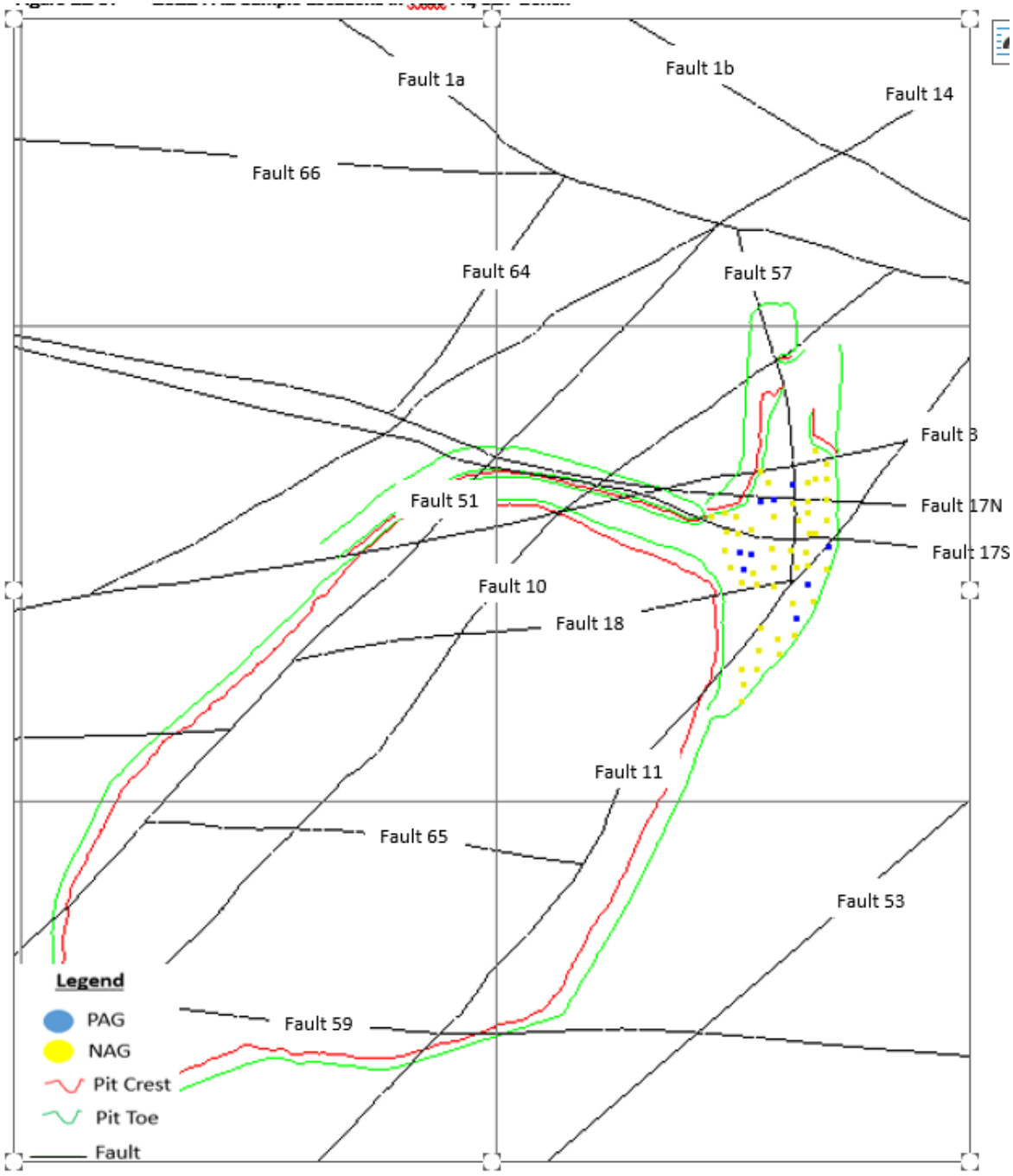
NAG = Non-acid generating

Figure 11-6 2022 PAG Sample Locations in Tuzo Pit, 341 Bench



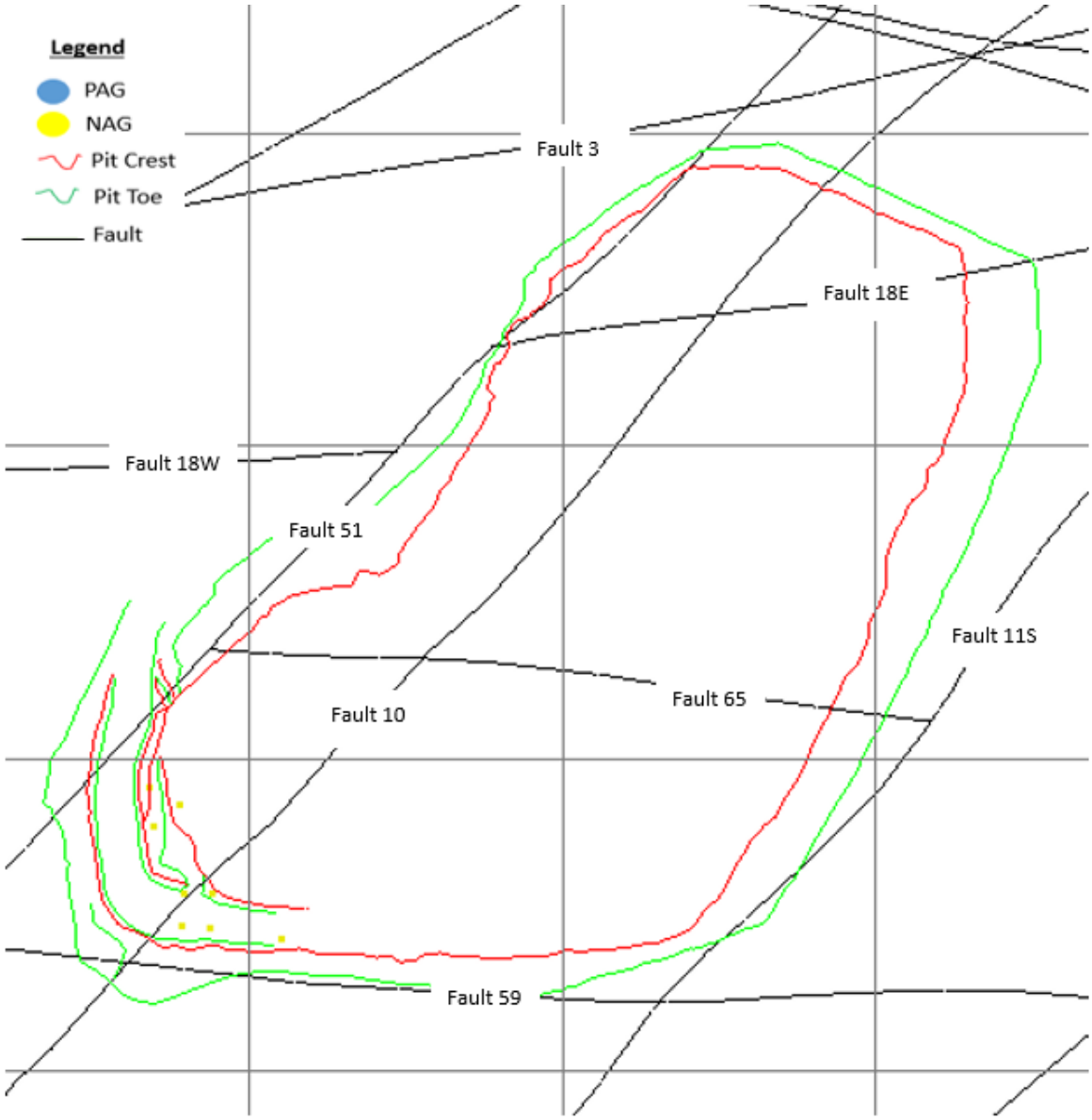
NAG = Non-acid generating

Figure 11-7 2022 PAG Sample Locations in Tuzo Pit, 327 Bench



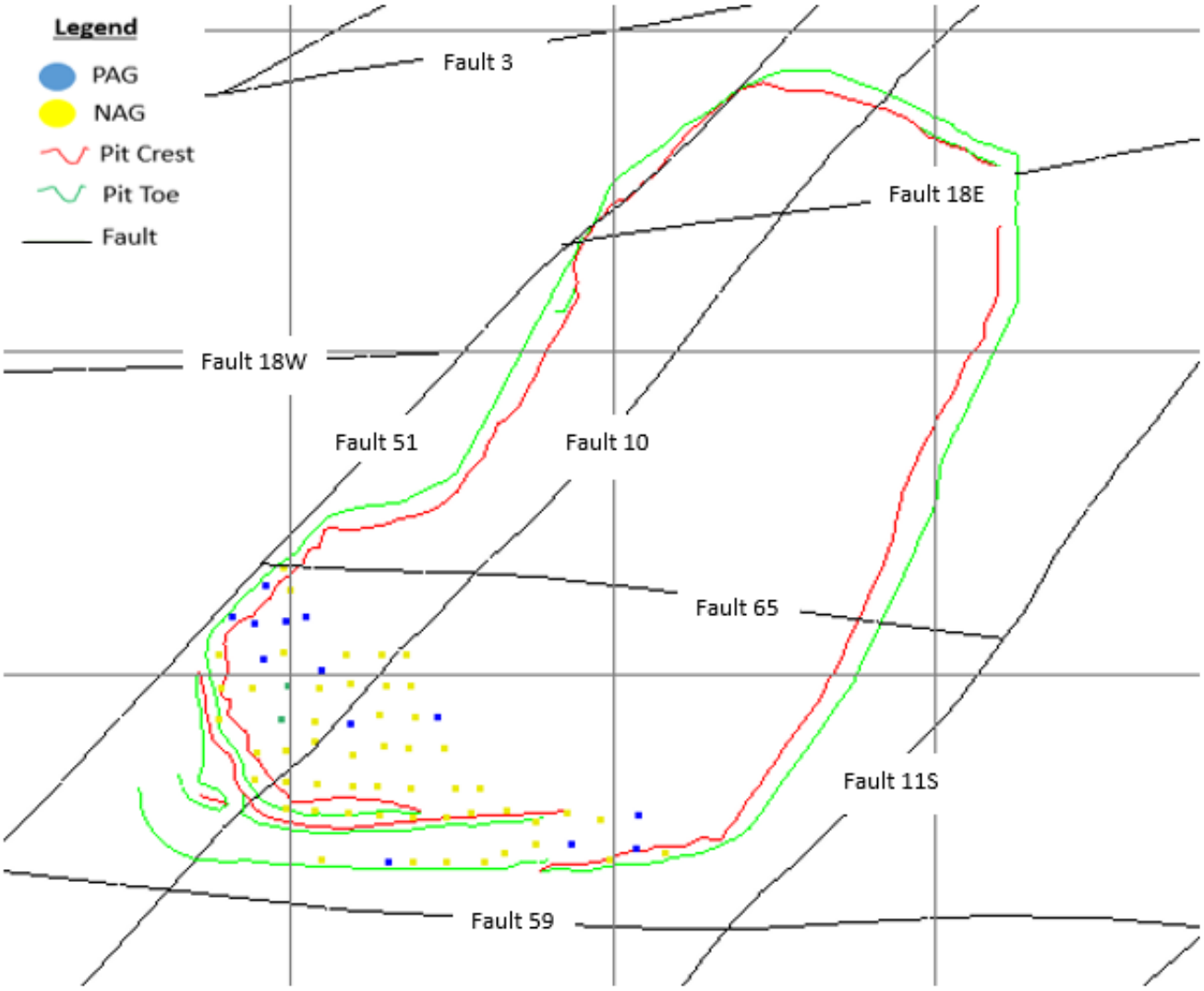
NAG = Non-acid generating

Figure 11-8 2022 PAG Sample Locations in 5034 Pit, 257 Bench



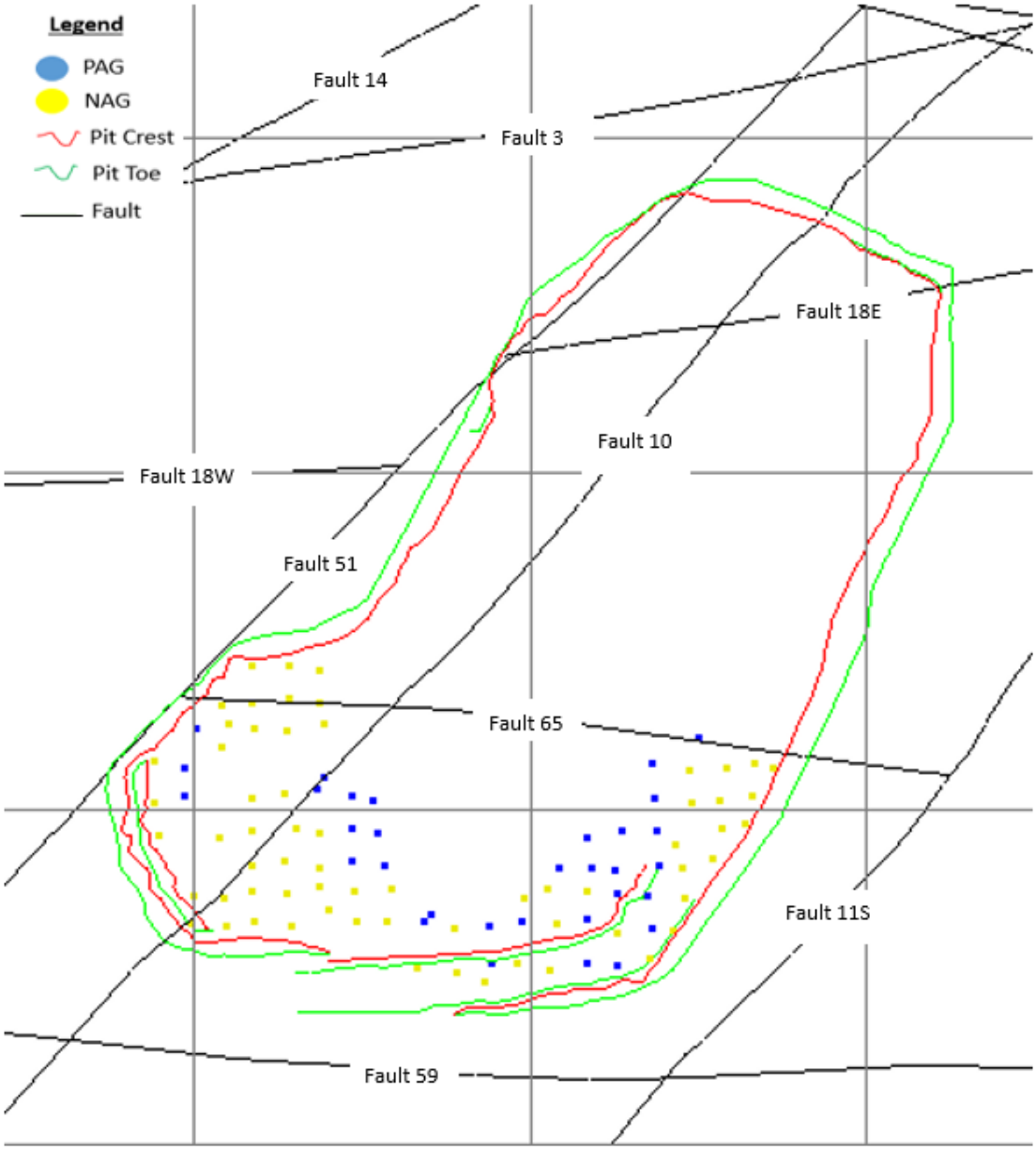
NAG = Non-acid generating

Figure 11-9 2022 PAG Sample Locations in 5034 Pit, 243 Bench



NAG = Non-acid generating

Figure 11-10 2022 PAG Sample Locations in 5034 Pit, 229 Bench

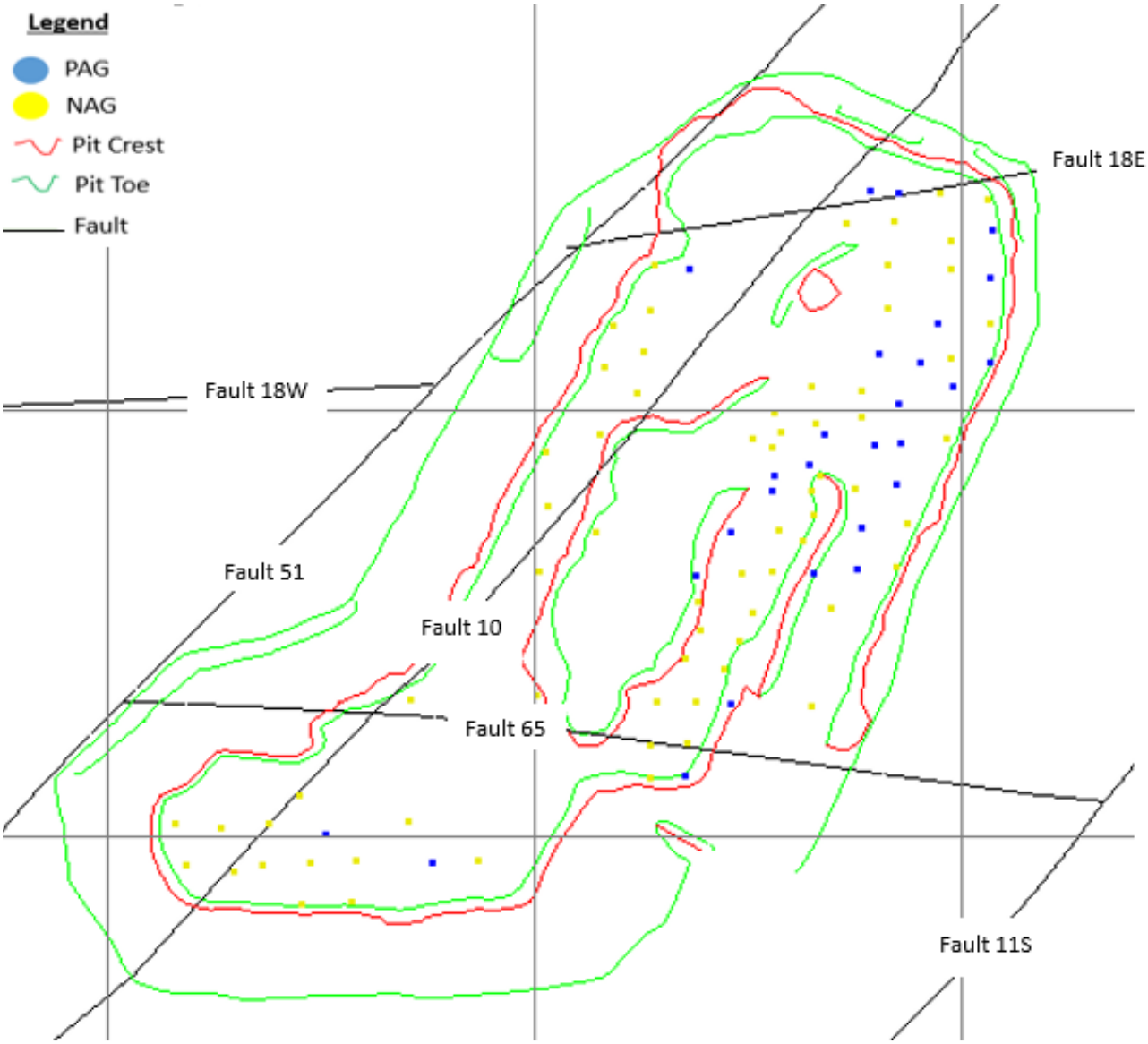


NAG = Non-acid generating

Figure 11-11 2022 PAG Sample Locations in 5034 Pit, 215 Bench

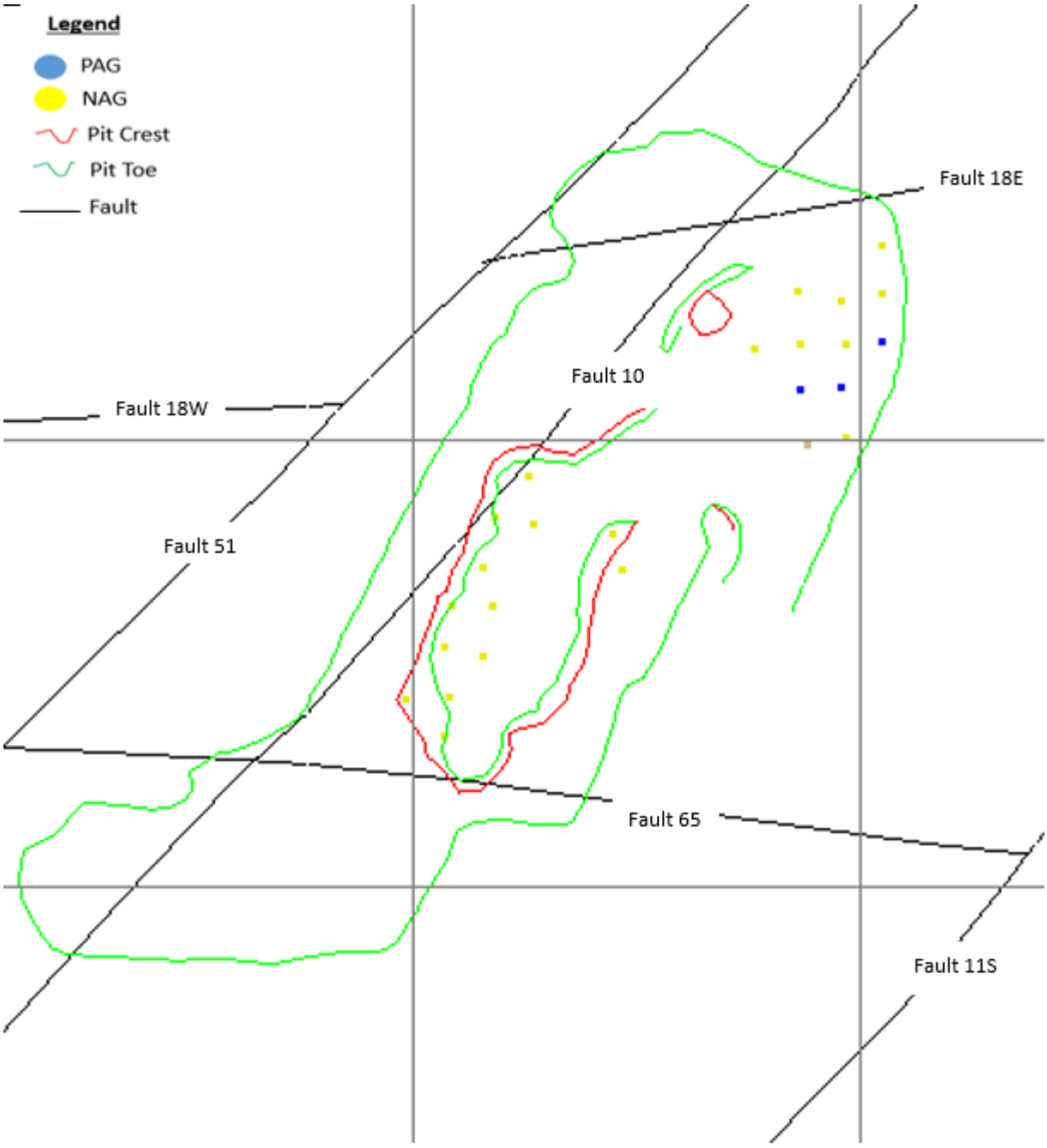
NAG = Non-acid generating

Figure 11-12 2022 PAG Sample Locations in 5034 Pit, 201 Bench



NAG = Non-acid generating

Figure 11-13 2022 PAG Sample Locations in 5034 Pit, 187 Bench

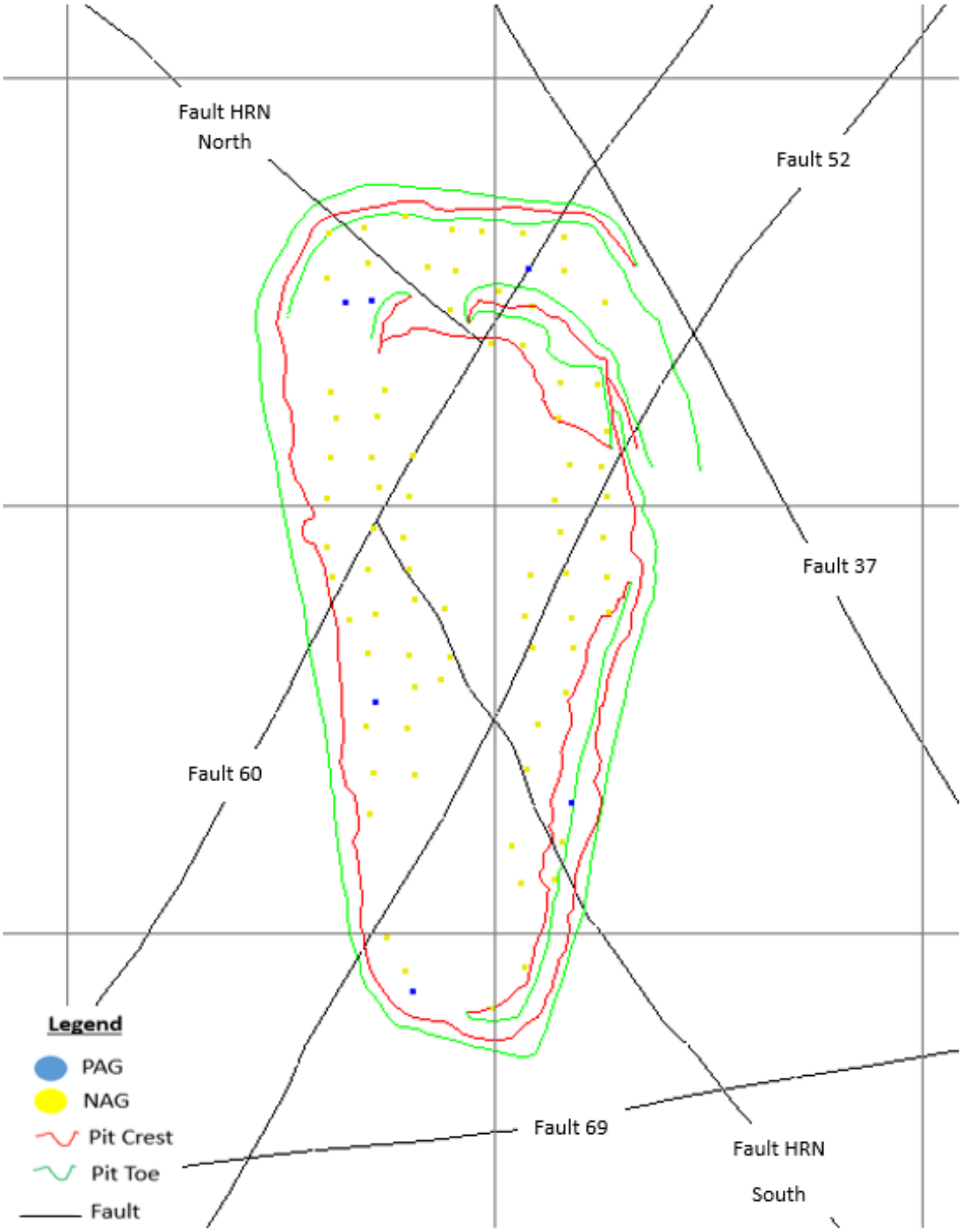


NAG = Non-acid generating

Figure 11-14 2022 PAG Sample Locations in Hearne Pit, 285 Bench

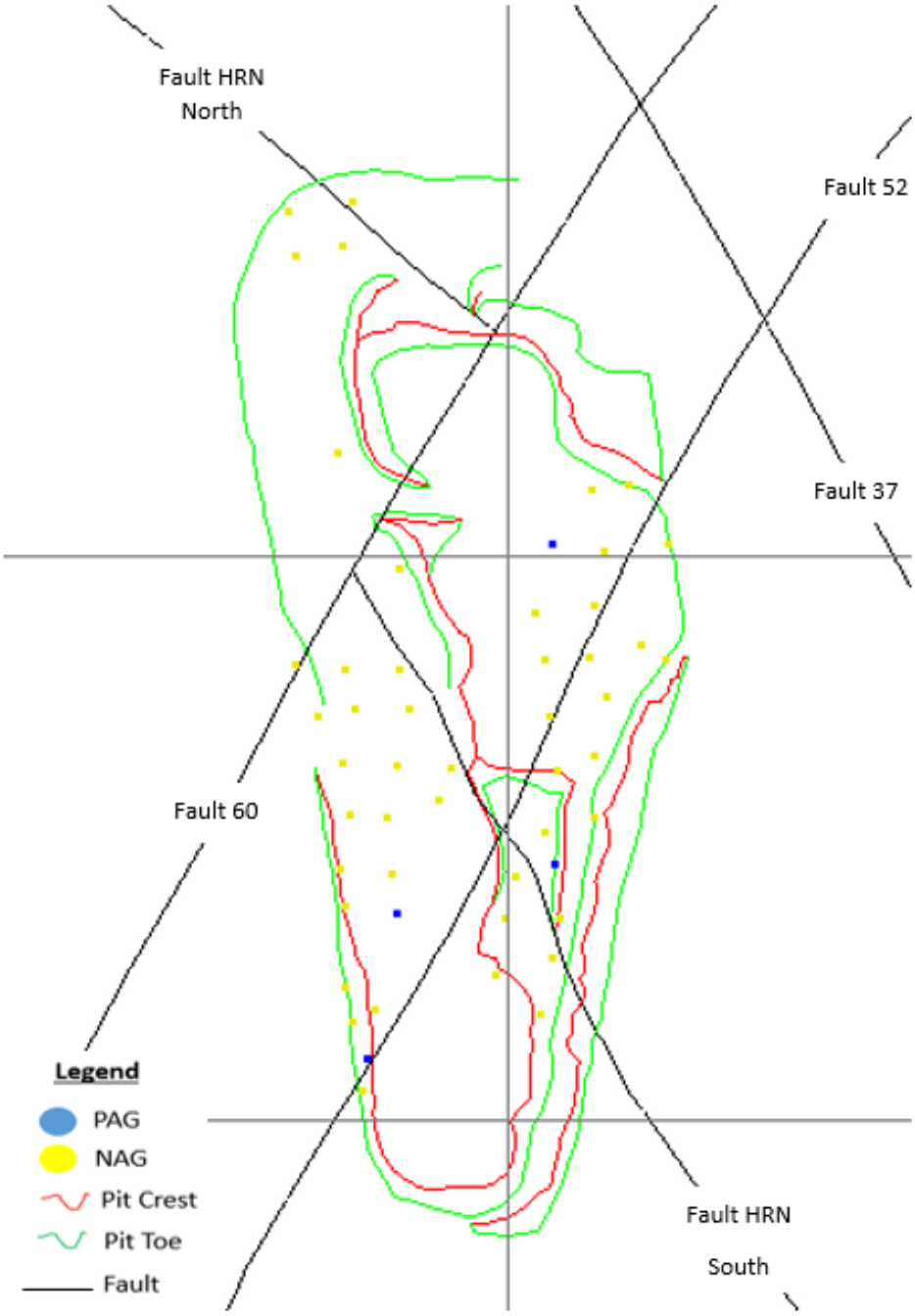
NAG = Non-acid generating

Figure 11-15 2022 PAG Sample Locations in Hearne Pit, 271 Bench



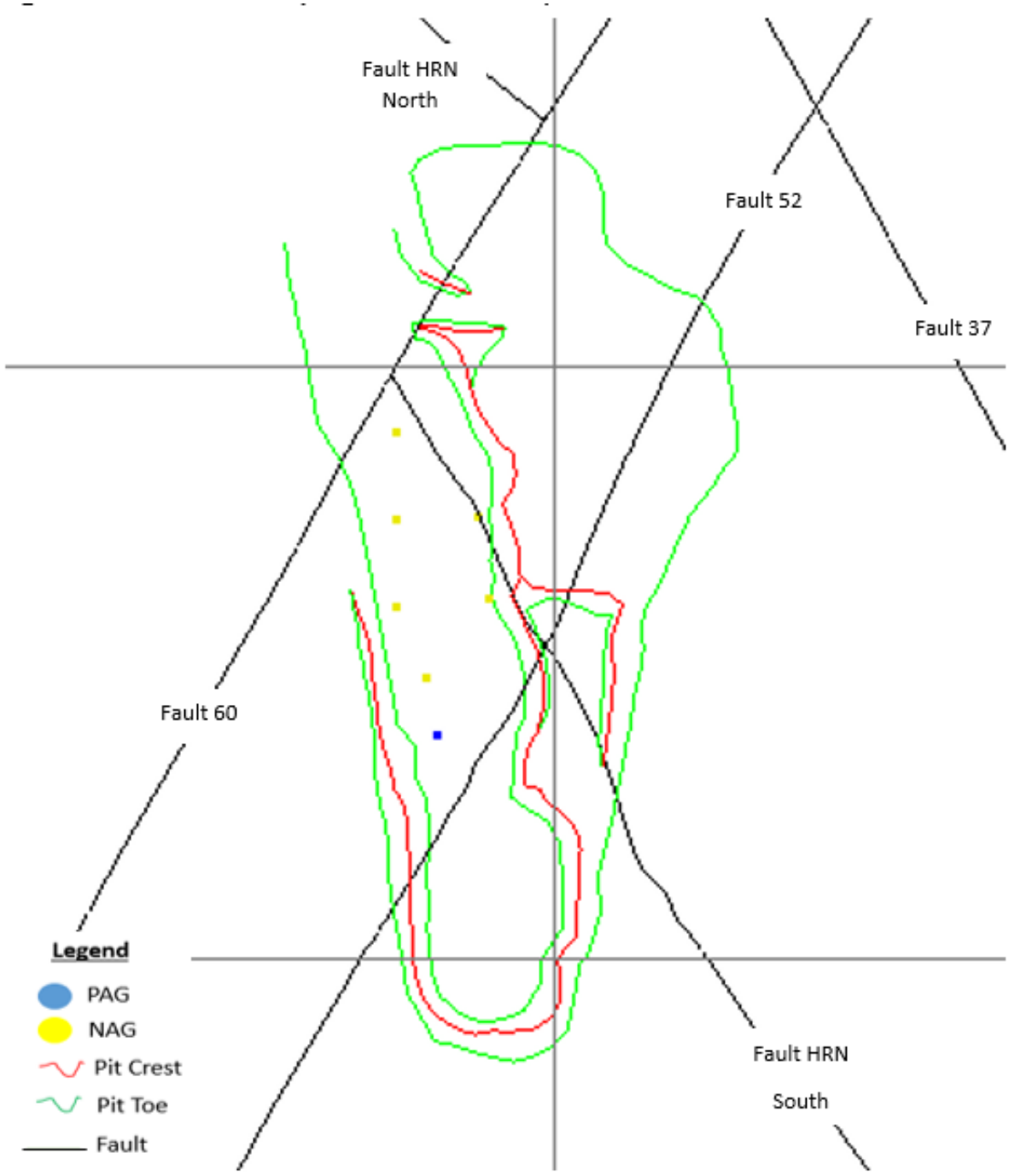
NAG = Non-acid generating

Figure 11-16 2022 PAG Sample Locations in Hearne Pit, 257 Bench



NAG = Non-acid generating

Figure 11-17 2022 PAG Sample Locations in Hearne Pit, 243 Bench



NAG = Non-acid generating

11.1 Comparison of the annual quantities of the different types of waste rock generated to predictions made in the approved Geochemical Characterization and Management Plan (Schedule 1, Part B, Item 10, 1.j.i)

A summary of the PAG rock samples collected in 2022 is provided in Table 11- below. Table 11- summarizes the waste rock sample results by month. In total, 18% of the waste rock samples had a total sulphur concentration of 0.1% or greater and were therefore classified as PAG.

Table 11-1 Summary of PAG Sampling Conducted at Gahcho Kué in 2022 by Month

Rock Type		Total Number of Samples	≥0.1% Sulphur	
		n	n	Percent (%)
EIS Results				
De Beers (2012a)	Granite	1,189	63	5
	Altered granite	10	7	70
	Diabase	7	3	43
	Diorite	1	1	100
	Gneissic granite	9	2	22
	Granodiorite	6	1	17
	Altered granodiorite	16	16	100
	Total - Baseline Geochemical Characterization	**1,238**	**93**	**7.5**
Operational Monitoring Results				
Operational Monitoring – 2016		2,329	209	9.0
Operational Monitoring – 2017		2,628	157	6.0
Operational Monitoring – 2018		3,059	195	6.4
Operational Monitoring – 2019		3,351	239	7.1
Operational Monitoring – 2020		2,560	193	7.5
Operational Monitoring – 2021		2,429	182	7.5
Operational Monitoring – 2022 (Total)		2199	391	17.8
Operational Monitoring – January 2022		186	9	4.8
Operational Monitoring – February 2022		119	17	14
Operational Monitoring – March 2022		172	25	15
Operational Monitoring – April 2022		203	42	21
Operational Monitoring – May 2022		160	40	25
Operational Monitoring – June 2022		138	10	7.2
Operational Monitoring – July 2022		211	48	23
Operational Monitoring – August 2022		108	18	17
Operational Monitoring – September 2022		149	26	17
Operational Monitoring – October 2022		237	34	14
Operational Monitoring – November 2022		291	65	22
Operational Monitoring – December 2022		225	57	25
Total number of Operational Monitoring Samples		**18,555**	**1,566**	**8.4**

Source: De Beers 2012a (Appendix 8.III, Table 8.III-35).

Note: Operational monitoring results based on De Beers operational database samples available between 2016 and 2022.

n = number of samples; > = greater than.

11.2 Summary and interpretation of results of geochemical monitoring required as per Schedule 5, item 7, including analysis results of any Seepage with runoff inputs to the Water Management Pond as well as any outside of the Controlled Area. Results shall be compared to appropriate reference locations in unaffected areas (Schedule 1, Part B, Item 10, 1.j.ii)

11.2.1 Rock Sampling Programs (Supplementary Samples)

Performance monitoring involves comparison of the expected geochemical characteristics, based on the Environmental Impact Statement (EIS) sampling, operational monitoring results, and the results of analysis of supplemental geochemical characterization samples. The supplemental samples collected during the geochemical site inspection were also be compared to the geochemical criteria for mine rock management to confirm the characteristics of the rock used for construction of site infrastructure.

Acid-Base Accounting and Net acid generation Test Results

A summary of the ABA results are presented in Table 11-2 and Table 11-3, with net acid generation pH values included in Table 11-2. Complete ABA results and net acid generation test results are provided in Appendix C.

Table 11-2 Summary of ABA Results and Net Acid Gerneration pH for 2022 Supplemental Samples

Lithology	Statistic	Paste pH	Total S	CO_2	AP	NP	CaNP	NPR	NAG pH
		pH Units	wt%	wt%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO^3$/t	-	pH Units
All (n=26)	Min	8.5	0.02	0.08	0.6	4.5	1.8	5.9	7.0
	Max	10	0.10	1.3	2.5	143	30	227	10
	Mean	9.4	0.037	0.39	1.0	63	8.9	64	8.2
	Median	9.4	0.02	0.11	0.6	19	2.5	31	7.8
	St. Dev.	0.57	0.022	0.38	0.56	58	8.6	64	1.8
CPK (n=6)	Min	8.7	0.02	0.43	0.6	130	9.8	100	9.7
	Max	9.2	0.05	0.88	1.3	142	20	227	10
	Mean	8.9	0.04	0.68	1.1	136	16	145	9.8
	Median	8.9	0.05	0.76	1.3	135	17	109	9.8
	St. Dev.	0.15	0.014	0.18	0.33	4.0	4.0	57	0.15
FPK (n=5)	Min	8.5	0.02	0.66	0.6	92	15	57	9.5
	Max	8.9	0.10	1.3	2.5	143	30	155	10.0
	Mean	8.7	0.06	0.91	1.4	120	21	103	9.7
	Median	8.7	0.06	0.71	1.3	131	16	87	9.9
	St. Dev.	0.13	0.026	0.27	0.66	22	6.2	40	0.21
Granite (n=15)	Min	9.0	0.02	0.08	0.6	4.5	1.8	5.9	7.0
	Max	10	0.08	0.36	2.5	41	8.2	32	8.1
	Mean	9.8	0.027	0.1	0.84	14	2.3	19	7.5
	Median	10.0	0.02	0.08	0.6	11	1.8	18	7.4
	St. Dev.	0.32	0.017	0.07	0.53	8.4	1.6	8.8	0.3

< = less than; wt% = weight by percent; AP = Acid Potential; NP = Neutralization Potential; CaNP = Carbonate Neutralization Potential; NPR = Neutralization Potential Ratio; NAG = Net Acid Generation; kg CaCO3/t = kilograms of calcium carbonate equivalent per tonne; n = sample size; CO2 = total inorganic carbon as carbon dioxide; S = sulphur.

Table 11-3 Summary of Acid Generation Potential for 2022 Supplemental Samples

Parameter	CPK	FPK	Granite	All
Count of Samples	6	5	15	26
# Samples PAG	0	0	0	0
# Samples Non-AG	6	5	15	26
% Samples PAG	0%	0%	0%	0%
% Samples Non-AG	100%	100%	100%	100%
# Samples expected to generate acid	0	0	0	0

CPK = coarse processed kimberlite; FPK = fine processed kimberlite; PAG = potentially acid generating; AG = acid generating;

Based on a review of the supplemental mine rock sample data, none of the samples collected are considered to have potential to generate acidity, and based on the overall results considering the NPR, Carbonate NPR, and net acid generation pH are considered non-acid generating with a small amount of excess neutralization potential, primarily provided by non-carbonate minerals. All samples are representative of the materials encountered and fall within or near the expected range of values based on the EIS data and supplemental sampling data from previous years (Figures 11-18 and 11-19).

Figure 11-18 Acid Potential vs. Neutralization Potential (including all Mine Rock samples from EIS through to 2022)

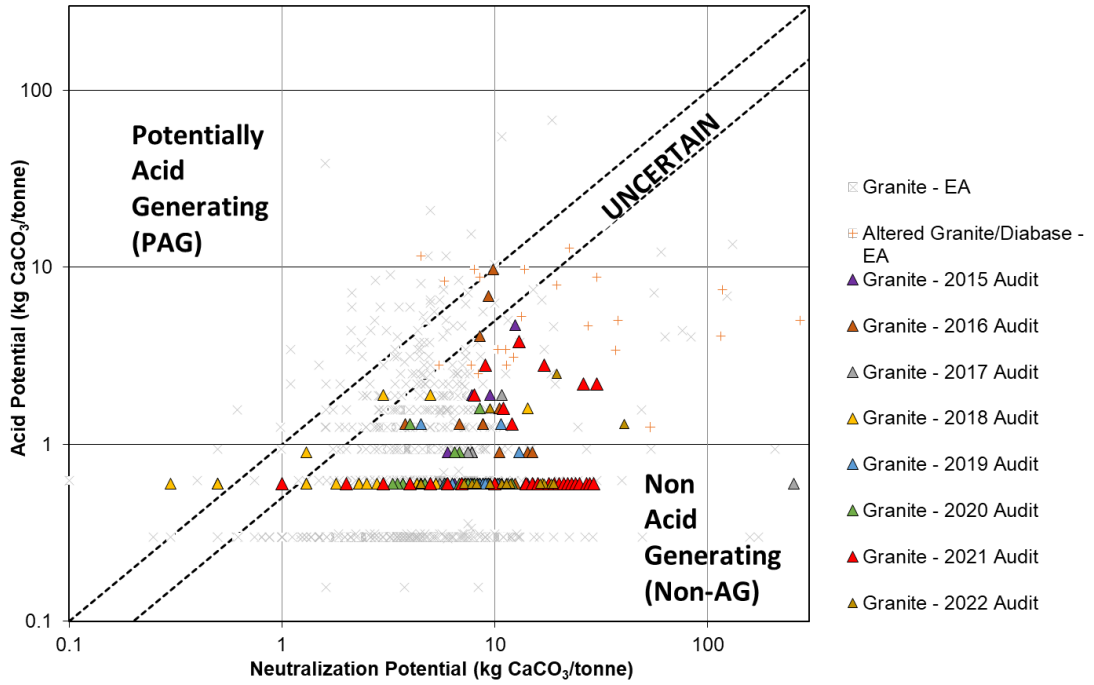
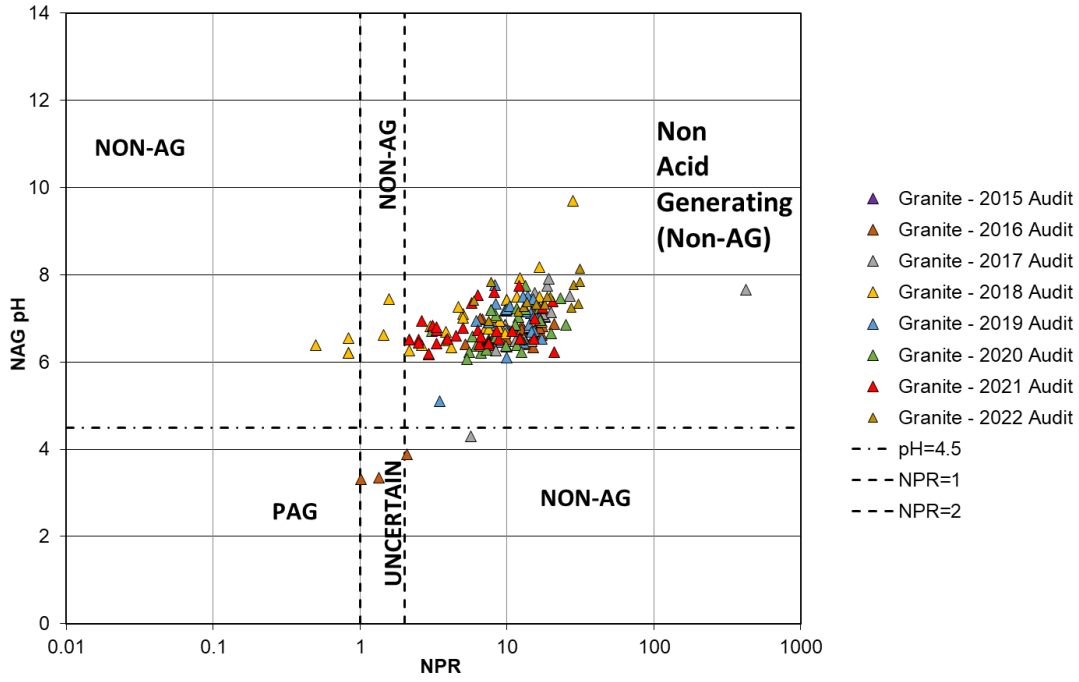


Figure 11-19 Net acid generation pH vs. Neutralization Potential Ratio (including all Mine Rock samples from 2015 through 2022)



Based on a review of the supplemental mine rock sample data, none of the kimberlite samples collected in 2022 are considered to have potential to generate acidity, and based on the overall results considering the NPR, Carbonate NPR, and net acid generation pH are considered non-acid generating with a significant amount of excess NP even when only considering NP provided by carbonate minerals. All samples are representative of the materials encountered and fall within the range of values expected based on the EIS data and supplemental sampling data from previous years (Figure 11-20 and Figure 11-21).

Figure 11-20 Acid Potential vs. Neutralization Potential (including all Kimberlite, FPK and CPK samples from EIS through to 2022)

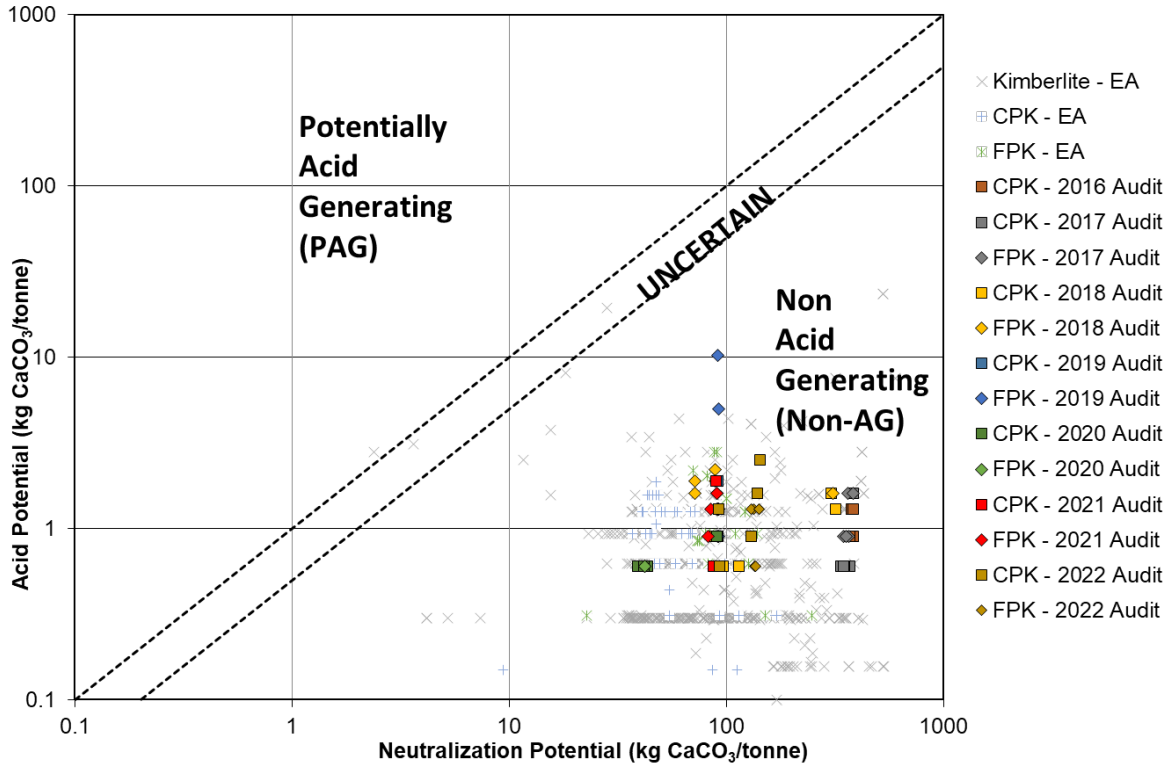
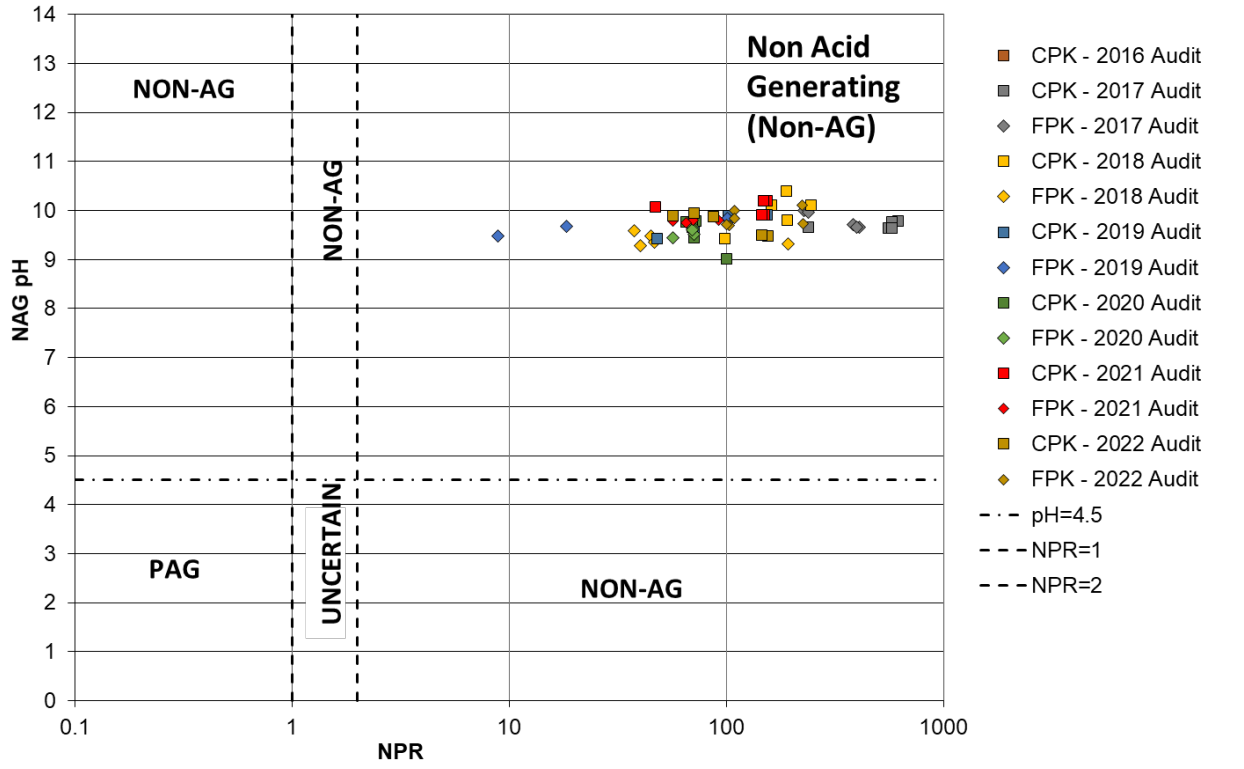


Figure 11-21 Net acid generation pH vs. Neutralization Potential Ratio (including all Kimberlite, FPK and CPK samples from 2016 through to 2022)



11.2.2 Seepage and Runoff Survey Results

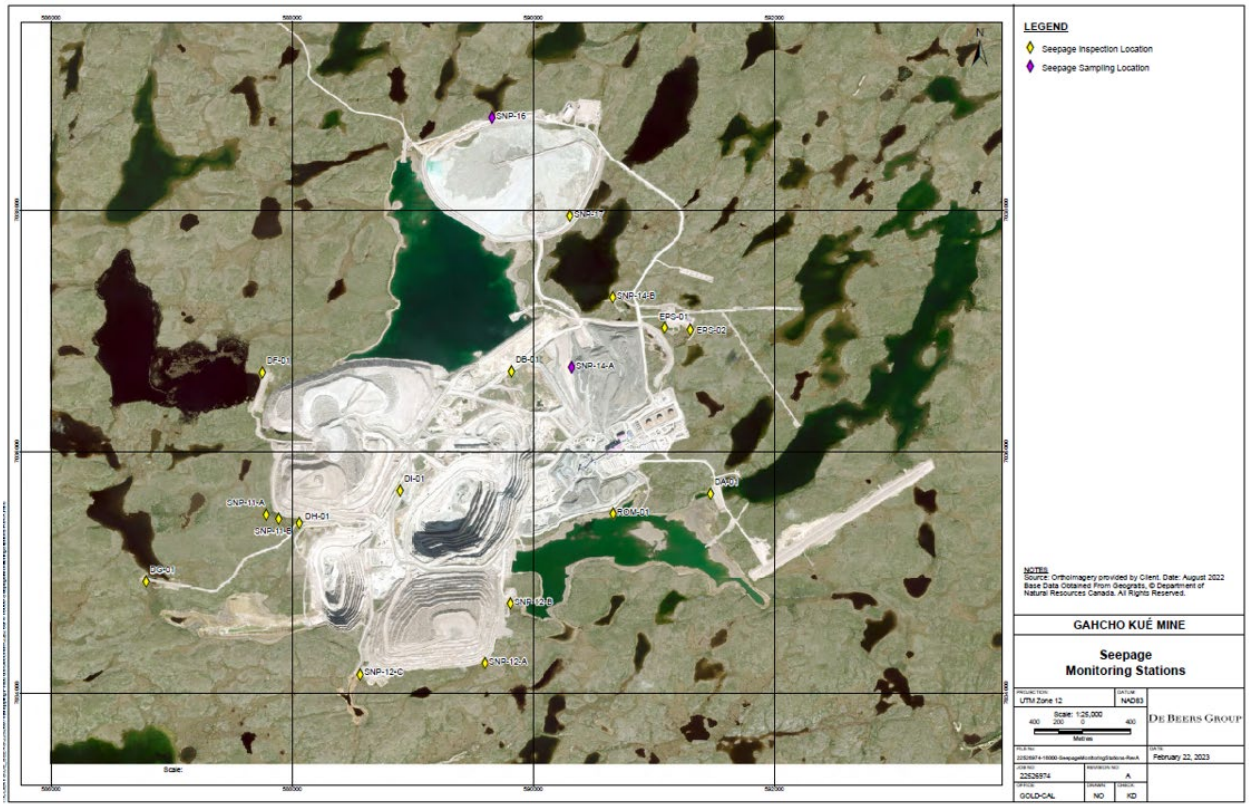
Detailed seepage survey results can be found in Appendix C. Samples were collected when flowing seepage water was available from the two sampling events (spring and fall) in 2022. During the spring sampling event, one (1) active seepage sample was collected. During the fall sampling event, two (2) active seepage samples were collected. Seepage samples were collected from two locations: SNP-14-A and SNP-16. Seepage from SNP-14-A at the Coarse PK Pile primarily originates from the water used to process the kimberlite ore (Reclaim from the Water Management Pond), and seepage at SNP-16 flows out of Dyke D at the Fine PKC Facility. Monitoring locations with standing water were only documented and no water samples were collected.

11.3 Overview analysis of major trends, site plans indicating the locations of seepage, and summary of recommendations for future seepage monitoring or management actions (Schedule 1, Part B, Item 10, 1.j.iii)

A site plan showing the locations of the seepage and runoff monitoring sampling locations visited during the 2022 geochemical audit is provided in Figure 11-22. Long-term trends remain to be developed as additional data is collected.

Temporal data for seepage collected at station SNP-14-A have been relatively stable over time for most parameters, including pH, which has ranged from 6.4 to 7.9 since 2017. However, concentrations of three major ion species appear to be increasing over time, with the most notable change observed for chloride, while corresponding increases in cation concentrations have been distributed primarily between calcium and sodium, and to a lesser extent, magnesium. Trends in major ion chemistry among samples of seepage from CPK are influenced by pit water entrained in raw kimberlite, as well as the use of water from the Water Management Pond as part of processing. Concentrations of TDS in the Water Management Pond have been increasing over time.

Figure 11-22 Site Seepage and Runoff Sample Locations, 2022



11.4 Interpretation of the results of all survey data collected since project inception with site plans indicating the locations of seepage and the quality assurance and quality control procedures used (Schedule 1, Part B, Item 10, 1.j.iv)

The interpretation of the seepage survey results, and the quality assurance and quality control procedures are included in Appendix C.

An interpretation of the results of the 2022 survey are discussed in detail in Section 11.2 of this report, and in Appendix C. This report also describes the quality assurance and quality control procedures implemented during the audit.

11.5 Summary of results from investigations or activities related to field test cells (Schedule 1, Part B, Item 10, 1.j.v)

Results of the 2022 Field Cell leachate testing is presented in Appendix C.

A comprehensive analysis of 2019 through 2022 leachate is provided in Appendix C.

11.6 Summary and interpretation of water quality monitoring results for each of the main source areas (Waste Rock piles, Open Pits, camp pad, and airstrip) and how these compare to predicted values (Schedule 1, Part B, Item 10, 1.j.vi)

Water samples were submitted for analysis and results compared to the water quality model inputs for first flush and steady state unsaturated granite mine rock from the 2012 EIS Supplement, Water Quality Model Report, Table 8.II-4: Kennady Lake Model Geochemical Inputs (De Beers, 2012). The detailed results are discussed in Section 11.2 of this report. Complete details are included in Appendix C.

11.7 Summary of any exceedances of the Action Levels described in the Geochemical Characterization and Management Plan (Schedule 1, Part B, Item 10, 1.j.vii)

Based on the 2022 geochemical surveys, De Beers concludes that the supplemental samples collected are non-potentially acid generating when considering all test methods (i.e., total S, ABA, and net acid generation testing). Operational monitoring results for acid generation analysis are noted to deviate from previous years and with the EIS, with approximately 17% of rock classified as PAG. Materials classified as PAG continued to be segregated during operations following the Geochemical Characterization and Management Plan.

Net-acid generation (NAG) testing results from the spring and fall audits showed that all mine rock and processed kimberlite samples tested have a final net acid generation pH of greater than 4.5 and are therefore classified as non-acid forming on this basis. Results for SFE and mineralogy are consistent with results from previous years and are within the range of expected values. Minor differences are noted in results for net acid generation

leachate; however, as all samples are classified as non-AG, conditions similar to the test environment are not anticipated to be applicable to the samples evaluated.

Results reported herein were evaluated with respect to the action levels defined in Table 7 of the Geochemical Characterization and Management Plan, Version 4.4 (De Beers 2021a). If action levels are triggered, a management response may be required to prevent significant adverse effects to the environment. Objectives, applicable action levels, and the status of each action level in 2022 are presented in Table 11-4 in Section 11.8 and Appendix C.

Similar to previous years' experiences, very limited active seepage flows were observed during the spring and fall seepage survey events. No mine rock seepage samples were collected in 2022. Evolution in SNP-14 A seepage chemistry is noted (i.e., a temporal increase in some major ions) and will continue to be monitored but is inferred to be primarily influenced by remnant water from ore processing and not ARD.

Based on the geochemical monitoring results throughout 2022, geochemical monitoring and rock placement protocols appear to be appropriate for the 2022 operational period. However, clarity regarding the continuity of elevated proportions of PAG mine rock is required. If it is concluded that the long-term proportions of PAG materials will materially differ from those defined in the Geochemical Characterization and Management Plan (De Beers 2021a), the potential for differences in anticipated chemical stability of mine rock piles and an evaluation of diabase acid generation potential will be reviewed in context of this new information.

11.8 Description of actions taken in response to any Action Level exceedances under the Geochemical Characterization and Management Plan (Schedule 1, Part B, Item 10, 1.j.viii)

Refer to Table 11-4 below for a description of 2022 status updates and actions taken in response to Action Level exceedances associated with the Geochemical Characterization and Management Plan – Version 4.4.

Table 11-4 Action levels and Status in 2022

Objective	Action Level	Status in 2022
To prevent the formation of acid rock drainage	Bi-annual inspection observes granite with visible staining observed on rock used to construct site facilities.	Minor staining observed at some locations, confirmation samples collected. All samples non-AG, leach testing indicates results are within expected range.
	Bi-annual inspection observes granite containing visible sulphide minerals is observed in rock used to construct roads, building foundations, the airstrip or filter dykes.	Trace sulphide observed at some locations, confirmation samples collected. All samples non-AG.
	Confirmation sample contains greater than or equal to 0.1% sulphide sulphur.	All confirmation samples less than 0.1% sulphide sulphur.
	Greater than 7.5% of the blast hole cutting samples collected in one month contain greater than or equal to 0.1% total sulphur.	Greater than 7.5% of samples in all months, except January and June, contain at least 0.1% total sulphur. Overall, 17% of 2022 samples greater than or equal to 0.1% total sulphur, which is greater than the expected volume of PAG material.
	Volume and location of visible seepage different	Observations consistent with previous

Objective	Action Level	Status in 2022
Minimize the potential for discharge of acidic drainage or seepage that could cause a significant environmental effect	than previously observed conditions	years.
	Seepage is turbid (i.e., not clear)	SNP-14-A reported to be turbid during freshet; fall sample was not turbid.
	pH below 5 or greater than 9 in one seepage monitoring sample	All pH results were between 5 and 9.
	Concentration measured outside normal range, or divergence in trends relative to water quality predictions in one seepage monitoring sample	No samples of mine rock seepage were collected for comparison to water quality predictions. Evolution in SNP-14-A seepage chemistry is noted for ongoing monitoring but is not indicative of ARD and is inferred to be related to water used during ore processing.

11.9 Any geochemical inspections reports from the preceding year, as appendices to the Annual Water Licence Report (Schedule 1, Part B, Item 10, 1.j.ix)

A detailed summary of the geochemical inspections that occurred at Gahcho Kué in 2022 is provided in Appendix C.

12 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED PROCESSED KIMBERLITE AND WASTE ROCK MANAGEMENT PLAN (SCHEDULE 1, PART B, ITEM 10, 1.K)

The Processed Kimberlite and Mine Rock Management Plan – Version 7.2 (De Beers 2021e) governed the construction and mining activities that took place under the Type A Water Licence in 2022.

12.1 Summary of updates or changes to the process or facilities required for the management of Processed Kimberlite, Waste Rock, and Overburden (Schedule 1, Part B, Item 10, 1.k.i)

The Processed Kimberlite and Mine Rock Management Plan – Version 7.2 was approved on August 12, 2021 (De Beers 2021e). It was initially submitted as part of supporting documents for Gahcho Kué Water Licence and Land Use Permit Amendment Application in 2020. The Management Plan summarized the update of the mine plan, incorporating changes associated with the mine waste management.

12.2 Monthly and annual quantities in cubic meters and tonnes (t) of Overburden removed from each Open Pit and its deposition location (Schedule 1, Part B, Item 10, 1.k.ii)

The monthly and annual quantities in cubic metres and tonnes of overburden removed from 5034, Hearne, and TUZO pits are provided in Table 12-1 to 12-3.

In 2022, overburden materials were either deposited in the West Mine Rock Pile or stockpiled at the approved overburden stockpiles for construction or cover purposes.

12.3 Monthly and annual quantities in cubic meters and tonnes (t) of Waste Rock placed in the South Mine Rock Pile, West Mine Rock Pile, and Coarse Processed Kimberlite and Mine Rock Pile, identifying the classification of quantities of each rock type, geochemical classification and its disposal location (Schedule 1, Part B, Item 10, 1.k.iii)

The monthly and annual quantities of PAG and Non-PAG mine rock placed in the South Mine Rock Pile, West Mine Rock Pile, and Coarse PK and Mine Rock Pile are summarized in Table 12-4.

12.4 Monthly and annual quantities in cubic meters of Waste Rock placed for Construction activities, including an updated map or diagram showing the location and Waste Rock classification of the deposited materials (Schedule 1, Part B, Item 10, 1.k.iv)

The monthly and annual quantities of mine rock placed for constructing South Mine Rock Pile, West Mine Rock Pile, Coarse PK and Mine Rock Pile, and other site infrastructure (categorized as Construction) are summarized in Table 12-4.

PAG rock was only deposited in the West Mine Rock Pile in 2022. Figures 12-2 to 12-4 show the perimeter of the PAG placement at various levels of the West Mine Rock Pile. Please note, non-PAG materials are also placed in the PAG placement area.

Table 12-1 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden Excavated from 5034 Pit at Gahcho Kué in 2022

	Units	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-Jul	22-Aug	22-Sep	22-Oct	22-Nov	22-Dec	2022 TOTAL
PAG	m3	1,002	379	50,766	94,644	124,664	129,743	125,762	121,547	104,315	81,677	7,697	20,633	862,827
	T	2,645	1,001	134,021	249,860	329,112	342,522	332,011	320,883	275,390	215,626	20,319	54,472	2,277,865
NAG	m3	167,209	144,027	267,693	202,134	133,837	227,334	216,444	249,590	180,101	175,862	60,216	42,388	2,066,837
	T	441,433	380,231	706,711	533,634	353,331	600,162	571,413	658,919	475,466	464,276	158,970	111,904	5,456,449
Overburden	m3	0	0	0	0	0	0	0	0	0	0	0	0	0
	T	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	m3	168,211	144,406	318,459	296,778	258,501	357,077	342,206	371,137	284,415	257,539	67,913	63,021	2,929,664
	T	444,078	381,232	840,732	783,494	682,443	942,684	903,424	979,802	750,856	679,903	179,289	166,376	7,734,314

Table 12-2 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden Excavated from Hearne Pit at Gahcho Kué in 2022

	Units	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-Jul	22-Aug	22-Sep	22-Oct	22-Nov	22-Dec	2022 TOTAL
PAG	m3	7,574	2,847	27,614	14,518	12,348	9,088	8,914	4,948	14,308	1,995	978	3,405	108,538
	T	19,997	7,516	72,900	38,327	32,599	23,992	23,533	13,064	37,773	5,267	2,582	8,990	286,539
NAG	m3	92,400	157,210	153,909	182,937	100,450	152,387	55,864	50,878	68,325	20,839	1,865	2,032	1,039,094
	T	243,936	415,033	406,321	482,953	265,187	402,302	147,480	134,319	180,377	55,015	4,923	5,363	2,743,207
Overburden	m3	0	0	0	0	0	0	0	0	0	0	0	0	0
	T	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	m^3	99,974	160,057	181,523	197,454	112,797	161,475	64,778	55,827	82,633	22,834	2,843	5,437	1,147,631
	T	263,933	422,549	479,221	521,280	297,785	426,293	171,013	147,382	218,150	60,282	7,505	14,354	3,029,747

Table 12-3 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden Excavated from Tuzo Pit at Gahcho Kué in 2022

	Units	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-Jul	22-Aug	22-Sep	22-Oct	22-Nov	22-Dec	2022 TOTAL
PAG	m3	36,379	27,491	104,636	76,469	92,346	47,099	70,217	91,812	88,993	73,350	316,701	271,651	1,297,145
	T	96,042	72,577	276,239	201,879	243,794	124,341	185,372	242,384	234,942	193,644	836,091	717,158	3,424,462
NAG	m3	574,177	432,860	459,635	168,180	346,616	443,436	328,208	428,216	207,764	687,229	962,743	852,784	5,891,847
	T	1,515,826	1,142,749	1,213,435	443,995	915,066	1,170,670	866,468	1,130,490	548,498	1,814,285	2,541,641	2,251,350	15,554,475
Overburden	m3	0	0	207	7,834	2,098	344	7,491	0	5,484	231	16,553	0	40,241
	T	0	0	465	17,626	4,721	773	16,854	0	12,340	520	37,244	0	90,543
Total	m^3	610,556	460,351	564,477	252,483	441,060	490,878	405,915	520,028	302,242	760,811	1,295,997	1,124,435	7,229,232
	T	1,611,868	1,215,326	1,490,140	663,499	1,163,581	1,295,785	1,068,694	1,372,874	795,779	2,008,450	3,414,976	2,968,508	19,069,480

Table 12-4 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden deposition locations at Gahcho Kué in 2022

Waste by Destination	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-Jul	22-Aug	22-Sep	22-Oct	22-Nov	22-Dec	2022 TOTAL
							Mass (t)						
PAG Construction	0	0	0	0	0	0	0	0	0	0	0	0	0
PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
PAG West Mine Rock Pile	118,684	81,094	483,161	490,066	605,505	490,855	540,916	576,331	548,105	414,538	858,992	780,620	5,988,865
Non-acid generating Construction	2,267,316	65,242	234,216	159,799	97,407	39,039	128,721	110,494	48,971	140,496	416,054	179,717	3,887,471
Non-acid generating South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0

Waste by Destination	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-Jul	22-Aug	22-Sep	22-Oct	22-Nov	22-Dec	2022 TOTAL
Non-acid generating West Mine Rock Pile	0	1,940,847	2,118,535	1,338,192	1,475,656	2,162,668	1,486,908	1,829,785	1,159,635	2,216,784	2,343,573	2,198,406	20,270,989
Non-acid generating CPK&Mine Rock Pile	1,776	0	0	0	281	0	0	0	0	180	0	154	2,391
Total Construction	2,267,316	65,242	234,216	159,799	97,407	39,039	128,721	110,494	48,971	140,496	416,054	179,717	3,887,471
Total South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Total West Mine Rock Pile	118,684	2,021,941	2,601,696	1,828,258	2,081,161	2,653,523	2,027,824	2,406,116	1,707,740	2,631,322	3,202,565	2,979,026	26,259,854
Total CPK&Mine Rock Pile	1,776	0	0	0	281	0	0	0	0	180	0	154	2,391
Volume (m^3)													
PAG Construction	0	0	0	0	0	0	0	0	0	0	0	0	0
PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
PAG West Mine Rock Pile	44,956	30,717	183,015	185,631	229,358	185,930	204,892	218,307	207,616	157,022	325,376	295,689	2,268,510
Non-acid generating Construction	858,832	24,713	88,718	60,530	36,896	14,787	48,758	41,854	18,549	53,218	157,596	68,075	1,472,527
Non-acid generating South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-acid generating West Mine Rock Pile	0	735,169	802,475	506,891	558,961	819,192	563,223	693,100	439,256	839,691	887,717	832,730	7,678,405
Non-acid generating CPK&Mine Rock Pile	673	0	0	0	106	0	0	0	0	68	0	58	906
Total Construction	858,832	24,713	88,718	60,530	36,896	14,787	48,758	41,854	18,549	53,218	157,596	68,075	1,472,527
Total South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Total West Mine Rock Pile	44,956	765,887	985,491	692,522	788,318	1,005,122	768,115	911,407	646,871	996,713	1,213,093	1,128,419	9,946,915
Total CPK&Mine Rock Pile	673	0	0	0	106	0	0	0	0	68	0	58	906

Figure 12-1 Gahcho Kué Mine 2022 Year End Site Map

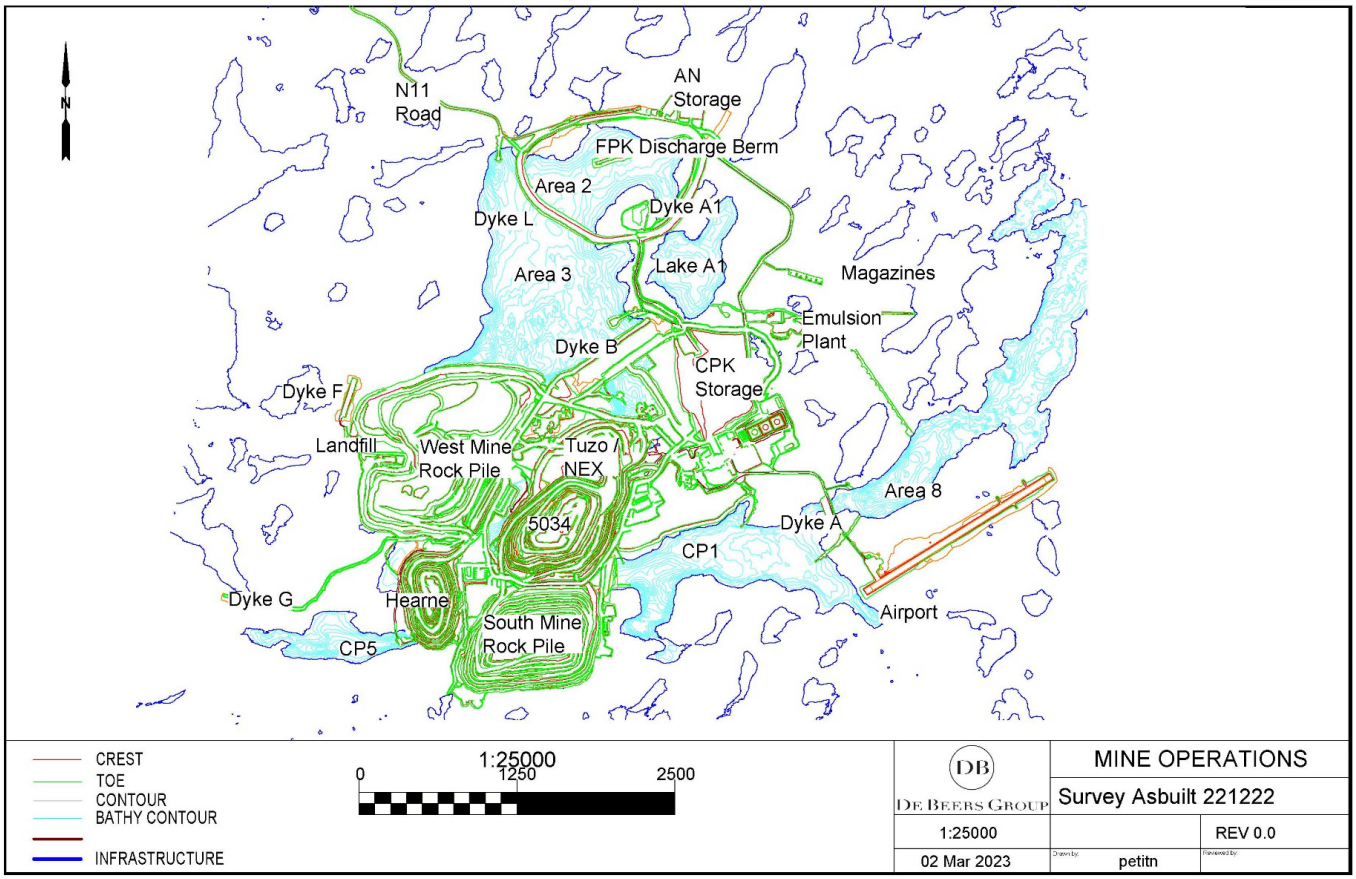


Figure 12-2 Gahcho Kué Mine PAG Placement Area 499 masl, 2022

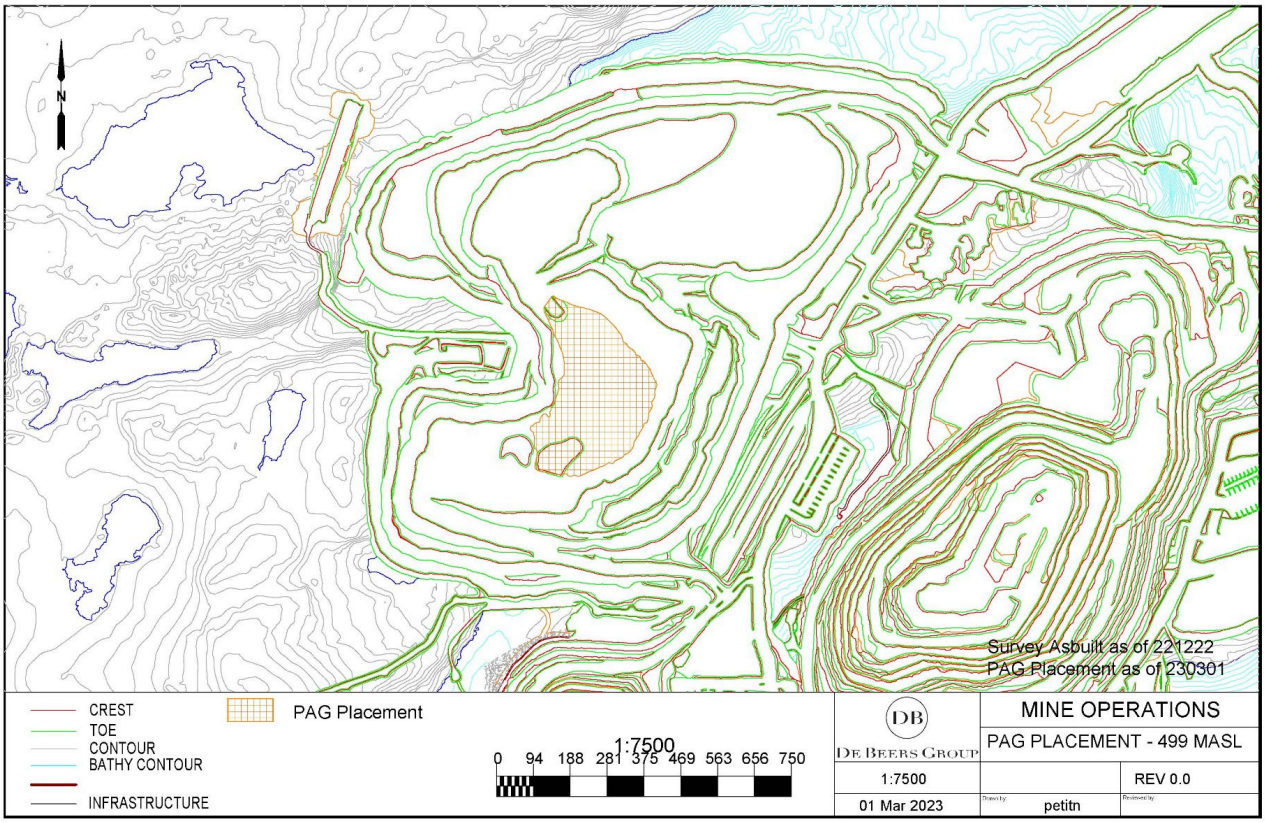


Figure 12-3 Gahcho Kué Mine PAG Placement Area, 484 masl 2022

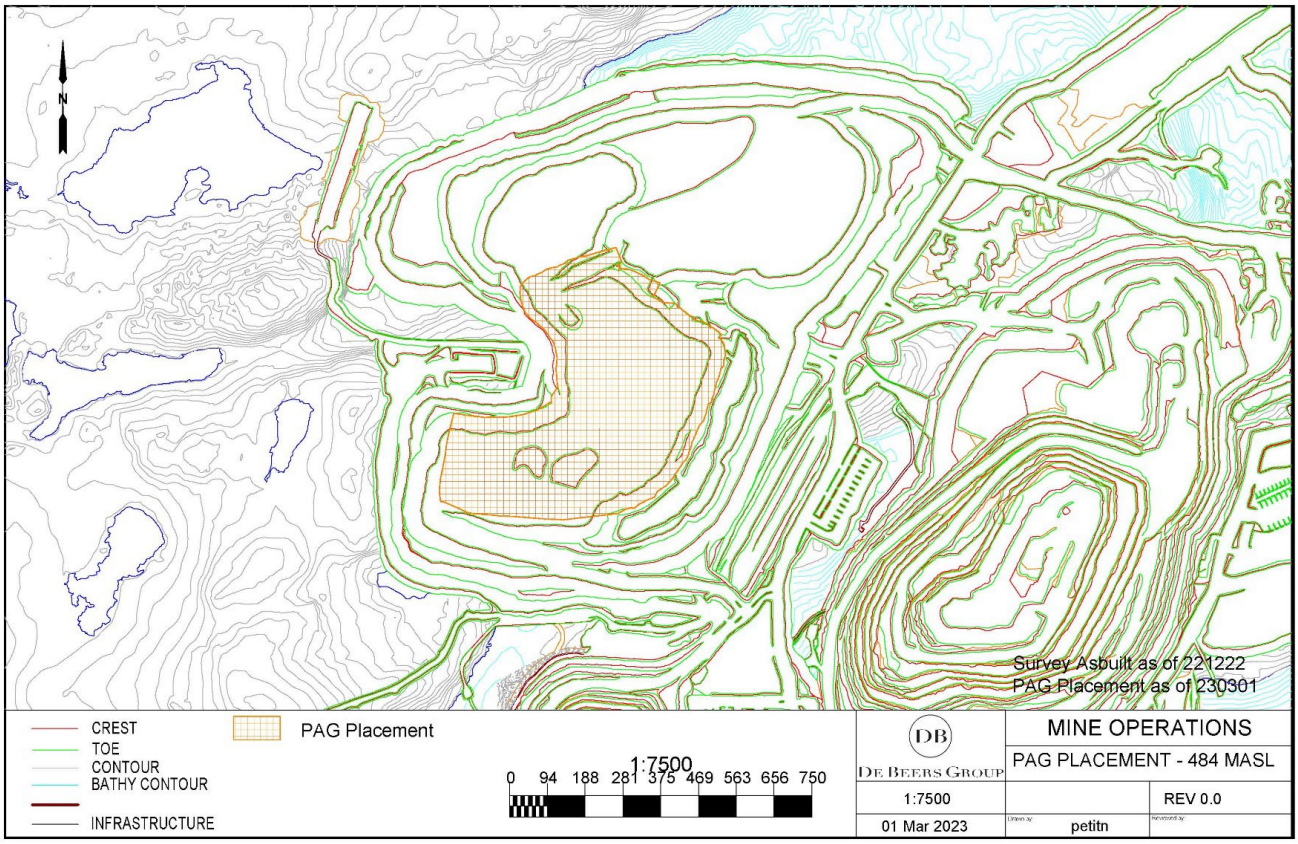
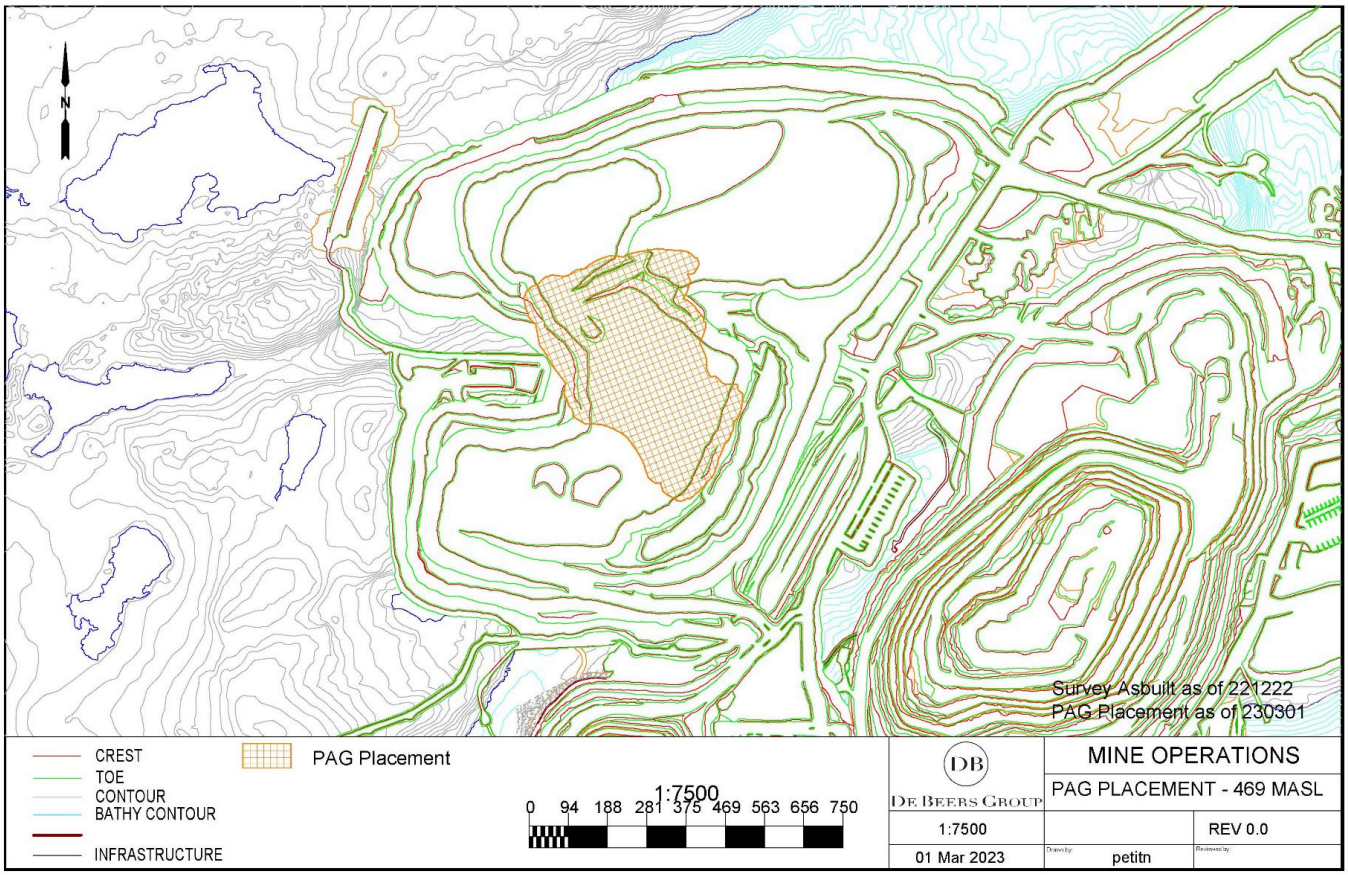


Figure 12-4 Gahcho Kué Mine PAG Placement Area, 469 masl, 2022



12.5 Monthly and annual quantities in cubic metres of waste rock placed in the 5034 Open Pit and the Hearne Open Pit; including an updated map or diagram showing the location and waste rock classification of the deposited materials (Schedule 1, Part B, Item 10, 1.k.v)

No waste rock was placed in 5034 or Hearne Pits in 2022.

12.6 Monthly and annual quantities in cubic meters and tonnes of Processed Kimberlite placed in each of the Coarse Processed Kimberlite and Mine Rock Pile, the Fine Processed Kimberlite Containment Facility, the 5034 Open Pit and the Hearne Open Pit (Schedule 1, Part B, Item 10, 1.k.vi)

Monthly, annual and cumulative quantities of Coarse Processed Kimberlite (PK) deposited to the Coarse PK and Mine Rock Pile is presented in Table 12-5. The cumulative totals were derived by adding the 2022 amounts to the total value from 2021. No PK was deposited to the 5034 Pit or the Hearne Pit in 2022.

Table 12-5 Gahcho Kué Mine Rock Pile Coarse PK Summary, 2022

Date	2022		Cumulative	
	CPK to CPK Facility (dry tonnes)	CPK to CPK Facility (m^3)	Cumulative CPK to CPK Facility (dry tonnes)	Cumulative CPK to CPK Facility (m^3)
Jan-22	189,875	105,486	11,726,599	7,275,486
Feb-22	127,553	70,863	11,854,152	7,346,349
Mar-22	170,161	94,534	12,024,313	7,440,883
Apr-22	199,732	110,962	12,224,045	7,551,845
May-22	152,669	84,816	12,376,714	7,636,661
Jun-22	199,253	110,696	12,575,967	7,747,357
Jul-22	186,471	103,595	12,762,438	7,850,952
Aug-22	190,660	105,922	12,953,098	7,956,874
Sep-22	168,369	93,538	13,121,467	8,050,413
Oct-22	170,570	94,761	13,292,037	8,145,174
Nov-22	178,131	98,962	13,470,168	8,244,136
Dec-22	199,644	110,913	13,669,812	8,355,049
Total	**2,133,088**			

Note: Assumed dry density of compacted coarse PK is 1.8 t/m3.

12.7 Monthly and annual quantities in cubic metres, and tonnes, of slurry deposited in each of the Fine Processed Kimberlite Containment Facility and the Hearne and 5034 Open Pits (Schedule 1, Part B, Item 10, 1.k.vii)

Monthly, annual and cumulative quantities of Fine Processed Kimberlite slurry deposited in the Fine Processed Kimberlite (FPK) Containment Facility are presented in

Table 12-6. The cumulative totals were derived by adding the 2022 amounts to the total value from 2021. No FPK was deposited to 5034 or Hearne Pits in 2022.

Table 12-6 Gahcho Kué Mine Fine PK Deposition Summary, 2022

Date	2022			Cumulative	
	FPK Slurry (m^3)	FPK Solids (m^3)	FPK Solids (tonnes)	Cumulative FPK Solids (m^3)	Cumulative FPK Solids (tonnes)
Jan-22	212,857	36,038	93,699	6,364,837	14,604,284
Feb-22	153,691	22,502	59,015	6,387,339	14,663,299
Mar-22	181,589	32,476	84,437	6,419,815	14,747,736
Apr-22	168,060	34,719	90,268	6,454,534	14,838,004
May-22	152,661	24,818	64,527	6,479,352	14,902,531
Jun-22	143,661	26,913	69,973	6,506,265	14,972,504
Jul-22	170,756	31,364	81,547	6,537,629	15,054,051
Aug-22	181,326	39,016	101,443	6,576,645	15,155,494
Sep-22	170,708	36,017	93,644	6,612,662	15,249,138
Oct-22	192,565	42,117	109,712	6,654,779	15,358,850
Nov-22	216,755	46,132	120,396	6,700,911	15,479,246
Dec-22	210,241	30,391	77,679	6,731,302	15,556,925
Total	**2,154,870**	**402,503**		**78,426,070**	

12.8 Monthly, annual, and cumulative quantities in cubic metres, and tonnes, and locations of any overburden, Processed Kimberlite, Waste Rock or ore stockpiles (Schedule 1, Part B, Item 10, 1. k.viii)

The monthly, annual, and cumulative quantities of material placed in the ore, overburden and waste rock stockpiles is summarized in Table 12-7.

Table 12-7 Summary of the Monthly, Annual, and Cumulative Quantities and locations of any Overburden and Waste Rock or Ore stockpiles in 2022

Date	South Mine Rock Pile		West Mine Rock Pile		Overburden Production [1]	Ore Stockpile [2]
	Monthly Totals (t)	Cumulative Total (t)	Monthly Totals (t)	Cumulative Total (t)	Monthly Totals (t)	Monthly Totals (t)
Jan-22	0	100,269,061	44,956	90,359,016	0	857,119
Feb-22	0	100,269,061	765,887	91,124,903	0	991,499
Mar-22	0	100,269,061	985,491	92,110,394	465	1,058,973
Apr-22	0	100,269,061	692,522	92,802,916	17,626	1,249,074
May-22	0	100,269,061	788,318	93,591,234	4,721	1,343,778
Jun-22	0	100,269,061	1,005,122	94,596,356	773	1,352,501
Jul-22	0	100,269,061	768,115	95,364,471	16,854	1,725,908
Aug-22	0	100,269,061	911,407	96,275,878	0	1,917,693
Sep-22	0	100,269,061	646,871	96,922,749	12,340	1,881,954
Oct-22	0	100,269,061	996,713	97,919,462	520	1,874,239
Nov-22	0	100,269,061	1,213,093	99,132,555	37,244	1,693,428
Dec-22	0	100,269,061	1,128,419	100,260,974	0	1,759,234
Total	**0**		**9,946915**		**90,543**	

Note:

1. Monthly production quantity. The overburden stockpile will continue to be surveyed throughout 2023
2. Ore stockpile is the quantity of kimberlite reported at month end

12.9 Annual quantities in cubic metres, and tonnes, of other solid waste, placed in each of the South Mine Rock Pile and West Mine Rock Pile (Schedule 1, Part B, Item 10, 1.k.ix)

The South Mine Rock Pile Landfill was commissioned in 2016 and there was no waste deposited at the South Mine Rock Pile Landfill in 2022. Approximately 1500 m^3 of non-hazardous waste, was deposited to the West Mine Rock Pile Landfill, which was commissioned in December 2018.

12.10 Summary and interpretation of monitoring results, including any Action Level exceedances (Schedule 1, Part B, Item 10, 1.k.x)

Monitoring programs are described in the Processed Kimberlite and Mine Rock Management Plan – Version 7.2 as they pertain to the mine rock piles, the Coarse PK Pile, and the Fine PKC Facility. Geotechnical inspections to assess the stability, deformation and signs of erosion of each of these engineered structures are conducted on an annual basis. The Geotechnical inspections are provided to GNWT within 90 days of completion of the

Inspection as per water licence (MV2005L2-0015), Part G, Item 23. The 2022 inspection reports were provided to the Board on October 12, 2022 . The dykes are also monitored on a weekly basis for signs of seepage, erosion, and deformation. There were no instances of instability or deformation noted at any of these facilities in 2022.

12.11 Description of actions taken in response to any Action Level exceedances (Schedule 1, Part B, Item 10, 1.k.xi)

In 2022, there were no Action Level exceedances associated with activities covered by the Processed Kimberlite and Mine Rock Management Plan – Version 7.2.

13 SUMMARY OF ACTIVITIES CONDUCTED IN ACCORDANCE WITH THE APPROVED SPILL CONTINGENCY PLAN (SCHEDULE 1, PART B, ITEM 10, 1.L)

The approved Emergency Response and Spill Contingency Plan – Version 3.1 (De Beers, 2018a) was utilized at the Gahcho Kué Mine throughout 2022. This plan was developed to describe the standards and specific procedures to be used by De Beers and its contractors in the event of an emergency or spill related to the Mine.

The following sub-sections provide a summary of activities as they pertain to the management and reporting of unauthorized discharges and the training of GK personnel on spill response and spill prevention.

13.1 List and description for all unauthorized discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e., open or closed), in accordance with the reporting requirements of this Water Licence (Schedule 1, Part B, Item 10, 1.l.i)

Table 13-1 provides a summary of the unauthorized discharges (i.e., reportable spills) that occurred at the Mine during 2022. Thirteen (13) reportable spill events were reported by De Beers to the Northwest Territories – Nunavut Spill Report Line in 2022. Detailed information related to each reportable spill is presented in Appendix D.

Table 13-1 Summary of Unauthorized Discharges at the Gahcho Kué Mine in 2022

Date	Description	Contaminant	Quantity Spilled (L)	Location	NWT Spill #	Status (Open/Closed)
1/15/2022	A fuel receiver on a drill had some dirt holding the spring in the filling position which caused a leak in Tuzo Pit.	Diesel	150	Tuzo Pit	2022015	Closed
2/23/2022	A hydraulic filter came loose and detached from the housing on an Excavator in Hearne Pit.	Hydraulic	150	Hearne Pit	2022047	Closed
4/4/2022	Hydraulic boom cylinder failed on a Komatsu Excavator in Tuzo Pit.	Hydraulic	500	Tuzo Pit	2022117	Closed
4/4/2022	Twisted hydraulic hose bundle leaked from drill in Hearne Pit.	Hydraulic	200	Hearne Pit	2022116	Open
4/28/2022	During inspection of an exploration drill area engine oil was noticed outside the containment.	Hydraulic	10	Lake E1	2022154	Closed

5/4/2022	A failed flange connection on a waste Glycol tank spilled within the 60,000 liter tank berm.	Glycol	104	60,00l Berm	2022166	Closed
5/17/2022	A split radiator hose on a Haul Truck resulted in a glycol coolant leak on the 5034 Ramp.	Coolant	200	5034 Ramp	2022193	Closed
6/3/2022	A drive motor failure on a drill resulted in a hydraulic spill in Hearne Pit.	Hydraulic	150	Hearne Pit	2022230	Closed
5/Aug/22	A hose failure on a Komatsu Shovel resulted in a hydraulic spill in Tuzo Pit.	Hydraulic	300	Tuzo Pit	2022404	Closed
4/Oct/22	A Drill's cylinder hydraulic supply line fitting failed resulting in a spill in Tuzo Pit.	Hydraulic	250	Tuzo Pit	2022487	Open
7/Oct/22	A Drill with a rubbing hose mount bundle leaked hydraulic oil in Hearne Pit	Hydraulic	150	Hearne Pit	2022494	Closed
24/Oct/22	A haul truck ran over a large rock damaging the hydraulic oil tank resulting in a spill in the West Mine Rock Pile.	Hydraulic	300	WMRP	2022510	Closed
31/Oct/22	A haul truck made contact with a large rock at the West Mine Rock Pile.	Diesel	1800	WMRP	2022516	Open

13.2 Outline of any spill training and communications exercises carried out during the previous calendar year (Schedule 1, Part B, Item 10, 1.l.ii)

Spill prevention training was provided as part of regular induction procedures. Spill training in the form of a mock spill scenario was completed with the Emergency Response Team on February 20th 2022. The training was conducted on the Winter Road at Gahcho Kue. It involved reviewing the spill response procedures including awareness, hazard assessments, inspections, identification of contents and use of materials, locations of spill kits at site, and methods of spill response. The training involved both classroom and hands-on activities with site response to a mock spill scenario.

14 PROGRESS REPORT ON ANY STUDIES OR PLANS, INCLUDING AQUATIC EFFECTS MONITORING PROGRAM RESPONSE PLANS AND ANY RECLAMATION RESEARCH PLANS, REQUESTED BY THE BOARD AND UNDERTAKEN DURING THE PREVIOUS CALENDAR YEAR, AND A BRIEF DESCRIPTION OF ANY FUTURE STUDIES PLANNED BY THE LICENSEE (SCHEDULE 1, PART B, ITEM 10, 1.M)

De Beers submitted the Aquatic Effects Monitoring Program (AEMP) – Response Plan for Lake D2/D3 (Version 1) to the Mackenzie Valley Land and Water Board (MVLWB) on July 8, 2022 (De Beers, 2022). This report presented a summary of measured data for several aquatic components (e.g., water quality, lower trophic indicators), action level determination, likely cases and lines of evidence and ecological implication for both toxicological impairment and nutrient enrichment, as well as response actions including monitoring programs and developing action levels downstream of Lake D2/D3. On October 13, 2022, the Board responded that the Plan was not approved, and that De Beers was required to engage with Board staff and regulators to resolve concerns raised during the review period. De Beers engaged with reviewers in December 2022. The updated AEMP Response Plan for Lake D2/D3 (Version 1.1; De Beers, 2023) was resubmitted to the Board on January 30, 2023 and is currently undergoing review.

An updated Reclamation Research Plan (RRP) was submitted to the Board on May 14, 2018 (revised again on August 21, 2018) to fulfill Part J, condition 1 of Water Licence (Licence) MV2005L2-0015 and Condition 84 of Land Use Permit (Permit) MV2005C0032. The RRP is Appendix E of the Interim Closure and Reclamation Plan (ICRP) Version 4.1. The ICRP Version 4.1 was approved by the MVLWB on June 6, 2019. The results of reclamation research conducted in 2022 will be included in the Annual Closure and Reclamation Progress Report to be submitted concurrently with this report.

15 ANY OTHER DETAILS ON WATER USE OR WASTE DISPOSAL REQUESTED BY THE BOARD BY NOVEMBER 30 OF THE YEAR BEING REPORTED (SCHEDULE 1, PART B, ITEM 10, 1.N)

There were no other details on water use or waste disposal requested by the Board by November 30th of 2022.

16 SUMMARY OF THE ACTIVITIES CARRIED OUT TO IMPLEMENT MEASURES AND FOLLOW-UP PROGRAMS TO ADDRESS WATER USE AND PROTECTION OF WATER QUALITY AS IDENTIFIED BY THE MINISTER IN THE REPORT OF ENVIRONMENTAL IMPACT REVIEW 0607-001 (SCHEDULE 1, PART B, ITEM 10, 1.O)

Follow-up measures in 2022 relevant to the aforementioned requirement include the following monitoring programs:

- Aquatic Effects Monitoring Program (AEMP); and
- Surveillance Network Program (SNP).

Aquatic Effects Monitoring Program

The Aquatic Effects Monitoring Program (AEMP) for the Gahcho Kué Mine was designed to monitor aquatic effects of the Mine, verify and update the Environmental Impact Statement (EIS) predictions, and inform management decisions made by the Mine. The content of the AEMP Design Plan is dictated by Schedule 6, Item 1 of the Water Licence (MV2005L2-0015).

The AEMP Design Plan Version 7 was approved in February 2023. This update was to incorporate the recommendations in the Aquatic Effects Re-Evaluation Report, submitted in September 2022. The intent of the Aquatic Effects Re-evaluation Report, as described in the Water Licence, is to describe the project-related effects on the receiving environment. The Aquatic Effects Re-evaluation Report has incorporated monitoring data between 2019 and 2021.

The 2022 AEMP Annual Report is also currently being written and will summarize the results of the aquatics-related monitoring conducted for the Mine during 2022. The report will be submitted to the Board on or before May 1, 2023.

Surveillance Network Program

The Surveillance Network Program (SNP) is conducted to satisfy Annex A of the Water Licence. In 2022, the SNP monitored the quantity and quality of mine contact water through both points of water transfer and water released to the environment during construction and operations activities. A meteorological monitoring component is also included in the SNP.

The objective of the SNP is to ensure that mine water within the controlled area is monitored, and that any mine water discharged to the receiving environment meets the licensed discharge criteria. Monthly reports are submitted to the Board summarizing the results of SNP monitoring. Further details on the 2022 SNP can be found in Section 19.

17 A TABLE DETAILING ALL COMMITMENTS MADE DURING ENVIRONMENTAL IMPACT REVIEW 0607-001 AND THE SUBSEQUENT REGULATORY PROCESSES, WITH DESCRIPTIONS OF HOW EACH COMMITMENT IS BEING, OR HAS BEEN, MET (SCHEDULE 1, PART B, ITEM 10, 1.P)

The commitments made by De Beers during the Environmental Impact Review and subsequent regulatory processes and the status of each commitment as of December 31, 2022 are provided in Appendix E.

18 SUMMARY OF THE CALIBRATION AND STATUS OF THE METERS AND DEVICES REFERRED TO IN PART B, ITEM 8 OF THIS LICENCE (SCHEDULE 1, PART B, ITEM 10, 1.Q)

A summary of the calibration and status of the meters and devices used to measure the volumes of water used and waste discharged in 2022 is provided in Table 18-1.

Table 18-1 Summary of the Quality Assurance and Quality Control Measures Implemented in 2022 as a Component of the Collection of Flow and Volume Measurements

SNP Station / Location	Monitoring Requirement	Instrument	Updated Instruments	QA/QC Measures
SNP Station / Location	Monitoring Requirement	Instrument	Updated Instruments	QA/QC Measures
SNP-02 SNP-04	Continuous monitoring of flow and volume	Seametrics Model FT415M flow meter Seametrics Model DL76 datalogger		1. Flow meter installed according to manufacturers recommendations. 2. Shack installed over pipeline to maintain flow meter within manufacturers recommended operating temperature. 3. Data downloaded frequently (~daily) to minimize data loss in the event of equipment failure.
Water Treatment Plant	Monitoring of flow and volume of both the raw water input (from Area 8) and treated water discharge	Burkert Type S055 Magnetic-inductive flow rate sensor w/ SE56 transmitter/display unit.	Endress+Hauser Electro - magnetic flowmeter Promag W300, Model#: 5W3B40-CSEIBADDGADUA1S0MA1+AAEBL4	1. Flow sensors calibrated by manufacturer prior to installation. 2. Flowmeter commissioning test performed to ensure proper functionality during new installation 3. Totalizer readings are recorded daily. 4. Flowmeter independently field verified for installation and functionality by third party OEM Tech on a 1Y PM interval
Water Truck	Monitoring of volume of water taken from Area 8	Volume of water is based on a truck load count recorded on daily field sheets. Truck tank volume is 12,000 liters.		1. Each load count is recorded by the operator on a field sheet that specifies the source and destination of the water.
Waste Water Treatment Plant (SNP-07)	Continuous monitoring of flow and volume of treated effluent	Endress+Hauser Electro-magnetic Promag flow meter Model - 1W80-UL1A1RA0B4AA		1. Flow meter installed according to manufacturers recommendations. 2. Flow meter located inside STP to maintain flow meter within manufacturers recommended operating temperature. 3. Flow rate and volume are continuously recorded on a datalogger. 4. Flowmeter independently field verified for installation and functionality by third party OEM Tech on a 1Y PM interval

SNP-18 SNP-19	Daily Stream Discharge (Flow)	1. USGS Type AA-ICE Current Meter Model 6240 2. SonTek Flow Tracker Handheld Acoustic Doppler Velocimeter 3. Hydrometric station at each location consisting of a KPSI pressure sensor connected to a datalogger and satellite transmitter		1. Manual stream discharge measurements are conducted according to industry best practices. 2. Daily stream flow is calculated based on the continuous hydrometric data and stream-discharge rating curves developed for each location
Coarse PK (3321-CV012-FIT-002)	Coarse processed kimberlite discharged from process plant	Siemens Milltronics MCS Belt Scale Model #: 7MH71522AB021AA Serial #: PBD/H7110139		4W Scale PM (includes calibration)
Fines PK (3500-PU031-FIT-001)	Fine processed kimberlite discharged from process plant	Endress+Hauser Promag 55S Electro-Magnetic Flow Meter Model #: 55S3H-K9JB1RC0BBBA Serial #: K524B319000		OEM calibration, periodic inspections, External PM for 3rd party independent verification
Reclaim Water (3611-PU038-FIT-001)	Continuous monitoring of flow and volume	Endress+Hauser Promag 50P Electro-Magnetic Flow Meter Model #: 50P3H-EL0A1RC0BBBA Serial #: K4084816000		OEM calibration, periodic inspections. External PM for independent 3rd party verification on a 3Y interval. Will be reduced to 1Y interval
Pit Dewatering	Continuous monitoring of flow and volume	5034 Pit dewatering - Booster pump - Prosonic Flow 91 flowmeter. Model # - 91WA1-AA2D20RCB5AA Hearne Pit - Promag P Electro-magnetic flowmeter. Model # - 5P5B1F-9V57/0		1. Flow meter installed according to manufacturers recommendations. 2. Flowmeter installed on pump discharge line within manufacturers recommended operating temperature. 3. Data downloaded frequently (~daily) to minimize data loss in the event of equipment failure. 4. Flow data recorded in PCS7 engineering station and daily reports are generated to distribute the information 5. Flowmeter is two-party verified internally at the time of installation 6. Flowmeters are independently inspected and verified by OEM Technician annually

19 TABULAR SUMMARIES OF ALL DATA AND INFORMATION GENERATED UNDER THE SURVEILLANCE NETWORK PROGRAM AND GRAPHICAL SUMMARIES OF PARAMETERS WITH EFFLUENT QUALITY (SCHEDULE 1, PART B, ITEM 10, 1.R)

19.1 Surveillance Network Program Monitoring

Nineteen (19) stations are associated with the SNP monitoring program. Depending on operational requirements, seasonal conditions, and mine life stage, SNP stations will come on-line or become inactive. The complete list of SNP stations associated with the GK Mine, their description and their operational status in 2022 is summarized in Table 19-1.

Table 19-1 Sampling Status of SNP Stations in 2022

SNP Station	Description	Status
SNP-01	Three locations along edge of mixing zone in Lake N11	Active
SNP-02	In-line monitoring for end-of-pipe Discharge from Kennady Lake to Lake N11	Active
SNP-05	Water Management Pond - North of West Mine Rock Pile	Active
SNP-06	Water Management Pond - Southwest of Dyke L	Active
SNP-07	Effluent from Sewage Treatment Plant	Active
SNP-08	Wastewater Collection sump - In-line from 5034 Open Pit	Active
SNP-09	Wastewater Collection sump - In-line from Hearne Open Pit	Active
SNP-10	Wastewater Collection sump - In-line from Tuzo Open Pit	Active
SNP-11	Seepage Survey - West Mine Rock Pile	Active
SNP-12	Seepage Survey - South Mine Rock Pile	Active
SNP-13	*Seepage Survey - Fine PKC Facility*	Inactive
SNP-14	Seepage Survey - Coarse PKC Facility	Active
SNP-15	*Dyke seepage - North of Dyke E*	Inactive
SNP-16	Dyke seepage - North of Dyke D	Active
SNP-17	Dyke seepage - East of Dyke A1	Active
SNP-18	Outlet of Lake N11	Active
SNP-19	Outlet of Area 8	Active
SNP-20	Intake point in Water Management Pond for Discharge to Lake N11	Active
SNP-21	Collection Pond 1 (CP1)	Active

Seventeen (17) SNP stations were actively monitored in 2022. SNP-13 is inactive as any potential seepage from the Fine PKC Facility is captured through monitoring of Dyke D and A1 (SNP-16 and 17). Despite the station being inactive, De Beers site personnel routinely checked the station as part of the Seepage Survey. SNP-15 is inactive, as Dyke E is not constructed.

SNP stations, their location and the monitoring trigger that initiated monitoring are outlined as follows:

- SNP-01: Located at the edge of the mixing zone in Lake N11. Monitoring triggered by dewatering of Kennady Lake from Area 3 to Lake N11 (No samples taken as discharge did not occur in 2022).

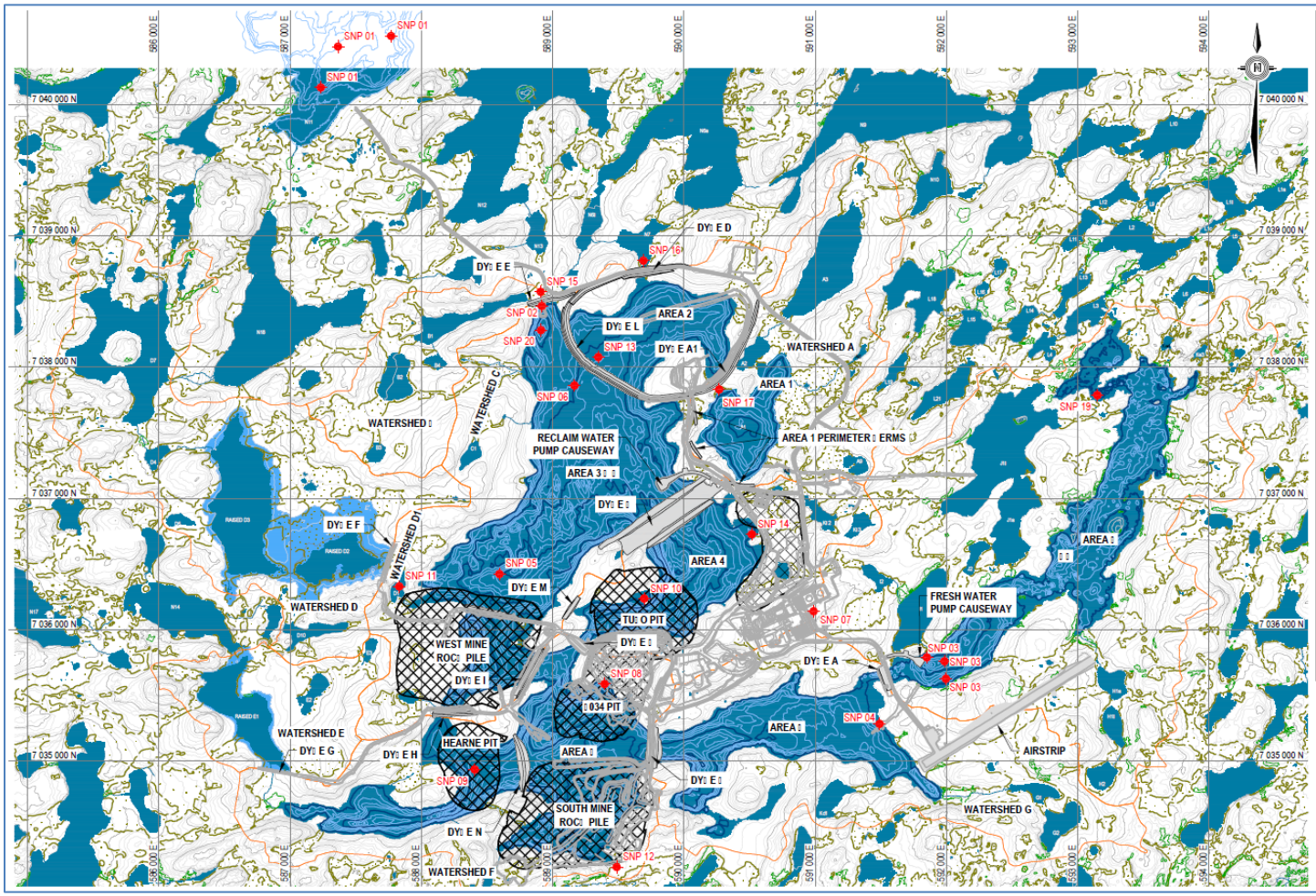
- SNP-02: In-line monitoring for end of pipe discharge from Kennady Lake to Lake N11. Monitoring was triggered by dewatering of Kennady Lake from Area 3 to Lake N11 (No samples taken as discharge did not occur in 2022).
- SNP-05: Within the Water Management Pond, north of West Mine Rock Pile. Monitoring was triggered by the West Mine Rock Pile (monthly throughout 2022).
- SNP-06: Within the Water Management Pond, southwest of Dyke L. Monitoring triggered by completion of Dyke L and commissioning of Fine Processed Kimberlite Facility (monthly throughout 2022).
- SNP-07: Effluent from the sewage treatment plant. Monitoring triggered by discharge of treated effluent from the Waste Water Treatment Plant (monthly throughout 2022).
- SNP-08: Discharge from wastewater collection sump in 5034 Open Pit. Monitoring triggered by requirement to begin managing surface water runoff and groundwater infiltration into the 5034 Open Pit. (daily/weekly/monthly throughout 2022)
- SNP-09: Discharge from wastewater collection sump in Hearne Open Pit. Monitoring triggered by requirement to begin managing surface water runoff and groundwater infiltration into the Hearne Open Pit. (daily/weekly/monthly throughout 2022)
- SNP-10: Discharge from wastewater collection sump in Tuzo Open Pit. Monitoring triggered by requirement to begin managing surface water runoff and groundwater infiltration into the Tuzo Open Pit. (daily/weekly/monthly starting May 28th, 2021)
- SNP-11: West Mine Rock Pile seepage locations. Monitoring active twice a year (spring and fall) when seepage is encountered, and following a major rainfall event.
- SNP-12: South Mine Rock Pile seepage locations. Monitoring active twice a year (spring and fall) when seepage is encountered, and following a major rainfall event.
- SNP-14: Coarse Processed Kimberlite Disposal Facility seepage locations. Monitoring active twice a year (spring and fall) when seepage is encountered, and following a major rainfall event.
- SNP-16: North of Dyke D, in any areas where seepage is observed. Monitoring active twice a year (spring and fall) when seepage is encountered, and following a major rainfall event.
- SNP-17: East of Dyke A1, in any areas where seepage is observed. Monitoring active twice a year (spring and fall) when seepage is encountered, and following a major rainfall event.
- SNP-18: Hydrometric station near the outlet of Lake N11. Monitoring as part of AEMP program. (levelogger and automated camera installed April 25th, 2022)
- SNP-19: Hydrometric station near the outlet of Kennady Lake at Area 8. Monitoring as part of AEMP program. (levelogger and automated camera installed April 22nd, 2022)
- SNP-20: Intake point at Area 3 in the Water Management Pond for discharge of wastewater to Lake N11. Samples collected at beginning and end of discharge period.
- SNP-21: West side of CP1, samples collected monthly during the active discharge of pit water.

Details pertaining to each active SNP station, including sampling dates, sampling parameters, and a summary of results, are provided in the following sections. The collection of meteorological data is also a requirement under Part C of the SNP and includes recording of the following parameters:

- Mean, minimum and maximum daily temperatures, in degrees Celsius (°C);
- Precipitation, measured and recorded in hourly and daily totals, in millimetres (mm);
- Wind speed, in kilometres per hour (km/h);
- Hourly wind direction, in degrees (°); and
- Evaporation (during the ice-free season), as calculated by hourly and daily averages, in millimetres per day (mm/d).

A summary of the meteorological data collected at the Gahcho Kué Mine in 2022 is presented within this section as well.

Figure 19-1 Active SNP Sample Stations Monitored at the Gahcho Kué Mine Project. 2022



SNP STATION	DESCRIPTION
1	EDGE OF MIXING ZONE IN LAKE N11
2	IN-LINE MONITORING FOR END-OF-PIPE DISCHARGE FROM KENNADY LAKE TO LAKE N11
3	EDGE OF MIXING ZONE IN AREA 8
4	IN-LINE MONITORING FOR END-OF-PIPE DISCHARGE FROM KENNADY LAKE TO AREA 8
5	WATER MANAGEMENT POND-NORTH OF WEST MINE ROCK PILE
6	WATER MANAGEMENT POND-SOUTHWEST OF DYKE L
7	EFFLUENT FROM SEWAGE TREATMENT PLANT
8	WASTEWATER COLLECTION SUMP – IN-LINE FROM 5034 OPEN PIT
9	WASTEWATER COLLECTION SUMP – IN-LINE FROM HEARNE OPEN PIT
10	WASTEWATER COLLECTION SUMP – IN-LINE FROM TUZO OPEN PIT
11	SEEPAGE SURVEY – WEST MINE ROCK PILE
12	SEEPAGE SURVEY – SOUTH MINE ROCK PILE
13	SEEPAGE SURVEY – FINE PKC FACILITY
14	SEEPAGE SURVEY – COARSE PKC FACILITY
15	DYKE SEEPAGE – NORTH OF DYKE E
16	DYKE SEEPAGE – NORTH OF DYKE D
17	DYKE SEEPAGE – EAST OF DYKE A1
18	OUTLET OF LAKE N11
19	OUTLET OF AREA 8
20	INTAKE POINT IN WATER MANAGEMENT POND FOR DISCHARGE TO LAKE N11 AND AREA 8

19.1.1 SNP-01

Water quality monitoring at station SNP-01, located on Lake N11, was not undertaken as no discharge from Kennady Lake to Lake N11 occurred in 2022. Due to low snowpack and lower than normal precipitation, no discharge from the Water Management Pond (Area 3) was required.

Water samples were not collected at the three separate locations (SNP-01A, SNP-01B, and SNP-01C) located at the edge of a defined mixing zone in Lake N11, approximately 200 m downstream from the Lake N11 diffuser. Annual sediment samples were taken at each separate sampling location. A summary of the sampling requirements applicable at SNP-01 in 202, including sample dates, are presented in Table 19-2. Sediment sample results are presented in Appendix G-01-A.

Table 19-2 Summary of Sampling Requirements and Sample Dates at SNP-01 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-01A/B/C	Drawdown of Kennady Lake	Weekly (during Discharge)	Water elevation (in Lake N11), pH, TSS, turbidity	N/A
		Twice (at the beginning of Discharge, and on the final day of Discharge)	Physical parameters, major ions, nutrients, total metals	N/A
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	N/A
	Discharge from Water Management Pond	Weekly (during Discharge)	Water elevation (in Lake N11), Physical parameters, major ions, nutrients, total metals, extractable petroleum hydrocarbons	N/A
		Twice (at the beginning of Discharge, and on the final day of Discharge)	N/A	N/A
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	September 29

19.1.2 SNP-02

Monitoring at station SNP-02 was active during the period of discharge from the Water Management Pond to Lake N11. However, due to low snowpack and lower than normal precipitation, no discharge from the Water Management Pond (Area3) was required; therefore, no water quality samples were taken in 2022 at SNP-02.

19.1.3 SNP-05

Monitoring at station SNP-05, located within the Water Management Pond (WMP), north of West Mine Rock Pile, was active throughout 2022. The objective of SNP-05 is to monitor the influence of the West Mine Rock Pile on water quality in the Water Management Pond.

In accordance with the requirements of the SNP, water quality samples are collected monthly at this station and analysed for the parameters listed in Table 19-3. A summary of the water quality results at this station are presented in Appendix G05_A and G05_B.

Additionally, sediment samples are collected at SNP-05 annually in the fall and analysed for the parameters listed in Table 19-3. A summary of the sediment quality results in 2022 at this station are presented in Appendix G05_C.

The water surface elevation in the Water Management Pond was measured regularly throughout 2022. This data is summarized in Appendix G05_D.

Table 19-3 Summary of Sampling Requirements and Sample Dates at SNP-05 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-05	Operations	Monthly (upon establishment of the Water Management Pond)	Physiochemical profile measurements at 1 m depth intervals; number of water samples to be determined by presence/absence of stratification) Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, Water Elevation	Monthly throughout 2022
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	July 13

19.1.4 SNP-06

Monitoring at station SNP-06, located in Area 3 of the Water Management Pond (WMP), just southwest of Dyke L, was active throughout 2022. The objective of SNP-06 is to monitor the influence of the Fine PKC Facility on water quality in the Water Management Pond. Dyke L is a filter dyke, constructed to separate the Fine PKC Facility from Area 3. The Fine PKC may on occasion require decanting of low TSS water across Dyke L from Area 2 to Area 3 in order to maintain the freeboard requirements of the Water License (Part F, Item 20 – MV2005L2-0015). It is expected that this may be infrequently required during the winter months when dyke permeability may be reduced due to ice lensing within the Dyke L filter material. The objective of this exercise would be to only remove supernatant water and not remove FPK from Area 2 and place it within Area 3. A mass balance evaluation will be carried out to consider the influence of the TSS, which is the main parameter of concern, and general water chemistry of the Area 2 water on the WMP water quality before decanting of water in Area 2.

In accordance with the requirements of the SNP, water quality samples are collected monthly at this station and analysed for the parameters listed in Table 19-4. A summary of the water quality results at this station are presented in Appendix G06_A and Appendix G06_B.

Additionally, sediment samples are collected at SNP-06 annually in the fall and analysed for the parameters listed in Table 19-15. A summary of the sediment quality results in 2022 at this station are presented in Appendix G06_C.

The water surface elevation in the Water Management Pond was measured regularly throughout 2022. This data is summarized in Appendix G06_D.

Table 19-4 Summary of Sampling Requirements and Sample Dates at SNP-06 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-06	Operations	Monthly (upon establishment of the Water Management Pond)	Physiochemical profile measurements at 1 m depth intervals; number of water samples to be determined by presence/absence of stratification) Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, Water Elevation	Monthly throughout 2022
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	July 13

19.1.5 SNP-07

Station SNP-07 is located on the effluent discharge line at the Waste Water Treatment Plant (WWTP). This station is intended to monitor the quality of treated sewage effluent prior to overland discharge towards Area 7 of the Water Management Pond. Station SNP-07 was active throughout 2022.

Treated effluent samples are collected monthly from a dedicated sample spigot within the WWTP, and analysed for the parameters listed in Table 19-5. Flow, volume, and physical parameters (i.e., temperature dissolved oxygen, pH, specific conductivity, total suspended solids and turbidity) are measured continuously by inline meters, and this information is recorded on a datalogger.

SNP-07 is one of two SNP stations active in 2022 that have EQCs associated with them, the other being SNP-02. The only EQC at SNP-07 is for fecal coliforms, and the maximum grab concentration for this parameter is 20 MPN/100mL, as specified in Part G, item 27 of the Water License. There is no specified maximum average concentration for fecal coliforms at this station.

A summary of the sampling requirements applicable at SNP-07 is provided in Table 19-5. Sample results are provided in Appendix G07_A (Physical Parameters), Appendix G07_B (Effluent Quality) and Appendix G07_C (Effluent Volume).

In 2022, all samples taken at the SNP-07 did not exceeded the faecal coliform EQC of 20 CFU/100mL with the maximum annual fecal coliform sample resulting in 4.0 CFU/100mL on June 2.

In the Summary of Treated Effluent Quality Results table (Appendix G07_B), Orthophosphate dissolved (as P) (mg/L) is higher than Phosphorus – Total (mg/L) on March 2, July 4, and August 2. These results indicate possible erroneous laboratory analysis as Phosphorus – Total (mg/L) should normally be greater than Orthophosphate dissolved (as P) (mg/L).

Table 19-5 Summary of Sampling Requirements and Sample Dates at SNP-07 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-07	Operations	Continuously (by in-line monitoring)	Flow, volume, physical parameters	January 1 to December 31
		Monthly	Physical parameters, nutrients, BOD, total and faecal coliforms, *E. coli*, extractable petroleum hydrocarbons, BTEX, oil and grease	January 5, February 3, March 2, April 6, May 5, June 2, July 4, August 2, September 12, October 3, November 1, December 8

19.1.6 SNP-08

Station SNP-08 is associated with the discharge of water from collection sumps located within the 5034 Open Pit. The purpose of this station is to monitor the quantity and quality of groundwater and surface water runoff collected within the open pit. In 2020, water from the 5034 Open Pit was pumped into the Water Management Pond until March 29, 2020, where it was then re-routed to go to CP1 where it is presently pumped.

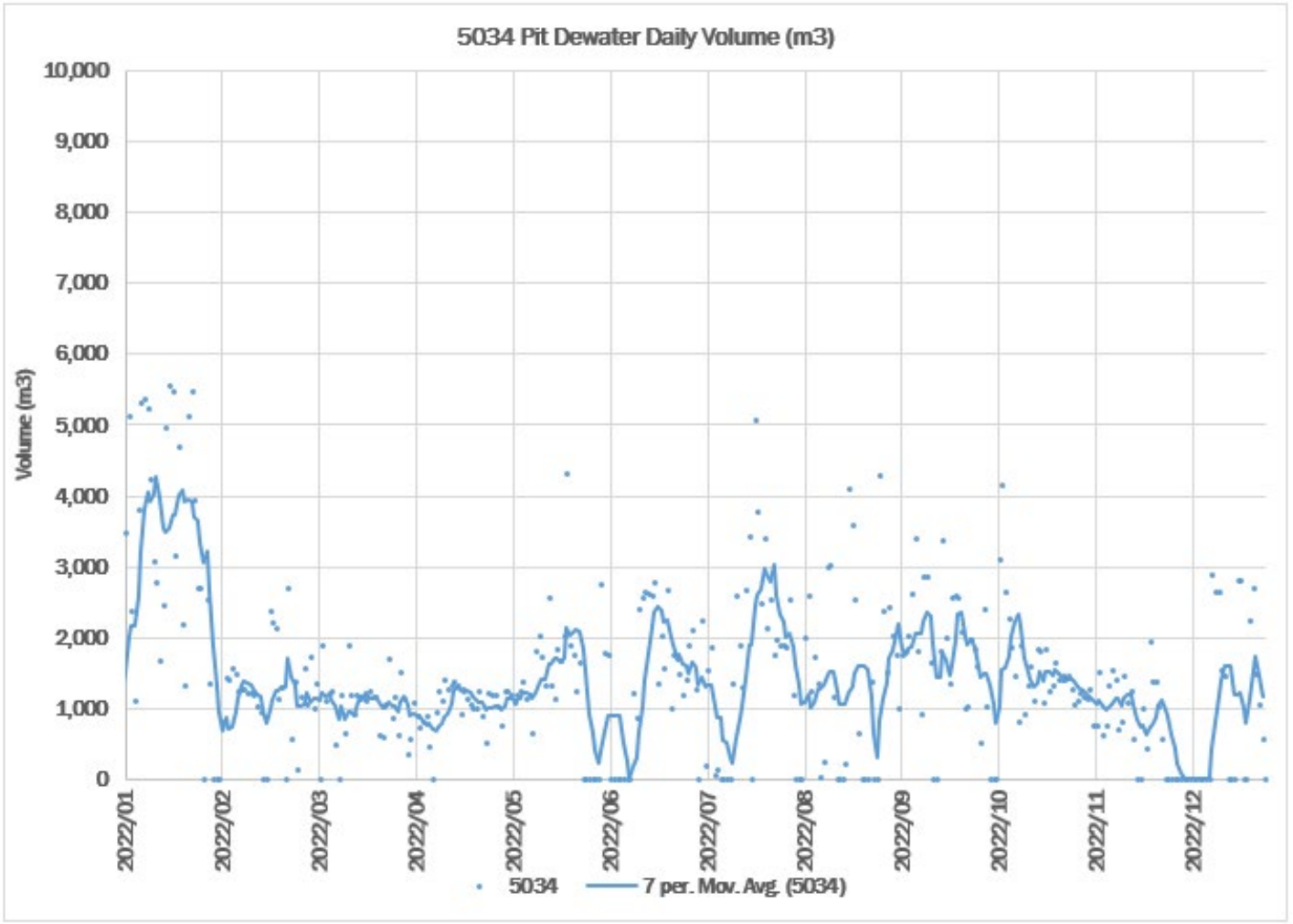
When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger. Mine Operation operators perform checks on the pumps during every shift in order to audit the daily volume and flow. Daily, weekly, and monthly water quality samples are collected at the outfall of the pipeline used to direct water from the active pit sump to the Water Management Pond.

A summary of the sampling requirements applicable at SNP-08 in 2022, including sample dates, is provided in Table 19-6. Water quality sampling results for SNP-08 are provided in Appendix G08_B in addition to physical parameters in Appendix G08_A. A summary of flow and volume data for SNP-08 are provided in Appendix G08_C. A graphical summary of the continuous flow and volume measurements collected at SNP-08 in 2022 is provided in Figure 19-2, and also discussed in detail in Section 8 of this report.

Table 19-6 Summary of Sampling Requirements and Sample Dates at SNP-08 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-08	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously throughout 2022, when discharge is active
		Daily (when sump is active)	Physical parameters	Daily throughout 2022, when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly throughout 2022, when discharge is active
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	Monthly in 2022 when sump is active

Figure 19-2 Summary of Daily Volumes at SNP-08, 2022



19.1.7 SNP-09

Station SNP-09 is associated with the discharge of water from collection sumps located within the Hearne Open Pit. The purpose of this station is to monitor the quantity and quality of groundwater and surface water runoff collected within the open pit that is ultimately discharged into the Water Management Pond.

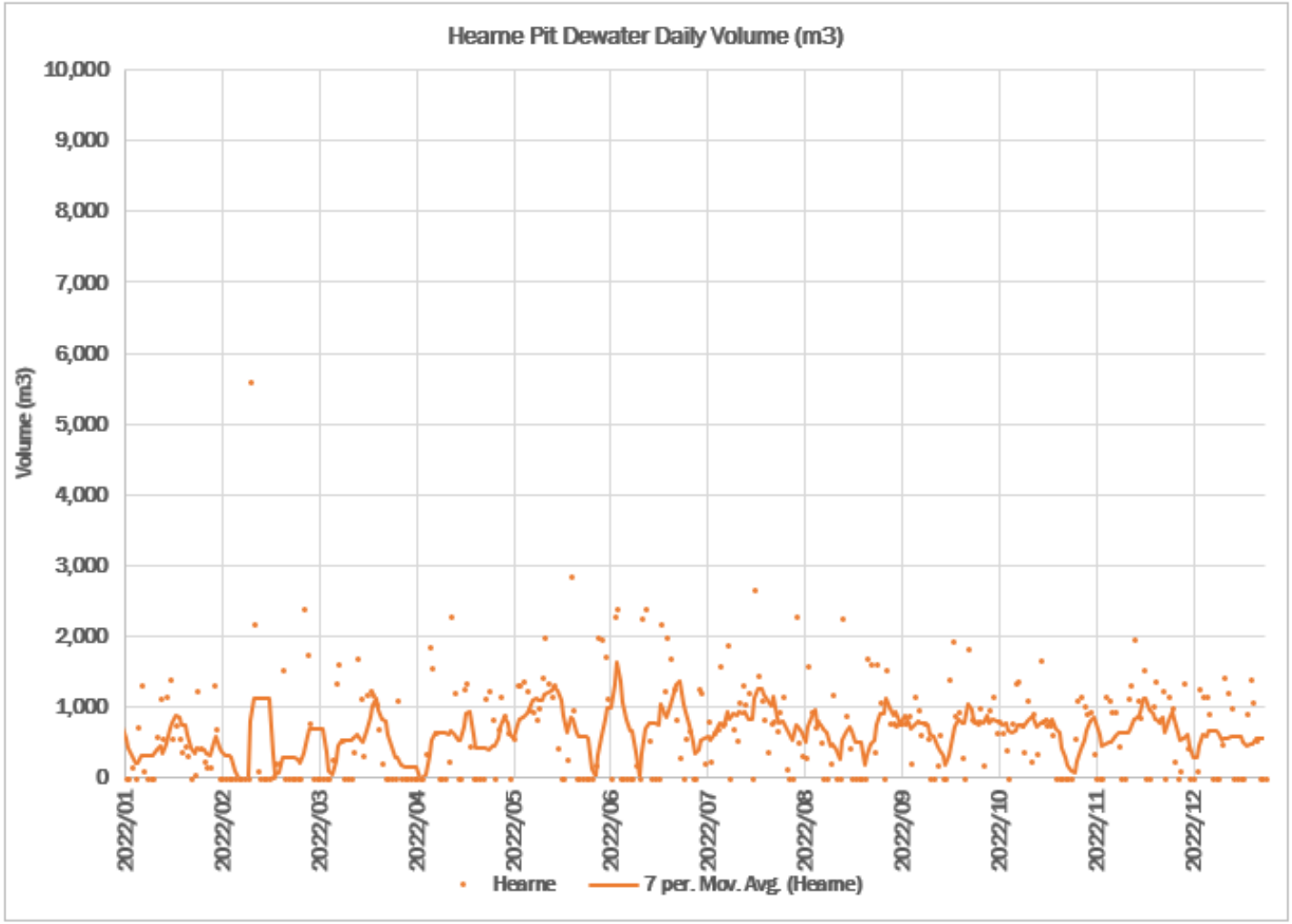
When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger Mine Operations perform checks on the pumps during every shift in order to audit the daily volume and flow. Daily, weekly and monthly water quality samples are collected at the outfall of the pipeline used to direct water from the active pit sump to the Water Management Pond.

A summary of the sampling requirements applicable at SNP-09 in 2022, including sample dates, is provided in Table 19-7. Water quality sampling results for SNP-09 are provided in Appendix G09_B in addition to physical parameters in Appendix G09_A. A graphical summary of the continuous flow and volume measurements collected at SNP-09 in 2022 is provided in Figure 19-3.

Table 19-7 Summary of Sampling Requirements and Sample Dates at SNP-09 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-09	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2022 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2022 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2022 when discharge is active
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	Monthly in 2022 when sump is active

Figure 19-3 Summary of Daily Volume at SNP-09, 2022



19.1.8 SNP-10

Station SNP-10 is associated with the discharge of water from collection sumps located within the Tuzo Open Pit. The purpose of this station is to monitor the quantity and quality of groundwater and surface water runoff collected within the open pit that is ultimately discharged into the Water Management Pond.

Dewatering at Tuzo Open Pit commenced on May 24th, 2021. When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger Mine Operations perform checks on the pumps during every shift in order to audit the daily volume and flow. Daily, weekly and monthly water quality samples are collected at the outfall of the pipeline used to direct water from the active pit sump to the Water Management Pond. In 2021, water from the Tuzo Open Pit was pumped into CP1 until June 23rd, 2021, where it was then re-routed to go to the Water Management Pond.

A summary of the sampling requirements applicable at SNP-10 in 2022, including sample dates, is provided in Table 19-8. In 2022, no water was discharged from the Tuzo Open Pit; therefore, water quality sampling, physical parameters, and daily effluent discharge results for SNP-10 are not available.

Table 19-8 Summary of Sampling Requirements and Sample Dates at SNP-10 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-10	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2022 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2022 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2022 when discharge is active
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	Monthly in 2022 when sump is active

19.1.9 SNP-11

The objective of SNP station SNP-11 is to monitor the quantity and quality of any areas of seepage originating from the West Mine Rock Pile. Per the SNP, samples are to be collected bi-annually in the spring (during freshet) and in the fall from any areas where seepage is encountered. In 2022, no seepage was observed during the spring and fall monitoring period in the seepage areas; therefore, no seepage samples were taken. Seepage monitoring for the West Mine Rock Pile is also discussed in the Geochemical Characterization and Management Plan section of this report. (Section 11). There was insufficient water flow present during either of the sampling events at SNP-11 to permit the measurements of flow rate or discharge volume of the seepage.

A summary of the sampling requirements applicable at SNP-11, including monitoring dates, is provided in Table 19-9.

If seepage samples were retrieved, results would be compared to the granite mine rock (non-PAG) values derived from Table 8.I-4 “Kennady Lake Model Geochemical Inputs” in Appendix 8.I of the 2010 Environmental Impact” (De Beers 2012).

Table 19-9 Summary of Sampling Requirements and Sample Dates at SNP-11 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP 11	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	N/A
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.10 SNP-12

The objective of SNP station SNP-12 is to monitor the quantity and quality of any areas of seepage originating from the South Mine Rock Pile. Per the SNP. Samples are to be collected bi-annually in the spring (during freshet) and in the fall from any areas where seepage is encountered. In 2022, no seepage was observed during the spring and fall monitoring period in the seepage areas; therefore, no seepage samples were taken. Seepage monitoring for the South Mine Rock Pile is also discussed in the Geochemical Characterization and Management Plan section of this report (Section 11). There was insufficient water flow present during either of the sampling events at SNP-12 to permit the measurements of flow rate or discharge volume of the seepage.

A summary of the sampling requirements applicable at SNP-12, including monitoring dates, is provided in Table 19-10.

If seepage samples were retrieved, sample results would be compared to the granite mine rock (non-PAG) values derived from Table 8.I-4 “Kennady Lake Model Geochemical Inputs” in Appendix 8.I of the 2010 Environmental Impact” (De Beers 2012).

Table 19-10 Summary of Sampling Requirements and Sample Dates at SNP-12 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP 12	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	N/A
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.11 SNP-14

The objective of SNP station SNP-14 is to monitor the quantity and quality of any areas of seepage originating from the Coarse Processed Kimberlite Facility. Per the SNP, samples are to be collected bi-annually in the spring (during freshet) and in the fall from any areas where seepage is encountered. In 2022, there was one area of seepage observed during the spring sampling event and one during the fall sampling event. Seepage monitoring for the Coarse Processed Kimberlite Facility is also discussed in the Geochemical Characterization and Management Plan section of this report. (Section 11). There was insufficient water flow present during the fall sampling event at SNP-14 to permit the measurements of flow rate or discharge volume of the seepage.

No major storm events occurred in 2021 that resulted in additional seepage samples being collected at SNP-14.

A summary of the sampling requirements applicable at SNP-14, including monitoring dates, is provided in Appendix G14A_A. Information summarizing the results of the seepage monitoring at this station is presented in Table 19-12.

Sample results are compared to the steady state unsaturated coarse processed kimberlite values derived from Table 8.I-4 “Kennady Lake Model Geochemical Inputs” in Appendix 8.I of the 2010 Environmental Impact Statement for the Gahcho Kué Project. There are no EQCs specified for SNP-14.

Table 19-11 Summary of Sampling Requirements and Sample Dates at SNP-14 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP 14	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	June 2 and September 30
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.12 SNP-16

The objective of SNP station SNP-16 is to monitor the quantity and quality of any areas of seepage from the north side of Dyke D. Per the SNP, samples are to be collected bi-annually in the spring (during freshet) and in the fall from any areas where seepage is encountered.

Construction of Dyke D began in early 2018, and at the end of 2018 only the cofferdam had been completed. This cofferdam is not intended to be impermeable. In 2022, there was one area of seepage observed during the fall sampling event.

No major storm events occurred in 2022 that resulted in additional seepage samples being collected at SNP-16. A summary of the sampling requirements applicable at SNP-16, including monitoring dates, is provided in Table 19-13. Information summarizing the results of the seepage monitoring at this station is presented in Appendix G16_A.

Results were compared to the steady state unsaturated coarse processed kimberlite values derived from Table 8.I-4 “Kennady Lake Model Geochemical Inputs” in Appendix 8.I of the 2010 Environmental Impact Statement for the Gahcho Kué Project. There are no EQCs specified for SNP-16.

Table 19-12 Summary of Sampling Requirements and Sample Dates at SNP 16 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP 16	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	September 27
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.13 SNP-17

The objective of SNP station SNP-17 is to monitor the quantity and quality of any areas of seepage originating from the area east of Dyke A1. Per the SNP, samples are to be collected bi-annually in the spring (during freshet) and in the fall from any areas where seepage is encountered. In 2022, no areas of seepage were observed during the spring sampling and fall sampling events. Seepage monitoring at SNP-17 is also discussed in the Geochemical Characterization and Management Plan section of this report. (Section 11). There was insufficient water flow present during the fall sampling event at SNP-17 to permit the measurements of flow rate or discharge volume of the seepage.

No major storm events occurred in 2022 that resulted in additional seepage samples being collected at SNP-17. A summary of the sampling requirements applicable at SNP-17, including monitoring dates, is provided in Table 19-13.

Table 19-13 Summary of Sampling Requirements and Sample Dates at SNP 17 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP 17	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	N/A
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.14 SNP-18

In the fall of 2014, De Beers established hydrometric stations near the outlets of Lake N11 (SNP-18) and Kennady Lake at Area 8 (SNP-19). These SNP stations include benchmarks and instrumentation for the continuous measurement of water surface elevation (WSE). Discharge and corresponding stage measurements have been collected by De Beers and Golder Associates Ltd. (Golder) from the outlet of Area 8 since 2013 and from the outlet of Lake N11 since 2010. 2017 was the first year that downstream flow mitigation pumping from Lake N11 between June and August occurred. The open-water rating curve is shown in Figure 19-5.

Stage refers to the height of water above a control point or “zero flow” elevation of a waterbody, below which there is no flow. Using this information, a set of equations has been developed to derive discharge rates for the outlets of Area 8 and Lake N11 based on stage measurements alone. These equations used in conjunction with the hydrometric station WSE data and field checks of actual discharge measurements were used in 2016 to compute the daily discharge flow rate and volumes during throughout 2016.

Data collected from SNP-18 determined that the discharge rate at the outlet of Lake N11 did not exceed the two-year (median) maximum daily flow rate of 500,000 m^3/day or 5.79 m^3/s, based on a stage elevations recorded (Table 19-14) and that lake elevation remained below the maximum allowable elevation of 416.940 masl.

Table 19-14 Summary of Hydrometric Monitoring at SNP-18 in Lake N11 Outlet, 2022

Date	Activities	Lake N11 WSE (masl)	Discharge (m3/s)
25 April 2022	Levelogger installed by De Beers crew	NM	NM
1 June 2022	WSE measurement and discharge measurement by WSP Golder Hydrology crew	416.010	0.749
5 July 2022	WSE measurement and Levelogger download by De Beers crew	415.940	NM
6 July 2022	Discharge measurement by De Beers crew	NM	0.340
24 September 2022	WSE measurement, discharge measurement, and Levelogger retrieval by De Beers crew	NM(a)	0.078

Notes:

a) Survey screened out because the variance between the two setups was not within the tolerable error of 0.008 m.

masl = metres above sea level; NM = not measured; WSE = water surface elevation.

A summary of the sampling requirements applicable at SNP-18 including monitoring dates, is provided in Table 19-15. Information summarizing the data collection and calculation of daily flow rate and discharge volume from the outlet of Lake N11 is provided in Figure 19-4, Figure 19-5, Table 19-16 and Table 19-17.

Table 19-15 Summary of Sampling Requirements and Sample Dates at SNP 18 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-18	Operations (Discharge from Water Management Pond	Daily (during Discharge)	Flow (m^3/s) and Volume (m^3) at Lake N11 outlet	June 2 to August 14

Discharge and WSE data collected in 2022 are presented in Figure 19-7. Discharge between 1 and 9 January was estimated by applying a daily recession constant beginning in the fall of 2021. On 25 April 2022, the outlet was observed by the De Beers crew to have no discharge.

Water was pumped from Lake N11 during 2022. Pumping from Lake N11 to Area 8 in 2022 as part of the downstream flow mitigation to the KLM watershed was initiated on 2 June and ended on 14 August. During that period, there were 74 days of active pumping. A total of 1,624,058 m3 was pumped, with an average daily flow volume of 21,947 m3 and an average daily flow rate of 0.25 m3/s. As a result of no operational discharge to Lake N11, and the downstream flow mitigation pumping from Lake N11, there was a net loss of 1,624,058 m3 to Lake N11 in 2022.

Figure 19-4 Lake N11 Water Surface Elevation and Outlet Discharge, 2022

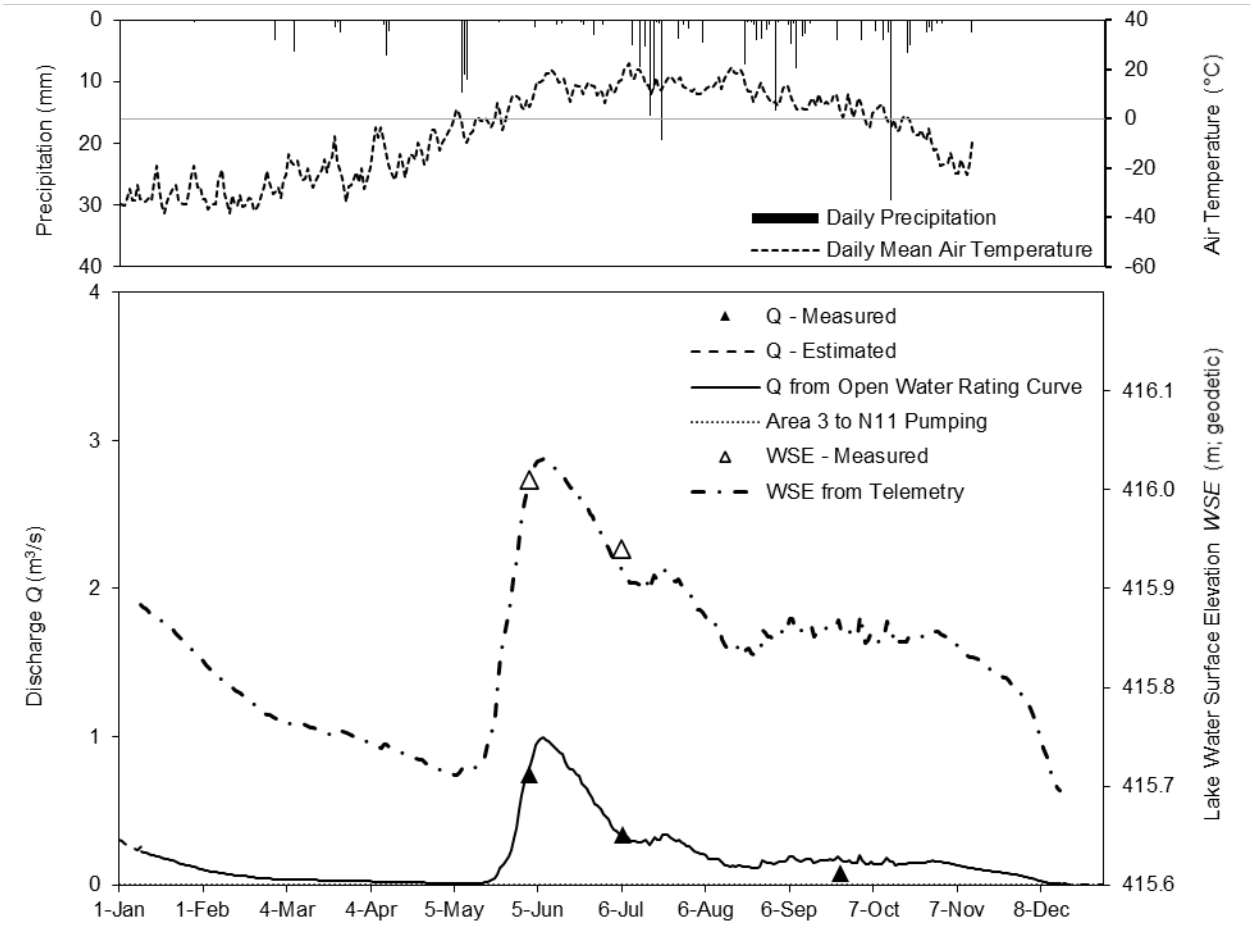
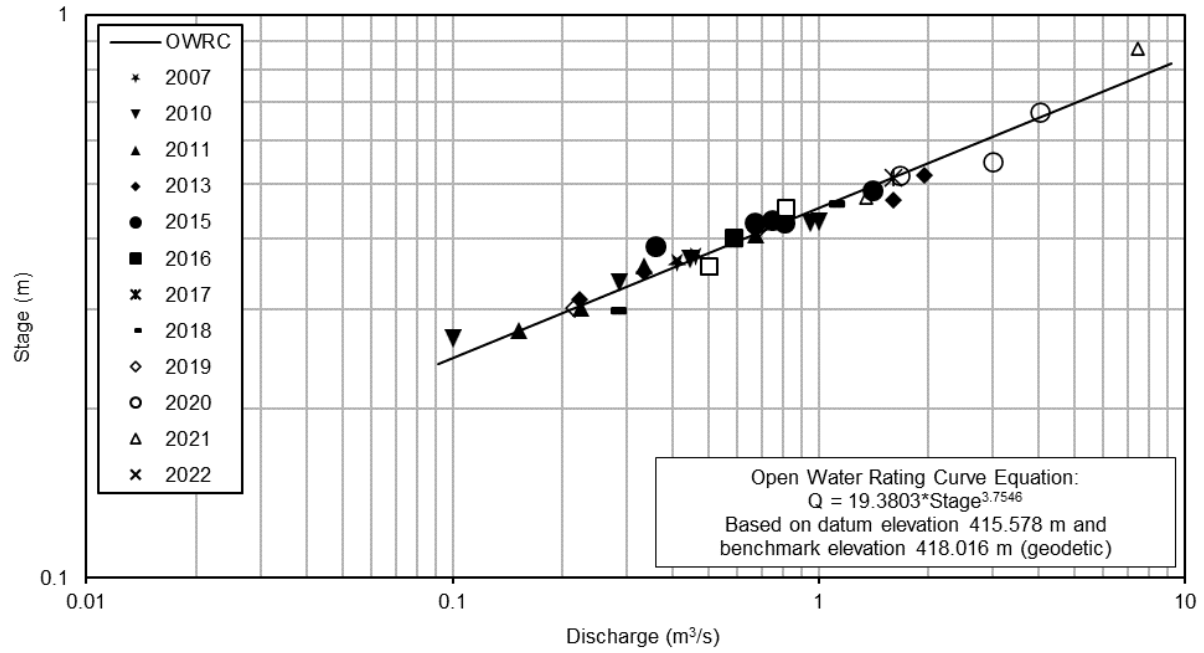


Figure 19-5 Open Water Rating Curve for SNP-18 at Outlet to Lake N11, 2022



Notes: Open symbols indicate ice-affected discharge.

Q = discharge; OWRC = open-water rating curve.

Table 19-16 Daily Mean Water Surface Elevation for SNP-18 at Lake N11 Hydrometric Station, 2022

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	ND	415.826	415.767	415.747	415.715	416.000	415.943	415.890	415.851	415.852	415.854	415.792
2	ND	415.823	415.765	415.746	415.715	416.008	415.934	415.883	415.857	415.873	415.853	415.788
3	ND	415.820	415.764	415.745	415.714	416.016	415.927	415.879	415.856	415.858	415.851	415.783
4	ND	415.818	415.763	415.745	415.714	416.025	415.924	415.878	415.854	415.845	415.849	415.779
5	ND	415.815	415.763	415.743	415.711	416.029	415.921	415.876	415.860	415.847	415.848	415.772
6	ND	415.812	415.764	415.741	415.711	416.031	415.920	415.872	415.870	415.854	415.845	415.765
7	ND	415.809	415.764	415.740	415.714	416.031	415.916	415.864	415.869	415.846	415.843	415.757
8	ND	415.808	415.763	415.739	415.717	416.029	415.913	415.864	415.861	415.847	415.840	415.747
9	415.884	415.806	415.763	415.743	415.720	416.028	415.906	415.863	415.859	415.846	415.838	415.739
10	415.882	415.804	415.763	415.742	415.722	416.026	415.906	415.864	415.856	415.846	415.835	415.729
11	415.879	415.802	415.761	415.739	415.720	416.022	415.906	415.861	415.861	415.854	415.832	415.718
12	415.877	415.800	415.761	415.738	415.719	416.020	415.905	415.849	415.862	415.866	415.830	415.710
13	415.874	415.797	415.760	415.737	415.719	416.019	415.903	415.843	415.864	415.855	415.830	415.704
14	415.873	415.795	415.759	415.736	415.720	416.017	415.905	415.840	415.862	415.856	415.829	415.698
15	415.871	415.794	415.758	415.735	415.722	416.010	415.909	415.839	415.851	415.843	415.828	415.696
16	415.869	415.791	415.757	415.734	415.725	416.005	415.898	415.841	415.856	415.847	415.826	ND
17	415.867	415.790	415.755	415.733	415.737	416.003	415.906	415.839	415.860	415.846	415.823	ND
18	415.864	415.787	415.754	415.732	415.749	416.003	415.914	415.843	415.860	415.846	415.820	ND
19	415.863	415.784	415.753	415.731	415.758	415.997	415.909	415.841	415.860	415.846	415.819	ND
20	415.860	415.782	415.752	415.729	415.773	415.996	415.909	415.835	415.860	415.851	415.817	ND
21	415.859	415.780	415.752	415.728	415.804	415.988	415.917	415.839	415.861	415.852	415.815	ND
22	415.855	415.777	415.754	415.727	415.832	415.985	415.919	415.839	415.859	415.853	415.814	ND
23	415.852	415.775	415.755	415.727	415.847	415.983	415.918	415.834	415.862	415.852	415.813	ND
24	415.848	415.773	415.757	415.724	415.859	415.976	415.913	415.833	415.868	415.851	415.810	ND
25	415.846	415.772	415.755	415.722	415.872	415.973	415.908	415.833	415.857	415.852	415.809	ND
26	415.843	415.772	415.754	415.721	415.888	415.964	415.906	415.836	415.857	415.852	415.807	ND
27	415.841	415.770	415.753	415.719	415.910	415.963	415.909	415.858	415.856	415.854	415.804	ND
28	415.838	415.769	415.751	415.719	415.930	415.958	415.904	415.855	415.859	415.857	415.803	ND
29	415.836	-	415.750	415.718	415.955	415.951	415.901	415.851	415.853	415.857	415.799	ND
30	415.833	-	415.750	415.716	415.976	415.946	415.896	415.851	415.851	415.857	415.796	ND
31	415.829	-	415.748	-	415.989	-	415.895	415.848	-	415.856	-	ND

Notes: Elevations in table are geodetic metres above sea level (masl).

- = day not present in month; ND = no data.

Table 19-17 Daily Mean Discharge for SNP-18 at Lake N11 Hydrometric Station, 2022

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.248	0.082	0.030	0.010	0.003	7.317	1.025	0.505	0.199	0.079	0.026	0.009
2	0.239	0.079	0.029	0.010	0.003	6.364	0.991	0.463	0.217	0.077	0.025	0.009
3	0.231	0.077	0.028	0.009	0.003	5.847	0.933	0.429	0.218	0.074	0.024	0.008
4	0.223	0.074	0.027	0.009	0.003	5.510	0.923	0.443	0.208	0.071	0.024	0.008
5	0.215	0.071	0.026	0.009	0.003	5.123	0.893	0.419	0.200	0.069	0.023	0.008
6	0.208	0.069	0.025	0.008	0.003	4.701	0.895	0.401	0.193	0.066	0.022	0.008
7	0.200	0.066	0.024	0.008	0.003	4.292	0.878	0.355	0.187	0.064	0.021	0.007
8	0.193	0.064	0.024	0.008	0.003	4.005	0.831	0.389	0.180	0.062	0.020	0.007
9	0.186	0.062	0.023	0.008	0.003	3.705	0.720	0.400	0.174	0.060	0.020	0.007
10	0.180	0.060	0.022	0.007	0.003	3.487	0.752	0.422	0.168	0.058	0.019	0.007
11	0.174	0.058	0.021	0.007	0.002	3.301	0.787	0.398	0.162	0.056	0.018	0.006
12	0.168	0.056	0.020	0.007	0.002	3.109	0.766	0.320	0.156	0.054	0.018	0.006
13	0.162	0.054	0.020	0.007	0.002	2.940	0.735	0.299	0.151	0.052	0.017	0.006
14	0.156	0.052	0.019	0.006	0.002	2.839	0.800	0.287	0.145	0.050	0.017	0.006
15	0.151	0.050	0.018	0.006	0.072	2.765	0.729	0.292	0.140	0.048	0.016	0.005
16	0.145	0.048	0.018	0.006	0.077	2.545	0.604	0.302	0.135	0.047	0.015	0.005
17	0.140	0.046	0.017	0.006	0.060	2.510	0.645	0.298	0.131	0.045	0.015	0.005
18	0.135	0.045	0.017	0.005	0.098	2.493	0.726	0.315	0.126	0.043	0.014	0.005
19	0.131	0.043	0.016	0.005	0.142	2.346	0.645	0.288	0.122	0.042	0.014	0.005
20	0.126	0.042	0.015	0.005	0.222	2.253	0.692	0.259	0.117	0.040	0.013	0.005
21	0.122	0.040	0.015	0.005	0.438	2.239	0.765	0.269	0.113	0.039	0.013	0.004
22	0.117	0.039	0.014	0.005	0.752	2.086	0.782	0.268	0.109	0.038	0.012	0.004
23	0.113	0.038	0.014	0.005	1.026	1.934	0.754	0.241	0.106	0.036	0.012	0.004
24	0.109	0.036	0.013	0.004	1.336	1.819	0.690	0.227	0.102	0.035	0.012	0.004
25	0.105	0.035	0.013	0.004	1.713	1.715	0.670	0.225	0.098	0.034	0.011	0.004
26	0.102	0.034	0.012	0.004	2.252	1.543	0.668	0.235	0.095	0.033	0.011	0.004
27	0.098	0.033	0.012	0.004	3.124	1.416	0.675	0.231	0.092	0.031	0.010	0.004
28	0.095	0.031	0.012	0.004	4.152	1.326	0.606	0.208	0.088	0.030	0.010	0.003
29	0.091	-	0.011	0.004	5.725	1.165	0.586	0.197	0.085	0.029	0.010	0.003
30	0.088	-	0.011	0.004	7.371	1.099	0.548	0.191	0.082	0.028	0.009	0.003
31	0.085	-	0.010	-	8.324	-	0.542	0.188	-	0.027	-	0.003

Note: Note: Discharges in the table are in cubic metres per second (m^3/s). Values before 18 April and after 24 September are estimated.

- = day not present in month; ND = no data.

19.1.15 SNP-19

In the fall of 2014, De Beers established hydrometric stations near the outlets of Lake N11 (SNP-18) and Kennady Lake at Area 8 (SNP-19). These SNP stations include benchmarks and instrumentation for the continuous measurement of water surface elevation (WSE). Discharge and corresponding stage measurements have been collected by De Beers and Golder Associates Ltd. (Golder) from the outlet of Area 8 since 2013 and from the outlet of Lake N11 since 2010. Area 8 is a core lake, and has been monitored as part of the AEMP since 2015. The open-water curve is shown in

Figure 19-7.

Stage refers to the height of water above a control point or "zero flow" elevation of a waterbody, below which there is no flow. Using this information, a set of equations has been developed to derive discharge rates for the outlets of Area 8 and Lake N11 based on stage measurements alone. These equations used in conjunction with the hydrometric station WSE data and field checks of actual discharge measurements were used in 2016 to compute the daily discharge flow rate and volumes during throughout 2016.

Field activities at the Area 8 outlet in 2022 are summarized in Table 19-18. In past years, water depth telemetry from SNP instrumentation, and water level surveys against SNP benchmarks by Golder Hydrology crews, were used to prepare the series of daily mean WSE presented. In 2022, the Area 8 Levelogger was deployed on April 22nd and retrieved on September 21th.

Table 19-18 Summary of Hydrometric Monitoring at SNP-19 in Area 8 Outlet, 2022

Table 4.3-19 Summary of Hydrometric Monitoring, Area 8, 2022**Date**	**Activities**	**Area 8 WSE[a] (masl)**	**Discharge (m^3/s)**
22 April 2022	Levelogger installed, Barologger installed, and automated camera installed by De Beers crew	NM	NM
28 May 2022	WSE measurement, discharge measurement, camera download, and Barologger download by WSP Golder Hydrology crew	420.808	NM[b]
30 May 2022	WSE measurement and discharge measurement by WSP Golder Hydrology crew	420.792	0.233
1 July 2022	WSE measurement, discharge measurement, camera download, Levelogger download, and Barologger download by De Beers crew	420.803	0.36
7 July 2022	WSE measurement and discharge measurement by De Beers crew	420.779	0.264
11 July 2022	WSE measurement and discharge measurement by De Beers crew	420.77	0.211
30 July 2022	Staff gauge reading and discharge measurement by WSP Golder Fisheries crew	420.728	NM[b]
21 September 2022	WSE measurement, discharge measurement, camera download, Levelogger retrieval, and Barologger retrieval by De Beers crew	420.608	NM[b]

Notes:

a) Water surface elevation measured against Area 8 BM1 or BM2.

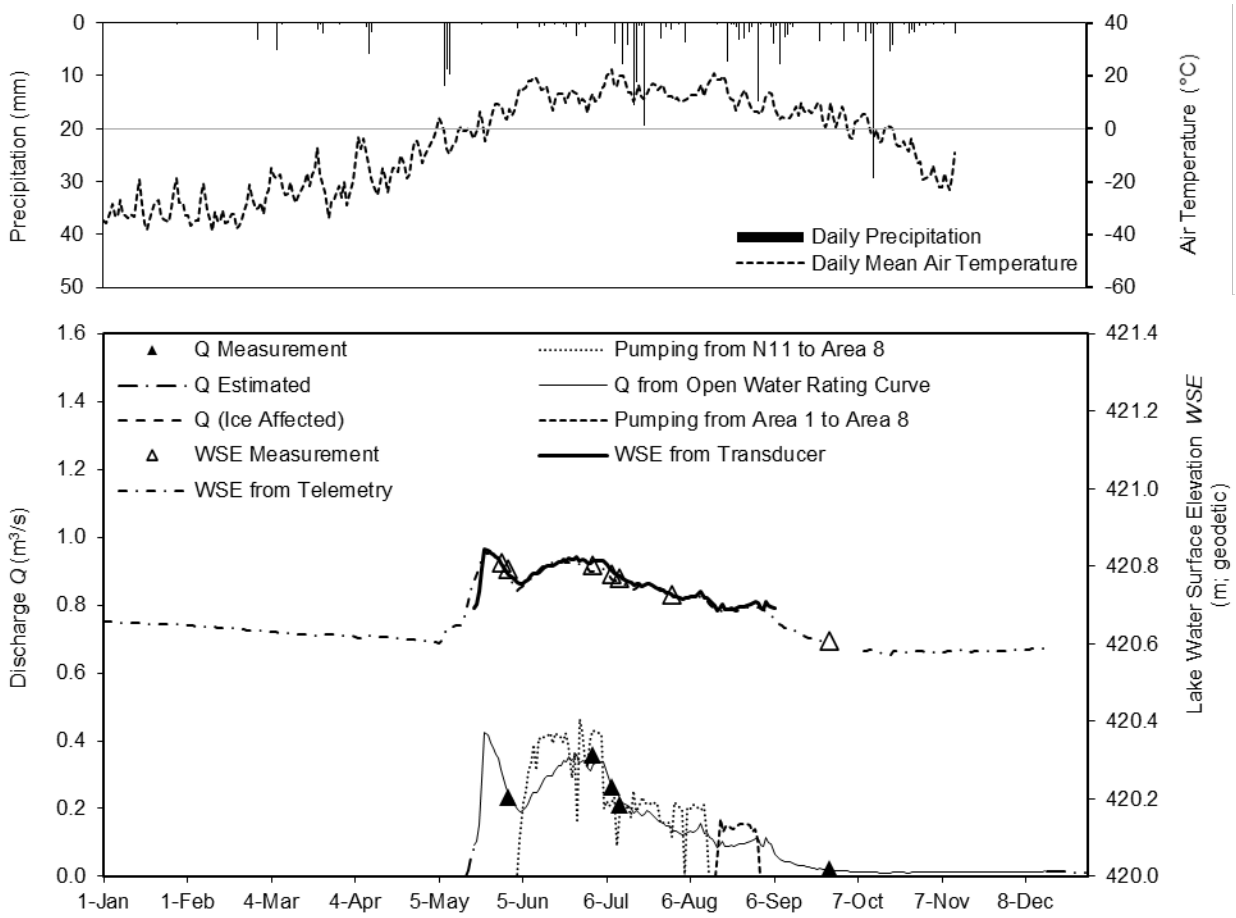
b) Discharge measurement screened out because of high residual error relative to open water rating curve.

masl = metres above sea level; NM = not measured; WSE = water surface elevation.

Discharge and WSE data collected in 2022 are presented in Figure 19-6. Images from the automated camera operating at the outlet of Area 8 provide information on the progression of the 2022 spring freshet. Based on photographs at the outlet of Area 8, the outlet channel was still fully obstructed by ice on 12 May, with some

minor water ponding becoming visible at the surface on the morning of 13 May. Ponded water began to proliferate thereafter, and by 15 May at 07:00, a continuous flow path was visible though anchor ice; the channel became clear by 21 May at 10:00. The temperature dropped on 22 and 23 May causing ice to form on the surface of the channel. A continuous flow path was reconstituted on 24 May at 12:00. Ice-out in the Area 8 outflow channel (i.e., Stream K5) is defined as 24 May at 12:00, when a clear channel was established (Table 4.2-1). The Area 8 outlet appeared to be completely ice-free on 25 May at 17:00. Peak water levels were observed on 22 May. The daily peak occurred around the first AEMP years' peaks in 2015 (14 May), 2016 (18 May), and 2017 (22 May) but was earlier than 2018 (8 June), 2019 (8 June), 2020 (12 June), and 2021 (8 June). Site water information was used to determine the mean daily discharge values from 23 May to 3 August.

Figure 19-6 Area 8 Water Surface Elevation and Outlet Discharge, 2022



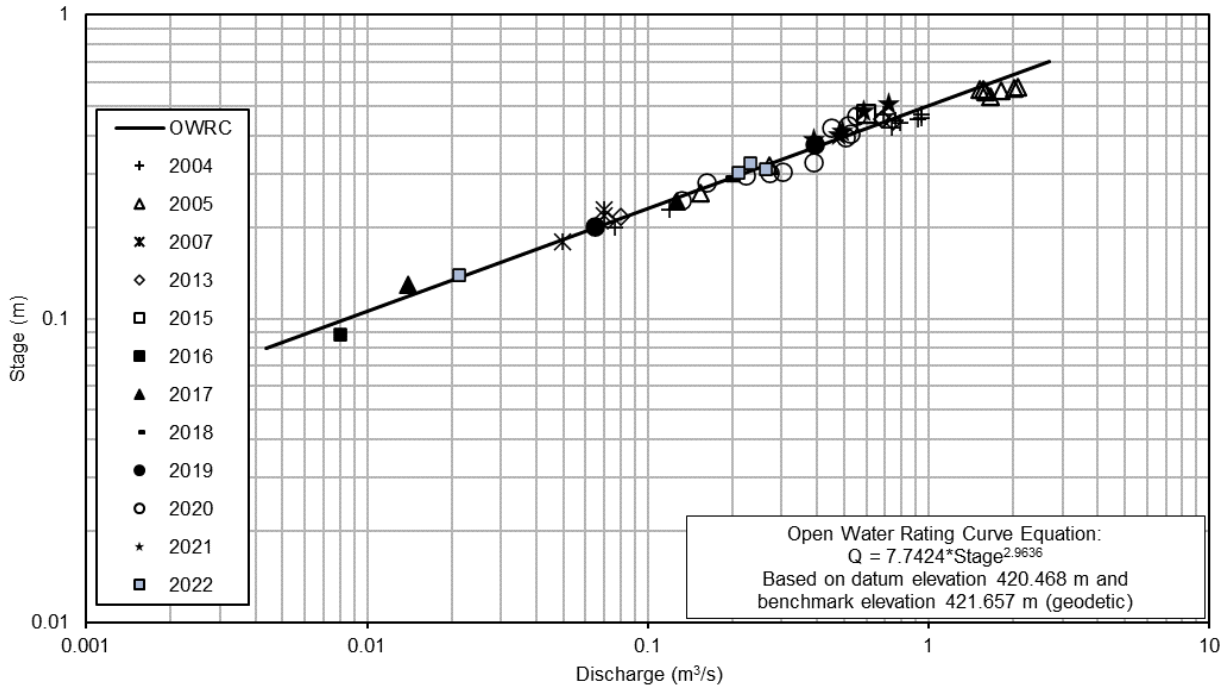
A summary of the sampling requirements applicable at SNP-19 including monitoring dates, is provided in Table 19-19. Information summarizing the data collection and calculation of daily flow rate and discharge volume from the outlet of Lake N11 is provided in

Figure 19-7, Table 19-20 and Table 19-21. Figure 19-10 is the current Open Water Rating Curve. To reduce uncertainty, it is based only on measurements where stage was derived from direct WSE measurements.

Table 19-19 Summary of Sampling Requirements and Sample Dates at SNP-19 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2021 Sampling Dates
SNP-19	Construction (Drawdown of Kennaday Lake)	Daily (during Drawdown)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	NA
	Operations (Discharge from Water Management Pond	Daily (during Discharge)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	DSFM: June 2 to August 15 Discharge from Lake A1: August 16 to August 31

Figure 19-7 Open Water Rating Curve for SNP-19 at Outlet to Area 8, 2022



Notes: Open symbols indicate ice-affected discharge.

Q = discharge; OWRC = open-water rating curve.

Downstream flow mitigation (i.e., supplemental pumping from Lake N11 to Area 8) in spring/summer was initiated in 2017 and has continued every year after. Water levels were supplemented in June, July, and August by downstream flow mitigation pumping from Lake N11. Pumping commenced on 2 June. Pumping was generally maintained between 0.29 m^3/s and 0.46 m^3/s between 7 June and 4 July, with an exception being a pumping rate of 0.16 m^3/s on 25 June. From 5 to 25 July, pumping was generally maintained between 0.18 m^3/s and 0.25 m^3/s with the exception of 0.09 m^3/s on 10 July. On 26 July, pumping rates were reduced to 0.16 m^3/s and were maintained at approximately that rate between 26 and 30 July, before being increased to roughly 0.21 m^3/s from 31 July to 11 August. Pumping ceased on 15 August. A total of 1,624,058 m^3 was pumped from Lake N11 to Area 8 in 2022 as part of the downstream flow mitigation program. Water transfers from Area 1 to Area 8 occurred in 2022 to draw down Lake A1. The pumping from Lake A1 to Area 8 began on 16 August, ceased on 31 August, and totalled 195,418 m^3 with an average daily pumping volume of 12,214 m^3/d and an average flow rate of 0.14 m^3/s. It is estimated that Area 8 lake storage at the end of the open-water period was high enough to support outflow through to the end of December, when the outlet likely froze to the bed.

Table 19-20 Daily Mean Water Surface Elevation Estimated for SNP-19 at Area 8 Hydrometric Station, 2022

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	ND	ND	ND	ND	ND	420.772	420.813	420.721	420.691	ND	ND	ND
2	ND	ND	ND	ND	ND	420.763	420.814	420.718	420.689	ND	ND	ND
3	ND	ND	ND	ND	ND	420.759	420.814	420.715	420.709	ND	ND	ND
4	ND	ND	ND	ND	ND	420.754	420.816	420.718	420.698	ND	ND	ND
5	ND	ND	ND	ND	ND	420.756	420.815	420.720	420.696	ND	ND	ND
6	ND	ND	ND	ND	ND	420.760	420.804	420.723	420.691	ND	ND	ND
7	ND	ND	ND	ND	ND	420.765	420.795	420.720	420.766	ND	ND	ND
8	ND	ND	ND	ND	ND	420.774	420.787	420.721	420.775	ND	ND	ND
9	ND	ND	ND	ND	ND	420.781	420.780	420.728	420.719	ND	ND	ND
10	ND	ND	ND	ND	ND	420.781	420.779	420.736	420.769	ND	ND	ND
11	ND	ND	ND	ND	ND	420.785	420.774	420.718	420.727	ND	ND	ND
12	ND	ND	ND	ND	ND	420.792	420.768	420.720	420.629	ND	ND	ND
13	ND	ND	ND	ND	ND	420.798	420.766	420.711	420.670	ND	ND	ND
14	ND	ND	ND	ND	ND	420.800	420.763	420.706	420.681	ND	ND	ND
15	ND	ND	ND	ND	ND	420.801	420.759	420.698	420.635	ND	ND	ND
16	ND	ND	ND	ND	ND	420.800	420.752	420.687	420.676	ND	ND	ND
17	ND	ND	ND	ND	ND	420.806	420.756	420.692	420.665	ND	ND	ND
18	ND	ND	ND	ND	420.691	420.812	420.753	420.701	420.665	ND	ND	ND
19	ND	ND	ND	ND	420.702	420.811	420.750	420.688	420.623	ND	ND	ND
20	ND	ND	ND	0.000	420.734	420.817	420.751	420.690	420.599	ND	ND	ND
21	ND	ND	ND	0.000	420.795	420.816	420.756	420.692	420.588	ND	ND	ND
22	ND	ND	ND	0.000	420.843	420.820	420.754	420.688	ND	ND	ND	ND
23	ND	ND	ND	0.000	420.842	420.816	420.750	420.691	ND	ND	ND	ND
24	ND	ND	ND	0.000	420.834	420.819	420.745	420.696	ND	ND	ND	ND
25	ND	ND	ND	0.000	420.830	420.823	420.740	420.696	ND	ND	ND	ND
26	ND	ND	ND	0.000	420.824	420.814	420.738	420.697	ND	ND	ND	ND
27	ND	ND	ND	ND	420.819	420.817	420.737	420.700	ND	ND	ND	ND
28	ND	ND	ND	ND	420.807	420.816	420.732	420.702	ND	ND	ND	ND
29	ND	-	ND	ND	420.797	420.809	420.731	420.705	ND	ND	ND	ND
30	ND	-	ND	ND	420.786	420.807	420.728	420.708	ND	ND	ND	ND
31	ND	-	ND	-	420.780	-	420.723	420.706	-	ND	-	ND

Notes: Elevations in table are geodetic metres above sea level (masl). All water surface elevations estimated using a daily water balance model.
- = day not present in month; ND = no data.

Table 19-21 Daily Mean Discharge Estimated for SNP-19 at Area 8 Hydrometric Station, 2022

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.000	0.000	0.000	0.000	0.000	0.228	0.330	0.133	0.091	0.016	0.011	0.013
2	0.000	0.000	0.000	0.000	0.000	0.209	0.333	0.127	0.088	0.016	0.011	0.013
3	0.000	0.000	0.000	0.000	0.000	0.199	0.335	0.123	0.114	0.015	0.011	0.013
4	0.000	0.000	0.000	0.000	0.000	0.189	0.339	0.127	0.100	0.015	0.011	0.013
5	0.000	0.000	0.000	0.000	0.000	0.195	0.337	0.130	0.097	0.014	0.012	0.013
6	0.000	0.000	0.000	0.000	0.000	0.201	0.304	0.135	0.064	0.014	0.012	0.013
7	0.000	0.000	0.000	0.000	0.000	0.212	0.282	0.131	0.057	0.013	0.012	0.013
8	0.000	0.000	0.000	0.000	0.000	0.231	0.261	0.132	0.052	0.013	0.012	0.013
9	0.000	0.000	0.000	0.000	0.000	0.248	0.246	0.142	0.048	0.012	0.012	0.013
10	0.000	0.000	0.000	0.000	0.000	0.247	0.243	0.156	0.044	0.012	0.012	0.014
11	0.000	0.000	0.000	0.000	0.000	0.257	0.231	0.128	0.043	0.013	0.012	0.015
12	0.000	0.000	0.000	0.000	0.000	0.274	0.219	0.130	0.042	0.014	0.012	0.015
13	0.000	0.000	0.000	0.000	0.000	0.290	0.214	0.116	0.039	0.013	0.012	0.014
14	0.000	0.000	0.000	0.000	0.000	0.296	0.208	0.110	0.037	0.012	0.013	0.014
15	0.000	0.000	0.000	0.000	0.000	0.297	0.199	0.099	0.033	0.011	0.013	0.015
16	0.000	0.000	0.000	0.000	0.018	0.295	0.185	0.086	0.031	0.010	0.012	0.015
17	0.000	0.000	0.000	0.000	0.055	0.310	0.193	0.092	0.030	0.010	0.012	0.015
18	0.000	0.000	0.000	0.000	0.091	0.328	0.188	0.104	0.028	0.010	0.012	0.014
19	0.000	0.000	0.000	0.000	0.105	0.325	0.181	0.087	0.026	0.010	0.012	0.014
20	0.000	0.000	0.000	0.000	0.152	0.343	0.183	0.090	0.025	0.012	0.012	0.014
21	0.000	0.000	0.000	0.000	0.283	0.339	0.194	0.092	0.025	0.012	0.012	0.014
22	0.000	0.000	0.000	0.000	0.423	0.351	0.189	0.088	0.022	0.012	0.012	0.014
23	0.000	0.000	0.000	0.000	0.418	0.340	0.183	0.091	0.023	0.012	0.013	0.013
24	0.000	0.000	0.000	0.000	0.393	0.348	0.172	0.097	0.022	0.011	0.013	0.013
25	0.000	0.000	0.000	0.000	0.380	0.361	0.164	0.097	0.019	0.011	0.013	0.013
26	0.000	0.000	0.000	0.000	0.362	0.334	0.160	0.098	0.019	0.011	0.013	0.013
27	0.000	0.000	0.000	0.000	0.349	0.341	0.158	0.102	0.018	0.012	0.013	0.013
28	0.000	0.000	0.000	0.000	0.314	0.338	0.150	0.105	0.018	0.012	0.013	0.012
29	0.000	-	0.000	0.000	0.288	0.318	0.148	0.109	0.017	0.013	0.012	0.012
30	0.000	-	0.000	0.000	0.261	0.313	0.144	0.112	0.017	0.012	0.013	0.012
31	0.000	-	0.000	-	0.244	-	0.135	0.111	-	0.012	-	0.012

Note: Discharges in the table are in cubic metres per second (m^3/s). Values of 0.000 are based on the assumption that the outlet is completely blocked by ice. All values were estimated using a water balance model.

- = day not present in month; ND = no data.

19.1.16 SNP-20

Station SNP-20 is located at the pump intake point in the Water Management Pond where water is drawn during discharge to Lake N11. The objective of this station is to determine whether the water being discharged is toxic, based on the following Environment Canada biological test methods:

1. Test of Reproduction and Survival Using *Ceriodaphnia dubia* (EPS 1/RM/21);
2. Test of Growth Inhibition Using *Pseudokirchneriella subcapitata* (EPS 1/RM/25);
3. Test of Larval Growth and Survival Using Fathead Minnows (EPS 1/RM/22);
4. Determination of Acute Lethality Using Rainbow Trout (EPS 1/RM/13); and
5. Determination of Acute Lethality Using *Daphnia magna* (EPS 1/RM/14).

Per the SNP, samples are collected at this station prior to discharge taking place, and on the final day of discharge. A summary of the sampling requirements applicable at SNP-20, including sampling dates, are provided in Table 19-22.

Table 19-22 Summary of Sampling Requirements and Sample Dates at SNP-20 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-20	Operations (During Discharge from the Water Management Pond)	Twice (at the beginning of Discharge period and on final day of Discharge period)	Toxicity	August 10

In October 2017, De Beers provided a pre-discharge water sample to Nautilus for toxicity testing of which, the Fathead Minnows Test showed low minnow survival rate. Following further fish tissue analysis, Nautilus identified that the high minnow mortality was due to "Sporadic Mortality Phenomenon", which is caused by naturally-occurring microbes (e.g. fungi) in the water sample, which is further exasperated by the fact that the test water is maintained at a relatively warm temperature (25°C) as part of the standard test design. Based on the experience from a mine in British Columbia, Nautilus recommended adding low dose of copper to the test water to inhibit the microbial growth, so that the actual toxicity of the WMP discharge water can be determined.

On August 8th, 2018, De Beers requested this change to the Board. To add relevancy to the argument for allowing the addition of copper as a method of mitigating the Sporadic Mortality Phenomenon, De Beers undertook a site-specific study using water samples obtained from the WMP. Five (5) samples were collected between November 2017 and July 2018 and tested using the proposed copper treatment. It was confirmed that:

- High mortality caused by fungal growth occurs sporadically, i.e. some of the untreated samples have over 90% survival rates, while some shows below 50% survival rates;
- Due to the high degree of variation in mortality rates among samples with similar water quality, it was determined that the high mortality rates are not caused by other constituents in the water;
- The fungal growth in the water can be inhibited by the addition of copper.

In order to remove the sporadic effect from the naturally-occurring microbes, so that any potential toxicity of the WMP discharge water can be determined, De Beers proposed the following:

- The standard Fathead Minnow Tests using the SNP-20 water sample will continue to be conducted as specified in the Water Licence;
- Additional Fathead Minnow Test using the SNP-20 water sample treated with microbial growth inhibitor, such as copper, will also be conducted. The rest of the test method will still follow the standard test as specified in the Water Licence;
- In the case that the sporadic mortality phenomenon occurs during the standard test, the test with the copper treatment will be presented to the Inspector for his/her review prior to authorizing discharge.

The board approved this request on August 30th, 2018.

2022 toxicity samples were collected at SNP-20 on August 10 and satisfies the pre-discharge sampling requirements of the discharge from the WMP. A summary of the results of the toxicity sampling completed at SNP-20 in 2022 is provided in Appendix G20-A indicating that samples passed Toxicity Testing, with all survival LC50's greater than 100. Despite passing toxicity testing, discharge to Lake N11 did not occur in 2022 due to low snowpack and precipitation.

19.1.17 SNP-21

Station SNP-21 is associated with the water from mine open pit water discharged to Collection Pond 1 (CP1). The purpose of this station is to monitor the influence of pit dewatering on water quality in CP1.

A summary of the sampling requirements applicable at SNP-21 in 2022, is provided in Table 19-8. Water quality sampling results for SNP-21 are provided in Appendix G21_A in addition to water elevations in Appendix G21_B.

Table 19-23 Summary of Sampling Requirements and Sample Dates at SNP 21 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-21	Operations (During discharge to CP1)	Monthly (During discharge to CP1)	Physical parameters, major ions, nutrients, total metals, water elevation	Monthly in 2022 when sump is active

19.1.18 Meteorological Monitoring Required under Part C of the SNP

Meteorological monitoring for the Gahcho Kué Mine is included as a supporting component of the SNP as per Part C, Annex A of the Water Licence. Under Part C, De Beers is required to measure and record the following meteorological data:

- Mean, minimum and maximum daily temperatures;
- Precipitation, measured and recorded in hourly and daily totals;
- Wind speed;
- Hourly wind direction; and
- Evaporation.

De Beers installed a 10-meter tower meteorological station (the Hill station) at the Gahcho Kué Mine to record meteorological data as per Part C of the Surveillance Network Program (SNP) and the Meteorological Monitoring Program (MMP). Data acquisition at this station began on October 17, 2015. The Hill Station is located on rolling low profile tundra with no large hills or structures in the vicinity of the station, at UTM coordinates 591,541 m east, 7,037,212 m north, zone 12V. The Hill station records the following parameters:

- wind speed and wind direction at 10 m height;
- precipitation (frozen and rainfall) at 1.5 m height;
- temperature at 2 m height;
- relative humidity at 2 m height; and
- solar radiation at 2 m height.

A lake hydro-meteorological station (the Lake Station) was installed in July 2015 on the north shoreline of Area 8, located at UTM coordinates 591,687 m east, 7,035,781 m north, zone 12V. The Lake Station provides data for the calculation of lake evaporation and for supplementary hydro-meteorological purposes. The Lake station records the following parameters:

- wind speed and wind direction at 3 m height;
- precipitation (rainfall) at 1 m height;
- temperature at 1 m and 2 m height above water;
- relative humidity at 2 m height above water;
- net radiation at 2 m height above water;
- water depth; and
- water temperature at 1 m and 2 m depth.

The meteorological data recorded at the Gahcho Kué Mine in 2022 is summarized in Appendix G_Met_A, Appendix G_Met_B, Appendix G_Met_C, and Appendix G_Met_D.

20 PREVIOUS CALENDAR YEAR (SCHEDULE 1, PART B, ITEM 10, 1.S)

A list of submissions made to the MVLWB as related to work activities covered by the Water Licence and Land Use Permit are presented in Table 20-1 below.

Table 20-1 List of Submissions made to the the Mackenzie Valley Land and Water Board in 2022 (Licence #MV2021D0009 & MV2005L2-0015)

Date	Submission
15-Dec-21	MV2005L2-0015 - De Beers Gahcho Kue - 2020 AEMP Annual Report - Version 2 - Dec 15_21.pdf (137.1 MB)
29-Dec-21	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Dec 3 Spill Report - Dec 29_21.pdf (596.78 KB)
29-Dec-21	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Dec 3 Spill Report - Dec 29_21.pdf (596.78 KB)
30-Dec-21	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - November 2021 - Dec 30_21.pdf (11.27 MB)
10-Jan-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 Dam Safety Review Report - Jan 10_22.pdf (34.05 MB)
10-Jan-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 Dam Safety Review Implementation - Jan 10_22.pdf (155.64 KB)
17-Jan-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Jan 17_22.pdf (331.45 KB)
17-Jan-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Jan 17_22.pdf (331.45 KB)
27-Jan-22	MV2005C0032 - De Beers Gahcho Kue - Inspector Recommendation for File Closure - Jan 27_22.pdf (91.46 KB)
27-Jan-22	MV2021D0009 - De Beers Gahcho Kue - Wildlife Management and Monitoring Plan - Version 1.1 - Jan 27_22.pdf (12.09 MB)
31-Jan-22	MV2005L2-0015 – De Beers - Gahcho Kue – Resubmission Required - AEMP Design Plan v6.2 - Jan31_22.pdf (144.42 KB)
3-Feb-22	MV2005L2-0015 - De Beers - Gahcho Kue – AEMP Design Plan v6.2 - Staff Report and Comments - Feb3_22.pdf (569.88 KB)
4-Feb-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - December 2021 - Feb 4_22.pdf (22.69 MB)
15-Feb-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Jan 17 Spill Report - Feb 15_22.pdf (2.64 MB)
15-Feb-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Jan 17 Spill Report - Feb 15_22.pdf (2.64 MB)
17-Feb-22	De Beers Gahcho Kue - AEMP Design Plan - Version 6.3 - Feb 17_22.pdf (8.86 MB)
18-Feb-22	MV2005L2-0015 - De Beers Gahcho Kue - AEMP Design Plan Version 6.3 - Board Staff Conformity - Feb 18_22.pdf (164.24 KB)
23-Feb-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Feb 23_22.pdf (307.24 KB)
23-Feb-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Feb 23_22.pdf (307.24 KB)
24-Feb-22	MV2005L2-0015 – De Beers – Gahcho Kue - Dyke CMP B,D,E, Peri Berms V3 - Staff Report and Comments - Feb 24_22.pdf (520.13 KB)
25-Feb-22	De Beers – Gahcho Kue – Approval - Final Plan and Clearance - Feb25_22.pdf (142.28 KB)
25-Feb-22	MV2005L2-0015 – De Beers – Gahcho Kué – Resubmission Required - Dyke Construction and Management Plan Version 3 - Feb25_22.pdf (148.58 KB)
25-Feb-22	MV2005L2-0015 – De Beers – Gahcho Kue – Resubmission Required - Dyke CMP B,D,E, Peri Berms V3 - Feb 25_22.pdf (148.58 KB)
28-Feb-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - January 2022 - Feb 28_22.pdf (9.08 MB)
3-Mar-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Dec 17, 21, Jan 28, 22 Inspection Report - Mar 3_22.pdf (11.61 MB)
3-Mar-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Dec 17, 21, Jan 28, 22 Inspection Report - Mar 3_22.pdf (11.61 MB)
17-Mar-22	MV2018C0001 - De Beers Gahcho Kue - Notification of Commencement of Activities - Mar 17_22.pdf (679.36 KB)
18-Mar-22	MV2005L2-0015 - De Beers Gahcho Kue - Dyke Construction Management Plan Dykes B, D, E, and Perim Berms (V3.1) - Mar 18_22.pdf (23.34 MB)
24-Mar-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Feb 23 Spill Report - Mar 24_22.pdf (458.86 KB)
24-Mar-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Feb 23 Spill Report - Mar 24_22.pdf (458.86 KB)

Date	Submission
25-Mar-22	MV2005L2-0015 - De Beers Gahcho Kue - Dyke CMP B,D,E, Peri Berms V3.1 - Conformity Confirmation from Staff - Mar 25_22.pdf (148.23 KB)
30-Mar-22	MV2021D0009 - De Beers Gahcho Kue - Notification of Closure of Winter Spur Road and Margaret Lake Camp - Mar 30_22.pdf (166.66 KB)
30-Mar-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - February 2022 - Mar 30_22.pdf (6.5 MB)
30-Mar-22	MV2021D0009 - De Beers Gahcho Kue - Vegetation and Soils Monitoring Program Report - Mar 30_22.pdf (16.34 MB)
30-Mar-22	MV2021D0009 - De Beers Gahcho Kue - 2021 Annual Wildlife Report - Mar 30_22.pdf (3.14 MB)
31-Mar-22	MV2021D0009 - De Beers Gahcho Kue - Wildlife Management and Monitoring Plan V1.1 - GNWT-ENR Approval - Mar 31_22.pdf (395.67 KB)
1-Apr-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual CandR Plan Progress Report - April 1_22.pdf (14.04 MB)
6-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Drill - April 6_22.pdf (307.15 KB)
6-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Excavator - April 6_22.pdf.pdf (331.35 KB)
6-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Excavator - April 6_22.pdf.pdf (331.35 KB)
6-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Drill - April 6_22.pdf (307.15 KB)
7-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report - April 7_22.pdf (76.32 MB)
7-Apr-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report - April 7_22.pdf (76.32 MB)
13-Apr-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - March 8, 22 Inspection Report - April 13_22.pdf (11.58 MB)
13-Apr-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - March 8, 22 Inspection Report - April 13_22.pdf (11.58 MB)
19-Apr-22	De Beers – Gahcho Kue – Final Plan and Clearance - Staff Report - Feb24_22.pdf (176.39 KB)
19-Apr-22	De Beers – Gahcho Kué – Dyke Construction and Management Plan Version 3 -Staff Report and Comments - Feb24_22.pdf (520.13 KB)
2-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 2_22.pdf (308.84 KB)
2-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 2_22.pdf (308.84 KB)
2-May-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report - May 2_22.pdf (152.66 MB)
3-May-22	De Beers Gahcho Kué – Revisions Required - Conceptual Mitigation Plan Version 1 - May3_22.pdf (178.75 KB)
5-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 6 Spill Report of Drill - May 5_22.pdf (366.46 KB)
5-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 6 Spill Report of Excavator - May 5_22.pdf (527.32 KB)
5-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 6 Spill Report of Drill - May 5_22.pdf (366.46 KB)
5-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 6 Spill Report of Excavator - May 5_22.pdf (527.32 KB)
6-May-22	MV2005L2-0015 – De Beers Gahcho Kué – Conceptual Mitigation Plan V1 - Staff Report and Comments - May6_22.pdf (1.09 MB)
10-May-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - April 14, 22 Inspection Report - May 10_22.pdf (14 MB)
10-May-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - April 14, 22 Inspection Report - May 10_22.pdf (14 MB)
18-May-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report - Raw Data - May 18_21.xlsx (2.3 MB)
19-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 19_22.pdf (307.87 KB)
19-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 19_22.pdf (307.87 KB)
24-May-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report - May 24_22.pdf (152.61 MB)
30-May-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - April 2022 - May 30_22.pdf (17.83 MB)
30-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 2 Spill Report - May 30_22.pdf (1.64 MB)
30-May-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 2 Spill Report - May 30_22.pdf (1.64 MB)
31-May-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report - Raw Data - May 31_21.xlsx (420.79 KB)

Date	Submission
31-May-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - March 2022 - May 31_22.pdf (7.69 MB)
31-May-22	MV2005L2-0015 - De Beers Gahcho Kue - Conceptual Mitigation Plan V 1.1 - May 31_22.pdf (1.76 MB)
31-May-22	MV2005L2-0015 - De Beers Gahcho Kue - Conceptual Mitigation Plan V 1.1 - Conformity Confirmation from Staff - May 31_22.pdf (162.3 KB)
6-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - June 6_22.pdf (307.96 KB)
6-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - June 6_22.pdf (307.96 KB)
9-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 4 Spill Report - June 9_22.pdf (963.37 KB)
9-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 4 Spill Report - June 9_22.pdf (963.37 KB)
11-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 19 Spill Report - June 11_22.pdf (556.47 KB)
13-Jun-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 19 Spill Report - June 11_22.pdf (556.47 KB)
15-Jun-22	MV2009D0009 MV2005L2-00015 - Temporary Incinerator Waste Management Plan - Inspector Response - Jun15_22.pdf (147.35 KB)
15-Jun-22	MV2009D0009 MV2005L2-00015 - Temporary Incinerator Waste Management Plan - Inspector Response - Jun15_22.pdf (147.35 KB)
16-Jun-22	De Beers Gahcho Kue - Waste Management Area Fire and Proposed Temporary Incinerator Waste Management Plan - Jun16_22.pdf (184.53 KB)
16-Jun-22	De Beers Gahcho Kue - Waste Management Area Fire and Proposed Temporary Incinerator Waste Management Plan - Jun16_22.pdf (184.53 KB)
30-Jun-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - May 2022 - June 30_22.pdf (15.2 MB)
30-Jun-22	MV2021D0009 - De Beers Gahcho Kue - Wildlife Management and Monitoring Plan - Version 1.2 - June 30_22.pdf (8.26 MB)
30-Jun-22	MV2021D0009 - De Beers Gahcho Kue - 2022 Annual Wildlife Report - June 30_22.pdf (3.14 MB)
4-Jul-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to June 6 Spill Report - July 4_22.pdf (4.63 MB)
4-Jul-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to June 6 Spill Report - July 4_22.pdf (4.63 MB)
8-Jul-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Response Plan - Lake D2_D3 - July 8_22.pdf (2.81 MB)
11-Jul-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 4_22.pdf (307.99 KB)
11-Jul-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 4_22.pdf (307.99 KB)
22-Jul-22	De Beers Gahcho Kue - Aquatic Effects Re-evaluation Report Extension Request - July 22_22.pdf (113.31 KB)
2-Aug-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - June 2022 - Aug 2_22.pdf (18.64 MB)
5-Aug-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Aug 5_22.pdf (307.09 KB)
5-Aug-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Aug 5_22.pdf (307.09 KB)
8-Aug-22	MV2005L2-0015 - De Beers Gahcho Kue - Revisions Required - 2021 AEMP Annual Report - Aug8_22.pdf (173.54 KB)
8-Aug-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report - Staff Report and Comments - Aug8_22.pdf (775.29 KB)
11-Aug-22	De Beers Gahcho Kue - Inspector Approval for Fuel Storage on Dyke A - Aug 8_22.pdf (145.8 KB)
30-Aug-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Revisions Required - 2021 Annual Report - Aug30_22.pdf (191.26 KB)
30-Aug-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Revisions Required - 2021 Annual Report - Aug30_22.pdf (191.26 KB)
30-Aug-22	De Beers Gahcho Kue - Correspondence with PWNHC Re AOA - Aug 30_22.pdf (172.62 KB)
30-Aug-22	De Beers Gahcho Kue - 2021 AEMP Annual Report V 1.1 - Aug 30_22.pdf (152.23 MB)
31-Aug-22	De Beers Gahcho Kue - SNP Report - July 2022 - Aug 31_22.pdf (8.38 MB)
2-Sep-22	De Beers Gahcho Kue - Notification of Commencement of Activities - Sept 2_22.pdf (1.31 MB)
6-Sep-22	De Beers Gahcho Kue - 2021 AEMP Annual Report V 1.1 - Board Staff Conformity - Sept 6_22.pdf (161.09 KB)
26-Sep-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Aug 4, 22 Inspection Report - Aug 18_22.pdf (25.29 MB)
26-Sep-22	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Aug 4, 22 Inspection Report - Aug 18_22.pdf (25.29 MB)

Date	Submission
30-Sep-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - August 2022 - Sept 30_22.pdf (12.26 MB)
30-Sep-22	MV2005L2-0015 - De Beers Gahcho Kue - AEMP Design Plan Version 7 - Sept 30_22.pdf (6.29 MB)
30-Sep-22	MV2005L2-0015 - De Beers Gahcho Kue - Aquatic Effecits Re-evaluation Report - Sept 30_22.pdf (23.25 MB)
4-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 4_22.pdf (307.13 KB)
4-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 4_22.pdf (307.13 KB)
11-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 11_22.pdf (288.05 KB)
11-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 11_22.pdf (288.05 KB)
12-Oct-22	MV2005L2-0015 - De Beers Gahcho Kue - 2022 Geotechnical Inspection - Oct 12_22.pdf (58.53 MB)
13-Oct-22	MV2005L2-0015 - De Beers Gahcho Kue - QA QC Plan - Version 3 - Oct 13_22.pdf (5.57 MB)
18-Oct-22	De Beers Gahcho Kue – Not Approved - AEMP Response Plan V1 - Oct18_22.pdf (746.24 KB)
25-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 25_22.pdf (307.17 KB)
25-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 25_22.pdf (307.17 KB)
31-Oct-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - September 2022 - Oct 31_22.pdf (13.7 MB)
31-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 31_22.pdf (301.89 KB)
31-Oct-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 31_22.pdf (301.89 KB)
4-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 4 Spill Report - Nov 4_22.pdf (352.47 KB)
4-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 4 Spill Report - Nov 4_22.pdf (352.47 KB)
7-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 11 Spill Report - Nov 7_22.pdf (400.11 KB)
7-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 11 Spill Report - Nov 7_22.pdf (400.11 KB)
14-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report V1.1 - Nov 14_22.pdf (93.56 MB)
14-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report V1.1 - Nov 14_22.pdf (93.56 MB)
14-Nov-22	MV2005L2-0015 - De Beers Gahcho Kue - 2022 Geotech Implementation Plan - Nov 14_22.pdf (180.11 KB)
17-Nov-22	MV2021D0009 - De Beers Gahcho Kue - Notification of Winter Road Construction and Occupancy of Margaret Lake Camp - Nov 17_22.pdf (167.3 KB)
23-Nov-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report V 1.2 - Nov 23_22.pdf (151.14 MB)
24-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 25 Spill Report - Nov 24_22.pdf (467.15 KB)
24-Nov-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 25 Spill Report - Nov 24_22.pdf (467.15 KB)
28-Nov-22	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - October 2022 - Nov 28_22.pdf (18.11 MB)
1-Dec-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 31 Spill Report - Dec 1_22.pdf (844.57 KB)
1-Dec-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 31 Spill Report - Dec 1_22.pdf (844.57 KB)
6-Dec-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report Version 1.1 - Board Staff Conformity - Dec 6_22.pdf (147.21 KB)
6-Dec-22	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Report Version 1.1 - Board Staff Conformity - Dec 6_22.pdf (147.21 KB)
9-Dec-22	MV2005L2-0015 - De Beers Gahcho Kue - 2021 AEMP Annual Report V 1.2 - Board Staff Conformity - Dec 9_22.pdf (147.97 KB)
13-Dec-22	MV2005L2-0015 - De Beers Gahcho Kue - QAQC Plan - Version 3 - Analyst Approval Letter - Dec 13_22.pdf (219.94 KB)
3-Jan-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - November 2022 - Jan 3_23.pdf (18.73 MB)

21 SUMMARY OF ACTIONS TAKEN TO ADDRESS CONCERNS, NON-CONFORMANCES, OR DEFICIENCIES IN ANY REPORTS FILED BY AN INSPECTOR (SCHEDULE 1, PART B, ITEM 10, 1.T)

The Government of the Northwest Territories (GNWT) Resource Management Officer (Inspector) performed inspections of the mine throughout 2022 to verify compliance with the Land Use Permit (MV2005C0032 & MV2021D0009) and Type A Water License (MV2005L2-0015). The Inspector conducted eight (8) reported inspections focusing on items such as winter road land use, water use, waste management, fuel storage and handling, ammonium nitrate storage and other activities governed under the licenses, permits and management plan requirements.

The Inspector has several enforcement tools that can be used to ensure regulatory compliance. These tools range from "Written Warnings" for items minor in nature to "Inspector's Directions" and prosecution for instances of potential or actual harm to the environment or failure to address issues of concern. In the May 25, 2022 Inspection Report, De Beers was instructed to rectify the noted non-compliances (see), no later than June 3, 2022 including photographic documentation of cleanup regarding a spill identified during a previous inspection at the mine rescue training area. These items were completed and forwarded to the Inspector. In the August 4th inspection De Beers was instructed to consolidate, cover the landfill, and reposition tarps of exposed contaminated soil by September 15, 2022. The Inspector confirmed that these items were addressed in the September 29, 2022 inspection (Inspection Report issued on October 20, 2022) with recommendations of increased cover of the landfill.

After each inspection was completed, a report was produced and provided to De Beers as well as posted on the MVLWB's public registry. The results of the inspection reports included a rating system that assessed conditions at site as either "Acceptable" or "Unacceptable" where non-conformances were observed. Each rating also had additional qualifiers used as cautionary remarks included within the report text to provide additional information or instruction. Table 21-1 provides a summary of issues identified as "Unacceptable" in reports filed by the Inspector during 2022. Actions taken by De Beers to address any non-conformances are also identified.

Table 21-1 Summary of Actions Taken in 2022 to Address Non-Conformance Issues Identified by the GNWT Inspector

Date of Inspection	Date of Inspection Report	Authorization Inspected	Aspect Inspected	Description of Non-Conformance Assigned "Unacceptable" Rating	Action Taken to Address Non-conformances
April 14, 2022	April 25, 2022	MV2005L2-0015 Industrial Water Use MV2021D0009 Mining & Associated Activities	Fuel Storage at Mine	Fuel Storage Unacceptable "U". Condition #49, #53, #63. Concerns hydrocarbon management practices noted.	No secondary containment at Drill Site under ancillary equipment Oil spill of light vehicle at Drill sites. Hydrocarbon staining on surrounding soil and debris.Minor hydrocarbon stains and debris on the ice surface of E1. All contaminated material removed after discovery and disposed of within the WMA area for offsite disposal or treatment through the oil water separator system. Hydrocarbon staining Hearn Pit refueling station containment. Small Oil spill identified in the

Date of Inspection	Date of Inspection Report	Authorization Inspected	Aspect Inspected	Description of Non-Conformance Assigned "Unacceptable" Rating	Action Taken to Address Non-conformances
					training area..All contaminated material was removed to the type 3 waste area. This area has also been lined as it is considered high risk for spills.
May 25, 2022	May 31, 2022	MV2005L2-0015 Industrial Water Use MV2021D0009 Mining & Associated Activities	Fuel Storage at Completed Drills Sites. Restoration of Lands at Completed Drill Sites. Fuel Storage at Mine	Restoration of Lands Unacceptable "U" at Drill sites. The Drill contractor is non-compliant with conditions #72 and #74 of the Land Use Permit as a result of the inspection. Fuel Storage Unacceptable "U" at completed drill sites and mine site. #53 Fuel Containment, #62 Drip Trays, #63 Clean Up Spills.	Lake E1 had a significant amount of debris as well as what appeared to be hydrocarbons/and residual drill additives on the ice surface. Ice was no longer safely accessible and cleanup during snow free months had to occur. All contaminated material removed after discovery and disposed of within the WMA area for offsite disposal or treatment through the oil water separator system. This was done by hand via snowmobile access due to lack of suitable ice for equipment. Hazardous waste items submerged in containers. Relocated and organized confirmed complete on June 22nd inspection. Open topped container of hydrocarbons observed and cleaned up. Minor cleanup of impacted soils as the main refueling module. Spill from mine rescue area not cleaned up from prior inspection. Light vehicle fueling module hydro carbon containment (spill trays etc) were pumped out, as well as any contaminated material removed to the WMA for offsite disposal. Mine Rescue burn pans cleaned up, as well as lids installed to help ensure rainwater does not fill pans and cause additional spills. A forklift observed with an active oil leak and no secondary containment. Condition# 62 & #63 require secondary containment when vehicles parked over two hours. Forklift taken to Light Vehicle Shop for repair, and contaminated soil removed to the type 3 waste dump.

Date of Inspection	Date of Inspection Report	Authorization Inspected	Aspect Inspected	Description of Non-Conformance Assigned "Unacceptable" Rating	Action Taken to Address Non-conformances
August 4, 2022	August 16, 2022	MV2005L2-0015 Industrial Water Use MV2021D0009 Mining & Associated Activities	Fuel Storage at Drill Program Storage, Handling and Disposal of Refuse or Sewage at Mine Site.	Condition #53 "The Permittee shall not allow petroleum products to spread to surrounding lands or Watercourses." Condition #63 "The Permittee shall clean up all leaks, spills, and contaminated material immediately. Condition #60 "The Permittee shall comply to the Spill Contingency Plan, once approved, and shall annually review the plan and make any revisions to reflect any changes Operations, technology, chemicals, or fuels, or as directed by the Board. Revisions of the plan shall be submitted to the Board for approval." Condition #40 Storage Handling and Disposal of Refuse or Sewage	Approx 25liter hydraulic spill occurred with minimal efforts for cleanup. Driller spoken to at time of inspection who indicated they would remediate the area immediately. Two completed drill sites were found to require additional remediation with hydrocarbon staining present. Drill team conducted extensive removal of contaminated hydrocarbons with support by mine operations. All contaminated material was removed to the type 3 waste dumps, as well as replacing it with fresh material. All drill sites remediated to an acceptable standard to the inspector during subsequent inspections. Several plastic items identified in the burn pit were identified and removed with notification to the site services team immediately. Waste was spread out during inspection at the landfill with the appearance it had not been covered for some time contrary to the approved Waste Management Plan. The landfill was covered and coverage was confirmed on the September 15th inspection. Tarps were blown off a pile of old contaminated soils. These tarps were repositioned and confirmed in the September 15th inspection. Non-compliant waste was removed from the landfill. Meeting was held with area owners stressing the importance on recovering and compacting waste on a regular basis. Plan was formed to ensure proper covering materials are also in place for future maintenance. Landfill was cover to the inspectors satisfaction during the Sept 15 inspection. Tarps re-installed on old landfill site to inspectors satisfaction as per the Sept 15 inspection.

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Appendix A – ENGAGEMENT RECORDS, 2022

Record of Engagement for 2022

Summary of major engagement activities undertaken in 2022 on matters related to the environment and regulatory submissions at the Gahcho Kue Mine. Does not include personal phone calls, emails, or responses to review comments.

Date	Event	Location / Method	Indigenous Parties	Discussion Summary
Jan 2-3, 2022	NHX Governance Committee Meeting	Virtual meeting	NHX	Provided environmental, operations and regulatory Updates. No major concerns received from the committee members
Apr 13-14, 2022	NHX Governance Committee Meeting	Yellowknife	NHX	Provided environmental, operations and regulatory Updates / Provided Plain Language Summaries of submitted annual reports. No major concerns received from the committee members.
Jun 8, 2022	Engagement Event Invitation Letters	Letter	DKFN	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jun 8, 2022	Engagement Event Invitation Letters	Letter	LKDFN	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jun 8, 2022	Engagement Event Invitation Letters	Letter	NSMA	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jun 8, 2022	Engagement Event Invitation Letters	Letter	NWTMN (incl. FRMG, FSMC, HRMGC)	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jun 8, 2022	Engagement Event Invitation Letters	Letter	TG	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jun 8, 2022	Engagement Event Invitation Letters	Letter	YKDFN	Invitation letters sent for organizing annual engagement events, including minesite visit, community updates, and fish tasting event
Jul 20, 2022	Minesite Visit	Gahcho Kue	NWTMN (incl. FRMG, FSMC, HRMGC)	Provided a general minesite tour for community members, including camp facilities, open pits, mine rock piles, FPK and CPK facilities, Lake N11, etc. Provided updates on the current mine operations, environmental management, social performance and Land Use Permit amendment in supporting potential underground mining expansion. No major concerns were received.
Jul 20, 2022	Minesite Visit	Gahcho Kue	NWTMN (incl. FRMG, FSMC, HRMGC)	Provided a general minesite tour for community members, including camp facilities, open pits, mine rock piles, FPK and CPK facilities, Lake N11, etc. Provided updates on the current mine operations, environmental management, social performance and Land Use Permit amendment in supporting potential underground mining expansion. No major concerns were received.
Jul 27, 2022	Minesite Visit	Gahcho Kue	NSMA	Provided a general minesite tour for community members, including camp facilities, open pits, mine rock piles, FPK and CPK facilities, Lake N11, etc. Provided updates on the current mine operations, environmental management, social performance and Land Use Permit amendment in

Date	Event	Location / Method	Indigenous Parties	Discussion Summary
				supporting potential underground mining expansion. No major concerns were received.
Jul 28, 2022	Minesite Visit	Gahcho Kue	DKFN	Provided a general minesite tour for community members, including camp facilities, open pits, mine rock piles, FPK and CPK facilities, Lake N11, etc. Provided updates on the current mine operations, environmental management, social performance and Land Use Permit amendment in supporting potential underground mining expansion. No major concerns were received.
Aug 8-9, 2022	Annual fish tasting program	NHX TK Monitoring Cabin @ Fletcher Lake	DKFN, LKDFN, NSMA, NWTMN, TG, YKDFN	Detailed summary of the fish tasting event is included in the AEMP Annual Report
Aug 15-17, 2022	NHX Governance Committee Meeting	NHX Monitoring Cabin	NHX	Provided environmental, operations and regulatory Updates / Provided updates on upcoming Land Use Permit Amendment for raising Fine PK Containment dykes, in order to support the potential underground expansion project. No major concerns received from the committee members.
Sep 6, 2022	Community Update	NSMA Office in Yellowknife	NSMA	Provided environmental, operations and regulatory Updates / Provided updates on upcoming Land Use Permit Amendment for raising Fine PK Containment dykes, in order to support the potential underground expansion project. No major concerns received.
Sep 7, 2022	Community Update	YKDFN Band Council in Dettah	YKDFN	Provided environmental, operations and regulatory Updates / Provided updates on upcoming Land Use Permit Amendment for raising Fine PK Containment dykes, in order to support the potential underground expansion project. No major concerns received.
Oct 18, 2022	Minesite Visit	Gahcho Kue	YKDFN	Provided a general minesite tour for community members, including camp facilities, open pits, mine rock piles, FPK and CPK facilities, Lake N11, etc. Provided updates on the current mine operations, environmental management, social performance and Land Use Permit amendment in supporting potential underground mining expansion. No major concerns were received.
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	DKFN	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	LKDFN	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	NSMA	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	NWTMN (incl. FRMG, FSMC, HRMGC)	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion

Date	Event	Location / Method	Indigenous Parties	Discussion Summary
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	TG	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion
Nov 10, 2022	Notification Letter on Mining LUP Amendment	Letter	YKDFN	Provided notification on the Land Use Permit Amendment submission to extend the life of the Fine PK Containment Facility in supporting the potential underground mine expansion
Nov 29, 2022	Fort Resolution Townhall	Fort Resolution	DKFN, NWTMN (FRMG)	Provided Gahcho Kue's environmental, operations and regulatory Updates / Provided general updates on the upcoming Land Use Permit Amendment for raising Fine PK Containment dykes, and the potential underground expansion project. No major environmental concerns received from the community members. Majority of the questions were on employment, training and funding opportunities.
Nov 29-30, 2022	NHX Governance Committee Meeting	Fort Resolution	NHX, FRMG Staff	Provided environmental, operations and regulatory Updates / Provided updates on upcoming Land Use Permit Amendment for raising Fine PK Containment dykes, in order to support the potential underground expansion project. Presented GK Emergency Response and Spill Contingency Plan. No major concerns received from the committee members.
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	DKFN	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	LKDFN	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	NSMA	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	NWTMN (incl. FRMG, FSMC, HRMGC)	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	TG	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years
Dec 15, 2022	Notification Letter on Exploration LUP Extension	Letter	YKDFN	Provided notification on the Land Use Permit Extension request to extend the term of the permit for two extra years

Note:

DKFN - Deninu Kué First Nation

FRMG – Fort Resolution Métis Government (incl. Fort Resolution Métis Government (FRMG), Fort Smith Métis Council (MSMC), and Hay River Métis Government Council (HRMGC))

YKDFN - Yellowknives Dene First Nation

TG - Tłı̨chǫ Government

LKDFN - Łutsel K'e Dene First Nation

NHX – Ni Hadi Xa Agreement signed between De Beers and six indigenous parties (DFKN, LKDFN, NSMA, NWTMN, TG, and YKDFN)

NSMA - North Slave Métis Alliance

NWTMN - Northwest Territory Métis Nation

Appendix B – GROUNDWATER SEEPAGE SURVEY REPORT, 2022

DE BEERS GROUP

Gahcho Kué Mine

2022 Groundwater Seepage Survey Report

March 2023

Acknowledgements

The following people contributed to this *2022 Groundwater Seepage Survey* report as primary authors or senior technical reviewers:

- William Liu, M.Eng., P.Eng (De Beers: document review);
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- Richard Simms, M.A.Sc., P.Geo. (WSP Canada Inc.: primary author)
- John Faithful, B.Sc. (Hons), P.Biol. (WSP Canada Inc.: technical review)

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1 INTRODUCTION

The 2022 Groundwater Seepage Survey Report is a requirement of the approved Groundwater Monitoring Program (the Program, V.4.1; De Beers 2019) for the Gahcho Kué Mine (Mine). The Plan is designed to provide information that will allow De Beers to assess the quantity and quality of inflows to the open pits to effectively manage mine water during the operation of the Mine. The plan includes monitoring of groundwater inflow quantity and quality to the open pits and annual seepage surveys. Specifically, with regards to this report, the objectives of the seepage surveys are to:

- identify if preferential groundwater flow paths in the walls of the open pits are present, due to features of enhanced permeability, and
- determine the relative contribution to the total groundwater inflow quantity and quality from these features.

The following report presents the results of the 2022 seepage surveys conducted in the Hearne, 5034, and Tuzo pits. In addition, a qualitative comparison is made between the observed and modelled sump inflow quantity and quality. The observed inflows are represented by daily pumping rates from the pit sumps to the water management pond (WMP) or CP1 (formerly Area 7) and the analysis of regular water samples collected from the sumps during pumping, and the predicted sump inflow quantity and total dissolved solids (TDS) concentrations were sourced from the Site Water Quality Model Update (Golder 2020).

2 SEEPAGE SURVEY

In accordance with the Groundwater Monitoring Program (De Beers 2019), the 2022 annual seepage survey was on 26 September 2022 by De Beers site staff. The surveys of the 5034, Hearne, and Tuzo pits included a visual inspection for seepages on the pit walls. No measured seepage inflow were identified in Tuzo Pit, which is still in the early stages of its development; it was relatively shallow during the September 2022 survey. Where seepages were observed in the 5034 and Hearne pits, these areas were accessed and flow measurements taken, where feasible, by measuring the time required to fill a container of known volume. It is noted that some of the seepage areas were inaccessible in these pits during the survey due to potential safety hazards.

In total, one seepage sample was collected from the toe of the west wall in the 5034 Pit, and one seepage sample from the south-west corner of Hearne Pit. The samples were collected directly into laboratory supplied bottles for chemistry analysis as per laboratory instructions. Seepage samples were also collected and measured for *in situ* physico-chemical water quality parameters (i.e., temperature, pH, specific conductivity, TDS, dissolved oxygen, turbidity). Bottled samples were handled and preserved according to standard procedures and submitted to ALS Environmental (ALS) in Yellowknife for laboratory analysis including major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium). Samples for dissolved metals analysis were filtered at the laboratory.

As a result of the timing of the sampling and the transport of the samples to the laboratory, some parameters for analysis exceeded their recommended hold times. These included pH (13 hours), total dissolved solids (one day), total suspended solids (one day), turbidity (five days), dissolved orthophosphate (five days), dissolved inorganic phosphorus (25 days), dissolved organic phosphorus (five days), total inorganic phosphorus (six days), nitrate (nine days), nitrite (nine days), and turbidity (four days). The hold time constraints should be considered if these data are to be evaluated in greater detail.

Water pumped from the 5034 Pit sump (SNP-08) and the Hearne Pit sump (SNP-09) to the WMP or CP1 was recorded, and weekly water quality data samples were collected from these sumps during 2022.

3 5034 PIT

3.1 Seepage Water Samples

One water sample was collected from a seep in the 5034 Pit near the toe of the west wall during the September 2022 program. Field physico-chemical measurements and the results of the laboratory analyses are presented in Appendix A.

The reported TDS of the seep sample was 1,470 mg/L.

3.2 Measured Groundwater Discharge Quantity

As of December of 2022, the bottom of the 5034 Pit was at an elevation of about 201 metres above sea level (masl). Any groundwater seeping through the pit wall and pit floor is collected in the 5034 Pit sump (SNP-08). The sump water is transferred to CP1 via continuous daily pumping, when required, which is monitored for flow rates. Appendix B shows the location of the 5034 Pit in relation to the WMP, CP1, and other nearby lakes. Appendix C presents the measured daily pit pumping rates (or discharge) from the 5034 Pit sump to CP1 from January to December 31, 2022.

Seepages into the 5034 Pit included visible flows and wetted surfaces on the pit wall (photographs of the seepages in the 5034 Pit are provided in Appendix D).

The majority of the seepages was wetted portions of the pit wall, which were unmeasurable in terms of flow. The wetting on the pit wall surface represents the discharge of water to the pit wall surface under very low horizontal gradients. Individual seeps with potentially measurable flow were noted but only one seep could be safely accessed for sampling. The location of the sampled seep flow is presented in Appendix E. No flow measurements were recorded at the seep due to the low volume of flow. The diffuse character of most water seepages and the very low flow rate of discrete flowing seeps in the 5034 Pit support the interpretation that groundwater is not being transmitted to the pit walls and pit floor through enhanced permeability zones. Structures do intersect the 5034 Pit shell but the ability of the mine rock to transmit water to these structures is low. Water appears to preferentially flow through kimberlite and along the damage zone between kimberlite and mine rock, but the flow is too small to be a characteristic of a highly transmissive feature.

3.3 Measured Groundwater Discharge Quality

As part of the Groundwater Monitoring Program (De Beers 2019), water collecting in the 5034 Pit sump (SNP-08) is sampled weekly, when water is pumped, for detailed laboratory analyses including physical parameters, major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium). The water collecting in the 5034 Pit sump includes groundwater inflow (i.e., shallow groundwater flow through the active layer and deep groundwater flow) and surface water inflow (e.g., direct precipitation and surface runoff to the pit).

Appendix F presents calculated TDS concentrations in sump water samples from the 5034 Pit (excluding the contribution of nitrate to the TDS, whose source comprises primarily explosive nitrogen residue) collected from January to December 2022. All other water chemistry data from the weekly SNP-08 samples collected from the 5034 Pit sump have been reported in the Mine's monthly SNP reports have been reported in the Mine's monthly SNP reports that were submitted to the Mackenzie Valley Land and Water Board (MVLWB).

4 HEARNE PIT

4.1 Seepage Water Samples

Seepages were observed in the Hearne Pit in 2022. One sample was collected from the south-west corner in Hearne Pit during the September 2022 program. Field physico-chemical measurements and the results of the laboratory analyses are presented in Appendix A.

The reported TDS of the seep sample was 454 mg/L.

4.2 Measured Groundwater Discharge Quantity

In December2022, the bottom of the Hearne Pit was at an approximate elevation of 243 masl. Any groundwater seeping through the pit wall and direct precipitation is collected in the Hearne Pit sump (SNP-09). The sump water is then transferred to the WMP via continuous daily pumping, when required, which is monitored for pumping flow rates. Appendix B shows the location of the Hearne Pit in relation to the WMP and other nearby lakes. Appendix G presents the measured daily pumping rates (or discharge) from the Hearne Pit sump to the WMP from January to December 2022.

Seepage areas were observed on the walls of the Hearne Pit in September 2022, as evidenced by the photographs presented in Appendix H. The location of the sampled flowing seep is in an area with slightly elevated flow in the southeast corner of the pit relative to other areas of the pit (Appendix E). Although the seep was able to be sampled for laboratory analysis, a flow rate measurement could not be collected due to the low volume of seep flow. The southeast corner of the Hearne Pit is an area where seepage into bedrock is interpreted to occur near a small water management pond (CP5) located to the immediate southeast of the pit (Appendix B). A southwest-northeast trending structure cuts through the pit shell at an oblique angle in the southeast corner. Seepage from CP5 combined with an expected moderately greater transmissivity in the structure create a condition where wall seepage is slightly greater in the southeast corner compared to other areas of the pit.

4.2 Measured Groundwater Discharge Quality

As part of the Groundwater Monitoring Program (De Beers 2019), water collecting in the Hearne Pit sump (SNP-09) is sampled weekly, when water is pumped, for detailed laboratory analyses including physical parameters, major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium). The water collecting in the Hearne Pit sump includes groundwater inflow (e.g., shallow groundwater flow through the active layer and deep groundwater inflow) and surface water inflow (e.g., direct precipitation and surface runoff to the pit).

Appendix I presents calculated TDS concentrations in sump water samples from the Hearne Pit (excluding nitrate) from January to December 2022. All other water chemistry data from the weekly SNP-09 samples collected from the 5034 Pit sump have been reported in the Mine's monthly SNP reports that were submitted to the MVLWB.

5 TUZO PIT

5.1 Seepage Water Samples

No measured seepages inflows were observed in Tuzo Pit during the September 2022 seepage survey. However, the development of the Tuzo Pit is still relatively new.

5.2 Measured Groundwater Discharge Quantity

As of December 2022, the bottom of the Tuzo Pit was at an approximate elevation of 355 masl. As the Tuzo pit was still in an early development stage, any surface water or seepage into the pit has drained into 5034 pit throughout 2022. Therefore, no sump water was pumped from the Tuzo Pit sump (SNP-10) in 2022. Appendix B presents the location of the Tuzo Pit in relation to CP1, WMP, and other nearby lakes. Appendix J presents the measured daily pumping rates from the Tuzo Pit sump to CP1 and the WMP from January to December 2022 (all daily rates are zero).

It is noted that the Tuzo Pit sump was pumped out in 2021. This active pumping in 2021 was used to estimate an annual groundwater inflow volume and average TDS estimate.

5.3 Measured Groundwater Discharge Quality

No groundwater discharge quality measurements were made in 2022 due to no water being pumped from the Tuzo Pit sump (Appendix K).

6 COMPARISONS OF PREDICTED TO OBSERVED INFLOWS AND QUALITY

6.1 Groundwater Model

A hydrogeological model was developed for the Mine as part of the 2011 Environmental Impact Statement (EIS; Appendix 11.6.I in De Beers [2010]) and used to generate groundwater inflow and chemistry inputs to the Site Water Quality Model for the Mine. Since the development of the EIS model, the groundwater model has undergone several updates, with the most recent modelling update completed in 2020 (Golder 2020). The results of the inflow predictions to each pit in from the updated groundwater model to the 2020 Site Water Quality Model, and daily sump inflows are shown in Tables 1 to 3 (Golder 2020).

Table 1: Comparison of Annual Average 2022 5034 Pit Inflow Measurements to 2020 Groundwater Flow Model and 2020 Site Water Quality Model

Calendar Year	Projected Groundwater Inflow Quantity (m^3/day)	Projected Sump Inflow Quantity (Groundwater and Surface Water) (m^3/day)	Actual Sump Inflow Quantity (m^3/day)
January to December 2022	1,100	1,461[(a)]	1,460

a) Based on the 2020 Site Water Quality Model results.
m^3/day = cubic metres per day.

Table 2: Comparison of Annual Average 2022 Hearne Pit Inflow Measurements to 2020 Groundwater Flow Model and 2020 Site Water Quality Model

Calendar Year	Projected Groundwater Inflow Quantity (m^3/day)	Projected Sump Inflow Quantity (Groundwater and Surface Water) (m^3/day)	Actual Sump Inflow Quantity (m^3/day)
January to December 2022	500	773[(a)]	650

a) Based on the 2020 Site Water Quality Model results.
m^3/day = cubic metres per day.

Table 3: Comparison of Annual Average 2022 Tuzo Pit Inflow Measurements to 2020 Groundwater Flow Model and 2020 Site Water Quality Model

Calendar Year	Projected Groundwater Inflow Quantity (m^3/day)	Projected Sump Inflow Quantity (Groundwater and Surface Water) (m^3/day)	Actual Sump Inflow Quantity (m^3/day)
January to December 2022	900	1,483[(a)]	0[(b)]

a) Based on the 2020 Site Water Quality Model results.
b) Undetermined as no water was pumped from the Tuzo Pit sump in 2022.
m^3/day = cubic metres per day.

Tables 1 to 3 show that the 2020 Site Water Quality Model predicted pit sump inflows within reasonable bounds of acceptance (i.e., within 20%), as determined from sump pumping rates at 5034

Pit and Hearne Pit. However, the 2020 Site Water Quality Model overpredicted inflows to Tuzo Pit; this overprediction may reflect model uncertainties associated with the early shallow stages of the pit development. The Tuzo Pit is still relatively shallow compared to the adjacent 5034 Pit and has also not progressed to the depth assumed in the modelling. It is noted that that the water models all assume that the Tuzo Pit sump would continuously be actively pumped as part of standard operations and that this assumption did not reflect the operating conditions in 2022 where the decision was made to not dewater the sump.

6.2 Gahcho Kué Mine Site Water Quality Model

The Site Water Quality Model developed for the EIS, with subsequent updates to 2020 (Golder 2020), was used to predict the quantity and quality of water transfers within the operating mine area (i.e., the controlled area), and inflows to the open pit sumps. The water collecting in the pit sumps includes groundwater and surface water components. The quantity and quality of the surface water sources and loadings, such as direct precipitation, wall rock seepage, and catchment runoff in the Site Water Quality Model, are measured values derived from data collected over the life of the Mine up to 2020; the groundwater components in the Site Water Quality Model are those predicted by the 2020 groundwater model.

The monitoring data from the pit sumps (pumping rates reflecting inflows and quality as TDS concentrations) collected under the Groundwater Monitoring Program in 2022 were compared to the 2020 Site Water Quality Model projections (as these account for groundwater and surface water sources of water in the sumps). The TDS predictions for 5034 Pit, Hearne Pit, and Tuzo Pit from the 2020 Site Water Quality Model are presented in Table 4, Table 5, and Table 6, respectively. The model projections are compared to the observed TDS data collected from January to December 2022 (i.e., the annual average concentration).

Some caution is recommended in the comparison of measured inflows and water quality data to the modelled inflows and water quality data because the Site Water Quality Model has not yet been updated to reflect the recent updates to the groundwater model, as well as current hydrological and water management conditions, and changes to the mine plan since the 2020 model update.

Table 4: Comparison of Annual Average 2022 5034 Pit Sump Quality Measurements to 2020 Site Water Quality Model

Calendar Year	Projected Groundwater TDS only (mg/L)	Projected Sump TDS (Groundwater and Surface Water) (mg/L)	Actual Average Sump TDS (mg/L)
January to December 2022	4,927	5,711	3,405

TDS = calculated total dissolved solids; mg/L = milligrams per litre.

Table 5: Comparison of Annual Average 2022 Hearne Pit Sump Quality Measurements to 2020 Site Water Quality Model

Calendar Year	Projected Groundwater TDS only (mg/L)	Projected Sump TDS (Groundwater and Surface Water) (mg/L)	Actual Average Sump TDS (mg/L)
January to December 2022	7,917	4,101	2,877

TDS = calculated total dissolved solids; m^3/day = cubic metres per day; mg/L = milligrams per litre.

Table 6: Comparison of Annual Average 2022 Tuzo Pit Sump Quality Measurements to 2020 Site Water Quality Model

Calendar Year	Projected Groundwater TDS only (mg/L)	Projected Sump TDS (Groundwater and Surface Water) (mg/L)	Actual Average Sump TDS (mg/L)
January to December 2022	3,510	3,465	N/A[a]

a) Sump TDS was not sampled in 2022 because the sump was not pumped in 2022.
TDS = calculated total dissolved solids; m^3/day = cubic metres per day; mg/L = milligrams per litre; N/A = Undetermined, as sump water not sampled because there was no pumping from Tuzo Pit sump in 2022.

Tables 4 to 6 show the Site Water Quality Model overestimated the pit sump water TDS in 5034 and Hearne Pit by an average of 55%. A comparison was not made for Tuzo Pit, as no water was pumped from the Tuzo Pit sump in 2022.

7 CONCLUSIONS

Based on the results of the seepage survey and a review of the sump monitoring data from each of the pits collected in 2022, the following conclusions are presented:

- The seepage surveys conducted in September 2022 found that there were rates of seepage in the walls of the 5034 and Hearne Pits (i.e., inflows) consistent with modelled projections. Structures do intersect the pit shell in both pits, but flow rates were not measured at any specific seeps. There were also no measurable seepage inflows observed in Tuzo Pit and water collecting in the Tuzo sump was not of sufficient volume to pump to the WMP or CP1; however, this pit is shallow compared to the other mined pits.

- The comparison of pit sump inflows (as determined from measured sump pumping rates) and pit sump water quality (as determined by calculated TDS concentrations) to modelled projections from the Site Water Quality Model showed that:

    - Measured inflows to the 5034 Pit sump were less than 1% lower than modelled inflows and measured TDS concentrations represented 60% of the modelled values.

    - Measured inflows to the Hearne Pit sump were approximately 19% lower than modelled inflows and measured TDS concentrations represented 70% of the modelled values.

- Measured inflows to the Tuzo Pit sump were 100% lower than the modelled inflows, due to no inflow being observed (i.e., water entered in the Tuzo Pit drained into 5034 pit); TDS concentrations were not measured in 2022 due to the no pumping condition at Tuzo Pit.

8 REFERENCES

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APPENDIX A

Water Chemistry – Seepage Survey

Table A1: Physico-chemical Field Parameters Measured in Seeps in the 5034 Pit and Hearne Pit, 2022

Parameter	Sample ID	
	GW-5034-01	GW-HEARNE-01
Temperature (˚C)	12.09	8.24
Field pH	8.21	8.18
Dissolved Oxygen (%)	101.7	99.6
Dissolved Oxygen (mg/L)	10.68	11.19
Specific Conductivity (µS/cm)	1,400	496
TSS (mg/L)	18.30	6.15
Turbidity (NTU)	11.80	3.97
Nitrate (mg/L)	41.88	1.68

µS/cm = microsiemens per centimetre; NTU = nephelometric turbidity unit; TSS = total suspended solids.

Table A2: Laboratory Chemistry Results for Seepage Survey Samples Collected from the 5034 Pit and Hearne Pit, September, 2022

Analyte	Units	Detection Limit	GW-5034-01	GW-HEARNE-01
			YL2201714-001	YL2201714-002
			26-Sept-22 13:40:00	26-Sept-22 15:05:00
Specific Conductivity	uS/cm	2	1,750	655
Hardness (as $CaCO_3$)	mg/L	0.5	708	306
pH (laboratory)	pH	0.1	8.06	7.93
Total Dissolved Solids	mg/L	20	1,470	454
Total Suspended Solids	mg/L	1	10.4	3.3
Turbidity	NTU	0.1	4.25	1.78
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	1	93.4	65.1
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	1	<1.0	<1.0
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	1	<1.0	<1.0
Alkalinity, Phenolphthalein (as $CaCO_3$)	mg/L	1	<1.0	<1.0
Alkalinity, Total (as $CaCO_3$)	mg/L	1	93.4	65.1
Aluminum - Dissolved	mg/L	0.001	0.0062	0.0021
Aluminum -Total	mg/L	0.003	0.0683	0.152
Ammonia - (as N)	mg/L	0.005	0.46	0.114
Bromide	mg/L	0.05	3.94	0.227
Chloride[(a)]	mg/L	1	360	-
Chloride[(a)]	mg/L	0.5	-	16.7
Fluoride[(a)]	mg/L	1	0.476	-
Fluoride[(a)]	mg/L	0.02	-	0.341
Nitrate (as N)[(a)]	mg/L	0.03	21.6	-
Nitrate (as N)[(a)]	mg/L	0.003	-	0.309
Nitrate and Nitrite (as N)[(a)]	mg/L	0.0316	21.7	-
Nitrate and Nitrite (as N)[(a)]	mg/L	0.0058	-	0.318
Nitrite (as N)[(a)]	mg/L	0.01	0.0887	-
Nitrite (as N)[(a)]	mg/L	0.005	-	0.0087
Total Kjeldahl Nitrogen	mg/L	0.05	0.405	0.287
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010
Phosphorus - Dissolved Inorganic	mg/L	0.001	<0.0010	<0.0010
Phosphorus - Dissolved Organic	mg/L	0.002	0.0054	0.0028
Phosphorus - Total Dissolved	mg/L	0.001	0.0054	0.0028
Phosphorus - Total	mg/L	0.03	<0.030	<0.030
Phosphorus - Total	mg/L	0.001	0.0404	0.0064
Phosphorus - Total Inorganic	mg/L	0.001	0.004	0.0022
Silicate (as SiO_2)	mg/L	0.5	9.71	16
Sulfate[(a)]	mg/L	0.5	150	-
Sulfate[(a)]	mg/L	0.3	-	243
Total Organic Carbon	mg/L	0.5	2.91	2.43
Antimony - Dissolved	mg/L	0.0001	0.00017	<0.00010

Table A2: Laboratory Chemistry Results for Seepage Survey Samples Collected from the 5034 Pit and Hearne Pit, September, 2022

Analyte	Units	Detection Limit	GW-5034-01	GW-HEARNE-01
			YL2201714-001	YL2201714-002
			26-Sept-22 13:40:00	26-Sept-22 15:05:00
Antimony - Total	mg/L	0.0001	0.00017	<0.00010
Arsenic - Dissolved	mg/L	0.00003	0.000292	0.000041
Arsenic - Total	mg/L	0.00003	0.000306	0.000086
Barium - Dissolved	mg/L	0.0001	0.0698	0.0299
Barium - Total	mg/L	0.0001	0.0692	0.0316
Beryllium - Dissolved	mg/L	0.00002	<0.000020	<0.000020
Beryllium - Total	mg/L	0.00002	<0.000020	0.00003
Bismuth - Dissolved	mg/L	0.00005	<0.000050	<0.000050
Bismuth - Total	mg/L	0.00005	<0.000050	<0.000050
Boron - Dissolved	mg/L	0.005	0.704	0.0787
Boron - Total	mg/L	0.01	0.777	0.066
Cadmium - Dissolved[(a)]	mg/L	0.000045	<0.0000450	-
Cadmium - Dissolved[(a)]	mg/L	0.000005	-	0.0000089
Cadmium - Total[(a)]	mg/L	0.00002	<0.0000200	-
Cadmium - Total[(a)]	mg/L	0.000005	-	0.0000078
Calcium - Dissolved	mg/L	0.05	190	83.7
Calcium - Total	mg/L	0.05	163	71.1
Cesium - Dissolved	mg/L	0.00001	0.000054	<0.000010
Cesium - Total	mg/L	0.00001	0.000056	0.000011
Chromium - Dissolved	mg/L	0.0005	<0.00050	<0.00050
Chromium - Dissolved	mg/L	0.0001	<0.00010	<0.00010
Chromium - Total	mg/L	0.0001	0.00028	0.00029
Cobalt - Dissolved	mg/L	0.00005	0.000656	0.000208
Cobalt - Total	mg/L	0.00005	0.00071	0.000431
Copper - Dissolved	mg/L	0.00015	0.00077	0.0003
Copper - Total	mg/L	0.00015	0.00082	0.00042
Iron - Dissolved	mg/L	0.005	0.0186	0.0069
Iron - Total	mg/L	0.005	0.109	0.37
Lead - Dissolved	mg/L	0.00003	<0.000030	<0.000030
Lead -Total	mg/L	0.00003	0.000054	0.000063
Lithium - Dissolved	mg/L	0.001	0.0465	0.0348
Lithium - Total	mg/L	0.001	0.0458	0.0343
Magnesium - Dissolved	mg/L	0.005	56.6	23.7
Magnesium - Total	mg/L	0.005	53.2	21.9
Manganese - Dissolved	mg/L	0.0001	0.188	0.0878
Manganese - Total	mg/L	0.0001	0.181	0.153
Mercury - Dissolved	mg/L	0.000005	<0.0000050	<0.0000050
Mercury - Total	mg/L	0.000005	<0.0000050	<0.0000050
Molybdenum - Dissolved	mg/L	0.00005	0.0532	0.000271

Table A2: Laboratory Chemistry Results for Seepage Survey Samples Collected from the 5034 Pit and Hearne Pit, September, 2022

Analyte	Units	Detection Limit	GW-5034-01	GW-HEARNE-01
			YL2201714-001	YL2201714-002
			26-Sept-22 13:40:00	26-Sept-22 15:05:00
Molybdenum - Total	mg/L	0.00005	0.0482	0.00024
Nickel - Dissolved	mg/L	0.0001	0.00582	0.00388
Nickel - Total	mg/L	0.0001	0.00616	0.00476
Phosphorus - Dissolved	mg/L	0.01	0.013	<0.010
Potassium - Dissolved	mg/L	0.05	16.1	3.7
Potassium - Total	mg/L	0.05	14.9	3.55
Rubidium - Dissolved	mg/L	0.0002	0.0178	0.00185
Rubidium - Total	mg/L	0.0002	0.0176	0.00214
Selenium - Dissolved	mg/L	0.00005	0.000121	<0.000050
Selenium - Total	mg/L	0.00005	0.000156	<0.000050
Silicon - Dissolved	mg/L	0.05	4.63	7.64
Silicon - Total	mg/L	0.1	4.88	8.02
Silver - Dissolved	mg/L	0.00001	<0.000010	<0.000010
Silver - Total	mg/L	0.00001	<0.000010	<0.000010
Sodium - Dissolved	mg/L	0.05	61.8	19.3
Sodium - Dissolved	mg/L	0.01	61.8	19.3
Sodium - Total	mg/L	0.03	57	17.5
Strontium - Dissolved	mg/L	0.0002	1.84	1.06
Strontium - Total	mg/L	0.0002	1.7	0.975
Sulfur - Dissolved	mg/L	0.5	52.4	83
Sulfur - Total	mg/L	0.5	50.6	79.2
Thallium - Dissolved	mg/L	0.00001	0.000024	<0.000010
Thallium - Total	mg/L	0.00001	0.000019	<0.000010
Thorium - Dissolved	mg/L	0.0001	<0.00010	<0.00010
Thorium - Total	mg/L	0.0001	<0.00010	0.00023
Tin - Dissolved	mg/L	0.00005	<0.000050	<0.000050
Tin - Total	mg/L	0.00005	<0.000050	<0.000050
Titanium - Dissolved	mg/L	0.0003	<0.00030	<0.00030
Titanium - Total	mg/L	0.0003	0.00252	0.00452
Tungsten - Dissolved	mg/L	0.0001	0.00058	<0.00010
Tungsten - Total	mg/L	0.0001	0.00054	<0.00010
Uranium - Dissolved	mg/L	0.00001	0.0306	0.00036
Uranium - Total	mg/L	0.00001	0.0296	0.000391
Vanadium - Dissolved	mg/L	0.0005	0.00095	<0.00050
Vanadium - Total	mg/L	0.0005	0.00109	<0.00050
Zinc - Dissolved	mg/L	0.001	0.0083	0.0037
Zinc - Total	mg/L	0.0015	0.011	0.0058
Radium-226[(a)]	Bq/L	6	<6	-
Radium-226[(a)]	Bq/L	5	-	<5

Table A2: Laboratory Chemistry Results for Seepage Survey Samples Collected from the 5034 Pit and Hearne Pit, September, 2022

Analyte	Units	Detection Limit	GW-5034-01	GW-HEARNE-01
			YL2201714-001	YL2201714-002
			26-Sept-22 13:40:00	26-Sept-22 15:05:00
Thorium-228	Bq/L	0.4	<0.4	<0.4
Thorium-230[(a)]	Bq/L	20	<20	-
Thorium-230[(a)]	Bq/L	30	-	<30
Thorium-232	Bq/L	0.001	<0.001	<0.001
Thorium-234	Bq/L	4	<4	<4
Uranium-234	Bq/L	0.001	0.33	0.004
Uranium-235	Bq/L	-	NR	NR
Uranium-238	Bq/L	0.001	0.33	0.005

a) The following parameters were analyzed with different detection limits for Hearne Pit and 50354 Pit samples: chloride, fluoride, nitrate, nitrate and nitrite, nitrite, sulfate, cadmium (dissolved and total), radium-226 and thorium-230.

µS/cm = microsiemens per centimetre; Bq/L = Becquerel per litre; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; < = less than; NTU = nephelometric turbidity unit; NR = not recorded; - = no data available.

APPENDIX B

Open Pit Development and Mine Layout Superimposed on an Aerial Photograph

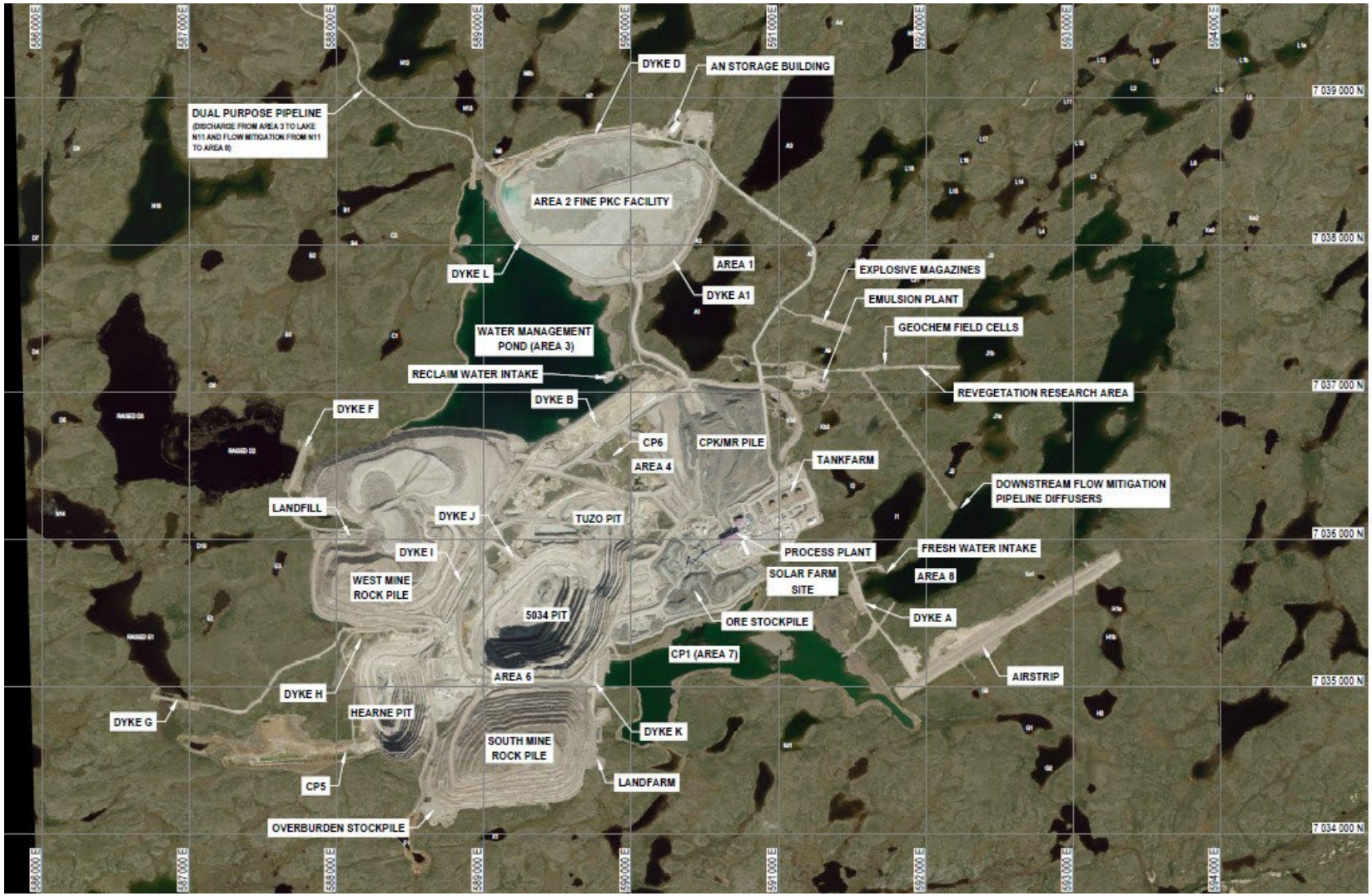

Figure B1: Site Infrastructure Layout

APPENDIX C

Daily Inflows to 5034 Pit Sump

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m^3/day
2022-01-01	3,489
2022-01-02	5,134
2022-01-03	2,370
2022-01-04	1,121
2022-01-05	3,811
2022-01-06	5,311
2022-01-07	5,378
2022-01-08	5,251
2022-01-09	4,237
2022-01-10	3,087
2022-01-11	2,793
2022-01-12	1,682
2022-01-13	2,455
2022-01-14	4,981
2022-01-15	5,557
2022-01-16	5,489
2022-01-17	3,174
2022-01-18	4,702
2022-01-19	2,184
2022-01-20	1,329
2022-01-21	5,131
2022-01-22	5,489
2022-01-23	3,934
2022-01-24	2,717
2022-01-25	2,717
2022-01-26	0
2022-01-27	2,557
2022-01-28	1,363
2022-01-29	0
2022-01-30	0
2022-01-31	0

Date	Inflow 5034 Pit Sump
	m^3/day
2022-02-01	810
2022-02-02	1,446
2022-02-03	1,420
2022-02-04	1,562
2022-02-05	1,491
2022-02-06	1,241
2022-02-07	1,265
2022-02-08	1,283
2022-02-09	1,220
2022-02-10	1,218
2022-02-11	1,195
2022-02-12	1,021
2022-02-13	961
2022-02-14	0
2022-02-15	0
2022-02-16	2,378
2022-02-17	2,210
2022-02-18	2,130
2022-02-19	1,147
2022-02-20	1,312
2022-02-21	0
2022-02-22	2,708
2022-02-23	568
2022-02-24	1,375
2022-02-25	138
2022-02-26	1,160
2022-02-27	1,569
2022-02-28	1,052

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2022-03-01	1,725
2022-03-02	1,010
2022-03-03	1,348
2022-03-04	0
2022-03-05	1,884
2022-03-06	1,112
2022-03-07	1,221
2022-03-08	1,253
2022-03-09	499
2022-03-10	0
2022-03-11	1,201
2022-03-12	658
2022-03-13	1,893
2022-03-14	1,201
2022-03-15	922
2022-03-16	1,194
2022-03-17	1,142
2022-03-18	1,165
2022-03-19	1,108
2022-03-20	1,257
2022-03-21	1,160
2022-03-22	1,178
2022-03-23	618
2022-03-24	596
2022-03-25	1,061
2022-03-26	1,695
2022-03-27	869
2022-03-28	1,175
2022-03-29	629
2022-03-30	1,523
2022-03-31	1,141

Date	Inflow 5034 Pit Sump
	m³/day
2022-04-01	348
2022-04-02	588
2022-04-03	1,078
2022-04-04	912
2022-04-05	739
2022-04-06	826
2022-04-07	909
2022-04-08	460
2022-04-09	0
2022-04-10	960
2022-04-11	1,261
2022-04-12	1,115
2022-04-13	1,405
2022-04-14	1,276
2022-04-15	1,343
2022-04-16	1,397
2022-04-17	1,334
2022-04-18	931
2022-04-19	1,253
2022-04-20	1,145
2022-04-21	1,065
2022-04-22	1,012
2022-04-23	1,014
2022-04-24	1,245
2022-04-25	890
2022-04-26	511
2022-04-27	1,227
2022-04-28	1,182
2022-04-29	1,206
2022-04-30	1,038

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2022-05-01	774
2022-05-02	1,258
2022-05-03	1,252
2022-05-04	1,185
2022-05-05	1,093
2022-05-06	1,195
2022-05-07	1,246
2022-05-08	1,390
2022-05-09	1,153
2022-05-10	1,186
2022-05-11	658
2022-05-12	1,819
2022-05-13	2,022
2022-05-14	1,741
2022-05-15	1,339
2022-05-16	2,563
2022-05-17	1,331
2022-05-18	1,145
2022-05-19	1,834
2022-05-20	1,692
2022-05-21	2,041
2022-05-22	4,320
2022-05-23	1,886
2022-05-24	1,759
2022-05-25	1,252
2022-05-26	1,664
2022-05-27	0
2022-05-28	0
2022-05-29	0
2022-05-30	0
2022-05-31	0

Date	Inflow 5034 Pit Sump
	m³/day
2022-06-01	0
2022-06-02	2,763
2022-06-03	1,785
2022-06-04	1,769
2022-06-05	0
2022-06-06	0
2022-06-07	0
2022-06-08	0
2022-06-09	0
2022-06-10	0
2022-06-11	0
2022-06-12	1,231
2022-06-13	885
2022-06-14	2,419
2022-06-15	2,584
2022-06-16	2,651
2022-06-17	2,636
2022-06-18	2,602
2022-06-19	2,777
2022-06-20	1,369
2022-06-21	2,019
2022-06-22	1,570
2022-06-23	2,687
2022-06-24	1,017
2022-06-25	1,755
2022-06-26	1,707
2022-06-27	1,496
2022-06-28	1,203
2022-06-29	1,411
2022-06-30	1,895

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2022-07-01	2,121
2022-07-02	1,270
2022-07-03	0
2022-07-04	2,249
2022-07-05	209
2022-07-06	1,553
2022-07-07	1,864
2022-07-08	66
2022-07-09	154
2022-07-10	0
2022-07-11	0
2022-07-12	0
2022-07-13	0
2022-07-14	1,345
2022-07-15	2,585
2022-07-16	1,906
2022-07-17	1,294
2022-07-18	2,677
2022-07-19	3,430
2022-07-20	0
2022-07-21	5,085
2022-07-22	3,777
2022-07-23	2,491
2022-07-24	3,415
2022-07-25	2,139
2022-07-26	2,533
2022-07-27	1,751
2022-07-28	1,989
2022-07-29	1,897
2022-07-30	1,907
2022-07-31	1,862

Date	Inflow 5034 Pit Sump
	m³/day
2022-08-01	2,535
2022-08-02	1,193
2022-08-03	0
2022-08-04	0
2022-08-05	0
2022-08-06	2,000
2022-08-07	2,608
2022-08-08	1,262
2022-08-09	1,722
2022-08-10	1,366
2022-08-11	24
2022-08-12	252
2022-08-13	2,990
2022-08-14	3,031
2022-08-15	1,162
2022-08-16	0
2022-08-17	0
2022-08-18	0
2022-08-19	233
2022-08-20	4,108
2022-08-21	3,593
2022-08-22	2,541
2022-08-23	657
2022-08-24	0
2022-08-25	0
2022-08-26	0
2022-08-27	1,390
2022-08-28	0
2022-08-29	0
2022-08-30	4,287
2022-08-31	2,390

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2022-09-01	1,516
2022-09-02	2,423
2022-09-03	2,034
2022-09-04	1,765
2022-09-05	999
2022-09-06	1,771
2022-09-07	1,820
2022-09-08	2,040
2022-09-09	2,617
2022-09-10	3,413
2022-09-11	1,812
2022-09-12	921
2022-09-13	2,880
2022-09-14	2,860
2022-09-15	1,650
2022-09-16	0
2022-09-17	0
2022-09-18	1,821
2022-09-19	3,388
2022-09-20	1,996
2022-09-21	1,360
2022-09-22	2,570
2022-09-23	2,604
2022-09-24	2,560
2022-09-25	2,080
2022-09-26	1,007
2022-09-27	1,023
2022-09-28	1,970
2022-09-29	1,852
2022-09-30	1,591
2022-09-01	1,516

Date	Inflow 5034 Pit Sump
	m³/day
2022-10-01	518
2022-10-02	2,409
2022-10-03	1,046
2022-10-04	0
2022-10-05	0
2022-10-06	0
2022-10-07	3,118
2022-10-08	4,169
2022-10-09	2,640
2022-10-10	2,278
2022-10-11	1,868
2022-10-12	1,475
2022-10-13	816
2022-10-14	1,905
2022-10-15	923
2022-10-16	1,341
2022-10-17	1,592
2022-10-18	1,106
2022-10-19	1,855
2022-10-20	1,825
2022-10-21	1,097
2022-10-22	1,844
2022-10-23	1,242
2022-10-24	1,342
2022-10-25	1,648
2022-10-26	1,404
2022-10-27	1,404
2022-10-28	1,404
2022-10-29	1,456
2022-10-30	1,267
2022-10-31	1,063

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2022-11-01	1,113
2022-11-02	1,214
2022-11-03	1,165
2022-11-04	1,150
2022-11-05	1,264
2022-11-06	768
2022-11-07	768
2022-11-08	1,526
2022-11-09	642
2022-11-10	777
2022-11-11	1,339
2022-11-12	1,539
2022-11-13	1,402
2022-11-14	707
2022-11-15	818
2022-11-16	1,466
2022-11-17	1,098
2022-11-18	1,261
2022-11-19	586
2022-11-20	0
2022-11-21	0
2022-11-22	1,003
2022-11-23	429
2022-11-24	1,956
2022-11-25	1,396
2022-11-26	1,386
2022-11-27	1,040
2022-11-28	566
2022-11-29	0
2022-11-30	0

Average Annual 5034 Pit Inflow	
January to end of December	
1,460	m³/day

Date	Inflow 5034 Pit Sump
	m³/day
2022-12-01	0
2022-12-02	0
2022-12-03	0
2022-12-04	0
2022-12-05	0
2022-12-06	0
2022-12-07	0
2022-12-08	0
2022-12-09	0
2022-12-10	0
2022-12-11	0
2022-12-12	0
2022-12-13	0
2022-12-14	2,901
2022-12-15	2,643
2022-12-16	2,643
2022-12-17	1,533
2022-12-18	1,471
2022-12-19	0
2022-12-20	0
2022-12-21	0
2022-12-22	2,810
2022-12-23	2,810
2022-12-24	0
2022-12-25	0
2022-12-26	2,254
2022-12-27	2,707
2022-12-28	1,497
2022-12-29	1,074
2022-12-30	578
2022-12-31	0

APPENDIX D

5034 Pit Photographs

Photo D1: 5034 Pit, East wall of 5034 Pit – September 26, 2022

Photo D2: 5034 Pit, East wall of 5034 Pit – September 26, 2022

Photo D3: 5034 Pit, East wall of 5034 Pit – September 26, 2022

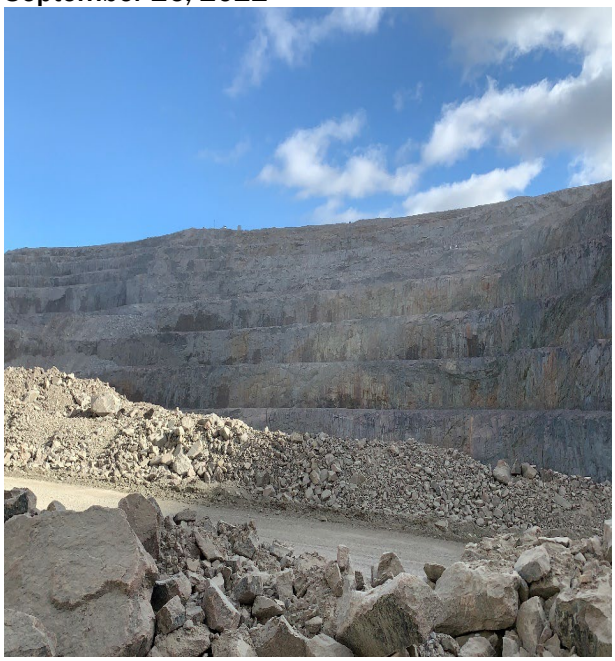

Photo D4: 5034 Pit, East wall of 5034 Pit – September 26, 2022

Photo D5: 5034 Pit, Northeast wall of 5034 Pit – September 26, 2022

Photo D6: 5034 Pit, Northeast wall of 5034 Pit, GW-5034-01 sample – September 26, 2022

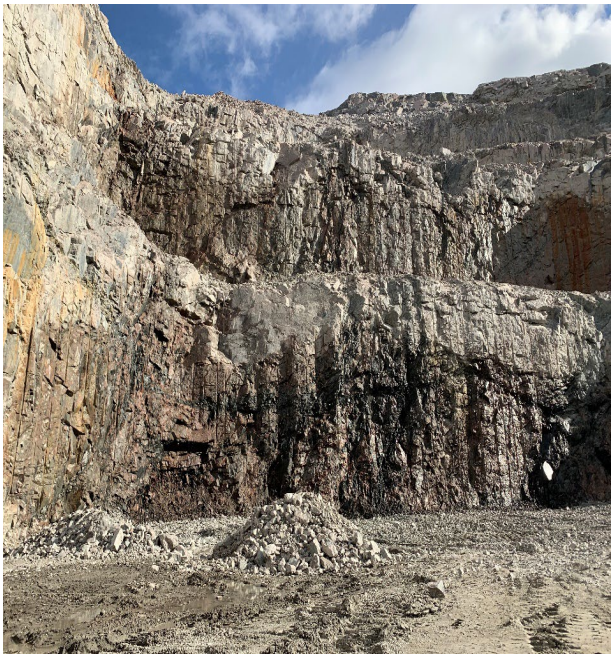

Photo D7: 5034 Pit, Northeast wall of 5034 Pit GW-5034-01 sample – September 26, 2022

Photo D8: 5034 Pit, Southwest wall of 5034 Pit – September 26, 2022

Photo D9: 5034 Pit, Overview of 5034 Pit (NE Wall) – September 26, 2022

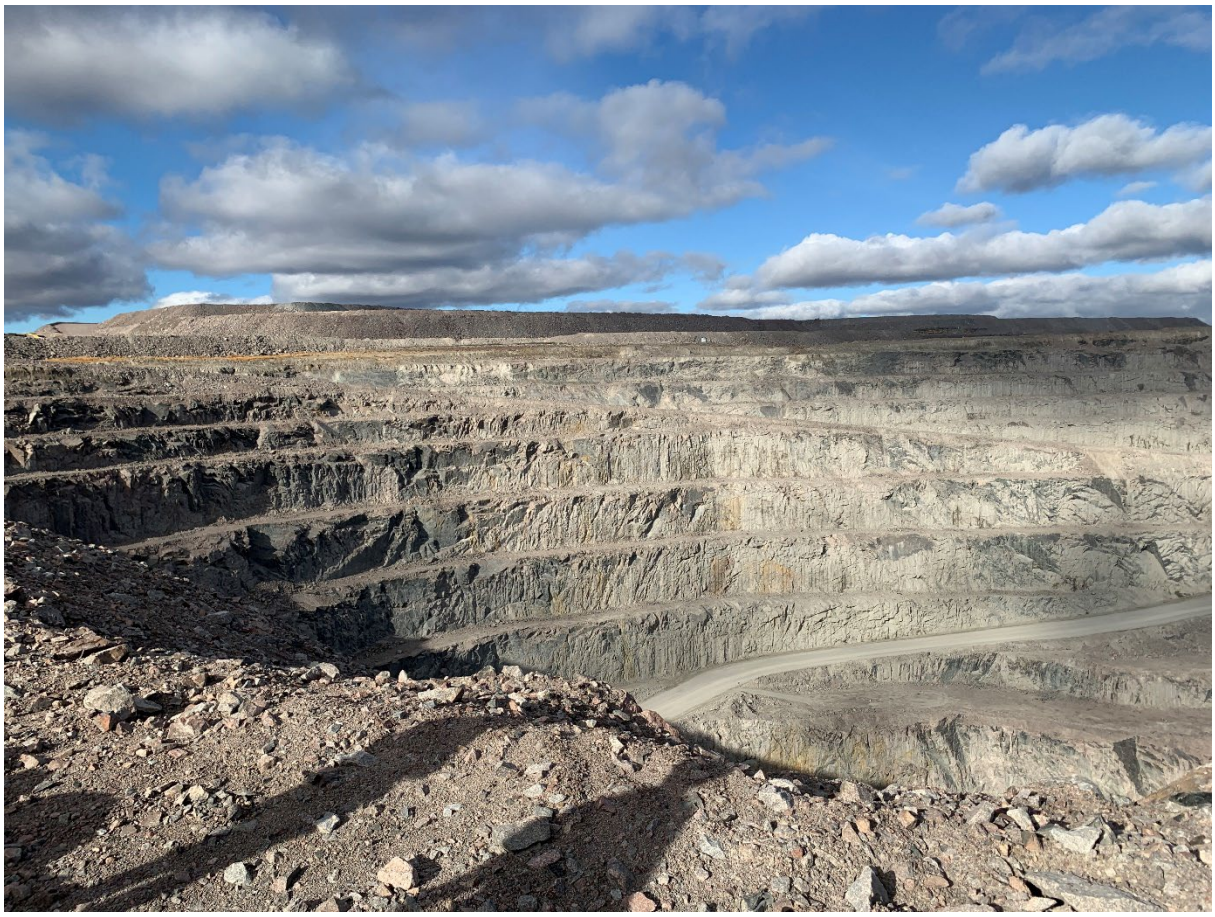

Photo D10: 5034 Pit, Overview of 5034 Pit (West Wall) – September 26, 2022

APPENDIX E

Field Flow Measurements – Seepage Survey

Table E1: Field Flow Measurements of Visible Seeps – Seepage Survey

Pit	Location ID	Bench	Location	Description	Estimated Flow Rate (L/min)	Sampled
5034	1	-	0590764 E 7036067 N	5034 Pit	-	Y (GW-5034-01)
Hearne	2	-	0589572 E 7035700 N	South-west cracks in the pit walls	-	Y (GW-Hearne-01)

- = supporting information not collected or available at the time of the survey; L/min = litres per minute.

APPENDIX F

TDS (Calculated) – 5034 Pit

Table F1: TDS (Calculated) – 5034 Pit

Sampling Point	Date	TDS (Calculated) (mg/L)
SNP-08	2022-01-03	4,480
SNP-08	2022-01-11	4,370
SNP-08	2022-01-17	4,510
SNP-08	2022-01-25	4,240
SNP-08	2022-02-01	3,720
SNP-08	2022-02-07	3,970
SNP-08	2022-02-17	3,990
SNP-08	2022-02-24	3,700
SNP-08	2022-03-02	3,670
SNP-08	2022-03-07	4,850
SNP-08	2022-03-14	3,690
SNP-08	2022-03-21	3,720
SNP-08	2022-03-28	3,360
SNP-08	2022-04-04	4,120
SNP-08	2022-04-11	3,880
SNP-08	2022-04-18	3,350
SNP-08	2022-04-25	3,530
SNP-08	2022-05-01	3,680
SNP-08	2022-05-10	3,470
SNP-08	2022-05-15	2,940
SNP-08	2022-05-24	2,380
SNP-08	2022-05-24	2,380
SNP-08	2022-06-02	2,650
SNP-08	2022-06-06	2,370
SNP-08	2022-06-13	2,850
SNP-08	2022-06-21	3,490
SNP-08	2022-06-28	3,520
SNP-08	2022-07-04	3,440
SNP-08	2022-07-07	3,240
SNP-08	2022-07-14	2,280
SNP-08	2022-07-15	2,340
SNP-08	2022-07-16	2,460
SNP-08	2022-07-17	2,350
SNP-08	2022-07-18	3,360
SNP-08	2022-07-19	2,900
SNP-08	2022-07-20	2,800
SNP-08	2022-07-21	3,660
SNP-08	2022-07-22	3,280
SNP-08	2022-07-23	2,600
SNP-08	2022-07-25	3,220
SNP-08	2022-07-26	3,240
SNP-08	2022-07-27	3,130
SNP-08	2022-07-28	3,080
SNP-08	2022-07-29	2,760
SNP-08	2022-07-30	3,280
SNP-08	2022-07-31	2,480
SNP-08	2022-08-01	3,640
SNP-08	2022-08-02	4,820
SNP-08	2022-08-07	3,670
SNP-08	2022-08-08	3,810
SNP-08	2022-08-09	3,630
SNP-08	2022-08-10	4,360
SNP-08	2022-08-13	4,300
SNP-08	2022-08-14	4,010
SNP-08	2022-08-15	3,530
SNP-08	2022-08-21	3,460
SNP-08	2022-08-22	3,560
SNP-08	2022-08-27	3,390
SNP-08	2022-08-30	3,760
SNP-08	2022-08-31	3,580
SNP-08	2022-09-06	2,070
SNP-08	2022-09-08	2,980
SNP-08	2022-09-11	4,100
SNP-08	2022-09-13	3,280
SNP-08	2022-09-14	3,670
SNP-08	2022-09-15	3,860
SNP-08	2022-09-19	3,000
SNP-08	2022-09-20	3,020
SNP-08	2022-09-21	3,090
SNP-08	2022-09-21	3,000
SNP-08	2022-09-22	3,050
SNP-08	2022-09-24	2,820
SNP-08	2022-09-25	3,080
SNP-08	2022-09-26	3,060
SNP-08	2022-09-27	3,440
SNP-08	2022-09-28	2,940
SNP-08	2022-09-29	3,120
SNP-08	2022-09-30	3,310
SNP-08	2022-10-02	3,540
SNP-08	2022-10-07	2,770
SNP-08	2022-10-10	4,640
SNP-08	2022-10-11	3,230
SNP-08	2022-10-17	3,010
SNP-08	2022-10-18	3,280

Table F1: TDS (Calculated) – 5034 Pit

Sampling Point	Date	TDS (Calculated) (mg/L)
SNP-08	2022-10-19	3,340
SNP-08	2022-10-20	3,110
SNP-08	2022-10-23	4,280
SNP-08	2022-10-24	3,060
SNP-08	2022-10-26	3,300
SNP-08	2022-10-27	3,430
SNP-08	2022-10-28	3,250
SNP-08	2022-10-30	3,320
SNP-08	2022-10-31	3,090
SNP-08	2022-11-01	2,910
SNP-08	2022-11-02	2,900
SNP-08	2022-11-03	2,860
SNP-08	2022-11-08	3,100
SNP-08	2022-11-11	3,500
SNP-08	2022-11-12	3,470
SNP-08	2022-11-13	3,420
SNP-08	2022-11-14	3,660
SNP-08	2022-11-15	4,200
SNP-08	2022-11-16	3,660
SNP-08	2022-11-17	3,970
SNP-08	2022-11-18	4,740
SNP-08	2022-11-19	4,780
SNP-08	2022-11-24	3,740
SNP-08	2022-11-25	3,490
SNP-08	2022-11-26	3,300
SNP-08	2022-11-27	3,460
SNP-08	2022-11-28	3,640
SNP-08	2022-12-14	2,820
SNP-08	2022-12-23	3,350
SNP-08	2022-12-27	3,330
Average		**3,405**

APPENDIX G

Daily Inflows to Hearne Pit

Table G1: Daily Inflows to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-01-01	0
2022-01-02	0
2022-01-03	146
2022-01-04	0
2022-01-05	717
2022-01-06	1,310
2022-01-07	101
2022-01-08	0
2022-01-09	0
2022-01-10	0
2022-01-11	575
2022-01-12	1,122
2022-01-13	551
2022-01-14	1,156
2022-01-15	1,391
2022-01-16	548
2022-01-17	743
2022-01-18	552
2022-01-19	378
2022-01-20	446
2022-01-21	308
2022-01-22	0
2022-01-23	59
2022-01-24	1,233
2022-01-25	416
2022-01-26	223
2022-01-27	151
2022-01-28	145
2022-01-29	1,302
2022-01-30	680
2022-01-31	0

Date	Inflow Hearne Pit Sump
	m³/day
2022-02-01	0
2022-02-02	0
2022-02-03	0
2022-02-04	0
2022-02-05	0
2022-02-06	0
2022-02-07	0
2022-02-08	0
2022-02-09	0
2022-02-10	5,601
2022-02-11	2,183
2022-02-12	111
2022-02-13	0
2022-02-14	0
2022-02-15	0
2022-02-16	0
2022-02-17	8
2022-02-18	196
2022-02-19	219
2022-02-20	1,533
2022-02-21	0
2022-02-22	0
2022-02-23	0
2022-02-24	0
2022-02-25	0
2022-02-26	0
2022-02-27	2,379
2022-02-28	1,751

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-03-01	771
2022-03-02	0
2022-03-03	0
2022-03-04	0
2022-03-05	0
2022-03-06	0
2022-03-07	0
2022-03-08	272
2022-03-09	1,350
2022-03-10	1,607
2022-03-11	522
2022-03-12	0
2022-03-13	0
2022-03-14	0
2022-03-15	381
2022-03-16	1,703
2022-03-17	1,121
2022-03-18	322
2022-03-19	1,186
2022-03-20	1,221
2022-03-21	1,184
2022-03-22	1,052
2022-03-23	686
2022-03-24	202
2022-03-25	0
2022-03-26	0
2022-03-27	0
2022-03-28	0
2022-03-29	1,087
2022-03-30	0
2022-03-31	0

Date	Inflow Hearne Pit Sump
	m³/day
2022-04-01	0
2022-04-02	0
2022-04-03	0
2022-04-04	0
2022-04-05	0
2022-04-06	0
2022-04-07	341
2022-04-08	1,863
2022-04-09	1,545
2022-04-10	643
2022-04-11	0
2022-04-12	0
2022-04-13	0
2022-04-14	224
2022-04-15	2,289
2022-04-16	1,196
2022-04-17	0
2022-04-18	0
2022-04-19	1,249
2022-04-20	1,341
2022-04-21	456
2022-04-22	0
2022-04-23	0
2022-04-24	0
2022-04-25	0
2022-04-26	1,126
2022-04-27	1,222
2022-04-28	833
2022-04-29	0
2022-04-30	706

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-05-01	1,148
2022-05-02	869
2022-05-03	645
2022-05-04	0
2022-05-05	563
2022-05-06	1,310
2022-05-07	1,307
2022-05-08	1,364
2022-05-09	1,220
2022-05-10	964
2022-05-11	929
2022-05-12	831
2022-05-13	994
2022-05-14	1,426
2022-05-15	1,973
2022-05-16	1,336
2022-05-17	1,153
2022-05-18	1,303
2022-05-19	423
2022-05-20	0
2022-05-21	0
2022-05-22	270
2022-05-23	2,861
2022-05-24	972
2022-05-25	0
2022-05-26	0
2022-05-27	0
2022-05-28	0
2022-05-29	0
2022-05-30	0
2022-05-31	182

Date	Inflow Hearne Pit Sump
	m³/day
2022-06-01	1,984
2022-06-02	1,968
2022-06-03	1,714
2022-06-04	1,122
2022-06-05	0
2022-06-06	2,295
2022-06-07	2,380
2022-06-08	0
2022-06-09	0
2022-06-10	0
2022-06-11	0
2022-06-12	0
2022-06-13	192
2022-06-14	0
2022-06-15	2,252
2022-06-16	2,393
2022-06-17	539
2022-06-18	0
2022-06-19	0
2022-06-20	0
2022-06-21	2,182
2022-06-22	1,238
2022-06-23	1,995
2022-06-24	1,687
2022-06-25	1,263
2022-06-26	822
2022-06-27	300
2022-06-28	0
2022-06-29	562
2022-06-30	665

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-07-01	0
2022-07-02	0
2022-07-03	1,267
2022-07-04	1,205
2022-07-05	208
2022-07-06	809
2022-07-07	247
2022-07-08	634
2022-07-09	699
2022-07-10	1,573
2022-07-11	782
2022-07-12	1,880
2022-07-13	0
2022-07-14	702
2022-07-15	522
2022-07-16	1,064
2022-07-17	1,320
2022-07-18	1,035
2022-07-19	1,203
2022-07-20	0
2022-07-21	2,654
2022-07-22	1,456
2022-07-23	1,104
2022-07-24	815
2022-07-25	380
2022-07-26	780
2022-07-27	802
2022-07-28	670
2022-07-29	948
2022-07-30	1,162
2022-07-31	127

Date	Inflow Hearne Pit Sump
	m³/day
2022-08-01	0
2022-08-02	5
2022-08-03	2,292
2022-08-04	509
2022-08-05	328
2022-08-06	301
2022-08-07	1,593
2022-08-08	923
2022-08-09	718
2022-08-10	808
2022-08-11	514
2022-08-12	0
2022-08-13	0
2022-08-14	215
2022-08-15	1,171
2022-08-16	0
2022-08-17	0
2022-08-18	2,264
2022-08-19	890
2022-08-20	421
2022-08-21	0
2022-08-22	0
2022-08-23	0
2022-08-24	0
2022-08-25	0
2022-08-26	1,695
2022-08-27	1,620
2022-08-28	379
2022-08-29	1,607
2022-08-30	1,077
2022-08-31	0

Table G1: Observed Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-09-01	1,537
2022-09-02	764
2022-09-03	773
2022-09-04	749
2022-09-05	762
2022-09-06	780
2022-09-07	766
2022-09-08	893
2022-09-09	204
2022-09-10	1,148
2022-09-11	975
2022-09-12	621
2022-09-13	770
2022-09-14	558
2022-09-15	0
2022-09-16	0
2022-09-17	189
2022-09-18	610
2022-09-19	0
2022-09-20	0
2022-09-21	1,382
2022-09-22	1,940
2022-09-23	886
2022-09-24	922
2022-09-25	281
2022-09-26	0
2022-09-27	1,835
2022-09-28	826
2022-09-29	795
2022-09-30	786
2022-09-01	1,537

Date	Inflow Hearne Pit Sump
	m³/day
2022-10-01	993
2022-10-02	190
2022-10-03	833
2022-10-04	958
2022-10-05	1,144
2022-10-06	633
2022-10-07	801
2022-10-08	646
2022-10-09	394
2022-10-10	0
2022-10-11	787
2022-10-12	1,330
2022-10-13	1,361
2022-10-14	757
2022-10-15	363
2022-10-16	1,087
2022-10-17	236
2022-10-18	899
2022-10-19	339
2022-10-20	1,651
2022-10-21	809
2022-10-22	749
2022-10-23	741
2022-10-24	604
2022-10-25	0
2022-10-26	0
2022-10-27	0
2022-10-28	0
2022-10-29	0
2022-10-30	0
2022-10-31	551

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2022-11-01	1,097
2022-11-02	1,159
2022-11-03	1,004
2022-11-04	906
2022-11-05	923
2022-11-06	351
2022-11-07	0
2022-11-08	0
2022-11-09	0
2022-11-10	1,142
2022-11-11	1,101
2022-11-12	940
2022-11-13	922
2022-11-14	448
2022-11-15	0
2022-11-16	0
2022-11-17	1,126
2022-11-18	1,325
2022-11-19	1,947
2022-11-20	1,085
2022-11-21	842
2022-11-22	1,518
2022-11-23	0
2022-11-24	0
2022-11-25	1,003
2022-11-26	1,361
2022-11-27	792
2022-11-28	1,241
2022-11-29	0
2022-11-30	1,148

Date	Inflow Hearne Pit Sump
	m³/day
2022-12-01	994
2022-12-02	241
2022-12-03	0
2022-12-04	93
2022-12-05	1,345
2022-12-06	425
2022-12-07	0
2022-12-08	0
2022-12-09	108
2022-12-10	1,271
2022-12-11	1,156
2022-12-12	1,159
2022-12-13	900
2022-12-14	0
2022-12-15	0
2022-12-16	0
2022-12-17	476
2022-12-18	1,413
2022-12-19	1,198
2022-12-20	979
2022-12-21	0
2022-12-22	0
2022-12-23	0
2022-12-24	0
2022-12-25	904
2022-12-26	1,404
2022-12-27	1,080
2022-12-28	523
2022-12-29	0
2022-12-30	0
2022-12-31	0

Average Annual Hearne Pit Inflow	
January to end of December	
650	m³/day

APPENDIX H

Hearne Pit Photographs

Photo H1: Hearne Pit, West wall of Pit – September 26, 2022

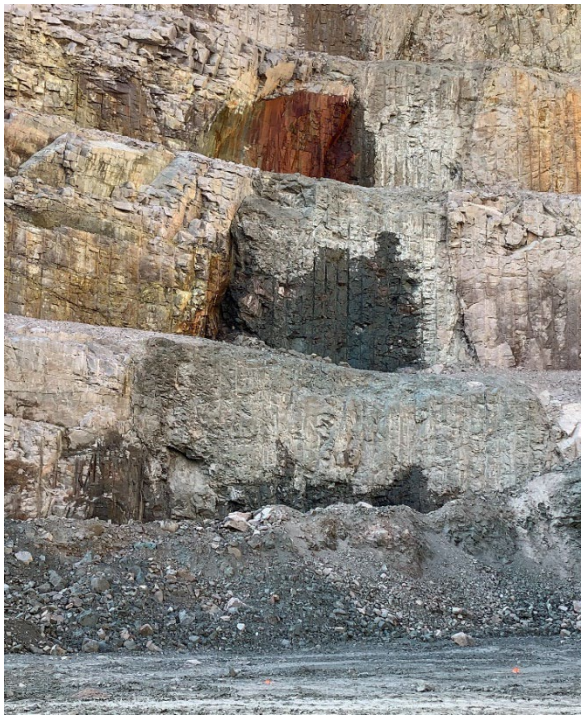

Photo H2: Hearne Pit, West wall of Pit – September 26, 2022

Photo H3: Hearne Pit, West wall of Pit – September 26, 2021

Photo H4: Hearne Pit, West wall of Pit, GW-Hearne-01 sample – September 26, 2021

Photo H5: Hearne Pit, West wall of Pit, GW-Hearne-01 sample – September 26, 2021

Photo H6: Hearne Pit, West wall of the Pit – September 26, 2022

Photo H7: Hearne Pit, North and Northeast wall of the Pit – September 26, 2022

Photo H8: Hearne Pit, Southwest wall of the Pit – September 26, 2022

APPENDIX I

TDS (Calculated) – Hearne Pit

Table I1: TDS (calculated) – Hearne Pit

Sampling Point	Date	TDS (Calculated) (mg/L)
SNP-09	2022-01-06	3,540
SNP-09	2022-01-11	3,810
SNP-09	2022-01-23	3,670
SNP-09	2022-02-10	4,290
SNP-09	2022-02-28	4,160
SNP-09	2022-03-09	2,680
SNP-09	2022-03-16	3,200
SNP-09	2022-03-21	3,350
SNP-09	2022-03-29	4,230
SNP-09	2022-04-08	4,110
SNP-09	2022-04-15	3,980
SNP-09	2022-04-20	3,670
SNP-09	2022-04-26	3,620
SNP-09	2022-05-01	2,950
SNP-09	2022-05-10	3,050
SNP-09	2022-05-17	1,360
SNP-09	2022-05-24	2,120
SNP-09	2022-05-24	2,120
SNP-09	2022-06-01	2,550
SNP-09	2022-06-04	2,650
SNP-09	2022-06-06	2,580
SNP-09	2022-06-13	2,240
SNP-09	2022-06-23	2,950
SNP-09	2022-07-05	3,690
SNP-09	2022-07-06	2,800
SNP-09	2022-07-10	3,140
SNP-09	2022-07-11	3,180
SNP-09	2022-07-14	3,400
SNP-09	2022-07-15	2,560
SNP-09	2022-07-16	2,820
SNP-09	2022-07-17	2,500
SNP-09	2022-07-18	3,040
SNP-09	2022-07-19	2,830
SNP-09	2022-07-20	2,810
SNP-09	2022-07-21	3,260
SNP-09	2022-07-22	2,750
SNP-09	2022-07-23	2,170
SNP-09	2022-07-24	2,560
SNP-09	2022-07-25	2,510
SNP-09	2022-07-26	2,590
SNP-09	2022-07-27	2,350
SNP-09	2022-07-28	2,550
SNP-09	2022-07-29	2,200

Sampling Point	Date	TDS (Calculated (mg/L)
SNP-09	2022-07-30	2,830
SNP-09	2022-08-02	3,710
SNP-09	2022-08-03	3,000
SNP-09	2022-08-04	3,600
SNP-09	2022-08-06	3,270
SNP-09	2022-08-07	3,120
SNP-09	2022-08-08	2,980
SNP-09	2022-08-09	2,780
SNP-09	2022-08-10	3,170
SNP-09	2022-08-11	2,560
SNP-09	2022-08-15	2,680
SNP-09	2022-08-16	3,560
SNP-09	2022-08-17	3,360
SNP-09	2022-08-18	3,640
SNP-09	2022-08-26	2,690
SNP-09	2022-08-27	2,470
SNP-09	2022-08-28	2,220
SNP-09	2022-08-29	2,300
SNP-09	2022-08-30	2,490
SNP-09	2022-08-31	2,590
SNP-09	2022-09-01	3,030
SNP-09	2022-09-05	2,620
SNP-09	2022-09-06	2,520
SNP-09	2022-09-08	2,530
SNP-09	2022-09-11	3,140
SNP-09	2022-09-12	2,520
SNP-09	2022-09-13	2,320
SNP-09	2022-09-22	2,860
SNP-09	2022-09-24	2,860
SNP-09	2022-09-25	3,110
SNP-09	2022-09-27	2,670
SNP-09	2022-09-28	2,910
SNP-09	2022-09-29	2,760
SNP-09	2022-09-30	3,070
SNP-09	2022-10-01	2,820
SNP-09	2022-10-02	2,720
SNP-09	2022-10-03	2,850
SNP-09	2022-10-04	2,640
SNP-09	2022-10-05	2,890
SNP-09	2022-10-06	2,580
SNP-09	2022-10-07	2,570
SNP-09	2022-10-11	3,200
SNP-09	2022-10-12	3,220

Table I1: TDS (calculated) – Hearne Pit

Sampling Point	Date	TDS (Calculated) (mg/L)
SNP-09	2022-10-13	3,140
SNP-09	2022-10-15	2,650
SNP-09	2022-10-16	2,630
SNP-09	2022-10-18	2,630
SNP-09	2022-10-19	2,850
SNP-09	2022-10-20	2,340
SNP-09	2022-10-23	3,120
SNP-09	2022-10-24	2,620
SNP-09	2022-11-01	2,480
SNP-09	2022-11-02	2,290
SNP-09	2022-11-03	2,450
SNP-09	2022-11-09	3,350
SNP-09	2022-11-12	2,450
SNP-09	2022-11-13	2,520
SNP-09	2022-11-14	2,580
SNP-09	2022-11-15	2,780
SNP-09	2022-11-18	4,010
SNP-09	2022-11-19	3,140
SNP-09	2022-11-21	2,450
SNP-09	2022-11-22	2,590
SNP-09	2022-11-26	2,400
SNP-09	2022-11-27	2,690
SNP-09	2022-11-28	2,490
SNP-09	2022-12-05	2,590
SNP-09	2022-12-11	2,740
SNP-09	2022-12-18	2,690
SNP-09	2022-12-20	2,290
SNP-09	2022-12-26	2,990
Average		**2,877**

APPENDIX J

Daily Inflows to Tuzo Pit

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m^3/day
2022-01-01	0
2022-01-02	0
2022-01-03	0
2022-01-04	0
2022-01-05	0
2022-01-06	0
2022-01-07	0
2022-01-08	0
2022-01-09	0
2022-01-10	0
2022-01-11	0
2022-01-12	0
2022-01-13	0
2022-01-14	0
2022-01-15	0
2022-01-16	0
2022-01-17	0
2022-01-18	0
2022-01-19	0
2022-01-20	0
2022-01-21	0
2022-01-22	0
2022-01-23	0
2022-01-24	0
2022-01-25	0
2022-01-26	0
2022-01-27	0
2022-01-28	0
2022-01-29	0
2022-01-30	0
2022-01-31	0

Date	Inflow Tuzo Pit Sump
	m^3/day
2022-02-01	0
2022-02-02	0
2022-02-03	0
2022-02-04	0
2022-02-05	0
2022-02-06	0
2022-02-07	0
2022-02-08	0
2022-02-09	0
2022-02-10	0
2022-02-11	0
2022-02-12	0
2022-02-13	0
2022-02-14	0
2022-02-15	0
2022-02-16	0
2022-02-17	0
2022-02-18	0
2022-02-19	0
2022-02-20	0
2022-02-21	0
2022-02-22	0
2022-02-23	0
2022-02-24	0
2022-02-25	0
2022-02-26	0
2022-02-27	0
2022-02-28	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2022-03-01	0
2022-03-02	0
2022-03-03	0
2022-03-04	0
2022-03-05	0
2022-03-06	0
2022-03-07	0
2022-03-08	0
2022-03-09	0
2022-03-10	0
2022-03-11	0
2022-03-12	0
2022-03-13	0
2022-03-14	0
2022-03-15	0
2022-03-16	0
2022-03-17	0
2022-03-18	0
2022-03-19	0
2022-03-20	0
2022-03-21	0
2022-03-22	0
2022-03-23	0
2022-03-24	0
2022-03-25	0
2022-03-26	0
2022-03-27	0
2022-03-28	0
2022-03-29	0
2022-03-30	0
2022-03-31	0

Date	Inflow Tuzo Pit Sump
	m³/day
2022-04-01	0
2022-04-02	0
2022-04-03	0
2022-04-04	0
2022-04-05	0
2022-04-06	0
2022-04-07	0
2022-04-08	0
2022-04-09	0
2022-04-10	0
2022-04-11	0
2022-04-12	0
2022-04-13	0
2022-04-14	0
2022-04-15	0
2022-04-16	0
2022-04-17	0
2022-04-18	0
2022-04-19	0
2022-04-20	0
2022-04-21	0
2022-04-22	0
2022-04-23	0
2022-04-24	0
2022-04-25	0
2022-04-26	0
2022-04-27	0
2022-04-28	0
2022-04-29	0
2022-04-30	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2022-05-01	0
2022-05-02	0
2022-05-03	0
2022-05-04	0
2022-05-05	0
2022-05-06	0
2022-05-07	0
2022-05-08	0
2022-05-09	0
2022-05-10	0
2022-05-11	0
2022-05-12	0
2022-05-13	0
2022-05-14	0
2022-05-15	0
2022-05-16	0
2022-05-17	0
2022-05-18	0
2022-05-19	0
2022-05-20	0
2022-05-21	0
2022-05-22	0
2022-05-23	0
2022-05-24	0
2022-05-25	0
2022-05-26	0
2022-05-27	0
2022-05-28	0
2022-05-29	0
2022-05-30	0
2022-05-31	0

Date	Inflow Tuzo Pit Sump
	m³/day
2022-06-01	0
2022-06-02	0
2022-06-03	0
2022-06-04	0
2022-06-05	0
2022-06-06	0
2022-06-07	0
2022-06-08	0
2022-06-09	0
2022-06-10	0
2022-06-11	0
2022-06-12	0
2022-06-13	0
2022-06-14	0
2022-06-15	0
2022-06-16	0
2022-06-17	0
2022-06-18	0
2022-06-19	0
2022-06-20	0
2022-06-21	0
2022-06-22	0
2022-06-23	0
2022-06-24	0
2022-06-25	0
2022-06-26	0
2022-06-27	0
2022-06-28	0
2022-06-29	0
2022-06-30	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2022-07-01	0
2022-07-02	0
2022-07-03	0
2022-07-04	0
2022-07-05	0
2022-07-06	0
2022-07-07	0
2022-07-08	0
2022-07-09	0
2022-07-10	0
2022-07-11	0
2022-07-12	0
2022-07-13	0
2022-07-14	0
2022-07-15	0
2022-07-16	0
2022-07-17	0
2022-07-18	0
2022-07-19	0
2022-07-20	0
2022-07-21	0
2022-07-22	0
2022-07-23	0
2022-07-24	0
2022-07-25	0
2022-07-26	0
2022-07-27	0
2022-07-28	0
2022-07-29	0
2022-07-30	0
2022-07-31	0

Date	Inflow Tuzo Pit Sump
	m³/day
2022-08-01	0
2022-08-02	0
2022-08-03	0
2022-08-04	0
2022-08-05	0
2022-08-06	0
2022-08-07	0
2022-08-08	0
2022-08-09	0
2022-08-10	0
2022-08-11	0
2022-08-12	0
2022-08-13	0
2022-08-14	0
2022-08-15	0
2022-08-16	0
2022-08-17	0
2022-08-18	0
2022-08-19	0
2022-08-20	0
2022-08-21	0
2022-08-22	0
2022-08-23	0
2022-08-24	0
2022-08-25	0
2022-08-26	0
2022-08-27	0
2022-08-28	0
2022-08-29	0
2022-08-30	0
2022-08-31	0

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2022-09-01	0
2022-09-02	0
2022-09-03	0
2022-09-04	0
2022-09-05	0
2022-09-06	0
2022-09-07	0
2022-09-08	0
2022-09-09	0
2022-09-10	0
2022-09-11	0
2022-09-12	0
2022-09-13	0
2022-09-14	0
2022-09-15	0
2022-09-16	0
2022-09-17	0
2022-09-18	0
2022-09-19	0
2022-09-20	0
2022-09-21	0
2022-09-22	0
2022-09-23	0
2022-09-24	0
2022-09-25	0
2022-09-26	0
2022-09-27	0
2022-09-28	0
2022-09-29	0
2022-09-30	0

Date	Inflow Tuzo Pit Sump
	m³/day
2022-10-01	0
2022-10-02	0
2022-10-03	0
2022-10-04	0
2022-10-05	0
2022-10-06	0
2022-10-07	0
2022-10-08	0
2022-10-09	0
2022-10-10	0
2022-10-11	0
2022-10-12	0
2022-10-13	0
2022-10-14	0
2022-10-15	0
2022-10-16	0
2022-10-17	0
2022-10-18	0
2022-10-19	0
2022-10-20	0
2022-10-21	0
2022-10-22	0
2022-10-23	0
2022-10-24	0
2022-10-25	0
2022-10-26	0
2022-10-27	0
2022-10-28	0
2022-10-29	0
2022-10-30	0
2022-10-31	0

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2022-11-01	0
2022-11-02	0
2022-11-03	0
2022-11-04	0
2022-11-05	0
2022-11-06	0
2022-11-07	0
2022-11-08	0
2022-11-09	0
2022-11-10	0
2022-11-11	0
2022-11-12	0
2022-11-13	0
2022-11-14	0
2022-11-15	0
2022-11-16	0
2022-11-17	0
2022-11-18	0
2022-11-19	0
2022-11-20	0
2022-11-21	0
2022-11-22	0
2022-11-23	0
2022-11-24	0
2022-11-25	0
2022-11-26	0
2022-11-27	0
2022-11-28	0
2022-11-29	0
2022-11-30	0

Date	Inflow to Tuzo Pit
	m³/day
2022-12-01	0
2022-12-02	0
2022-12-03	0
2022-12-04	0
2022-12-05	0
2022-12-06	0
2022-12-07	0
2022-12-08	0
2022-12-09	0
2022-12-10	0
2022-12-11	0
2022-12-12	0
2022-12-13	0
2022-12-14	0
2022-12-15	0
2022-12-16	0
2022-12-17	0
2022-12-18	0
2022-12-19	0
2022-12-20	0
2022-12-21	0
2022-12-22	0
2022-12-23	0
2022-12-24	0
2022-12-25	0
2022-12-26	0
2022-12-27	0
2022-12-28	0
2022-12-29	0
2022-12-30	0
2022-12-31	0

Average Annual Tuzo Pit Inflow	
January to December	
0	m³/day

APPENDIX K

TDS (Calculated) – Tuzo Pit

Table K1: TDS (Calculated) – Tuzo Pit

Station	Date	TDS (Calculated) (mg/L)
SNP-10	-	0
Average		**0**

Note: no pumping occurred at Tuzo Pit in 2022.

APPENDIX L

Tuzo Pit Photographs

Photo L1: Tuzo Pit, East wall of Pit – September 26, 2022

Photo L2: Tuzo Pit, East wall of Pit – September 26, 2022

Photo L3: Tuzo Pit, East wall of Pit – September 26, 2022

Photo L4: Tuzo Pit, Northeast wall of Pit – September 26, 2022

Photo L5: Tuzo Pit, Northeast wall of Pit – September 26, 2022

Photo L6: Tuzo Pit, Southeast wall of Pit – September 26, 2022

Photo L7: Tuzo Pit, Southeast wall of Pit – September 26, 2022

Appendix C – GEOCHEMICAL AUDIT TECHNICAL REPORT, 2022

DE BEERS GROUP

Gahcho Kué Mine

2022 Bi-Annual Geochemical Audit Report

March 2023

REVISION HISTORY

Version	Date	Notes/Revisions
Version 1	March 2023	Submitted to the Mackenzie Valley Land and Water Board (MVLWB) in accordance with Water Licence MV2005L2-0015.

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1 Introduction

This report presents the results of the 2022 Bi-Annual Geochemical Audit at the Gahcho Kué Mine (Mine) completed by De Beers Canada Inc. (De Beers). The geochemical audit is to be completed during the construction and operation phases of the project twice per year: once following spring freshet and again prior to freeze up in late summer/early fall.

As part of the Gahcho Kué Mine Geochemical Characterization and Management Plan (Version 4.4; De Beers 2021a) under Section 8.1 “Bi-Annual Geochemical Audit”, De Beers committed to completing a visual inspection of construction material, mine roads, rock pads, water management structures, mine rock piles, the Coarse Processed Kimberlite (CPK) Pile, and the Fine Processed Kimberlite (FPK) Containment Facility and laboratory analysis of sampled material from these sources and facilities. Samples were collected for geochemical characterization to confirm that rock is being placed according to the protocols in the Processed Kimberlite and Mine Rock Management Plan, Version 7.2 (De Beers 2021). De Beers also committed to monitor storage facilities of all solid phase mine waste materials including observed seepage and runoff water in the surrounding vicinity for contaminants.

This report presents the rock performance monitoring sampling programs carried out as part of the 2022 Bi-annual Geochemical Audit. The report presents details of the site inspections, sampling programs, sample characterization and analysis of analytical results and conclusions of the audit inspections.

2 Background

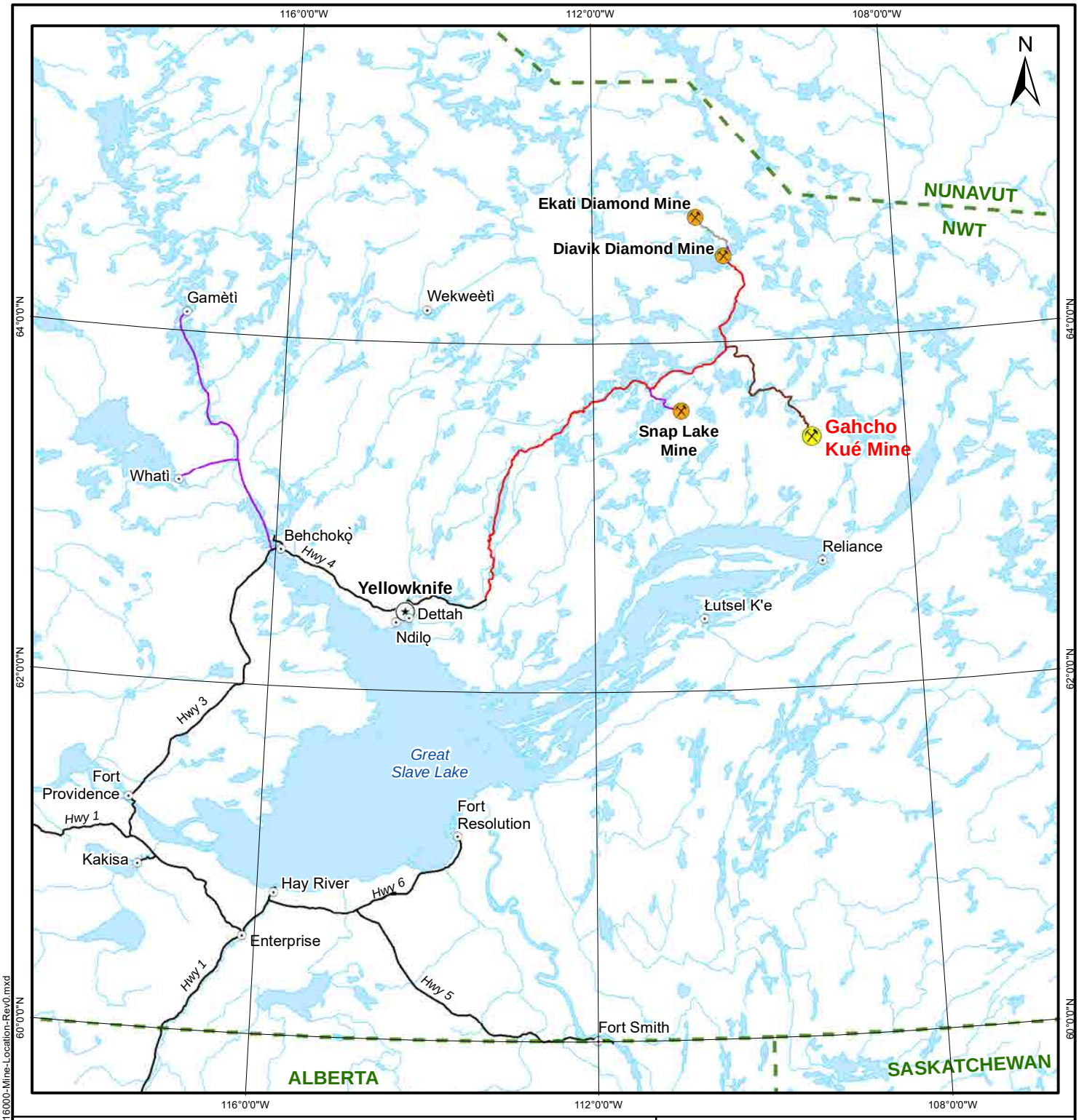
De Beers began open pit mining, milling, and associated activities at the Mine in September 2016. The Mine is located approximately 280 km northeast of Yellowknife, and approximately 80 km southeast of the Snap Lake Mine (Figure 2-1; centered at 63°25’48” N, 109°12’00” W). The three phases of the life of mine include construction (2 years), operations (12 years), and closure (19+ years). Activities at the Mine include:

- The development of:
  - dykes and berms to facilitate the dewatering of Kennady Lake;
  - milling facilities and infrastructure;
  - ore and low grade ore stockpiles;
  - a FPK Containment Facility;
  - a CPK Containment Facility;
  - a West Mine Rock Pile;
  - a South Mine Rock Pile;
  - the existing exploration camp, winter access spur road camp, and a mining camp;
  - fuel, lubricant, and glycol storage facilities and laydown areas;
  - explosives storage facilities and use of explosives;

  - a landfarm;
  - site facilities and infrastructure including but not limited to the water supply facility, sewage treatment plant, pipelines, incinerator, site roads, all-season airstrip and apron, power plant, electrical distribution, and material storage, and sorting facilities;
- open pit mining of the 5034, Hearne, and Tuzo kimberlite pipes;
- deposition of kimberlite and waste rock into the open pits;
- quarrying;
- construction and operation of the winter access road; and
- use of equipment, vehicles, and machines.

Further details on Mine activities are provided in the 2020 Updated Project Description (De Beers 2020b).

The study area for the Bi-Annual Geochemical Audit includes the open pits, CPK Pile, FPK Containment Facility, kimberlite ore stockpile, West and South Mine Rock piles, roadways, rock pads, water management dykes and berms, and any other areas where rock will be disturbed or deposited (Figure 2-2). Geochemical classification criteria for mine materials are presented in the context of the development plans for the Mine.



LEGEND

- Gahcho Kué Mine
- Existing Mine
- Territorial Capital
- Populated Place
- Highway
- Access Road
- Existing Winter Road
- Gahcho Kué Winter Access Road
- Tibbitt to Contwoyto Winter Road
- Watercourse
- Waterbody
- Territorial/Provincial Boundary

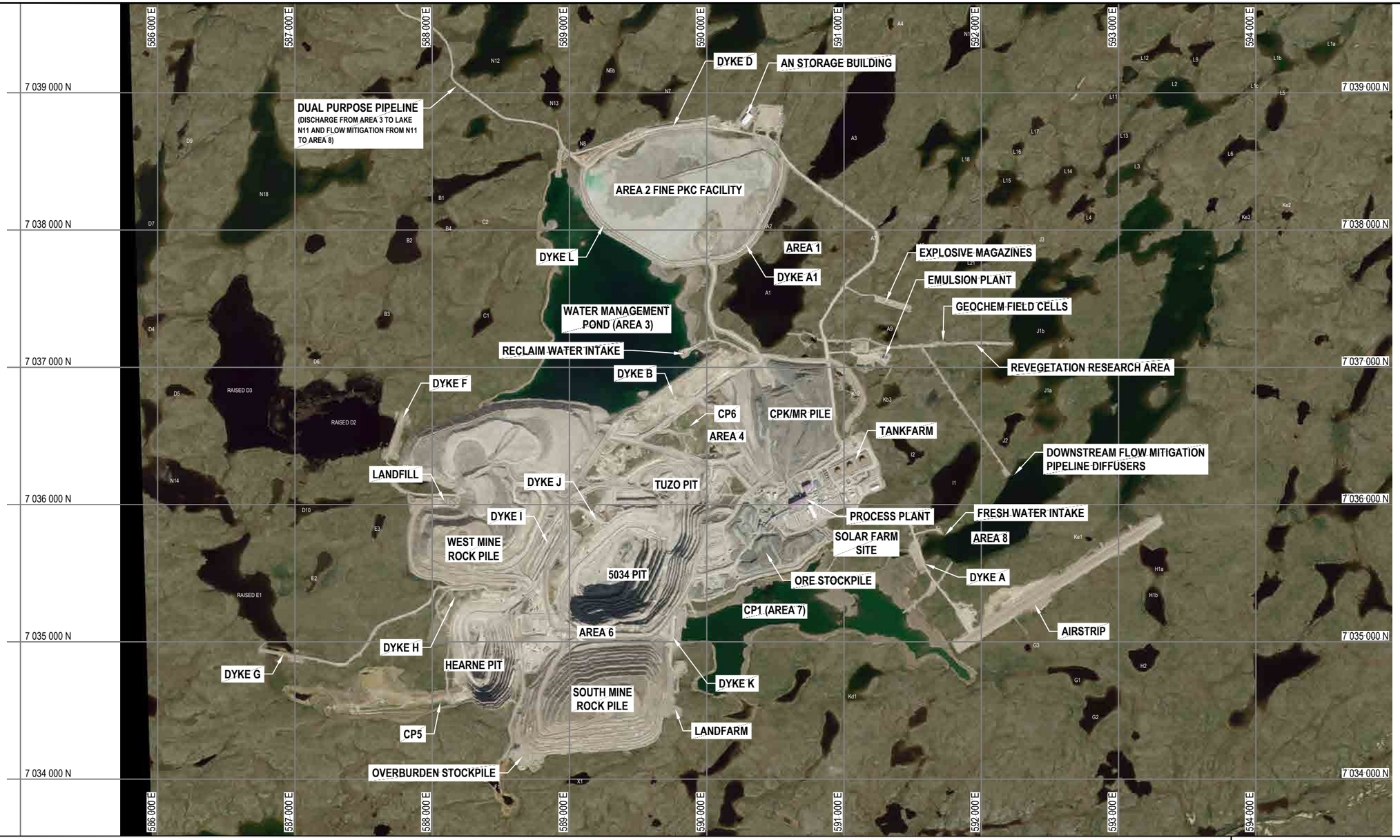
NOTES
Source: Base Data Obtained From Geogratis, © Department of Natural Resources Canada. All Rights Reserved.

GAHCHO KUÉ MINE

Location of the Gahcho Kué Mine

PROJECTION: Canadian Lambert Conf. Conic	DATUM: NAD83	DE BEERS GROUP
Scale: 1:3,500,000 (30 15 0 30 Kilometres)		
FILE No: 22526974-16000-Mine-Location-Rev0		DATE: March 16, 2023
JOB NO: 22526974	REVISION NO: 0	Figure 2-1
OFFICE: GOLD-CAL	DRAWN: ANK / CHECK: BT	

I:\CLIENT\DE BEERS\22526974\Mapping\Products\Geochem\22526974-16000-Mine-Location-Rev0.mxd



NOTES:

Satellite Image Provided by Maxar Technologies.
Photo Date: August 17, 2022

GAHCHO KUÉ MINE

SITE INFRASTRUCTURE LAYOUT

PROJECTION: UTM Zone 12	DATUM: NAD83	
500 0 500 SCALE 1:30,000 METRES		
FILE No: ENG.EARC03068-Figure 2		DATE: Sept. 23, 2022
JOB No: ENG.EARC03068	REVISION No: A	**Figure 2-2**
OFFICE: EDMONTON	DRAWN: EL / CHECK: HX	

Q:\Edmonton\Engineering\E1419\Projects_GAHCHO_KUE\ENG.EARC03068-10_WL_Amendment\OWMP V6 2020\Figure 8x Infrastructure Layout 2022.dwg Mar 08, 2023 - 12:04pm

3 Scope of Work

The 2022 Bi-Annual Geochemical Audit includes 2022 site specific activities, pursuant to the Geochemical Characterization and Management Plan (De Beers 2021a), as described in Table 3-1. The scope of work is comprised of three primary tasks: inspection, field sampling, and data analysis and reporting.

Table 3-1 Requirements under Geochemical Characterization and Management Plan

Plan Guidelines	Corresponding Section in Report
Recorded mine material volumes	Section 4.1
Descriptions of mine material placement during the past year;	Section 4.1 and 5.4
Results of the bi-annual geochemical site audit;	Section 5
Results of mine material sample collection and analysis;	Section 5
A factual summary of the results of geochemical characterization of processed kimberlite and mine rock samples collected during the monitoring period;	Section 4.1, 4.2, 5.1 and 5.2
Evaluation of the results of geochemical characterization relative to the existing geochemical characterization dataset;	Section 5, Section 6, Appendix C
Summary of water quality, and evaluation of any trends, at SNP water quality monitoring locations relevant to the Geochemical Characterization Plan and bi-annual monitoring locations;	Section 4.3, 5.3, SNP stations addressed in Water Licence Annual Report
Monitoring locations relevant to the Geochemical Characterization Plan and bi-annual geochemistry audit sampling locations;	Section 4.1 and 4.3
Any action level exceedances and response actions taken during the year;	Section 7
Information regarding contingencies and responses to monitoring results;	Section 7
Recommendations for additional monitoring based on observations made during the bi-annual geochemical audits, and/or trends in ARD monitoring data and seepage quality data; and	Section 7
Recommendations with respect to the protocols as described in the Processed Kimberlite and Mine Rock Management Plan, based on the results of geochemical monitoring during that year.	Section 7

3.1 Site Inspection and Rock Performance Monitoring

The site inspections include observing site infrastructure where mine rock material has been placed, and the coarse and fine processed kimberlite piles, for visible signs of weathering such as iron staining or mineral precipitates, as well as for presence of visible sulphides and carbonates. In addition, supplemental mine rock and processed kimberlite samples were collected for geochemical characterization to confirm that rock is being placed according to the protocols in the Processed Kimberlite and Mine Rock Management Plan (De Beers 2020a). Collection of mine rock and processed kimberlite samples in accordance the Geochemical Characterization and Management Plan (Table 6 in De Beers 2021a) was completed during the rock performance monitoring site investigations.

Performance monitoring involves comparison of the expected geochemical characteristics, based on the Environmental Impact Statement (EIS) sampling, operational monitoring results, and the results of analysis of supplemental geochemical characterization samples. The supplemental samples collected during the geochemical site inspection will also be compared to the geochemical criteria for mine rock management to confirm the characteristics of the rock used for construction of site infrastructure.

3.2 Geochemical Field Cell Monitoring

The objective of field scale tests is to evaluate long-term chemical and physical weathering properties of materials to confirm the rate of acid generation and/or metal leaching in site-specific conditions. De Beers constructed four isolated test pads in 2019, each constructed of 6,500 to 10,800 kg of material (De Beers 2020c). Each of the sample pads contain representative waste rock and ore samples of differing compositions, as described in Table 3-2. In accordance with the Geochemical Characterization and Management Plan, field tests are required to be monitored during the initial operation period until such time that the results do not add value to the geochemical monitoring dataset. The results of the field test monitoring are summarized in Section 5.2.

Table 3-2 Gahcho Kué Test Pads Dimensions and Materials

Pad	Dimensions of Testpad (LxWxD) (m)	Rock Material Description	Origin of Material	Volume of material placed (kg)	Date Placed
Type 1	4.2 x 2.7 x 1	Granite (NAG)	5034 Pit	7,200	Feb. 2019
Type 3	4.2 x 2.7 x 1	Granite/Diabase (PAG)	5034 Pit	10,800	June 2019
CPK	4.2 x 2.7 x 1	Course Processed Kimberlite	5034 Pit	6,500	Feb. 2019
Blank*	4.2 x 2.7 x 1	Empty	Empty	0	n/a

*Intended to be a baseline measurement for one year and then filled with Till.
NAG = net acid generating; PAG = potentially acid generating; n/a = not applicable.

3.3 Seepage Survey

During the 2022 seepage survey program, water quality samples were collected where active seepage was observed discharging from site infrastructure. The 2022 seepage survey program was comprised of 18 locations, which were each visited in the spring and fall. Among the stations inspected, active seepage was observed and sampled at two locations, of which SNP-14-A was sampled during the spring and fall surveys, while active seepage was observed and sampled at SNP-16 during the fall survey only. Photos captured during the 2022 survey are presented in Appendix A.

Flow rate of seepage was to be estimated in the field using an average of three timed measurements taken of the speed of a neutral buoyant particle over a measured distance, and then converted to metres per second. Due to the low flow nature of most identified seepages, only one seepage flow was able to be recorded during the 2022 seepage program; these flows were measured in the fall survey as 0.0003 m/s for SNP-14-A.

Seepage water quality was measured in the field using a 'SmarTroll' multimeter to record water temperature, pH, specific conductivity, dissolved oxygen, and oxidation-reduction potential. The results of the seepage surveys are summarized in Section 5.3.

4 Methodology and Sample Collection

4.1 Rock Sampling Programs

Detailed mine rock placement records are presented in Section 12 of the 2022 Water Licence Annual Report. In summary, approximately 2.3 million tonnes of PAG materials were placed in the Type 3 zone of the West Mine Rock Pile in 2022. Not all the material placed in the Type 3 zone was PAG. Due to construction sequencing, non-AG materials were also placed in the PAG zone. There was no mine rock placed in the South Mine Rock Pile in 2022.

As outlined in the Geochemical Characterization and Management Plan, two types of samples were collected for the purpose of geochemical assessment:

- mine rock samples collected by De Beers as a component of the operational mine rock monitoring program
- supplemental geochemistry samples collected during the bi-annual geochemical audit inspections

4.1.1 Operational Sampling

Operational monitoring samples are collected by De Beers for the purpose of geochemical management of mine materials during operations. Samples are collected from blast hole drilling following a pattern as defined in the Geochemical Characterization and Management Plan. In 2022, a total of 2,247 operational samples of mine rock were collected and analysed for total sulphur by De Beers.

A summary and interpretation of the results of the operational monitoring results are provided in Section 5.4 and in the Annual Water Licence Report.

4.1.2 Supplemental Samples

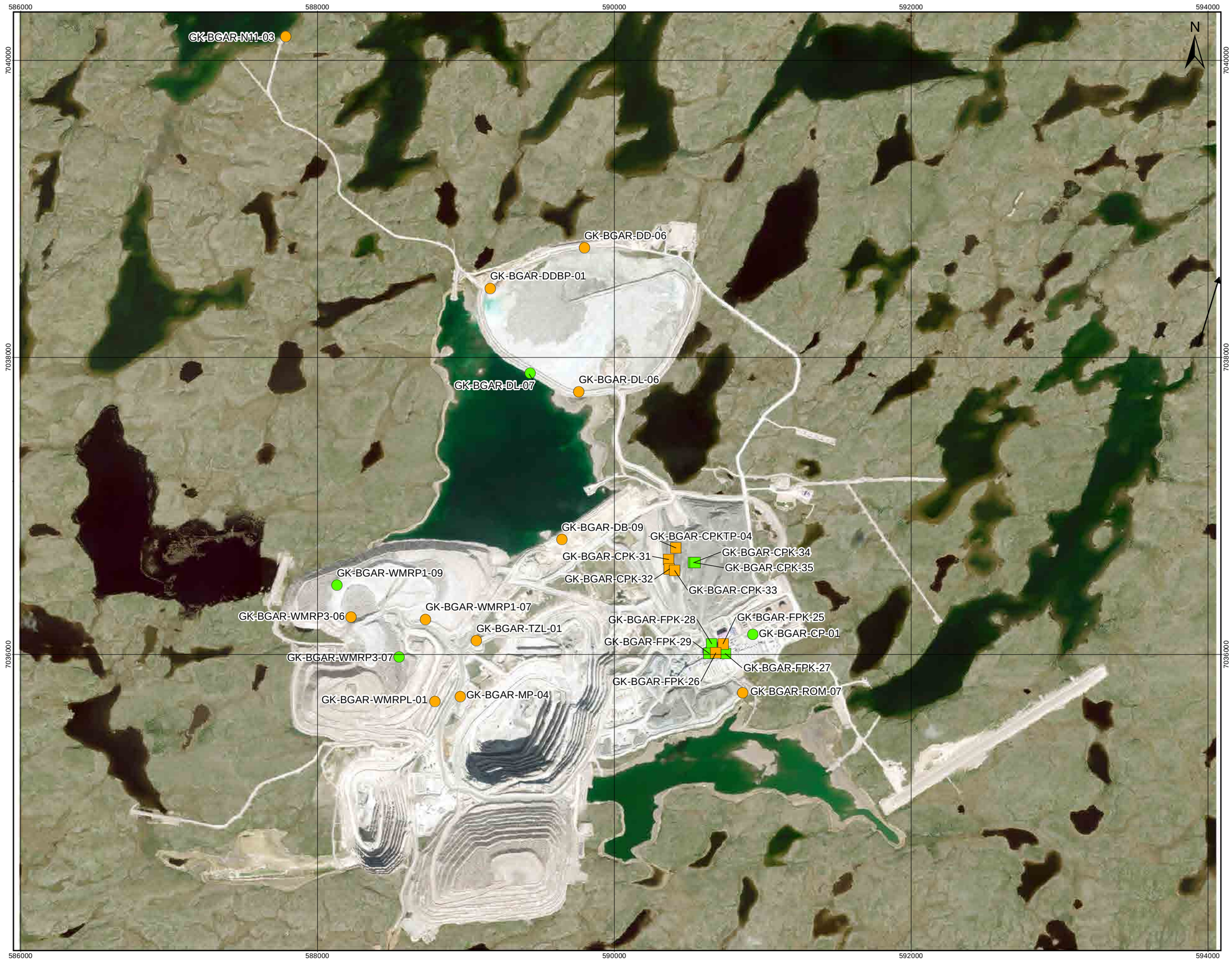
A visual inspection for acid generation in areas of mine rock deposition or disturbance was carried out between 18 and 20 July 2022 under the direction of Kevin Gostlin, Mine Technical Services Manager, P.Geo. This inspection is referred to as the "Spring Audit". A visual inspection for acid generation in areas of mine rock deposition or disturbance was carried out between 13 and 15 November 2022, also under the direction of Kevin Gostlin. This inspection is referred to as the "Fall Audit". A total of 26 supplemental geochemical samples were also collected during the bi-annual geochemical site audits (Table 4-1).

The inspections included observing surface exposed rock for visible signs of weathering such as iron staining or mineral precipitates, visual evaluation for presence of visible sulphides and carbonates, and

collection of samples for laboratory analysis to confirm the properties of the construction materials used on site. The following work method was utilized for rock sample collection:

- Infrastructure components to undergo sampling were identified based on locations with active material placement in the preceding six months of the audit inspection; specific sample locations were chosen based on recent construction and rock placement. Rock samples were collected from fresh, unweathered material, where possible, from the surface of infrastructure sites. No mechanical means of digging or drilling methods were used to collect samples; however, material was moved manually to uncover fresh samples below the top layer of the rock piles. Figure 4-1 shows each sample location for the rock sampling program. For the mobile crusher, a sieved sample was collected to obtain fine grained material as directed in Appendix A of the Geochemical Characterization and Management Plan (De Beers 2021a).
- The rock samples were bagged and labelled individually. Descriptions of each sample were recorded by the geologist at the time of collection.
- Each sampling location was documented with the date sampled, GPS coordinates and elevation, and photograph. Photos collected during the sampling are included in Appendix B (Spring 2022 – Appendix B1, and Fall 2022 – Appendix B2).

Table 4-1 provides the date of sample collection, sample identification, origin description, location, and overall rock type for the samples collected during the spring and fall supplemental sampling campaigns. A visual description including rock type classification and observations of sulphide-type/exposure, presence of carbonates, mineralogy, grain size and weathering/slaking characteristics for samples of mine rock is provided in Table 4-2.



LEGEND

Geochemistry Sample Location

- Fall - Mine Rock
- Fall - PK
- Spring - Mine Rock
- Spring - PK

NOTES
Source: Orthoimagery provided by Client. Date: August 2022
Base Data Obtained From Geogratis, © Department of Natural Resources Canada. All Rights Reserved.

GAHCHO KUÉ MINE

Geochemistry Sample Locations

PROJECTION: UTM Zone 12	DATUM: NAD83	DE BEERS GROUP
Scale: 1:25,000 (400 200 0 400 Metres)		
FILE No: 22526974-16000-GeochemSampleLocations-Rev0		DATE: March 16, 2023
JOB NO: 22526974	REVISION NO: 0	Figure 4-1
OFFICE: GOLD-CAL	DRAWN: ANK / CHECK: BT	

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Table 4-1 Supplemental Rock Samples (2022 Spring and Fall Audit)

Date Sampled	Sample ID	Infrastructure	Rock Type	Sample Location - UTM Zone 12 (m)		
				Northing	Easting	Elev.
18-Jul-22	GK-BGAR-CPK-31	CPK	CPK	7036639	590366	428
18-Jul-22	GK-BGAR-CPK-32	CPK	CPK	7036575	590371	431
18-Jul-22	GK-BGAR-CPK-33	CPK	CPK	7036565		
20-Jul-22	GK-BGAR-FPK-25	FPK	FPK	Inside Plant		
20-Jul-22	GK-BGAR-FPK-26	FPK	FPK	Inside Plant		
18-Jul-22	GK-BGAR-CPKTP-04	CPK KB2 Pad	CPK	7036717	590415	430
18-Jul-22	GK-BGAR-DB-09	Dyke B	GRANITE	7036773	589646	426
18-Jul-22	GK-BGAR-DD-06	Dyke D	GRANITE	7038738	589798	435
18-Jul-22	GK-BGAR-DDBP-01	Dyke D Bypass Road	GRANITE	7038466	589163	428
18-Jul-22	GK-BGAR-DL-06	Dyke L	GRANITE	7037768	589760	428
18-Jul-22	GK-BGAR-MP-04	Maintenance Pad	GRANITE	7035716	588963	427
18-Jul-22	GK-BGAR-N11-03	N11 Road	GRANITE	7040161	587786	422
18-Jul-22	GK-BGAR-ROM-07	ROM Pad	GRANITE	7035740	590865	447
18-Jul-22	GK-BGAR-TZL-01	Tuzo Pipe Laydown	GRANITE	7036091	589071	436
18-Jul-22	GK-BGAR-WMRPL-01	WMRP Pipe Laydown	GRANITE	7035683	588790	432
18-Jul-22	GK-BGAR-WMRP1-07	WMRP Type 1	GRANITE	7036237	588727	459
18-Jul-22	GK-BGAR-WMRP3-06	WMRP Type 3	GRANITE	7036251	588226	494
13-Nov-22	GK-BGAR-CPK-34	CPK	CPK	7036616	590533	435
13-Nov-22	GK-BGAR-CPK-35	CPK	CPK	7036617	590543	432
13-Nov-22	GK-BGAR-DL-07	Dyke L	GRANITE	7037894	589433	428
13-Nov-22	GK-BGAR-CP-01	Camp Pad	GRANITE	7036134	590934	439
13-Nov-22	GK-BGAR-WMRP1-09	WMRP Type 1	GRANITE	7036466	588131	470
13-Nov-22	GK-BGAR-WMRP3-07	WMRP Type 3	GRANITE	7035982	588549	489
15-Nov-22	GK-BGAR-FPK-27	FPK	FPK	Inside Plant		
15-Nov-22	GK-BGAR-FPK-28	FPK	FPK	Inside Plant		
15-Nov-22	GK-BGAR-FPK-29	FPK	FPK	Inside Plant		

PK = processed kimberlite; CPK = coarse processed kimberlite; elev. = elevation; ROM = run-of-mine.

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2022 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
GK-BGAR-CPK-31	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2022 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
GK-BGAR-CPK-32	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-CPK-33	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-FPK-25	FPK	n/a	n/a	n/a	Very fine	None
GK-BGAR-FPK-26	FPK	n/a	n/a	n/a	Very fine	None
GK-BGAR-CPKTP-04	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-DB-09	GRANITE	Light pink / white	n/a	Plagioclase, K-feldspar, Quartz, Amphibole, Biotite	Coarse	Fresh
GK-BGAR-DD-06	GRANITE	Very light pink	n/a	Plagioclase, Quartz, K-feldspar, Amphibole	Coarse	Fresh
GK-BGAR-DDBP-01	GRANITE	White	n/a	Quartz, Plagioclase, Amphibole, K-feldspar	Coarse	Fresh
GK-BGAR-DL-06	GRANITE	Pink	n/a	K-feldspar, Amphibole, Plagioclase, Quartz	Very Coarse	Fresh
GK-BGAR-MP-04	GRANITE	Orange	n/a	K-feldspar, quartz, Amphibole	Coarse	Fresh
GK-BGAR-N11-03	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Amphibole, Quartz	Coarse	Fresh
GK-BGAR-ROM-07	GRANITE	White 'Salt and Pepper'	n/a	Quartz, Plagioclase, Amphibole, K-feldspar	Coarse	Fresh
GK-BGAR-TZL-01	GRANITE	Pink	n/a	K-feldspar, quartz, Amphibole, Plagioclase	Coarse	Fresh
GK-BGAR-WMRPL-01	GRANITE	Pink	n/a	K-feldspar, quartz, Plagioclase, Amphibole	Very Coarse	Oxidized
GK-BGAR-WMRP1-07	GRANITE	Light pink / white	n/a	Plagioclase, Quartz, Amphibole, K-feldspar	Coarse	Fresh
GK-BGAR-WMRP3-06	GRANITE	Dark green	Trace pyrite	Hornblende	Fine to medium	Fresh
GK-BGAR-CPK-34	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-CPK-35	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-DL-07	GRANITE	Pink	n/a	K-feldspar, Quartz,	Medium to Coarse	Fresh

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2022 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
				Plagioclase, Biotite, Epidote		
GK-BGAR-CP-01	GRANITE	Pink	n/a	K-feldspar, Quartz, Amphibole	Medium	Fresh
GK-BGAR-WMRP1-09	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Coarse	Fresh
GK-BGAR-WMRP3-07	GRANITE	Blue-green	~0.5% py, weak carbonate veining	Quartz, Plagioclase, K-feldspar, Biotite	Coarse	Oxidized
GK-BGAR-FPK-27	FPK	Dark blue	n/a	n/a	Very fine	None
GK-BGAR-FPK-28	FPK	Dark blue	n/a	n/a	Very fine	None
GK-BGAR-FPK-29	FPK	Dark blue	n/a	n/a	Very fine	None

n/a = parameter not applicable (i.e., not observed).

Methods of operational and supplemental geochemical testing and analyses are consistent with the approach described in the Mine Environment Neutral Drainage Program (MEND 2009) and INAP (2010). Operational monitoring samples were analyzed on site for total sulphur using the LECO method, with a subset of not less than 5% of samples sent off site for verification testing. Supplemental geochemical samples were submitted for the following geochemical analyses:

- Acid-Base Accounting (ABA);
- Net-Acid Generation (NAG) Test;
- Shake Flask Extraction (SFE) (subset of 10 mine rock samples and 5 processed kimberlite samples);
- NAG Leachate Analysis (subset of 10 mine rock samples and 5 processed kimberlite samples); and
- Mineralogical Analysis (subset of 10 mine rock samples and 5 processed kimberlite samples).

The results of geochemical testing of rock samples are discussed in Section 5.1.

4.1.3 Classification of ARD Potential

During the EIS process, a neutralization potential ratio value was determined from the ABA results and used for material classification in accordance with the MEND guidelines (MEND 2009). The guidelines state that a sample with a Neutralization Potential Ratio (NPR) value of less than one is classified as PAG and as non-potentially acid generating (Non-AG) if the NPR is greater than two. Material characterized by an NPR of between one and two is classified as “Uncertain” and requires additional information to determine the acid rock drainage potential. Values for Sobek NPR and Carbonate NPR are both discussed for interpretation of material classification for acid rock drainage (ARD) potential. Where NPR values are calculated based on a calculation from one half of the detection limit of inorganic carbon content (for Carbonate Neutralization Potential [CaNP]) or sulphide sulphur (for Acid Potential [AP]) content, greater uncertainty exists regarding the balance of acid neutralizing and acid consuming components in the sample.

When combined with results from Humidity Cell testing, an operational classification criterion based on total percent sulphur content was developed as part of the EIS process, as described in the Geochemical Characterization and Management Plan, Version 4.4 (De Beers 2021a). Based on this criterion, in accordance with Part E of Water Licence MV2005L2-0015, material with less than 0.1% Total Sulphur (Total S%) is classified as non-AG, and material with measured values of greater than or equal to 0.1% Total Sulphur is classified as PAG. It is noted that mine rock results reported in previous years (De Beers 2022) have indicated that some samples with greater than or equal to 0.1% sulphur have reported NPR values greater than 2.0 and would not be classified as PAG based on MEND (2009) criteria, which takes into account the buffering capacity of a sample.

4.2 Geochemical Field Cell Leachate Monitoring

Geochemical field cells were set up in 2019 as described in the 2019 Annual Audit report (De Beers 2020c). Runoff from field cells pool within the liner of each cell at a low point and was collected during 2022 on 6 June, 17 July, 18 July, 5 August, 9 September, and 3 October. Leachate was submitted for laboratory analysis of the following:

- **General Parameters including:** pH, Total Alkalinity, Hardness, Total Dissolved Solids (TDS), Total Suspended Solids, Turbidity, Conductivity.
- **Major Ions and Nutrients including**: Sulphate, Bromide, Chloride, Fluoride, Carbonate, Bicarbonate, Hydroxide, Calcium, Magnesium, Sodium, Potassium, Total Ammonia, Nitrate, Nitrite, Silicate.
- **Dissolved Metals and Total Metals including:** Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Cesium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Phosphorus, Potassium, Rubidium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Thallium, Thorium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium.

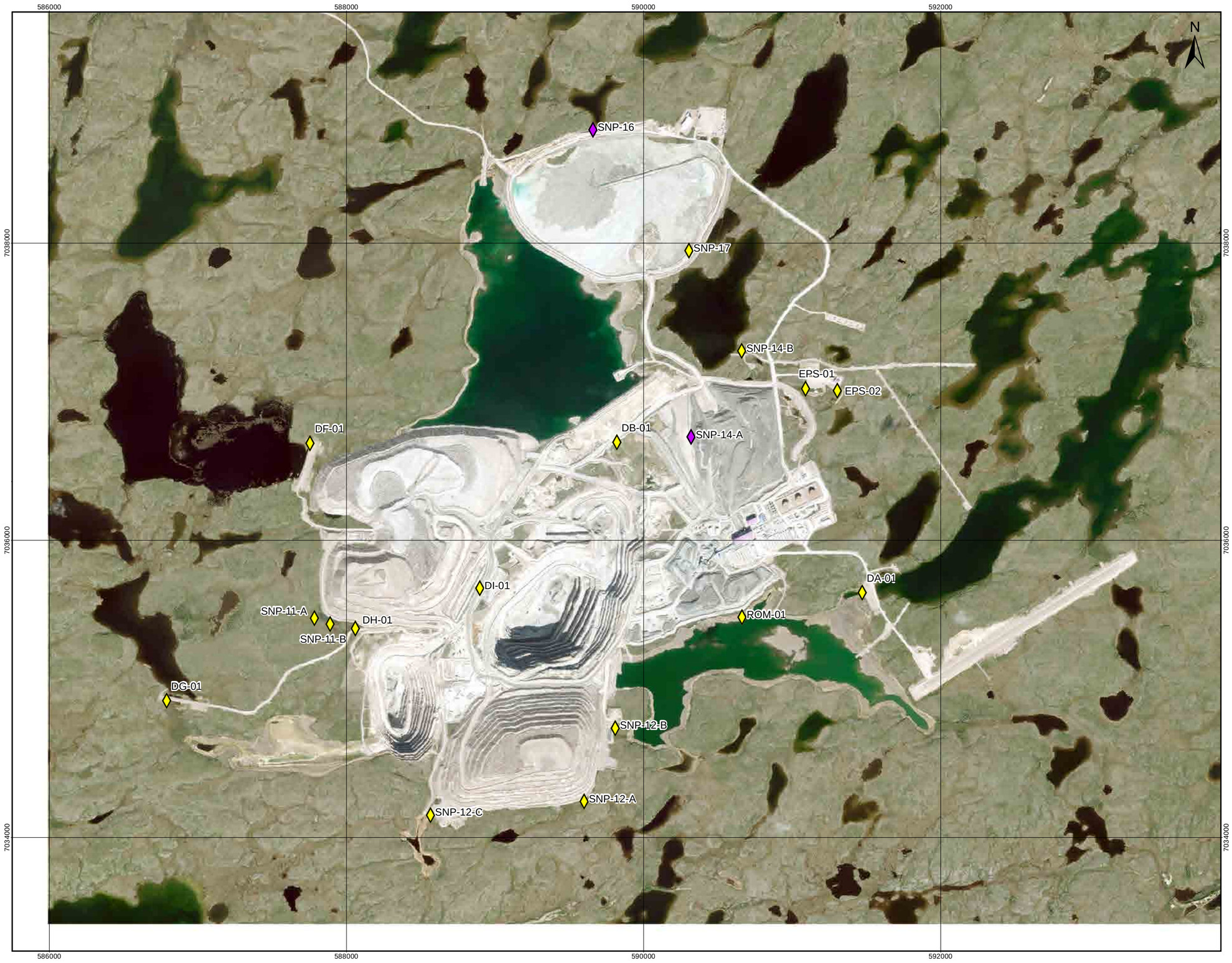
4.3 Seepage and Runoff Survey

Seepage and runoff surveys were conducted in the spring and fall of 2022, with 18 locations inspected as shown in Figure 4-2. During the spring sampling event, one (1) active seepage sample was collected. During the fall sampling event, two (2) active seepage samples were collected. Monitoring locations with standing water were only documented and no water samples were collected.

Seepage and runoff samples were analysed for laboratory analyses, including the following parameters:

- Field measurements – specific conductivity (conductivity), temperature, turbidity, dissolved oxygen, and pH, flow rate.
- Chemistry – hardness, TDS, major anions and cations (including calcium and chloride), nutrients (e.g., phosphorus), and dissolved metals (including low-level mercury).

Samples collected at each location and observed surface water conditions are provided in Table 4-3 along with a description of conditions as observed.



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LEGEND

- Seepage Inspection Location
- Seepage Sampling Location

NOTES
Source: Orthoimagery provided by Client. Date: August 2022
Base Data Obtained From Geogratis, © Department of Natural Resources Canada. All Rights Reserved.

GAHCHO KUÉ MINE

Seepage Monitoring Stations

PROJECTION: UTM Zone 12		DATUM: NAD83	DE BEERS GROUP
Scale: 1:25,000 (400 200 0 400 Metres)			
FILE No: 22526974-16000-SeepageMonitoringStations-Rev0			DATE: March 16, 2023
JOB NO: 22526974	REVISION NO: 0		Figure 4-2
OFFICE: GOLD-CAL	DRAWN: ANK	CHECK: BT	

Table 4-3 Seepage and Runoff Survey Locations and Observations

Historical Station ID	2022 Station ID	Location	Easting	Northing	Sample Collected in 2022		Comments
					Spring	Fall	
WMRP-01	SNP-11-A	West Mine Rock Pile	587784	7035476			**Spring:** Ponding found around the base but most of the area is dry. Ponding of water but no flow seen. **Fall:** Dry area, no water present.
WMRP-02	SNP-11-B	West Mine Rock Pile	587889	7035439			**Spring:** Ponding found around the base but most of the area is dry. No flow observed. **Fall:** Some ponding at the base; however, all water stagnant. No visible seepage or active flow.
SMRP-02	SNP-12-B	South Mine Rock Pile	589810	7034738			**Spring:** Very dry around the area. Some areas have pooling of water; however, no active flow observed. **Fall:** Some ponding at the base; however, all water stagnant. No visible seepage or active flow.
SMRP-01	SNP-12-A	South Mine Rock Pile	589600	7034244			**Spring:** Very dry around the area. Some areas have pooling of water; however, no active flow observed. **Fall:** Some ponding at the base; however, all water stagnant. No visible seepage or active flow.
OB-01	SNP-12-C	Overburden Stockpile	588564	7034152			**Spring:** Some pools of water visible at the base but water is stagnant. No active seepage seen. **Fall:** Some ponding at the base; however, all water stagnant. No visible seepage or active flow
CPK-01	SNP-14-A	Coarse PK Dump	590320	7036695	X	X	**Spring:** Active seepage from under road/infrastructure at toe of CPK pile/road. Sample taken in larger pool of water where multiple points of seepage flow into. Unable to get accurate flow rate due to shallow stream depth. **Fall:** Many shallow streams that end up in a large pool. All streams have varying flows.
-	SNP-14-B	Coarse PK Dump	590660	7037276			**Spring:** Dry conditions, no visible seepage. **Fall:** Ponding on side (Emulsion) but stagnant. Area towards Dyke L dry. No active seepage.
DD-01	SNP-16	North of Dyke D	589659	7038766		X	**Spring:** Ponded areas at the toe of the dyke. **Fall:** Stream too small to measure flow. Visible seepage at the toe of the dyke. Water flowing towards N7 Lake from sump down by Dyke D.
DA1-01	SNP-17	East of Dyke A1	590305	7037951			**Spring:** Ponding found at the toe of dyke; however, no visible flow identified. Lake glassed over with ice. Snow still present at the base of the dyke. **Fall:** Extremely dry area. No water present. No seepage observed
AN-OPER	EPS-01	East Emulsion Pad	591090	7037022			**Spring:** No active seepage. Some pooling of water around the area. Snow present. **Fall:** Dry area. No water present.
AN-OPER_REF	EPS-02	West Emulsion Pad	591305	7037008			**Spring:** No active seepage. Some pooling of water around the area. Snow present. **Fall:** Dry area. No water present.
DA-01	DA-01	Dyke A	591471	7035647			**Spring:** Area was dry. No visible seepage. **Fall:** Dry area. No water present.

Table 4-3 Seepage and Runoff Survey Locations and Observations

Historical Station ID	2022 Station ID	Location	Easting	Northing	Sample Collected in 2022		Comments
					Spring	Fall	
-	DB-01	Dyke B	589820	7036661			**Spring:** No active seepage observed. **Fall:** Along the toe of the Dyke in CP6 area ponding observed, no active seepage.
DF-01	DF-01	Dyke F	587755	7036653			**Spring:** Ponding on both sides of the dyke. Water stagnant. No active flow or seepage observed. Snow melting at the base of the dyke. **Fall:** Dry area. No water present.
DG-01	DG-01	Dyke G	586789	7034919			**Spring:** Ponding on both sides of the dyke. No visible signs of seepage. **Fall:** Ponding observed but no seepage observed.
DH-01	DH-01	Dyke H	588058	7035408			**Spring:** Some ponding at the toe of the dyke; however, no active seepage observed. Snow still in area. **Fall:** Ponding of water seen around the Dyke H area but not at the toe of the dyke. No seepage observed.
DI-01	DI-01	Dyke I	588898	7035678			**Spring:** Ponding at the toe area of dyke. All water stagnant. No active flow or seepage observed. **Fall:** Dry area. No seepage observed.
-	ROM-01	ROM Pad	590662	7035483			**Spring:** No seepage seen at the toe of the ROM Pad. Visible ponding around however no flow observed. **Fall:** No seepage and very dry at toe of Rom Pad Pile. Very little water present, which was stagnant.

X = Sample was collected at this station in 2022; WMRP = West Mine Rock Pile; SMRP = South Mine Rock Pile; ROM = run-of-mine.

4.4 Quality Assurance and Quality Control

Quality assurance and quality control for the seepage sampling program were conducted in accordance with the approved Gahcho Kué Mine Quality Assurance and Quality Control Plan, Version 2 (De Beers 2017a).

5 Results

The results section is grouped by general types of sampling with sub-sections organized by test types and results. The results of geochemical testing chemical testing are presented in Appendix C. The overall evaluation of results consists of analysis and review of samples and sample results to:

- Confirm samples are representative of the materials encountered.
- Confirm sample results are within the range of values expected based on the EIS, previous bi-annual geochemical audits, and previous work completed (De Beers 2010, 2012a,b,c, 2014a,b, 2016, 2017b, 2018, 2019, 2020c, 2021b, 2022).

Based on a review of all geochemical information developed including for the year in review, a determination can then be made regarding the similarity or differences that might be expected in the overall site conditions as a result of the additional information.

5.1 Rock Sampling Programs (Supplemental Samples)

5.1.1 Acid-Base Accounting and NAG test Results

A summary of the ABA results is presented in Tables 5-1 and 5-2, with NAG pH values included in Table 5-1. Complete ABA results and NAG test results are provided in Appendix C.

Table 5-1 Summary of ABA Results and NAG pH for 2022 Supplemental Samples

Lithology	Statistic	Paste pH	Total S	CO_2	AP	NP	CaNP	NPR	NAG pH
		pH Units	wt%	wt%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO^3$/t	-	pH Units
All (n=26)	Min	8.5	0.02	0.08	0.6	4.5	1.8	5.9	7.0
	Max	10	0.10	1.3	2.5	143	30	227	10
	Mean	9.4	0.037	0.39	1.0	63	8.9	64	8.2
	Median	9.4	0.02	0.11	0.6	19	2.5	31	7.8
	St. Dev.	0.57	0.022	0.38	0.56	58	8.6	64	1.8
CPK (n=6)	Min	8.7	0.02	0.43	0.6	130	9.8	100	9.7
	Max	9.2	0.05	0.88	1.3	142	20	227	10
	Mean	8.9	0.04	0.68	1.1	136	16	145	9.8
	Median	8.9	0.05	0.76	1.3	135	17	109	9.8
	St. Dev.	0.15	0.014	0.18	0.33	4.0	4.0	57	0.15

Table 5-1 Summary of ABA Results and NAG pH for 2022 Supplemental Samples

Lithology	Statistic	Paste pH	Total S	CO_2	AP	NP	CaNP	NPR	NAG pH
		pH Units	wt%	wt%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO^3$/t	-	pH Units
FPK (n=5)	Min	8.5	0.02	0.66	0.6	92	15	57	9.5
	Max	8.9	0.10	1.3	2.5	143	30	155	10.0
	Mean	8.7	0.06	0.91	1.4	120	21	103	9.7
	Median	8.7	0.06	0.71	1.3	131	16	87	9.9
	St. Dev.	0.13	0.026	0.27	0.66	22	6.2	40	0.21
Granite (n=15)	Min	9.0	0.02	0.08	0.6	4.5	1.8	5.9	7.0
	Max	10	0.08	0.36	2.5	41	8.2	32	8.1
	Mean	9.8	0.027	0.1	0.84	14	2.3	19	7.5
	Median	10.0	0.02	0.08	0.6	11	1.8	18	7.4
	St. Dev.	0.32	0.017	0.07	0.53	8.4	1.6	8.8	0.3

< = less than; wt% = weight by percent; AP = Acid Potential; NP = Neutralization Potential; CaNP = Carbonate Neutralization Potential; NPR = Neutralization Potential Ratio; NAG = Net Acid Generation; kg $CaCO_3$/t = kilograms of calcium carbonate equivalent per tonne; n = sample size; CO_2 = total inorganic carbon as carbon dioxide; S = sulphur.

Table 5-2 Summary of Acid Generation Potential for 2022 Supplemental Samples

Parameter	CPK	FPK	Granite	All
Count of Samples	6	5	15	26
# Samples PAG	0	0	0	0
# Samples Non-AG	6	5	15	26
% Samples PAG	0%	0%	0%	0%
% Samples Non-AG	100%	100%	100%	100%
# Samples expected to generate acid	0	0	0	0

CPK = coarse processed kimberlite; FPK = fine processed kimberlite; PAG = potentially acid generating; AG = acid generating.

Mine Rock

A total of 15 mine rock samples (primarily granite) were collected and analyzed as part of the 2022 supplemental sampling program. In comparison with mine rock as presented in the EIS (Golder 2014), the 2022 data falls within the expected range of values. Of the 15 supplemental samples analyzed for the 2022 spring and fall audits, all samples were classified as non-AG based on NPR values of greater than 2. NPR values ranged from 5.9 to 32 in all samples, with a median value of 19. In general, Carbonate NP was lower than Sobek NP indicating that some neutralization potential is provided by non-carbonate mineral sources. Sulphide content of the samples was low, ranging from less than 0.02 to 0.08 percent by weight.

The results of the NAG results show that all 15 mine rock samples over the spring and fall audits have a pH of greater than 4.5 in the NAG test and are therefore classified as non-acid forming (NAF). The NAG pH values for the mine rock samples ranged from pH 7.0 to pH 8.1, with a median value of pH 7.5.

Based on a review of the supplemental mine rock sample data, none of the samples collected are considered to have potential to generate acidity, and based on the overall results considering the NPR, Carbonate NPR, and NAG pH are considered non-acid generating with a small amount of excess neutralization potential, primarily provided by non-carbonate minerals. All samples are representative of the

materials encountered as shown in photographs (Appendix B) and fall within or near the expected range of values based on the EIS data and supplemental sampling data from previous years (Figures 5-1 and 5-2).

Figure 5-1 Acid Potential vs. Neutralization Potential (including all Mine Rock samples from EIS through to 2022)

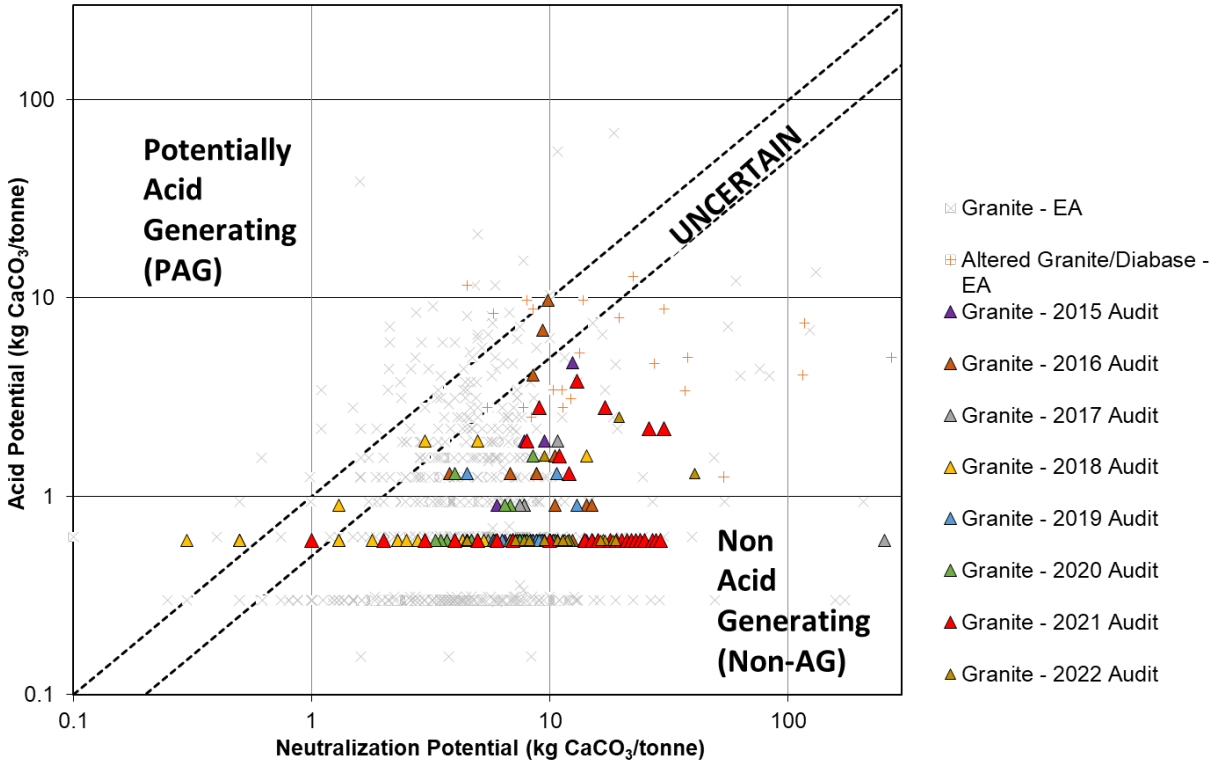
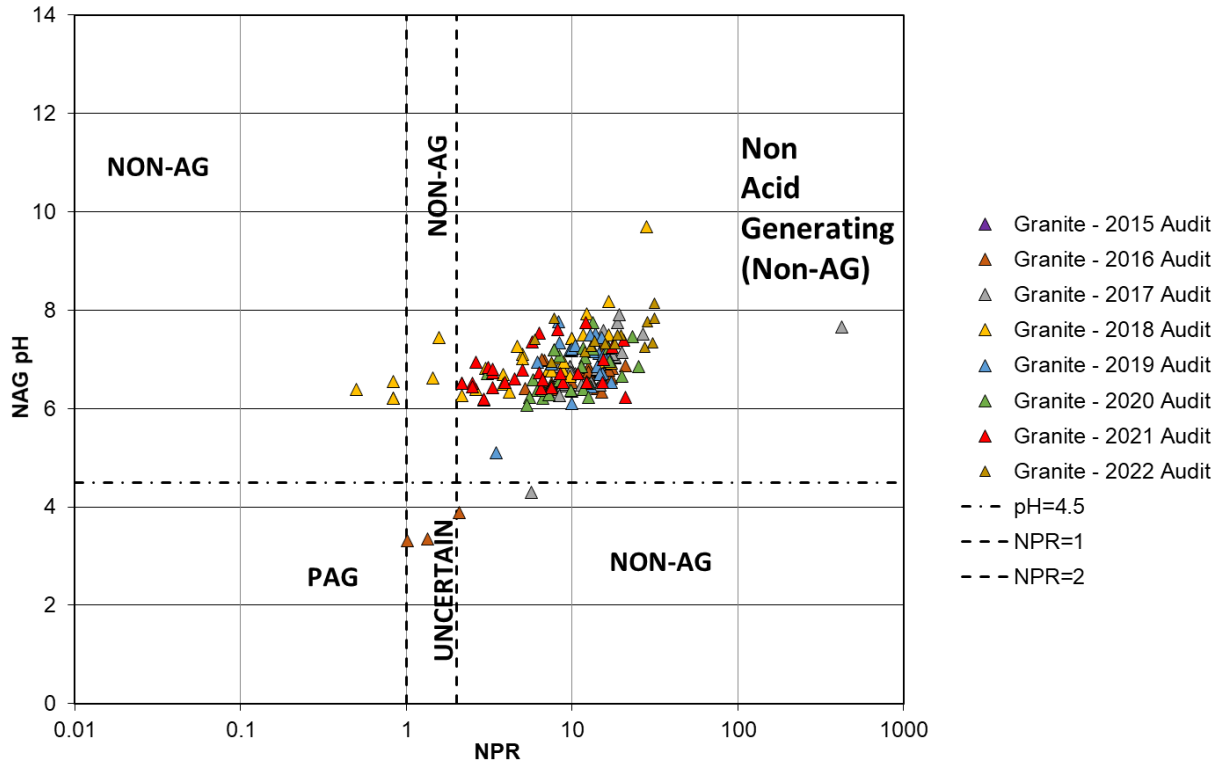


Figure 5-2 NAG pH vs. Neutralization Potential Ratio (including all Mine Rock samples from 2015 through 2022)



Kimberlite

A total of ten kimberlite samples (6 CPK and 5 FPK) were collected and analyzed as part of the 2022 supplemental sampling program. In comparison with kimberlite as presented in the EIS (Golder 2014), the 2022 data falls within or near the expected range of values. Of the 11 supplemental samples analyzed for the 2022 spring and fall audits, all samples were classified as non-AG based on NPR and Carbonate NPR values greater than 2. The NPR values ranged from 57 to 227, with a median value of 126. In general, Carbonate NP was lower than Sobek NP indicating that some neutralization potential is provided by non-carbonate mineral sources. Sulphide content of the samples was low, ranging from less than 0.02 to 0.1 percent by weight. All samples had a NAG pH of greater than 4.5, further indicating that the samples are non-acid generating. The NAG pH values for the processed kimberlite samples ranged from pH 9.5 to 10.1 with a median of 9.8.

Based on a review of the supplemental mine rock sample data, none of the kimberlite samples collected in 2022 are considered to have potential to generate acidity, and based on the overall results considering the NPR, Carbonate NPR, and NAG pH are considered non-acid generating with a significant amount of excess NP even when only considering NP provided by carbonate minerals. All samples are representative of the materials encountered as shown in photographs (Appendix B) and fall within the range of values expected based on the EIS data and supplemental sampling data from previous years (Figures 5-3 and 5-4).

Figure 5-3 Acid Potential vs. Neutralization Potential (including all Kimberlite, FPK, and CPK samples from EIS through to 2022)

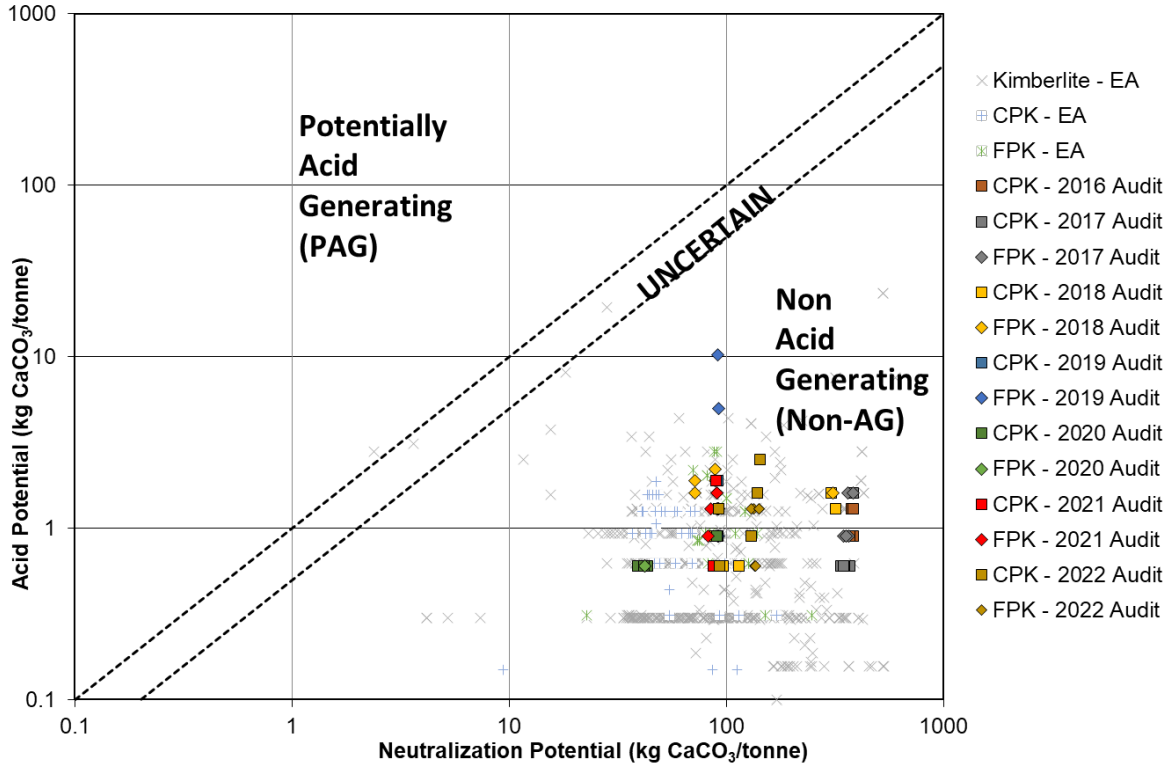
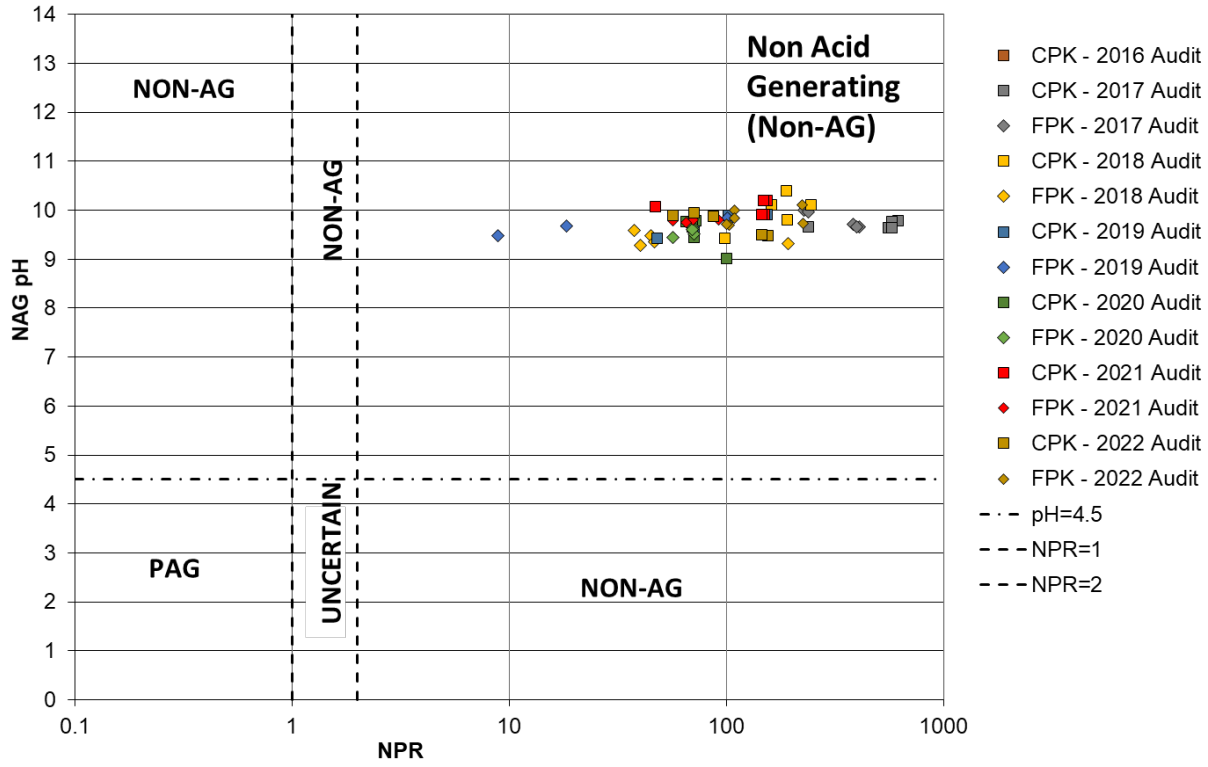


Figure 5-4 NAG pH vs. Neutralization Potential Ratio (including all Kimberlite, FPK, and CPK samples from 2016 through to 2022)



5.1.2 Shake Flask Extraction Test Results

Results of the SFE analysis from a subset of the supplemental samples are presented in Appendix C3. Table 5-3 presents the range of concentrations observed for selected parameters for mine rock and PK samples. Appendix C3 includes the mean, median, standard deviation, and range of concentrations from the SFE analyses and a comparison to the range of SFE results observed in the EIS data set. The results show pH values for the SFE leachate range from 7.8 to 9.5 for granitic mine rock and 8.7 to 9.2 for PK, with median values of 9.5 and 9.0 respectively. Values of pH are higher than the EIS range in four of five PK samples; and lead and manganese concentrations are higher than the EIS range in one PK sample (GK-BGAR-CPK-31).

Table 5-3 Summary of Select Parameters from the Shake Flask Extraction Analysis

Parameters	Units	2022 Mine Rock Samples (n=9)			2022 PK Samples (n=5)		
Sample ID		Minimum	Maximum	Median	Minimum	Maximum	Median
pH	units	7.8	9.6	9.5	8.7	9.2	9.0
Chloride	mg/L	1.4	6.2	2.1	34	94	47
Fluoride	mg/L	0.07	0.36	0.19	0.12	0.55	0.21
Sulphate	mg/L	1.1	4.7	2.2	1.1	22	2.7
Aluminum	mg/L	0.27	0.88	0.54	0.0057	0.14	0.0097
Barium	mg/L	0.0021	0.0089	0.005	0.027	0.16	0.12
Calcium	mg/L	0.29	4.9	3.6	7.1	21	13
Cobalt	mg/L	0.0000052	0.00053	0.000033	0.00001	0.00022	0.000022
Copper	mg/L	0.000063	0.0014	0.00019	0.000056	0.00051	0.000056
Iron	mg/L	0.0089	1.0	0.034	0.0059	0.18	0.0075
Lead	mg/L	0.000017	0.0019	0.00011	0.0000076	0.00045	0.000029
Magnesium	mg/L	0.053	0.84	0.3	1.6	5.8	2.7
Nickel	mg/L	0.000044	0.00061	0.00013	0.00023	0.00087	0.00072
Potassium	mg/L	0.76	3.7	2.7	5.1	24	8.1
Sodium	mg/L	1.8	8.9	3.1	9.0	43	17
Strontium	mg/L	0.0024	0.041	0.024	0.12	0.38	0.18
Thallium	mg/L	0.0000031	0.0000087	0.0000044	0.000011	0.00013	0.000058
Uranium	mg/L	0.0000046	0.00026	0.000017	0.0000095	0.000014	0.000002
Vanadium	mg/L	0.00064	0.0065	0.0013	0.00025	0.0023	0.00065

5.1.3 Net-Acid Generation Extract Test Results

Results of the NAG test leachate from a subset of the supplemental samples are presented in Appendix C4. Table 5-4 presents the range of concentrations observed for a select set of parameters for mine rock and PK samples. Appendix C4 includes the mean, median, standard deviation and range of concentrations from the NAG leachate analyses and a comparison to the range of NAG leachate results observed in supplemental sampling from previous years to identify data trends and anomalies. The results show pH values for the NAG leachate range from 7.0 to 9.3 for granitic mine rock and 8.2 to 10 for PK, with median values of 7.6 and 9.8 respectively. Several constituents were reported at higher concentrations than previous NAG leachate results among PK and mine rock samples; however, it should be noted that the NAG extraction procedure is designed to oxidize minerals present in the sample, a scenario that is not

applicable to the non-AG PK materials. Among results for mine rock samples, results were generally consistent with previous years. Moderately higher concentrations were reported in some samples for alkalinity, antimony, arsenic, boron, calcium, chromium, potassium, silicon, sodium, titanium, and vanadium. However, as all samples are classified as non-AG, geochemical conditions facilitating leaching of these constituents is not expected to develop, rather SFE results reported in Section 5.1.2 may be more representative of anticipated leachate composition.

Table 5-4 Summary of Select Parameters from the Net Acid Generation Extract Analysis

Parameters	Units	2022 Mine Rock Samples (n=9)			2022 PK Samples (n=5)		
Sample ID		Minimum	Maximum	Median	Minimum	Maximum	Median
pH	units	7.0	9.3	7.6	8.2	10	9.8
Fluoride	mg/L	0.07	0.9	0.21	0.5	0.92	0.58
Sulphate	mg/L	1.2	20	7.8	3.2	7.2	5.6
Aluminum	mg/L	0.16	1.3	0.42	0.021	1.1	0.32
Barium	mg/L	0.0017	0.011	0.0064	0.014	0.49	0.23
Calcium	mg/L	0.4	20	2.9	8.4	17	12
Cobalt	mg/L	0.0000081	0.00013	0.000085	0.000075	0.0011	0.00011
Copper	mg/L	0.00008	0.0009	0.00052	0.00011	0.0013	0.00026
Iron	mg/L	0.016	0.21	0.17	0.0032	0.94	0.083
Lead	mg/L	0.00002	0.0015	0.00021	0.000022	0.00069	0.000067
Magnesium	mg/L	0.18	2.3	2.0	0.46	3.1	1.3
Nickel	mg/L	0.000031	0.00055	0.00022	0.000072	0.018	0.0016
Potassium	mg/L	3.4	14	7.7	7.8	32	26
Sodium	mg/L	6.0	18	8.4	8.1	9.4	9.0
Thallium	mg/L	0.0000035	0.000068	0.000018	0.0000068	0.000024	0.000015
Uranium	mg/L	0.000009	0.013	0.00036	0.000007	0.00041	0.000022
Vanadium	mg/L	0.0036	0.068	0.012	0.013	0.031	0.02
Zinc	mg/L	0.00014	0.0014	0.00074	0.00048	0.0021	0.00082

5.1.4 Mineralogical Analyses Results

Mineralogical quantitative phase Rietveld X-Ray Diffraction (XRD) analysis was performed on a subset of 16 samples (11 mine rock, 5 PK) selected from the 2022 supplemental samples. The results of quantitative phase analysis by Rietveld refinements are provided in Table 5-5. Calcite was noted in all five PK samples, ranging from 0.29 to 2.7 relative percent occurrence collectively and dolomite was observed in one PK sample at 1.9 relative percent occurrence. A substantial amount of K-feldspar, plagioclase, and quartz make up the mine rock samples and may provide some silicate buffering capacity. Mineralogical results are consistent with observations from previous years (De Beers 2022, Golder 2014).

Table 5-5 Mineralogy XRD Analysis Results

Mineral	Units	Sample ID															
		BIL780-GK-BGAR-CPK-34	BBH139-GK-BGAR-CPK-33	BBH137-GK-BGAR-CPK-31	BIL786-GK-BGAR-FPK-27	BBH140-GK-BGAR-FPK-25	BIL782-GK-BGAR-DL-07	BIL783-GK-BGAR-CP-01	BIL784-GK-BGAR-WMRP1-09	BIL785-GK-BGAR-WMRP3-07	BBH146-GK-BGAR-DL-06	BBH143-GK-BGAR-DB-09	BBH143-GK-BGAR-DB-09	BBH145-GK-BGAR-DDBP-01	BBH147-GK-BGAR-MP-04	BBH149-GK-BGAR-ROM-07	BBH153-GK-BGAR-WMRP3-06
Actinolite	%	-	1.4	-	-	0.75	-	-	-	-	-	-	-	-	-	-	-
Almandine	%	-	-	-	-	-	-	-	-	-	-	0.23	0.23	-	-	-	-
Andesine	%	-	-	-	-	-	-	-	-	19	-	-	-	-	-	-	-
Andradite	%	1.2	1.9	0.56	0.58	0.74	-	-	-	-	-	-	-	-	-	-	1.2
Ankerite	%	-	-	-	-	-	-	-	-	1.3	-	-	-	-	-	-	1.1
Augite	%	-	-	-	-	-	-	-	-	23	-	-	-	-	-	-	33
Calcite	%	0.3	0.71	0.87	0.97	2.7	0.38	0.29	-	-	-	-	-	0.19	-	-	-
Chamosite	%	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	6.9
Clinochlore	%	-	0.8	1.2	-	2.0	2.0	2.3	2.2	-	3.3	1.7	1.7	1.1	0.27	0.87	-
Dolomite	%	-	-	-	1.9	-	-	-	0.75	-	-	-	-	-	-	-	-
Ferroactinolite	%	-	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	3.1
Forsterite	%	7.3	6.6	-	3.2	-	0.37	0.18	-	-	-	-	-	-	-	-	-
Hematite	%	-	-	-	-	-	-	-	0.21	-	-	0.2	0.2	-	1.3	-	-
Illite/Muscovite	%	-	-	-	-	-	3.3	5.4	1.7	5.1	2.8	3.9	3.9	2.6	3.2	1.8	7.7
Ilmenite	%	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	2.0
K-feldspar	%	4.6	12	19	4.4	10	5.9	9.0	31.2	-	31.0	11	11	20	5.6	15	2.0
Lizardite	%	15	20	14	14	18	-	-	-	2.2	-	-	-	-	-	-	2.9
Magnesiochromite	%	0.58	-	-	1.1	0.33	-	-	-	-	-	-	-	-	-	-	-
Magnetite	%	-	0.73	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
Monticellite	%	-	2.0	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-

Table 5-5 Mineralogy XRD Analysis Results

Mineral	Units	Sample ID														
		BIL780-GK-BGAR-CPK-34	BBH139-GK-BGAR-CPK-33	BBH137-GK-BGAR-CPK-31	BIL786-GK-BGAR-FPK-27	BBH140-GK-BGAR-FPK-25	BIL782-GK-BGAR-DL-07	BIL783-GK-BGAR-CP-01	BIL784-GK-BGAR-WMRP1-09	BIL785-GK-BGAR-WMRP3-07	BBH146-GK-BGAR-DL-06	BBH143-GK-BGAR-DB-09	BBH143-GK-BGAR-DB-09	BBH145-GK-BGAR-DDBP-01	BBH147-GK-BGAR-MP-04	BBH149-GK-BGAR-ROM-07	BBH153-GK-BGAR-WMRP3-06
Montmorillonite	%	31	21	21	37	34	-	-	-	-	-	-	-	-	-	-	-
Orthoclase	%	2.8	-	-	2.5	-	3.2	3.7	7.8	2.6	-	-	-	-	-	-	-
Pectolite	%	2.6	1.3	2.0	1.5	2.3	-	-	-	-	-	-	-	-	-	-	-
Plagioclase	%	7.8	9.4	20	4.2	7.7	56	50	26	19	35	50	50	44	78	51	32
Phlogopite	%	12	10	6.2	10	7.3	3.4	1.8	1.8	-	-	1.9	1.9	2.6	-	2.9	-
Pyrite	%	-	-	-	-	-	-	-	-	0.59	-	-	-	-	-	-	0.37
Sepiolite	%	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-
Quartz	%	6.7	10	15	5.3	8.3	26	27	28	8.4	28	30	30	29	12	28	5.3
Talc	%	8.1	1.7	-	13	3.6	-	-	-	-	-	-	-	-	-	-	-
Total	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

- = species not detected.

5.2 Geochemical Field Cell Leachate Monitoring

Results of the Field Cell leachate testing is presented in Table 5-6 for field parameters with a more comprehensive analysis of 2019 through 2022 leachate provided in Appendix C5. Samples were collected when water was available from five sampling events in 2022.

The results show pH values for the field cell leachate remain neutral, ranging from 7.0 to 8.6, with the control cell pH ranging from 7.5 to 7.8. Parameters, including pH, remain consistent with expected results from SFE, humidity cell tests (HCTs), and seepage monitoring. A review of the data in Appendix C5 shows results for each cell are similar across the dates sampled, except for the July sample event, which reported higher conductivity values than measured in other events, and the highest turbidity and TSS value (i.e., FC-4 - Type 3). Trends over time appear to be relatively stable and indicate that acid generation has not developed to date.

Table 5-6 Field Cell Sample Dates and Field Measurements

Sample ID	Date	pH	Temperature	Specific Conductivity	TSS	Turbidity	Dissolved Oxygen	
		pH units	°C	µS/cm	mg/L	NTU	%	mg/L
FC-1 - Type 1	2022-06-06	-	9.4	81	-	-	99	11
	2022-07-17	7.0	15	180	0.25	0.16	89	8.6
	2022-09-09	8.3	7.0	168	1.5	1.0	98	11
	2022-10-03	8.2	4.0	178	0.02	0.015	105	13
FC-2 - CPK	2022-07-17	8.1	13	773	1.4	0.89	88	8.6
	2022-09-09	8.6	6.2	508	3.5	2.3	80	9.4
	2022-10-03	8.2	3.1	468	1.5	0.99	90	12
FC-3 - Control	2022-07-17	7.5	14	86	1.6	1.1	85	8.2
	2022-09-09	7.8	4.6	47	-	-	96	12
	2022-10-03	7.6	3.2	83	2.9	1.9	96	12
FC-4 - Type 3	2022-07-18	7.5	18	273	353	227	101	8.9

- = parameter not measured; TSS = total suspended solids; µS/cm = microsiemens per centimetre; mV = millivolt; NTU = nephelometric turbidity unit.

5.3 Seepage and Runoff Survey

Results of the seepage and runoff survey testing are presented in Table 5-7 for field parameters with laboratory analytical results provided in Appendix C6. Samples were collected when flowing seepage water was available from up to two sampling events (spring and fall) in 2022. As no flowing water was observed at stations monitoring for seepage from mine rock piles during 2022, no samples of seepage from mine rock piles were collected. Results for all seepage samples collected in 2022 are presented in Appendix C6.

Seepage samples were collected from two locations: SNP-14-A and SNP-16. Seepage from SNP-14-A at the Coarse PK Pile primarily originates from the water used to process the kimberlite ore (Reclaim from the Water Management Pond), and seepage at SNP-16 flows out of Dyke D at the Fine PKC Facility. The results show pH values for the seepage samples remained above pH 6 during the spring and fall surveys,

with the pH ranging from 6.4 to 8.2. At one station (SNP-14-A) where samples were collected during both surveys, pH and major ion concentrations were higher during the fall, while turbidity and total suspended solids (TSS) were higher in the spring. A single (fall) sample was collected at SNP-16. Generally, reported concentrations in the SNP-16 sample were lower than in either SNP-14-A sample, except for sulphate and nitrate.

Long-term trends remain to be developed as additional data are collected. Data for most stations is limited due to active seepage not being present at most locations in each seasonal survey event.

Temporal data for seepage collected at station SNP-14-A have been relatively stable over time for the majority of parameters, including pH, which has ranged from 6.4 to 7.9 since 2017. However, concentrations of three major ion species appear to be increasing over time, with the most notable change observed for chloride, while corresponding increases in cation concentrations have been distributed primarily between calcium and sodium, and to a lesser extent, magnesium. Trends in major ion chemistry among samples of seepage from CPK are influenced by pit water entrained in raw kimberlite, as well as the use of water from the Water Management Pond as part of processing. Concentrations of TDS in the Water Management Pond have been increasing over time. Monitoring results for SNP-14-A are presented as time series for concentrations of sulphate, chloride, calcium, and sodium in Figure 5-5. Seepage at this location should continue to be monitored to evaluate further evolution of seepage chemistry over time.

Figure 5-5 Water Chemistry Time Series at SNP-14-A

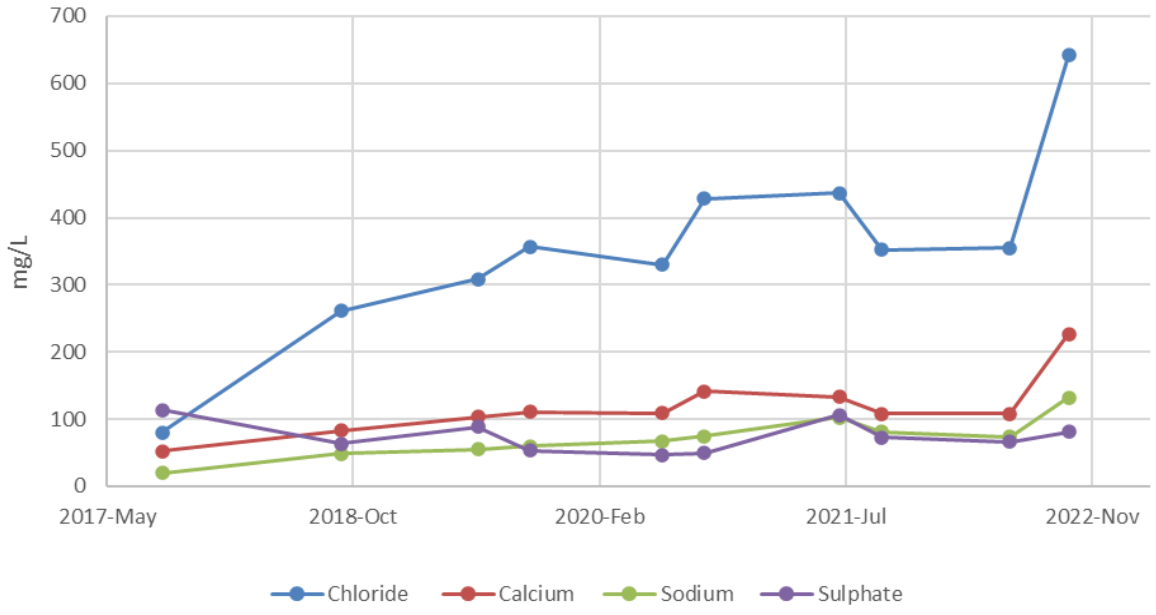


Table 5-7 Seepage and Runoff Survey Sample Location and Field Measurements

Historical Sample ID	2022 Sample ID	Location	Date	Northing	Easting	Temperature	pH	Conductivity	Dissolved Oxygen		Turbidity
						°C	pH units	µS/cm	mg/L	%	NTU
Spring Survey											
CPK-01	SNP-14-A	Coarse PK Dump	2022-06-2	590154	7036523	6.0	6.6	1,423	10.4	87.6	54
Fall Survey											
CPK-01	SNP-14-A	Coarse PK Dump	2022-09-30	590154	7036523	-0.12	6.6	2,329	13.2	94.4	0
DD-01	SNP-16	North of Dyke D	2022-09-27	590773	7036063	15.4	7.3	158	10.3	109.9	10

- = parameter not reported; µS/cm = microsiemens per centimetre; n/a = not applicable; BDL = below limit of detection; NTU = nephelometric turbidity unit.

5.4 Operational Monitoring (Mine Rock)

Operational monitoring samples were submitted for total sulfur analyses with results summarized in Table 5-8 (operational monitoring database results used in this report are available upon request). Results showed that approximately 18% of the 2022 samples had total sulphur greater than or equal to 0.1 percent by weight and were therefore classified as PAG. This result represents a change from previous years and is attributed to diabase comprising a greater proportion of mine rock generated from mining zones in 2022 compared to previous years. De Beers is currently evaluating whether greater volumes of diabase mine rock will continue to be generated or whether a return to previous proportions of waste rock lithologies (and PAG materials) can be expected. Additional information related to sample location, movement and placement is provided in the Annual Water Licence Report.

Table 5-8 Summary of Operational Monitoring Acid Generation Potential for Mine Rock

Rock Type		Total Number of Samples	≥0.1% Sulphur	
		n	n	Percent (%)
EIS Results				
De Beers (2012a)	Granite	1,189	63	5
	Altered granite	10	7	70
	Diabase	7	3	43
	Diorite	1	1	100
	Gneissic granite	9	2	22
	Granodiorite	6	1	17
	Altered granodiorite	16	16	100
	Total - Baseline Geochemical Characterization	**1,238**	**93**	**7.5**
Operational Monitoring Results				
Operational Monitoring – 2016		2,329	209	9.0
Operational Monitoring – 2017		2,628	157	6.0
Operational Monitoring – 2018		3,059	195	6.4
Operational Monitoring – 2019		3,351	239	7.1
Operational Monitoring – 2020		2,560	193	7.5
Operational Monitoring – 2021		2,429	182	7.5
Operational Monitoring – 2022 (Total)		2199	391	17.8
Operational Monitoring – January 2022		186	9	4.8
Operational Monitoring – February 2022		119	17	14
Operational Monitoring – March 2022		172	25	15
Operational Monitoring – April 2022		203	42	21
Operational Monitoring – May 2022		160	40	25
Operational Monitoring – June 2022		138	10	7.2
Operational Monitoring – July 2022		211	48	23
Operational Monitoring – August 2022		108	18	17
Operational Monitoring – September 2022		149	26	17
Operational Monitoring – October 2022		237	34	14
Operational Monitoring – November 2022		291	65	22
Operational Monitoring – December 2022		225	57	25
Total number of Operational Monitoring Samples		**18,555**	**1,566**	**8.4**

Source: De Beers 2012a (Appendix 8.III, Table 8.III-35).

Note: Operational monitoring results based on De Beers operational database samples available between 2016 and 2022.

n = number of samples; > = greater than.

6 Summary of Overall ARD and Leachate Potential by Rock Type

The objective of the geochemical characterization program is to evaluate the ARD and metal leaching potential of a representative dataset to develop an understanding of the geochemical characteristics of materials expected to be encountered under the range of conditions that may be realized during construction and operations.

The pre-development geochemical dataset for the Mine is robust, consisting of 508 samples of kimberlite, 61 samples of PK, and 1,238 samples of mine rock that were evaluated between 1996 and 2013 (De Beers 2012a; Golder 2014). As part of supplemental sampling between 2015 and 2022, an additional 66 samples of PK and 203 samples of mine rock were collected and analysed for additional geochemical test work (beyond operational sulphur analyses), and over 18,600 operational samples were collected and analysed for total sulphur. On site monitoring related to the geochemical characterization includes sampling of active seepage locations and monitoring of four field cells constructed in 2019.

This section presents an overall assessment for each rock type based on the EIS evaluation and available data from ongoing monitoring. Based on these results, interpretations with respect to acid rock drainage and metal leaching potential are provided along with a discussion of trends or changes based on a review of the 2020 data relative to previously collected data. A more detailed summary of the geochemistry by rock type is presented the EIS geochemistry report (ML/ARD Report; Golder 2014) and in the Geochemical Characterization and Management Plan (De Beers 2021a).

6.1 Kimberlite Ore and Processed Kimberlite

Kimberlite ore consists primarily of kimberlite material typically pervasively altered to clay minerals, with trace amounts of chlorite, talc, and biotite, and lesser inclusions of granitic and basic rock fragments. Olivine, quartz, amphibole, and k-feldspar were identified in small amounts. Carbonate minerals were identified in trace amounts, and sulphide minerals including pyrite, chalcopyrite, and pyrrhotite are rare.

The results of geochemical characterization of the kimberlite ore indicate that kimberlite is non-AG. The average total sulphur concentration of kimberlite samples in the EIS geochemical dataset was 0.04% (less than 0.01% to 0.75% total sulphur; De Beers 2012a, Appendix 8.III). Kimberlite contains significant neutralization potential. The dissolution of carbonate minerals during chemical weathering of kimberlite will buffer the acidity resulting from sulphide mineral oxidation.

The acid generation potential of kimberlite was confirmed by the results of long-term leach testing (i.e., HCTs), and field cell results. Neutral to alkaline pH values were maintained through the duration of the kimberlite kinetic tests. Initial metal concentrations were low, and decreased over time after the first five weeks of testing, which represents the typical initial flushing period of the test sample.

The results of geochemical characterization of coarse-grained and fine-grained PK were similar to those of kimberlite. Coarse PK is non-AG, owing to the low concentrations of total sulphur relative to the carbonate

content of the material. Coarse PK samples contained between less than 0.01% and 0.06% total sulphur, with an average total sulphur concentration of 0.03%.

The mineralogical assemblage in fine PK samples was the same as coarse PK samples, with the exception of sulphide minerals. Sulphide minerals were not detected in fine PK samples. Fine PK samples contained between less than 0.01% and 0.09% total sulphur. Fine PK samples contained comparable neutralization potential to the coarse PK.

Long-term HCTs and field cell results confirmed that PK is non-AG. Metal concentrations were below or near analytical detection limits in the HCT leachates for the majority of parameters. Submerged column leach tests (SCT), which were conducted to confirm the geochemical characteristics of saturated coarse PK, indicated that saturated coarse PK also has a low potential for acid generation and metal leaching.

Ongoing monitoring results from 2015 through 2022 are consistent with expectations based on the EIS evaluation, and do not change the overall interpretation of the results for kimberlite or PK. The supplemental 2022 samples of FPK and CPK are non-acid generating with substantial excess neutralization potential and are within the range of previously observed data. The NAG pH values are above 4.5 pH units, confirming that the samples are non-acid generating. Leach results are consistent with those observed during the EIS testing, and previous annual testing (De Beers 2016, 2017b, 2018, 2019, 2020c, 2021b, 2022).

There is no change in the expected geochemical characteristics and classifications of the kimberlite and processed kimberlite based on the additional data collected in 2022.

6.2 Mine Rock

Mine rock consists mainly of granite (greater than 95%), with lesser amounts of altered granite, granodiorite, altered granodiorite, diabase, and diorite. The dominant minerals in granite samples are silicate minerals, including k-feldspar, quartz, biotite, plagioclase, muscovite-sericite, chlorite, magnetite, pyroxene and olivine. Sulphide minerals include pyrite, pyrrhotite and chalcopyrite. Calcite was identified in trace amounts.

This granitic rock contains very little sulphide mineralization. Based on median concentrations, granite contains the lowest amount of total sulphur and sulphide sulphur or all rock types (median concentration of 0.01 wt%). Based on the samples in the EIS, the altered granite, altered granodiorite, and diorite have median sulphide sulphur concentrations of 0.27 wt%, 0.12 wt%, and 0.16 wt%, respectively. However, mine rock also contains very limited neutralization potential, so some samples have been classified as PAG, despite these very low sulphur concentrations.

The results of HCT confirmed that mine rock samples containing less than 0.1% total sulphur are non-acid generating. Based on the results of baseline geochemical characterization, 7.5% of mine rock is expected to have acid generating potential (De Beers 2012a). The results of operational monitoring conducted from 2016 though 2022 are in agreement with the baseline geochemical characterization data, except for the proportion of mine rock with total sulphur content equal to or greater than 0.1 wt% being larger than anticipated.

Although there is no change in the expected geochemical characteristics and classifications of mine rock based on the supplemental samples analyzed in 2022, it is noted that samples from diabase materials, which are the primary source of additional PAG mine rock generated in 2022, have both greater mean sulphur content and an associated greater mean neutralization potential (De Beers 2012a) relative to granite. Further study of the acid generation and neutralization potentials of diabase may be conducted to evaluate the suitability of a possible increase in allowable total sulphur for the diabase unit while maintaining a non-acid generating condition in the overall pile. It is noted that the total sulphur criteria of 0.1% was developed based on a granitic HCT with low neutralizing potential relative to granite samples, which have an overall average neutralizing potential lower than diabase samples (De Beers 2012a).

6.3 Leachate Potential

A review of field cell leachate, NAG Leachate, SFE leachate, and seepage from site locations shows the values to be consistent with expectations based on the EIS and water quality predictions at the majority of locations. No samples from mine rock pile seepage monitoring locations were collected in 2022.

There is no change in the expected leachate potential chemistry from the site based on the seepage and field cell leachate data collected in 2022.

7 Conclusions

Based on the 2022 geochemical surveys, De Beers concludes that the supplemental samples collected are non-potentially acid generating when considering all test methods (i.e., total S, ABA, and NAG testing). Operational monitoring results for acid generation analysis are noted to deviate from previous years and with the EIS, with approximately 17% of rock classified as PAG. Materials classified as PAG continued to be segregated during operations following the Geochemical Characterization and Management Plan.

Net-acid generation (NAG) testing results from the spring and fall audits showed that all mine rock and processed kimberlite samples tested have a final NAG pH of greater than 4.5 and are therefore classified as non-acid forming on this basis. Results for SFE and mineralogy are consistent with results from previous years and are within the range of expected values. Minor differences are noted in results for NAG leachate; however, as all samples are classified as non-AG, conditions similar to the test environment are not anticipated to be applicable to the samples evaluated.

Results reported herein were evaluated with respect to the action levels defined in Table 7 of the Geochemical Characterization and Management Plan, Version 4.4 (De Beers 2021a). If action levels are triggered, a management response may be required to prevent significant adverse effects to the environment. Objectives, applicable action levels, and the status of each action level in 2022 are presented in Table 7-1.

Table 7-1 Actions Levels and Status in 2022

Objective	Action Level	Status in 2022
To prevent the formation of acid rock drainage	Bi-annual inspection observes granite with visible staining observed on rock used to construct site facilities.	Minor staining observed at some locations, confirmation samples collected. All samples non-AG, leach testing indicates results are within expected range.
	Bi-annual inspection observes granite containing visible sulphide minerals is observed in rock used to construct roads, building foundations, the airstrip or filter dykes.	Trace sulphide observed at some locations, confirmation samples collected. All samples non-AG.
	Confirmation sample contains greater than or equal to 0.1% sulphide sulphur.	All confirmation samples less than 0.1% sulphide sulphur.
	Greater than 7.5% of the blast hole cutting samples collected in one month contain greater than or equal to 0.1% total sulphur.	Greater than 7.5% of samples in all months, except January and June, contain at least 0.1% total sulphur. Overall, 17% of 2022 samples greater than or equal to 0.1% total sulphur, which is greater than the expected volume of PAG material.
Minimize the potential for discharge of acidic drainage or seepage that could cause a significant environmental effect	Volume and location of visible seepage different than previously observed conditions	Observations consistent with previous years.
	Seepage is turbid (i.e., not clear)	SNP-14-A reported to be turbid during freshet; fall sample was not turbid.
	pH below 5 or greater than 9 in one seepage monitoring sample	All pH results were between 5 and 9.
	Concentration measured outside normal range, or divergence in trends relative to water quality predictions in one seepage monitoring sample	No samples of mine rock seepage were collected for comparison to water quality predictions. Evolution in SNP-14-A seepage chemistry is noted for ongoing monitoring but is not indicative of ARD and is inferred to be related to water used during ore processing.

Similar to previous years' experiences, very limited active seepage flows were observed during the spring and fall seepage survey events. No mine rock seepage samples were collected in 2022. Evolution in SNP-14-A seepage chemistry is noted (i.e., a temporal increase in some major ions) and will continue to be monitored but is inferred to be primarily influenced by remnant water from ore processing and not ARD.

Based on the geochemical monitoring results throughout 2022, geochemical monitoring and rock placement protocols appear to be appropriate for the 2022 operational period. However, clarity regarding the continuity of elevated proportions of PAG mine rock is required. If it is concluded that the long-term proportions of PAG materials will materially differ from those defined in the Geochemical Characterization and Management Plan (De Beers 2021a), the potential for differences in anticipated chemical stability of mine rock piles and an evaluation of diabase acid generation potential will be reviewed in context of this new information.

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9 Acronyms and Glossary

9.1 Acronyms and Abbreviations

Abbreviation	Definition
ABA	acid base accounting
AP	Acid Potential
ARD	acid rock drainage
BDL	below detection limit
De Beers	De Beers Canada Inc.
CaNP	Carbonate Neutralization Potential
CaNPR	Carbonate Neutralization Potential Ratio
CPK	coarse processed kimberlite
EIS	Environmental Impact Statement
FPK	fine processed kimberlite
HCT	humidity cell tests
MEND	Mine Environment Neutral Drainage Program
Mine	Gahcho Kué Mine
MVLWB	Mackenzie Valley Land and Water Board
NAF	non-acid forming
NAG	Net Acid Generation
Non-AG	non-acid generating
NP	Neutralization Potential
NPR	Neutralization Potential Ratio
NT	Northwest Territories
PAG	potentially acid generating
PK	processed kimberlite
ROM	run-of-mine
SCT	submerged column leach test
SFE	Shake Flask Extraction
SMRP	South Mine Rock Pile
SNP	Surveillance Network Program
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TSS	total suspended solids
WMP	water management pond
WMRP	West Mine Rock Pile
XRD	X-Ray Diffraction

9.2 Units of Measure

Unit	Definition
%	percent
°C	degree Celsius
<	less than
>	greater than
µS/cm	microsiemens per centimetre
kg	kilogram
kg $CaCO_3$/t	kilograms of calcium carbonate equivalent per tonne
km	kilometre
m	metre
m/s	metres per second
mm	millimetre
mg/L	milligram per liter
Mt	million tonnes
NTU	nephelometric turbidity unit
t	tonnes
wt%	percent by weight

9.3 Glossary

Acid Base Accounting (ABA)	Acid base accounting; a set of static analyses that defines the amounts, and relative balance, or potentially acid-generating and acid-neutralizing (or base) minerals in a sample
Acid mine drainage	A variation on acid rock drainage, mine site drainage with an acidic pH due to the oxidation of sulphide minerals exposed by mining activity
Acid potential	The acid potential represents the bulk amount of acidity that can be produced by a material. The acid potential is calculated from the sulphide content and assumes that all sulphide minerals occur as pyrite.
Acid rock drainage (ARD)	Acidic pH rock drainage due to the oxidation of sulphide minerals that includes natural acidic drainage from rock not related to mining activity; an acidic pH is defined as less than 6.0.
Acidic drainage	A general term applied to any drainage with an acidic pH; an acidic pH is defined as a value less than 6.0.
Alkaline mine drainage	Mine site drainage with an alkaline pH; an alkaline pH is defined as a value greater than 8.5.
Altered	A rock that has undergone changes in chemical or mineralogical composition usually produces by hydrothermal solutions or weathering.
Biotite	A mineral of the mica group $K(Mg, Fe+4)_3(Al, Fe+3)Si_3O_{10}(OH)_2$. It is black in a hand specimen, brown or green in a thin section, and has perfect basal (001) cleavage.
Column test	Column tests are a kinetic test method that provides neutral drainage data that can be compared to the acid rock drainage and primary weathering data obtained from humidity cell testing.

Diabase	A medium grained basaltic intrusive rock composed primarily of pyroxene, and plagioclase feldspar; approximate medium grained equivalent of gabbro.
Diorite	A dark, coarse grained plutonic rock composed primarily of plagioclase feldspar, hornblende, and pyroxene; intrusive equivalent of andesite.
Drainage chemistry	Concentrations of elements and other aqueous parameters in mine site drainage from mine site components through surface or subsurface pathways.
Glacio-lacustrine	Sediments that were deposited in lakes that formed at the edge of retreating glaciers; commonly laminar deposits of fine sand, silt, and clay.
Gneiss	A coarse crystalline metamorphic rock in which there are bands of light and dark minerals of widely varying origin and mineralogy.
Granite	A coarsely crystalline igneous intrusive rock composed of quartz, potassium feldspar, mica, and/or hornblende.
Granitoid	Rocks with a composition the same or similar to granite.
Granodiorite	A coarse-grained plutonic rock composed primarily of quartz, potassium feldspar, hornblende, and pyroxene; similar to granite with less alkali feldspar.
Humidity cell	A type of kinetic test in which a small sample (about 1 kg) is placed in an enclosed chamber in a laboratory, alternating cycles of moist and dry air is constantly pumped through the chamber, and once a week the sample is rinsed with water; chemical analysis or rinse water yield concentrations of elements and other parameters used to calculate reaction rates.
Hypabyssal	Igneous rocks forming minor, small scale, intrusions at relatively shallow depths in the crust; medium to fine-grained.
Kinetic test	A geochemical procedure for characterizing the chemical status of a sample through time during continued exposure to a known set of environmental conditions, such as humidity cell tests; see also static test.
Loading	Concentration multiplied by a flow, providing a mass per unit time flowing through or from a mine site component.
Metal leaching	The release of a metal from its solid-phase mineral into mine site drainage described by concentrations in static test and by metal release rates obtained from kinetic tests.
Mine rock	The rock surrounding an ore body.
Mine rock pile	A general term referring to any accumulation of rock at a mine, including waste rock piles, ore and low-grade ore stockpiles, roads, heap leach piles, and building foundations.
Mine site drainage	Water that runs off or flows through a mine site component, including surface and subsurface (groundwater) flow; see also acid mine drainage, neutral mine drainage, alkaline mine drainage, and drainage chemistry.
Neutralization potential	The neutralization potential represents the bulk amount of acidity that the sample can potentially consume or neutralize.
Overburden	A general term referring to all soil and broken rock, lying above ore and waste rock, that can usually be removed without blasting; as mines in soft sedimentary rock, like coal, overburden can be synonymous with waste rock.
Potentially acid generating (PAG)	Rock with a neutralization potential/acid potential ratio less than 3 as determined by static tests.

Processed kimberlite	The material that remains after all economically and technically recoverable diamonds have been removed from the kimberlite during processing.
Processed kimberlite containment	On-site storage facility for storing processed kimberlite.
Static test	A procedure for characterizing the physical and/or chemical status of a sample at one point in time, such as acid base accounting.
Submerged column test (SCT)	Submerged column tests are kinetic tests designed to address the influence of submerging a material underwater. Sample charges with a weight of 3 kg were placed in a PVC column, which was inundated with an initial volume of distilled water f approximately 2.5 L. Each week, samples of water are collected from the base (“bottom”) of the column and the water overlying the top of the column (“top”). Additional distilled water is added to the top of the column to replace the volume of water collected each week.
Sulphide oxidation	Oxidation of chemically reduced sulphur, such as sulphide (S_2^{2-}) and elemental sulphur to a partially oxidized form, such as sulphate (SO_4^{2-}). Generally used to refer to oxidation of pyrite (FeS_2).
Sulphide sulphur	A part of acid base accounting that provides the sulphide content of a sample, expressed as %S.
Total sulphur	A part of acid base accounting that provides the total sulphur content of a sample, expressed as%S; see also sulphide sulphur, total sulphate sulphur.

APPENDIX A

SEEPAGE SURVEY PHOTOS

Photo 1a: DA-01(Spring)

Photo 1b: DA-01(Fall)

Photo 2a: DF-01(Spring)

Photo 2b: DF-01(Fall)

Photo 3a: DG-01(Spring)

Photo 3b: DG-01(Fall)

Photo 4: DB-01(Fall)

Photo 5a: DH-01(Spring)

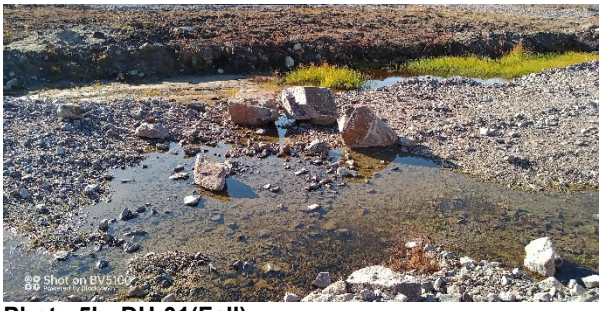

Photo 5b: DH-01(Fall)

Photo 6a: DI-01(Spring)

Photo 6b: DI-01(Fall)

Photo 7a: EPS-01(Spring)

Photo 7b: EPS-02(Fall)

Photo 8a: EPS-02(Spring)

Photo 8b: EPS-02(Fall)

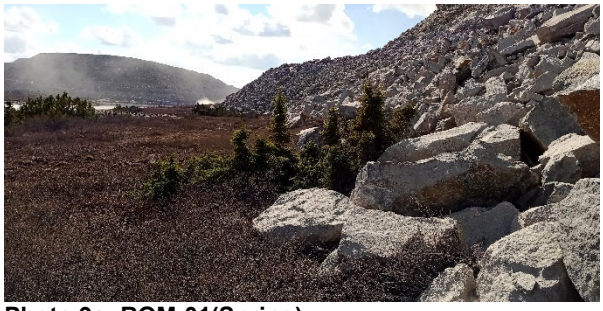

Photo 9a: ROM-01(Spring)

Photo 9b: ROM-01(Fall)

Photo 10a: SNP-11-A(Spring)

Photo 10b: SNP-11-A(Fall)

Photo 11a: SNP-11-B(Spring)

Photo 11b: SNP-11-B(Fall)

Photo 12a: SNP-12-A(Spring)

Photo 12b: SNP-12-A(Fall)

Photo 13a: SNP-12-B(Spring)

Photo 13b: SNP-12-B(Fall)

Photo 14a: SNP-12-C(Spring)

Photo 14b: SNP-12-C(Fall)

Photo 15a: SNP-14-B(Spring)

Photo 15b: SNP-14-B(Fall)

Photo 16: SNP-14-A(Fall)

Photo 17a: SNP-16(Spring)

Photo 17b: SNP-16(Fall)

Photo 18a: SNP-17(Spring)

Photo 18b: SNP-17(Fall)

APPENDIX B

PHOTOS OF ROCK SAMPLE LOCATIONS

APPENDIX B1

SPRING 2022 SAMPLE PHOTOS

Photo 1a: GK-BGAR-CPK-31 AREA

Photo 1b: GK-BGAR-CPK-31

Photo 2a: GK-BGAR-CPK-32 AREA

Photo 2b: GK-BGAR-CPK-32

Photo 3a: GK-BGAR-CPK-33 AREA

Photo 3b: GK-BGAR-CPK-33

Photo 4a: GK-BGAR-CPKTB-04 AREA

Photo 4b: GK-BGAR-CPKTB-04

Photo 5a: GK-BGAR-DB-09 AREA

Photo 5b: GK-BGAR-DB-09

Photo 6a: GK-BGAR-DD-06 AREA

Photo 6b: GK-BGAR-DD-06

Photo 7a: GK-BGAR-DDBP-01 AREA

Photo 7b: GK-BGAR-DDBP-01

Photo 8a: GK-BGAR-DL-06 AREA

Photo 8b: GK-BGAR-DL-06

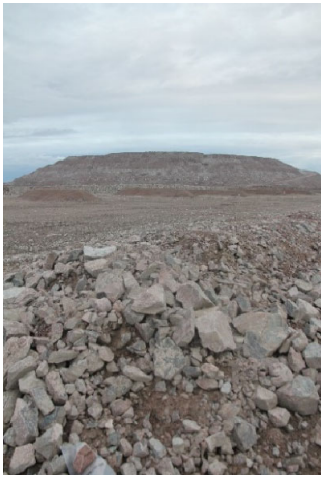

Photo 9a: GK-BGAR-MP-04 AREA

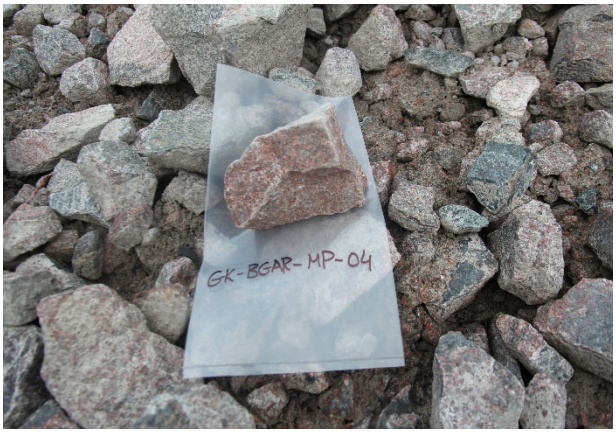

Photo 9b: GK-BGAR-MP-04

Photo 10a: GK-BGAR-N11-03 AREA

Photo 10b: GK-BGAR-N11-03

Photo 11a: GK-BGAR-ROM-07 AREA

Photo 11b: GK-BGAR-ROM-07

Photo 12a: GK-BGAR-TZL-01 AREA

Photo 12b: GK-BGAR-TZL-01

Photo 13a: GK-BGAR-WMRP1-07 AREA

Photo 13b: GK-BGAR-WMRP1-07

Photo 15a: GK-BGAR-WMRP3-06 AREA

Photo 15b: GK-BGAR-WMRP3-06

Photo 16a: GK-BGAR-WMRPL-01 AREA

Photo 16b: GK-BGAR-WMRPL-01

APPENDIX B2

FALL 2022 SAMPLE PHOTOS

Photo 1: GK-BGAR-CP-01

Photo 2: GK_BGAR-CPK-34

Photo 3: GK-BGAR-CPK-35

Photo 4: GK-BGAR-DL-07

Photo 5: GK-BGAR-WMRP3-07

Photo 6: GK-BGAR-WMRP1-09

APPENDIX C

ANALYTICAL RESULTS SUMMARY TABLES

Table C1: ABA Test Results for Gahcho Kué Mine 2022 Supplemental Samples

Sample ID	Audit Event	Rock Type	Paste pH	Total Sulphur	Sulphide Sulphur	Sulphate Sulphur	Carbon Dioxide	CO_3-NP[(1)]	NP[(2)]	AP[(3)]	Net NP[(4)]	Net CO_3-NP[(5)]	NPR[(6)]	CO_3-NPR[(7)]
			pH Units	%	%	%	%	t $CaCO_3$ /1000 tonne					ratio	ratio
GK-BGAR-CPK-31	2022 Spring	CPK	8.8	0.05	0.04	0.01	0.71	16	134	1.3	133	15	106	13
GK-BGAR-CPK-32	2022 Spring	CPK	8.7	0.05	0.04	0.01	0.88	20	130	1.3	129	19	103	16
GK-BGAR-CPK-33	2022 Spring	CPK	8.8	0.05	0.04	0.01	0.80	18	142	1.3	140	17	112	15
GK-BGAR-FPK-25	2022 Spring	FPK	8.6	0.07	0.05	0.02	1.15	26	139	1.6	138	25	88	17
GK-BGAR-FPK-26	2022 Spring	FPK	8.5	0.10	0.08	0.02	1.32	30	143	2.5	140	28	56	12
GK-BGAR-CPKTP-04	2022 Spring	CPK	8.9	0.05	0.04	0.01	0.82	19	141	1.3	140	17	112	15
GK-BGAR-DB-09	2022 Spring	GRANITE	10.0	<0.02	<0.02	<0.01	0.08	1.8	12	0.6	11	1.2	18	2.9
GK-BGAR-DD-06	2022 Spring	GRANITE	10.0	<0.02	<0.02	<0.01	<0.08	<1.8	7.2	0.6	6.6	1.2	11	2.9
GK-BGAR-DDBP-01	2022 Spring	GRANITE	10.0	0.05	0.05	<0.01	<0.08	<1.8	9.5	1.6	7.9	0.2	5.1	1.2
GK-BGAR-DL-06	2022 Spring	GRANITE	9.5	<0.02	<0.02	<0.01	<0.08	<1.8	7.8	0.6	7.2	1.2	11	2.9
GK-BGAR-MP-04	2022 Spring	GRANITE	10.0	0.02	0.02	<0.01	<0.08	<1.8	4.5	0.6	3.9	1.2	6.2	2.9
GK-BGAR-N11-03	2022 Spring	GRANITE	10.0	<0.02	<0.02	<0.01	<0.08	<1.8	9.5	0.6	8.9	1.2	14	2.9
GK-BGAR-ROM-07	2022 Spring	GRANITE	10.2	<0.02	<0.02	<0.01	<0.08	<1.8	11	0.6	10	1.2	16	2.9
GK-BGAR-TZL-01	2022 Spring	GRANITE	10.0	<0.02	<0.02	<0.01	0.11	2.5	17	0.6	16	1.9	26	4.0
GK-BGAR-WMRPL-01	2022 Spring	GRANITE	10.0	<0.02	<0.02	<0.01	<0.08	<1.8	8.2	0.6	7.6	1.2	12	2.9
GK-BGAR-WMRP1-07	2022 Spring	GRANITE	10.1	<0.02	<0.02	<0.01	<0.08	<1.8	11	0.6	11	1.2	17	2.9
GK-BGAR-WMRP3-06	2022 Spring	GRANITE	9.3	0.08	0.08	<0.01	<0.08	<1.8	20	2.5	17	-0.7	6.8	0.7
GK-BGAR-CPK-34	2022 Fall	CPK	9.1	<0.02	<0.02	0.01	0.43	9.8	135	0.6	134	9.2	215	16
GK-BGAR-CPK-35	2022 Fall	CPK	9.2	<0.02	<0.02	0.01	0.46	11	136	0.6	135	9.9	216	17
GK-BGAR-DL-07	2022 Fall	GRANITE	10.0	<0.02	<0.02	<0.01	<0.08	<1.8	18	0.6	18	1.2	28	2.9
GK-BGAR-CP-01	2022 Fall	GRANITE	9.6	<0.02	<0.02	<0.01	0.11	2.5	16	0.6	16	1.9	25	4.0
GK-BGAR-WMRP1-09	2022 Fall	GRANITE	9.9	<0.02	<0.02	<0.01	0.36	8.2	19	0.6	18	7.6	29	13
GK-BGAR-WMRP3-07	2022 Fall	GRANITE	9.0	0.04	0.04	<0.01	<0.08	<1.8	41	1.3	39	0.6	31	1.4
GK-BGAR-FPK-27	2022 Fall	FPK	8.8	<0.02	<0.02	0.02	0.66	15	93	0.6	92	14	148	24
GK-BGAR-FPK-28	2022 Fall	FPK	8.7	0.06	0.04	0.02	0.70	16	92	1.3	91	15	73	13
GK-BGAR-FPK-29	2022 Fall	FPK	8.9	0.05	0.03	0.02	0.71	16	131	0.9	130	15	139	17

Notes:

(1) Carbonate neutralization potential (CO_3-NP) = (CO_2 / 44.01) x 100.09 x 10

(2) Neutralization potential (NP) is determined directly from Sobek method (Sobek 1978).

(3) Acid potential (AP) = Sulphide Sulphur (%) x 31.25

(4) Net neutralization potential = NP - AP

(5) Net carbonate neutralization potential = CO_3-NP - AP

(6) Net Potential Ratio (NPR) = NP / AP

(7) Carbonate NPR (CO_3-NPR) = CO_3-NP / AP

ABA = acid-base accounting; FPK = fine processed kimberlite; CPK = coarse processed kimberlite.

Table C2: NAG Test Results for Gahcho Kué 2022 Supplemental Samples

Sample ID	Audit Event	Rock Type	NAG Vol. of 15% H_2O_2 Used	NAG pH	NAG Volume to pH 4.5	NAG Volume to pH 7.0	NAG Acidity pH 4.5	NAG Acidity pH 7.0
			mL	pH units	mL	mL	kg H_2SO_4/T	kg H_2SO_4/T
GK-BGAR-CPK-31	2022 Spring	CPK	250	9.7	0	0	0	0
GK-BGAR-CPK-32	2022 Spring	CPK	250	9.7	0	0	0	0
GK-BGAR-CPK-33	2022 Spring	CPK	250	10.0	0	0	0	0
GK-BGAR-FPK-25	2022 Spring	FPK	250	9.9	0	0	0	0
GK-BGAR-FPK-26	2022 Spring	FPK	250	9.9	0	0	0	0
GK-BGAR-CPKTP-04	2022 Spring	CPK	250	9.8	0	0	0	0
GK-BGAR-DB-09	2022 Spring	GRANITE	250	7.5	0	0	0	0
GK-BGAR-DD-06	2022 Spring	GRANITE	250	7.2	0	0	0	0
GK-BGAR-DDBP-01	2022 Spring	GRANITE	250	7.4	0	0	0	0
GK-BGAR-DL-06	2022 Spring	GRANITE	250	7.3	0	0	0	0
GK-BGAR-MP-04	2022 Spring	GRANITE	250	7.0	0	0	0	0
GK-BGAR-N11-03	2022 Spring	GRANITE	250	7.3	0	0	0	0
GK-BGAR-ROM-07	2022 Spring	GRANITE	250	7.3	0	0	0	0
GK-BGAR-TZL-01	2022 Spring	GRANITE	250	7.8	0	0	0	0
GK-BGAR-WMRPL-01	2022 Spring	GRANITE	250	7.4	0	0	0	0
GK-BGAR-WMRP1-07	2022 Spring	GRANITE	250	7.5	0	0	0	0
GK-BGAR-WMRP3-06	2022 Spring	GRANITE	250	7.8	0	0	0	0
GK-BGAR-CPK-34	2022 Fall	CPK	250	10.1	0	0	0	0
GK-BGAR-CPK-35	2022 Fall	CPK	250	9.7	0	0	0	0
GK-BGAR-DL-07	2022 Fall	GRANITE	250	7.3	0	0	0	0
GK-BGAR-CP-01	2022 Fall	GRANITE	250	7.2	0	0	0	0
GK-BGAR-WMRP1-09	2022 Fall	GRANITE	250	8.1	0	0	0	0
GK-BGAR-WMRP3-07	2022 Fall	GRANITE	250	7.8	0	0	0	0
GK-BGAR-FPK-27	2022 Fall	FPK	250	9.5	0	0	0	0
GK-BGAR-FPK-28	2022 Fall	FPK	250	10.0	0	0	0	0
GK-BGAR-FPK-29	2022 Fall	FPK	250	9.5	0	0	0	0

NAG = net acid generating; FPK = fine processed kimberlite; CPK = coarse processed kimberlite.

Table C3: Short-term Leach Results

Parameters	Units	Range of Results Presented in EIS [1]			Spring 2022									Fall 2022					
Sample ID		FPK	CPK	Mine Rock	GK-BGAR-FPK-25 - SFE	GK-BGAR-CPK-31 - SFE	GK-BGAR-CPK-33 - SFE	GK-BGAR-DB-09 - SFE	GK-BGAR-DDBP-01 - SFE	GK-BGAR-MP-04 - SFE	GK-BGAR-ROM-07 - SFE	GK-BGAR-WMRP3-06 - SFE	GK-BGAR-DL-06-SFE	GK-BGAR-FPK-27-SFE	GK-BGAR-CPK-34-SFE	GK-BGAR-DL-07-SFE	GK-BGAR-CP-01-SFE	GK-BGAR-WMRP1-09-SFE	GK-BGAR-WMRP3-07-SFE
pH	units	*7.7 - 8.37*	*7.38 - 8.36*	*5.52 - 9.84*	**8.7**	**9.0**	**9.2**	9.5	9.5	9.3	9.5	9.5	7.8	**8.9**	9.1	9.5	9.5	9.6	9.4
Conductivity	µS/cm	-	-	-	450	208	187	43	57	45	42	50	50	439	188	50	63	54	56
Acidity	mg/L as $CaCO_3$	-	-	-	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity	mg/L as $CaCO_3$	-	-	-	41	17	16	14	20	10	15	22	6	49	24	14	15	20	22
Hardness	mg/L	-	-	-	76	42	39	13	13	0.94	8.8	12	3	60	26	10	14	13	12
Chloride	mg/L	-	-	-	94	47	39	1.4	3.4	5.2	2.8	2.0	6.2	72	34	1.6	2.1	1.6	1.7
Fluoride	mg/L	*< 0.06 - 0.96*	*< 0.06 - 1.14*	-	0.48	0.21	0.12	0.36	0.27	0.07	0.32	0.16	0.11	0.55	0.2	0.21	0.28	0.13	0.09
Nitrite	mg/L as N	-	-	-	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate	mg/L as N	-	-	-	2.9	0.7	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2.5	0.3	<0.2	<0.2	<0.2	<0.2
Sulphate	mg/L	-	-	-	11	2.7	1.1	2.3	2.0	3.1	1.8	2.4	4.7	22	1.2	2.0	3.5	1.1	1.2
Aluminum	mg/L	*0.0009 - 0.226*	*0.0008 - 0.2*	*< 0.005 - 6.32*	0.01	0.14	0.0057	0.4	0.54	0.5	0.55	0.59	0.27	0.0073	0.0097	0.67	0.55	0.49	0.88
Antimony	mg/L	-	-	*< 0.001 - 0.067*	0.00029	0.000093	0.000042	<0.000020	<0.000020	0.0097	<0.000020	0.000028	0.000034	0.0004	0.00018	<0.000020	0.000045	0.000044	0.00011
Arsenic	mg/L	*0.000293 - 0.0062*	*0.0005 - 0.0039*	*< 0.001 - 0.048*	0.00029	0.00034	0.00051	0.00015	0.00017	0.012	0.00012	0.0004	0.00243	0.0008	0.0002	0.00017	0.00017	0.00018	0.00032
Barium	mg/L	-	-	*0.002 - 3.04*	0.16	0.068	0.12	0.0059	0.0089	0.003	0.005	0.0021	0.0049	0.12	0.027	0.008	0.0067	0.0031	0.0039
Beryllium	mg/L	-	-	*< 0.001 - < 0.001*	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth	mg/L	-	-	*< 0.001 - < 0.001*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.00014	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron	mg/L	-	-	*< 0.05 - 1.53*	1.5	0.7	0.14	<0.050	<0.050	<0.050	<0.050	0.12	<0.050	0.66	0.33	<0.050	<0.050	<0.050	0.061
Cadmium	mg/L	-	-	*< 0.0002 - < 0.0002*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000092	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	*8.31 - 43.7*	*3.34 - 50.4*	*0.25 - 34.8*	21	12	13	4.7	4.9	0.29	3.1	3.6	0.7	16	7.1	3.6	4.9	4.6	3.2
Chromium	mg/L	*<0.0001 - 0.002*	*0.0005 - 0.0023*	*< 0.001 - 0.003*	<0.00010	0.0018	0.00011	0.0001	0.00053	0.00027	<0.00010	<0.00010	0.0	0.00016	0.00011	0.00021	<0.00010	<0.00010	0.00051
Cobalt	mg/L	*0.0000077 - 0.000354*	*0.000015 - 0.000562*	*0.000007 - 0.0124*	0.000026	0.00022	0.00001	0.000019	0.000059	0.00004	0.000015	0.000047	0.000025	0.000022	0.000016	0.00004	0.0000063	0.0000052	0.00053
Copper	mg/L	*0.000097 - 0.0069*	*0.0006 - 0.013*	*< 0.001 - 0.005*	0.00013	0.00051	0.000056	0.00014	0.00021	0.0014	0.00016	0.00038	0.00021	<0.000050	<0.000050	0.000076	0.000066	0.000063	0.00032
Iron	mg/L	*0.0019 - 0.286*	*< 0.002 - 0.306*	*0.004 - 6.92*	0.0075	0.18	0.0063	0.018	0.058	0.041	0.028	0.08	0.028	0.0059	0.0087	0.11	0.0089	0.01	1.0
Lead	mg/L	*0.00002 - 0.00018*	*< 0.00002 - 0.00023*	*< 0.00002 - 0.057*	0.000045	**0.00045**	0.000029	0.000081	0.00024	0.0019	0.000085	0.000045	0.000385	<0.0000050	0.0000076	0.00013	0.000029	0.000017	0.00013
Lithium	mg/L	-	-	*< 0.001 - 0.036*	0.0066	0.0013	0.00088	0.0013	0.0025	0.0014	0.0028	0.0017	0.0012	0.0053	0.00087	0.0039	0.002	0.0019	0.0013
Magnesium	mg/L	*0.848 - 16.1*	*0.814 - 24.6*	*0.27 - 13.6*	5.8	2.7	1.6	0.28	0.27	0.053	0.23	0.65	0.19	4.9	2.0	0.35	0.32	0.39	0.84
Manganese	mg/L	*0.00009 - 0.014*	*0.0002 - 0.0041*	*0.0007 - 0.364*	0.0013	**0.015**	0.0002	0.00087	0.0043	0.0027	0.00087	0.0012	0.0009	0.00072	0.00039	0.0022	0.00039	0.00036	0.0097
Mercury	mg/L	-	-	*< 0.02 - < 0.02*	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum	mg/L	*0.000671 - 0.245*	*0.00018 - 0.18*	*< 0.00003 - 0.033*	0.004	0.0012	0.00033	0.00018	0.00028	0.00066	0.000087	0.00031	0.00217	0.0099	0.00058	0.0003	0.00027	0.00063	0.001
Nickel	mg/L	*0.000208 - 0.0104*	*0.0003 - 0.0098*	*< 0.0003 - 0.0337*	0.00087	0.00082	0.00023	0.00015	0.00019	0.00016	0.00011	0.0001	0.00009	0.00072	0.00042	0.00015	0.000081	0.000044	0.00061
Potassium	mg/L	*7.39 - 54.9*	*0.946 - 42.6*	*2.84 - 48.2*	24	8.1	7.0	1.6	3.6	0.76	2.1	3.6	3.6	19	5.1	2.8	2.5	3.7	2.5
Selenium	mg/L	*<0.00004 - 0.00159*	*< 0.00004 - 0.00132*	*0.00004 - < 0.001*	0.000065	0.000067	<0.000040	0.000067	0.000047	0.000071	<0.000040	0.00025	0.00006	0.00015	0.000053	<0.000040	0.000079	0.000076	0.00027
Silicon	mg/L	-	-	*3.8 - 24.8*	2.6	1.1	0.76	1.5	3.6	2.4	2.3	2.5	1.6	3.0	1.8	2.1	1.8	1.6	2.8
Silver	mg/L	-	-	*< 0.00025 - < 0.00025*	<0.0000050	0.0000068	<0.0000050	<0.0000050	0.000006	0.00092	0.000012	<0.0000050	0.0	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000059
Sodium	mg/L	*4.99 - 56*	*1.01 - 44.3*	*1.79 - 23.2*	43	16	9.0	2.1	4.1	8.9	2.8	3.4	5.5	43	17	2.4	2.7	1.8	4.2
Strontium	mg/L	*0.118 - 0.989*	*0.0305 - 0.882*	*0.003 - 0.54*	0.34	0.18	0.18	0.028	0.038	0.0024	0.025	0.013	0.009	0.38	0.12	0.024	0.041	0.026	0.019
Thallium	mg/L	-	-	*< 0.0001 - < 0.0001*	0.00013	0.00005	0.000058	0.0000041	0.0000068	0.0000031	0.0000046	0.0000049	0.0000035	0.00006	0.000011	0.000006	0.0000036	0.0000087	0.0000033
Tin	mg/L	-	-	*< 0.001 - 0.003*	<0.00020	0.0004	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium	mg/L	-	-	*< 0.001 - 0.73*	<0.00050	0.0026	<0.00050	0.0019	0.003	0.0011	0.0047	0.0072	0.002	<0.00050	<0.00050	0.013	0.0018	0.0014	0.013
Tungsten	mg/L	-	-	-	0.00041	0.0001	0.000017	0.00008	0.000052	0.00051	0.000023	0.00013	0.00009	0.00037	0.000046	0.00025	0.00036	0.00019	0.0016
Uranium	mg/L	*<0.000001 - 0.00241*	*< 0.000001 - 0.00109*	*< 0.0005 - 0.0038*	<0.0000020	0.0000095	<0.0000020	0.0000066	0.00004	0.00004	0.000017	0.0000046	0.000256	0.000014	<0.0000020	0.000017	0.000017	0.000028	0.0000057
Vanadium	mg/L	-	-	*< 0.001 - 0.1*	0.00036	0.00065	0.00025	0.00085	0.00092	0.0011	0.00073	0.0063	0.0006	0.0023	0.0014	0.0018	0.0015	0.0028	0.0065
Zinc	mg/L	-	*< 0.001 - 0.003*	*< 0.005 - 0.06*	0.00089	0.0012	0.00055	0.00052	0.00069	0.00094	0.00091	0.00053	0.00669	0.0018	0.00083	0.00059	0.00056	0.0006	0.0047

Notes:

0.1 – Denotes a value that is outside of the range presented in the EIS.

(1) De Beers (De Beers Canada Inc.). 2010. Environmental Impact Statement for the Gahcho Kué Project. Volumes 1, 2, 3a, 3b, 4, 5, 6a, 6b, 7 and Annexes A through N. Submitted to the Mackenzie Valley Environmental Impact Review Board, Yellowknife, NWT. December 2010.

A dash "-" indicates that results were not reported for this parameter.

Laboratory certificates of analysis available on request.

Table C3: Short-term Leach Results

Parameters	Units	Range of Results Presented in EIS [1]			Statistics - Mine Rock					Statistics - PK				
Sample ID		FPK	CPK	Mine Rock	Minimum	Maximum	Mean	Median	Standard Deviation	Minimum	Maximum	Mean	Median	Standard Deviation
pH	units	*7.7 - 8.37*	*7.38 - 8.36*	*5.52 - 9.84*	7.8	9.6	9.3	9.5	0.531	8.7	9.2	9.0	9.0	0.18
Conductivity	µS/cm	-	-	-	42	63	51	50	6.6	187	450	294	208	137
Acidity	mg/L as $CaCO_3$	-	-	-	<0.5	<0.5	0.5	0.5	0	0.7	0.7	0.54	0.5	0.089
Alkalinity	mg/L as $CaCO_3$	-	-	-	6	22	16	15	5.4	16	49	29	24	15
Hardness	mg/L	-	-	-	0.94	14	10	12	4.5	26	76	49	42	20
Chloride	mg/L	-	-	-	1.4	6.2	2.8	2.1	1.7	34	94	57	47	25
Fluoride	mg/L	*< 0.06 - 0.96*	*< 0.06 - 1.14*	-	0.07	0.36	0.2	0.19	0.1	0.12	0.55	0.31	0.21	0.19
Nitrite	mg/L as N	-	-	-	<0.05	<0.05	0.05	0.05	7.3E-18	0.06	0.12	0.066	0.05	0.03
Nitrate	mg/L as N	-	-	-	<0.2	<0.2	0.2	0.2	2.9E-17	0.2	2.9	1.3	0.7	1.3
Sulphate	mg/L	-	-	-	1.1	4.7	2.4	2.2	1.1	1.1	22	7.6	2.7	9.1
Aluminum	mg/L	*0.0009 - 0.226*	*0.0008 - 0.2*	*< 0.005 - 6.32*	0.27	0.88	0.54	0.54	0.16	0.0057	0.14	0.034	0.0097	0.057
Antimony	mg/L	-	-	*< 0.001 - 0.067*	0.000028	0.0097	0.001	0.000031	0.003	0.000042	0.0004	0.0002	0.00018	0.00015
Arsenic	mg/L	*0.000293 - 0.0062*	*0.0005 - 0.0039*	*< 0.001 - 0.048*	0.00012	0.012	0.0016	0.00018	0.0037	0.0002	0.0008	0.00043	0.00034	0.00024
Barium	mg/L	-	-	*0.002 - 3.04*	0.0021	0.0089	0.0051	0.005	0.0022	0.027	0.16	0.098	0.12	0.051
Beryllium	mg/L	-	-	*< 0.001 - < 0.001*	<0.00001	<0.00001	0.00001	0.00001	0	<0.00001	<0.00001	0.00001	0.00001	0
Bismuth	mg/L	-	-	*< 0.001 - < 0.001*	0.00014	0.00014	0.000019	0.000005	0.000043	<0.000005	<0.000005	0.000005	0.000005	0
Boron	mg/L	-	-	*< 0.05 - 1.53*	0.061	0.12	0.058	0.05	0.022	0.14	1.5	0.67	0.66	0.52
Cadmium	mg/L	-	-	*< 0.0002 - < 0.0002*	0.0000092	0.0000092	0.0000054	0.000005	0.0000013	<0.000005	<0.000005	0.000005	0.000005	0
Calcium	mg/L	*8.31 - 43.7*	*3.34 - 50.4*	*0.25 - 34.8*	0.29	4.9	3.4	3.6	1.7	7.1	21	14	13	5.1
Chromium	mg/L	*<0.0001 - 0.002*	*0.0005 - 0.0023*	*< 0.001 - 0.003*	0.0001	0.00053	0.00022	0.00013	0.00017	0.00011	0.0018	0.00046	0.00011	0.00077
Cobalt	mg/L	*0.0000077 - 0.000354*	*0.000015 - 0.000562*	*0.000007 - 0.0124*	0.0000052	0.00053	0.000078	0.000033	0.00016	0.00001	0.00022	0.000058	0.000022	0.00009
Copper	mg/L	*0.000097 - 0.0069*	*0.0006 - 0.013*	*< 0.001 - 0.005*	0.000063	0.0014	0.00031	0.00019	0.00041	0.000056	0.00051	0.00016	0.000056	0.0002
Iron	mg/L	*0.0019 - 0.286*	*< 0.002 - 0.306*	*0.004 - 6.92*	0.0089	1.0	0.14	0.034	0.31	0.0059	0.18	0.042	0.0075	0.079
Lead	mg/L	*0.00002 - 0.00018*	*< 0.00002 - 0.00023*	*< 0.00002 - 0.057*	0.000017	0.0019	0.0003	0.00011	0.00056	0.0000076	0.00045	0.00011	0.000029	0.00019
Lithium	mg/L	-	-	*< 0.001 - 0.036*	0.0012	0.0039	0.002	0.0018	0.00085	0.00087	0.0066	0.003	0.0013	0.0027
Magnesium	mg/L	*0.848 - 16.1*	*0.814 - 24.6*	*0.27 - 13.6*	0.053	0.84	0.36	0.3	0.23	1.6	5.8	3.4	2.7	1.9
Manganese	mg/L	*0.00009 - 0.014*	*0.0002 - 0.0041*	*0.0007 - 0.364*	0.00036	0.0097	0.0023	0.0011	0.0029	0.0002	0.015	0.0035	0.00072	0.0064
Mercury	mg/L	-	-	*< 0.02 - < 0.02*	<0.00005	<0.00005	0.00005	0.00005	7.1E-21	<0.00005	<0.00005	0.00005	0.00005	0
Molybdenum	mg/L	*0.000671 - 0.245*	*0.00018 - 0.18*	*< 0.00003 - 0.033*	0.000087	0.0022	0.00059	0.00031	0.00062	0.00033	0.0099	0.0032	0.0012	0.004
Nickel	mg/L	*0.000208 - 0.0104*	*0.0003 - 0.0098*	*< 0.0003 - 0.0337*	0.000044	0.00061	0.00017	0.00013	0.00016	0.00023	0.00087	0.00061	0.00072	0.00028
Potassium	mg/L	*7.39 - 54.9*	*0.946 - 42.6*	*2.84 - 48.2*	0.76	3.7	2.7	2.7	1.0	5.1	24	13	8.1	8.3
Selenium	mg/L	*<0.00004 - 0.00159*	*< 0.00004 - 0.00132*	*0.00004 - < 0.001*	0.000047	0.00027	0.0001	0.000069	0.000087	0.000053	0.00015	0.000075	0.000065	0.000044
Silicon	mg/L	-	-	*3.8 - 24.8*	1.5	3.6	2.2	2.2	0.64	0.76	3.0	1.8	1.8	0.95
Silver	mg/L	-	-	*< 0.00025 - < 0.00025*	0.0000054	0.00092	0.0001	0.0000052	0.00029	0.0000068	0.0000068	0.0000054	0.000005	0.0000008
Sodium	mg/L	*4.99 - 56*	*1.01 - 44.3*	*1.79 - 23.2*	1.8	8.9	3.8	3.1	2.1	9.0	43	26	17	16
Strontium	mg/L	*0.118 - 0.989*	*0.0305 - 0.882*	*0.003 - 0.54*	0.0024	0.041	0.022	0.024	0.012	0.12	0.38	0.24	0.18	0.11
Thallium	mg/L	-	-	*< 0.0001 - < 0.0001*	0.0000031	0.0000087	0.0000049	0.0000044	0.0000018	0.000011	0.00013	0.000061	0.000058	0.000041
Tin	mg/L	-	-	*< 0.001 - 0.003*	<0.0002	<0.0002	0.0002	0.0002	2.9E-20	0.0004	0.0004	0.00024	0.0002	0.000089
Titanium	mg/L	-	-	*< 0.001 - 0.73*	0.0011	0.013	0.005	0.0025	0.0048	0.0026	0.0026	0.00091	0.0005	0.00092
Tungsten	mg/L	-	-	-	0.000023	0.0016	0.00033	0.00016	0.00047	0.000017	0.00041	0.00019	0.0001	0.00019
Uranium	mg/L	*<0.000001 - 0.00241*	*< 0.000001 - 0.00109*	*< 0.0005 - 0.0038*	0.0000046	0.000256	0.000043	0.000017	0.000076	0.0000095	0.000014	0.0000059	0.000002	0.0000056
Vanadium	mg/L	-	-	*< 0.001 - 0.1*	0.00064	0.0065	0.0023	0.0013	0.0023	0.00025	0.0023	0.00098	0.00065	0.00085
Zinc	mg/L	-	*< 0.001 - 0.003*	*< 0.005 - 0.06*	0.00052	0.0067	0.0017	0.00065	0.0022	0.00055	0.0018	0.0011	0.00089	0.00048

Notes:

0.1 – Denotes a value that is outside of the range presented in the EIS.

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A dash "-" indicates that results were not reported for this parameter.
Laboratory certificates of analysis available on request.

Table C4: NAG Extract Results

Parameters	Units	Range of Results Presented in Previous Annual Audits			Sping 2022									Fall 2022					
Sample ID		FPK	CPK	Mine Rock	GK-BGAR-FPK-25 - NAGX	GK-BGAR-CPK-31 - NAGX	GK-BGAR-CPK-33 - NAGX	GK-BGAR-DB-09 - NAGX	GK-BGAR-DDBP-01 - NAGX	GK-BGAR-MP-04 - NAGX	GK-BGAR-ROM-07 - NAGX	GK-BGAR-WMRP3-06 - NAGX	GK-BGAR-DL-06-NAGX	GK-BGAR-FPK-27-NAGX	GK-BGAR-CPK-34-NAGX	GK-BGAR-CP-01-NAGX	GK-BGAR-WMRP1-09-NAGX	GK-BGAR-WMRP3-07-NAGX	GK-BGAR-DL-07-NAGX
pH	units	8.62 - 10.2	*7.13 - 10.39*	*3.24 - 8.08*	10	10	10	7.6	7.4	7.0	7.4	7.7	7.8	9.6	9.7	8.2	**9.3**	7.5	7.7
Conductivity	µS/cm	113 - 218	*51 - 238*	*27.3 - 379*	218	166	**247**	95	104	69	78	83	64	158	186	122	168	83	93
Acidity	mg/L as $CaCO_3$	<0.5 - <0.5	*<0.5 - 150.7*	*<0.5 - 428.9*	<0.5	<0.5	<0.5	167	131	342	210	0.6	82	<0.5	<0.5	3.9	<0.5	<0.5	33
Alkalinity	mg/L as $CaCO_3$	28.2 - 87.6	*17.9 - 86.4*	*<0.5 - 50*	63	51	78	**51**	29	36	40	10	30	47	66	48	**77**	8.2	45
Hardness	mg/L	16.4 - 58.9	*1.49 - 42.3*	*3.2 - 45.2*	49	**44**	**43**	29	22	2.5	16	16	7.7	28	29	23	**51**	15	21
Fluoride	mg/L	0.07 - 2	*0.11 - 2*	*0.07 - 12*	0.59	0.53	0.92	0.75	0.71	0.08	0.9	0.07	0.21	0.48	0.5	0.62	0.21	0.1	0.63
Sulphate	mg/L	5 - 10.8	*1.6 - 9.8*	*<0.5 - 79.8*	**12**	7.2	5.7	2.3	17	7.8	1.2	20	4.1	10	5.5	3.2	2.4	18	2.5
Aluminum	mg/L	0.0066 - 0.0195	*0.0049 - 0.228*	*0.0123 - 2.41*	**0.021**	**0.56**	0.021	0.74	0.52	0.16	0.42	0.63	0.24	**0.34**	0.08	**1.1**	1.3	0.29	0.98
Antimony	mg/L	0.000261 - 0.00068	*0.000029 - 0.000532*	*<0.00002 - 0.0103*	0.00061	0.0003	0.00027	0.00021	0.0001	**0.068**	0.00019	0.000091	0.000068	0.00024	0.00022	0.000073	0.000074	0.000082	0.000058
Arsenic	mg/L	0.000726 - 0.00201	*0.000249 - 0.00204*	*<0.00002 - 0.00865*	0.0019	0.0012	0.00085	0.0031	0.00037	**0.019**	0.00036	0.00031	0.0013	0.0019	0.0013	0.0017	0.00032	0.0003	0.0005
Barium	mg/L	0.0932 - 0.475	*0.00387 - 0.351*	*0.0014 - 0.111*	0.37	0.2	**0.49**	0.0064	0.009	0.011	0.0069	0.005	0.0034	0.19	0.25	0.014	0.0044	0.0017	0.0074
Beryllium	mg/L	<0.00001 - <0.00005	*<0.00001 - <0.00005*	*0.00001 - 0.000987*	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000077	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth	mg/L	<0.000005 - <0.000025	*<0.000005 - <0.000025*	*0.000005 - 0.00002*	<0.000010	<0.000010	<0.000010	<0.0000050	0.000005	0.000012	<0.0000050	<0.0000050	<0.0000050	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron	mg/L	1.33 - 3.9	*<0.05 - 5.09*	*<0.05 - 0.176*	3.9	2.7	3.6	0.075	0.069	**0.23**	0.066	0.1	0.12	2.8	3.7	0.12	0.081	0.14	0.11
Cadmium	mg/L	<0.000005 - <0.000025	*<0.000005 - 0.000131*	*0.000005 - 0.000247*	<0.000010	<0.000010	<0.000010	0.0000051	<0.0000050	0.0000062	<0.0000050	<0.0000050	0.000016	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	6.2 - 23.6	*0.6 - 16.9*	*0.572 - 15.7*	20	13	**17**	7.9	6.0	0.49	2.9	2.6	0.4	8.0	11	8.4	**20**	2.9	4.7
Chromium	mg/L	0.0412 - 0.103	*0.0142 - 0.105*	*0.00573 - 0.0513*	0.1	**0.14**	0.092	0.021	0.032	**0.084**	0.02	0.011	**0.054**	**0.11**	**0.11**	0.037	0.047	0.017	0.035
Cobalt	mg/L	<0.000005 - 0.000072	*0.0000076 - 0.000372*	*<0.000005 - 0.119*	<0.000010	**0.0011**	<0.000010	0.00012	0.00013	0.000018	0.000038	0.00012	0.000065	**0.0012**	0.00018	0.000075	0.0000081	0.000085	0.000049
Copper	mg/L	0.000058 - 0.000477	*<0.00005 - 0.0568*	*<0.00005 - 0.397*	0.00023	0.0013	0.00011	0.0007	0.0008	0.00027	0.00024	0.0009	0.00052	**0.0023**	0.00021	0.00011	0.00008	0.00034	0.00031
Iron	mg/L	0.0033 - 0.0412	*<0.002 - 0.286*	*0.0017 - 2.06*	0.007	**0.94**	0.0032	0.21	0.17	0.018	0.05	0.17	0.036	**0.59**	0.12	0.07	0.016	0.17	0.044
Lead	mg/L	<0.000005 - 0.000084	*<0.000005 - 0.00032*	*0.000006 - 0.0197*	0.000028	**0.00069**	0.000022	0.0015	0.0013	0.00015	0.00023	0.0004	0.00016	**0.00021**	0.000034	0.000073	0.000028	0.00002	0.0001
Lithium	mg/L	0.00102 - 0.0042	*0.00107 - 0.00797*	*<0.0005 - 0.0399*	**0.007**	**0.013**	0.0075	0.0058	0.0055	<0.00050	0.009	0.0055	0.00092	**0.0044**	0.0054	0.0033	0.0095	0.0049	0.022
Magnesium	mg/L	<0.05 - <0.25	*<0.05 - 0.989*	*0.34 - 4.67*	<0.10	**3.1**	<0.10	2.3	1.7	0.3	2.2	2.2	1.6	2.0	0.46	0.54	0.18	2.0	2.2
Manganese	mg/L	<0.00005 - 0.00036	*<0.0001 - 0.00573*	*0.000678 - 0.224*	0.00016	**0.015**	<0.00010	0.013	0.01	0.004	0.0099	0.0027	0.0023	**0.0091**	0.0022	0.0023	0.0028	0.0019	0.0086
Mercury	mg/L	<0.00005 - <0.0003	*<0.00005 - <0.0003*	*<0.00005 - <0.00005*	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum	mg/L	0.00274 - 0.00693	*0.00075 - 0.00636*	*0.000112 - 0.0351*	**0.0075**	0.0045	0.0042	0.0017	0.0044	0.00097	0.00096	0.0033	0.0044	0.0051	0.0022	0.0023	0.002	0.0045	0.0026
Nickel	mg/L	0.000076 - 0.00164	*0.000058 - 0.00598*	*0.000021 - 0.455*	0.00022	**0.018**	0.000072	0.00028	0.00026	0.00022	0.000076	0.00055	0.00018	**0.018**	0.0031	0.00085	0.000031	0.0001	0.00012
Potassium	mg/L	11.6 - 25.3	*4.76 - 30.6*	*1.63 - 7.85*	21	23	**32**	7.0	**9.9**	3.4	**10.0**	5.6	7.7	20	29	7.8	**14**	3.6	**9.5**
Selenium	mg/L	0.000117 - 0.00025	*0.000059 - <0.0002*	*0.00004 - 0.00184*	0.00022	0.00017	0.00012	0.000053	0.0002	0.00011	<0.000040	**0.0024**	0.00017	**0.00034**	0.00019	0.00015	0.0001	**0.0021**	0.00049
Silicon	mg/L	12.4 - 23.8	*5.39 - 27.9*	*2.04 - 8.83*	23	23	26	**12**	**12**	**15**	**13**	**13**	**9.4**	21	26	14	**17**	**11**	**13**
Silver	mg/L	<0.000005 - <0.000025	*<0.000005 - 0.0000462*	*0.000005 - 0.000601*	0.000028	**0.000047**	0.000012	0.000075	0.00005	0.000083	0.000068	0.000018	<0.0000050	<0.000010	<0.000010	<0.0000050	0.0000066	<0.0000050	0.000011
Sodium	mg/L	4.99 - 9.16	*3.17 - 8.28*	*2.66 - 6.68*	**11**	**9.1**	**8.9**	**7.7**	**8.4**	**18**	**8.8**	6.2	**9.1**	**9.2**	**9.4**	8.1	6.4	6.0	**7.0**
Strontium	mg/L	0.0623 - 0.272	*0.00636 - 0.173*	*0.00479 - 0.0523*	0.19	0.15	**0.21**	0.03	0.039	0.0038	0.026	0.008	0.0063	0.12	0.16	0.045	0.032	0.0099	0.029
Thallium	mg/L	<0.000002 - <0.00001	*<0.000002 - 0.0000489*	*0.0000036 - 0.000314*	0.0000081	0.0000096	0.000021	0.000032	0.000038	0.0000097	0.000034	0.0000035	0.000018	0.0000095	0.0000068	0.000024	0.000068	0.0000042	0.000041
Tin	mg/L	<0.0002 - <0.001	*<0.0002 - 0.0023*	*0.0002 - 0.0794*	<0.00040	0.00091	<0.00040	0.00043	0.00037	<0.00020	0.00027	0.00024	0.00026	0.00055	<0.00040	0.00027	<0.00020	<0.00020	<0.00020
Titanium	mg/L	<0.0005 - <0.0025	*<0.0005 - 0.0485*	*0.0006 - 0.0871*	<0.0010	0.019	<0.0010	0.046	0.049	0.017	**0.11**	0.019	0.012	0.0082	<0.0010	0.012	0.0047	0.0084	0.048
Tungsten	mg/L	0.00131 - 0.01	*0.000065 - 0.000765*	*<0.00001 - 0.00333*	0.0034	0.00044	0.00029	0.00016	0.000091	0.0016	0.000043	0.00012	0.0002	0.0013	0.00047	0.00018	0.00021	0.00031	0.00037
Uranium	mg/L	0.000002 - 0.000014	*0.000002 - 0.000729*	*0.0000053 - 0.0366*	**0.000025**	0.000035	0.000007	0.00036	0.00056	0.00083	0.00064	0.000056	0.013	**0.000045**	0.0000093	0.00041	0.00017	0.000009	0.00038
Vanadium	mg/L	0.0113 - 0.0346	*0.00749 - 0.0306*	*<0.0002 - 0.0633*	0.023	0.023	0.015	0.0099	0.0098	0.0036	0.012	0.048	0.011	**0.041**	**0.031**	0.013	0.015	**0.068**	0.016
Zinc	mg/L	0.00029 - 0.00486	*0.00016 - 0.00609*	*0.00015 - 0.163*	0.00049	0.0021	0.00052	0.00092	0.00081	0.0005	0.00074	0.0014	*0.00038*	*0.0021*	*0.0011*	*0.00048*	*0.00014*	*0.00032*	*0.00036*

Notes:

0.1 – Denotes a value that is outside of the range presented in previous annual audit reports.
A dash "-" indicates that results were not reported for this parameter.
Laboratory certificates of analysis available on request.

Table C4: NAG Extract Results

Parameters	Units	Range of Results Presented in Previous Annual Audits			Statistics - Mine Rock					Statistics - PK				
Sample ID		FPK	CPK	Mine Rock	Minimum	Maximum	Mean	Median	Standard Deviation	Minimum	Maximum	Mean	Median	Standard Deviation
pH	units	8.62 - 10.2	*7.13 - 10.39*	*3.24 - 8.08*	7.0	9.3	7.9	7.6	0.9	8.2	10	9.4	9.8	1.2
Conductivity	µS/cm	113 - 218	*51 - 238*	*27.3 - 379*	64	168	100	83	37.66	122	247	*140*	176	63
Acidity	mg/L as $CaCO_3$	<0.5 - <0.5	*<0.5 - 150.7*	*<0.5 - 428.9*	0.6	342	104	82	120.36	3.9	3.9	*138*	0.5	16
Alkalinity	mg/L as $CaCO_3$	28.2 - 87.6	*17.9 - 86.4*	*<0.5 - 50*	8.2	77	36	36	21.19	48	78	*51*	59	15
Hardness	mg/L	16.4 - 58.9	*1.49 - 42.3*	*3.2 - 45.2*	2.5	51	21	16	14.12	23	44	*27*	36	11
Fluoride	mg/L	0.07 - 2	*0.11 - 2*	*0.07 - 12*	0.07	0.9	0.39	0.21	0.33	0.5	0.92	*0.61*	0.58	0.19
Sulphate	mg/L	5 - 10.8	*1.6 - 9.8*	*<0.5 - 79.8*	1.2	20	9.2	7.8	7.39	3.2	7.2	*5.5*	5.6	2.0
Aluminum	mg/L	0.0066 - 0.0195	*0.0049 - 0.228*	*0.0123 - 2.41*	0.16	1.3	0.52	0.42	0.35	0.021	1.1	*0.29*	0.32	0.45
Antimony	mg/L	0.000261 - 0.00068	*0.000029 - 0.000532*	*<0.00002 - 0.0103*	0.000058	0.068	0.0077	0.0001	0.02	0.000073	0.0003	*0.017*	0.00024	0.00011
Arsenic	mg/L	0.000726 - 0.00201	*0.000249 - 0.00204*	*<0.00002 - 0.00865*	0.0003	0.019	0.003	0.00037	0.01	0.00085	0.0017	*0.0052*	0.001	0.00037
Barium	mg/L	0.0932 - 0.475	*0.00387 - 0.351*	*0.0014 - 0.111*	0.0017	0.011	0.026	0.0064	0.06	0.014	0.49	*0.18*	0.23	0.2
Beryllium	mg/L	<0.00001 - <0.00005	*<0.00001 - <0.00005*	*0.00001 - 0.000987*	0.000077	0.000077	0.000019	0.00001	0.0	<0.00001	<0.00002	*0.000015*	0.00002	0.000005
Bismuth	mg/L	<0.000005 - <0.000025	*<0.000005 - <0.000025*	*0.000005 - 0.00002*	0.000005	0.000012	0.0000063	0.000005	0.0	<0.000005	<0.00001	*0.0000092*	0.00001	0.0000025
Boron	mg/L	1.33 - 3.9	*<0.05 - 5.09*	*<0.05 - 0.176*	0.066	0.23	0.41	0.1	0.89	0.12	3.7	*1.6*	3.1	1.7
Cadmium	mg/L	<0.000005 - <0.000025	*<0.000005 - 0.000131*	*0.000005 - 0.000247*	0.0000051	0.000016	0.0000069	0.000005	0.0	<0.000005	<0.00001	*0.0000078*	0.00001	0.0000025
Calcium	mg/L	6.2 - 23.6	*0.6 - 16.9*	*0.572 - 15.7*	0.4	20	5.7	2.9	6.05	8.4	17	*8.4*	12	5.2
Chromium	mg/L	0.0412 - 0.103	*0.0142 - 0.105*	*0.00573 - 0.0513*	0.011	0.084	0.044	0.032	0.03	0.037	0.14	*0.085*	0.1	0.046
Cobalt	mg/L	<0.000005 - 0.000072	*0.0000076 - 0.000372*	*<0.000005 - 0.119*	0.0000081	0.00013	0.0002	0.000085	0.0	0.000075	0.0011	*0.0003*	0.00011	0.00054
Copper	mg/L	0.000058 - 0.000477	*<0.00005 - 0.0568*	*<0.00005 - 0.397*	0.00008	0.0009	0.00068	0.00052	0.0	0.00011	0.0013	*0.00048*	0.00026	0.00055
Iron	mg/L	0.0033 - 0.0412	*<0.002 - 0.286*	*0.0017 - 2.06*	0.016	0.21	0.16	0.17	0.18	0.0032	0.94	*0.25*	0.083	0.45
Lead	mg/L	<0.000005 - 0.000084	*<0.000005 - 0.00032*	*0.000006 - 0.0197*	0.00002	0.0015	0.00045	0.00021	0.0	0.000022	0.00069	*0.00027*	0.000067	0.00032
Lithium	mg/L	0.00102 - 0.0042	*0.00107 - 0.00797*	*<0.0005 - 0.0399*	0.00092	0.022	0.0051	0.0055	0.0	0.0033	0.013	*0.0074*	0.01	0.0074
Magnesium	mg/L	<0.05 - <0.25	*<0.05 - 0.989*	*0.34 - 4.67*	0.18	2.3	1.6	2.0	0.81	0.46	3.1	*1.4*	1.3	1.4
Manganese	mg/L	<0.00005 - 0.00036	*<0.0001 - 0.00573*	*0.000678 - 0.224*	0.0019	0.013	0.0062	0.004	0.0	0.0022	0.015	*0.0072*	0.0054	0.0067
Mercury	mg/L	<0.00005 - <0.0003	*<0.00005 - <0.0003*	*<0.00005 - <0.00005*	<0.00005	<0.0001	0.000056	0.00005	0.0	<0.00005	<0.0001	*0.000075*	0.0001	0.000025
Molybdenum	mg/L	0.00274 - 0.00693	*0.00075 - 0.00636*	*0.000112 - 0.0351*	0.00096	0.0045	0.003	0.0033	0.0	0.0022	0.0045	*0.0026*	0.0034	0.0011
Nickel	mg/L	0.000076 - 0.00164	*0.000058 - 0.00598*	*0.000021 - 0.455*	0.000031	0.00055	0.0022	0.00022	0.01	0.000072	0.018	*0.0047*	0.0016	0.0087
Potassium	mg/L	11.6 - 25.3	*4.76 - 30.6*	*1.63 - 7.85*	3.4	14	9.0	7.7	5.18	7.8	32	*17*	26	9.8
Selenium	mg/L	0.000117 - 0.00025	*0.000059 - <0.0002*	*0.00004 - 0.00184*	0.000053	0.0024	0.00062	0.00017	0.0	0.00012	0.00019	*0.00011*	0.00018	0.00017
Silicon	mg/L	12.4 - 23.8	*5.39 - 27.9*	*2.04 - 8.83*	9.4	17	14	13	3.38	14	26	*19*	24	6.0
Silver	mg/L	<0.000005 - <0.000025	*<0.000005 - 0.0000462*	*0.000005 - 0.000601*	0.0000066	0.000083	0.000035	0.000018	0.0	0.000012	0.000047	*0.000052*	0.000012	0.000018
Sodium	mg/L	4.99 - 9.16	*3.17 - 8.28*	*2.66 - 6.68*	6.0	18	8.9	8.4	3.65	8.1	9.4	*11*	9.0	1.1
Strontium	mg/L	0.0623 - 0.272	*0.00636 - 0.173*	*0.00479 - 0.0523*	0.0038	0.039	0.03	0.026	0.03	0.045	0.21	*0.097*	0.15	0.077
Thallium	mg/L	<0.000002 - <0.00001	*<0.000002 - 0.0000489*	*0.0000036 - 0.000314*	0.0000035	0.000068	0.000024	0.000018	0.0	0.0000068	0.000024	*0.000019*	0.000015	0.000016
Tin	mg/L	<0.0002 - <0.001	*<0.0002 - 0.0023*	*0.0002 - 0.0794*	0.00024	0.00043	0.0003	0.00026	0.0	0.00027	0.00091	*0.00045*	0.0004	0.0003
Titanium	mg/L	<0.0005 - <0.0025	*<0.0005 - 0.0485*	*0.0006 - 0.0871*	0.0047	0.11	0.031	0.017	0.03	0.012	0.019	*0.037*	0.0098	0.022
Tungsten	mg/L	0.00131 - 0.01	*0.000065 - 0.000765*	*<0.00001 - 0.00333*	0.000043	0.0016	0.00045	0.0002	0.0	0.00018	0.00047	*0.0006*	0.0004	0.000079
Uranium	mg/L	0.000002 - 0.000014	*0.000002 - 0.000729*	*0.0000053 - 0.0366*	0.000009	0.013	0.0017	0.00036	0.0	0.000007	0.00041	*0.00038*	0.000022	0.00018
Vanadium	mg/L	0.0113 - 0.0346	*0.00749 - 0.0306*	*<0.0002 - 0.0633*	0.0036	0.068	0.024	0.012	0.02	0.013	0.031	*0.014*	0.02	0.0075
Zinc	mg/L	0.00029 - 0.00486	*0.00016 - 0.00609*	*0.00015 - 0.163*	0.00014	0.0014	0.00081	0.00074	0.0	*0.00048*	*0.0021*	*0.00096*	*0.00082*	*0.00077*

Notes:

0.1 – Denotes a value that is outside of the range presented in previous annual audit reports.
A dash "-" indicates that results were not reported for this parameter.
Laboratory certificates of analysis available on request.

Table C5: Field Cell Analytical Results

Parameter	Units	FC-1 - Type 1	FC-1 - Type 1	FC-1 - Type 1	FC-1 - Type 1	FC-1 - Type 1	FC-2 - CPK	FC-2 - CPK	FC-2 - CPK	FC-2 - CPK	FC-3 - Control	FC-3 - Control	FC-3 - Control	FC-3 - Control	FC-4 -Type 3
		2022-06-06	2022-07-17	2022-08-05	2022-09-09	2022-10-03	2022-07-17	2022-08-05	2022-09-09	2022-10-03	2022-07-17	2022-08-05	2022-09-09	2022-10-03	2022-07-18
General Parameters															
pH	pH	7.64	8.01	7.91	8.06	8.07	8.13	8	8.08	8.04	7.29	7.12	7.38	7.41	7.79
Conductivity	uS/cm	88.1	176	178	175	190	721	606	524	523	108	56	51.5	53.9	307
Hardness (as $CaCO_3$)	mg/L	38.9	78	84.7	77.9	86.5	232	166	134	145	46	25.9	25	25.1	138
Total Suspended Solids	mg/L	6.4	6.1	5.5	<1.0	9	4.9	3.1	1.9	4.6	13.5	2.5	<1.0	27.2	113
Total Dissolved Solids	mg/L	62	121	113	119	96	534	416	363	324	145	65	78	43	225
Turbidity	NTU	0.98	1.75	0.6	1.32	0.33	2.34	0.61	1.87	1.11	4.41	0.73	0.69	6.86	58
Anions and Nutrients															
Total Alkalinity	mg/L as $CaCO_3$	34.8	60.9	74.9	68.1	75.3	69.3	77.8	72.1	70.5	28.9	22.2	17.4	18	42.5
Bicarbonate	mg/L as $CaCO_3$	34.8	60.9	74.9	68.1	75.3	69.3	77.8	72.1	70.5	28.9	22.2	17.4	18	42.5
Carbonate	mg/L as $CaCO_3$	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hydroxide	mg/L as $CaCO_3$	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromide	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.0778	0.0667	0.0898	<0.0500	<0.0500	<0.0500	<0.0500	0.0836
Chloride	mg/L	<0.50	1.7	1.33	1.39	1.35	7.46	7.02	7.8	7.75	1.67	0.7	0.83	0.83	2.96
Fluoride	mg/L	0.388	0.8	0.912	0.811	0.846	0.564	0.613	0.656	0.641	<0.234	0.077	0.077	0.065	0.572
Total Ammonia	mg/L as N	0.0111	0.0208	0.0079	0.0066	<0.0050	0.0053	0.0182	<0.0050	<0.0050	0.17	0.039	0.0182	0.015	0.0104
Nitrate and Nitrite	mg/L as N	0.49	1.93	1.24	1.15	1.08	26.8	12.3	7.53	6.51	0.452	0.0543	<0.0058	<0.0058	2.11
Nitrate	mg/L as N	0.49	1.93	1.24	1.15	1.08	26.6	12.3	7.53	6.51	0.452	0.0543	<0.0030	0.0041	2.11
Nitrite	mg/L as N	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.171	<0.0050	<0.0050	<0.0500	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050
Total Kjeldahl Nitrogen	mg/L	0.168	0.484	0.617	0.343	0.217	<0.050	0.56	0.402	0.407	2.69	0.955	0.697	0.623	0.423
Dissolved Orthophosphate	mg/L as P	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0075	0.0056	0.0032	0.0029	<0.0010	<0.0010	0.0018	<0.0010	0.0015
Total Dissolved Phosphorous	mg/L	0.0012	0.0074	0.0032	0.0067	0.0034	0.0217	0.0096	0.0038	0.0051	0.0266	0.0207	0.0094	0.0069	0.0059
Total Phosphorous	mg/L	0.007	0.0075	0.0058	0.0054	0.0107	0.363	0.0506	0.0103	0.0073	0.0778	0.0198	0.0146	0.0138	0.0779
Dissolved Organic Phosphorous	mg/L	<0.0020	0.0057	<0.0020	0.0049	<0.0020	0.0157	0.0041	0.0021	<0.0020	0.0193	0.0189	0.0063	<0.0020	0.0041
Total Inorganic Phosphorous	mg/L	0.0026	0.0054	0.0038	0.0027	0.0124	0.0113	0.0571	0.0024	0.0034	0.0291	0.0068	0.0045	0.0031	0.273
Dissolved Inorganic Phosphorous	mg/L	0.002	0.0017	0.0015	0.0018	0.0025	0.006	0.0055	0.0017	0.0048	0.0073	0.0018	0.0031	0.005	0.0018
Silicate	mg/L as SiO_2	1.21	3.06	3.5	3.56	3.54	13.1	14.3	12.4	12.6	1.64	1.56	1.62	1.76	5.91
Sulphate	mg/L	2.55	12.4	11.5	12.4	13.4	170	160	138	138	9.47	3.82	3.09	3.37	94.5
Total Organic Carbon	mg/L	1.21	7.3	3.42	3.4	3.4	3.13	2.88	2.45	2.41	72.5	24.7	22.8	18.4	10.5
Total Metals															
Aluminum	mg/L	0.027	0.0794	0.0353	0.0397	0.0448	0.0615	0.225	0.0332	0.0314	0.0509	0.0335	0.0328	0.123	1.46
Antimony	mg/L	<0.00010	0.00012	0.00011	<0.00010	<0.00010	0.00104	0.00089	0.00087	0.00083	<0.00010	<0.00010	<0.00010	<0.00010	0.00016
Arsenic	mg/L	0.000077	0.00024	0.00021	0.000206	0.000188	0.002	0.00186	0.00175	0.00166	0.00056	0.00026	0.000221	0.000182	0.00034
Barium	mg/L	0.0124	0.0334	0.0305	0.0272	0.028	0.0865	0.0614	0.0436	0.0405	0.0693	0.0357	0.0331	0.0319	0.0403
Beryllium	mg/L	<0.000020	<0.000100	<0.000100	<0.000020	<0.000020	<0.000100	<0.000100	<0.000020	<0.000100	<0.000100	<0.000100	<0.000020	<0.000020	<0.000100
Bismuth	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000250	<0.000250	<0.000050	<0.000250	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.061	0.181	0.218	0.197	0.187	4.65	5.24	4.36	3.93	0.026	0.02	0.021	0.017	0.069
Cadmium	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000250	<0.0000250	<0.0000150	<0.0000250	0.0000081	<0.0000050	<0.0000050	<0.0000050	<0.0000100
Calcium	mg/L	9.93	19.5	21.5	21	21.4	47.3	33.9	28.4	26.9	11	6.47	6.45	6.11	39.2
Cesium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000052	0.000066	0.000034	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	0.000053
Chromium	mg/L	<0.00010	<0.00050	<0.00050	0.0002	0.00016	<0.00050	0.0262	0.00025	<0.00050	0.00108	<0.00050	0.00036	0.0004	0.002
Cobalt	mg/L	<0.000050	<0.00010	<0.00010	0.000065	0.000052	<0.00050	0.00104	0.000143	<0.000250	0.00048	<0.00010	0.000092	0.000103	0.00087
Copper	mg/L	0.0005	0.00279	0.00203	0.00212	0.00189	<0.00250	<0.00250	0.00028	<0.00075	0.00747	0.00185	0.00167	0.00128	0.00343
Iron	mg/L	0.0218	0.041	0.012	0.0295	0.0438	0.073	1.18	0.0419	0.0376	0.044	0.023	0.0216	0.0856	1.6
Lead	mg/L	<0.000030	0.000064	<0.000050	0.000035	<0.000030	<0.000250	<0.000250	<0.000030	<0.000150	<0.000050	<0.000050	<0.000030	0.000043	0.000861
Lithium	mg/L	0.0026	0.0057	0.0059	0.0049	0.0049	<0.0050	<0.0050	0.0019	<0.0050	0.0011	<0.0010	<0.0010	<0.0010	0.014
Magnesium	mg/L	2.79	7.12	7.03	6.68	7.4	27.7	20.5	15.7	15.8	4.51	2.26	2.37	2.32	9.75
Manganese	mg/L	0.00274	0.0036	0.00059	0.00114	0.0021	0.0063	0.0173	0.00204	0.0013	0.00486	0.00069	0.00058	0.00194	0.0331
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000132	<0.0000050	<0.0000050	<0.0000050	0.0000061
Molybdenum	mg/L	0.00161	0.0073	0.00787	0.00783	0.00803	0.0659	0.0627	0.0572	0.0576	0.00197	0.000978	0.000969	0.000976	0.0176
Nickel	mg/L	0.00036	0.00182	0.00106	0.00142	0.00118	0.00849	0.0186	0.00447	0.00387	0.0284	0.00908	0.0085	0.00651	0.00593
Phosphorus	mg/L	0.007	0.0075	0.0058	0.0054	0.0107	0.363	0.0506	0.0103	0.0073	0.0778	0.0198	0.0146	0.0138	0.0779
Potassium	mg/L	1.5	4.52	4.06	3.59	3.59	25.2	23.2	19.7	19.7	2.2	1.05	1.12	0.984	7.6
Rubidium	mg/L	0.00117	0.00343	0.00316	0.00257	0.00247	0.0208	0.0202	0.0158	0.0146	0.00306	0.00137	0.00101	0.00096	0.00781
Selenium	mg/L	<0.000050	0.000142	0.000124	0.000073	0.00007	0.00229	0.00212	0.00188	0.0017	0.000249	<0.000100	0.000074	0.00006	0.000275
Silicon	mg/L	0.55	1.73	1.83	1.89	1.7	7.05	8.01	6.27	6	0.79	0.84	0.82	1.07	5.43
Silver	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	0.000011
Sodium	mg/L	0.677	2.21	2.13	2.12	2.19	52.6	45.7	43.1	42	1.42	0.607	0.676	0.792	5.16
Strontium	mg/L	0.0698	0.159	0.161	0.151	0.16	0.608	0.427	0.336	0.326	0.0523	0.0295	0.0272	0.0269	0.275
Sulfur	mg/L	0.8	4.18	3.74	4.89	4.24	61.6	52.1	50.2	44.1	2.75	0.96	1.38	1.3	30.9
Tellurium	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00100	<0.00100	<0.00020	<0.00100	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	<0.000010	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	0.00001	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050
Thorium	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	0.00117
Tin	mg/L	<0.000050	<0.00010	<0.00010	<0.000050	0.00304	<0.00050	<0.00050	<0.000050	<0.000250	<0.00010	<0.00010	<0.000050	<0.000050	0.00014
Titanium	mg/L	0.00073	<0.0100	<0.0100	0.0009	0.00129	<0.0100	<0.0100	0.00069	<0.00150	<0.0100	<0.0100	0.00064	0.00242	0.0409
Tungsten	mg/L	<0.00010	0.00028	0.0003	0.00028	0.0003	0.00108	0.00112	0.00115	0.00109	0.00033	0.00034	0.00022	0.00023	0.0044
Uranium	mg/L	0.00217	0.00634	0.00816	0.00756	0.00787	0.000138	0.00011	0.000079	0.000066	0.000235	0.000088	0.000088	0.000074	0.00622
Vanadium	mg/L	<0.00050	0.00116	0.00127	0.00093	0.00107	0.0042	0.00551	0.0038	0.00422	<0.00100	<0.00100	<0.00050	<0.00050	0.00338
Zinc	mg/L	0.0017	<0.0030	<0.0030	0.0019	0.0019	<0.0150	<0.0150	0.0018	<0.0075	0.0162	0.0107	0.0036	0.0038	0.0128
Zirconium	mg/L	<0.00020	0.00032	<0.00020	<0.00020	<0.00020	<0.00100	<0.00100	<0.00020	<0.00100	0.00064	<0.00020	<0.00020	<0.00020	0.00135
Dissolved Metals															
Aluminum	mg/L	0.0122	0.0266	0.0234	0.0149	0.0139	0.0017	<0.0050	<0.0050	0.0023	0.0185	0.0147	0.0088	0.0061	0.0292
Antimony	mg/L	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	0.00098	0.00085	0.00093	0.00082	<0.00010	<0.00010	<0.00010	<0.00010	0.00015
Arsenic	mg/L	0.00007	0.00024	0.00021	0.00018	0.000188	0.00189	0.00179	0.00186	0.00163	0.00055	0.00024	0.000172	0.00019	0.00021
Barium	mg/L	0.0136	0.0304	0.0316	0.0263	0.03	0.0772	0.0592	0.043	0.0397	0.064	0.0378	0.0317	0.0361	0.0292
Beryllium	mg/L	<0.000020	<0.000100	<0.000100	<0.000020	<0.000020	<0.000100	<0.000100	<0.000100	<0.000040	<0.000100	<0.000100	<0.000020	<0.000020	<0.000100
Bismuth	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000250	<0.000250	<0.000100	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.061	0.182	0.225	0.193	0.234	4.77	5.34	4.08	4.49	0.029	0.019	0.0208	0.0226	0.061
Cadmium	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000150	<0.0000250	<0.0000250	<0.0000100	0.000007	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	10.2	19.5	22.1	20	22.5	44.8	34.4	27.8	29.4	10.9	6.67	6.1	6.35	38.7
Cesium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000051	0.000054	<0.000050	0.00003	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	<0.00010	<0.00050	<0.00050	0.00013	0.00011	<0.00050	<0.00050	<0.00050	<0.00020	0.00099	<0.00050	0.00029	0.00028	<0.00050
Cobalt	mg/L	<0.000050	<0.00010	<0.00010	<0.000050	<0.000050	<0.00010	<0.00050	<0.000250	<0.000100	0.00036	<0.00010	0.000076	<0.000050	<0.00010
Copper	mg/L	0.00044	0.00235	0.00179	0.00187	0.00185	0.00034	<0.00100	<0.00075	<0.00030	0.00682	0.00181	0.00153	0.00123	0.00216
Iron	mg/L	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.010	<0.050	<0.0250	<0.0100	0.015	<0.010	<0.0050	<0.0050	<0.010
Lead	mg/L	<0.000030	<0.000050	<0.000050	<0.000030	<0.000030	<0.000050	<0.000250	<0.000150	<0.000060	<0.000050	<0.000050	<0.000030	<0.000030	<0.000050
Lithium	mg/L	0.0026	0.0059	0.0061	0.0048	0.0051	0.0023	<0.0050	<0.0050	<0.0020	0.0011	<0.0010	<0.0010	<0.0010	0.0102
Magnesium	mg/L	3.26	6.52	7.16	6.78	7.37	24.2	19.4	15.8	17.3	3.84	2.24	2.36	2.24	8.3
Manganese	mg/L	<0.00010	0.00014	<0.00010	0.00012	0.00019	0.00086	<0.00050	0.00095	0.0004	0.00166	0.00032	0.00028	0.00047	0.00014
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.00177	0.00754	0.00762	0.00775	0.00776	0.0629	0.0616	0.058	0.0579	0.00194	0.000988	0.001	0.00095	0.0175
Nickel	mg/L	0.00034	0.00146	0.00098	0.00105	0.001	0.00598	0.00397	0.00391	0.00336	0.0273	0.00925	0.00793	0.00648	0.0013
Phosphorus	mg/L	<0.010	<0.300	<0.300	<0.010	<0.010	<0.300	<0.300	<0.300	<0.050	<0.020	<0.300	<0.300	<0.010	<0.010	<0.300
Potassium	mg/L	1.68	4.36	4.13	3.6	3.85	23.3	23	20.6	21.4	2.08	1.06	1.13	0.999	7.21
Rubidium	mg/L	0.00122	0.00347	0.00321	0.00244	0.00256	0.0205	0.0195	0.0152	0.0153	0.00293	0.00124	0.00082	0.00077	0.00562
Selenium	mg/L	<0.000050	0.000171	0.000095	0.000091	0.000104	0.00218	0.00216	0.00196	0.00173	0.000198	0.000085	0.00007	0.00009	0.000266
Silicon	mg/L	0.569	1.57	1.82	1.67	1.63	6.95	7.21	6	6.19	0.689	0.76	0.759	0.787	2.91
Silver	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium	mg/L	0.734	2.17	2.23	2.14	2.37	50.2	48.1	40.6	42.9	1.34	0.621	0.631	0.823	5.02
Strontium	mg/L	0.0771	0.16	0.16	0.148	0.162	0.589	0.42	0.345	0.345	0.0505	0.0285	0.0267	0.0275	0.268
Sulfur	mg/L	0.81	4.04	3.68	4.29	4.32	58.1	54.1	45.8	52.8	2.87	1.2	1.11	0.88	29.3
Tellurium	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00100	<0.00100	<0.00040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000016	<0.000050	<0.000050	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	<0.000050	<0.00010	<0.00010	<0.000050	<0.000050	<0.00010	<0.00050	<0.000250	<0.000100	<0.00010	<0.00010	<0.000050	<0.000050	<0.00010
Titanium	mg/L	<0.00030	<0.0100	<0.0100	<0.00030	<0.00030	<0.0100	<0.0100	<0.00150	<0.00060	<0.0100	<0.0100	<0.00030	<0.00030	<0.0100
Tungsten	mg/L	<0.00010	0.00029	0.0003	0.00026	0.0003	0.00109	0.00123	0.00114	0.00122	0.00032	0.00036	0.00021	0.00021	0.00338
Uranium	mg/L	0.00214	0.00692	0.00817	0.00714	0.00777	0.000142	0.000086	0.000073	0.000071	0.000213	0.00007	0.000067	0.000038	0.00582
Vanadium	mg/L	<0.00050	<0.00100	0.00118	0.00089	0.00089	0.00362	0.00386	0.00355	0.00339	<0.00100	<0.00100	<0.00050	<0.00050	<0.00100
Zinc	mg/L	<0.0010	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0020	0.011	0.0098	0.0036	0.003	<0.0010
Zirconium	mg/L	<0.00030	0.00023	<0.00020	<0.00030	<0.00030	<0.00020	<0.00100	<0.00150	<0.00040	0.00068	<0.00020	<0.00030	<0.00030	0.00066

Table C6: 2022 Seepage Analytical Results

Parameter	Units	SNP-14-A		SNP-16
		2022-06-02	2022-09-30	2022-09-30
Physical Parameters				
pH	pH	6.43	7.5	8.2
Conductivity	uS/cm	1520	2,340	1,260
Hardness (as $CaCO_3$)	mg/L	423	786	458
Total Suspended Solids	mg/L	67.5	19.1	<1.0
Total Dissolved Solids	mg/L	1210	1670	909
Turbidity	NTU	35.0	1.4	0.2
Anions and Nutrients				
Total Alkalinity	mg/L as $CaCO_3$	2.7	20.2	99.2
Bicarbonate	mg/L as $CaCO_3$	2.7	20.2	99.2
Carbonate	mg/L as $CaCO_3$	<1.0	<1.0	<1.0
Hydroxide	mg/L as $CaCO_3$	<1.0	<1.0	<1.0
Bromide	mg/L	3.54	5.6	1.5
Chloride	mg/L	355	642	99
Fluoride	mg/L	0.088	0.47	0.72
Total Ammonia	mg/L as N	0.748	0.50	0.30
Nitrate and Nitrite	mg/L as N	8.89	16.2	32.3
Nitrate	mg/L as N	8.86	16.2	32.2
Nitrite	mg/L as N	0.0282	<0.0200	0.082
Total Kjeldahl Nitrogen	mg/L	1.26	0.7	<0.050
Dissolved Orthophosphate	mg/L as P	<0.0010	<0.0010	<0.0010
Dissolved Phosphorous	mg/L	0.0037	<0.0010	0.0040
Total Phosphorous	mg/L	0.0524	0.0057	0.0049
Dissolved Organic Phosphorous	mg/L	<0.0020	<0.0020	0.0040
Total Inorganic Phosphorous	mg/L	0.0038	0.0011	0.0010
Dissolved Inorganic Phosphorous	mg/L	0.0033	<0.0010	<0.0010
Silicate	mg/L as SiO_2	9.11	11.5	7.1
Sulphate	mg/L	66.3	81.3	274.0
Total Organic Carbon	mg/L	2.14	2.8	4.8
Total Metals				
Aluminum	mg/L	1.28	0.429	0.017
Antimony	mg/L	<0.00010	<0.00010	0.00012
Arsenic	mg/L	0.00128	0.00045	0.00028
Barium	mg/L	0.200	0.338	0.066
Beryllium	mg/L	0.000068	0.00020	<0.000020
Bismuth	mg/L	<0.000050	<0.000050	<0.000050
Boron	mg/L	1.02	1.7	0.7
Cadmium	mg/L	0.00138	0.00054	<0.0000150
Calcium	mg/L	114	221.0	113.0
Cesium	mg/L	0.000220	0.00007	0.00003
Chromium	mg/L	0.00259	0.00015	<0.00010
Cobalt	mg/L	0.0535	0.0175	0.0006
Copper	mg/L	0.00334	0.0119	0.0010
Iron	mg/L	1.70	0.1920	0.0420
Lead	mg/L	0.000338	0.000391	0.000032
Lithium	mg/L	0.0102	0.0144	0.0212
Magnesium	mg/L	34.4	52.0	44.3
Manganese	mg/L	2.15	0.922	0.091
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000876	0.0063	0.0366
Nickel	mg/L	0.0900	0.0649	0.0050
Potassium	mg/L	24.9	43.5	19.7
Rubidium	mg/L	0.0217	0.0370	0.0118
Selenium	mg/L	0.000140	0.00021	0.00023
Silicon	mg/L	6.97	6.0	3.5
Silver	mg/L	0.000010	<0.000010	<0.000010
Sodium	mg/L	70.0	135.0	75.8
Strontium	mg/L	1.19	2.7	1.3
Thallium	mg/L	0.000391	0.00011	<0.000010
Tin	mg/L	<0.000050	<0.000050	<0.000050
Titanium	mg/L	0.0668	0.00069	<0.00060
Uranium	mg/L	0.000160	0.00272	0.02770
Vanadium	mg/L	0.00298	<0.00050	0.00071
Zinc	mg/L	0.149	0.052	<0.0015

Table C6: 2022 Seepage Analytical Results

Parameter	Units	SNP-14-A		SNP-16
		2022-06-02	2022-09-30	2022-09-30
Dissolved Metals				
Aluminum	mg/L	0.0306	0.026	0.007
Antimony	mg/L	<0.00010	<0.00010	0.00011
Arsenic	mg/L	0.000403	0.00026	0.00028
Barium	mg/L	0.204	0.362	0.072
Beryllium	mg/L	0.000031	0.00010	<0.000020
Bismuth	mg/L	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.954	1.5	0.60
Cadmium	mg/L	0.00144	0.00055	<0.0000100
Calcium	mg/L	108	227.0	107.0
Cesium	mg/L	0.000058	0.000070	0.000026
Chromium	mg/L	<0.00010	<0.00050	<0.00050
Cobalt	mg/L	0.0541	0.0170	0.0005
Copper	mg/L	0.00158	0.0072	0.0010
Iron	mg/L	0.0116	<0.0050	0.0173
Lead	mg/L	<0.000030	<0.000030	<0.000030
Lithium	mg/L	0.0075	0.0137	0.0173
Magnesium	mg/L	37.3	53.3	46.4
Manganese	mg/L	2.30	0.94	0.09
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000743	0.0055	0.0341
Nickel	mg/L	0.0872	0.0640	0.0048
Potassium	mg/L	25.1	43.7	21.1
Rubidium	mg/L	0.0209	0.036	0.012
Selenium	mg/L	0.000118	0.0002	0.0003
Silicon	mg/L	4.73	5.6	3.3
Silver	mg/L	<0.000010	<0.000010	<0.000010
Sodium	mg/L	73.5	132.0	73.2
Strontium	mg/L	1.18	2.6	1.3
Thallium	mg/L	0.000383	0.00011	<0.000010
Tin	mg/L	<0.000050	<0.000050	<0.000050
Titanium	mg/L	<0.00030	<0.00030	<0.00030
Uranium	mg/L	0.000025	0.00215	0.02870
Vanadium	mg/L	<0.00050	<0.00050	0.00054
Zinc	mg/L	0.150	0.053	<0.0010

APPENDIX D

LABORATORY METHODS

Acid-Base Accounting Analysis

Acid-base accounting (ABA) analysis was conducted to assess the potential for ARD to be produced from the sampled rock. ABA analysis includes whole rock paste pH, total sulphur and carbonate carbon (CO_2) by LECO furnace analysis, sulphate sulphur by HCl leach, neutralization potential (NP) by Standard Sobek method, and fizz rating. The sulphide sulphur is calculated by subtracting the measured sulphate sulphur from the measured total sulphur. Sulphide sulphur is then used to calculate the acid generation potential (AP). The net neutralization potential (NNP) is determined by subtracting the AP from the Sobek NP (NNP = Sobek NP – AP). The Sobek neutralization potential ratio (Sobek NPR) is the ratio of neutralization potential to the acid potential (Sobek NP:AP). Carbonate NP ($CaCO_3$ equivalent) is calculated from carbonate carbon (CO_2 %) and used to calculate a carbonate NPR value (Carbonate NP:AP).

The acid neutralizing capacity (or NP) is a measure of the total acid a material is capable of neutralizing. The future pH of geologic materials that presently produce near-neutral or alkaline pH drainage is determined by whether reactive acid neutralizing minerals will be depleted before the reactive acid-generating minerals.

The Sobek NP method follows the procedure identified in EPA 600 / 2-78-054 (Sobek et.al, 1978).

Net-Acid Generation Test Analysis

Net-acid generation (NAG) tests use hydrogen peroxide, a strong oxidizing agent capable of rapidly oxidizing sulphide minerals, to assess whether a sample is capable of neutralizing the potential acidity. The single addition net-acid generation test procedure was completed as per the method description provided by EGi Environmental Geochemistry International (EGi, 2006). The objective of the single addition NAG test is to measure the pH and acidity after the sulphide is oxidized with hydrogen peroxide, which will depend on the acid produced and the reaction with acid neutralizing materials. The peroxide addition in the single addition NAG test is suitable for samples with less than 1% sulphide sulphur and low concentrations of metals such as copper which can catalyze the decomposition of hydrogen peroxide. The test uses a solid:liquid ratio of 1:100; 2.5g Pulp Sample: 250mL 15% H2O2. Materials are classified as non-acid forming (NAF) when they have a final NAG pH of >4.5, and potentially acid forming (PAF) when they have a final NAG pH <4.5. A value of NAG-NNP is calculated as a comparison tool to the final NAG pH value. The NAG-NNP is derived from the AP value calculated from the measurement of sulphide sulphur and the bulk Sobek NP value (both from the ABA test results). The NAG-NNP value is calculated by subtracting the Sobek NP value from AP (NAG NNP = AP- Sobek NP). In the NAG screening procedure, an NNP >0 is classified as PAG and an NNP <0 is non-AG. Note that this is a different definition and calculation of NNP than that reported in ABA analysis.

Net-Acid Generation Test Leachate Analysis

The NAG extraction test analyses the physical parameters and dissolved metal concentrations by inductively coupled mass spectroscopy (ICP-MS) of the resultant liquor generated from the NAG test prior to post-titration to determine the acidity at pH 4.5 and pH 7. This comprehensive analysis of NAG leachates provides insight into potential contaminants of concern in scenarios where the material is oxidized in the manner consistent with the NAG test.

Shake Flask Extraction Analysis

The Shake Flask Extraction (SFE) analysis was the selected short-term leachate analysis method to determine the dissolved parameters of readily soluble components in the rock samples. The test is completed using a 100g sample of minus 6.35mm mixed with 300mL of de-ionized water of known chemical composition. This represents a 3:1 water to solids ratio by weight. The sample is gently agitated on a shake table or gyrator shaker for 24 hours to ensure continuous exposure of all surfaces and mixing of the rinse solution. The resulting supernatant water is submitted for multi-element chemical analysis by ICP-MS.

Mineralogical Analysis by XRD

Mineralogical analysis was completed based on field mineralogy of hand samples confirmed by X-Ray Diffraction (XRD) sampling on a subset of samples. The samples were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 µm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 7 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a Bruker D8 Advance Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

Appendix D – SPILL FOLLOW-UP REPORTS, 2022

DE BEERS GROUP

May 4, 2022

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Nahum Lee
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Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – April 4, 2022 (GNWT Spill #2022116)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022116, which occurred at the Gahcho Kué Mine at 20:30 on April 4, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 09:00 on April 6, 2022.

Incident Summary:

271 Pit viper Drill "RD-003" was drilling on a kimberlite pattern in Hearne Pit when at approximately 8:30pm. The operator stated the hole drilled down extremely quick (possible void), then noticed the hose bundle was twisted and some fluid leaking onto the deck. Operator then pulled the drill head back up to remove the drill steel out of the hole. The operator then got out of the cab and noticed a hydraulic leak spraying from the bundle.

Immediate Actions:

Once the operator was aware of the leak they immediately deployed the emergency stop and the equipment was shut down. Both their supervisor and mobile maintenance were notified. The maintenance technician then deployed spill pads, while the mine operations supervisor coordinated the cleanup of contaminated materials and remediation of the area. Repairs were completed to the damaged hydraulic lines before the equipment was placed back into service. Upon refilling the hydraulic reservoir, it was determined the spill was approximately 200 litres of hydraulic oil.

The spill occurred in the Hearne Pit and all contaminated material was removed and loaded out to the Type 3 Area of the West Mine Rock Pile.

Root Cause:

Due to the void within the drill hole, hydraulic lines had become "bundled" and kinked, which resulted in wear against moving drill steel. This went unnoticed by the operator until the line ruptured resulting in a spill.

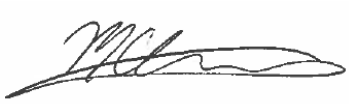
Follow-Up Actions:

The following corrective actions were identified during the internal investigation:

1. Review of operating procedures with crew, emphasising the need to note unusual conditions in the field that could result in malfunctions. If these conditions are noted, equipment must be shut down and inspected prior to a spill or malfunction occurring.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,



Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:
Figure 1. Location of GNWT Spill #2022116
Figure 2. Photos GNWT Spill #2022116
Figure 3. Updated Spill Report (GNWT Spill #2022116)

Figure 1. Location of GNWT Spill #2022116

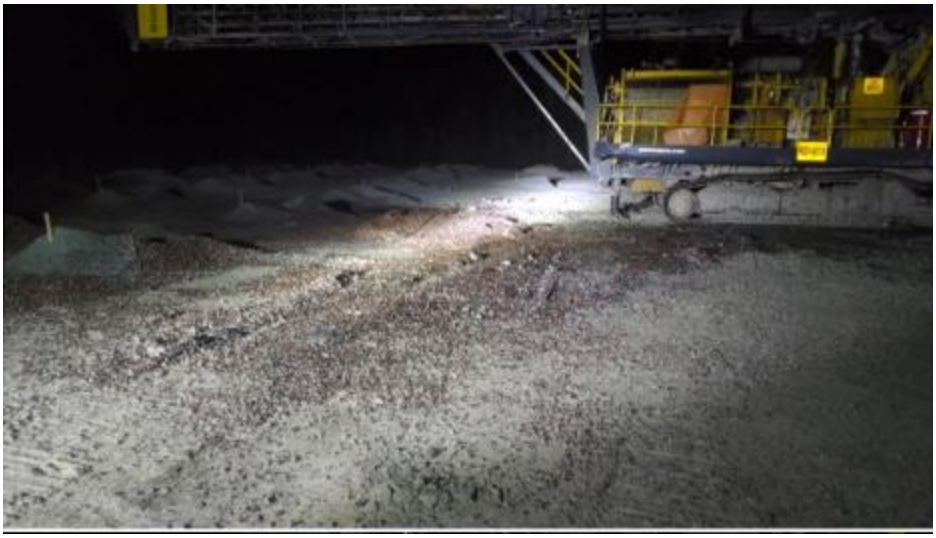


Figure 2. Photos of GNWT Spill #2022116

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 04 / 06 / 22	Report Time: 9:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 04 / 04 / 22	Occurrence Time: 11:00 pm		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 25 Minutes 50 Seconds		Longitude: 109 Degrees 13 Minutes 40 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	

H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 200 L	U.N. Number:
I	Spill Source: PV261 Pit Viper Drill	Spill Cause: Line Failure	Area of Contamination in Square Metres: 10
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None

K — Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:

On April 4, 2022 at approximately 23:00, the hydraulic hose bundle for the rotation head on RD-003 (Pit Viper Drill) got caught up in the safety chain. As the rotation head passed the stuck hoses, one hose was torn in half, releasing approximately 200 litres of hydraulic oil to the pattern being drilled. The unit has been locked out and will be repaired in the next 36 hours. Once repairs are complete, the unit will be moved and the contaminated material will be removed and disposed of properly.

A follow up report will be submitted within the next 30 days detailing the root cause and corrective/preventative actions of this incident.

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____ | Significance: ☐ Minor ☐ Major ☐ Unknown | File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 3. Original Spill Report (GNWT Spill #2022116)

DE BEERS GROUP

May 4, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – April 4, 2022 (GNWT Spill #2022117)

Pursuant to Part H Condition 3(d) of Water License MV2S005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022117, which occurred at the Gahcho Kué Mine at 05:30 on April 4, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 08:30 on April 6, 2022.

Incident Summary:

On April 4, 2022 at approximately 05:30, the operator of TV-003 was resourcing till in the Tuzo burrow pit, however the area was frozen the operator was scratching the burrow bottom to produce the material required for construction. While doing so, a hydraulic boom cylinder failed, resulting in a significant spill. Upon failure the operator grounded the implement and hit the emergency stop before notifying their supervisor and deploying spill containment.

Immediate Actions:

Once the operator was aware of the malfunction, the equipment was shut down and the pit supervisor and mobile maintenance were notified. The maintenance technician and operator then deployed spill pads, while the mine operations supervisor coordinated the cleanup of contaminated materials and remediation of the area. During the repair process it was noted that the hydraulic reservoir had lost approximately 500L of hydraulic oil due to the malfunction.

The spill occurred in the Tuzo Pit and all contaminated material was removed and loaded out to the Type 3 Area of the West Mine Rock Pile.

Root Cause:

The cylinder failure was likely due to excessive use against frozen till material, which accelerated the wear of the component leading to failure.

Follow-Up Actions:

The following corrective actions were identified during the internal investigation:

1. Planned preventative maintenance program put in place to review remaining cylinder components life expectancy and schedule replacements for next major services or mid-life.
2. Review incident with crews and ensure operators are operating within specified requirements to prevent similar incidents in the future.
3. Remaining identical stick cylinder warrants change out before releasing back to operations.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022117
Figure 2. Photos GNWT Spill #2022117
Figure 3. Clean Up Photos GNWT Spill #2022117
Figure 4. Updated Spill Report (GNWT Spill #2022117)

Figure 1. Location of GNWT Spill #2022117

Figure 2. Photos GNWT Spill #2022117

Figure 3. Clean Up Photos GNWT Spill #2022117

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 04 / 06 / 22	Report Time: 8:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 04 / 04 / 22	Occurrence Time: 5:30 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 30 Seconds		Longitude: 109 Degrees 11 Minutes 59 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Hydraulic oil	Quantity in Litres, Kilograms or Cubic Metres: 500 L	U.N. Number:	
I	Spill Source: Komatsu PC2000 Excavator	Spill Cause: Line failure	Area of Contamination in Square Metres: 8	
J	Factors Affecting Spill or Recovery: none	Describe Any Assistance Required: none	Hazards to Persons, Property or Environment: none	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On April 4, 2021 at approximately 05:30, one of the stick cylinders failed on TV-003 (PC2000 excavator), as the operator was booming the cylinder out it caught on the steel hard lines causing them to break. The initial investigation determined approximately 400-500 litres was released to the bench being worked on. The area of the spill was scraped up with another excavator, loaded on a haul truck and deposited in the Type 3 area of the West Mine Rock Pile. A follow up report will be submitted within the next 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env.Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. Original Spill Report (GNWT Spill #2022117)

DE BEERS GROUP

November 30, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – October 31, 2022 (GNWT Spill #2022516)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022510, which occurred at the Gahcho Kué Mine at 00:30 on October 31, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 17:30 on October 31, 2022.

Incident Summary:

A Komatsu 830e haul truck (TC-802) operator was assigned to the West mine rock pile 469 elevation to deposit waste rock throughout night shift of October 30th & 31st. During their twelfth load of the shift, the haul truck operator travelled behind the dump face dozer before making a clockwise turn to the unit. While the operator was making the turn, their focus was on the moving dozer, not ensuring area was clear to make the complete turn. During the turn a large rock in the running path contacted the fuel tank. The operator felt the contact and a pull to the right, but continued to spot and dump the load. After dumping the load, the haul truck operator noticed a trail of fluid. At this point they notified their supervisor of the spill, before parking the unit in a safe area.

Immediate Actions:

The operator shut down the equipment immediately after contacting their supervisor and the mobile maintenance team. Spill pads and booms were deployed, with the area supervisor and mobile maintenance team being notified. After the unit was repaired and moved from the area, absorbent pads were properly disposed of. Due to the volume of the spill, the initial release path was excavated to a depth of .75 meters for the 250 meter length, with the final parking site being excavated to a depth of 2 meters, at which point no hydrocarbon staining was visible. The contaminated rock was removed and deposited in the Type 3 Area of the West Mine Rock Pile.

Root Cause:

Several large rocks were left exposed in the dumping area. While approaching the dump area the driver became distracted by other equipment, which is in violation of the site driving procedure. The operator then turned into a large exposed rock that was previously identified as a hazard during their initial approach. Due to this lapse in

judgement TC 802 sustained damage to the diesel fuel tank, resulting in a spill. It was also determined that the area had less than optimal lighting, not fully illuminating the hazard and may have contributed to the incident.

Follow-Up Actions:

The following preventative/corrective actions were identified during the internal investigation:

1. Due to breaching the site dumping procedure, and exposing themselves and equipment to a known hazard due to complacency, the operator is undergoing a performance review. This process also includes a review the relevant department procedures with a technical trainer.
2. The incident has been reviewed with other operators, with the emphasis on reporting known hazards in work areas and mitigating them appropriately.
3. The environment department will begin attending mine operations daily toolbox meetings on a regular basis to ensure that staff are aware of the consequences of spills to the natural environment, and the importance of proper spill response & reporting.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:
Figure 1. Location of GNWT Spill #2022516
Figure 2. Photos of GNWT Spill #2022516
Figure 3. Photos of Cleanup GNWT Spill#2022516
Figure 4. NT-NU Spill Report GNWT Spill #2022516

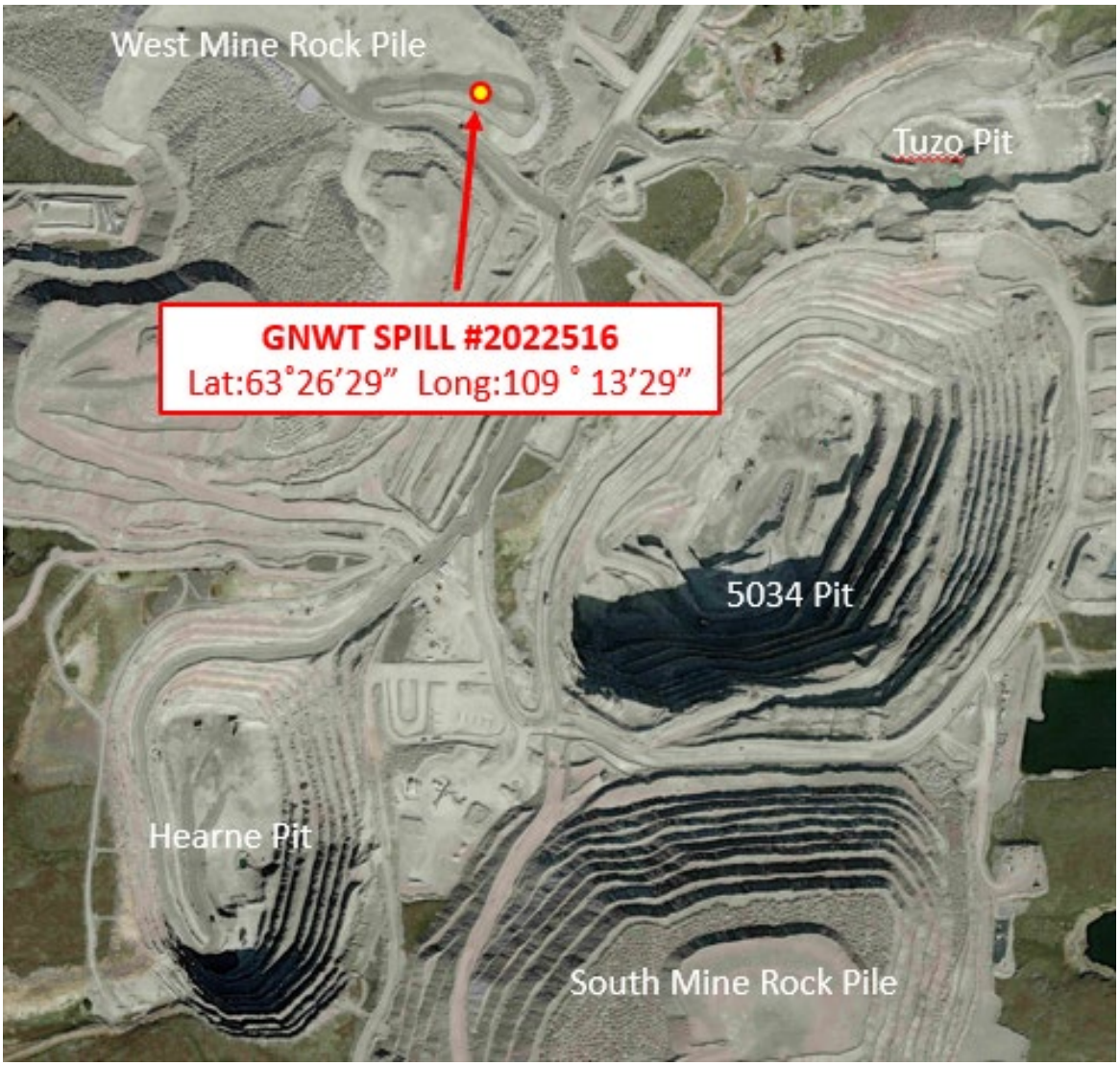


Figure 1. Location of GNWT Spill #2022516

Figure 2. Photos of GNWT Spill #2022516.

Figure 3. Cleanup Photos of GNWT Spill #2022516.

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 10 / 31 / 22	Report Time: 5:30 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 10 / 31 / 22	Occurrence Time: 0:30 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 29 Seconds		Longitude: 109 Degrees 13 Minutes 29 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	

H	Product Spilled: ☐ Potential Spill Diesel Fuel	Quantity in Litres, Kilograms or Cubic Metres: 1800 litres	U.N. Number:
I	Spill Source: Komatsu 830e Haul Truck - TC 802	Spill Cause: Diesel tank contacted large rock	Area of Contamination in Square Metres: 15
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None

K — Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:

At approximately 00:30 on October 31, 2022, a Komatsu 830e haul truck ran over a large rock in the West Mine Rock Pile damaging the fuel tank. Approximately 1800 litres of diesel fuel was released onto the mine rock pile. Contaminated rock will be moved to the Type 3 Area of the West Mine Rock Pile when the equipment is repaired and moved.

A follow up report will be submitted within 30 days detailing the root cause and corrective actions relevant to this incident.

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5814
M	Any Alternate Contact: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off Site	Alternate Telephone: (867) 679-5812

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. NT-NU Spill Report GNWT Spill #2022516

DE BEERS GROUP

February 15, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel Fuel – Gahcho Kué Mine – January 15, 2022 (GNWT Spill #2022015)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022015, which occurred at the Gahcho Kué Mine at 07:20 on January 15, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 15:58 on January 15, 2022.

Incident Summary:

On the morning of January 15, 2022, the drill (RD-001) was refueled by the fuel truck operator. The blast shifter went to check on the drill and noticed that the receiver end of the fuel fitting was not properly seated and was leaking. Approximately 150L of diesel was spilled.

Immediate Actions:

The blast shifter dislodged the end of the receiver by pushing in on the end of the receiver and as a result it sealed itself to stop the leak. There had to been some dirt on the receiver end holding the spring in the filling position which caused it to leak.

The spill occurred in the Tuzo Pit and all contaminated material was removed and loaded out to the Type 3 Area of the West Mine Rock Pile.

Root Cause:

Dirt on the receiver end held the spring in the filling position which the fuel truck operator failed to identify after refueling.

Follow-Up Actions:

The following corrective actions were identified during the internal investigation:

1. Review fast-fill system with the Fuel Truck Operator to ensure he understands how the system works and what steps are required to ensure all components are working properly – Complete.
2. Disciplinary Letter to be issues to Fuel Truck Operator – by March 31, 2022.

The following preventative action was also identified during the internal investigation:

1. Review incident and finding with all Fuel Truck Operators on both teams. – March 15, 2022

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Allan Knight
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
allan.knight@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022015
Figure 2. Photos GNWT Spill #2022015
Figure 3. Clean Up Photos GNWT Spill #2022015
Figure 4. Updated Spill Report (GNWT Spill #2022015)

Figure 1. Location of GNWT Spill #2022015

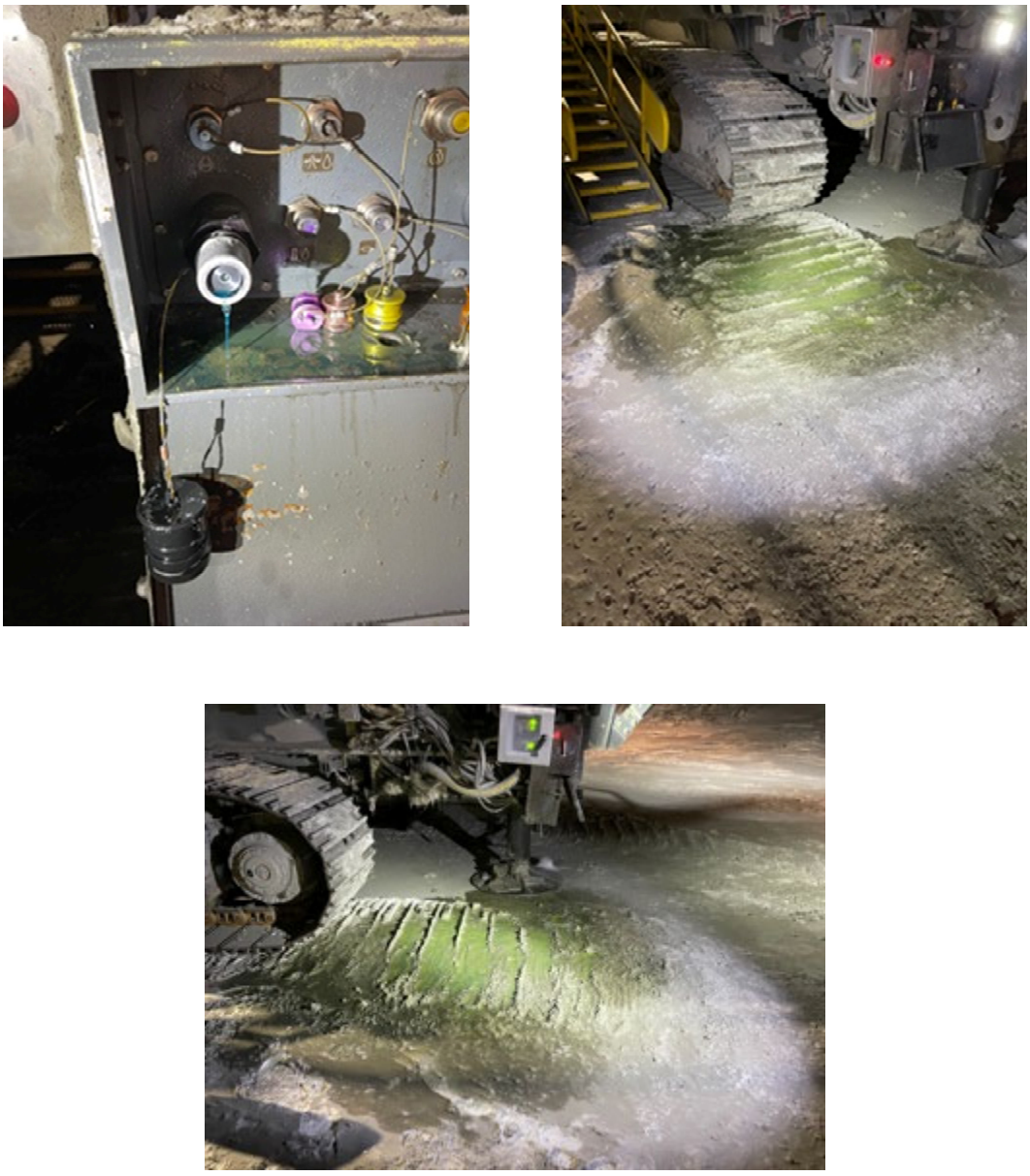


Figure 2. Photos GNWT Spill #2022015

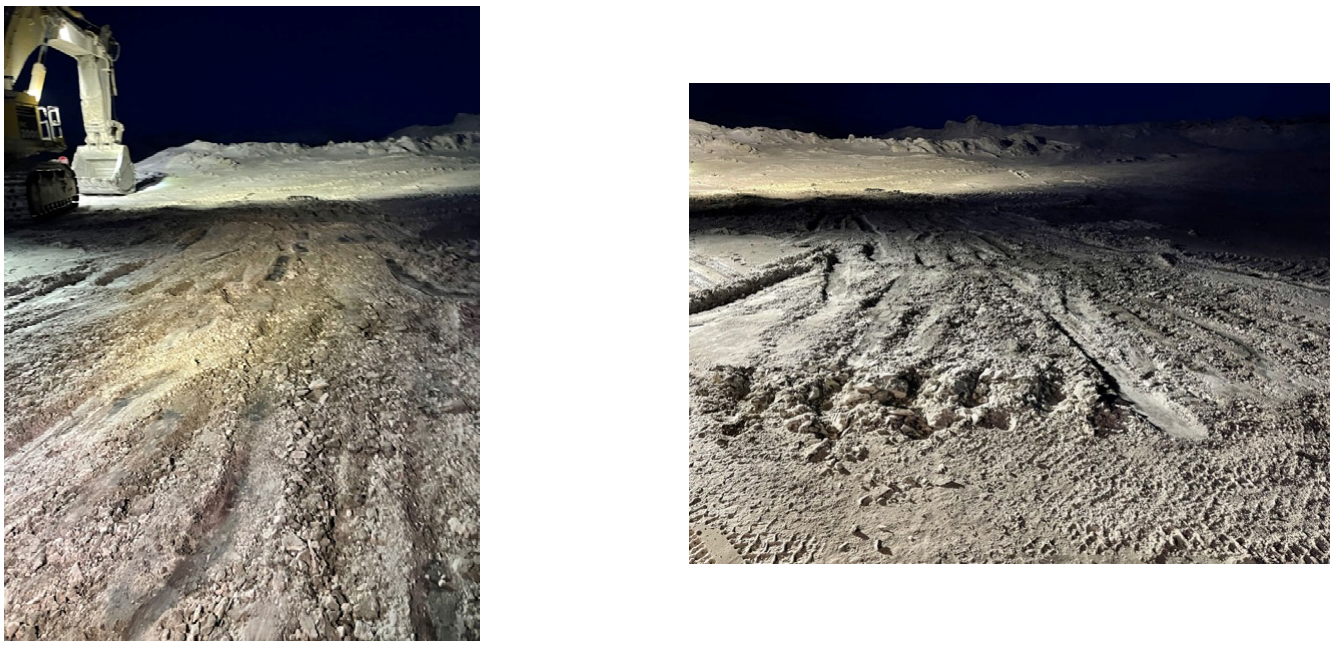


Figure 3. Clean Up Photos GNWT Spill #2022015

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 01 / 15 / 22	Report Time: 11:08 am	☐ Original Spill Report OR ☑ Update # 1 to the Original Spill Report	**Report Number:**
B	Occurrence Date: 01 / 15 / 22	Occurrence Time: 7:20 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 32 Seconds		Longitude: 109 Degrees 11 Minutes 41 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Diesel	Quantity in Litres, Kilograms or Cubic Metres: 150	U.N. Number:	
I	Spill Source: RD-001n (Drill)	Spill Cause: Fuel Cap fitting not seated properly	Area of Contamination in Square Metres: 5.5 sq. m	
J	Factors Affecting Spill or Recovery: N/A	Describe Any Assistance Required: N/A	Hazards to Persons, Property or Environment: N/A	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On the morning of January 15 Fuel truck driver was filling the drill and when he finished removed the nozzle. The blast shifter went back to check on the drill and had noticed that the receiver end of the fuel fitting did not seat and was leaking. The blast shifter dislodged the end of the receiver by pushing in on the end of the receiver and as a result it sealed itself to stop the leak. There had to been some dirt on the receiver end holding the spring in the filling position which caused it to leak. Clean-up was done at 16:30 with a excavator and material was brought to the contaminated pile at the dump (west rock pile).			

L	Reported to Spill Line by: Lee-Ann Knee	Position: Env. Tech	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-6499
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. Update #1 Spill Report (GNWT Spill #2022015)

DE BEERS GROUP

March 24, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – February 23, 2022 (GNWT Spill #2022047)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022047, which occurred at the Gahcho Kué Mine at 01:00 on February 23, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 09:00 on February 23, 2022.

Incident Summary:

Mine operations were travelling a PC2000 Shovel (TV-003) from the pit maintenance pad to the Hearne Pit, when the operator smelled hydraulic oil. He proceeded to shut the unit down and investigated what was causing the smell. The operator found a hydraulic filter had come lose and detached from the housing. He then called the shovel technician for assistance. The shovel technician went to the scene and placed spill pads, installed new filters, continued to cleaned up oil on machine and coordinated with the Mine Operations and Environment team for help with the ground clean up. TV-003 had recently undergone a 2000 hour maintenance service. It was determined that the hydraulic filter canisters came loose due to improper installation, resulting in 150 liters of AST 20 hydraulic oil to spill onto the ground.

Immediate Actions:

Once the operator was aware of the odour of hydraulic oil, the equipment was shut down and both their supervisor and mobile maintenance were notified. The maintenance technician then deployed spill pads, while the mine operations supervisor coordinated the cleanup of contaminated materials and remediation of the area.

The spill occurred in the Hearne Pit and all contaminated material was removed and loaded out to the Type 3 Area of the West Mine Rock Pile.

Root Cause:

TV-003 had recently undergone a 2000 hour maintenance service. It was determined that the hydraulic filter canisters came loose due to improper installation, resulting in 150 liters of AST 20 hydraulic oil to spill onto the ground.

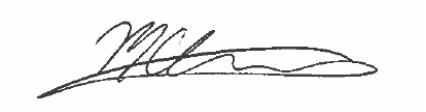
Follow-Up Actions:

The following corrective actions were identified during the internal investigation:

1. Proper hydraulic cylinder instillation procedure to be reviewed by all maintenance technicians.
2. Hydraulic cylinder instillations to be signed off by senior technician prior to recommissioning.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,



Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:
Figure 1. Location of GNWT Spill #2022047
Figure 2. Photos GNWT Spill #2022047
Figure 3. Clean Up Photos GNWT Spill #2022047
Figure 4. Updated Spill Report (GNWT Spill #2022047)

Figure 1. Location of GNWT Spill #2022047

Figure 2. Photos GNWT Spill #2022047

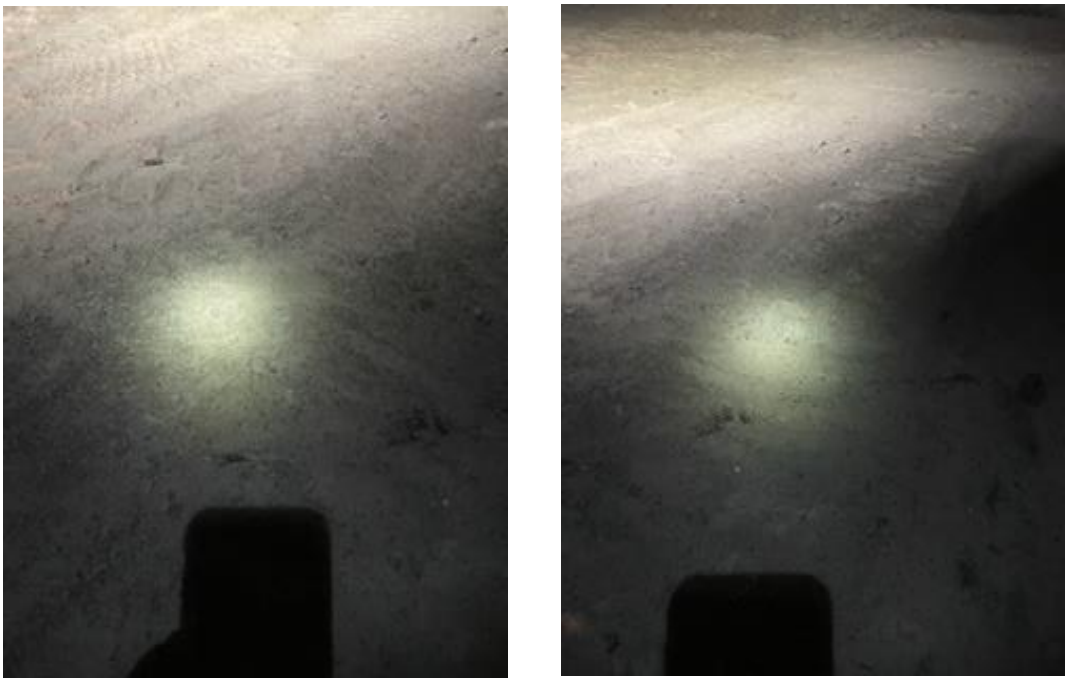


Figure 3. Clean Up Photos GNWT Spill #2022047

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 02 | 23 | 22	Report Time: 9:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 02 | 23 | 22	Occurrence Time: 1:00 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 11 Seconds		Longitude: 109 Degrees 12 Minutes 29 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 150 litres	U.N. Number:	
I	Spill Source: Komatsu Excavator (TV-003)	Spill Cause: Loose Filter	Area of Contamination in Square Metres: 5	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On Feb 23, 2022 at 1:00am, the operator of excavator TV-003 notified mechanic that a hydraulic oil filter fell off while operating in the bottom of the Hearne Open Pit. The mechanic replaced the oil filter, and cleaned the machine. Spill pads were put down to clean up the oil. The contaminated snow and rock were loaded out and placed in the Type 3 area of the West Rock Mine Pile and the spill pads were placed in the proper drum for disposal. The unit released approximately 150 litres of hydraulic oil before it was shut down. A follow up report will be submitted within the next 30 days detailing the root cause and corrective actions of this incident.			
L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____	Significance: ☐ Minor ☐ Major ☐ Unknown	File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. Original Spill Report (GNWT Spill #2022047)

DE BEERS GROUP

May 29,2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Engine Oil – Gahcho Kué Mine – April 28, 2022 (GNWT Spill #2022154)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022154, which was discovered at the Gahcho Kué Mine at 13:00 on April 28, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 10:30 on April 30, 2022.

Incident Summary:

On April 28, 2022 at approximately 13:00, Environment staff conducted an inspection of the exploration drill area on Lake E1, and noted a small volume (10L) of engine oil outside of containment. This likely occurred during the demobilization of the drill the previous day. Spill containment was deployed and all hydrocarbons and affected material were removed to waste management.

Immediate Actions:

The oil was cleaned up and disposed of at the Waste Management Area. The Drill Foreman was made aware of the occurrence and will discuss the importance of spill containment.

Root Cause:

Crew did not follow proper procedures to ensure hydrocarbons and other products must be handled and stored properly using secondary containment, and that all spills must be reported immediately.

Follow-Up Actions:

The following corrective actions were identified during the internal investigation:

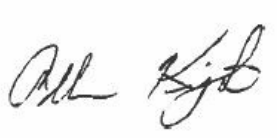
1. Review storage and handling of hydrocarbon with crews to understand the importance of controlling releases and what is to be done when a release occurs.

The following preventative action was also identified during the internal investigation:

1. Review incident and finding with all drill crews on both rotations. – June 15, 2022

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,



Allan Knight
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
allan.knight@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022154
Figure 2. Photo GNWT Spill #2022154
Figure 3. Clean Up Photos GNWT Spill #2022154
Figure 4. NT-NU Spill Report GNWT Spill #2022154

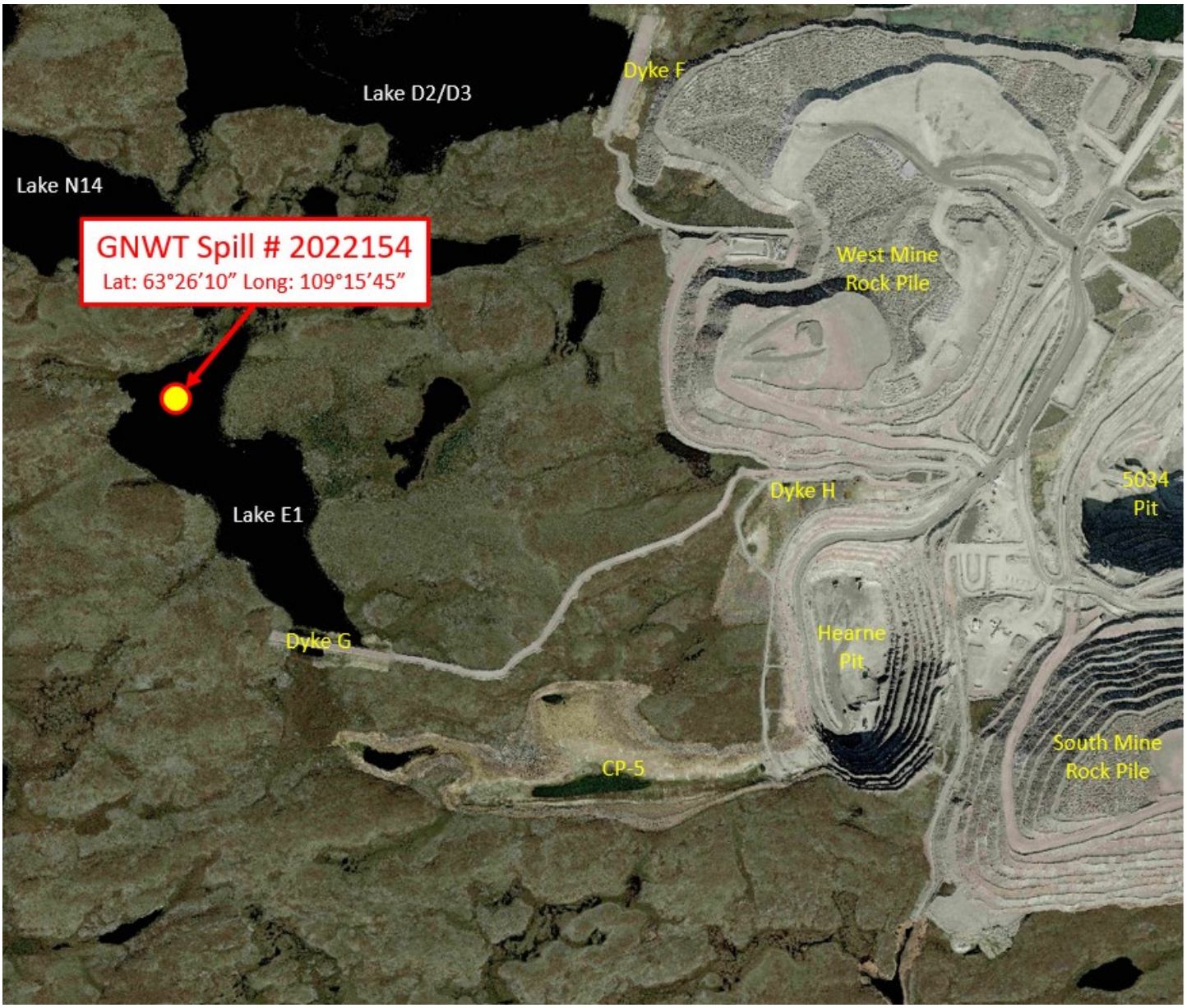


Figure 1. Location of GNWT Spill #2022154

Figure 2. Photo GNWT Spill #2022154

Figure 3. April 28 Clean Up Photos GNWT Spill #2022154

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 04 / 30 / 22	Report Time: 10:30 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2020154
B	Occurrence Date: 04 / 28 / 22	Occurrence Time: 1:00 pm		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 10 Seconds		Longitude: 109 Degrees 15 Minutes 45 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved: Vital Drilling		Contractor Address or Office Location: 2868 Belisle Dr, Val Caron, ON P3N 1B3	
H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 10 L	U.N. Number: N/A	
I	Spill Source: Exploration Drill Rig	Spill Cause: Under investigation	Area of Contamination in Square Metres: 1	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On April 28 at approximately 13:00, Environment staff conducted an inspection of the exploration drill area on Lake E1, and noted a small volume (10L) of engine oil outside of containment. This likely occurred during the demobilization of the drill the previous day. Spill containment was deployed and all hydrocarbons and affected material were removed to waste management. Investigation ongoing to determine root cause. A follow up report will be submitted within the next 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5814
M	Any Alternate Contact: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5812

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:
Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____			Significance: ☐ Minor ☐ Major ☐ Unknown		File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. NT-NU Spill Report GNWT Spill #2022154

DE BEERS GROUP

September 11, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – August 5, 2022 (GNWT Spill #2022404)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022404, which occurred at the Gahcho Kué Mine at 01:30 on August 05, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 18:00 on August 05, 2022.

Incident Summary:

On August 5, 2022 at approximately 01:30, A hydraulic hose on SH-003 rubbed though causing a spill of approximately 300 litres in the bottom of the Tuzo Open Pit.

Immediate Actions:

Oil cleaned up, absorbent pads properly disposed of, and a new hose was installed. Contaminated rock was removed and deposited in the Type 3 Area of the West Mine Rock Pile once the machine was moved.

Root Cause:

Two hoses rubbing together and one rubbed through the rubber outer casing and then the steel core.

Follow-Up Actions:

The following preventative action was also identified during the internal investigation:

1. Ensure all clamps are in place to prevent hoses from rubbing together or against other surfaces.
2. If a clamp cannot be installed due to how / where a hose is routed, apply a hose protecting cover (ie. Kevlar sleeve or plastic coil). In the event the hose is able to move the protecting cover will prevent damage to the hose

3. Continue to develop a hose management program to track hose hours, regular inspections, planning and execution of hose replacement strategies.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Allan Knight
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
allan.knight@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022404
Figure 2. Photos of GNWT Spill #2022404
Figure 3. Photo of Area Once Remediated, GNWT Spill #2022404
Figure 4. NT-NU Spill Report GNWT Spill #2022404

Figure 1. Location of GNWT Spill #2022404

Figure 2. Photos of GNWT Spill #2022404

Figure 4. Photo of Area during and after Remediated, GNWT Spill #2022404

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 08 / 05 / 22	Report Time: 6:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2022404
B	Occurrence Date: 08 / 05 / 22	Occurrence Time: 1:30 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 30 Seconds		Longitude: 109 Degrees 11 Minutes 59 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Hydraulic Oil (AST 20)	Quantity in Litres, Kilograms or Cubic Metres: 300 litres	U.N. Number:	
I	Spill Source: Komatsu PC5500 Shovel (SH-003)	Spill Cause: Failed Hose	Area of Contamination in Square Metres: 3	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On August 5, 2022 at approximately 01:30, A hydraulic hose on SH-003 rubbed though causing a spill of approximately 300 litres in the bottom of the Tuzo Open Pit. The oil was cleaned up, absorbent pads disposed of, and a new hose was installed. Contaminated rock will be removed and deposited in the Type 3 Area of the West Mine Rock Pile when the machine is moved. A follow up report will be submitted within 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 5. NT-NU Spill Report GNWT Spill #2022404

DE BEERS GROUP

July 03, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – June 3, 2022 (GNWT Spill #2022230)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022230, which occurred at the Gahcho Kué Mine at 08:30 on June 03, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 07:00 on June 04, 2022.

Incident Summary:

On the morning of June 03 2022 at 08:30, RD-002 drill was tramming off the pattern HE257-004 in Hearne Pit Bench 271. When maneuvering the drill off the pattern the left hand rear final drive motor failed causing a hydraulic spill of approximately 150 Liters.

Immediate Actions:

Spill pads were placed immediately and buckets were used to contain the spill. Area was cleaned once the drill was repaired and contaminated material was sent to the Type 3 area of the West Mine Rock Pile.

Root Cause:

The investigation showed that the Final Drive bolts had failed. The OEM does not have adequate maintenance procedure for removing and re-installing the final drive. The previous install appears to have been flawed during execution. Bolts could not be seen as they are secured behind a cover plate.

Follow-Up Actions:

The following preventative action was also identified during the internal investigation:

1. Work with the OEM to complete a detailed procedure

2. Investigate option of removing cover to inspect mounting bolts for both final drive to the track frame and the travel motor to the final drive.
3. Review complete procedure with Epiroc maintenance team

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Allan Knight
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
allan.knight@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022230
Figure 2. Photos of GNWT Spill #2022230
Figure 3. Photo of Damaged Coolant Line, GNWT Spill #2022230
Figure 4. Photo of Area Once Remediated, GNWT Spill #2022230
Figure 5. NT-NU Spill Report GNWT Spill #2022230

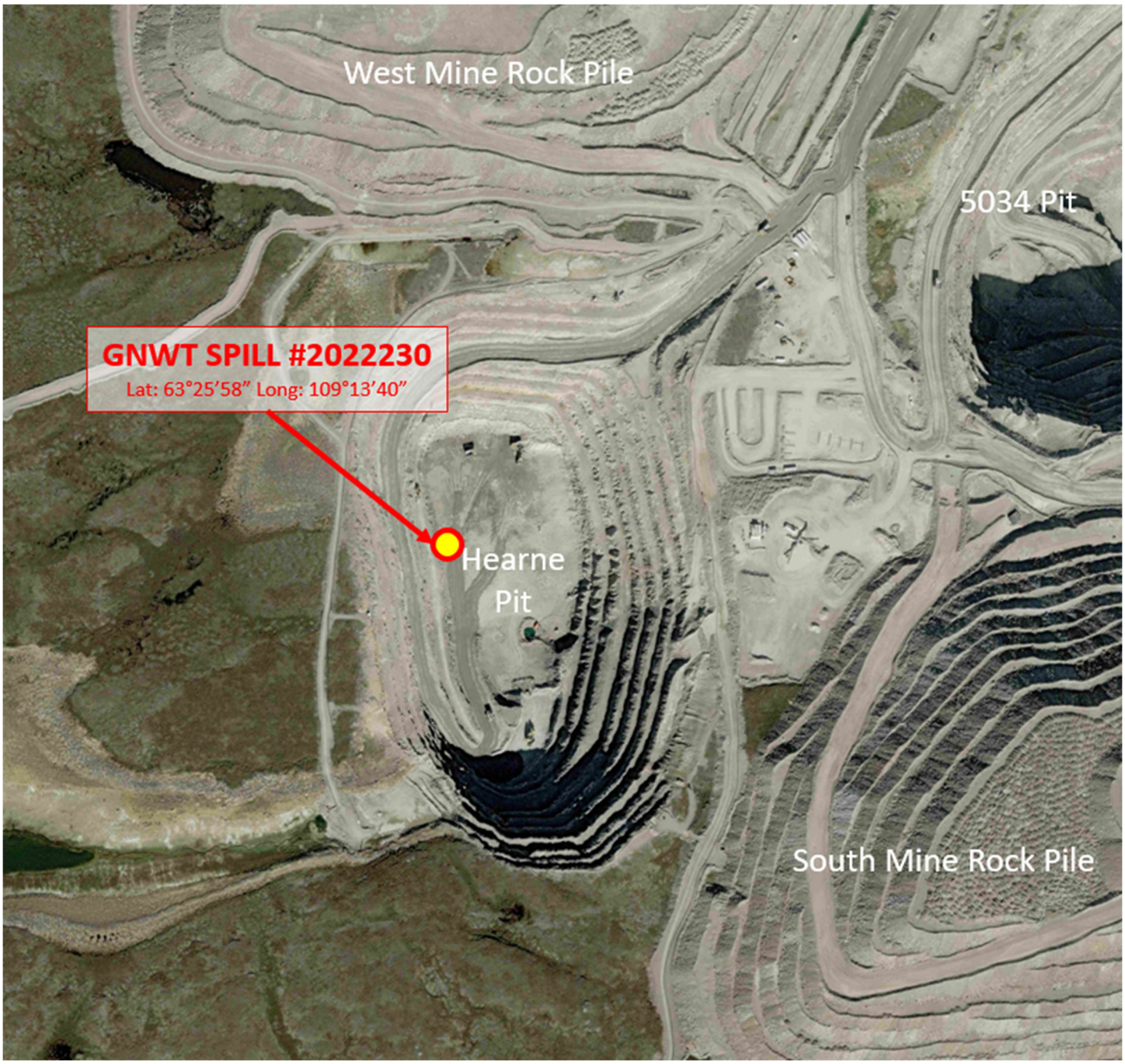


Figure 1. Location of GNWT Spill #2022230

Figure 2. Photos of GNWT Spill #2022230

Figure 4. Photos of Area during and after Remediated, GNWT Spill #2022230

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 06 / 04 / 22	Report Time: 8:30 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2022230
B	Occurrence Date: 06 / 03 / 22	Occurrence Time: 8:30 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 25 Minutes 58 Seconds		Longitude: 109 Degrees 13 Minutes 40 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved: N/A		Contractor Address or Office Location: N/A	
H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 150 Liters	U.N. Number:	
I	Spill Source: RD-002 (Drill)	Spill Cause: Motor Drive Failure	Area of Contamination in Square Metres: 4x4 sq meters	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On the morning of June 03 2022 at 0830 RD-002 drill was tramming off the pattern HE257-004 in Hearne Pit Bench 271. When maneuvering the drill off the pattern the left hand rear final drive motor failed causing a hydraulic spill of approximately 150 Liters. Maintenance is working on the equipment to confirm the cause of the failure. Clean up of the spill is currently underway. Spill pads were immediately placed on the spill. Buckets were used to help keep the spill contained. A follow up report will be submitted within the next 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Lee-Ann Knee	Position: Env. Tech	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-6499
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Gahcho Kue Mine	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 5. NT-NU Spill Report GNWT Spill #2022230

DE BEERS GROUP

November 6, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – October 7, 2022 (GNWT Spill #2022487)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022494, which occurred at the Gahcho Kué Mine at 20:30 on October 07, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 18:00 on October 08, 2022.

Incident Summary:

On October 7, 2022 at approx. 20:30 the driller operating RD-008 (Epiroc Model D65 Rotary Rock Drill) noticed hydraulic oil leaking from the machine and called the Epiroc technician to inspect the unit.

Upon further inspection the Epiroc technician found the hose wrap for the hydraulic lines travel bundle had become caked in mud, and the weight of the mud had pulled the wrap below the side frame mount and the hose bundle was exposed and rubbing on the frame. One hose had rubbed through the outer casing and steel cords creating a leak. The failure created a spill of approximately 150 litres of hydraulic oil.

Immediate Actions:

Once the spill was identified the pit supervisor and environmental department were contacted. The technician also capped the damaged lines in order to reduce further oil loss. The technician laid out spill pads to absorb what he could and Mine Ops removed the contaminated soil. The technician changed the hose, refilled the hydraulic tank and returned the machine to service.

Root Cause:

1. Hose wrap failure due to mud build up, which pulled down the protective hose wraps, creating a contact point between the bare hydraulic hoses and frame of the machine.
2. Hose wrap not secured appropriately to prevent movement.
3. Issue was known amongst Eprico technicians, but maintenance planners not notified of the ongoing deficiency requiring correction.

Follow-Up Actions:

The following preventative actions were also identified during the internal investigation:

1. Develop a procedure to install and inspect protective hose wrap to ensure maximum protection of hoses, including individual wrap inside of bundle wrap, bright colored wrap (yellow) inside of bundle wrap for better visibility and multi-direction wrapping to prevent separation.
2. Drill techs to create a list of repeat & known deficiencies on drills and work with DeBeers Reliability team to prioritize and action preventative measures to correct the deficiencies.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022494
Figure 2. Photos of hose failure associate with GNWT #2022494.
Figure 3. Photos of Spill, and Area Post Remediation, Associated with GNWT #2022494.
Figure 4. NT-NU Spill Report GNWT Spill #2022494

Figure 1. Location of GNWT Spill #2022494

Figure 2. Photos of hose failure associate with GNWT #2022494.

Figure 3. Photos of Spill, and Area Post Remediation, Associated with GNWT #2022494.

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 10 / 08 / 22	Report Time: 6:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**	
B	Occurrence Date: 10 / 07 / 22	Occurrence Time: 8:30 pm			
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015		
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean		
E	Latitude: 63 Degrees 26 Minutes 30 Seconds		Longitude: 109 Degrees 11 Minutes 59 Seconds		
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8		
G	Any Contractor Involved:		Contractor Address or Office Location:		
H	Product Spilled: ☐ Potential Spill Hydraulic Oil (AST 20)	Quantity in Litres, Kilograms or Cubic Metres: 150 litres	U.N. Number:		
I	Spill Source: Epiroc D65 Drill (RD-008)	Spill Cause: Failed Hose	Area of Contamination in Square Metres: 3		
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None		
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On October 07, 2022 at approximately 20:30, A hydraulic hose on RD-008 rubbed though causing a spill of approximately 150 litres in the bottom of the Hearne Open Pit. The oil was cleaned up, absorbent pads disposed of, and a new hose was installed. Contaminated rock will be removed and deposited in the Type 3 Area of the West Mine Rock Pile when the machine is moved. A follow up report will be submitted within 30 days detailing the root cause and corrective/preventative actions of this incident.				

L	Reported to Spill Line by: Jarrett Vornbrock	Position: Env. Technologist	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5814
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off-Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. NT-NU Spill Report GNWT Spill #2022494

DE BEERS GROUP

November 4, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – October 4, 2022 (GNWT Spill #2022487)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022487, which occurred at the Gahcho Kué Mine at 00:26 on October 04, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 11:33 on October 04, 2022.

Incident Summary:

October 04, 2022 at approx. 00:26 RD-001 operator noticed oil on the ground in his work area. He traveled the machine approximately 100 feet to clear the area he was working in and shut the machine down. The operator contacted the Epiroc maintenance team to investigate the leak. The Epiroc technician found the deck fork cylinder hydraulic supply line fitting had failed, causing a spill. After repairs were completed and the hydraulic tank refilled, the approximate volume was calculated as 250 litres.

Immediate Actions:

Once staining was noticed, the operator moved away from the drilled pattern and shut the unit down. Spill pads and booms were deployed, with the area supervisor and mobile maintenance team being notified. Absorbent pads properly disposed of, and new hose fittings installed. Contaminated rock was removed and deposited in the Type 3 Area of the West Mine Rock Pile once the machine was moved.

Root Cause:

Two hydraulic fittings feeding the deck fork cylinder failed resulting in the spill. Upon further investigation it was determined that this was due to the following conditions:

1. The deck wrench forced upward by drill steel, putting excess pressure upon the fitting. When operators are applying access pressure to the drill steel in order to cut drill time, it will create excess sustained pressure on the system that is not required to complete the task.

2. The deck bushing retaining ring on the failed fittings was “tack” welded, as opposed to a full ring weld. This was installed by the maintenance team, and although it holds the fitting in place, it does not provide as robust a fitting.

Follow-Up Actions:

The following preventative action was also identified during the internal investigation:

1. Fully weld deck bushing retainer ring in place on hydraulic fittings to increase durability and strength.
2. Review the incident with drill operators and proper drilling technique to ensure undue stress is not placed on hydraulic systems.
3. Investigate the potential installation of additional deck bushing retainers.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:
Figure 1. Location of GNWT Spill #2022487
Figure 2. Photos of GNWT Spill #2022487 and Hose Fittings That Failed
Figure 3. NT-NU Spill Report GNWT Spill #2022487

Figure 1. Location of GNWT Spill #2022487

Figure 2. Photos of GNWT Spill #2022487, Hose Fittings That Failed.

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 10 / 04 / 22	Report Time: 11:33 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	Report Number:
B	Occurrence Date: 10 / 04 / 22	Occurrence Time: 12:26 am		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 29 Seconds		Longitude: 109 Degrees 12 Minutes 17 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 250	U.N. Number:	
I	Spill Source: Drill RD001	Spill Cause: Ring Failure	Area of Contamination in Square Metres: Not Available at this time	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: Drill was operating in Tuzo Pit on Pattern TZ397-071. Breakout base ring fell and damaged a hydraulic hose on the drill. Approximately 250 liters of hydraulic oil was released. Area was cleaned up and material disposed of in Type 3 dump (designated and approved area) A follow up report will be submitted within 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Lee-Ann Knee	Position: Senior Environmental Tech	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-6499
M	Any Alternate Contact: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Gahcho Kue Mine	Alternate Telephone: (867) 679-5812

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 3. NT-NU Spill Report GNWT Spill #2022487

DE BEERS GROUP

June 9, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Glycol Coolant – Gahcho Kué Mine – May 4, 2022 (GNWT Spill #2022166)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022166, which was discovered at the Gahcho Kué Mine at 16:30 on May 4, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 16:00 on May 5, 2022.

Incident Summary:

Logistics personnel observed visible glycol within the lube storage berm while conducting daily quality assurance checks on their jet A fuel truck. Site Services & Environment were contacted, and upon further inspection it was determined that the waste glycol line was leaking from a failed flanged connection in the line. A Site Services millwright isolated the line and deployed spill containment. All leaked glycol was captured and contained within the 60,000L horizontal tank berm and the lube storage berm. No glycol was noted outside of these locations. All visible released glycol was contained and then placed into totes to be stored within the waste management area prior to disposal off site. Based on the volume noted within containment, it is originally estimated that as much as 700 litres was released.

Upon further consultation with Site Services and the millwright responsible for the area, it was determined that the waste Glycol tank that was the source of this release was actually frozen, meaning that all of the spilt material came from within the transfer line itself. This line is approximately 23 metres long and 7.6 centimetres in diameter, resulting in an estimated **spilt volume of 104 litres**. This volume is also inline with what was observed in the field, and is the revised spill estimate.

The cause of the spill was determined to be a failed gasket in the waste glycol transfer line. This was likely due to the line becoming frozen during the winter months, and leaking once thawed.

Immediate Actions:

Once observed the area supervisor and Environment were notified, and spill containment materials were deployed at the identified source.

All leaked glycol was captured and contained within the 60,000L horizontal tank berm and the lube storage berm. All visible released glycol was contained and then placed into totes for disposal off site.

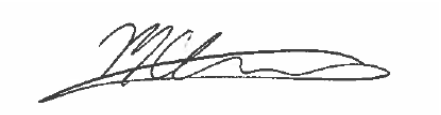
Follow-Up Actions:

The following preventative action was also identified during the internal investigation:

1. The heat trace on the waste glycol line had failed, resulting in the freezing of the line and damage to a flange gasket. This system will be repaired, with the maintenance schedule revised to adequate inspection to resolve future failures.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,



Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022166
Figure 2. Photos of GNWT Spill #2022166
Figure 3. April 28 Photos of Damaged and Repaired Flange, GNWT Spill #2022166
Figure 4. NT-NU Spill Report GNWT Spill #2022166

Figure 1. Location of GNWT Spill #2022166

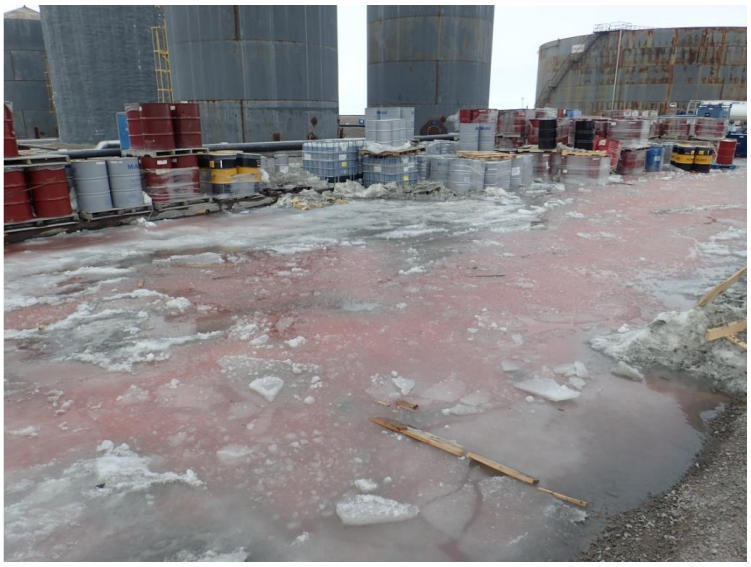


Figure 2. Photos of GNWT Spill #2022166

Figure 3. April 28 Photos of Damaged and Repaired Flange, GNWT Spill #2022166

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 05 / 04 / 22	Report Time: 4:00 pm	☐ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 05 / 04 / 22	Occurrence Time: 4:30 pm		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 32 Seconds		Longitude: 109 Degrees 10 Minutes 42 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved: No		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Waste Glycol	Quantity in Litres, Kilograms or Cubic Metres: 700	U.N. Number:	
I	Spill Source: Failed gasket on pipe coupling	Spill Cause: Failed gasket on pipe couple due to thermal expansion	Area of Contamination in Square Metres: 50	
J	Factors Affecting Spill or Recovery: None Reqiured	Describe Any Assistance Required: None Required	Hazards to Persons, Property or Environment: Limited, all spilled glycol captured with the tank farm containment berms	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: Logistics personnel observed visible glycol within the the lube storage berm while conducting QA/QC on their fuel truck. Site services was contacted, and upon further inspection by Site Services it was found that the waste glycol line was leaking from a flanged connection. A Site Services millwright isolated the line and deployed spill containment. All leaked glycol was captured and contained within the 60,000L horizontal tank berm and the lube storage berm. No visible spills outside of these location. All visible released glycol was contained and then placed into totes for disposal off site. Based on the volume within the pipe that was soluble, it is estimated at 700L were released. An investigation detailing the spill response, root cause and follow up actions will be submitted within 30 days of this notification.			

L	Reported to Spill Line by: Mason Elwood	Position: Environment Coordinator	Employer: DeBeers Canada	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5814
M	Any Alternate Contact: Allan Knight	Position: Environment Coordinator	Employer: DeBeers Canada	Alternate Contact Location: Offsite	Alternate Telephone: (867) 679-5812

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 4. NT-NU Spill Report GNWT Spill #2022166

DE BEERS GROUP

November 23, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – October 24, 2022 (GNWT Spill #2022510)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022510, which occurred at the Gahcho Kué Mine at 04:30 on October 24, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 08:30 on October 25, 2022.

Incident Summary:

At approximately 16:30 on October 24, 2022, a Komatsu 785 (Equipment ID TC-707) haul truck ran over a large rock in the West Mine Rock Pile damaging the hydraulic oil tank. Approximately 300 litres of hydraulic oil were released in the mine rock pile. The location is greater than 100m from the ordinary high-water mark of the closest water body.

Immediate Actions:

The operator shut down the equipment immediately which limited the spread of hydraulic oil. Spill pads and booms were deployed, with the area supervisor and mobile maintenance team being notified. After the unit was repaired and moved from the area, absorbent pads were properly disposed of and the contaminated rock was removed and deposited in the Type 3 Area of the West Mine Rock Pile.

Root Cause:

Several large rocks were left exposed in the dump area. After free dumping without authorization, and in violation of the site dumping procedure, the operator pulled ahead running over one of the large exposed rocks that was previously identified as a hazard. Due to this lapse in judgement TC 707 sustained damage to the hydraulic oil tank, resulting in a spill.

Follow-Up Actions:

The following preventative/corrective actions were identified during the internal investigation:

1. Due to breaching the site dumping procedure, and exposing themselves and equipment to a known hazard due to complacency, the operator is undergoing a performance review. This process also includes a review the relevant department procedures with a technical trainer.
2. The incident has been reviewed with other operators, with the emphasis on reporting known hazards in work areas and mitigating them appropriately.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:
Figure 1. Location of GNWT Spill #2022510
Figure 2. Photos of GNWT Spill #2022510
Figure 3. NT-NU Spill Report GNWT Spill #2022510

Figure 1. Location of GNWT Spill #2022510

Figure 2. Photos of GNWT Spill #2022510.

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 10 / 25 / 22	Report Time: 8:30 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 10 / 24 / 22	Occurrence Time: 4:30 pm		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 29 Seconds		Longitude: 109 Degrees 13 Minutes 29 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved:		Contractor Address or Office Location:	

H	Product Spilled: ☐ Potential Spill Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 300 litres	U.N. Number:
I	Spill Source: Komatsu 785 Haul Truck - TC 707	Spill Cause: Hydraulic tank contacted large rock	Area of Contamination in Square Metres: 15
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: At approximately 16:30 on October 24, 2022, a Komatsu 785 haul truck ran over a large rock in the West Mine Rock Pile damaging the hydraulic oil tank. Approximately 300 litres of hydraulic oil was released in the mine rock pile. The location is greater than 100m from the ordinary high water mark. Contaminated rock will be moved to the Type 3 Area of the West Mine Rock Pile when the equipment is moved. A follow up report will be submitted detailing the root cause and corrective/preventative actions of this incident.		

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 3. NT-NU Spill Report GNWT Spill #2022510

DE BEERS GROUP

June 11, 2022

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4922 48th Street
P.O. Box 2130
Yellowknife, NT X1A 2P6

Nahum Lee
Resource Management Officer III (Inspector)
North Slave Regional Office
Department of Lands
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Glycol Coolant – Gahcho Kué Mine – May 17, 2022 (GNWT Spill #2022193)

Pursuant to Part H Condition 3(d) of Water License MV2005L2-0015, De Beers Canada Inc. (De Beers) is submitting this follow-up spill report for GNWT Spill #2022193, which occurred at the Gahcho Kué Mine at 21:15 on May 17, 2022.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 09:00 on May 19, 2022.

Incident Summary:

On May 17, 2022 at 21:15, a loaded Komatsu 830e haul truck (TC-802) was coming up the 5034 ramp, when the operator observed smoke & steam coming from the engine compartment. A Code 1 Emergency call was made upon suspicion of a fire.

During the initial response and investigation, a radiator hose was found to have split, releasing coolant onto the hot section of the engine which resulted in steam. Once the scene was deemed safe a heavy equipment mechanic assessed the volume of glycol coolant released as approximately 200 litres, based up the volume remaining in the machine.

Immediate Actions:

After the initiation of the Code 1, the area supervisor and Environment department were notified, and spill containment materials were deployed at the identified source. Contaminated material was disposed of in the Type 3 area of the West Mine Rock Pile, and the area was dressed with fresh gravel.

Root Cause:

Upon investigation by a heavy equipment mechanic, it was determined that a radiator coolant line failed due to excessive flexing, resulting in the eventual breaking of the line. This line failed prior to the end of its expected service life.

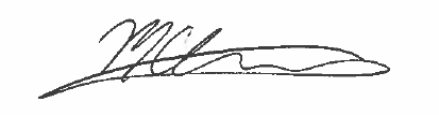
Follow-Up Actions:

The following preventative action was also identified during the internal investigation:

1. Review 830E operating hours, identify the hose failure mode and length of service hours, revising the site based expected operating life.
2. Schedule replacement of hoses identified that exceed the average operating life within the existing fleet.
3. Include replacement of the flexing radiator coolant hoses during the engine mid-life at approximately 10,000hrs

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,



Mason Elwood
Environmental Coordinator / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2022193
Figure 2. Photos of GNWT Spill #2022193
Figure 3. Photo of Damaged Coolant Line, GNWT Spill #2022193
Figure 4. Photo of Area Once Remediated, GNWT Spill #2022193
Figure 5. NT-NU Spill Report GNWT Spill #2022193

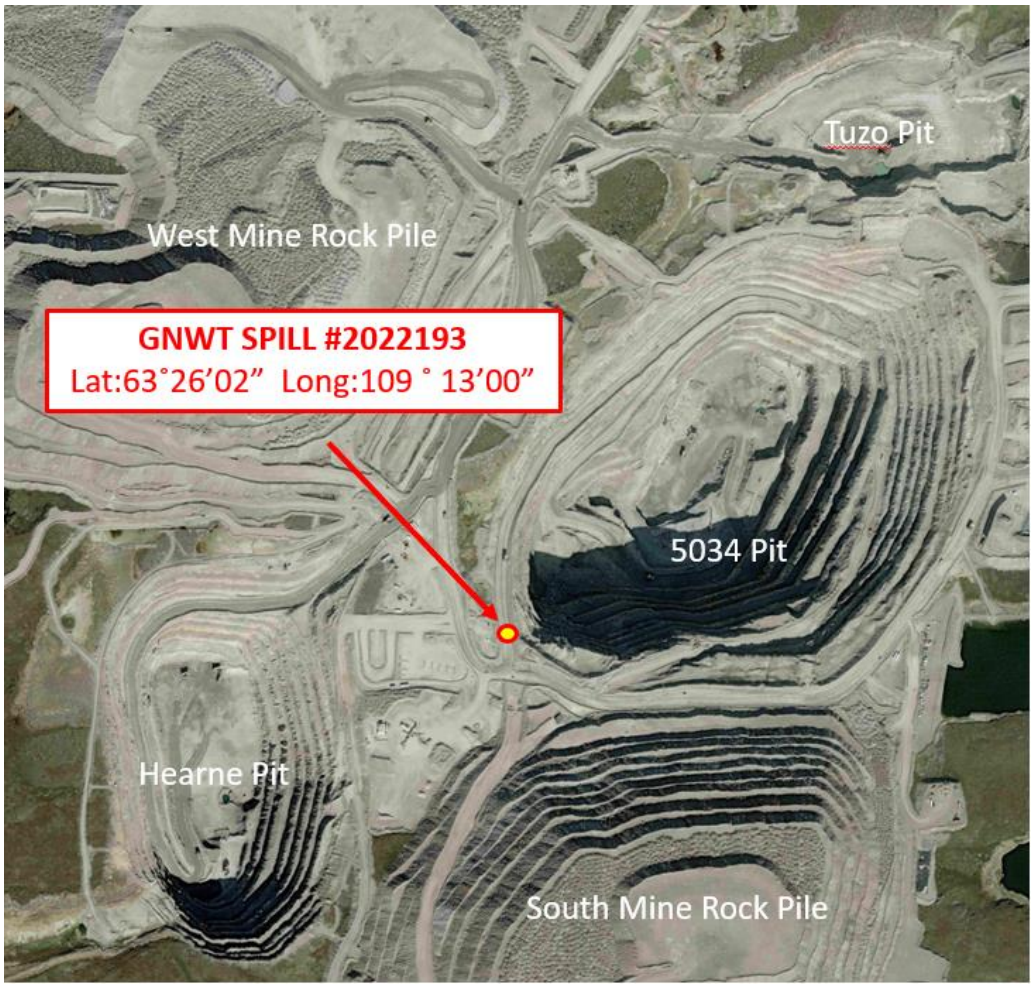


Figure 1. Location of GNWT Spill #2022193

Figure 2. Photos of GNWT Spill #2022193

Figure 3. Photo of Damaged Coolant Line, GNWT Spill #2022193

Figure 4. Photo of Area Once Remediated, GNWT Spill #2022193

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 05 | 19 | 22	Report Time: 9:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 05 | 17 | 22	Occurrence Time: 9:15 pm		
C	Land Use Permit Number (if applicable): MV2021D0009		Water Licence Number (if applicable): MV2005L2-0015	
D	Geographic Place Name or Distance and Direction from the Named Location: De Beers Group (Canada) Gahcho Kue Mine (Kennady Lake, NT)		Region: ☑ NT ☐ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: 63 Degrees 26 Minutes 2 Seconds		Longitude: 109 Degrees 13 Minutes 0 Seconds	
F	Responsible Party or Vessel Name: De Beers Group		Responsible Party Address or Office Location: Suite 300 - 1601 Airport Road NE, Calgary Alberta Canada T2E 6X8	
G	Any Contractor Involved: N/A		Contractor Address or Office Location: N/A	
H	Product Spilled: ☐ Potential Spill Coolant	Quantity in Litres, Kilograms or Cubic Metres: 200 litres	U.N. Number:	
I	Spill Source: Komatsu 830e Haul Truck	Spill Cause: Hose Failure	Area of Contamination in Square Metres: 3	
J	Factors Affecting Spill or Recovery: None	Describe Any Assistance Required: None	Hazards to Persons, Property or Environment: None	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials: On May 17, 2022 at 21:15, a loaded haul truck (TC-802) was coming up the 5034 ramp, when the operator observed smoke/steam coming from the engine compartment. A Code 1 was called. During the initial investigation, a radiator hose was found to have split, releasing coolant onto the hot engine which caused the steam. Spill pads were used to soak up the coolant, and disposed of properly. Contaminated material was disposed of in the Type 3 area of the West Mine Rock Pile. Approximately 200L of coolant was released. A follow up report will be submitted within the next 30 days detailing the root cause and corrective/preventative actions of this incident.			

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: Gahcho Kue Mine	Telephone: (867) 679-5812
M	Any Alternate Contact: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Alternate Contact Location: Off Site	Alternate Telephone: (867) 679-5814

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	Contact Name:	Contact Time:	Remarks:
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

Figure 5. NT-NU Spill Report GNWT Spill #2022193

Appendix E – COMMITMENTS TABLE, 2022

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers will: • Minimize impacts to caribou and the extent of the zone of influence around the mine site to the extent that is technically feasible. • Prior to construction, develop a caribou protection plan that ensures protection of caribou and caribou habitat. The caribou protection plan should include an adaptive management framework demonstrating how the Wildlife Effects Monitoring Program and the Wildlife and Wildlife Habitat Protection Plan are linked.	Gahcho Kué Panel 2013, Appendix A	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report completed each March **Status:** Commitment implemented: work under approved plan is ongoing
Governments, land managers and regulators will: • Include conditions for habitat protection in the Land Use Permit.	Gahcho Kué Panel 2013, Appendix A	• Type A Land Use Permit (MV2005C0032) – Issued**:** August 2014, **Status:** Commitment implemented.
De Beers will: • Construct and operate the Winter Access Road in a way that minimizes its adverse effects as a partial barrier to caribou movement and migration; • Monitor to determine the presence and behaviour of caribou along the winter access road using means in addition to satellite collar data, such as track counts and visual observations; and • Ensure that the caribou protection plan, the wildlife effects monitoring program and the wildlife and wildlife habitat protection plan address the effects on caribou movement and behaviour along the winter access road.	Gahcho Kué Panel 2013, Appendix A	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report completed each March **Status:** Commitments implemented: work under approved plan is ongoing
The GNWT and AANDC will: • Develop and implement a cumulative effects framework that links project specific monitoring and mitigation (project specific wildlife effects monitoring program and wildlife and wildlife habitat protection plan) to cumulative effects monitoring and mitigation and ensure there is two-way feedback between the project and cumulative scales • The implementation of the cumulative effects framework should lead to effective management including best management practices that can be applied at the Project scale • Report annually on the development, implementation and results of the framework in a publically accessible manner.	Gahcho Kué Panel 2013, Appendix A	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report completed each March **Status:** Commitments implemented: work under approved plan is ongoing.
De Beers will: • Monitor project specific effects (e.g. size of the Zone of influence, changes in habitat, effects of the Winter Access Road on caribou movement and behaviour) and will report to the GNWT and make the results public on how project specific effects contribute to cumulative effects for the duration of the Project.	Gahcho Kué Panel 2013, Appendix A	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Annual Wildlife Report completed each March • Research into the behavioural response of caribou to industrial features conducted by UNBC in collaboration with GNWT-ENR. • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 **Status:** Commitments implemented: work under approved plan is ongoing
• Traditional water uses in Lake N11 (outside of the initial dilution zone) and in all waters downstream of Kennady Lake should not be affected by Gahcho Kué mining activities throughout construction, operation and reclamation of the mine. Post-closure conditions in all waters in the region, including the refilled Kennady Lake, shall support all traditional water uses. Traditional water uses include: – drinking the water – harvesting and consuming fish	Gahcho Kué Panel 2013, Appendix A	• Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**.** ***Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May. • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented: work under approved plan is ongoing
This means that: • (b) Throughout all project stages (construction, operations, closure and post-closure) the Gahcho Kué Project should be designed and managed by De Beers so that the following water quality objectives in Lake N11 or any waters downstream of Kennady Lake are met: – water quality changes due to Project activities will not substantially alter the suitability of waterbodies to support viable aquatic ecosystems; and – water quality changes due to Project activities will not substantially alter fish health, abundance or diversity or impact the ability of traditional users to harvest or consume fish.	Gahcho Kué Panel 2013, Appendix A	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Final Effluent Quality Criteria (EQC) defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Approved: Mar 2021. • Surveillance Network Program (SNP) provided as Annex A to the Water Licence (MV2005L2-0015) • Monthly SNP reporting • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under approved plan is ongoing
• (c) De Beers should monitor conditions, including water and sediment quality, during the refilling of Kennady Lake to ensure that conditions are suitable to support aquatic life before re-connecting the lake to the rest of the watershed.	Gahcho Kué Panel 2013, Appendix A	• Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time **Status:** To be Implemented post closure
• During operations, part of closure planning should include the identification of potential mechanisms through which full lake mixing could occur (e.g. weathering, pit wall slumping) and use the results of ongoing investigations and studies to implement measures such that chemocline stability will be enhanced. Once mining is complete, the information gathered should be used to improve the likelihood that successful pit lake stratification can be achieved over the long-term.	Gahcho Kué Panel 2013, Appendix A	• Closure Water Management Plans (to be developed) supported by AEMP, SNP, and Groundwater Monitoring Program completed over time • Groundwater Monitoring Program (GMP). ***Latest Version:*** V.4.1. ***Version history:*** V.4.-Mar 2018, V.3.1-Jun 2015, V.3–May 2015; V.2–Mar 2015; V.1–Nov 2013. ***Approved:*** Jan 22, 2019 • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017

Commitment Description	Documents/ Public Hearings	Commitment Status
		Status: Commitments implemented. Work under RRP (part of ICRP) is ongoing
• During operations, closure planning should identify and develop methods to reduce the period of time required for recovery of the refilled Kennady Lake.	Gahcho Kué Panel 2013, Appendix A	• Operational Water Management Plan (OWMP). ***Latest Version*****:** V.6.2**.** ***Version history*****:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*****:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*****:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Implemented. Work under approved plans is ongoing
– Water and aquatic effects – Fish	Gahcho Kué Panel 2013, Appendix A	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under approved plans is ongoing
• Follow Up Program – Barren ground caribou and caribou habitat – Other wildlife and species at risk	Gahcho Kué Panel 2013, Appendix A	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*****:** Mar 31, 2022 • Annual Wildlife Report completed each March **Status:** Commitments implemented. Work under approved plan is ongoing
Socio-economic • Developers Environmental Impact Statement and Environmental Impact Review Commitments Table C-8	Gahcho Kué Panel 2013, Appendix A	• Socio-Economic Agreement Jun 28, 2013– Follow-up Monitoring and Reporting Requirement • Socio-economic Report released annually Q3 **Status:** Commitments implemented. Work under approved plan is ongoing
Socio Economic Commitments - Agreement with GNWT		
• De Beers will enter into a Socio Economic Agreement with the Government of the Northwest Territories which will be for the benefit of the entire population of the Northwest Territories.	Technical Report Responses (November 2012) GNWT #18	• Socio-Economic Agreement June 28, 2013 **Status:** Closed
Socio Economic Commitments – Employment, Education and Training		
• De Beers commits to recruiting and employing as many Aboriginal and Northwest Territories (NWT) residents as possible, building on our current experience with recruitment, training and development and retention strategies already implemented for the Snap Lake Mine. • De Beers has established hiring priorities. • De Beers will have pick-up locations and travel allowances such that these optimize the employment of NWT residents. Maintain a 1-800 Number in the NWT for employment information and job opportunities. • De Beers will offer incentives to assist Project employees who live in the Northwest Territories, including establishing and implementing northern benefits and relocation packages. • De Beers will implement the Gahcho Kué Human Resources Strategy. • De Beers will collaborate with the Government of the Northwest Territories (GNWT), Aboriginal communities and others on initiatives to plan, design and coordinate the delivery of education and literacy, pre-employment and on-the-job training, skill development, professional development and other related education and training programs and services that support and inform northern labour market and that enable participants to further improve their qualifications towards employment. • During the life of the Project, De Beers commits to supporting training positions at the Project. These will include apprenticeships, trades training positions and the development of professional occupations. • De Beers will ensure there is adequate space on the Company's premises to pursue and successfully complete the training programs for site-based employees and contractors. An on-site learning centre will be equipped and resourced with computers and a learning centre resource library. • Provide Financial Management Training • Promoting the participation of women in the workforce and providing scholarships for female students attending college and/or university • Establishing a mine orientation program for all new employees De Beers, through its tendering and contracting process will: – Require all Contractors to outline in their bids, a plan to hire and develop Aboriginal and NWT Resident employees in accordance with De Beers' Hiring Priorities; – Include in the bid evaluation an assessment of the Contractors' plan for the above; • Incorporate into the contract document for the successful bidder, commitments to report on the employment data required by De Beers to provide the Project hiring and employment information by Hiring Priority, heritage and gender.	2010 EIS Section 12 (December 2010) 1st Round Information Request Responses (April 2012) TG 18, 35 Technical Report Responses (November 2012) GNWT 9, 10, 12 NSMA 5c, 11 TG 6, 8 YKDFN 13	• Socio-Economic Agreement June 28, 2013 • Socio-economic Report released annually Q3. This report summarizes progress made on implementation of the Socio-economic agreement in the previous calendar year. • De Beers has integrated the SEA hiring priorities into the contract tender process and the contract framework **Status:** Commitments implemented. Work under the Agreement is ongoing
• Socio Economic Commitments - Procurement and Business Development		
• De Beers commits to source its procurement needs from NWT and Aboriginal businesses as much as possible for the Project and to working in collaboration to help them pursue new business opportunities with the Project. • Develop a flexible contracting approach by size and scope to match the capacity of Aboriginal businesses and NWT businesses where feasible and share business-related expertise with industry contracts to support NWT mine-related business initiatives; • De Beers will inform Aboriginal and NWT Businesses of its business opportunities first, as a measure to assist them to prepare for competitive bids. • De Beers has established and will maintain a position with the key role and responsibility of working with NWT and Aboriginal Businesses. • De Beers will maintain its NWT Business Policy.	2010 EIS Section 12 (December 2010) Technical Report Responses (November 2012) GNWT 15, 16	• Socio-Economic Agreement on June 28, 2013 • Socio-economic Report released annually Q3. This report summarizes progress made on implementation of the Socio-economic agreement in the previous calendar year. • De Beers developed and maintains a NWT Business Policy and maintains a position with the key role and responsibility of working with NWT and Aboriginal Businesses. **Status:** Commitments implemented. Work under the Agreement and De Beers Policies is ongoing
• Socio Economic Commitments – Health, Wellness and Culture		
• De Beers will coordinate and welcome special site visits with Aboriginal leaders • De Beers will provide a comprehensive benefits plan to all its employees (plan concerns services to assist with family issues, work performance, career development and general health and wellness)	2010 EIS Section 12 (December 2010	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • De Beers hosted a series of site visits with Aboriginal parties each year. Community leaders, elders, and youth visited Gahcho Kué and met with key personnel on site. A record of

Commitment Description	Documents/ Public Hearings	Commitment Status
• De Beers will work with the GNWT and Aboriginal communities to promote cultural preservation, sustainability and traditional language use and will support Cultural events in communities • With sufficient notice and flexibility in their rotation schedule, De Beers will provide opportunities for employees who wish to be engaged in traditional activities; • De Beers will provide financial or in-kind support for local cultural programming, language support programs and/or on-the-land programming in communities • De Beers will provide and maintain space at the mine site for spiritual and cultural pursuits De Beers will provide core policies in Chipewyan, Tåîchô, as well as in French and English De Beers will offer drug and alcohol programming • De Beers will provide cross-cultural training for northern Aboriginal and non-Aboriginal workers De Beers will provide family counselling services for mine employees and their families. • De Beers will include among its benefits an employee volunteer incentive program • De Beers will collaborate with GNWT and NWT communities to disseminate information to employees and in communities related to awareness prevention areas such as: substance abuse, sexually-transmitted infections, and family violence. • De Beers commits to work with the Tåîchô Government and with the Tåîchô Community Services Agency to learn about the alternative services and programs that the Tåîchô Government or its service agencies offer for on-the-land counselling programs and to adaptively manage opportunities in the area of health, education and social services that enhance the ability of Tåîchô citizens to participate successfully in the Project. • De Beers commits making information regarding alternative services and programs of Tåîchô Government or its service agencies available to its Employee Assistance Program (EAP) provider. • De Beers will make information available on site to its employees regarding its EAP and will ensure toll-free access to the EAP service provider both on and off site. • De Beers will implement the health and wellness commitments made to GNWT and filed on the public registry on October 19, 2012	GNWT De Beers Meeting Commitments Submitted to the Panel on October 19, 2012 Technical Report Responses (November 2012) GNWT 13 NSMA 7, 9 TG 7,9	key engagement activities undertaken is provided in the Water Licence Annual Report (WLAR). • De Beers provides funding to Aboriginal communities for cultural activities, health and wellness and sustainability initiatives on an annual basis. This funding is managed cooperatively with Aboriginal Parties through a mutually agreed upon work plan. • De Beers established a cultural centre at Gahcho Kue in 2016. • Socio-Economic Agreement was established on June 28, 2013 **Status:** Commitments implemented. Work under the agreement and approved plan is ongoing • Socio-economic Reports are released annually. This report summarizes progress made on implementation of the Socio-economic agreement in the previous calendar year. **Status:** Commitments implemented. Work under the Agreement and De Beers Policies is ongoing
Socio Economic Commitments – Reporting		
• De Beers commits to report publicly on the following with respect to recruitment and employment and procurement outcomes: – Hiring by Hiring Priority and job category in total numbers and percentage of total hires. – Hiring by NWT community in total numbers and percentage of total hires – Total employment in person years by hiring priority and job category in total numbers and percentage of the workforce – Total employment in person years by NWT community in total numbers and percentage of the workforce – Participation in and results of training activities undertaken by the company to increase NWT and Aboriginal employment in the Project – Report on the gross value of goods and services purchased annually through or from NWT and Aboriginal Businesses. – De Beers will report annually regarding the number of current and cumulative placements in training positions by hiring priority. – De Beers will upgrade its existing socio economic tracking systems, established for the Snap Lake Mine, to incorporate annual tracking and reporting for the Project. The upgrade will be completed upon receipt of permits to proceed and will build on its existing operations, procedures and systems, and current reporting processes it has already established with Aboriginal communities. • De Beers will monitor and report on the outcomes of its programs and initiatives identified and committed to in the Gahcho Kué Project Human Resource Strategy. • De Beers, through its tendering and contracting process will require its contractors to provide all relevant information to allow for reporting on hiring and employment according to the Hiring Priorities by incorporating into the contract document for the successful bidder, commitments to report on the employment data required by De Beers to provide the Project hiring and employment information by Hiring Priority, heritage and gender. • De Beers will also work with its contractors to obtain information annually regarding their training with respect to training and apprenticeships for NWT Residents. This information will be included in the annual report produced by De Beers. • De Beers will report on activities related to promote cultural preservation, sustainability and traditional language use in its annual report. – De Beers will review with the NSMA how best to incorporate their cultural activities in the company's annual reporting.	2011 EIS Update Section 10 (July 2011) Technical Report Responses (November 2012) GNWT 9, 10, 12, 13, 15 NSMA 4c, 6a,c	• Socio-Economic Agreement established on June 28, 2013 • Socio-economic Reports are released annually. This report summarizes progress made on implementation of the Socio-economic agreement in the previous calendar year. **Status:** Commitments implemented. Work under the Agreement and De Beers Policies is ongoing
Socio Economic Commitments - Adaptive Management		
• De Beers will meet with the GNWT to review annual report results, to discuss challenges and to identify opportunities for collaboration to overcome those challenges or to optimize NWT resident participation in the Project • De Beers commits to meet with Aboriginal groups annually, throughout the life of the Project, to review and discuss socio- economic results and report, including reports produced by De Beers that are specific to the Aboriginal communities participation in the Project, seeking input from communities • Meet at least annually with contractors to review their performance, including their success in contributing to the employment of Aboriginal and NWT residents and to discuss ways to work together to grow Aboriginal and NWT Resident participation in the Project. • De Beers NWT Business Policy will apply to the Project.	Technical Report Responses (November 2012) GNWT 10, 15, and 16 NSMA 2a,c,d and 6b	• Socio-Economic Agreement established on June 28, 2013 • Socio-economic Reports are released annually. This report summarizes progress made on implementation of the Socio-economic agreement in the previous calendar year. **Status:** Commitments implemented. Work under the Agreement and De Beers Policies is ongoing
• Socio Economic Commitments - Closure		
• In the case of temporary closure, De Beers will, where operationally feasible, collaborate with the GNWT so the GNWT can optimize its preparedness for NWT resident employees affected by a temporary closure. • With respect to permanent closure, De Beers will meet legislative requirements and collaborate with the GNWT leading up to permanent closure to ease employee transition to new jobs. • De Beers will continue to engage Aboriginal Communities regarding the Project during all phases and will discuss employee transition to new jobs leading up to permanent closure as part of its engagement process. • Three years prior to Closure, De Beers will undertake a study to assess the effects of closure to assist the company with its planning for Closure to transition employees.	Technical Report Responses (November 2012) GNWT 11 Public Hearing – December 5, 2012	• De Beers participated in an NHX hosted workshop on closure on February 25 and February 26, 2016. • De Beers met with YKDFN and presented ICRP V.2 on January 21, 2016 • De Beers circulated the draft ICRP V.2 to Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff on February 17, 2016. • De Beers hosted a closure workshop on March 2, 2016 for Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff. The draft ICRP V.2 was presented. Meeting notes were taken and were used to revise the Plan prior to submission of ICRP V.3 to the Board July 2016. • De Beers presented the ICRP V.3 at a MVLWB hosted Technical Workshop on October 7, 2016 and responded to all reviewer comments through the MVLWB administered public review. • De Beers participated in an MVLWB-hosted ICRP technical workshop on Criteria on December 13, 2017.

Commitment Description	Documents/ Public Hearings	Commitment Status
		• De Beers worked through the MVLWB workplan for additional review of ICRP V.3 and V.4 in sections throughout 2017 and 2018. • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • Socio-economic Report released annually Q3. **Status:** Commitments implemented. Work under current ICRP is ongoing.
Socio Economic Commitments - Other		
• Staff a position with the responsibility to act as a liaison between De Beers, and the GNWT and Aboriginal groups • De Beers commits to work with the Tåîchô Government and with the Tåîchô Community Services Agency on adaptively managing opportunities in the areas of health, education and social services that enhance the ability of Tåîchô citizens to participate successfully in the Project.	Public Hearing – December 5, 2012	• De Beers maintains a position with the key role and responsibility of liaising with the GNWT and Aboriginal Groups on socio-economic matters. **Status:** Commitments implemented.
Traditional Knowledge		
• De Beers is committed to considering and incorporating Traditional Knowledge (TK) into all stages to the Project life: the assessment, permitting, construction, operations and closure of the Project. This will be achieved by: – When the results of Traditional Knowledge / Traditional Land Use (TK/TLU) studies are made available, De Beers will use that information to further inform impact predictions, to evaluate whether additional mitigation or refinements to proposed mitigation is needed, and to identify additional opportunities for incorporating traditional knowledge into monitoring programs. – Develop annual engagement plans in an effort to meet its commitments. – Continuing to advance engagement activities with communities that will provide opportunities to discuss the Project and any traditional knowledge that the community is willing to provide; – Hosting site visits on a regular basis to enable the exchange of information between elders, TK holders and De Beers' staff. Visiting communities regularly to provide updated information regarding the project and incorporating an opportunity in this visit for TK holders to meet with the company to provide expertise and advice; – From time to time, the company will provide community based workshops as part of the company's planning processes or to address specific topics; – Involving elders and students from their home communities together in on site and field monitoring programs from time to time; – Featuring the events and activities that the company undertakes with the involvement of elders in the company's internal newsletters to employees and in the on-site the cultural centre as a means to sharing the knowledge and advice of elders with all staff; and – Working together with Aboriginal authorities in the development of the closure plan.	2010 EIS Section 5 (December 2010) 1st Round Information Request Responses (April 2012) LKDFN 2, 3, 4, and 10 TG 1, 3, 5, 6, 7, 8, 9, 19, and 27 YKDFN 4.43 and 4.44 Technical Sessions (May 2012) 2nd Round Information Request Responses (September 2012) LKDFN 1 TG 1 YKDFN 2.3, Response 2 Technical Report Responses (November 2012) TG 10 YKDFN 12 Public Hearing – December 5, 2012	• Engagement activities are reported in the Water Licence Report Annual (Section 2) each year. • Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • De Beers has actively participated in NHX and supported the development of Traditional Knowledge and Family Culture programs. Several sessions were held in 2016 including a workshop in Lutsel K'e on the TK framework in Q4 2016 and Knowledge exchange workshop with Tlicho Government in Q4 2018 and various meetings of the Wildlife, Land and Environment Committee. • A NHX TK Framework workshop, and several meetings with elders were held in Lutsel K'e in 2017. The TK monitoring Framework was finalized by NHX, led by LKDFN in 2017. • The TK program is staffed with 2 TK monitors and 1 administrative assistant, all based out of Lutsel K'e. • In 2015 and 2016 NHX/LKDFN worked with elders from Lutsel K'e to identify a site for a traditional cabin. Cabin construction began in 2016. • In 2016 the NHX cabin was completed by LKDFN and improvements were made in 2017. • In each year since 2017, NHX sponsored several Indigenous groups for on-the-land travel in the region around the mine. • An on-the-land governance committee meeting was held in September each year. Two traditional knowledge monitors monitored as per the TK framework throughout the year. **Status:** Commitments implemented
De Beers acknowledges the request of the Tåîchô Government for the Company to work more closely with Aboriginal authorities in the planning of sessions that will engage Traditional Knowledge holders, particularly when there are sessions that will inform the Wildlife Effects Management Program (WEMP) and/or Aquatic Effects Monitoring Program (AEMP). De Beers commits to work with the leadership of Aboriginal communities to determine the appropriate approach and level of involvement in the opportunities that the company is providing, and to discuss how best to engage Traditional Knowledge holders.	2010 EIS Section 5 (December 2010) 1st Round Information Request Responses (April 2012), DFO&EC 2, 3, and 10 Technical Sessions (May 2012) 2nd Round Information Request Responses (September 2012) TG 1 YKDFN 2.3-2 Technical Report Responses (November 2012) TG 4 Dettah Community Hearing – November 30, 2012	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • Engagement activities for 2018 are reported in this Annual Water Licence Report (Section 2) • Each year since 2017, NHX sponsored several Indigenous groups for on-the-land travel in the region around the mine. • An on-the-land governance committee meeting was held in September each year. Two traditional knowledge monitors monitored as per the TK framework throughout the year. **Status:** Commitments implemented. Work under approved plan is ongoing
• Risk Management, Emergency Response and Waste Management		
• Management of risks, including preparation for the unexpected (emergency response and contingency planning) is integral to De Beers' Sustainable Development Policy. De Beers will ensure that management systems are in place to minimize the risk of accidents affecting people, the environment, and the facilities. Risks will be managed for the Project through the following means: – prevention of accidents and malfunctions through engineering design, construction and operations training, awareness, education, and equipment maintenance; – assessment of risks of accidents and malfunctions throughout the Project phases; – employment of adaptive management to ensure continual appraisal of risks; – design and implementation of effective emergency response and contingency plans; and – implementation of a site environmental management plan.	2012 EIS Supplement Section 3 (April 2012)	• Emergency Response and Spill Contingency Plan (ERSCP). ***Latest Version:*** V.3.2–Jan 2018. ***Version history:*** V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented. Work under approved plan is ongoing
Standard operating procedures are a key part of accident prevention and emergency response; Project-specific procedures will be developed before construction of the Project begins. The Snap Lake Mine currently has an International Organization for Standardization (ISO) -14001 certified environmental management system (EMS). This system will be extended to the Gahcho Kué Project before operations start.	2012 EIS Supplement Section 3 (April 2012) Public Hearing - December 5, 2012	• De Beers received ISO 14001 Certification in Q4 2015. ISO certification was updated to ISO 14001:2015 in 2018. **Status:** Commitments implemented.
• The Emergency Response and Spill Contingency Plan was developed to establish a guidance document for emergency responses at the Gahcho Kué Project (Project) site. • The plan provides: – a clear chain of command for all emergency activities; – accountability for the performance of the spill response; – well-defined task and operational hazards/risk; and – reporting and record keeping requirements to track program progress. • The plan will be a "living" document and will be updated on a regular basis to address operational changes, as new information comes to light or procedures, permits, and authorizations change. • Mitigation identified in the Emergency Response and Spill Contingency Plan, and other environmental design features (e.g., containment dykes, liners, proper storage conditions) will be in place to minimize the frequency and extent of spills that result from Project activities	2012 EIS Supplement Section 3 (April 2012)	• Emergency Response and Spill Contingency Plan (ERSCP). ***Latest Version:*** V.3.2–Jan 2018. ***Version history:*** V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented.
• De Beers is committed to the implementation and adaptive management of Waste Management Plans as listed below. De Beers has developed Air Quality and Emissions Monitoring and Management Plan (AQEMMP) and Incinerator Management Plan (IMP) which were submitted to the Mackenzie Valley	2010 EIS Sections 7 and 11 (December 2010) 2012 EIS Supplement Section 3 (April 2012)	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016

Commitment Description	Documents/ Public Hearings	Commitment Status
Environmental Impact Review Board (MVEIRB) Public Registry in October 2012. De Beers commits to the development of other management plans in support of the Water Licence and Land Use Permit applications for the Project. • De Beers is developing a memorandum of understanding (MOU) with Environment Canada and Environment and Natural Recourses (ENR) on the implementation of the AQEMMP and IMP and the responsibility of Environment Canada and ENR in providing a review of monitoring data and participating in adaptive management. Having already developed the Project's AQEMMP and IMP in sufficient detail, and considering the MOU, a specific follow-up measure from the Panel may not be required in this case. – Air Quality and Emissions Monitoring and Management Plan - Provided to Environment Canada and GNWT in September 2012. Revised and submitted to the Panel in October 2012. The AQEMMP will be revised as necessary in consultation with Environment Canada. MOU being developed. The document will form part of the Mackenzie Valley Land and Water Board (MVLWB) application. – Incinerator Management Plan - Provided to Environment Canada and GNWT in September 2012. Revised and submitted to the Panel in October 2012. The AQEMMP will be revised as necessary in consultation with Environment Canada. MOU being developed. The plan will form part of the MVLWB application. – Wildlife and Wildlife Habitat Protection Plan - Submitted to the Panel in September 2012 following input received by the wildlife working group parties. Will be revised as necessary in consultation with ENR. MOU being developed. The plan will form part of the MVLWB application. – Sediment and Erosion Management Plan - MVLWB application – Mine Rock Management Plan - MVLWB application – Effluent and Surface Water Management Plan - MVLWB application – Explosives Management Plan - MVLWB application – Hazardous Materials Management Plan - MVLWB application – Landfill Management Plan - MVLWB application – Landfarm Management Plan - MVLWB application • The specific plans listed above may be combined into more general plans (e.g., Waste Management Plan) as the regulatory process advances. De Beers' commitment to monitoring and adaptive management of the water management pond, fine and coarse processed kimberlite mine rock piles and other project components throughout operations as defined in monitoring and management plans.	1st Round Information Request Responses (April 2012) DFO&EC 52b, 53 EC 9, 13, EC&GNWT 3 GNWT 3-1, 5 Technical Sessions (May 2012) Responses to Technical Reports (November 2012) AANDC 7 DFO 5; EC 5.1; GNWT 1, 2, and 7; NRCan 3 and 4; YKDFN 10; Public Hearings - December 5, 2012	• Air Quality and Emissions Monitoring and Management Plan (AQEMMP) ***Latest Version:*** V. 3 - October 2015 ***Version history:*** V. 2 – June 2014; V. 1 – Nov 2013 ***Status:*** Completed • Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 • Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 • Processed Kimberlite and Mine Rock Management Plan ***Latest Version:*** *V.6*, Mar 2018: ***Version history:*** V. 5.1 – March 2017V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** Nov 26, 2018 • Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version***: V.6.2**.** ***Version history***: V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • Explosives Management Plan (EMP). **Latest Version:** V.4-Mar 2017. ***Version history***: V.3-Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Sep 10, 2014 • The Hazardous Materials Management Plan and Landfill Management Plan are now components of the Waste Management Plan • Landfarm Management and Final Detailed Construction Plan. ***Latest Version***: V.5-Mar 2019. ***Version history***: V. 4–Aug 2017; V.3-Sep 2014; V.2–Jun 2014; V.1–Nov 2013. **Approved:** Jan 11, 2017 • This Annual Water Licence Report contains summaries of activities conducted during 2018 in accordance with the Waste Management Plan, Erosion and Sediment Management Plan, Processed Kimberlite and Mine Rock Management Plan, Explosives Management Plan), and Landfarm Management Plan **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Potentially Acid Generating Rock		
• Less than 6% of the mine rock that will be excavated through open-pit mining will have to be managed as being potentially acid generating (PAG). This rock will be managed appropriately to avoid the generation of acidic leachate and limit the release of the metals and other elements. The management strategy will involve sequestering any PAG mine rock, as well as any barren kimberlite, within the interior (typically 2 m) of the mine rock piles. Till from on-going pit stripping will be used to cover PAG rock placed within the interior of the structure to keep water from penetrating into that portion of the repository. Further, the PAG rock will be enclosed within enough non-acid generating (non-AG) rock, such that the active zone will not extend into the enclosed material, and water runoff will occur on the non-AG rock cover areas. • De Beers will monitor for the effects of climate change on the Project. Thermistors will be installed to monitor temperatures within the Mine Rock Piles, the Coarse PK Pile and the Fine PKC Facility. The resulting information will be used to track the development and possible regression of permafrost within these structures. De Beers will also monitor the quality and quantity of the water passing through the operational water management system to verify the conclusions of the analysis outlined herein. • Finally, De Beers will periodically review its operating procedures during the life of the Project, and adjust them, if and as required, to account for the influence of climate change. • De Beers will use only non-reactive mine rock for mine site construction (roads, airstrips, dykes, berms, etc.).	2010 EIS Sections 5, 7, and 11 (December 2010) 2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) AANDC 5, 11, 14, and 16, Reponses 2 DFO&EC 43a and 53b DKFN 23 EC 8 and 13 NRCan 1-4, 1-5, and 1-8 TG 12 Technical Sessions (May 2012)	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version***: V.6-Mar 2018. ***Version history***: V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018 • Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Mine Rock Placement Verification Report ***Latest Version:***: V. 1.1 ***Version history***: V. 1 April 2016. ***Approved***: November 22, 2016. • PAG rock will be placed in interior dykes which will be submerged under water at closure as approved by the Board (see letter from the Board to De Beers October 16th, 2014; Construction Water Management Plan V.6 Table 2a, Page 12, and the Processed Kimberlite and Mine Rock Management Plan V.4, Pg. 15 and Section 2.1.2.3). **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Aquatic Effects Monitoring Program		
If monitoring or follow-up detects effects that are different from predicted effects, or the need for improved or modified design features, then adaptive management will be implemented. This may include increased monitoring, changes in monitoring plans, or additional mitigation. These will be incorporated into monitoring plans such as an AEMP as part of a Class A water licence.	2010 EIS Section 11 (December 2010) 1st Round Information Request Responses (April 2012) AANDC 12	• AEMP Design Plan, ***Latest Version***: V.7. ***Version history:***: V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Effects monitoring programs will include a Surveillance Network Program (SNP) that focuses primarily on Project site operations as well as a more broadly focused Aquatic Effects Monitoring Program (AEMP). De Beers will develop the scope of the SNP and AEMP in consultation with regulators and aboriginal groups. • De Beers will consider the following documents in the development of an AEMP and related management response framework for the Project: – Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories: Recommended Procedures for Developing Detailed Designs for Aquatic Effects Monitoring Programs (Zajdlik et al. 2009); – *Draft Guidelines for Adaptive Management - a Response Framework for Aquatics Effects Monitoring* (Wek'éezhii Land and Water Board 2011); and other related AEMP documentation publicly available from existing northern mines, as applicable.	2011 EIS Update Sections 8, 9, and 10 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 2c DKFN 21, 22, 23 2nd Round Information Request Responses (September 2012) AANDC 2-2 Technical Report Responses (November 2012) AANDC 6	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version***: V.7. ***Version history:***: V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
The AEMP will incorporate the key components of the measurements endpoints presented in the EIS in its development. The AEMP will have an overall study design that will be developed according to currently accepted statistical design principles and regulatory guidance and will include hydrology, water quality (effluent and receiving water) and sediment quality components, components focused on lower trophic communities (i.e., plankton, periphyton, and benthic invertebrates), and fish and fish habitat. A groundwater monitoring program and habitat compensation monitoring will also be included as components of the overall aquatic ecosystem monitoring. The development of the AEMP will involve regulatory and aboriginal input, as well as consideration of available TK, and allow for adaptive management.	1st Round Information Request Responses (April 2012); DFO&EC 3 Response c) 2nd Round Information Request Responses (September 2012) DKFN 6	• AEMP Design Plan, ***Latest Version***: V.7. ***Version history:***: V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
The recommended methodology with respect to the collection of sediment quality and benthic invertebrate data will be considered during the development of the AEMP.	1st Round Information Request Responses (April 2012) DFO&EC 23	• AEMP Design Plan, ***Latest Version***: V.7. ***Version history:***: V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • **Status:** Commitments implemented. Work under the approved plans is ongoing.
Baseline information for the downstream lakes in the L and M watersheds has been collected and is presented in 2010 EIS Section 8 and Section 9 Appendices. Supplemental monitoring information was collected in 2011, and is presented in the 2011 Supplemental Monitoring Reports (Golder 2012 a,b,c,d). These lakes will be assessed for inclusion in the AEMP. De Beers is committed to ongoing	1st Round Information Request Responses (April 2012) DFO&EC 18b YKDFN 2.31 and 2.26	• Gahcho Kué Project Baseline Synthesis Aquatic Environment submitted to MVLWB on Feb. 19, 2014 • AEMP Design Plan, ***Latest Version***: V.7. ***Version history:***: V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023

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monitoring, with focussed work in 2012 including monitoring at five screened reference lakes during under-ice and open water conditions, and in the D-E-N lakes during open water conditions.		**Status:** Commitments implemented. Work under the approved plans is ongoing.
Monitoring of fish populations will be conducted through the use of standardized, repeatable methods (e.g., a random, stratified, standard fish community monitoring program), which will be ratified according to currently accepted statistical design principles and regulatory and community guidance and review. The same rigor will be applied to chemical analyses. The data collected (e.g., presence, relative abundance, and population statistics of selected fish species) would be compared to metrics or benchmarks developed for the AEMP, associated with pre-construction conditions and to predicted effects of the Project during operations and closure. The AEMP will also incorporate a response framework, so that adaptive management, additional mitigation and/or monitoring can be applied, where necessary. Furthermore, in a post-closure perspective, the presence, relative abundance, and population data from Kennady Lake would be used to track fish species re-establishment in Kennady Lake.	1st Round Information Request Responses (April 2012) DFO&EC 3b and 4c Technical Report Responses (November 2012) DFO 14	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
Lake 410 will be a focal point for the AEMP and sampled on a scheduled basis-based on modelling predictions.	1st Round Information Request Responses (April 2012) DFO&EC 18a	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
The criteria that will be used to evaluate sediment quality in the water management pond (WMP; Areas 3 and 5) and its acceptability to allow the reconnection of the refilled Kennady Lake to downstream waters will be developed during the detailed design phase of the AEMP. The monitoring program would also include other areas of Kennady Lake and receiving waterbodies throughout operations and during the refilling period.	1st Round Information Request Responses (April 2012) DFO&EC 51	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
For the AEMP, the assessment endpoints for fish presented in the EIS are being further refined to more specifically reflect abundance and distribution, without the use of terms “desired” or “persistence”.	Technical Report Responses (November 2012) DFO 14	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
Monitoring stations will be selected during the detailed design phase of the AEMP, and will consider the type and magnitude of predicted effects and sensitivity of the affected habitat. Results of the AEMP will be used to evaluate the necessity for mitigation as part of adaptive management.	1st Round Information Request Responses (April 2012) DKFN 22	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
The AEMP will allow for adaptive management, so that any unexpected adverse impacts to the aquatic ecosystem identified through the AEMP could be addressed (i.e., implementation of additional mitigation or compensation, as required). The AEMP will be developed with regulatory and aboriginal input.	1st Round Information Request Responses (April 2012) DFO&EC 44a	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
Effects monitoring will involve programs focused on the receiving environment, with the objectives of verifying the conclusions of the EIS, evaluating the short-term and long-term effects on the physical, chemical and biological components of the aquatic ecosystem of Kennady Lake, estimating the spatial extent of effects, and providing the necessary input to adaptive management.	2011 EIS Update Sections 8, 9, and 10 (July 2011) 1st Round Information Request Responses (April 2012) AANDC 12	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Aquatic Health		
De Beers commits to monitoring of mercury concentrations in edible fish tissue in the raised D-E-N lakes prior to and following raising the lake and during operations using non-invasive techniques, to determine whether there is a potential issue. As per the response to Round 1 Information Request DKFN_37 and to Round 2 Information Request DFO 2-1, specific management response actions to any upward trend of mercury concentrations (adjusted for fish age, which is a major modifying factor) following water level increases would be determined, if and when necessary, through engagement with regulatory agencies, including EC, and Aboriginal communities.	1st Round Information Request Responses (April 2012) DFO&EC 32b DKFN 25 and 37 2nd Round Information Request Responses (September 2012) DFO 2-1 Technical Report Responses (November 2012) Environment Canada 3 and 4	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Downstream Flow Mitigation		
• De Beers commits to developing and implementing a downstream flow mitigation plan. • One aspect of follow-up monitoring required in the downstream waterbodies is to define an appropriate mitigation flow regime to augment flows downstream of Kennady Lake during operations and refilling. The key aspects of this monitoring will be to better define an appropriate spring spawning flow for Arctic grayling, including determining the flow at which barriers to fish migration no longer exist, and defining a suitable flow for Arctic grayling rearing. • The mine plan, does not contemplate the construction of excavated diV. channels from the raised lakes to the N watershed. However, as described in Section 8.10.3.3 of the EIS Update, the new stream channels will be evaluated to make sure that they provide spring spawning and rearing habitat for Arctic grayling and allow the seasonal passage of fish between lakes that approximates natural conditions. These streams will be temporary as Dykes E, F, and G will be removed at the end of the operations period, and the flows returned to Kennady Lake through the original stream channels.	2011 EIS Update Sections 8 and 9 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 55i, 55a, and 40 2nd Round Information Request Responses (September 2012) DFO 2-1 and 2-2	• Operational Water Management Plan (OWMP). ***Latest Version*****:** V.6.2**.** ***Version history*****:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • Downstream Flow Mitigation Plan ***Latest Version:*** V. 2 – Nov 2013 ***Version history:*** V. 1 – June 2012 • Monitoring of fish habitat, and the downstream has also been integrated into the annual AEMP • 2013 Downstream Flow and Fish Passage Supplemental Monitoring Report submitted to MVLWB March 31, 2014. • Annual Downstream Flow Mitigation Report submitted to the MVLWB in May. **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Downstream Connections and Flow Monitoring		
De Beers commits to work with the Water Survey of Canada to conduct hydrological monitoring of downstream water bodies including perceived connections to the Hoarfrost River.	Water Survey of Canada- Monitoring Water downstream of Gahcho Kué- November 13, 2012 Public Hearing - December 5, 2012	• De Beers collaborated with the Water Survey of Canada to install and operate water survey stations at Kirk and Fletcher Lakes in 2013 and 2014. • Water Survey Stations were monitored from 2013-2015 at Kirk Lake and Fletcher Lake and were decommissioned in 2016 as per the agreement with Water Survey of Canada. • De Beers conducted a hydrological survey in spring of 2016 to further investigate the potential hydrological connection between Fletcher Lake and Kirk Lake. The summary memo is appended to the 2016 WLAR. **Status:** Commitments implemented.
• Water Quality		
Committed to not allowing changes to water quality that could adversely affect the drinkability of the water, the fish communities (lake trout, northern pike, Arctic grayling), or the ability to eat the fish in Lake N11 and Area 8 during operations, closure and post-closure, and in Kennady Lake in post-closure.	2nd Round Information Request Responses (September 2012) AANDC 2-2	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May

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	Technical Report Responses (November 2012) AANDC 7 LKDFN 3.2	**Status:** Commitments implemented. Work under the approved plans is ongoing.
It is planned that an initial iteration of proposed water quality benchmarks for Lake N11 during operations and Kennady Lake in post-closure and rationale will be prepared as a technical memorandum to the MVEIRB in 2012, which will form the basis for detailed consultation with government agencies and communities.	1st Round Information Request Responses (April 2012) YKDFN 2.20 AANDC 1 and 2 DKFN 19 2nd Round Information Request Responses (September 2012) LK 04	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013 and updated April 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Seepage water quality and thermal conditions in the waste storage facilities will be monitored throughout all stages of the Project. DBCI is committed to the development of a Mine Waste Management Plan • De Beers is committed to the development of a monitoring program to verify the water quality predictions and the effectiveness of mitigation.	1st Round Information Request Responses (April 2012) AANDC 16, Response 1 and 3	• Waste Management Plan. ***Latest Version:*** V.5.5-Apr 2019. ***Version history***: V.5.4-Mar 2019; V.5.3-Nov 2017. V.5.2–Aug 2017, V.5-Oct 2015; V.4–Mar 2015; V.3–Sep. 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved***: Jan 11, 2018 **Status:** Commitments implemented. Work under the approved plans is ongoing.
If it is identified that the quality of runoff or seepage is worse than predictions, adaptive management strategies will be triggered to address the problem.	1st Round Information Request Responses (April 2012) EC 13	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 **Status:** Commitments implemented. Work under the approved plans is ongoing
Prior to, and during the refilling process, De Beers will track the water quality within Kennady Lake and use adaptive management to make decisions with respect to dyke removal, in consultation with regulatory agencies. If monitoring indicates that water quality is not acceptable in Kennady Lake, De Beers have the option to defer the removal of the dykes, or restore the dykes, to identify the issue and determine appropriate mitigation to address the problem.	1st Round Information Request Responses (April 2012) DFO&EC 50	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*****:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*****:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the RRP is ongoing
• Despite the predicted exceedances of the chronic effects benchmark (CEB), the potential for copper to cause adverse effects to aquatic life in Kennady Lake and Area 8 is considered to be low. The CEB for copper is based on the CCME guideline (CCME 2014), which is intended to be conservative and protective of the most sensitive species. Follow-up monitoring will be undertaken to confirm this evaluation. • As the biotic ligand model (BLM) is most sensitive to pH and the amount and quality of DOC, it is important that these parameters be measured during monitoring, and included in new BLM-derived CEB predictions. Monitoring of water quality will be carried out to verify model inputs, and predictions will be adjusted accordingly. The BLM model will be used update BLM-derived CEBs when monitoring data are available.	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) IR AANDC 9 IR DKFN 9	• Closure Water Management Plans (to be developed) supported by AEMP and SNP completed over time • AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. **Status**: Commitments implemented. Work under the approved plans is ongoing
It is anticipated that water quality in the controlled area (e.g., water management pond) and receiving waters will be monitored during operations to compare to EIS predictions	1st Round Information Request Responses (April 2012) YKDFN 2.20	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status**: Commitments implemented. Work under the approved plans is ongoing
The inclusion of a monitoring program that will include a range of applicable monitoring parameters at representative lakes in the local study area (LSA) so that potential changes to light attenuation and TSS concentrations as a result of the Project have a high likelihood of being identified	1st Round Information Request Responses (April 2012) DFO&EC 5b	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers is committed to monitor the site water quality in Areas 3 and 5 during operations, which will receive the loading from the Fine PKC Facility during closure (i.e. the refilling period) and post-closure	1st Round Information Request Responses (April 2012) DKFN 29 DFO&EC 43b	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • Operational and Closure Water Management Plans (to be developed) **Status:** Commitments implemented. Work under the approved plans is ongoing.
During construction and operations, pumped discharge from Kennady Lake will only occur while regulatory requirements, including total suspended solids (TSS) concentrations, in the discharge are met. Discharge will be sampled regularly to monitor for compliance with TSS discharge limits to be specified by the Mackenzie Valley Land and Water Board in the water license, which will be required before the Project can operate.	1st Round Information Request Responses (April 2012) YKDFN 2.30	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013 and updated April 2014 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. **Status:** Commitments implemented. Work under the approved plans is ongoing.
Water quality will be closely monitored during operations and the re-filling process, and adaptive management will be implemented as required to ensure that the final water quality is sufficient to support a viable and self-sustaining ecosystem that is compatible with the regional watershed and maintains traditional use of the area prior to reconnecting the WMP to the downstream watersheds	Technical Report Responses (November 2012) AANDC 7 Environment Canada 3.3 Public Hearing - December 5, 2012	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013, April 2014, and updated in Mar 2018 • AEMP Design Plan, ***Latest Version:*** V.5 - Jan 2016. ***Version history:*** V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 1, 2016 • Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Further front-end design will be done on a comprehensive AEMP, with monitoring to be conducted during construction, operation and closure phases of the project.	Technical Report Responses (November 2012) Environment Canada 3.1	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023

Commitment Description	Documents/ Public Hearings	Commitment Status
• Monitoring data will be compared to predictions and periodically used to update and re-run models predicting future water quality (Environment Canada suggests every 3 to 5 years would be appropriate). • At closure, modeling predictions for lake quality will be supplemented with bioassay testing (chronic and acute) prior to reconnection of Kennady Lake with Area 8		**Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to continue to evaluate AEMP water quality benchmarks applied to parameters that have a natural upper range of concentrations that are above their respective CCME guidelines for the protection of aquatic life (CCME 2014). Proposed water quality benchmarks presented in the technical memorandum titled, "*Water Quality Objectives (WQO) and Sediment Quality Objectives (SQO) for the Proposed Gahcho Kué Project – Recommendation*", dated September 14, 2012, served to inform discussions on the development of details being considered in the preliminary design of an AEMP for the Project, which will be resolved during the regulatory process .	Technical Report Responses (November 2012) Environment Canada 3.2 Water Quality Objectives (WQO) and Sediment Quality Objectives (SQO) for the Proposed Gahcho Kué Project- September 14, 2012	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013 and updated April 2014 • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will include uranium, thorium, and possibly radium 226, in the suite of monitoring parameters, developed for the groundwater quality monitoring program.	Technical Report Responses (November 2012) NRCan 5	• Groundwater Monitoring Program (GMP). ***Latest Version:*** V.4.1. ***Version history:*** V.4.-Mar 2018, V.3.1-Jun 2015, V.3–May 2015; V.2–Mar 2015; V.1–Nov 2013. ***Approved:*** Jan 22, 2019 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Fish and Fish Habitat		
De Beers has committed to look for opportunities to restore Area 7 earlier in the mine plan.	2nd Round Information Request Responses (September 2012) EC 2 Technical Report Responses (November 2012) DFO 4 Public Hearing – December 5, 2012	• Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Sediment and Erosion Control		
De Beers commits to develop and implement a sediment and erosion plan for dyke construction to control sediment release. This plan will include details of the sediment and erosion control measures for each dyke to be constructed, along with contingency plans. The Sediment and Erosion Plan will be submitted to the MVLWB as a component of the Water Licence Application.	2nd Round Information Request Responses (September 2012) NRCan 2-1 Technical Report Responses (November 2012) DFO 5 Public Hearing – December 5, 2012	• Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Release of sediment during construction of dykes in the A, B, D and E watersheds may change water and sediment quality, and affect fish habitat and fish: • Changes to permafrost conditions in the flooded shoreline zone of the raised lakes due to increased water levels may lead to erosion and affect fish habitat: • Alteration of water levels in Lakes A3. D2, D3, and E1 may result in shoreline erosion, re-suspension of sediment and sedimentation, and affect water and sediment quality, fish habitat and fish: • Alteration of the A, B, D and E watershed areas and flow paths may change flows, water levels, and channel/bank stability in the Kennady Lake watershed, and affect water and sediment quality, fish habitat and fish: – all mine rock used to construct the dykes will be Non-acid generating (NAG) – construction of dykes will raise the water level in various areas and subsequently create new fish habitat – cobble and boulder placement to reduce erosion potential – silt curtains will be placed upstream and downstream of the construction area to control the release of suspended sediments – implementation of a quality assurance program during construction of each of the dykes so that construction-sensitive features of the design are achieved; the specific requirements and testing frequencies for the quality assurance process will be set out in the Construction Specifications prepared during final designs – monitoring of the performance of the dykes throughout their construction and operating life; instrumentation including piezometers, thermistors, and survey monitoring markers together with systematic visual inspection will provide early warning of many conditions that can contribute to dyke failures and incidents – active monitoring and maintenance plan for the new shorelines associated with the raised lakes – DiV. outlet structures will be designed and managed to provide an outflow rating curve that approximates the natural outflow rating curve, to the extent possible, during construction and operations. The channels will be evaluated and mitigation applied as necessary to prevent erosion and to maintain stability in permafrost, and to provide fish passage and spawning habitat between the re-aligned lakes. Furthermore, a monitoring and mitigation program for the raised lakes will be incorporated in an adaptive management plan for shoreline erosion. For water quality, preparation of the areas to be flooded will be undertaken, where necessary, to limit the potential for long-term nutrient and metals releases to the lakes and mercury methylation.	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 36 Technical Report Responses (November 2012) DFO 5	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 • Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Erosion of lake-bottom sediments in Lake N11 and Area 8 from pumped discharge may change water quality and fish habitat in downstream waterbodies, and affect fish habitat and fish: – pumped discharge to Lake N11 and Area 8 will be directed through properly designed outfalls/diffusers to prevent erosion • The end-of-pipe discharge points for the lake dewatering operations will be placed at relatively deep water locations in Lake N11 and Area 8 so as to minimize the potential impact to lake bottom sediments.	2011 EIS Update Section 9 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 35a	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 • Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**.** ***Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Release of sediment to Area 8 during the construction of Dyke A may change water and sediment quality, and affect fish habitat and fish: – silt curtains will be placed upstream and downstream of the construction area to control the release of sediment to Area 8 • Some general considerations in the use of turbidity barriers in dyke construction are presented in Page 8-128 of 2011 EIS Update (De Beers 2011). In the event that TSS concentrations approach monitoring thresholds, construction activities will be temporarily curtailed and additional measures would be implemented to meet the water quality requirements in Area 8. These contingency measures would include 1) installing additional rows of the turbidity barriers, 2) constructing a temporary filter berm to retain the excess suspended solids and	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 26 YKDFN 2.30	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 • Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013 and updated April 2014 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023

Commitment Description	Documents/ Public Hearings	Commitment Status
allow the clean water to pass through, or 3) pumping the water with excess TSS to a temporary polishing pond.		• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• De Beers commits to develop and implement minimum water level thresholds in Area 8 during construction and operation, as well as Lake N11 during closure. In Area 8, winter water withdrawals from Area 8 for potable water will meet the Fisheries and Oceans Canada (DFO) *Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut*. In Lake N11, planned pumping rates during open water conditions will be set accordingly to ensure that the total annual discharge from Lake N11 does not drop below the 1-in-5 year dry condition. • Hydrological monitoring will be conducted as part of the project, both for operational decision-making with respect to the water management plan, and also as part of the AEMP. Staff gauges will be installed to monitor water levels to protect littoral habitat; this was identified in the response to Round 1 Information Request DFO&EC_61 for Area 8. If changes to water levels are greater than predicted (e.g., water levels approach benchmarks developed as part of the AEMP), then adaptive management will be applied, as appropriate.	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 35a Technical Report Responses (November 2012) DFO 6	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • Monthly SNP reporting in 2015 • AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing
• No Net Loss Plan		
• Fish habitat compensation to account for harmful alteration, disruption or destruction (HADD) of fish habitat associated with the Project will be developed in consultation with regulatory agencies and aboriginal groups • De Beers is committed to continuing to work with DFO, Environment Canada and Aboriginal communities on the finalization of options, as part of the development of the detailed fish habitat compensation plan to achieve no net loss of fish habitat. • Monitoring will also be conducted to evaluate the effectiveness of habitat compensation, and will include evaluation of both physical and biological characteristics.	2011 EIS Update Sections 8 and 10 (July 2011) 2012 EIS Supplement Section 3 (April 2012) 1st Round Information Request Responses (April 2012) DFO&EC 56, 57, and 58 DKFN 25 and 39 GKP 14 2nd Round Information Request Responses (September 2012) DFO 2-3 LK 01 2012 Draft No Net Loss Plan- November 13, 2012 (Section 8.0) Public Hearing – December 5, 2012	• Draft No Net Loss Plan- November 13, 2012 (Section 8.0) to MVEIRB • De Beers met with DFO and Aboriginal Parties representatives throughout 2014 to review Habitat Off-Set Requirements and report • DFO authorization 03-HCAA-CA6-00057.1obtained in June 2014. De Beers presented and discussed the content of the authorization related to compensation options with Ni Hadi Xa and Aboriginal Parties in 2015. • De Beers met with LKDFN community and the Wildlife, Land and Environment Committee in Lutselke January 20-21, 2016 and discussed alternative off-setting projects. • De Beers, together with DFO, met with the LKDFN June 29-30, 2016 to discuss, and visit, alternative fish off-setting projects. • De Beers provided LKDFN with a proposal to further investigate potential off-setting opportunities in 2017. • De Beers has held update meetings with DFO since 2018 in discussing fish habitat off-setting project study findings. • Gahcho Kué Mine - Fisheries Act Authorization Annual Report submitted each December **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Fish-out Plan		
A fish out will be conducted from Areas 2 through 7 of Kennady Lake to remove fish before and during dewatering. This will be undertaken as part of a DFO *Fisheries Authorization* in a manner that involves aboriginal communities, minimizes spoilage of fish and maximizes the potential to collect valuable scientific data on northern fishes. Where possible, the timing of the fish out will coincide with important aboriginal cultural events.	1st Round Information Request Responses (April 2012) DFO&EC 65 Draft Fish Out Plan - October 4, 2012	• De Beers submitted a Draft Fish Out Plan - October 4, 2012Phase I of Fish Out = June to September 2014 • Phase II of Fish Out = March and June to August 2015 • DFO acknowledge completion of the Fish-Out on September 9, 2015. • Gahcho Kué Mine - Lue T'e Halye Fish-Out Annual Report 2015 submitted with 2015 Fisheries Act Authorization Annual Report • Offsetting plan was submitted to DFO in Mar 2018 • Gahcho Kué Mine - Fisheries Act Authorization Annual Report submitted each December **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Water Management		
• The performance of the dykes will be monitored throughout their construction and operating life; instrumentation monitoring together with systematic visual inspection will provide early warning of many conditions that can contribute to dyke failures and incidents. Additional mitigation will be applied, if required. • In the unlikely event that degradation of foundation conditions over the relatively short life of the structure impact a dyke's stability, contingency measures will be applied. Contingency measures may include foundation grouting, downstream or upstream till blankets, ground freezing for temporary situations, cut off walls or dyke reconstruction. The measured ground temperatures and the results from regular site inspection and monitoring activities will be collected, analyzed and reported. The information from monitoring programs will be used to determine if contingency measures are required and will be implemented accordingly.	2010 EIS Sections 5, 7, and 11 (December 2010) 1st Round Information Request Responses (April 2012) NRCan 1-12iii	• Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 • Summary of erosion and sediment management activities conducted in 2015 reported in Section 9 of this Annual Water Licence Report **Status:** Commitments implemented. Work under the approved plans is ongoing
The suggested 0.002 mg/L method detection limit (MDL) for total phosphorus (TP) will be utilized as a maximum MDL for all future analyses	1st Round Information Request Responses (April 2012) DFO&EC 11a	• Target detection limit for total phosphorus is 0.001 mg/L; See Table 9.2-2 Aquatic Effects Monitoring Program (AEMP) Design Plan ***Latest Version:*** V. 5 - January 2016 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers is committed to complete monitoring and testing using standard field and laboratory procedures during the Project operation to evaluate groundwater quantity and quality. Where necessary, the water quality and quantity input profiles assigned to the loadings for groundwater will be revised and Project effects will be re-assessed, as appropriate. Where required, adaptive management strategies will be adopted	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) AANDC 12	• Groundwater Monitoring Program (GMP). ***Latest Version:*** V.4.1. ***Version history:*** V.4.-Mar 2018, V.3.1-Jun 2015, V.3–May 2015; V.2–Mar 2015; V.1–Nov 2013. ***Approved:*** Jan 22, 2019 **Status:** Commitments implemented. Work under the approved plans is ongoing.
It is anticipated that water column profiles in Kennady Lake will be monitored during closure and following reconnection with Area 8 to compare to EIS predictions. If it is identified that water column dissolved oxygen (DO) concentrations, particularly in the surface 6 metre depth zone, are worse than predictions, adaptive management strategies will be triggered to address the problem.	1st Round Information Request Responses (April 2012) DKFN 45	• Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time Status: Commitment to be fulfilled prior to closure.
Ongoing monitoring of water quality in the LSA will include reporting of the TSI index.	1st Round Information Request Responses (April 2012) YKDFN 2.29	• AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
• During operations, Project activities associated with the water management plan will be designed to discharge site water to downstream waterbodies only when specific water quality criteria are met. During operations, water for use in the processing plant will be sourced from the WMP and recycled to the greatest extent possible.	2011 EIS Update Section 9 (July 2011) 1st Round Information Request Responses (April 2012)	• Type A Water Licence (MV2005L2-0015) issued September 24, 2014. • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates.

Commitment Description	Documents/ Public Hearings	Commitment Status
• Parameters for discharge, mixing zones and monitoring points will be determined and regulated as part of the water licensing process.	DFO&EC 66 2nd Round Information Request Responses (September 2012) AANDC 2-1	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**. *Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • AEMP and SNP data summarized in AEMP and Water License Annual reports **Status:** Commitments implemented. Work under the approved plans is ongoing.
Dewatering of Kennady Lake to Lake N11 and Area 8 may change flows, water levels, and channel/bank stability in downstream waterbodies, and affect water quality, fish habitat and fish: • pumped discharge to Lake N11 and Area 8 will only occur while water quality discharge criteria are met • discharge from Area 7 to Area 8 is proposed to cease after Year 2, when water levels in Area 7 drop to a level that turbidity levels exceed discharge criteria • pumped discharge will be directed to the lake environment in Lake N11 and Area 8, and not directly to outlets, to attenuate flow changes	2011 EIS Update Section 9 (July 2011)	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). Draft Effluent Quality Criteria Report (Lake N11) submitted in Dec 2013 and updated April 2014 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • Monthly SNP reporting in 2015 • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • AEMP annual report submitted each May **Status:** Commitments implemented. Work under the approved plans is ongoing.
To manage water that has higher levels of TSS, flocculants may be added through an in-line treatment process; for example, water that can no longer be pumped from Area 7 to Area 8 will be pumped to Areas 3 and 5 through a pumped system with in-line flocculation to minimize TSS in Areas 3 and 5 to allow for dewatering of this area to the maximum extent possible.	2011 EIS Update Section 8 (July 2011) 2012 EIS Supplement Section 3 (April 2012) 1st Round Information Request Responses (April 2012) AANDC 4, Response 6	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**. *Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Follow-up monitoring will consist of programs designed to verify key inputs to the effects analysis, such as the quality of the water pumped from the WMP to Lake N11. Results of follow-up monitoring will be used to reduce the level of uncertainty related to impact predictions. • Future monitoring programs will apply the lowest available MDL to collected lake and stream samples.	2011 EIS Update Section 9 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 11c	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Wildlife Mitigation		
De Beers will implement the Wildlife and Wildlife Habitat Protection Plan as submitted to the Panel on October 4, 2012. The Wildlife and Wildlife Habitat Protection Plan will be refined prior to construction to address the recommendations made by GNWT and Environment Canada in their technical reports. The Wildlife and Wildlife Habitat Protection Plan will be adaptively managed by De Beers during the Project life with input from GNWT, Environment Canada, and Ni Hadi Yati.	Wildlife and Wildlife Habitat Protection Plan, October 2012	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
Downward directional and low impact lighting will be used to reduce light pollution	Wildlife and Wildlife Habitat Protection Plan, next iteration	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
Low profile roads will be used so that they do not act as a barrier to movement for wildlife	Wildlife and Wildlife Habitat Protection Plan, next iteration	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
Winter road snow berms will be removed so that they do not act as a barrier to movement for wildlife	Wildlife and Wildlife Habitat Protection Plan, next iteration	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented.
De Beers will implement the Wildlife Effects Monitoring Program as submitted to the Panel on October 4, 2012. The Wildlife Effects Monitoring Program will be refined prior to construction to address the recommendations made by GNWT and EC in their technical reports. The Wildlife Effects Monitoring Program will be adaptively managed during the Project life by De Beers with input from GNWT, Environment Canada, and Ni Hadi Yati.	Wildlife Effects Monitoring Program, October 2012	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers will submit a Soil and Vegetation Monitoring Plan to the MVLWB as part of the Land Use Permit application. The Soil and Vegetation Monitoring Plan will include a targeted study examining the correlation between dustfall and caribou Zone of Influence.	2010 EIS Section 11 (December 2010)	• Vegetation and Soils Monitoring Program ***Latest Version:*** V. 3 - September 2014 ***Version history:*** V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** Sept 10, 2014 • Golder. 2015a. 2013 Vegetation and Soils Supplemental Monitoring Report. 12-1365-0018/DCN-195. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 • Golder. 2015b. 2014 Vegetation and Soils Supplemental Monitoring Report.. 13-1365-0007/DCN-293. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 **Status:** Commitments implemented. Work under the approved plans is ongoing.
The monitoring activities associated with Project construction, operations, and closure, are described below, and are designed to work in conjunction with other programs. • Identification of areas where vegetation is intact. A general site survey to identify areas where healthy vegetation is maintained and where vegetation is showing signs of degradation will be carried out on a regular basis. Estimates of the extent of intact (undisturbed) and degraded vegetation will be recorded. • Identification of areas where re-vegetation is required. Disturbed areas will be identified from the general site survey identified above, as well as from surveys conducted as part of the monitoring program associated with the closure and reclamation plan (Section 10). Disturbance estimates will include descriptions of areas that have been re-vegetated and an indication of treatment effectiveness. Test plots will be established at longer-term monitoring stations to evaluate treatment effectiveness as well. • Implementation of re-vegetation efforts. Areas identified as requiring re-vegetation (e.g., from the general site survey and/or closure and reclamation monitoring) will be assigned an appropriate treatment. Vegetative material (seed or otherwise) will be composed of non-invasive species. The long-term re-vegetation goal is to facilitate and encourage the re-establishment of native vegetation. Treatments will be designed such that they optimize success (e.g., timing will coincide with favourable weather events). • Survey timing. The timing of the surveys will be planned according to when the areas were re-vegetated and the potential for soil erosion. For example, areas with a high potential for soil erosion will likely be surveyed more frequently following treatment. Test plots will be established at longer-term monitoring stations.	2010 EIS Section 11 (December 2010)	• Vegetation and Soils Monitoring Program (VSMP). ***Latest Version:*** V. 3 - Sep 2014. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved*:** Sep 10, 2014 • Golder. 2015a. 2013 Vegetation and Soils Supplemental Monitoring Report. 12-1365-0018/DCN-195. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 • Golder. 2015b. 2014 Vegetation and Soils Supplemental Monitoring Report. 13-1365-0007/DCN-293. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 **Status:** Commitments implemented. Work under the approved plans is ongoing.
Additional surveys for plant species considered to be “at risk” within the Project footprint will be carried out in conjunction with other vegetation monitoring programs (e.g., those specified in the vegetation management plan, Kennady Lake dewatering, and dust monitoring program), as the compilation of a plant species list is included as a component.	2010 EIS Section 11 (December 2010)	• Vegetation and Soils Monitoring Program (VSMP). ***Latest Version:*** V. 3 - Sep 2014. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved*:** Sep 10, 2014 • Golder. 2015a. 2013 Vegetation and Soils Supplemental Monitoring Report. 12-1365-0018/DCN-195. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 • Golder. 2015b. 2014 Vegetation and Soils Supplemental Monitoring Report. 13-1365-0007/DCN-293. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. May 2015 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will continue to evaluate alternative energy sources that will reduce the Project’s dependency on fossil fuel as part of adaptive management and De Beers’ sustainable development policy.	2010 EIS Section 11 (December 2010)	• De Beers Energy Management Plan • De Beers investigated the potential to install a solar farm at Gahcho Kue (2019) **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers is committed to continuously evaluate ways to improve energy efficiency that are both technically and economically feasible.	2010 EIS Section 11 (December 2010)	• De Beers formed energy efficiency improvement working group to implement energy saving initiatives. **Status:** Commitments implemented.
Protection of permafrost — all activities that affect permafrost around the site will be carefully planned so that areas not directly affected by the mine and plant site will be preserved	2010 EIS Section 11 (December 2010)	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 **Status:** Commitments implemented.
De Beers recognizes that connections with the land exist, and it will work with Łutselk’e and Parks Canada, once the Park is established, on initiatives that might be identified as essential to keep the story on the land alive.	2010 EIS Section 12 (December 2010)	• Statements made during EIR Process. De Beers has continued to support Ni Hadi Xa and the traditional monitoring program that they implement. **Status:** Commitments implemented**.**
Experience gained from closures of the Ekati and Diavik mines will be used at the Project site to develop a re-vegetation management plan to support the successful restoration of the site. Reclamation activities will include: • Implement monitoring and mitigation programs and adaptively manage to achieve closure objectives • Removal and disposal of site infrastructure and materials; • To the extent practical, the total amount of area disturbed by Project activities at any one time will be reduced through the use of progressive reclamation; • An evaluation will consider the physical aspects of re-vegetation, such as re-contouring, erosion control techniques, seedbed preparation, surface roughening, and the use of soil amendments, which collectively promote natural secondary succession; • Removal or breaching of dykes; • Evaluate opportunities to restore Area 7 earlier in the closure process; • Refilling Kennady Lake; • Breaching of Dyke A that separates Kennady Lake from the Downstream will only occur once the water quality is at an acceptable quality as defined in the water licences discharge criteria; • Restoration of navigation • Reclamation plans will be developed iteratively during the Project in consultation with Regulators and Aboriginal Authorities; and • Traditional knowledge will be considered in reclamation and closure plans.	2010 EIS Sections 4, 5, 7, 11, and 12 (December 2010) 2011 EIS Update Sections 8 and 10 (July 2011) 2012 EIS Supplement Section 3 (April 2012) 1st Round Information Request Responses (April 2012) DFO&EC 29a, 39, 53b, and 57;DKFN 4;EC 11 and 12;GKP 6 and 14;NRCan 1-8;TC 3;YKDFN 4-40;Technical Sessions (May 2012) Technical Report Responses (November 2012);AANDC 7; DFO 6;EC 3.1 and 3.3;LKDFN 3.2;NSMA 1;YKDFN 12; Public Hearing – December 5, 2012	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • ICRP V.4.1 contains a Reclamation Research Plan (Appendix E) with a focussed effort on revegetation research (Section 2.1); Post-closure seepage quality and quantity (Section 2.2); landform options (Section 2.3); Cover types for PK facilities; Stability of chemocline (Section 4.1); Timeline for reconnection of Kennady Lake (Section 5.1). **Status:** Commitments implemented. Work under the approved plans is ongoing.
Gahcho Kué Panel Report of Environmental Impact Review and Reasons for Decision July 19, 2013 Appendix C: List of Commitments, Table C-9: List of additional commitments		
De Beers is committed to undertaking regular monitoring and follow-up testing of water quality and aquatic health during the Project. Sub-lethal toxicity testing will be undertaken during operations to assess predictions in the 2011 EIS Update that effects from water quality to aquatic communities will be negligible. Toxicity testing with sensitive, native organisms will be conducted.	Information request response to AANDC (PR#168 p.7-3)	• Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**.** ***Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers will develop closure and reclamation objectives for the Project that are consistent with the draft Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories prepared by AANDC and the Mackenzie Valley Land and Water Boards, which builds upon the Mine Site Reclamation Guidelines for the Northwest Territories. Objectives for Areas 2 to 7, which include the Water Management Pond (WMP), will be developed as part of the Closure and Reclamation Plan process. De Beers understands that the development of a Closure and Reclamation Plan for the Project requires engagement with Aboriginal groups, interested parties and regulators.	Technical report response to AANDC (PR#347 p. 7)	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*****:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*****:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to monitoring the basins of Kennady Lake during closure (i.e., refilling of Kennady Lake), including mine pits.	Technical report response to EC (PR#348 p. 3)	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*****:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*****:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will be monitoring the water quality during the mine operations to verify the water quality modelling projections presented in the 2012 EIS Supplement and commits to continue to develop contingency plans for the operational and closure stages of the Project such that they can be implemented as needed.	Technical report response to EC (PR#348 p. 4)	• Operational Water Management Plan (OWMP). ***Latest Version*****:** V.6.2**.** ***Version history*****:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • AEMP and SNP data summarized in AEMP and Water License Annual reports **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will meet with Lutsel K'e Dene First Nation to review monitoring locations and discuss potential new monitoring locations as part of the Aquatic Effects Monitoring Program (AEMP) development process.	Undertakings and Commitments from Technical Meeting (PR#216 p.2)	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • An AEMP workshop was held on April 8, 2015, as per the commitment made by De Beers after submission of responses to review comments received from the MVLWB in December 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to consider the traditional uses of the region by Aboriginal people in the process to develop the proposed water quality benchmarks and Site Specific Water Quality Objectives (SSWQOs) through the Water License permitting process.	Technical report response to TG (PR#342 p. 2)	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8) • AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Fisheries		
De Beers will continue to seek input on additional off-site fish habitat compensation options as part of the permitting phase.	Technical report response to TG (PR#342 p. 3)	• De Beers met with DFO and Aboriginal Parties representatives throughout 2014 to review habitat off-set requirements and options for compensation • DFO authorization 03-HCAA-CA6-00057.1 issued June 2014. De Beers presented and discussed the content of the authorization as it relates to compensation options with Ni Hadi Xa and Aboriginal Parties in 2015. • De Beers met with DFO, and LKDFN land and wildlife committee in early 2016 to discuss alternative compensation projects. • De Beers provided LKFN with a proposal to further investigate potential off-setting opportunities in 2017. • Submitted Offset Plan to DFO in 2018 • Provided offset project update to DFO in 2017, 2018 and 2019 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to continue to develop a detailed No-Net-Loss Plan (NNLP) that will describe habitat compensation plans to offset losses to fish habitat. A draft NNLP was submitted to the public registry in November 2012 (PR#355, 356,357, 358). This draft is expected to continue to evolve and be further refined as additional community and regulatory input is received during the permitting phase.	Technical report response to DFO (PR#352 p. 7)	• Draft No Net Loss Plan- November 13, 2012 (Section 8.0) to MVEIRB • De Beers met with DFO and Aboriginal Parties representatives throughout 2014 to review habitat off-set requirements and options for compensation • DFO authorization 03-HCAA-CA6-00057.1 issued June 2014. De Beers presented and discussed the content of the authorization as it relates to compensation options with Ni Hadi Xa and Aboriginal Parties in 2015. • DFO authorizations obtained in June 2014 • Gahcho Kué Mine - 2015 Fisheries Act Authorization Annual Report submitted December 2015 • De Beers met with DFO, and LKDFN land and wildlife committee in early 2016 to discuss alternative compensation projects. • De Beers provided LKFN with a proposal to further investigate potential off-setting opportunities in 2017. **Status:** Commitments implemented. Work under the approved plans is ongoing.
Ice thickness will be routinely measured and included in the database [of information pertaining to fish overwintering habitat] , along with other relevant data parameters as part of on-going winter water quality data monitoring programs, including the AEMP once implemented .	Technical report response to DFO (PR#352 p. 3)	• AEMP Design Plan, ***Latest Version*****:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • 2015 AEMP Annual Report to be completed by May 1, 2016 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Watershed Management		
De Beers commits to develop and implement an operational Flow Mitigation Plan.	Technical report response to DFO (PR#352 p. 6)	• Draft Gahcho Kué Operational Downstream Flow Mitigation Plan – October 2014 • Downstream Flow Mitigation Plan ***Latest Version:*** V. 2 – Nov 2013 ***Version history:*** V. 1 – June 2012 • In 2015, the Project was still in the construction phase, which included dewatering activities to Area 8, and therefore, the downstream flow mitigation (i.e., supplemental pumping of flow downstream of Kennady Lake) was not initiated. • To further inform and refine the Downstream Flow Mitigation Plan, monitoring was conducted in 2015 downstream of Area 8. The results of this monitoring will be reported in the 2015 Downstream Flow and Fish Passage Supplemental Monitoring Report (in progress; expected to be an appendix of the 2015 AEMP Annual Report) • Monitoring of fish habitat has also been integrated into the annual AEMP

Commitment Description	Documents/ Public Hearings	Commitment Status
		• 2013 Downstream Flow and Fish Passage Supplemental Monitoring Report submitted to MVLWB March 31, 2014 • DSFM plan was included as part of the OWMP V.6. • Provided DSFM project update to DFO in 2017, 2018 and 2019 • DFO also conducted site visit on the DSFM project in fall 2019 **Status:** Commitments implemented. Work under the approved plans is ongoing.
The operational monitoring [Flow Mitigation] plan will include details regarding scenarios about consecutive dry or wet years to develop operational protocols that De Beers will follow to provide protection to the downstream fish populations. These protocols will be developed in consultation with regulators.	Information request response to DFO (PR#285 p. 2-1-2)	• Draft Gahcho Kué Operational Downstream Flow Mitigation Plan – October 2014 • Downstream Flow Mitigation Plan ***Latest Version:*** V. 2 – Nov 2013 ***Version history:*** V. 1 – June 2012 • In 2015, the Project was still in the construction phase, which included dewatering activities to Area 8, and therefore, the downstream flow mitigation (i.e., supplemental pumping of flow downstream of Kennady Lake) was not initiated. • To further inform and refine the Downstream Flow Mitigation Plan, monitoring was conducted in 2015 downstream of Area 8. The results of this monitoring will be reported in the 2015 Downstream Flow and Fish Passage Supplemental Monitoring Report (in progress; expected to be an appendix of the 2015 AEMP Annual Report) • Monitoring of fish habitat has also been integrated into the annual AEMP • 2013 Downstream Flow and Fish Passage Supplemental Monitoring Report submitted to MVLWB March 31, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to utilizing in situ flocculation and other applicable best management practices to minimize the risk of sediment-laden water affecting downstream habitats.	Technical report response to DFO (PR#352 p. 6)	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 • Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version***: V.6.2. ***Version history***: V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Dyke and Containment Facility Design, Construction, and Monitoring		
A geotechnical investigation program (planned for February/March 2013) will obtain additional information on all the planned dyke alignments. Ground thermal conditions will be collected as part of this program.	Technical report response to NRCan (PR#340 p. 2)	• Dyke A As-Built Report – August 2015 • Dyke A Final Detailed Design V. 2 - September 2014 • Final Detail Design Plans – Dyke (B, D, E, F) and Perimeter Berm A1 – **Latest Version**: V. 2 - April 2017 ***Version history***: May 2015. ***Approved:*** July 10 2017: • Final Detail Design Plans – Dyke A1, G, H, I, J, K, and L – ***Latest Version***: V. 4 – April 2017. ***Version history*** – V. 3 – February 2015, V. 2-December 2014, V. 1 - October 2014 **Status:** Commitments implemented.
Upon completion of the geotechnical program mentioned above, De Beers will develop detailed designs for the planned dykes. The detailed design will be undertaken in accordance with the Canadian Dam Association Guidelines. None of the dykes planned rely on permafrost conditions for long-term containment although and thermal analysis will be carried out for dykes that will be constructed on permafrost foundations. The detailed design for each dyke will consider all input parameters as well as a review of potential effects of changing climate conditions.	Technical report response to NRCan (PR#340 p. 2)	• Dyke A As-Built Report – August 2015 • Dyke A Final Detailed Design V. 2 - September 2014 • Final Detail Design Plans – Dyke (B, D, E, F) and Perimeter Berm A1 – **Latest Version**: V. 2 - April 2017 ***Version history***: May 2015. ***Approved:*** July 10 2017: • Final Detail Design Plans – Dyke A1, G, H, I, J, K, and L – ***Latest Version***: V. 4 – April 2017. ***Version history*** – V. 3 – February 2015, V. 2-December 2014, V. 1 - October 2014 ***Approved:*** July 10 2017: **Status:** Commitments implemented.
De Beers will develop monitoring plans to monitor the thermal performance and stability of dyke foundations to determine mitigations as required.	Technical report response to NRCan (PR#340 p. 3)	• Dyke A As-Built Report – August 2015 • Dyke A Final Detailed Design V. 2 - September 2014 • Final Detail Design Plans – Dyke (B, D, E, F) and Perimeter Berm A1 – **Latest Version**: V. 2 - April 2017 ***Version history***: May 2015. ***Approved:*** July 10 2017: • Final Detail Design Plans – Dyke A1, G, H, I, J, K, and L – ***Latest Version***: V. 4 – April 2017. ***Version history*** – V. 3 – February 2015, V. 2-December 2014, V. 1 - October 2014 ***Approved:*** July 10 2017: **Status:** Commitments implemented.
De Beers will develop a monitoring plan for the processed kimberlite facility to assess the condition and stability of the pile and to determine the need for mitigation should there be instability or deformation of the cover affecting the performance.	Technical report response to NRCan (PR#340 p. 3)	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version***: V.6-Mar 2018. ***Version history***: V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018 **Status:** Commitments implemented.
• Wildlife		
De Beers is committed to using a collaborative approach – with communities and regulators – in developing the Wildlife Effects Monitoring Plan (WEMP).	Undertakings and Commitments from Technical Meeting (PR#216 p.3)	• Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version*** **history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved***: Mar 31, 2022 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will provide Environment Canada with results of the 2013 field investigation to determine the species and density of nesting birds in the area that will be flooded and to identify potential areas for targeted shrub removal outside of the nesting season and provide an updated assessment of the feasibility of shrub removal and use of deterrents to reduce attractiveness of the area for nesting birds.	Technical report response to EC (PR#348 p. 7)	• De Beers met with EC to discuss nest mitigation in the spring of 2015 and provided all requested information. • De Beers met with Aboriginal Parties and with Ni Hadi Xa throughout 2015 and discussed nest and bird mitigation plans. • Migratory Bird Nest Management Plan ***Latest Version:*** June 2015 ***Approved:*** July 2015 • A summary of nest mitigation measures is provided in the Annual Wildlife Report submitted each March. **Status:** Commitments implemented. Work under the approved plans is ongoing.

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers commits to providing Environment Canada with a plan to avoid the incidental take of nest and eggs from flooding of terrestrial habitat.	Technical report response to EC (PR#348 p. 8)	• Migratory Bird Nest Management Plan ***Latest Version:*** June 2015 ***Approved:*** July 2015 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to including surveys of water bird use of collection ponds and the water management pond (WMP) as part of the Wildlife Surveillance Monitoring. De Beers commits to reporting the results of this survey annually. De Beers commits to notifying Environment Canada of any injuries or mortalities to migratory birds.	Technical report response to EC (PR#348 p. 8)	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Annual Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers has committed to implementing an upland bird monitoring program as outlined in the Wildlife Effects Monitoring Program.	Technical report response to EC (PR#348 p. 8)	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Wildlife Annual Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers agrees that if species at risk or their nests and eggs are encountered during project activities or monitoring programs, the primary mitigation measure for each species should be avoidance. The species-specific nest setback distances recommended by Environment Canada will be used to determine zones of avoidance. Monitoring will be undertaken to ensure that mitigation measures are successful and the results of monitoring will be provided to the relevant agency and De Beers will ensure that mitigation and monitoring strategies are consistent with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the project and should consult with GNWT and Environment Canada on adaptive management strategies should they be required. In instances where an at risk avian species nests within the established Project footprint and the setback distances specified cannot be met, nest-specific guidelines and procedures will be developed in consultation with Environment Canada to protect the nest.	Technical report response to EC (PR#348 p. 9)	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Annual Wildlife Report submitted each March **Status:** Commitments implemented. Work under the approved plans is ongoing.
Flight paths other than take-offs, landings and specific monitoring studies will be above 650 m. Normal flight operations will discourage excessive hovering or circling below these altitudes and pilots will be informed of the mitigations.	Technical report response to EC (PR#348 p. 10)	• Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers committed to monitoring of the zone of influence (ZOI) in the WEMP submitted to the public registry on October 4, 2012	Technical report response to GNWT (PR#346 p. 3)	• Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to additional discussions with the GNWT on (a) caribou monitoring program collaboration; and (b) the regional wolf monitoring program and wolf predation study as it relates to the Bathurst herd.	Technical report response to GNWT (PR#346 p. 3)	• De Beers provided support for GNWT Wildlife Programs in 2013, and 2014. Funds were directed towards caribou and wolf monitoring programs. • De Beers contributed $10,000 in 2015 to augment funding from the Northwest Territories Cumulative Impact Monitoring Program specifically to develop Bathurst caribou winter range resource selection function models. • De Beers participated in the Zone of Influence Task Team facilitated by the GNWT, ENR in 2016 and 2017 • De Beers provided review and feedback to ENR's Bathurst Caribou Range Plan Discussion Document in 2017 De Beers collaboratd with ENR and the Univeristy of Northern British Columbia in 2018 and 2019 to establish a research project into the interaction between caribou and industrial features. **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will continue to work with GNWT, communities and Aboriginal governments to address potential wildlife mortalities, harvest and other issues that may arise on the Project Winter Access Road.	Technical report response to GNWT (PR#346 p. 4)	• Wildlife Winter Road Monitoring Memorandum in January 2014 that was revised and submitted to MVLWB in February 2014. No triggers occurred in 2015, so no reporting was completed in 2015 (confirm). • Wildlife and Wildlife Habitat Protection Plan (WWHPP), ***Latest Version:*** V.3.1 - Oct 2014 ***Version history:*** V.3 – Sep. 2014; V.2 – May 2014; V.1 – May 2013, ***Approved:*** Sep 10, 2014 • Wildlife Effects Monitoring Program (WEMP), ***Latest Version:*** V.2 - May 2014, ***Version* history:** V.1 – May 2013, ***Approved:*** Memorandum of Understanding signed with the GNWT, Sep 2014 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 • Continued field and logistics support to NHX's TK monitoring program on wildlife monitoring at Winter Spur Road. **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to working with GNWT-ENR to develop an MOU for collaborating on the development and operation of check stations along the Project Winter Access Road and the development of public education programs and materials that emphasize respect for caribou and hunter excellence.	Technical report response to GNWT (PR#346 p. 4)	• Memorandum of Understanding signed with the GNWT September 24, 2014 • De Beers actively participated in discussions with the Indigenous Parties and Government regarding use of the winter road by members of the public and continues to collaborate with all parties to ensure the safety of all users. **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers commits to discuss opportunities to coordinate the timing for reporting monitoring and adaptive management results with the GNWT and Aboriginal groups.	Technical report response to GNWT (PR#346 p. 4)	• **Status:** Commitments implemented.

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers is committed to incorporating the lessons learned at other mines in the design and operation of the Project, which includes the mitigation and management policies and practices at the Snap Lake Mine.	Information request response to GNWT (PR#162 p.2-3)	• Addressed within each of the Environmental Monitoring and Management Plans **Status:** Commitments implemented.
• Socio Economic		
Regardless of the number of NWT resident employees it hires, De Beers is committed to working with all of the affected communities to improve their participation in the employment opportunities throughout the entire life of the Project.	Information request response to TG (PR#175 p.32-7)	• Socio-economic Report released annually Q3. • IBA Committees were established with Aboriginal Communities **Status:** Commitments implemented.
De Beers is committed to assisting those working at the mine sites who have a below Grade 12 education to work towards obtaining their GED so that they may further their careers.	Information request response to TG (PR#175 p. 37-4)	• Socio-economic report released annually Q3 **Status:** Commitments implemented.
De Beers is committed to the continued involvement of Community Monitors for both water and terrestrial monitoring programs. De Beers anticipates that based on community visits, that Community Monitors are available. However, if qualified persons are not identified for future programs, De Beers will consider the need for training.	Information request response to DKFN (PR#167 p.47-1)	• De Beers collaborated with Aboriginal Parties in 2015 to establish Ni Hadi Xa (NHX). NHX hired a full time on-site Environmental Monitor. This Environmental Monitor participates in all environmental programs on site as a representative of Ni Hadi Xa. The Environmental Monitors Annual Report will be posted to the Ni Hadi Xa website in mid-2016. • Ni Hadi Xa also hired a full-time and a part-time Traditional Knowledge Monitor in 2015. • De Beers hired Aboriginal monitors to participate in several environmental programs in 2015 including bird deterrent programs, vegetation clearing, freshet management, archaeology, the fish-out and several other field based programs. • Socio-economic Report released annually Q3. Ni Hadi Xa hired a Traditional Knowledge administrative assistant in 2018 to assist with reporting, safety, and team management. De Beers has continued to host Ni Hadi Xa staff at the mine site, including the traditiaonl monitors and supports their work monitoring the land around the mine. In 2018 Nadi Xa provided additional training for NHX employees and community members into wildlderness first aid and traditional monitoring. De Beers continues to support these programs. **Status:** Commitments implemented.
De Beers has committed to providing funding to the NWT Mine Training Society (MTS) in partnership with the GNWT and other NWT industry organizations to enable the continued operation of the MTS into 2012 and 2013 and the development of the Northern Minerals Workforce Development Strategy.	Information request response to GNWT (PR#162 p.8-6)	• Socio-economic Report released annually Q3. **Status:** Commitments implemented.
De Beers is committed to establishing a relationship based on mutual respect, trust, good faith, active partnership, commitment and certainty with the NSMA so that training, employment and business opportunities are made available to the NSMA.	Information request response to NSMA (PR#159 p.002-2)	• Socio-economic Report released annually Q3. • IBA Committee established for the NSMA to discuss training, employment, and business opportunities. **Status:** Commitments implemented.
During the life of the Project, De Beers commits to supporting training positions at the Project. These will include apprenticeships, trades training positions and the development of professional occupations. The company will assess where these placements will occur as part of its annual business planning process. De Beers will report annually regarding the number of current and cumulative placements in these training positions by hiring priority.	Technical report response to GNWT (PR#346 p. 6)	• Socio-economic Report released annually Q3. • Training positions to be initiated upon commercial production **Status:** Commitments implemented.
De Beers is committed to meet with communities, governments and others to discuss the hiring and retention challenges the company is facing and to identify through collaboration, opportunities to work together to address such challenges, rather than to report on the NWT resident employees who resigned, were laid off, fired or otherwise terminated in the previous year.	Technical report response to GNWT (PR#346 p. 14)	• De Beers participated in a meeting with GNWT (August 6, 2015) to discuss hiring and retention challenges and approaches for general contractors • De Beers met with Aboriginal Parties throughout the 2015 including hosting a series of community visits, site visits, and attending various meetings. • Socio-economic Report released annually Q3. **Status:** Commitments implemented.
De Beers will report annually on the purchases of goods and services through or from NWT and Aboriginal Businesses. This reporting will be in the same format the company currently reports for the Snap Lake Mine.	Technical report response to GNWT (PR#346 p. 14)	• Socio-economic Report released annually Q3. **Status:** Commitments implemented.
De Beers will publicly report its results [of the socio-economic follow-up program defined by the a socio-economic agreement between GNWT and De Beers] each year, and will distribute the report to the GNWT and to the communities in the Local Study Area.	Technical report response to GNWT (PR#346 p. 15)	• De Beers signed a Socio-Economic Agreement with the GNWT in June 2013. The Agreement is being implemented and is in progress • Socio-economic Report released annually Q3. **Status:** Commitments implemented.
De Beers commits to work with the Tlicho Government and with the Tlicho Community Services Agency on adaptively managing opportunities in the area of health, education and social services that enhance the ability of Tlicho citizens to participate successfully in the Project.	Technical report response to TG (PR#342 p. 5)	• De Beers participated in the quarterly Kwe Beh Working Group throughout 2015. • Socio-economic Report released annually Q3. **Status:** Commitments implemented.
De Beers remains committed to providing opportunities over the life of the Project for the incorporation of Traditional Knowledge through site visits and workshops, through ongoing community engagement, in monitoring programs, developed with the input of communities, and through Traditional Knowledge Studies undertaken by communities with the support of De Beers.	Technical report response to YKDFN (PR#345 p. 10)	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • De Beers hosted Aboriginal Parties at the mine site during the spring and summer of 2015, 2016, and 2017. • De Beers collaborated with Aboriginal Parties through Ni Hadi XA in 2015 on strategies for environmental management and monitoring. Specific examples include engagement on nest management strategies, bird deterrent strategies, caribou monitoring work and the fish-out. • De Beers funded Ni Hadi Xa in the development of a Traditional Knowledge Framework, led by LKDFN, and finalized in 2017. • De Beers sought input throughout 2017 through a workshop (December 12, 2017) and at various meetings into potential placement options for additional mine rock expected during the life of mine. **Status:** Commitments implemented.
• Transport		
De Beers will be seeking a Proclamation of exemption under Section 23 of the Navigable Waters Protection Act. De Beers will notify Transport Canada in writing that it will apply for a Proclamation of exemption, and include all of the necessary information required to support the Proclamation of exemption.	Technical report response to Transport Canada (PR#341 p. 3)	• The application was submitted and confirmation of the application package was completed was received. **Status:** Commitments implemented.
• Closure		

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers will commit to working together with Aboriginal authorities in the development of the closure plan.	Technical report response to TG (PR#342 p. 7)	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers commits to applying available technologies or management practices (e.g., appropriately sized and designed screens on the intake in Lake N11, consistent with that described in the Freshwater Intake End-of-pipe Fish Screen Guideline), and to following recommended guidelines during closure to limit the potential for fish species and life stages from entering Kennady Lake during refilling until it is demonstrated that the lake can support fish.	Technical report response to DFO (PR#352 p. 7)	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history*:** V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time **Status:** Commitments implemented.
De Beers commits to developing a revegetation plan for riparian and aquatic vegetation as part of the interim closure and reclamation plan for Kennady Lake. The details of the plan will be developed in consultation with DFO and would include opportunities for early implementation. Monitoring of the reestablishment of aquatic vegetation in the refilled lake will also be included as part of the AEMP.	Technical report response to DFO (PR#352 p. 8)	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
• Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments		
De Beers to provide the 2014 winter (late season ice and flow conditions at the lake outlets) fieldwork information by May 31, 2014 (provide addition baseline information).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 1	• Information submitted to MVLWB in June 2014 • Also, see Gahcho Kué Project Baseline Synthesis Aquatic Environment submitted to MVLWB on Feb. 19, 2014 **Status:** Commitments implemented.
De Beers to develop EQC for water quality for Area 8 (such as exists for N11 already). To be provided on or before March 27, 2014 for review prior to submissions for Public Hearing.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 2	• Final EQC defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8) **Status:** Commitments implemented.
De Beers to submit the 2014 updated water quality model predictions for operations on or before March 1, 2014, and evaluate the validity of the existing EQC values.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 3	• Submitted on March 5, 2014 **Status:** Commitments implemented.
De Beers committed to meeting with any concerned parties regarding the equations in the EQC report to provide further clarification (Proposed meeting – Feb 12, 2014, 12:30-1:15).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 4	• De Beers' consultants met with Parties on February 12, 2014 at Technical Sessions and submitted a follow-up Technical Memorandum on February 24, 2014 **Status:** Commitments implemented.
De Beers commits to stockpiling rock classified as PAG (rock with >0.1 weight percent total sulphur) to be deposited in the pits if volumes exceed the capacity to be placed 15 m within the waste rock pile as a contingency.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 5	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*:** V.6-Mar 2018. ***Version history*:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018 **Status:** Commitments implemented.
De Beers commits that Non-PAG rock will not be placed before test results are received to confirm materials are Non-PAG. This will be included in the operation procedures for construction material (IR # 9).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 6	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 **Status:** Commitments implemented.
De Beers commits to providing a detailed Standard Operating Procedure for placement of rock during operations - This will appear in the Geochemical Characterization Plan Update.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 7	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Standard Operating Procedure **Latest Version:** V. 2.1 – May 2017 **Version history** V. 1 approved October 2014. • Status: Commitments implemented.
De Beers commits to constructing field test cells during operations to confirm the geochemical properties of the mined materials (details to be determined and submitted under the Geochemical Characterization Plan Update).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 8	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Field test cell was constructed in Dec 2018 **Status:** Commitments implemented.
De Beers commits to reviewing options for storing overburden (need to identify areas where overburden can potentially be stockpiled) and to incorporating this material into their reclamation and closure planning where appropriate.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 9	• De Beers to submitted a Technical Memorandum on overburden storage to MVLWB in March 2014 – Completed, submitted on March 4, 2014 • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers commits to listen and have an open conversation with Aboriginal communities about preferences regarding re- vegetation of mine rock piles.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 10	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers commits to participating in a Closure and Reclamation Working Group.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 11	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers will confirm the cover characteristics on the figures submitted in the presentation (Coarse PK vs. Fine PK).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 12	**Status:** Completed, submitted March 13, 2014
De Beers commits to providing source terms and modeling inputs for fine PK as presented in EIS supplement 8.2 2012.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 13	**Status:** Completed, submitted Feb. 24, 2014
De Beers commits to gather and provide existing information on best management practices for reclamation (specific to vegetation restoration and vegetation trials).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 14	**Status:** Completed, submitted March 2014

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers commits to confirm and provide the reference to tables in the EIS comparing baseline and expected post-closure Water Quality in Kennady Lake.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 15	**Status:** Completed, submitted Feb. 24, 2014
De Beers commits to update the Closure and Reclamation Plan to reflect the suggestions (1-3) outlined in the MVEIRB Report of EIR.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 16	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers commits to providing a reference for information provided during the EIR process regarding pit wall stability and meromixis of pit lakes by February 13, 2014 (De Beers has missed the deadline, but commits to providing this information by February 24, 2014).	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 17	**Status:** Completed, submitted meromixis of pit lakes references February 24, 2014, and pit wall stability references February 28, 2014
De Beers commits to submitting the Aquatic Effects Monitoring Program Synthesis report of baseline data by February 19, 2014.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 18	• Gahcho Kué Project Baseline Synthesis Aquatic Environment submitted to MVLWB on Feb 19, 2014 **Status:** Commitments implemented.
De Beers will amend the Land Use Permit to include the Winter Access Road and will include quarry locations for winter road upgrades by March 3, 2014.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 19	**Status:** Completed, submitted March 7, 2014
De Beers to address the MVLWB comments in the next iteration of the Engagement Plan.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 21	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • Commitment: Completed
De Beers to integrate the Emergency Response Plan into the Spill Contingency Plan.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 22	• Emergency Response and Spill Contingency Plan (ERSCP). ***Latest Version:*** V.3.2–Jan 2018. ***Version history:*** V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented.
De Beers to submit Construction Design Memorandum for Dyke A by March 1, 2014.	Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Commitments – Commitment ID 23	**Status:** Completed, submitted March 11, 2014
• Gahcho Kué Project Technical Sessions (February 11 to 13, 2014) Transcripts Commitments		
De Beers commits to undertaking vegetation trails to determine relative success of the effort and to inform best management practices	Gahcho Kué Project Technical Sessions Transcript (February 12, 2014)	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers intend to use a three (3) year cycle for its incinerator stack testing	Gahcho Kué Project Technical Sessions Transcript (February 13, 2014)	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
• Gahcho Kué Project Intervention Responses (April 14, 2014) Commitments		
De Beers agrees to submit a Dyke Construction Plan and Management Plan sixty (60) days prior to commencement of the dyke construction activities.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_1	• Dyke A Construction and Management Plan ***Latest Version:*** V. 3 - October 2014 ***Version history:*** V. 2 – Sept. 2014; V. 1 – June 2014 ***Approved:*** October 22, 2014 • Dyke Construction Management Plan Dykes B, D, E, and A1 Perimeter Berm ***Latest Version:*** V. 2 April 2017 ***Version history*:** V. 1 - October 2015 ***Approved:*** July 10, 2017 • Dyke Construction Management Plan Dykes A1, F,G, F, H, I, J, K, and L. ***Latest Version:*** V. 3 – April 2017 **Version history:** V. 2 – May 2015; V. 1 - March 2015 ***Approved:*** July 10, 2017 **Status:** Commitments implemented.
De Beers agrees to separate the previously submitted Water Management Plan into three components, including a Construction Water Management Plan, an Operational Water Management Plan, and a Closure Water Management Plan.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_2	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version*:** V.6.2**. *Version history*:** V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • AEMP and SNP and groundwater data summarized in AEMP and Water License Annual reports **Status:** Commitments implemented.
De Beers agrees to separate the previously submitted Erosion and Sediment Management Plan into three specific plans for the different phases of the Project: Construction, Operations, and Closure.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_6	• Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers agrees to undertake a survey to develop a site-specific relationship between turbidity and TSS.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_11	• Dyke A Construction and Management Plan ***Latest Version:*** V. 3 - October 2014 ***Version history:*** V. 2 – Sept. 2014; V. 1 – June 2014 ***Approved:*** October 22, 2014 **Status:** Commitments implemented.
De Beers will update the Incinerator Management Plan (IMP) based on comments received, and commitments made, during the permitting process.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_14	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
If waste oil is to be recycled for this use, De Beers will comply with the requirements of NWT Used and Waste Oil regulations, which includes evaluation of testing data for various constituents (which may include halogens, trace metals, flash point) using standard analytical practices to determine its potential for use; this detail will be incorporated into the Hazardous Materials and Waste Management Plan.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_16	• Waste Management Plan. ***Latest Version:*** V.5.5-Apr 2019. ***Version history***: V.5.4-Mar 2019; V.5.3-Nov 2017. V.5.2–Aug 2017, V.5-Oct 2015; V.4–Mar 2015; V.3–Sep. 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved***: Jan 11, 2018 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers is committed to continuing to participate in a working group on the AEMP to allow for ongoing feedback and refinement, which may be a group under Ni Hadi Yati.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_28	**Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will address the deficiencies associated with the quantity of baseline data by collecting additional data to support the new BACI study design proposed for the AEMP.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_31	• Golder. 2014a. Gahcho Kué Project Synthesis of Baseline information for the Aquatic Environment. 12-1365-0018/DCN-190. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada.

Commitment Description	Documents/ Public Hearings	Commitment Status
		• Golder. 2014b. 2013 Supplemental Monitoring Report – Water Quality and Sediment Quality – Core, Reference, and Raised Lakes. 12-1365-0018/DCN-192. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. • Golder. 2014c. 2013 Plankton Supplemental Monitoring Report. 12-1365-0018/DCN-203. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. • Golder. 2014d. 2013 Benthic Invertebrate Supplemental Monitoring Report. 12-1365-0018/DCN-197. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. • Golder. 2014e. 2013 Fish Health Supplemental Monitoring Report. 12-1365-0018/DCN-198. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. • AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
De Beers proposes to conduct baseline plankton sampling for June, July, and August to support the proposed study design.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_31	• Golder. 2014c. 2013 Plankton Supplemental Monitoring Report. 12-1365-0018/DCN-203. Prepared for De Beers Canada Inc., Yellowknife, NWT, Canada. • AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
On Day 2 (February 12, 2014) of the Technical Session, De Beers committed to participating in a Closure and Reclamation working group (Commitment #9).	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_36	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
Ongoing investigation and research will be undertaken through the life of mine on mechanisms to enhance meromixis in the Tuzo Pit during the refilling of Kennady Lake.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_38	• Construction Water Management Plan (CWMP). ***Latest Version:*** V.6–Mar 2016. ***Version history***: V.5 - Feb 2015; V.4–Oct 2014; V.3–Sep 2014; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Apr 18, 2016 • Operational Water Management Plan (OWMP). ***Latest Version***: V.6.2**.** ***Version history***: V.5.–Mar 2018, V.4–Apr 2017, V.3–Apr 2017; V.2–Jul 2016, V.1-Apr 2016. ***Approved***: Jun 28, 2021 • Closure Water Management Plans (to be developed) supported by AEMP, SNP, and groundwater monitoring completed over time • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • ICRP contains Reclamation Research Plan (Appendix E) which proposes research into methods to enhance the chemocline in Tuzo Pit (Section 4.1) **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers is committed to working with Aboriginal Parties and regulatory agencies on the development of closure goals, objectives, and criteria as part of their Interim Closure and Reclamation planning process.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to ENR_39	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • De Beers participated in an NHX hosted workshop on closure on February 25 and February 26, 2016. • De Beers met with YKDFN and presented ICRP V.2 on January 21, 2016 • De Beers circulated the draft ICRP V.2 to Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff on February 17, 2016. • De Beers hosted a closure workshop on March 2, 2016 for Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff. The draft ICRP V.2 was presented. Meeting notes were taken and were used to revise the Plan prior to submission of ICRP V.3 to the Board July 2016. • De Beers presented the ICRP V.3 at a MVLWB hosted Technical Workshop on October 7, 2016 and responded to all reviewer comments through the MVLWB administered public review. **Status:** Commitments implemented.
Total Petroleum Hydrocarbons (TPH) as an EQC for discharge to Lake N11 and Area 8.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_3.1	• Final EQC, including total petroleum hydrocarbons, defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers committed to conducting chronic toxicity testing at the end-of-pipe, and using a tiered approach where samples from the edge of the mixing zone if the end-of-pipe sample indicated a concern.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_3.2	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 • Chronic toxicity testing reported in Appendix A and B of the WLAR. **Status:** Commitments implemented. Work under the approved plans is ongoing.
As shown in Tables 9.2-1 and 9.3-1 of the Conceptual AEMP Design Plan, water and sediment quality samples will be tested for mercury.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_3.5	• AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers accepts this recommendation and will update the draft Spill Contingency Plan accordingly.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_3.8	• Emergency Response and Spill Contingency Plan (ERSCP). ***Latest Version:*** V.3.3–May 2019. ***Version history:*** V.3.2–Jan 2018; V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014

Commitment Description	Documents/ Public Hearings	Commitment Status
		Status: Commitments implemented. Work under the approved plans is ongoing.
De Beers propose that an update of the ongoing investigations and research be provided back to the MVLWB on a three-yearly basis.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_3.9	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers supports the recommendation to not incinerate sewage or sewage sludge in the revised Incineration Management Plan.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_4.1	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers supports the recommendation to complete stack emission testing for all incinerators.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to EC_4.1	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers supports the recommendation to update the definitions to reflect the recent changes in devolution if these are to be addressed in the license.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to DKFN_6	**Status:** Commitments implemented. Work under the approved plans is ongoing.
The meters will be validated periodically on site and recalibrated if necessary.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to DKFN_7	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. • AEMP Design Plan, ***Latest Version***: V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented. Work under the approved plans is ongoing.
All final drawings in the As-built report will be stamped by a Professional Engineer.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to DKFN_13	**Status:** Commitments implemented.
De Beers agrees to re-evaluate the classification and need for a dam safety review throughout the Project.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to DKFN_23	• Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will perform weekly inspections of structures designed to withhold, retain, or divert Water or Waste, which will be carried out on-site personnel, as directed by a Professional Engineer.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to DKFN_24	• Erosion and Sediment Management Plan ***Latest Version:*** V. 4 - October 2014 ***Version history:*** V. 3 – Sept. 2014; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** October 22, 2014 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will be undertaking sublethal (chronic) toxicity testing of water to be discharged as part of the SNP monitoring.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_4	• SNP provided as Annex A to the Water Licence (MV2005L2-0015) - Sept 24, 2014 and subsequent updates. **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers has agreed to include total petroleum hydrocarbons as a parameter with regulatory limits.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_5	• Final EQC, including total petroleum hydrocarbons, defined in the Type A Water Licence (MV2005L2-0015) Part G Items 30 (Lake N11) and 31 (Area 8). **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers agrees to submit a reclamation research plan within six (6) months of the issuance of the Type A Water Licence and Land Use Permit.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_7	• A draft Reclamation Research Plan (RRP) was distributed to governments, regulators, and Aboriginal Parties as part of the ICRP V.2 for their review on February 17, 2016. It was discussed at the NHX closure workshop February 25-26, 2016. The RRP was presented and discussed at the Gahcho Kué Closure Workshop held on March 2, 2016 in Yellowknife. De Beers attended and presented the RRP again at a Technical Workshop hosted by the MVLWB on Oct.7. 2016. • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers agrees to continue engagement with Aboriginal Parties and regulatory agencies on closure planning and to this end has agreed to host a closure workshop at the Gahcho Kué site in 2014.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_7	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • Closure Workshop hosted by De Beers in Yellowknife September 24, 2014 (preferred location by all parties). Focus on Objectives. **Status:** Commitments implemented. Work under the approved plans is ongoing.
De Beers will follow the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories November 2013 (CRP Guidelines).	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_7	• Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **Status:** Commitments implemented.
De Beers has committed to working with Aboriginal Parties and regulatory agencies on the development of closure goals, objectives, and criteria as part of their Interim Closure and Reclamation planning process.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to YKDFN_7	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015 • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version***: V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • Closure Workshop hosted by De Beers in Yellowknife September 24, 2014 (preferred location by all parties). Focus on Objectives. • De Beers participated in an NHX hosted workshop on closure on February 25 and February 26, 2016.

Commitment Description	Documents/ Public Hearings	Commitment Status
		• De Beers met with YKDFN and presented ICRP V.2 on January 21, 2016 • De Beers circulated the draft ICRP V.2 to Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff on February 17, 2016. • De Beers hosted a closure workshop on March 2, 2016 for Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff. The draft ICRP V.2 was presented. Meeting notes were taken and were used to revise the Plan prior to submission of ICRP V.3 to the Board July 2016. • De Beers presented the ICRP V.3 at a MVLWB hosted Technical Workshop on October 7, 2016 and responded to all reviewer comments through the MVLWB administered public review. • De Beers participated in an MVLWB-hosted ICRP technical workshop on Criteria on December 13, 2017. • De Beers worked through the MVLWB workplan for additional review of ICRP V.3 in sections throughout 2017. **Status:** Commitments implemented.
De Beers plans to construct and operate the Mine in a safe and sustainable manner.	Gahcho Kué Project Intervention Reponses (April 14, 2014) – Response to NSMA_5	• Updated Project Description submitted to MVLWB in Nov 2013, Mar 2018 and Mar 2020 • Refer to applicable Monitoring and Management Plans **Status:** Commitments implemented.
Aquatic Effects Monitoring Program		
De Beers will continue to consider Environmental Effects Monitoring (EEM) guidance when developing the AEMP further, and will take into account potential changes to EEM regulations relevant to AEMP study design.	December 11, 2014 MVLWB Review Process; MVLWB (2014) ID 6	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Commitment #1 - We will work with YKDFN to ensure their TK is also addressed	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #1: De Beers will add some wording to the AEMP Design Plan to address TK monitoring related to the YKDFN.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #2: De Beers to draw-up a revised water quality action level that will address EIS predictions for circulation with meeting notes.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #3: The% change in toxicity endpoints considered to be an effect will be specified in the AEMP.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #4: De Beers to add text to the AEMP to indicate it will assess effects with a holistic or weight-of-evidence approach to look at the bigger picture. De Beers will be using a suite of factors, rather than particular parameters/ exceedance in isolation in its annual review of AEMP results.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #5: De Beers will add Simpson's diversity index to the Low Action Level as an additional variable for all benthic invertebrate action levels.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Follow-up Item #6: Distribute published journal article on development of the Normal Range to the AEMP Workshop Attendees.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Workshop April 8, 2015 (AEMP Design Plan Appendix A) **Status:** Commitment: Completed
Follow-up Item #7: De Beers will check the AEMP Design Plan text to make sure the definition of Normal Range clearly indicates where seasonality will be included.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version:*** V.6.3 - Jan 2022. ***Version history:*** V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 18, 2022 **Status:** Commitments implemented.
Follow-up Item #8: De Beers to add an appendix to the AEMP Design Plan with the power analysis.	AEMP Workshop April 8, 2015 (Appendix A)	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
De Beers will reference the Board's Reasons for Decision (Appendix 1, the Detailed EQC Reasons) for a description of the final water quality objectives adopted by the Board for Lake N11 and Area 8.	June 30, 2015 MVLWB Review Process; IR MVLWB #4	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
De Beers will add sampling of the top 1 cm of the sediment at an SNP diffuser station in each of Lake N11 and Area 8. Sampling of the top 1 cm will be conducted at the stations near the diffusers to provide early warning data for potential changes in sediment quality	June 30, 2015 MVLWB Review Process; IR MVLWB #5	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
The low action level for fish consumption by humans will be revised to address metals in large-bodied fish collected as part of the community fish tasting surveys. The summary tables will be updated to reflect this change. The low action level for the Fish Consumption by Humans will be revised to include "OR Metals in edible fish tissue above normal range", with a footnote that explains "edible fish tissue" refers to concentrations in large-bodied fish muscle collected as part of the community fish tasting program. "Metals" includes the typical set of metals analyzed in the AEMP and includes total mercury, to allow comparison to the fish consumption guideline.	June 30, 2015 MVLWB Review Process; IR GNWT #2, #3	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
De Beers will revise Table 8.4-3 to include defined action levels related to fish community for the physical habitat alteration impact hypothesis.	June 30, 2015 MVLWB Review Process; IR GNWT #8	• AEMP Design Plan, ***Latest Version*:** V.7. ***Version history::*** V.6 - Jan 2016. V.5 – Aug 2015; V.4 – May 2015; V.3 – Jun 2014; V.2 – Apr 2014; V.1 – Nov 2013. ***Approved:*** Feb 3, 2023 **Status:** Commitments implemented.
Air Quality and Emission Monitoring and Management		

Commitment Description	Documents/ Public Hearings	Commitment Status
De Beers understands the need for adaptive management of the monitoring programs, acknowledges that the monitoring sites may change as the Project evolves, and will consult with communities on providing their input on monitoring locations.	AQEMMP	• AQEMMP Section 1.4 **Status:** Commitments implemented.
It is De Beers' intent to manage emissions and ground-level concentrations in keeping with the principles of "Continuous Improvement" (CI) and "Keeping Clean Areas Clean" (KCAC), as described in the Canada-Wide Standards for Particulate Matter and Ozone.	AQEMMP	• AQEMMP Section 1.4 **Status:** Commitments implemented.
De Beers has committed to meet the relevant Northwest Territories (NWT) standards that apply to combustion by-products from the Project sources.	AQEMMP	• AQEMMP Section 3.2 **Status:** Commitments implemented.
De Beers will control dust through watering surfaces that have high dust generation potential, by limiting the intensity of certain activities that have the potential to generate significant fugitive dust, and by protecting surfaces that may erode and potentially high dust generation areas from the wind.	AQEMMP	• AQEMMP Section 3.4 **Status:** Commitments implemented.
De Beers will include in the water licence annual report a summary of outcomes from the air quality monitoring program and air emissions data collected during each year.	AQEMMP	• AQEMMP Section 5 **Status:** Commitments implemented.
De Beers will make available the results of the air quality monitoring programs and emissions estimates through public submission of the annual report to AANDC, EC, and GNWT for regional cumulative effects monitoring initiatives.	AQEMMP	• AQEMMP Section 6 **Status:** Commitments implemented.
De Beers is committed to an inclusive and collaborative stakeholder engagement process.	AQEMMP	• AQEMMP Section 7 **Status:** Commitments implemented.
De Beers agreed to stack testing in the draft Air Quality Emissions Management and Monitoring Plan (AQEMMP) and IMP submitted for review in May 2013, and during the MVLWB Type A Water Licence Technical Sessions in February 2014. De Beers proposes that as this commitment is stated in the AQEMMP and IMP, a separate condition for stack testing would not be required in the Water Licence and Land Use Permit.	Gahcho Kué Responses to Interventions to Water Licence Application MV2005L2-0015 & Land Use Permit Application MV2005C0032 (De Beers 2014b, ENR_15)	• AQEMMP Section 3.2 **Status:** Commitments implemented.
De Beers will not be required to monitor for sulphur dioxide emissions from the Project under the AQEMMP.	Follow-up to May 20, 2015 Meeting (GNWT 2015a) and Email correspondence (GNWT 2015b)	• AQEMMP **Status:** Commitments implemented.
De Beers has updated the Action Level Triggering Criteria to reflect meetings and follow-up with the GNWT ENR.	Follow-up to May 20, 2015 Meeting (GNWT 2015a) and Email correspondence (GNWT 2015b)	• AQEMMP Section 4 **Status:** Commitments implemented.
De Beers has included more detail on dustfall monitoring in the AQEMMP.	Email correspondence (GNWT 2015b)	• AQEMMP Section 2.4 **Status:** Commitments implemented.
De Beers has developed a memorandum of understanding (MOU) with Environment and Natural Recourses (ENR) to provide a mutually agreed upon approach for the continued development, implementation, review and revision of the AQEMMP and IMP.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP, and Waste Management Plan Appendix A : Incinerator Management Plan **Status:** Commitments implemented.
De Beers will acquire emissions-producing equipment, which meets the Best Available Technology Economically Achievable (BATEA) principle.	Memorandum of Understanding (GNWT 2015c) and Email correspondence (GNWT 2015b)	• AQEMMP Section 1.4, 3.4 **Status:** Commitments implemented.
De Beers will develop Best Operating Practices and Best Management Practices for emissions generating equipment, for the purposes of emission reductions.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 3.4 **Status:** Commitments implemented.
De Beers will develop an emissions inventory based on appropriate equipment use, with the intention of updating the inventory as operations change on-site.	Memorandum of Understanding (GNWT 2015c) and Email correspondence (GNWT 2015b)	• AQEMMP Section 5 **Status:** Commitments implemented.
De Beers will conduct dispersion modelling as a predictive tool every five years or following significant changes in operations or changes affecting the emissions profile for the site.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 5.1 **Status:** Commitments implemented.
De Beers has developed an air quality monitoring program for use as a management tool, to verify modelled predictions, to measure long-term trends and to trigger mitigative measures.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 2 **Status:** Commitments implemented.
De Beers will establish response planning including data analysis protocols, methods, metrics and criteria against which to measure monitoring results.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 2.6, Section 4 **Status:** Commitments implemented.
De Beers will implement Adaptive Management approaches to revising practices and procedures on site that contribute to emissions.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 1 **Status:** Commitments implemented.
De Beers will develop reporting requirements to summarize and publish the activities and results achieved under the AQEMMP.	Memorandum of Understanding (GNWT 2015c)	• AQEMMP Section 5 **Status:** Commitments implemented.
• Dyke A Construction Management Plan V. 3 (Table 1)		
Commitment 1 Table 5 in Section 4.1 identifies EQC for TSS during dyke construction (15 mg/L Average Monthly Limit (AML) and 25 mg/L Daily Maximum Limit (DML)). Table 6 identifies Action Levels for TSS during dyke construction of 12 mg/L AML and 20 mg/L DML. The CCME provides both short term (24 hour) and long term (24 hour to 30 day) TSS guidelines (CCME 2014). The short term guideline is a maximum increase of 25 mg/L from background levels. The long term guidance is a maximum average increase of 5 mg/L from background levels. The CCME guidelines are based upon changes from background conditions in the receiving water body. The short term EQC and DeBeer's proposed short term action levels are conservative, since they will limit the change from background to 25 mg/L or less. The long term EQC may be appropriate depending upon the dilution behavior within the receiving environment. However, the proposed long term action level appears high for use as an action level within the receiving environment. Depending upon baseline concentrations in Area 7/8, the proposed concentration of 12 mg/L in the receiving environment may represent a change of greater than 5 mg/L. De Beers should provide additional information supporting the proposed long term action level. Recommendation: 1) ENR recommends De Beers provide additional information supporting the selection of 12 mg/L as a suitable action level for use in the receiving environment.	October 16, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Dyke A Construction Management Plan Section 4.1 **Status:** Commitments implemented.
Commitment 2 The process described for comparison to the DML is to calculate an average turbidity at each sampling station using the measured maximum values over the past 24 hours. This turbidity value will be converted to a TSS value. A moving average will be calculated and a value will then be compared to the appropriate DML value. There appears to be some disagreement between this procedure and the statement on page 21, Section 4.1, which states that the action level for the daily maximum limit is a single sample that exceeds the DML TSS concentration. This disagreement may be resolved in Section 4.5 where it appears that a single sample exceeding the DML action levels triggers a certain response and where the 24 hour average TSS exceeding the DML triggers a greater response. However,	October 16, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Dyke A Construction Management Plan Section 4.4.2 **Status:** Commitments implemented.

Commitment Description	Documents/ Public Hearings	Commitment Status
additional clarity should be provided in the text of Section 4.4.2. ENR further notes that per part A.9 of the water Licence, the TSS/turbidity correlation survey is to be completed prior to the start of dewatering. Recommendation Recommendation(s): 1) ENR recommends that De Beers clarify the procedure for ensuring that the DML is met.		
Commitment 3 This figure appears to be missing components and should be corrected. Recommendation: 1) ENR recommends that De Beers provide an updated figure.	October 16, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Dyke A Construction Management Plan Figure 4 **Status:** Commitments implemented.
Commitment 4 To achieve twice/day sampling in daylight during winter months, samplers will basically be limited to dawn/dusk sampling. Will this create any concerns with regards to the data collected (i.e., if sampling occurs at the same time each day, will that data be adequately representative of the worst TSS in any given day of construction)? Recommendation: Just a comment to consider.	October 16, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Dyke A Construction Management Plan Section 4.5 **Status:** Commitments implemented.
• Erosion and Sediment Management Plan V. 4 (Table 1)		
Commitment 1 The requirements of Schedule 5, item 5 are not listed in this concordance table. Recommendation: For ease of reference, the complete requirements for the Erosion and Sediment Management Plan should be included in the concordance table in future V.s of this Plan.	October 19, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Erosion and Sediment Management Plan Table 1 **Status:** Commitments implemented.
Commitment 2 BMP 6 is missing from this table, but is referenced in the text and is present in Appendix A. Recommendation: In future V.s of this Plan, BMP 6 should be included in this table, so that it is clear where BMP 6 could be applied.	October 19, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Erosion and Sediment Management Plan Table 13 **Status:** Commitments implemented.
Commitment 3 The frequency for downstream monitoring of water level, ice depth, and formation of aufeis is not specified in this Plan or in the Construction Water Management Plan. Recommendation: Please clarify the frequency of downstream monitoring during winter pumping.	October 19, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Erosion and Sediment Management Plan Section 4.1 **Status:** Commitments implemented.
Commitment 4 The frequency for inspections of erosion and sediment control/management measures is not specified. Recommendation: Please specify the frequency of inspections. If frequency varies according to the risk being addressed by the measure, specify the frequency for each risk level.	October 19, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	• Erosion and Sediment Management Plan Section 5.2 **Status:** Commitments implemented.
ENR recommends that the Board explicitly require an adaptive management – management response plan for the mine. The plan should include an overarching framework as well as action levels from other specific management plans such as the Geochemistry Monitoring Plan, the Dewatering [Construction Water] Monitoring Plan, the Groundwater Monitoring Plan, the Air Quality Watering – Air Quality Monitoring Plan, and the Wildlife Effects Monitoring Plan, as well as the Wildlife and Wildlife Habitat Protection Plan, Explosive Management Plan, and the Erosion and Sediment Management Plan.	Public Hearing Day 1 Transcripts (May 6, 2014) page 197 to 198	• Explosives Management Plan (EMP). **Latest Version:** V.4-Mar 2017. ***Version history***: V.3-Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Sep 10, 2014, Section 4 • Wildlife Management and Monitoring Plan, V.1.1, Dec 2021, ***Approved*:** Mar 31, 2022 **Status:** Commitments implemented.
Overall, we believe that storing it -- encapsulating it within the mine rock pile, it'll be non-acid-generating. And we'll be monitoring according to the Geochemical Characterization Plan that we put on the record with the Application to ensure that anything that's coming out of the mine rock pile is monitored.	Public Hearing Day 1 Transcripts (May 6, 2014) page 74	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 **Status:** Commitments implemented.
De Beers Canada Inc. to provide to the MVLWB an update to the Standard Operating Procedure for handling of the PAG and Non-PAG rock including placement and volumes in the blocks due May 9, 2014	Public Hearing Day 1 Transcripts (May 6, 2014) page 129	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 **Status:** Commitments implemented.
ENR recommends that the Board explicitly require an adaptive management – management response plan for the mine. The plan should include an overarching framework as well as action levels from other specific management plans such as the Geochemistry Monitoring Plan, the Dewatering Monitoring Plan, the Groundwater Mani -- Monitoring Plan, the Air Quality Watering -- Air Quality Monitoring Plan, and the Wildlife Effects Monitoring Plan, as well as the Wildlife and Wildlife Habitat Protection Plan, Explosive Management Plan, and the Erosion and Sediment Management Plan.	Public Hearing Day 1 Transcripts (May 6, 2014) pages 197 to 198	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 **Status:** Commitments implemented.
The criteria for defining Non-PAG is material with less than 0.1% total sulphur, unless otherwise approved by the Board. The Board may consider other criteria for Non-PAG material if the Licensee demonstrates to the Board's satisfaction that the Non-PAG criteria has minimal potential for Acid Rock Drainage and Metal Leaching, and the Licensee submits a revised Geochemical Characterization Plan for reflect the new criteria. The revised Geochemical Characterization Plan shall be approved by the Board prior to any changes to the Non-PAG criteria.	Water Licence MV2005L2-0015	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 **Commitment:** Completed
De Beers will address revegetation of overburden in the Interim Closure and Reclamation Plan, as required in Part J. of the Water Licence. De Beers has and will continue to engage Aboriginal Parties and Regulators in the development of this Plan. All contemplated uses of overburden should be included as a component of the GCMP. The proponent shall update and resubmit the GCMP to the Board.	December 11, 2014 MVLWB	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • De Beers participated in an NHX hosted workshop on closure on February 25 and February 26, 2016. • De Beers met with YKDFN and presented ICRP V.2 on January 21, 2016 • De Beers circulated the draft ICRP V.2 to Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff on February 17, 2016. • De Beers hosted a closure workshop on March 2, 2016 for Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff. The draft ICRP V.2 was presented. Meeting notes were taken and were used to revise the Plan prior to submission of ICRP V.3 to the Board July 2016. • De Beers presented the ICRP V.3 at a MVLWB hosted Technical Workshop on October 7, 2016 and responded to all reviewer comments through the MVLWB administered public review. **Status:** Commitments implemented.
• De Beers will address revegetation of overburden in the Interim Closure and Reclamation Plan, as required in Part J. of the Water Licence. De Beers has and	December 11, 2014 MVLWB	• Geochemical Characterization Plan. ***Latest Version***: V.4.4-Jun 2021; ***Version history:*** V.4.1-Jan 2019; V.4-Mar 2018; V. 3-

Commitment Description	Documents/ Public Hearings	Commitment Status
will continue to engage Aboriginal Parties and Regulators in the development of this Plan. To ensure consistency through the various plans, the Board recommends that all relevant components be included in each of the plans. • The proponent shall update and resubmit the GCMP to the Board.		Jan 2015; V. 2–Jun 2014; V.1–Nov 2013. ***Approved:*** Jun 28, 2021 • Interim Closure and Reclamation Plan (ICRP) including Reclamation Research Plan (RRP), ***Latest Version*****:** V.4.1 – Mar 2019. ***Version history:*** V.4 – May 2018, V.3 – Jul 2016, V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved*****:** Objectives - Mar 16, 2017, RRP - Sep 14, 2017 • De Beers participated in an NHX hosted workshop on closure on February 25 and February 26, 2016. • De Beers met with YKDFN and presented ICRP V.2 on January 21, 2016 • De Beers circulated the draft ICRP V.2 to Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff on February 17, 2016. • De Beers hosted a closure workshop on March 2, 2016 for Aboriginal Parties, Government, Regulators and NHX Governance Committee members and staff. The draft ICRP V.2 was presented. Meeting notes were taken and were used to revise the Plan prior to submission of ICRP V.3 to the Board July 2016. • De Beers presented the ICRP V.3 at a MVLWB hosted Technical Workshop on October 7, 2016 and responded to all reviewer comments through the MVLWB administered public review. **Status:** Commitments implemented.
And I was wondering if you had considered developing action levels or triggers, or even collecting saline groundwater inputs from active pits and diverting them deliberately into the unactive (sic) pits to improve that as you go, which of course would keep the saline water out of the water management pond and -- and less need to discharge it to the external environment. And, of course, it would also promote your meromixis.	Public Hearing Day 1 Transcripts (May 6, 2014) page 167 to 168	• Groundwater Monitoring Program (GMP). ***Latest Version:*** V.4.1. ***Version history:*** V.4.-Mar 2018, V.3.1-Jun 2015, V.3–May 2015; V.2–Mar 2015; V.1–Nov 2013. ***Approved:*** Jan 22, 2019, Section 7 **Status:** Commitments implemented.
So as noted, we recommend the establishment of pre-defined action levels or triggers and pre-defined alternative monitoring, mitigation, or management actions. We noted yesterday that this could fit as subsections of plans as appropriate. This could feed into the Aquatic Effects Monitoring Plan; the Groundwater Monitoring Plan, notably on the inflow levels; on the seepage monitoring and management, on the seepage quality, Sediment and Erosion Management Plans, Dike Construction and Management Plans, and on the water quality and Kennady Lake rec – reconnection.	Public Hearing Day 2 Transcripts (May 7, 2014) page 28 to 29	• Groundwater Monitoring Program (GMP). ***Latest Version:*** V.4.1. ***Version history:*** V.4.-Mar 2018, V.3.1-Jun 2015, V.3–May 2015; V.2–Mar 2015; V.1–Nov 2013. ***Approved:*** Jan 22, 2019, Section 7 **Status:** Commitments implemented.
Professional Engineer will perform an annual inspection during the summer months, with a full geotechnical inspection report being prepared	Interventions Comment responses, April 2014	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*****:** V.6-Mar 2018. ***Version history*****:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018, Section 7 **Status:** Commitments implemented.
The Permittee shall slope the sides of waste material piles, excavations, and embankments — except in solid rock — to a minimum ratio of 2:1 vertical, unless otherwise authorized in writing by an Inspector	Type A Land Use Permit Gahcho Kué Project (MV2005C0032)	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*****:** V.6-Mar 2018. ***Version history*****:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018, Section 3.2, 3.5, and 3.6 **Status:** Commitments implemented.
The Licensee shall excavate and stockpile any potential Reclamation Materials from within the footprints of the camp infrastructure, roads, West Mine Rock Pile, South Mine Rock Pile, and Open Pits for eventual use during closure and Reclamation. The Licensee will ensure that Seepage and runoff from these materials is managed to prevent release of suspended sediments, Acid Rock Drainage and Metal Leaching to the Receiving Environment.	Type A Water Licence Gahcho Kué Project (MV2005L2-0015)	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*****:** V.6-Mar 2018. ***Version history*****:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018, Section 4 **Status:** Commitments implemented.
De Beers commits to providing a report on the amount of PAG being extracted on an annual basis to monitor the amount that can be stored underwater	Public Hearing Day 1 Transcripts, May 2014	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*****:** V.6-Mar 2018. ***Version history*****:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018, Table 6 **Status:** Commitments implemented.
De Beers Canada Inc. shall adhere to the commitments made in their responses to reviewer comments, including outlined in GNWT-ENR Comment ID-7 and in Tlicho Lands Protection Department comment ID-9 (to update Table 9 in the next revision of the Processed Kimberlite and Mine Rock Management Plan).	June 7, 2017 MVLWB Letter Page 2	• Processed Kimberlite and Mine Rock Management Plan (PKMRMP). ***Latest Version*****:** V.6-Mar 2018. ***Version history*****:** V.5.1–Mar 2017, V. 4–Jun 2016; V.3 - Jan 2015; V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Nov 26, 2018, Section 2.1.2.3 and Section 2.3. **Status:** Commitments implemented.
They include conducting stack testing prior to commissioning, and on regular intervals we've agreed to three (3) years of our incinerator, for dioxins, furans, and mercury. We will also test waste oil and residual ash on a regular basis. And we'll incorporate that into the water -- in our Waste Management Plan.	Public Hearing Day 1 Transcripts (May 6, 2014) page 48 to 49	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014, Section 4.2 and 6.1 **Status:** Commitments implemented.
In the Incinerator Management Plan, the concern was raised by Environment Canada that we shouldn't burn our sewage or sewage sludge. We've agreed that we will not do that. We will store it in our landfill, which is typical -- typical of what Snap Lake is doing. And that, yes, again I'll make the -- say it again, that we will conduct stack testing for Canada-wide standards for dioxins, and furans, and mercury.	Public Hearing Day 1 Transcripts (May 6, 2014) page 49 to 50	• Incinerator Management Plan. ***Latest Version:*** V. 3-Nov 2015. ***Version history:*** V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014, Section 4.2 and 6.1 **Status:** Commitments implemented.
In relation to GNWT-ENR's Review Comment 7, De Beers to supply the raw data in a tabular form that was used to develop the graphs.	Information Requests and Commitments – Responses Required March 2018 Amendment Applications (Jun 1, 2018)	**Status:** Commitments implemented.
De Beers to provide the section of the EIS referenced, as it relates to chronic effects benchmarks related to Copper.	Information Requests and Commitments – Responses Required March 2018 Amendment Applications (Jun 1, 2018)	**Status:** Commitments implemented.
De beers will continue to optimize the sewage treatment plant for performance and effluent quality.	Water Licence Amendment Reviewer Comments Response – PropReq_12440 (Jun 2018), ECCC #8	• Surveillance Network Program (SNP) provided as Annex A to the Water Licence (MV2005L2-0015) • SNP-7 (Sewage treatment plant effluent) results are reported in monthly SNP reports. **Status:** Commitments implemented.
De Beers will continue to monitor a full suite of parameters during discharge from the WMP to Lake N11 and discharge from Area 7 to Area 8 for downstream flow mitigation and report parameter concentrations in monthly surveillance network program reports. Therefore, concentrations for the full suite of parameters will be available to confirm whether model predictions are accurate.	Water Licence Amendment Reviewer Comments Response – PropReq_12440 (Jun 2018), ECCC #12	• Surveillance Network Program (SNP) provided as Annex A to the Water Licence (MV2005L2-0015) • Monitoring results are submitted through monthly SNP reports and Annual Water Licence Reports. **Status:** Commitments implemented.

Commitment Description	Documents/ Public Hearings	Commitment Status
De beers will continue to work with DFO to ensure the off-setting plan addresses this need.	Water Licence Amendment Reviewer Comments Response – PropReq_12440 (Jun 2018), DFO #2	• De Beers has had ongoing update meetings with DFO since 2018 in discussing fish habitat off-setting project study findings. • De Beers will continue to provide update to and work with DFO on the fish habitat off-setting project. **Status:** Commitments implemented.
De Beers will provide additional information to DFO in a Request for Review related to the design of the proposed diversion channel, including information related to fish passage and use, once further design details are available.	Water Licence Amendment Reviewer Comments Response – PropReq_12440 (Jun 2018), DFO #4	• Closure Water Management Plan (to be developed) supported by AEMP and SNP completed over time **Status:** To be Implemented.

Appendix F - SEDIMENT AND EROSION ASSESSMENT SUMMARY, 2022

DE BEERS GROUP

TECHNICAL MEMORANDUM

DATE October 22, 2022

TO Mason Elwood; Allan Knight; William Liu

CC Jessie Bowser; Jarrett Vornbrock

FROM Lee Anne Knee; Alex Perrett **EMAIL** LeeAnee.knee@debeersgroup.com; Alex.Perrett@debeersgroup.com

RE: 2022 SEDIMENT AND EROSION SURVEY SUMMARY REPORT – DE BEERS GAHCHO KUÉ MINE

INTRODUCTION

The De Beers Gahcho Kué Mine *Erosion and Sediment Management Plan* was developed to provide direction for monitoring and mitigating potential erosion and sedimentation associated with the construction and operation of the Gahcho Kué Mine. Erosion is defined as the detachment and transport of sediment by water, wind, ice or gravity, while sedimentation is the deposition of those transported materials. Examples of activities that pose a risk of sedimentation or erosion include water discharges, surface water diversion due to dyke construction, land-based construction activities, and water level changes associated with water pumping and dyke construction.

The intention of this report is to provide a summary of the erosion and sediment monitoring surveys conducted at the Gahcho Kué Mine during 2022, as well as a description and assessment of any mitigation measures implemented to address any identified areas of concern.

This monitoring program is designed to address the regulatory requirements outlined in the *Type A Water Licence* (MV2005L2-0015), and the *Fisheries Act 35.(2)(b) Authorization*. This program also serves as a summary of data collected to support the commitments made in the *Erosion and Sediment Management Plan version 4* (De Beers, October 2014).

SCOPE OF WORK

The *Erosion and Sediment Management Plan* identifies seven (7) locations that are at risk for erosion dependent on the type of work activities planned for each location. Two (2) additional locations have also been identified by De Beers Environment staff. These nine (9) locations are listed in Table 1 and referenced in Appendix A – Figures. Photos taken during surveys are attached in Appendix B – Photos.

Activities and infrastructure at the Gahcho Kué Mine that had the potential to result in sedimentation and/or erosion in 2022 include:

- Downstream Flow Mitigation (Pumping of water from Lake N11 to Area 8 to supplement natural flow regime);
- Dyke construction;
- Discharge of effluent from the Water Management Pond (WMP) to Lake N11, increasing downstream flow within the N Lakes watershed downstream to Lake 410; and
- Increased water elevation of Lakes D2/D3 and Lake E1 due to diversion Dykes F and G.

METHODS AND RESULTS

Environmental staff conducted three (4) aerial surveys in 2022 via helicopter to assess the lake and stream banks for signs of sediment and erosion along the shorelines and outlets. If shoreline erosion was observed, a Lake/Stream Bank Erosion Shoreline Assessment Field Sheet was completed for the location identified. If no erosion was observed, pertinent field notes were recorded. Photos of each site were taken along with documentation of erosion concerns.

Aerials surveys were completed on the following dates:

- June 10, 2022
- July 01-07, 2022
- July 31, 2022
- September 26, 2022

SUMMARY

No erosion or sedimentation was observed during the three aerial surveys conducted in 2022.

The information provided summarizes individual survey documentation and overall program observations.

Regards,

Lee Anne Knee & Alex Perrett
Gahcho Kué Mine
De Beers Group

REFERENCES

Type A Water Licence (MV2005L2-0015, MVLWB).
Erosion and Sediment Management Plan, version 4 (De Beers, October 2014)
Federal *Fisheries Act*
Government of the Northwest Territories *Waters Act*

Mackenzie Valley Land and Water Board *Water and Effluent Quality Management Policy* (MVLWB 2011)

Table 1: Sediment and Erosion Locations Identified for Assessments

Area	Description	Affected by Project	Erosion Susceptibility Class
1	Shoreline and outlet of Lake D2/D3	Lake water elevation rose due to Dyke F, water diverted from Lake D3 to Lake N14	Low class, although a portion of the shoreline of Lake D3 classified as High to Very High
2	Shoreline and outlet of Lake N14	Lake N14 will receive water from Lake D2/D3 and E1	Low class, with downstream half of the outlet channel classified as Moderate to High
3	Shoreline and outlet of Lake B1	Water is currently flowing through its original course into Water Management Pond.	No erosion potential until the construction of Dyke E
4	Shoreline and outlet of Lake E1	Water diverted to Lake N14 Channel installed to mitigate risks	Channel to Lake N14 classified as High to Very High, but channel armored to reduce risk
5	Shoreline of Lake A1	Fluctuating water levels due to construction of Dyke A1 and regular pumping of water to Area 8 to maintain sufficient capacity in Lake A1 for spring freshet	Low class
6	Shoreline of Area 3 of former Kennady Lake (Water Management Pond)	Fluctuating water levels resulting in potential shoreline erosion	Very Low class for the west shoreline, and a portion of the east shoreline classified as High
7	Shoreline and outlet of Area 8	Generally, reduced flow to Area 8, but small water elevation changes during Lake A1 and downstream flow mitigation pumping period	Low class
8	Outlet of Lake N11	Increased water flow during periods of discharge from Water Management Pond	Low class
9	Outlet of Lake N1	Increased water flow during periods of discharge from Water Management Pond	Low class

Table 2: Gahcho Kué Sediment and Erosion Assessment Survey Results for June to September 2022

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
10-Jun-22	N1	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	N11	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	Area 8	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	Area 3	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	A1	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	B1	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	N14	N	K. Lui; M. Elwood	No erosion observed	N/A
10-Jun-22	E1	N	K. Lui; M. Elwood	Engineered spillway functioning correctly between E1 and N14. No erosion observed	N/A
10-Jun-22	D2/D3	N	K. Lui; M. Elwood	No flow observed from D2/D3 into N14. Water observed by it was stagnant No erosion observed	N/A
01-07-Jul-22	N1	N	L. Knee; A. Perrett	No erosion observed	1
01-07-Jul-22	N11	N	L. Knee; A. Perrett	No erosion observed	3
01-07-Jul-22	Area 8	N	L. Knee; A. Perrett	No erosion observed	5 & 6
01-07-Jul-22	Area 3	N	L. Knee; A. Perrett	No erosion observed	9 & 10
01-07-Jul-22	A1	N	L. Knee; A. Perrett	No erosion observed	13
01-07-Jul-22	B1	N	L. Knee; A. Perrett	No erosion observed	15
01-07-Jul-22	N14	N	L. Knee; A. Perrett	No erosion observed	17
01-07-Jul-22	E1	N	L. Knee; A. Perrett	Engineered spillway functioning correctly between E1 and N14. No erosion observed	19

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
01-07-Jul-22	D2/D3	N	L. Knee; A. Perrett	No flow observed from D2/D3 into N14. Water observed by it was stagnant No erosion observed	21
31-Jul-22	N1	N	J. Bowser	No erosion observed	N/A
31-Jul-22	N11	N	J. Bowser	No erosion observed	N/A
31-Jul-22	Area 8	N	J. Bowser	No erosion observed	N/A
31-Jul-22	Area 3	N	J. Bowser	No erosion observed	N/A
31-Jul-22	A1	N	J. Bowser	No erosion observed	N/A
31-Jul-22	B1	N	J. Bowser	No erosion observed	N/A
31-Jul-22	N14	N	J. Bowser	No erosion observed	N/A
31-Jul-22	E1	N	J. Bowser	Engineered spillway functioning correctly between E1 and N14. No erosion observed	N/A
31-Jul-22	D2/D3	N	J. Bowser	No flow observed from D2/D3 into N14. Water observed by it was stagnant No erosion observed	N/A
26-Sep-22	N1	N	L. Knee; S. Fournier	No erosion observed	2

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
26-Sep-22	N11	N	L. Knee; S. Fournier	No erosion observed	4
26-Sep-22	Area 8	N	L. Knee; S. Fournier	No erosion observed	7 & 8
26-Sep-22	Area 3	N	L. Knee; S. Fournier	No erosion observed	11 & 12
26-Sep-22	A1	N	L. Knee; S. Fournier	No erosion observed	14
26-Sep-22	B1	N	L. Knee; S. Fournier	No erosion observed	16
26-Sep-22	N14	N	L. Knee; S. Fournier	No erosion observed	18
26-Sep-22	E1	N	L. Knee; S. Fournier	Engineered spillway functioning correctly between E1 and N14. No erosion observed	20
26-Sep-22	D2/D3	N	L. Knee; S. Fournier	No flow observed from D2/D3 into N14. Water observed by it was stagnant No erosion observed was stagnant No erosion observed	22

Appendix A – Figures

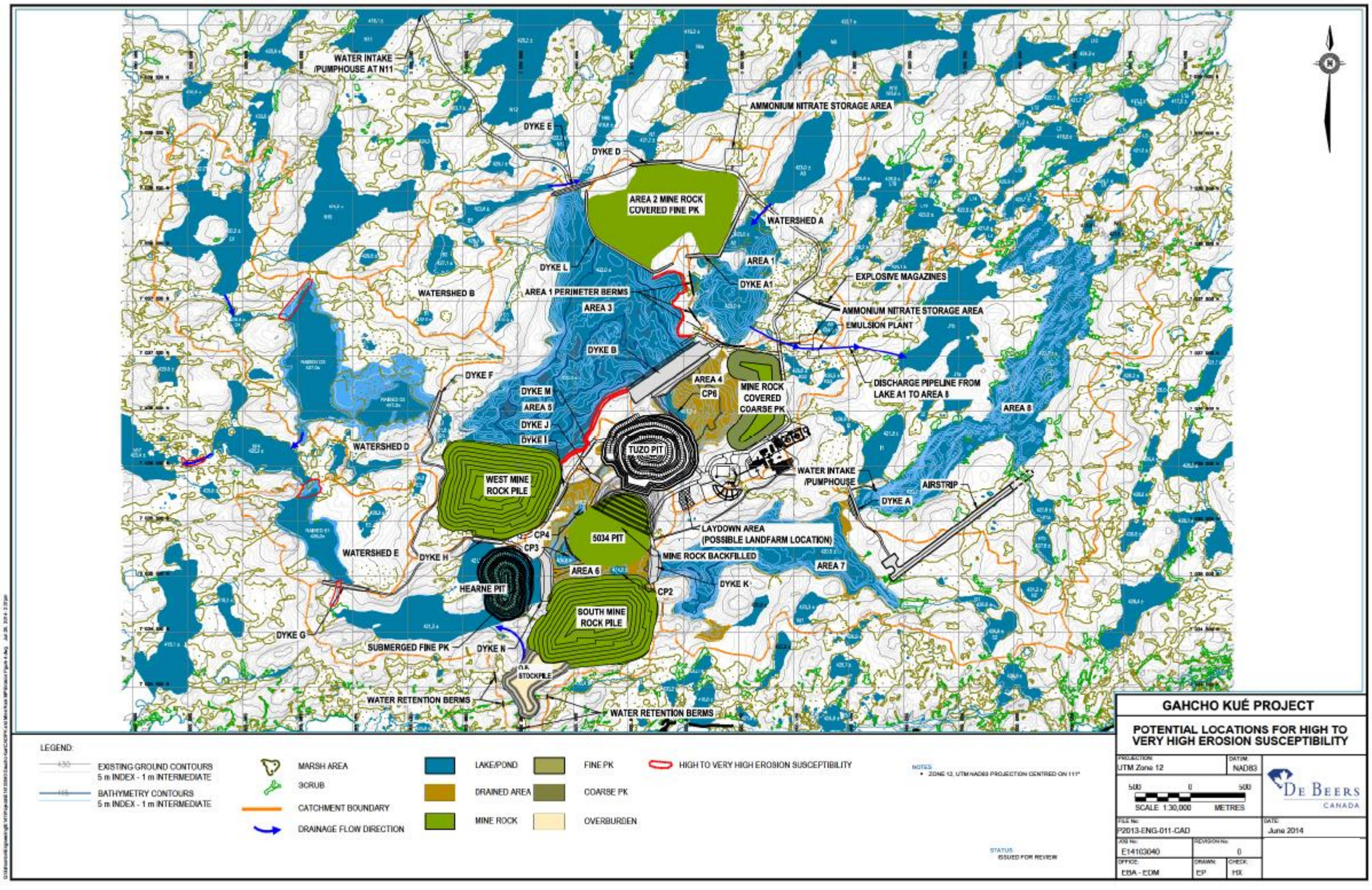

Figure 1. Location of On-Site Erosion Susceptible Areas.

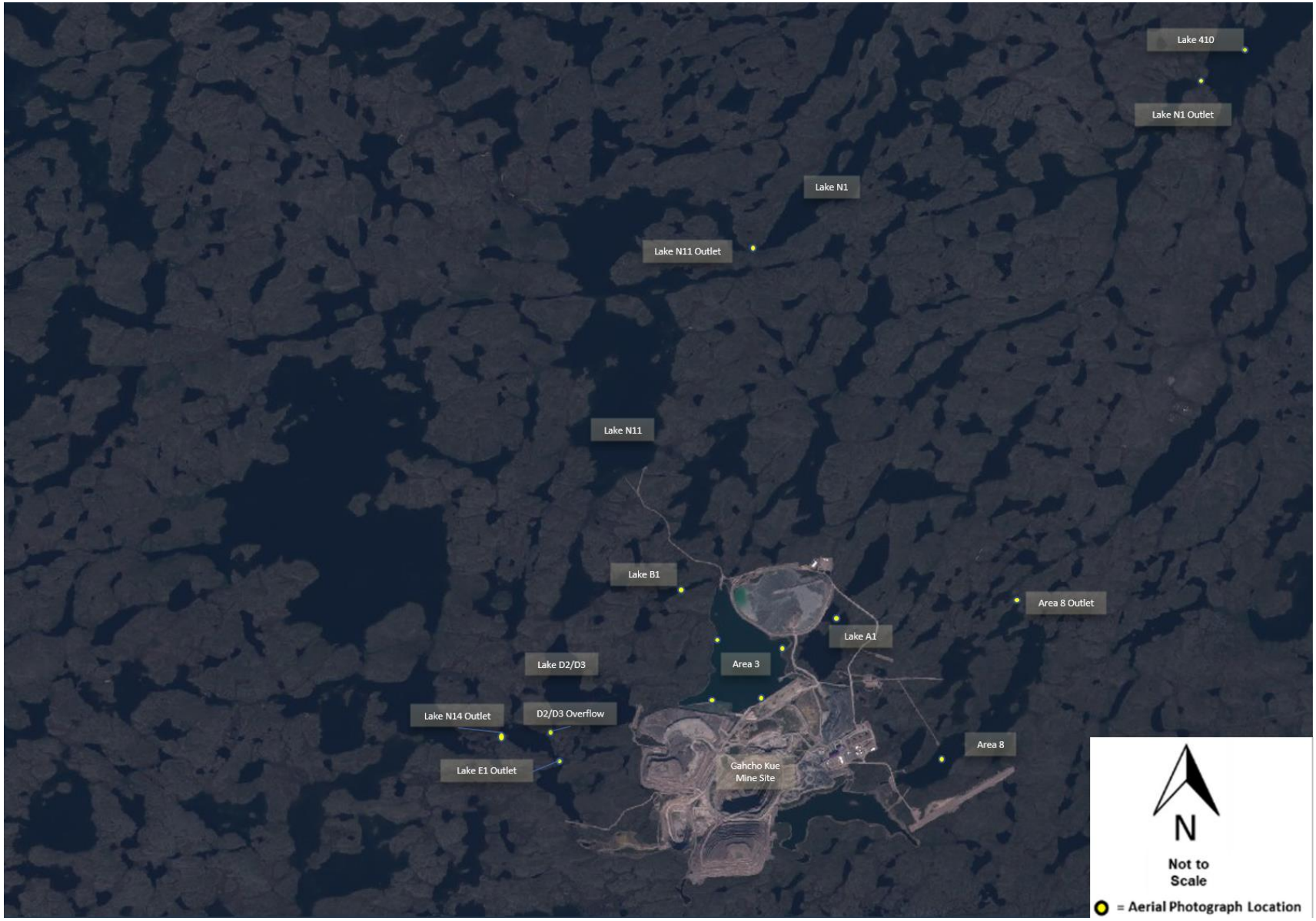

Figure 2. 2022 survey locations of on-site aerial photography of erosion susceptible areas

Appendix B – Aerial Photographs

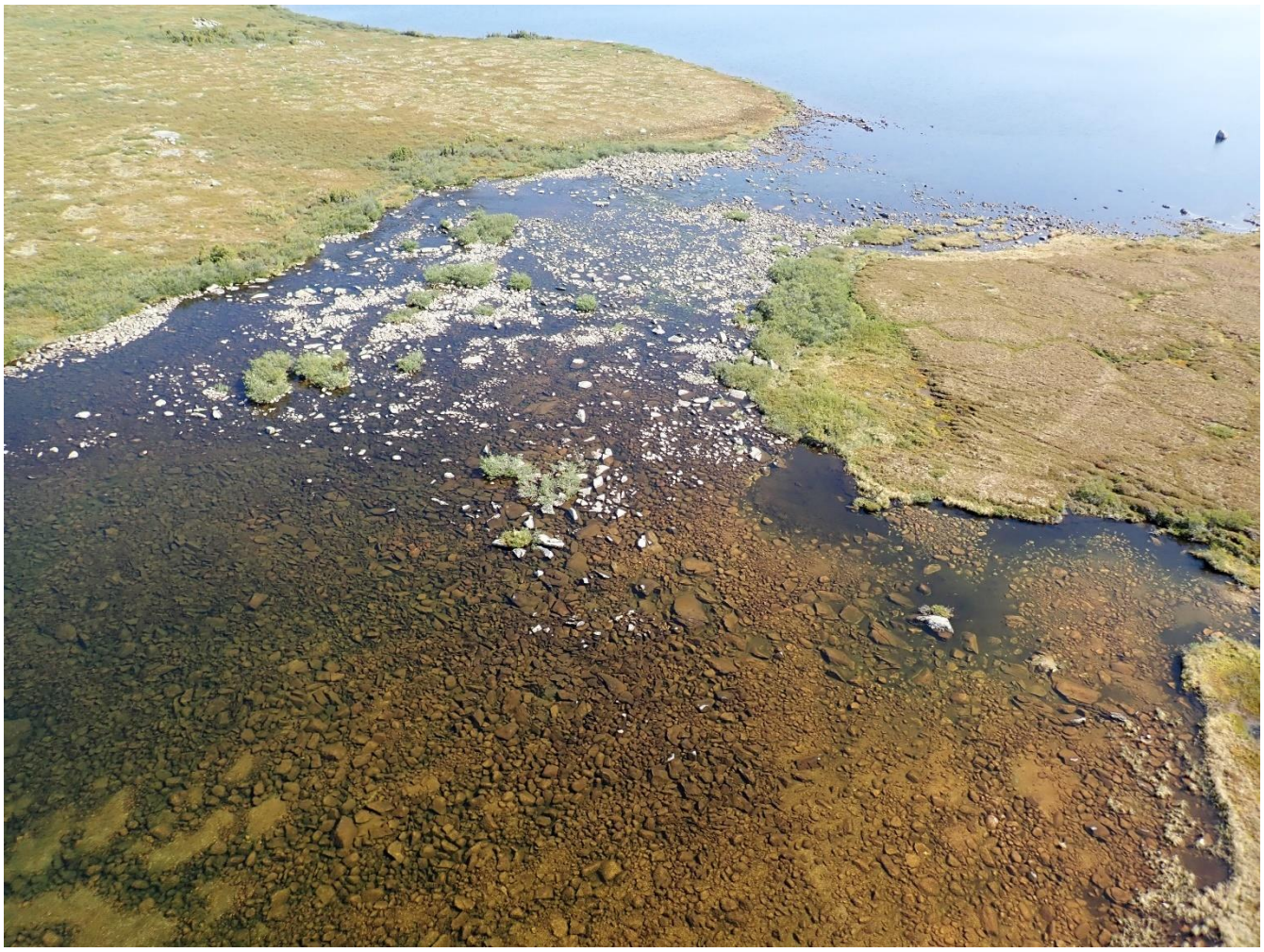

Photo 1: Outlet of N1 July 01-07, 2022

Photo 2: Outlet of N1 September 26, 2022

Photo 3: Outlet of N11 July 01-07 2022

Photo 4: Outlet of N11 September 26, 2022

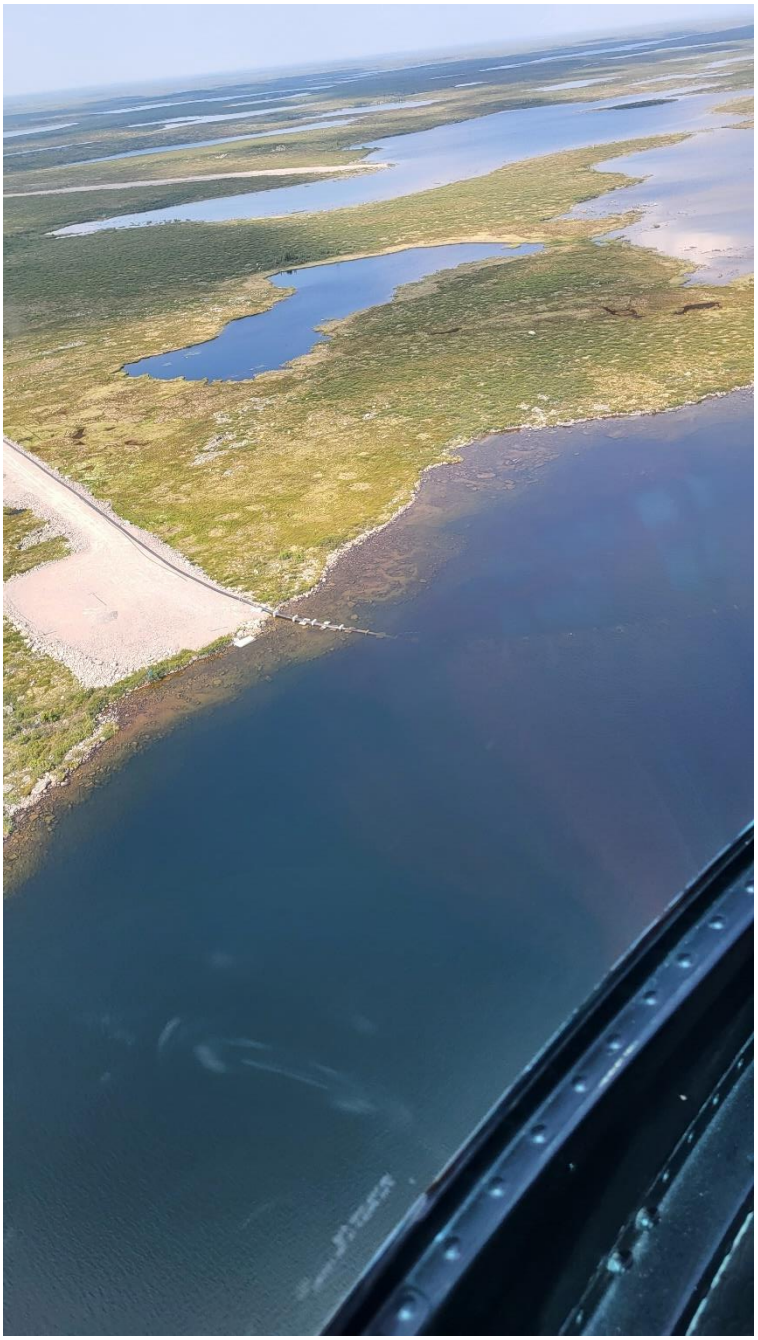

Photo 5: Shoreline of Area 8 July 01-07, 2022

Photo 6: Outlet of Area 8 (K5 Stream) July 01-07, 2022

Photo 7: Shoreline of Area 8 September 26, 2022

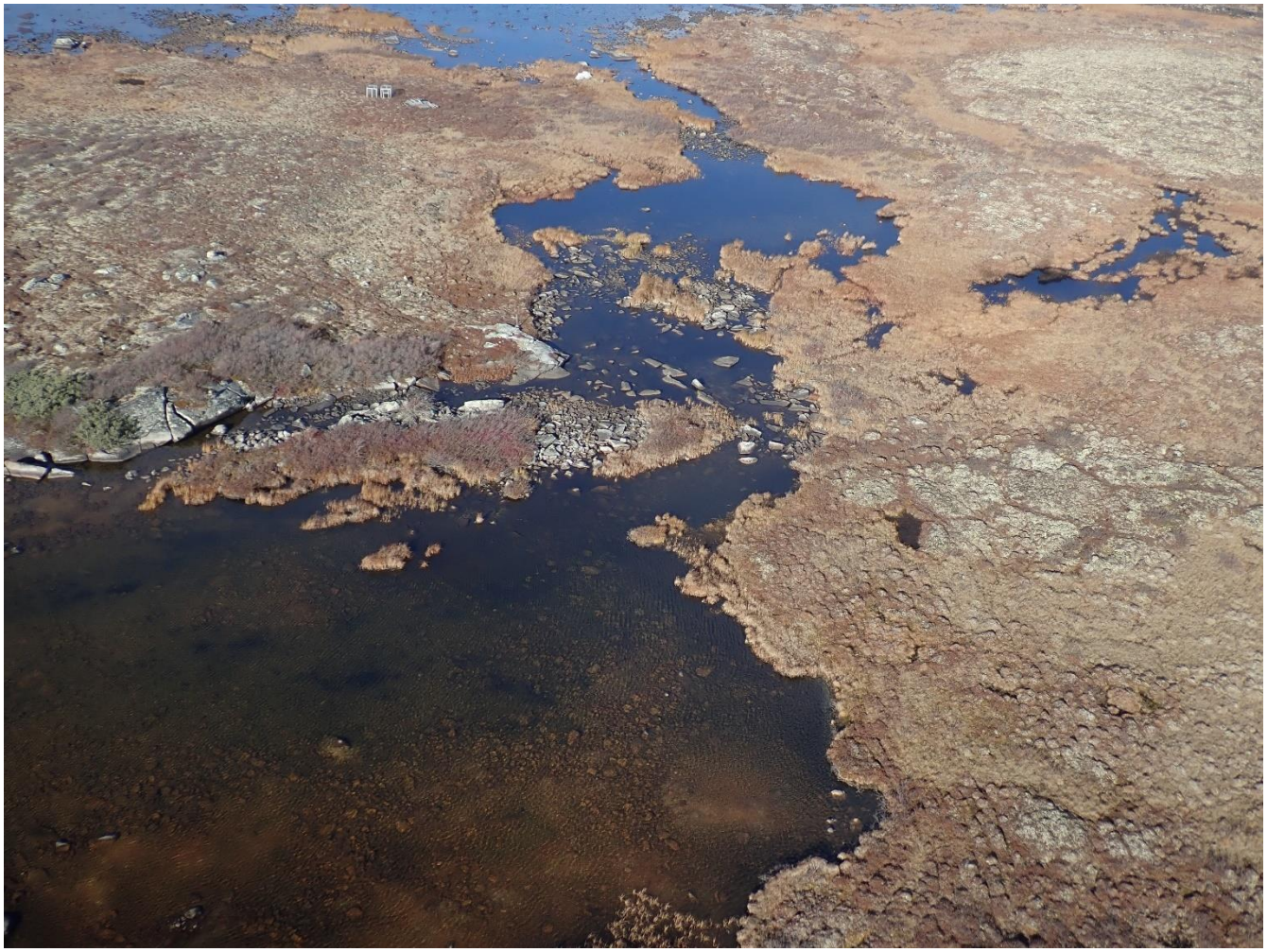

Photo 8: Outlet of Area 8 (K5 Stream) September 26, 2022

Photo 9: Water Management Pond (Area 3): Along Dyke L Road July 01-07, 2022

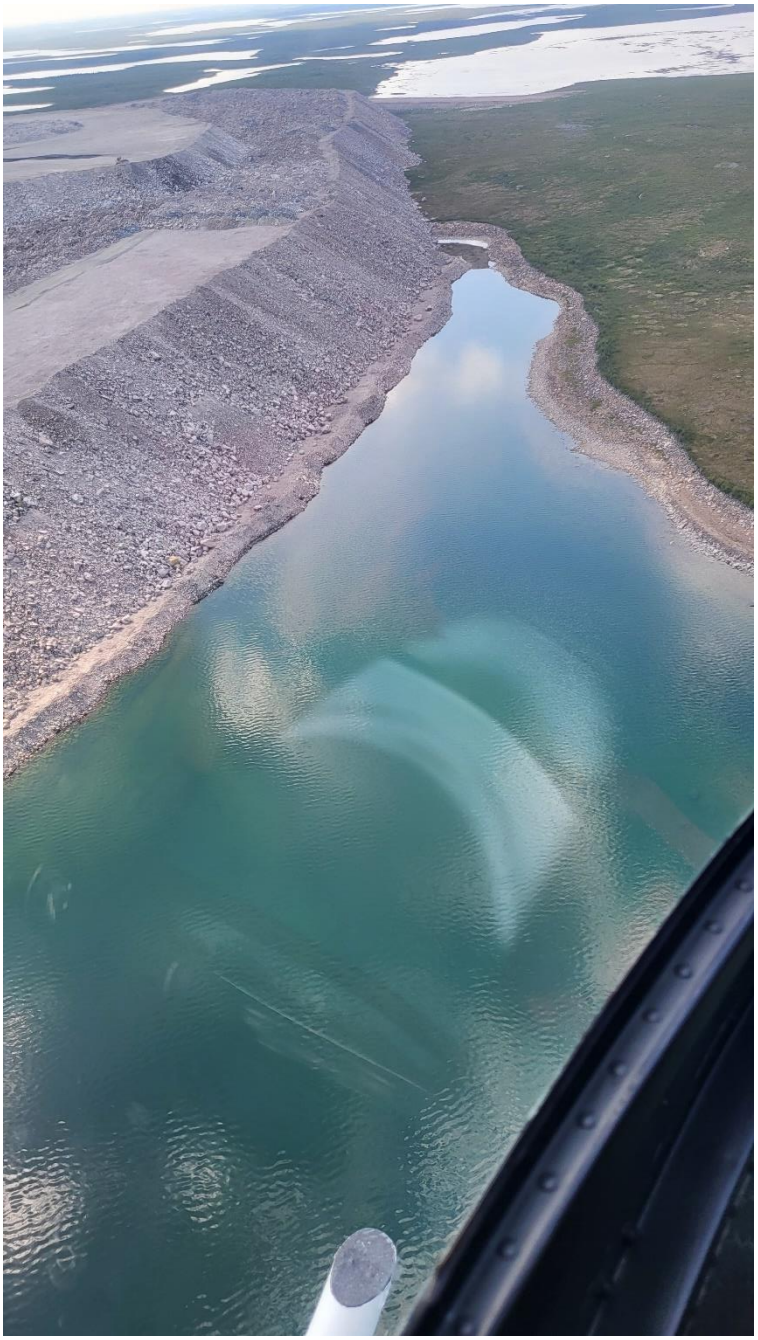

Photo 10: Water Management Pond (Area 3): Along the extension of the WMRP July 01-07, 2022

Photo 11: Water Management Pond (Area 3): Along Dyke L Road September 26, 2022

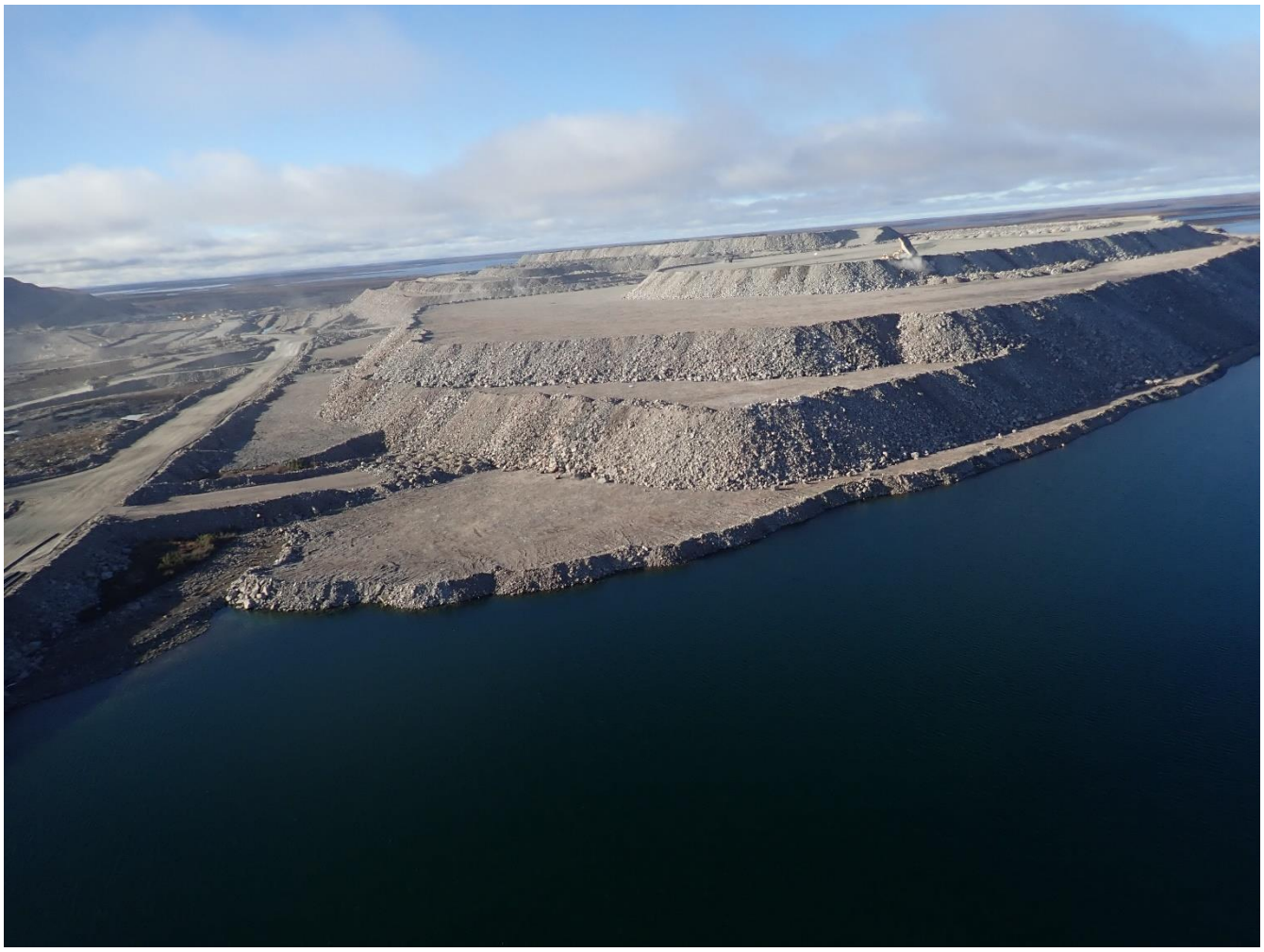

Photo 12: Water Management Pond (Area 3): Along the extension of the WMRP September 26, 2022

Photo 13: Shoreline of Area 1 July 01-07, 2022

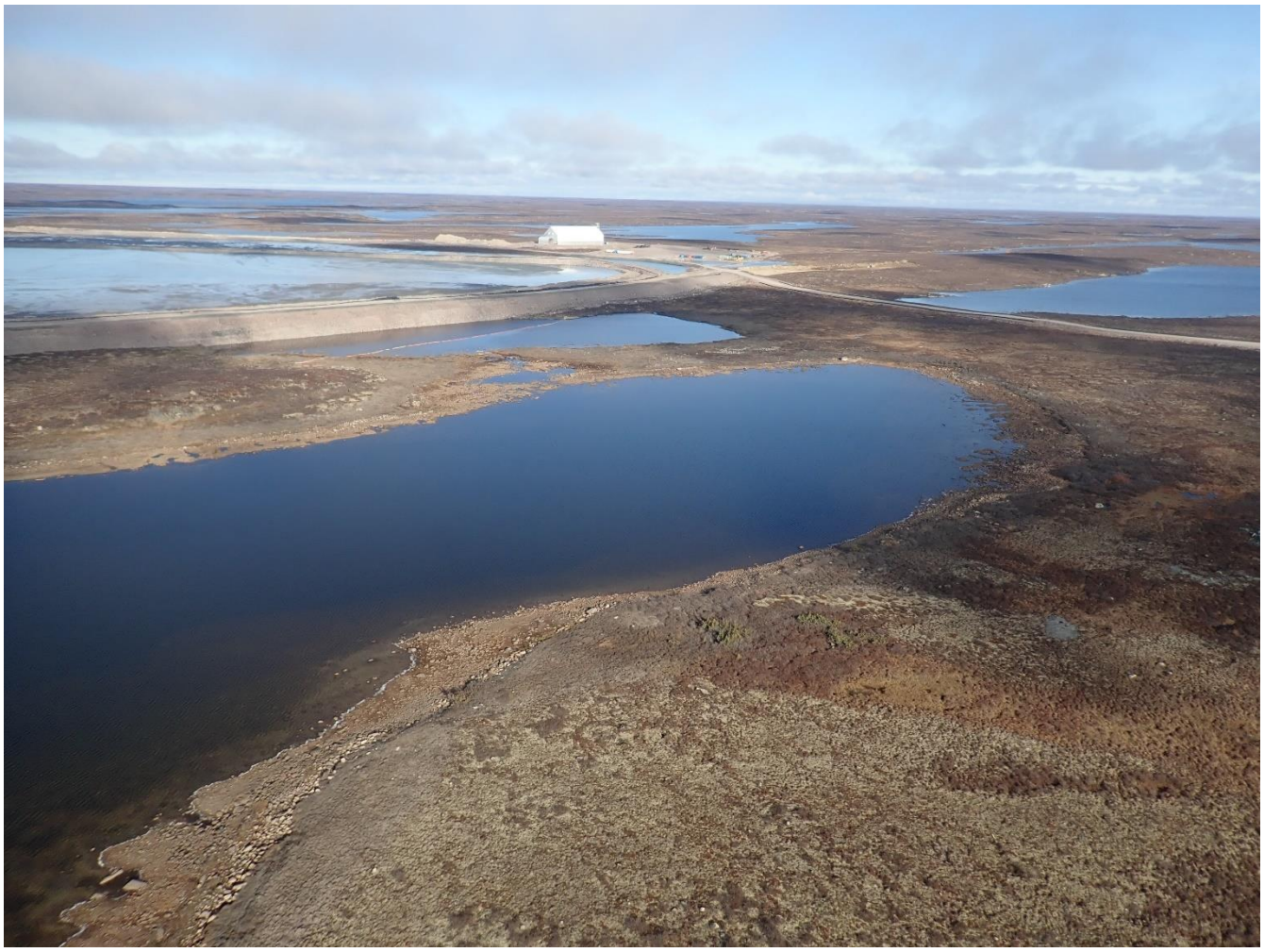

Photo 14: Shoreline of Area 1 September 26, 2022

Photo 15: Shoreline of B1 July 01-07, 2022

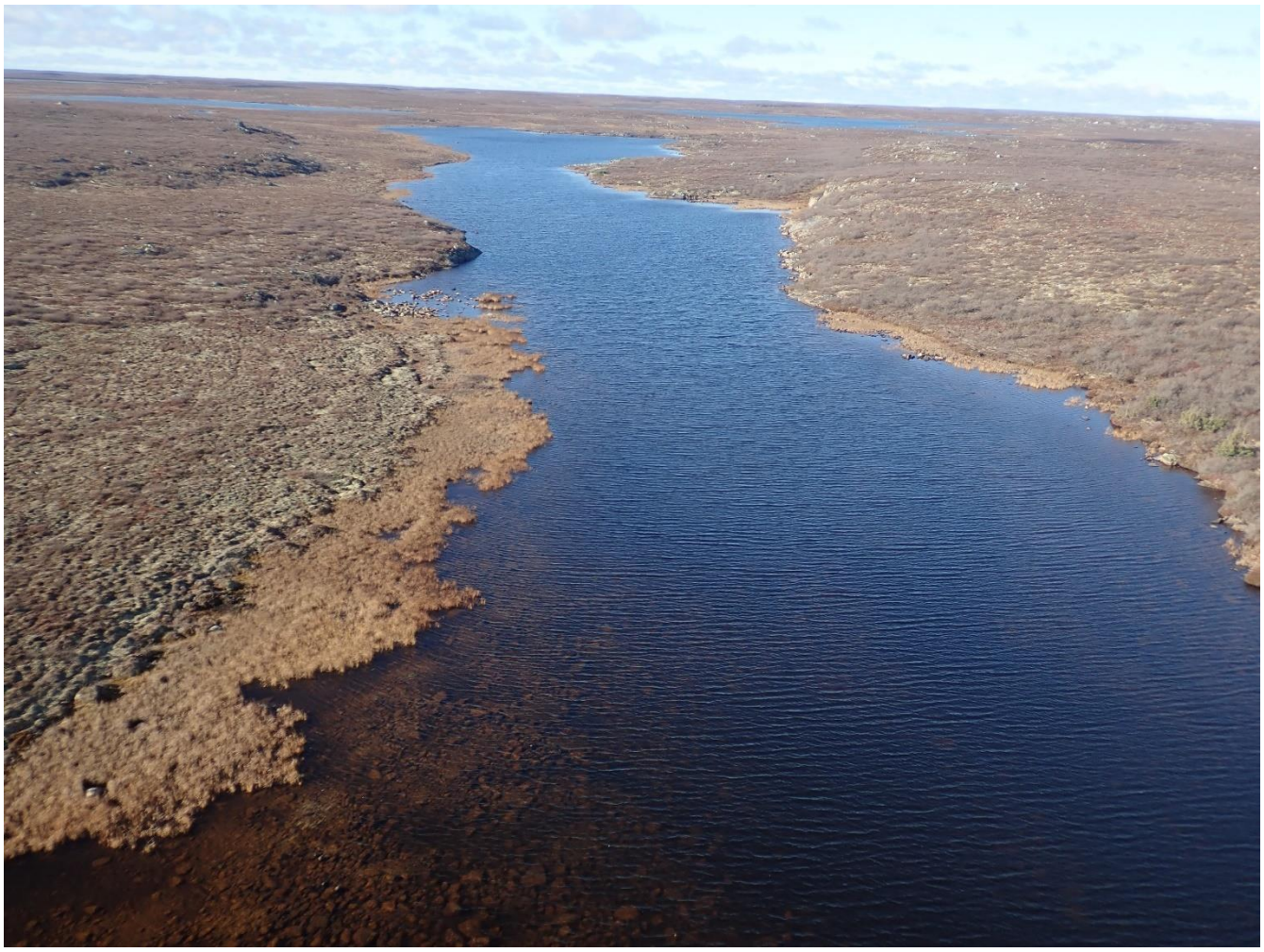

Photo 16: Shoreline of B1 September 26, 2022

Photo 17: Shoreline and Outlet of N14 July 01-07, 2022

Photo 18: Shoreline and Outlet of N14 September 26, 2022

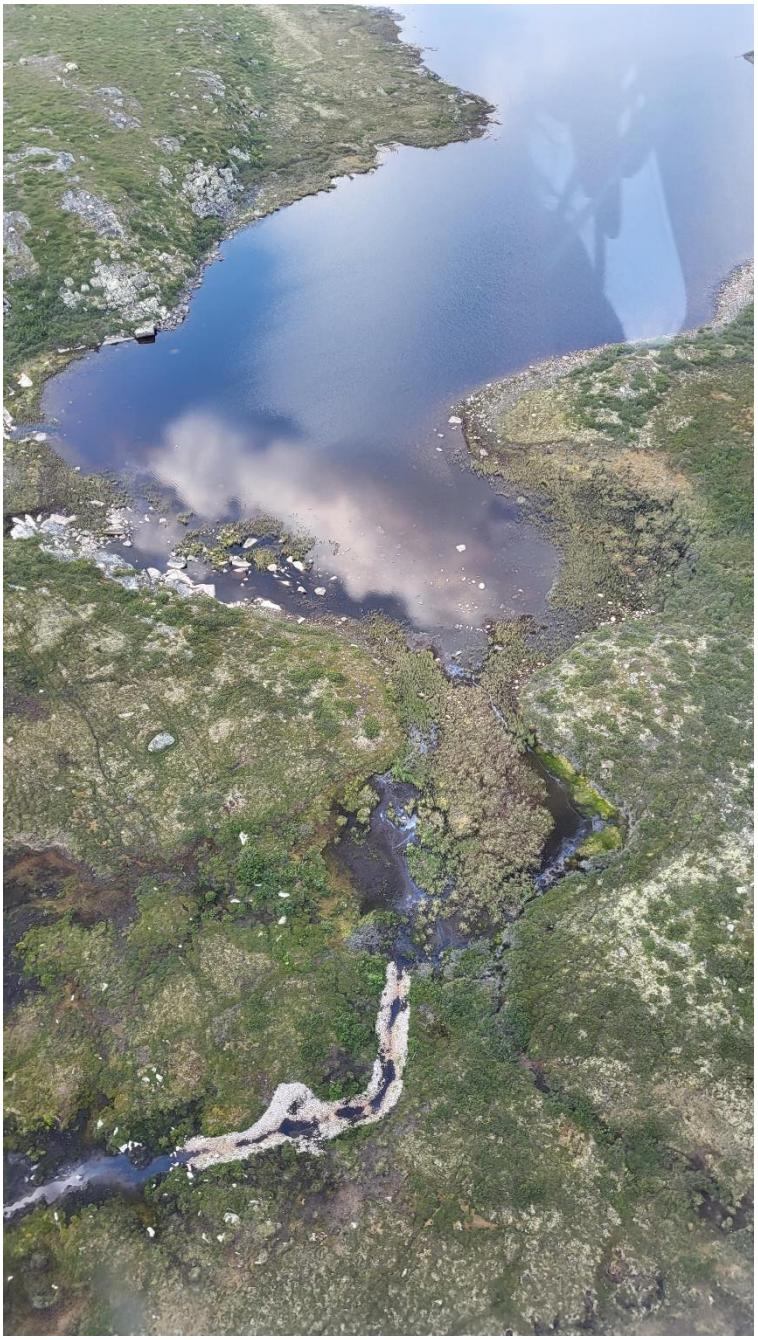

Photo 19: Shoreline and Outlet of E1 July 01-07, 2022

Photo 20: Shoreline and Outlet of E1 September 26, 2022

Photo 21: Shoreline and Outlet of D2/D3 July 01-07, 2022

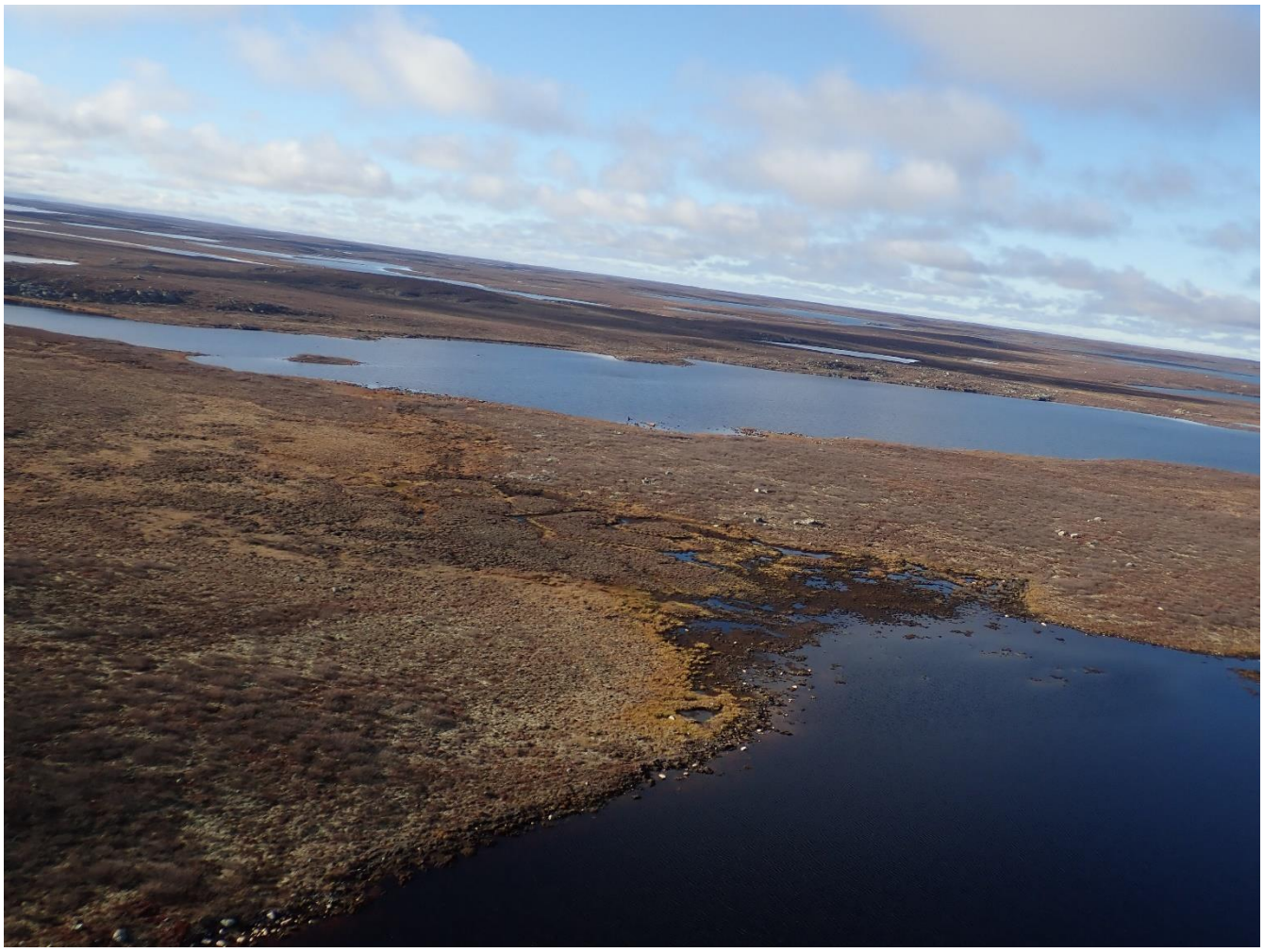

Photo 22: Shoreline and Outlet of D2/D3 September 26, 2022

Appendix G – SNP Tables, 2022

Appendix	Title
G01	Summary of Sampling Requirements and Sample Dates at SNP 01 in 2022
G01_A	Summary of Fall Sediment Sampling Results for SNP-01 in Lake N11
G02	Summary of Sampling Requirements and Sample Dates at SNP 02 in 2022
G05	Summary of Sampling Requirements and Sample Dates at SNP 05 in 2022
G05_A	Summary of Physical Parameter Measurements at SNP-05
G05_B	Summary of Results for Monthly Water Quality in the Water Management Pond at SNP-05
G05_C	Summary of Sediment Quality Results at SNP-05
G05_D	Water Surface Elevations at SNP-05 (Water Mangement Pond)
G06	Summary of Sampling Requirements and Sample Dates at SNP 06 in 2022
G06_A	Summary of Physical Parameter Measurements at SNP-06
G06_B	Summary of Results for Monthly Water Quality in the Water Management Pond at SNP-06
G06_C	Summary of Sediment Quality Results at SNP-06
G06_D	Water Surface Elevations at SNP-06 (Water Management Pond)
G07	Summary of Sampling Requirements and Sample Dates at SNP 07 in 2022
G07_A	Summary of Field Physical Parameters at SNP-07
G07_B	Summary of Treated Effuent Quality Results at SNP-07
G07_C	Summary of Daily Effluent Volume Measurements at SNP-07
G08	Summary of Sampling Requirements and Sample Dates at SNP 08 in 2022
G08_A	Summary of Daily Monitoring of Physical Parameters at SNP-08
G08_B	Summary of Weekly and Monthly Water Quality Results at SNP-08
G08_C	Summary of Flow Data at SNP-08
G09	Summary of Sampling Requirements and Sample Dates at SNP 09 in 2022
G09_A	Summary of Daily Monitoring of Physical Parameters at SNP-09
G09_B	Summary of Weekly and Monthly Water Quality Results at SNP-09
G09_C	Summary of Flow Data at SNP-09
G10	Summary of Sampling Requirements and Sample Dates at SNP 10 in 2022
G11	Summary of Sampling Requirements and Sample Dates at SNP 11 in 2022
G12	Summary of Sampling Requirements and Sample Dates at SNP 12 in 2022
G14	Summary of Sampling Requirements and Sample Dates at SNP 14 in 2022
G14A_A	Laboratory Analytical Results for Samples Collected at SNP-14 in 2022
G16	Summary of Sampling Requirements and Sample Dates at SNP 16 in 2022
G16_A	Laboratory Analytical Results for Samples Collected at SNP-16 in 2022
G17	Summary of Sampling Requirements and Sample Dates at SNP 17 in 2022
G18	Summary of Sampling Requirements and Sample Dates at SNP 18 in 2022
G19	Summary of Sampling Requirements and Sample Dates at SNP 19 in 2022
G20	Summary of Sampling Requirements and Sample Dates at SNP 20 in 2022
G20_A	Summary of Toxicity Results at SNP-20
G21	Summary of Sampling Requirements and Sample Dates at SNP 21 in 2022
G21_A	Summary of Monthly Water Quality Results at SNP-21
G21_B	Water Surface Elevations at SNP-21 (Collection Pond 1)
G_MET_A	Mean, Minimum and Maximum Daily Temperatures at the Gahcho Kué Mine in 2022
G_MET_B	Daily Precipitation at the Gahcho Kué Mine in 2022
G_MET_C	Summary Results of Kennady Lake Evaporation Monitoring in 2022
G_MET_D	Summary of Hourly Wind Speed and Direction in 2022

G01 Summary of Sampling Requirements and Sample Dates at SNP 01 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-01A/B/C	Drawdown of Kennady Lake	Weekly (during Discharge)	Water elevation (in Lake N11), pH, TSS, turbidity	N/A
		Twice (at the beginning of Discharge, and on the final day of Discharge)	Physical parameters, major ions, nutrients, total metals	N/A
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	N/A
	Discharge from Water Management Pond	Weekly (during Discharge)	Water elevation (in Lake N11), Physical parameters, major ions, nutrients, total metals, extractable petroleum hydrocarbons	N/A
		Twice (at the beginning of Discharge, and on the final day of Discharge)	N/A	N/A
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	3-Oct

G01_A Summary of Fall Sediment Sampling Results for SNP-01 in Lake N11

Station	SNP - 01A	SNP - 01B	SNP - 01C
Sampling Date	29-Sep-2022	29-Sep-2022	29-Sep-2022
nitrogen, total %	0.670	1.47	1.36
Kjeldahl nitrogen, total [TKN] %	0.563	1.26	1.07
aluminum mg/kg	7200	9320	9450
antimony mg/kg	0.090	0.102	0.093
arsenic mg/kg	2.49	2.18	2.46
barium mg/kg	52.8	60.1	63.0
beryllium mg/kg	0.29	0.38	0.39
bismuth mg/kg	0.13	0.18	0.21
boron mg/kg	11.5	13.8	13.2
cadmium mg/kg	0.182	0.331	0.309
calcium mg/kg	2480	3880	3740
cesium mg/kg	0.83	1.20	1.27
chromium mg/kg	16.2	22.6	23.2
cobalt mg/kg	7.63	6.74	8.62
copper mg/kg	22.5	42.7	46.9
iron mg/kg	21400	17200	16200
lead mg/kg	3.68	5.06	5.58
lithium mg/kg	14.4	13.1	14.2
magnesium mg/kg	2760	2780	2890
manganese mg/kg	544	177	215
mercury mg/kg	0.0261	0.0493	0.0625
molybdenum mg/kg	1.72	1.71	1.86
nickel mg/kg	17.6	24.7	26.0
phosphorus mg/kg	515	741	747
potassium mg/kg	1340	1320	1380
rubidium mg/kg	8.5	10.2	10.4
selenium mg/kg	0.36	0.51	0.63
silver mg/kg	<0.050	0.080	0.091
sodium mg/kg	219	350	344
strontium mg/kg	33.5	50.4	48.4
sulfur mg/kg	1500	3300	3600
tellurium mg/kg	<0.10	<0.10	<0.10
thallium mg/kg	0.092	0.077	0.097
tin mg/kg	0.49	0.85	0.78
titanium mg/kg	241	165	226
tungsten mg/kg	<0.50	<0.50	<0.50
uranium mg/kg	1.43	2.13	2.43
vanadium mg/kg	22.5	28.2	28.2
zinc mg/kg	50.9	69.5	65.0
zirconium mg/kg	<1.0	1.1	<1.0
carbon, inorganic [IC] %	0.092	0.131	0.136
carbon, inorganic [IC], (as CaCO3 equivalent) %	0.77	1.09	1.13
carbon, total [TC] %	7.73	17.1	16.5
carbon, total organic [TOC] %	7.64	17.0	16.4
organic matter %	13.2	29.3	28.3
clay (<0.002mm) %	3.8	9.5	10.8
sand (2.0mm - 0.05mm) %	87.3	65.1	65.0
silt (0.05mm - 0.002mm) %	8.9	25.4	24.1
texture class -	Sand	Sandy Loam	Sandy Loam
moisture %	87.0	93.0	93.0

G02 Summary of Sampling Requirements and Sample Dates at SNP 02 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-02	Drawdown of Kennady Lake	Continuously (during Discharge, by in-line monitoring)	Flow, volume	N/A
		Daily (during Discharge)	Physical parameters	N/A
		Weekly (during Discharge)	Water elevation (in Lake N11)	N/A
		Twice (at the beginning of Discharge period and on final day of Discharge period)	Physical parameters, major ions, nutrients, total metals, extractable petroleum hydrocarbons, BTEX, total and faecal coliforms, *Escherichia coli*	N/A
SNP-02	Discharge from Water Management Pond	Continuously (during Discharge, by in-line monitoring)	Flow, volume	N/A
		Weekly (during Discharge)	Physical parameters, major ions, nutrients, total metals, extractable petroleum hydrocarbons, BTEX	N/A
		Weekly (during Discharge)	Water elevation (in Lake N11)	N/A
		Twice (at the beginning of Discharge period and on final day of Discharge period)	Toxicity	N/A

G05 Summary of Sampling Requirements and Sample Dates at SNP 05 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-05	Operations	Monthly (upon establishment of the Water Management Pond)	Physiochemical profile measurements at 1 m depth intervals; number of water samples to be determined by presence/absence of stratification) Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, Water Elevation	Monthly throughout 2022
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	13-Jul

G05_A Summary of Physical Parameter Measurements at SNP-05

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Effective Depth (m)
SNP-05-0.3m	10-Jan-2022	93.45	12.62	6.97	1,447.38	0.36	0	0	
SNP-05-1m	10-Jan-2022	93.49	12.62	6.98	1,439.48	0.42	0	0	
SNP-05-2m	10-Jan-2022	93.02	12.45	6.99	1,424.97	0.73	0	0	
SNP-05-3m	10-Jan-2022	92.13	12.26	6.99	1,413.34	1.01	0	0	
SNP-05-4m	10-Jan-2022	89.76	11.84	6.99	1,402.06	1.37	0	0	
SNP-05-5m	10-Jan-2022	81.11	10.60	6.98	1,398.46	1.75	0	0	
SNP-05-6m	10-Jan-2022	67.80	8.77	6.98	1,415.77	2.15	0	0	
SNP-05-7m	10-Jan-2022	57.12	7.24	6.98	1,403.79	2.94	0	0	
SNP-05-8m	10-Jan-2022	29.27	3.63	7.04	1,593.79	3.78	0	0	
SNP-05-9m	10-Jan-2022	3.24	0.39	7.27	1,713.07	4.35	0.67	0.43	
SNP-05-0.3m	7-Feb-2022	95.07	11.99	7.05	1,308.78	0.03	0	0	
SNP-05-1m	7-Feb-2022	94.64	11.86	7.01	1,288.66	0.27	0	0	
SNP-05-2m	7-Feb-2022	94.68	11.77	6.99	1,278.92	0.55	0	0	
SNP-05-3m	7-Feb-2022	94.59	11.67	6.96	1,275.18	0.87	0	0	
SNP-05-4m	7-Feb-2022	89.12	10.91	6.91	1,274.96	1.15	0	0	
SNP-05-5m	7-Feb-2022	85.54	10.38	6.86	1,268.92	1.51	0	0	
SNP-05-6m	7-Feb-2022	77.74	9.34	6.81	1,284.19	1.91	0	0	
SNP-05-7m	7-Feb-2022	75.89	8.99	6.79	1,291.08	2.42	0	0	
SNP-05-8m	7-Feb-2022	36.05	4.14	7.08	1,345.54	3.62	0	0	
SNP-05-0.3m	5-Mar-2022	67.90	9.20	6.35	1,419.80	0.90	0.00	0.00	
SNP-05-1m	5-Mar-2022	79.70	10.80	6.35	1,422.40	0.80	0.00	0.00	
SNP-05-2m	5-Mar-2022	79.90	10.80	6.35	1,419.40	1.00	0.00	0.00	
SNP-05-3m	5-Mar-2022	78.10	10.50	6.35	1,422.90	1.10	0.00	0.00	
SNP-05-4m	5-Mar-2022	75.30	10.10	6.33	1,432.20	1.30	0.00	0.00	
SNP-05-5m	5-Mar-2022	73.20	9.70	6.33	1,433.90	1.80	0.00	0.00	
SNP-05-6m	5-Mar-2022	57.70	7.50	6.34	1,429.70	2.60	0.00	0.00	
SNP-05-7m	5-Mar-2022	18.50	2.30	6.48	1,566.10	3.50	0.00	0.00	
SNP-05-0.3m	3-Apr-2022	10.35	78.30	6.71	1,454.93	0.73	0	0	
SNP-05-1m	3-Apr-2022	10.47	79.47	6.67	1,449.11	0.72	0	0	
SNP-05-2m	3-Apr-2022	10.38	79.75	6.64	1,442.72	1.15	0	0	
SNP-05-3m	3-Apr-2022	10.35	79.96	6.60	1,438.49	1.32	0	0	
SNP-05-4m	3-Apr-2022	9.57	74.31	6.57	1,449.51	1.49	0	0	
SNP-05-5m	3-Apr-2022	9.10	71.60	6.55	1,470.02	1.96	0	0	
SNP-05-6m	3-Apr-2022	8.08	64.26	6.54	1,556.08	2.34	0	0	
SNP-05-7m	3-Apr-2022	1.90	15.59	6.65	1,757.81	3.45	0	0	
SNP-05-0.3m	13-May-2022	67.42	9.07	6.67	1,532.85	1.23	0	0	
SNP-05-1m	13-May-2022	71.53	9.44	6.64	1,535.70	1.92	0	0	
SNP-05-2m	13-May-2022	66.70	8.75	6.62	1,543.61	2.16	0	0	
SNP-05-3m	13-May-2022	71.43	9.34	6.61	1,555.60	2.26	0	0	
SNP-05-4m	13-May-2022	65.35	8.51	6.58	1,567.50	2.41	0	0	
SNP-05-5m	13-May-2022	57.95	7.52	6.57	1,570.25	2.61	0	0	
SNP-05-6m	13-May-2022	24.05	3.07	6.67	1,621.11	3.07	0	0	
SNP-05-7m	13-May-2022	19.50	2.46	6.86	1,940.99	3.59	0	0	
SNP-05-0.3m	28-Jun-2022	103.72	10.38	7.05	991.91	12.85	0	0	
SNP-05-1m	28-Jun-2022	103.82	10.38	7.05	991.58	12.86	1.87	1.21	
SNP-05-2m	28-Jun-2022	103.72	10.37	7.06	991.76	12.85	0	0	
SNP-05-3m	28-Jun-2022	103.76	10.38	7.06	991.99	12.85	0	0	
SNP-05-4m	28-Jun-2022	103.67	10.36	7.07	992.18	12.85	0	0	
SNP-05-5m	28-Jun-2022	103.73	10.37	7.08	991.85	12.85	0	0	
SNP-05-6m	28-Jun-2022	103.54	10.36	7.08	992.01	12.84	0	0	

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Effective Depth (m)
SNP-05-7m	28-Jun-2022	77.18	8.82	6.98	1,480.56	7.09	0	0	
SNP-05-8m	28-Jun-2022	70.14	8.33	6.92	1,611.82	5.49	0	0	
SNP-05-9m	28-Jun-2022	67.18	7.98	6.86	1,512.01	5.37	0	0	
SNP-05-0.3m	28-Jun-2022	104.45	10.37	6.92	991.34	12.89	0	0	
SNP-05-0.3m	13-Jul-2022	105.33	9.55	7.00	1,063.90	16.93	0	0	
SNP-05-1m	13-Jul-2022	105.30	9.55	7.07	1,064.36	16.92	0	0	
SNP-05-2m	13-Jul-2022	105.29	9.55	7.13	1,063.97	16.90	0	0	
SNP-05-3m	13-Jul-2022	105.55	9.59	7.18	1,063.59	16.83	0	0	
SNP-05-4m	13-Jul-2022	106.72	9.77	7.22	1,062.45	16.46	0	0	
SNP-05-5m	13-Jul-2022	108.38	10.28	7.27	1,062.14	14.83	0	0	
SNP-05-6m	13-Jul-2022	95.58	9.57	7.26	1,103.03	12.39	0	0	
SNP-05-7m	13-Jul-2022	44.37	4.96	7.31	1,121.04	7.79	0	0	
SNP-05-8m	13-Jul-2022	49.44	5.59	7.25	1,485.61	7.19	0	0	
SNP-05-0.3m	14-Aug-2022	102.11	9.84	7.34	1,222.88	14.60	0	0	
SNP-05-1m	14-Aug-2022	102.01	9.84	7.34	1,221.05	14.56	0	0	
SNP-05-2m	14-Aug-2022	101.81	9.83	7.35	1,219.77	14.49	0	0	
SNP-05-3m	14-Aug-2022	101.57	9.82	7.35	1,219.94	14.45	0	0	
SNP-05-4m	14-Aug-2022	101.53	9.83	7.35	1,220.80	14.41	0	0	
SNP-05-5m	14-Aug-2022	101.07	9.79	7.35	1,220.50	14.36	0	0	
SNP-05-6m	14-Aug-2022	100.64	9.78	7.36	1,220.89	14.26	0	0	
SNP-05-7m	14-Aug-2022	100.51	9.77	7.36	1,221.42	14.23	0	0	
SNP-05-8m	14-Aug-2022	99.81	9.72	7.37	1,222.37	14.12	0	0	
SNP-05-9m	14-Aug-2022	76.22	7.70	7.38	1,243.94	12.50	0	0	
SNP-05-0.3m	2-Sep-2022	97.66	10.05	7.24	1,210.74	11.52	0	0	
SNP-05-1m	2-Sep-2022	97.62	10.04	7.27	1,210.67	11.54	0.06	0.04	
SNP-05-2m	2-Sep-2022	97.50	10.04	7.28	1,210.83	11.54	0	0	
SNP-05-3m	2-Sep-2022	97.49	10.05	7.29	1,211.25	11.52	0	0	
SNP-05-4m	2-Sep-2022	97.45	10.05	7.31	1,211.44	11.52	0	0	
SNP-05-5m	2-Sep-2022	97.28	10.04	7.32	1,211.53	11.51	0	0	
SNP-05-6m	2-Sep-2022	97.17	10.03	7.32	1,212.08	11.49	0	0	
SNP-05-7m	2-Sep-2022	96.92	10.01	7.33	1,212.35	11.47	0	0	
SNP-05-8m	2-Sep-2022	96.32	9.96	7.34	1,212.16	11.41	0	0	
SNP-05-9m	2-Sep-2022	95.29	9.88	7.34	1,213.85	11.28	0	0	
SNP-05-0.3m	3-Oct-2022	98.63	11.69	7.04	1,142.72	5.92	0.55	0.35	
SNP-05-1m	3-Oct-2022	98.58	11.69	7.12	1,142.59	5.93	0.44	0.28	
SNP-05-2m	3-Oct-2022	98.52	11.68	7.16	1,142.25	5.92	0.51	0.39	
SNP-05-3m	3-Oct-2022	98.47	11.68	7.18	1,142.43	5.91	0.59	0.38	
SNP-05-4m	3-Oct-2022	98.42	11.68	7.20	1,142.13	5.91	0.42	0.27	
SNP-05-5m	3-Oct-2022	98.31	11.67	7.21	1,141.35	5.92	0.58	0.38	
SNP-05-6m	3-Oct-2022	98.37	11.68	7.23	1,141.13	5.93	1.97	1.27	
SNP-05-7m	3-Oct-2022	98.30	11.67	7.24	1,141.59	5.91	0.46	0.30	
SNP-05-8m	3-Oct-2022	98.31	11.68	7.24	1,141.18	5.93	0.51	0.33	
SNP-05-9m	3-Oct-2022	98.42	11.69	7.25	1,141.16	5.93	0.48	1.07	
SNP-05-0.3m	14-Nov-2022	101.16	13.93	6.37	1,338.56	0.49	0	0	0.30
SNP-05-1m	14-Nov-2022	101.10	13.91	6.48	1,337.19	0.52	0	0	1.00
SNP-05-2m	14-Nov-2022	101.07	13.87	6.59	1,330.26	0.63	0	0	2.00
SNP-05-3m	14-Nov-2022	98.19	13.47	6.76	1,325.93	0.68	0	0	3.00
SNP-05-4m	14-Nov-2022	96.63	13.16	6.79	1,320.43	0.94	0	0	4.00
SNP-05-5m	14-Nov-2022	92.39	12.46	6.82	1,310.65	1.31	0	0	5.00
SNP-05-6m	14-Nov-2022	87.65	11.68	6.84	1,303.26	1.73	0	0	6.00
SNP-05-7m	14-Nov-2022	76.83	10.11	6.84	1,302.98	2.21	0	0	7.00

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Effective Depth (m)
SNP-05-8m	14-Nov-2022	68.48	8.95	6.87	1,322.39	2.47	0	0	8.00
SNP-05-9m	14-Nov-2022	81.26	10.54	6.87	1,389.00	2.72	0	0	9.00
SNP-05-0.3m	12-Dec-2022	99.52	13.30	6.76	1,400.82	1.37	0	0	8.70
SNP-05-1m	12-Dec-2022	97.97	13.17	6.87	1,402.37	1.17	0	0	8.70
SNP-05-2m	12-Dec-2022	97.34	13.11	6.94	1,396.12	1.12	0	0	8.70
SNP-05-3m	12-Dec-2022	96.23	12.89	7.02	1,389.10	1.32	0	0	8.70
SNP-05-4m	12-Dec-2022	94.10	12.51	7.08	1,378.70	1.61	0	0	8.70
SNP-05-5m	12-Dec-2022	90.33	11.90	7.09	1,372.77	1.95	0	0	8.70
SNP-05-6m	12-Dec-2022	84.88	11.12	7.03	1,410.83	2.16	0	0	8.70
SNP-05-7m	12-Dec-2022	79.51	10.32	6.98	1,416.05	2.50	0	0	8.70
SNP-05-8m	12-Dec-2022	78.51	10.17	6.94	1,507.66	2.58	0	0	8.70

Note:

ND = No data collected due to sampler error.

Physical parameters were measured in the field using a YSI™ EXO1 or smarTROLLTM multiparameter handheld water quality meter.

Field total suspended solids (TSS) is derived from the field Turbidity measurement based on the manufacture's preset TSS-Turbidity correlation

G05_B Summary of Results for Monthly Water Quality in the Water Management Pond at SNP-05

Station	SNP-05-Mid	SNP-05-Mid	SNP-05-Mid	SNP-05-Bot	SNP-05-Mid	SNP-05-4m	SNP-05-5m	SNP-05-8m	SNP-05-5m	SNP-05-8m	SNP-05-5m	SNP-05-9m	SNP-05-5m	SNP-05-4m	SNP-05-7m	SNP-05-5m	SNP-05-4m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	5-Mar-2022	3-Apr-2022	13-May-2022	28-Jun-2022	28-Jun-2022	13-Jul-2022	13-Jul-2022	14-Aug-2022	14-Aug-2022	2-Sep-2022	3-Oct-2022	3-Oct-2022	14-Nov-2022	12-Dec-2022
Conductivity (µS/cm)	1260	1310	1420	1430	1460	1450	1000	1580	1080	1170	1170	1200	1220	1250	1240	1330	1370
pH	7.18	7.22	7.14	7.17	7.07	7.50	7.31	7.68	7.48	7.63	7.62	7.65	7.59	7.41	7.43	7.49	7.44
Total Suspended Solids (mg/L)	<1.0	1.40	<1.0	1.80	<1.0	1.40	1.10	1.50	1.00	<1.0	<1.0	<1.0	<1.0	<1.0	1.40	<1.0	<1.0
Turbidity (NTU)	0.59	0.53	0.50	0.38	0.65	0.62	0.54	0.55	0.32	0.20	0.23	0.23	0.24	0.50	0.47	0.40	0.16
Alkalinity, Bicarbonate (mg/L)	25.00	26.30	24.70	28.30	27.90	28.70	17.20	41.20	18.70	25.90	22.00	23.00	23.30	26.80	26.80	28.00	25.70
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	25.00	26.30	24.70	28.30	27.90	28.70	17.20	41.20	18.70	25.90	22.00	23.00	23.30	26.80	26.80	28.00	25.70
Calcium (Ca)-Total (mg/L)	96.80	116	108	111	112	128	74.90	125	80.60	91.10	92.00	95.40	89.10	105	105	97.40	101
Chloride (mg/L)	290	317	326	328	335	340	222	417	248	264	273	274	279	284	287	305	343
Fluoride (mg/L)	0.35	0.35	0.39	0.40	0.37	0.36	0.26	0.47	0.30	0.33	0.33	0.33	0.33	0.34	0.33	0.37	0.34
Hardness (as CaCO3) (mg/L)	376	387	404	415	427	440	283	480	303	326	359	359	334	332	329	353	379
Magnesium (Mg)-Total (mg/L)	27.80	34.80	31.00	31.00	29.20	33.50	21.60	35.80	23.70	26.70	27.50	27.80	27.20	30.80	30.90	29.20	27.40
Potassium (K)-Total (mg/L)	17.20	21.70	20.00	19.00	20.50	23.00	15.80	21.90	15.90	16.50	19.10	19.30	19.10	21.70	21.50	20.30	19.20
Silicate (as SiO2) (mg/L)	2.21	2.58	2.52	3.06	2.90	3.31	1.66	3.29	1.40	2.09	1.31	1.50	1.23	1.00	1.01	1.15	1.27
Sodium (Na)-Total (mg/L)	80.20	91.20	91.80	89.00	87.80	104	62.90	95.90	65.00	71.40	74.60	75.60	76.30	82.80	82.10	83.60	76.90
Sulfate (mg/L)	74.20	81.80	84.50	90.10	84.90	88.60	51.00	120	58.20	68.90	66.80	68.00	67.40	69.60	60.80	73.30	81.80
TDS (mg/L)	898	860	921	904	914	1040	840	1380	848	929	1010	1030	1400	840	911	905	827
Ammonia, Total (as N) (mg/L)	0.52	0.46	0.50	0.84	0.48	0.41	0.37	1.28	0.31	0.36	0.31	0.35	0.21	0.13	0.13	0.12	0.12
Nitrate and Nitrite (mg/L)	15.30	16.60	17.20	17.60	17.70	18.00	11.40	22.80	12.60	14.20	13.90	13.90	13.60	13.40	13.70	14.60	16.20
Nitrate as Nitrogen (mg/L)	15.20	16.50	17.10	17.50	17.60	18.00	11.40	22.60	12.60	14.10	13.80	13.80	13.60	13.40	13.70	14.60	16.20
Nitrite as Nitrogen (mg/L)	0.08	0.07	0.07	0.08	0.08	0.06	0.04	0.18	0.05	0.07	0.06	0.07	0.06	0.04	0.03	0.03	0.03
Orthophosphate-Dissolved (as P) (mg/L)	0.00	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	0.00	<0.0010	<0.0010	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	0.00	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	0.00
Phosphorus - Total (mg/L)	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	0.65	0.78	0.78	1.00	0.77	0.40	0.65	0.92	0.42	0.64	0.62	0.53	0.44	0.42	0.42	0.48	0.21
Total Organic Carbon (mg/L)	2.84	3.06	3.26	3.18	3.24	3.00	2.78	3.48	2.33	2.17	3.90	3.84	3.47	2.14	2.33	2.34	2.30
Aluminum (Al)-Total (mg/L)	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.01	0.01
Antimony (Sb)-Total (mg/L)	<0.00010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.00010	<0.00010	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arsenic (As)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Total (mg/L)	0.15	0.16	0.17	0.16	0.17	0.16	0.11	0.17	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.14	0.13
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	0.73	0.86	0.77	0.80	0.82	0.90	0.58	0.79	0.53	0.61	0.66	0.67	0.68	0.69	0.69	0.72	0.75
Cadmium (Cd)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cesium (Cs)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper (Cu)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iron (Fe)-Total (mg/L)	0.04	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	<0.010	0.04	0.04	0.01	0.01
Lead (Pb)-Total (mg/L)	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000050	<0.000050	<0.000030	0.00	0.00	<0.000030	<0.000050	<0.000030	<0.000030	<0.000030	<0.000030
Lithium (Li)-Total (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Manganese (Mn)-Total (mg/L)	0.06	0.06	0.06	0.13	0.06	0.06	0.04	0.21	0.03	0.07	0.03	0.04	0.02	0.02	0.02	0.01	0.01
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubidium (Rb)-Total (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Total (mg/L)	<0.000050	0.00	<0.000050	0.00	0.00	<0.000050	<0.000100	<0.000100	<0.000050	0.00	0.00	<0.000050	<0.000100	0.00	0.00	0.00	<0.000050
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium (Sr)-Total (mg/L)	1.43	1.69	1.69	1.69	1.75	1.98	1.13	1.84	1.16	1.25	1.36	1.34	1.28	1.45	1.46	1.40	1.50
Sulfur (S)-Total (mg/L)	27.40	28.80	30.40	32.20	30.90	34.20	19.90	39.80	20.10	24.00	25.20	25.60	23.70	26.60	25.20	28.70	27.60
Tellurium (Te)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.00020	0.00	<0.00020	<0.00020	0.00	0.00	<0.00020	0.00	0.00	0.00	<0.00020

Station	SNP-05-Mid	SNP-05-Mid	SNP-05-Mid	SNP-05-Bot	SNP-05-Mid	SNP-05-4m	SNP-05-5m	SNP-05-8m	SNP-05-5m	SNP-05-8m	SNP-05-5m	SNP-05-9m	SNP-05-5m	SNP-05-4m	SNP-05-7m	SNP-05-5m	SNP-05-4m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	5-Mar-2022	3-Apr-2022	13-May-2022	28-Jun-2022	28-Jun-2022	13-Jul-2022	13-Jul-2022	14-Aug-2022	14-Aug-2022	2-Sep-2022	3-Oct-2022	3-Oct-2022	14-Nov-2022	12-Dec-2022
Thallium (Tl)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.000050	<0.000050	0.00	0.00	0.00	0.00	<0.000050	0.00	0.00	0.00	0.00
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.00	0.00	0.00	<0.000050	<0.000050	0.00	0.00	0.00	<0.000050	<0.000050
Titanium (Ti)-Total (mg/L)	0.00	<0.00030	<0.00030	<0.00030	<0.00030	0.00	<0.0100	<0.0100	<0.00030	<0.00030	<0.00030	<0.00030	<0.0100	0.00	0.00	<0.00030	<0.00030
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.0030	<0.0030	0.00	<0.0015	0.00	<0.0015	<0.0030	<0.0015	<0.0015	0.00	<0.0015
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Aluminum (Al)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Antimony (Sb)-Dissolved (mg/L)	0.00	<0.00010	0.00	<0.00010	0.00	0.00	<0.00010	0.00	0.00	0.00	<0.00010	0.00	0.00	0.00	0.00	0.00	0.00
Arsenic (As)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Dissolved (mg/L)	0.15	0.17	0.17	0.17	0.17	0.17	0.11	0.16	0.11	0.12	0.13	0.13	0.13	0.12	0.12	0.14	0.15
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100	<0.000020	<0.000020	<0.000100	<0.000100	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.72	0.73	0.69	0.69	0.83	0.81	0.58	0.85	0.58	0.57	0.66	0.64	0.66	0.63	0.63	0.70	0.73
Cadmium (Cd)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcium (Ca)-Dissolved (mg/L)	102	105	112	114	115	122	76.50	131	81.10	89.20	97.50	97.10	90.40	89.60	89.00	94.00	100
Cesium (Cs)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.00010	0.00	0.00	0.00	0.00	0.00	<0.00010	0.00	0.00	0.00	0.00
Copper (Cu)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iron (Fe)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	0.01	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050
Lead (Pb)-Dissolved (mg/L)	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000050	<0.000050	<0.000030	<0.000030	<0.000030	<0.000030	<0.000050	<0.000030	<0.000030	<0.000030	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Magnesium (Mg)-Dissolved (mg/L)	29.60	30.40	30.20	31.70	34.00	32.80	22.30	37.10	24.40	25.10	28.00	28.30	26.00	26.30	26.00	28.80	31.50
Manganese (Mn)-Dissolved (mg/L)	0.04	0.04	0.05	0.11	0.00	0.04	0.03	0.20	0.03	0.06	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Phosphorus - Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.300	<0.300	<0.010	<0.010	<0.010	<0.010	<0.300	<0.010	<0.010	<0.010	<0.010
Potassium (K)-Dissolved (mg/L)	19.10	20.20	19.60	19.80	22.00	20.70	16.90	23.60	16.10	16.40	20.00	20.40	18.70	18.20	18.80	20.10	21.30
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00	0.00	0.00	0.00	0.00	<0.000050	0.00	<0.000050	<0.000050	<0.000050	<0.000050	0.00	<0.000050	<0.000050	<0.000050	<0.000050
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	81.70	84.50	87.20	87.90	91.50	93.00	63.90	97.00	65.70	67.40	75.90	77.00	73.00	74.20	74.60	81.20	89.60
Strontium (Sr)-Dissolved (mg/L)	1.48	1.59	1.68	1.73	1.76	1.81	1.12	1.87	1.13	1.23	1.37	1.34	1.29	1.35	1.38	1.36	1.45
Sulfur (S)-Dissolved (mg/L)	27.10	27.00	30.00	33.50	32.30	31.70	22.00	43.30	21.00	24.20	25.80	25.10	24.90	24.80	26.20	26.30	28.60
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.01	0.00	0.00	<0.000050	<0.000050	0.00	0.00	0.00	<0.000050	<0.000050
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0100	<0.0100	<0.00030	<0.00030	<0.0100	<0.0100	<0.0100	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100	<0.00100	<0.00050	<0.00050	<0.00100	<0.00100	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00030	<0.00030	<0.00030	<0.00030

G05_C Summary of Sediment Quality Results at SNP-05

Station	SNP-05-Sed
Date	13-Jul-2022
Aluminum (Al) (mg/kg)	15600
Antimony (Sb) (mg/kg)	<0.10
Arsenic (As) (mg/kg)	4.51
Barium (Ba) (mg/kg)	71.90
Beryllium (Be) (mg/kg)	0.66
Bismuth (Bi) (mg/kg)	0.30
Boron (B) (mg/kg)	16.80
Cadmium (Cd) (mg/kg)	0.63
Calcium (Ca) (mg/kg)	4390
Chromium (Cr) (mg/kg)	30.90
Cobalt (Co) (mg/kg)	10.00
Copper (Cu) (mg/kg)	65.20
Iron (Fe) (mg/kg)	27000
Lead (Pb) (mg/kg)	4.63
Lithium (Li) (mg/kg)	16.40
Magnesium (Mg) (mg/kg)	3780
Manganese (Mn) (mg/kg)	267
Mercury (Hg) (mg/kg)	0.04
Molybdenum (Mo) (mg/kg)	4.39
Nickel (Ni) (mg/kg)	28.40
Phosphorous (P) (mg/kg)	1400
Potassium (K) (mg/kg)	1830
Selenium (Se) (mg/kg)	1.11
Silver (Ag) (mg/kg)	0.18
Sodium (Na) (mg/kg)	1060
Strontium (Sr) (mg/kg)	66.00
Thallium (Tl) (mg/kg)	0.10
Titanium (Ti) (mg/kg)	258
Uranium (U) (mg/kg)	3.11
Vanadium (V) (mg/kg)	42.60
Zinc (Zn) (mg/kg)	87.80
% Clay (<2um) (%)	18.60
% Sand (2.0mm - 0.05mm) (%)	10.80
% Silt (0.05mm - 2um) (%)	70.60
Texture	Silt Loam
Inorganic Carbon (%)	0.14
Total Organic Carbon (%)	12.10
Sulfur (S) (mg/kg)	3000
% Organic Matter	20.90
carbon, total (TC) (%)	12.20

G05_D Water Surface Elevations at SNP-05 (Water Mangement Pond)

Date	Monthly Average Water Elevation (masl)
Jan-2022	417.89
Feb-2022	417.73
Mar-2022	417.57
Apr-2022	417.40
May-2022	417.53
Jun-2022	417.90
Jul-2022	417.96
Aug-2022	417.95
Sep-2022	417.95
Oct-2022	417.93
Nov-2022	417.83
Dec-2022	417.68

G06 Summary of Sampling Requirements and Sample Dates at SNP 06 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-06	Operations	Monthly (upon establishment of the Water Management Pond)	Physiochemical profile measurements at 1 m depth intervals; number of water samples to be determined by presence/absence of stratification) Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, Water Elevation	Monthly throughout 2022
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	13-Jul

G06_A Summary of Physical Parameter Measurements at SNP-06

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Effective Depth (m)
SNP-06-0.3m	10-Jan-2022	98.83	13.34	7.05	1,478.16	0.14	0	0	
SNP-06-1m	10-Jan-2022	98.62	13.32	7.06	1,474.33	0.15	0	0	
SNP-06-2m	10-Jan-2022	97.56	13.09	7.07	1,452.21	0.49	0	0	
SNP-06-3m	10-Jan-2022	95.24	12.67	7.07	1,435.48	0.81	0	0	
SNP-06-4m	10-Jan-2022	91.25	12.04	7.05	1,423.48	1.18	0	0	
SNP-06-5m	10-Jan-2022	85.77	11.29	7.02	1,455.15	1.36	0	0	
SNP-06-0.3m	7-Feb-2022	100.94	12.70	7.21	1,330.05	0.01	0	0	
SNP-06-1m	7-Feb-2022	99.59	12.50	7.12	1,314.38	0.11	0	0	
SNP-06-2m	7-Feb-2022	98.34	12.22	7.05	1,299.08	0.49	0	0	
SNP-06-3m	7-Feb-2022	97.70	12.06	7.01	1,289.38	0.76	0	0	
SNP-06-4m	7-Feb-2022	96.35	11.80	6.98	1,280.83	1.06	0	0	
SNP-06-5m	7-Feb-2022	90.62	11.11	6.91	1,323.16	1.07	0	0	
SNP-06-6m	7-Feb-2022	67.80	8.21	6.73	1,445.90	1.54	0	0	
SNP-06-0.3m	5-Mar-2022	82.20	11.30	5.97	1,450.00	0.40	0.00	0.00	
SNP-06-1m	5-Mar-2022	82.90	11.40	6.08	1,444.70	0.50	0.00	0.00	
SNP-06-2m	5-Mar-2022	83.70	11.40	6.16	1,450.70	0.70	0.00	0.00	
SNP-06-3m	5-Mar-2022	82.50	11.10	6.20	1,441.30	1.00	0.00	0.00	
SNP-06-4m	5-Mar-2022	79.40	10.70	6.22	1,461.60	1.10	0.00	0.00	
SNP-06-0.3m	3-Apr-2022	10.61	80.86	6.80	1,468.60	1.84	0	0	
SNP-06-1m	3-Apr-2022	10.76	81.89	6.74	1,472.37	2.51	0	0	
SNP-06-2m	3-Apr-2022	10.69	82.04	6.69	1,468.80	3.52	0	0	
SNP-06-3m	3-Apr-2022	10.33	79.86	6.66	1,458.66	4.51	0	0	
SNP-06-4m	3-Apr-2022	10.07	77.94	6.62	1,488.71	5.54	0	0	
SNP-06-0.3m	13-May-2022	79.68	10.66	6.90	1,343.79	1.40	0	0	
SNP-06-1m	13-May-2022	74.56	9.75	6.79	1,525.62	2.26	0	0	
SNP-06-2m	13-May-2022	76.29	9.93	6.75	1,539.19	2.44	0	0	
SNP-06-3m	13-May-2022	83.54	10.80	6.70	1,540.14	2.71	0	0	
SNP-06-4m	13-May-2022	94.71	12.07	6.66	1,542.15	3.28	96.62	62.34	
SNP-06-0.3m	28-Jun-2022	104.15	10.46	6.87	1,005.40	12.63	0	0	
SNP-06-1m	28-Jun-2022	104.23	10.47	6.92	1,007.22	12.57	0	0	
SNP-06-2m	28-Jun-2022	104.18	10.46	6.95	1,005.64	12.62	0	0	
SNP-06-3m	28-Jun-2022	104.05	10.45	6.98	1,005.77	12.63	0	0	
SNP-06-4m	28-Jun-2022	104.41	10.49	7.00	1,006.29	12.62	0	0	
SNP-06-0.3m	28-Jun-2022	104.18	10.45	6.99	1,004.83	12.67	0	0	
SNP-06-0.3m	13-Jul-2022	104.67	9.40	7.04	1,067.04	17.31	0	0	
SNP-06-1m	13-Jul-2022	104.76	9.42	7.16	1,067.20	17.27	0	0	
SNP-06-2m	13-Jul-2022	104.76	9.42	7.21	1,067.61	17.23	0	0	
SNP-06-3m	13-Jul-2022	104.61	9.42	7.21	1,067.61	17.23	0	0	
SNP-06-4m	13-Jul-2022	104.67	9.43	7.27	1,067.46	17.23	0	0	
SNP-06-5m	13-Jul-2022	104.39	9.45	7.31	1,071.12	16.95	0	0	
SNP-06-6m	13-Jul-2022	112.55	10.91	7.40	1,085.12	13.87	0	0	
SNP-06-1m	14-Aug-2022	102.95	9.87	7.35	1,222.81	14.77	0	0	
SNP-06-2m	14-Aug-2022	102.76	9.86	7.35	1,222.61	14.75	0	0	
SNP-06-3m	14-Aug-2022	102.75	9.86	7.35	1,221.27	14.77	0	0	

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Effective Depth (m)
SNP-06-4m	14-Aug-2022	102.69	9.86	7.35	1,221.06	14.76	0	0	
SNP-06-5m	14-Aug-2022	102.83	9.88	7.36	1,220.84	14.70	0	0	
SNP-06-6m	14-Aug-2022	102.87	9.89	7.37	1,219.89	14.68	3.14	2.03	
SNP-06-0.3m	14-Aug-2022	102.91	9.85	7.34	1,220.29	14.91	0	0	
SNP-06-0.3m	2-Sep-2022	99.59	10.29	6.36	1,213.09	11.28	0	0	
SNP-06-1m	2-Sep-2022	98.63	10.18	6.46	1,211.30	11.30	0	0	
SNP-06-2m	2-Sep-2022	97.87	10.10	6.69	1,209.78	11.32	0	0	
SNP-06-3m	2-Sep-2022	97.66	10.10	6.83	1,209.29	11.31	0	0	
SNP-06-4m	2-Sep-2022	97.61	10.10	6.88	1,209.58	11.27	0	0	
SNP-06-5m	2-Sep-2022	97.72	10.13	6.97	1,209.49	11.24	0	0	
SNP-06-6m	2-Sep-2022	97.10	10.09	7.06	1,210.21	11.15	0	0	
SNP-06-0.3m	3-Oct-2022	99.14	11.72	7.23	1,144.44	6.05	0.51	0.33	
SNP-06-1m	3-Oct-2022	99.00	11.71	7.23	1,144.73	6.05	0.42	0.27	
SNP-06-2m	3-Oct-2022	98.98	11.72	7.24	1,145.25	6.03	0.42	0.27	
SNP-06-3m	3-Oct-2022	99.01	11.71	7.24	1,145.38	6.03	0.52	0.34	
SNP-06-4m	3-Oct-2022	98.93	11.71	7.25	1,144.78	6.05	0.48	0.31	
SNP-06-5m	3-Oct-2022	98.96	11.72	7.25	1,144.58	6.05	0.55	0.35	
SNP-06-6m	3-Oct-2022	98.93	11.72	7.25	1,144.45	6.05	0.48	0.31	
SNP-06-0.3m	14-Nov-2022	102.87	14.15	7.19	1,349.98	0.55	0	0	0.30
SNP-06-1m	14-Nov-2022	102.22	13.99	7.19	1,346.33	0.73	0	0	1.00
SNP-06-3m	14-Nov-2022	101.00	13.84	7.23	1,328.31	0.73	0	0	3.00
SNP-06-4m	14-Nov-2022	100.26	13.66	7.24	1,321.66	0.91	0	0	4.00
SNP-06-5m	14-Nov-2022	97.27	13.14	7.21	1,362.93	1.23	0	0	5.00
SNP-06-6m	14-Nov-2022	87.99	11.62	7.13	1,441.20	2.03	0	0	6.00
SNP-06-2m	14-Nov-2022	101.89	14.02	7.21	1,341.14	0.54	0	0	2.00
SNP-06-0.3m	12-Dec-2022	103.72	14.37	7.09	1,451.10	0.11	0	0	5.30
SNP-06-1m	12-Dec-2022	103.40	14.28	7.17	1,445.27	0.24	0	0	5.30
SNP-06-2m	12-Dec-2022	102.44	14.02	7.20	1,431.47	0.54	0	0	5.30
SNP-06-3m	12-Dec-2022	100.07	13.58	7.21	1,422.06	0.85	0	0	5.30
SNP-06-4m	12-Dec-2022	102.01	13.77	7.24	1,442.11	1.04	0	0	5.30
SNP-06-5m	12-Dec-2022	85.38	11.36	7.14	1,546.97	1.58	0	0	5.30

Note:

ND = No data collected due to sampler error.

Physical parameters were measured in the field using a YSI™ EXO1 or smarTROLLTM multiparameter handheld water quality meter.

Field total suspended solids (TSS) is derived from the field Turbidity measurement based on the manufacture's preset TSS-Turbidity correlation

G06_B Summary of Results for Monthly Water Quality in the Water Management Pond at SNP-06

Station	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	3-Apr-2022	13-May-2022	28-Jun-2022	13-Jul-2022	14-Aug-2022	2-Sep-2022	3-Oct-2022	14-Nov-2022	12-Dec-2022
Conductivity (µS/cm)	1340	1330	1450	1490	1250	1050	1090	1180	1200	1230	1340	1410
pH	7.20	7.28	7.09	7.09	7.46	7.42	7.42	7.63	7.58	7.58	7.51	7.44
Total Suspended Solids (mg/L)	<1.0	<1.0	1.00	<1.0	1.00	<1.0	<1.0	<1.0	<1.0	4.90	<1.0	<1.0
Turbidity (NTU)	0.67	0.35	0.35	0.43	0.68	0.49	0.23	0.18	0.20	0.45	0.30	0.14
Alkalinity, Bicarbonate (mg/L)	25.10	27.00	24.90	28.40	24.80	18.40	18.90	22.60	23.00	23.50	28.40	26.00
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	25.10	27.00	24.90	28.40	24.80	18.40	18.90	22.60	23.00	23.50	28.40	26.00
Calcium (Ca)-Total (mg/L)	102	120	112	116	120	72.00	81.20	93.20	90.00	110	101	104
Chloride (mg/L)	311	325	334	342	288	231	242	272	273	284	311	335
Fluoride (mg/L)	0.34	0.38	0.39	0.38	0.32	0.26	0.30	0.32	0.31	0.32	0.38	<1.00
Hardness (as CaCO3) (mg/L)	413	398	406	441	396	283	318	357	336	340	368	388
Magnesium (Mg)-Total (mg/L)	28.80	34.00	31.40	30.70	31.20	21.20	24.10	28.10	27.00	32.40	29.00	29.00
Potassium (K)-Total (mg/L)	18.00	21.30	19.90	21.50	20.50	14.20	16.80	19.80	19.10	22.40	20.50	20.60
Silicate (as SiO2) (mg/L)	2.04	2.48	2.59	2.81	2.47	1.61	1.40	1.29	1.22	1.01	0.99	1.26
Sodium (Na)-Total (mg/L)	84.50	88.60	91.30	90.90	91.00	61.30	65.10	76.10	76.30	86.10	84.60	82.40
Sulfate (mg/L)	76.50	83.90	85.90	86.60	73.40	54.60	56.40	66.40	66.70	66.90	75.00	53.50
TDS (mg/L)	933	892	928	805	845	848	868	1010	938	987	874	916
Ammonia, Total (as N) (mg/L)	0.60	0.56	0.53	0.49	0.43	0.34	0.29	0.32	0.21	0.14	0.14	0.12
Nitrate and Nitrite (mg/L)	16.10	17.00	17.60	18.00	15.20	12.00	12.40	13.80	13.40	13.60	14.90	16.30
Nitrate as Nitrogen (mg/L)	16.00	16.90	17.50	17.90	15.20	12.00	12.40	13.70	13.40	13.60	14.90	16.20
Nitrite as Nitrogen (mg/L)	0.07	0.07	0.07	0.07	0.06	0.04	0.05	0.06	0.05	0.03	0.04	0.11
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	<0.0014	<0.0014	<0.0014	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010
Phosphorus - Total (mg/L)	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	0.63	0.85	0.64	0.26	0.62	0.60	0.45	0.39	0.54	0.47	0.51	0.38
Total Organic Carbon (mg/L)	3.50	2.92	3.49	3.10	2.62	2.54	4.04	2.31	4.07	2.46	2.57	2.39
Aluminum (Al)-Total (mg/L)	0.03	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.02	0.01	0.01
Antimony (Sb)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.00010	0.00	0.00	0.00
Arsenic (As)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Total (mg/L)	0.15	0.16	0.17	0.17	0.14	0.11	0.12	0.12	0.12	0.13	0.14	0.14
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100	<0.000020	<0.000100	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	0.77	0.89	0.80	0.85	0.80	0.52	0.61	0.67	0.70	0.67	0.73	0.77
Cadmium (Cd)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cesium (Cs)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00	<0.00050	<0.00050	0.00	<0.00050	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper (Cu)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	3-Apr-2022	13-May-2022	28-Jun-2022	13-Jul-2022	14-Aug-2022	2-Sep-2022	3-Oct-2022	14-Nov-2022	12-Dec-2022
Iron (Fe)-Total (mg/L)	0.05	0.03	0.02	0.02	0.03	0.02	<0.010	0.02	<0.010	0.03	0.01	0.01
Lead (Pb)-Total (mg/L)	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000050	<0.000050	<0.000030	<0.000050	<0.000030	<0.000030	<0.000030
Lithium (Li)-Total (mg/L)	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Manganese (Mn)-Total (mg/L)	0.06	0.06	0.06	0.06	0.05	0.04	0.03	0.03	0.02	0.01	0.01	0.01
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Rubidium (Rb)-Total (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.000100	<0.000100	<0.000050	<0.000100	<0.000050	<0.000050	<0.000050
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium (Sr)-Total (mg/L)	1.50	1.76	1.76	1.80	1.69	1.10	1.10	1.32	1.27	1.57	1.45	1.58
Sulfur (S)-Total (mg/L)	28.50	29.70	31.60	32.00	29.70	18.80	22.00	25.00	24.30	27.80	28.40	29.30
Tellurium (Te)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.00020	0.00	0.00	<0.00020	0.00	0.00	<0.00020
Thallium (Tl)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.000050	<0.000050	0.00	<0.000050	0.00	0.00	0.00
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.00	0.00	<0.000050	0.00	0.00	<0.000050	<0.000050
Titanium (Ti)-Total (mg/L)	0.00	<0.00030	<0.00030	<0.00030	0.00	<0.0100	<0.0100	<0.00030	<0.0100	0.00	<0.00030	<0.00030
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100	<0.00100	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.01	0.00	0.00	0.00	0.00	0.00	<0.0030	<0.0015	<0.0030	<0.0015	<0.0015	<0.0015
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Aluminum (Al)-Dissolved (mg/L)	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Antimony (Sb)-Dissolved (mg/L)	0.00	0.00	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00	0.00	0.00	0.00	0.00
Arsenic (As)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Dissolved (mg/L)	0.16	0.17	0.17	0.18	0.16	0.12	0.12	0.12	0.13	0.13	0.14	0.15
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100	<0.000020	<0.000100	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.78	0.75	0.70	0.81	0.73	0.55	0.58	0.66	0.61	0.69	0.72	0.76
Cadmium (Cd)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcium (Ca)-Dissolved (mg/L)	113	108	112	119	110	77.10	87.10	97.40	87.00	91.00	97.10	102
Cesium (Cs)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.00010	0.00	0.00	0.00
Copper (Cu)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iron (Fe)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	<0.0050
Lead (Pb)-Dissolved (mg/L)	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000050	<0.000030	<0.000050	<0.000030	<0.000030	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Magnesium (Mg)-Dissolved (mg/L)	31.80	31.20	30.80	35.00	29.50	22.00	24.50	27.60	26.20	27.40	30.40	32.30
Manganese (Mn)-Dissolved (mg/L)	0.00	0.03	0.05	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00

Station	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-Mid	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	3-Apr-2022	13-May-2022	28-Jun-2022	13-Jul-2022	14-Aug-2022	2-Sep-2022	3-Oct-2022	14-Nov-2022	12-Dec-2022
Phosphorus - Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.300	<0.010	<0.300	<0.010	<0.010	<0.010
Potassium (K)-Dissolved (mg/L)	21.20	20.40	21.30	23.70	18.80	15.60	16.90	19.90	19.30	18.90	20.80	22.80
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Dissolved (mg/L)	0.00	0.00	0.00	<0.000050	0.00	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	89.20	84.80	91.10	97.30	83.80	62.20	66.40	74.90	73.90	75.10	85.10	90.40
Strontium (Sr)-Dissolved (mg/L)	1.63	1.64	1.74	1.84	1.60	1.12	1.15	1.38	1.28	1.32	1.41	1.49
Sulfur (S)-Dissolved (mg/L)	27.90	26.90	30.50	32.40	27.60	18.30	20.80	25.20	24.00	25.40	26.90	29.70
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.00	<0.000050	0.00	0.00	<0.000050	<0.000050
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.0100	<0.0100	<0.00030	<0.0100	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100	<0.00100	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	0.00	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00030	<0.00020	<0.00030	<0.00030	<0.00030
Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
F1 (C6-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10
F2 (C10-C16) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F4 (C34-C50) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Total Hydrocarbons (C6-C50) (mg/L)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40		<0.40	<0.40	<0.40
Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075

G06_C Summary of Sediment Quality Results at SNP-06

Station	SNP-06-Sed
Date	13-Jul-2022
Aluminum (Al) (mg/kg)	16200
Antimony (Sb) (mg/kg)	<0.10
Arsenic (As) (mg/kg)	8.62
Barium (Ba) (mg/kg)	87.20
Beryllium (Be) (mg/kg)	0.66
Bismuth (Bi) (mg/kg)	0.33
Boron (B) (mg/kg)	22.30
Cadmium (Cd) (mg/kg)	0.44
Calcium (Ca) (mg/kg)	4390
Chromium (Cr) (mg/kg)	32.70
Cobalt (Co) (mg/kg)	13.30
Copper (Cu) (mg/kg)	66.80
Iron (Fe) (mg/kg)	48300
Lead (Pb) (mg/kg)	5.06
Lithium (Li) (mg/kg)	17.10
Magnesium (Mg) (mg/kg)	3800
Manganese (Mn) (mg/kg)	353
Mercury (Hg) (mg/kg)	0.04
Molybdenum (Mo) (mg/kg)	5.67
Nickel (Ni) (mg/kg)	33.40
Phosphorous (P) (mg/kg)	1460
Potassium (K) (mg/kg)	1920
Selenium (Se) (mg/kg)	1.12
Silver (Ag) (mg/kg)	0.16
Sodium (Na) (mg/kg)	840
Strontium (Sr) (mg/kg)	57.70
Thallium (Tl) (mg/kg)	0.13
Titanium (Ti) (mg/kg)	265
Uranium (U) (mg/kg)	3.32
Vanadium (V) (mg/kg)	46.70
Zinc (Zn) (mg/kg)	131
% Clay (<2um) (%)	17.20
% Sand (2.0mm - 0.05mm) (%)	9.40
% Silt (0.05mm - 2um) (%)	73.40
Texture	Silt Loam
Inorganic Carbon (%)	0.13
Total Organic Carbon (%)	11.90
Sulfur (S) (mg/kg)	3100
% Organic Matter	20.50
carbon, total (TC) (%)	12.00

G06_D Water Surface Elevations at SNP-06 (Water Management Pond)

Date	Monthly Average Water Elevation (masl)
Jan-2022	417.89
Feb-2022	417.73
Mar-2022	417.57
Apr-2022	417.40
May-2022	417.53
Jun-2022	417.90
Jul-2022	417.96
Aug-2022	417.95
Sep-2022	417.95
Oct-2022	417.93
Nov-2022	417.83
Dec-2022	417.68

G07 Summary of Sampling Requirements and Sample Dates at SNP 07 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-07	Operations	Continuously (by in-line monitoring)	Flow, volume, physical parameters	January 1 to December 31
		Monthly	Physical parameters, nutrients, BOD, total and faecal coliforms, *E. coli* , extractable petroleum hydrocarbons, BTEX, oil and grease	January 5, February 3, March 2, April 6, May 5, June 2, July 4, August 2, September 12, October 3, November 1, December 8

G07_A Summary of Field Physical Parameters at SNP-07

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-07	5-Jan-2022	87.44	7.17	7.05	683.91	22.91	0.00	0.00
SNP-07	3-Feb-2022	72.99	5.24	7.27	787.02	29.92	0	0
SNP-07	2-Mar-2022	48.50	3.90	7.39	733.20	24.40	1.30	0.80
SNP-07	6-Apr-2022	76.20	5.90	7.20	736.40	25.60	0	0
SNP-07	5-May-2022	74.08	5.50	6.95	880.43	27.12	0.23	0.15
SNP-07	2-Jun-2022	49.41	3.89	7.21	668.40	25.12	0.04	0.03
SNP-07	4-Jul-2022	51.48	3.95	7.26	929.92	26.62	ND	0
SNP-07	2-Aug-2022	61.82	4.71	6.77	871.26	26.25	0.61	0.39
SNP-07	12-Sep-2022	71.54	5.63		941.39	24.72	0.43	0.28
SNP-07	3-Oct-2022	80.06	6.55	7.60	827.28	22.73	0.88	0.57
SNP-07	1-Nov-2022	63.20	5.06	7.18	1,026.03	23.70	0	0
SNP-07	8-Dec-2022	52.56	4.09	7.16	968.16	25.31	1.71	1.10

ND = No data collected due to sampler error.

G07_B Summary of Treated Effuent Quality Results at SNP-07

Station	EQC	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07	SNP-07
Date		5-Jan-2022	3-Feb-2022	2-Mar-2022	6-Apr-2022	5-May-2022	2-Jun-2022	4-Jul-2022	2-Aug-2022	12-Sep-2022	3-Oct-2022	1-Nov-2022	8-Dec-2022
Conductivity (µS/cm)		728	773	706	700	866	679	955	807	894	827	867	914
pH		7.62	7.86	7.81	7.57	8.11	8.13	8.18	7.95	8.28	8.03	7.79	7.81
Total Suspended Solids (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0	1.40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Turbidity (NTU)		0.12	0.12	0.28	0.16	0.11	0.11	0.11	0.13	0.15	0.19	0.23	0.13
Ammonia, Total (as N) (mg/L)		0.02	0.86	0.24	0.03	0.14	0.24	0.22	0.33	0.68	0.02	3.18	1.49
BOD (mg/L)		2	<2	<2	2	3	<2	<2.0	<2.0	2.00	2.00	2.00	<2.0
Nitrate and Nitrite (mg/L)		18.30	8.58	6.37	8.84	13.80	7.40	10.50	12.30	7.35	16.50	16.40	24.30
Nitrate as Nitrogen (mg/L)		18.30	8.34	6.24	8.84	13.80	7.38	10.50	12.30	7.32	16.50	16.30	24.20
Nitrite as Nitrogen (mg/L)		0.01	0.24	0.13	<0.0050	0.03	0.02	0.02	0.05	0.03	0.01	0.06	0.08
Orthophosphate-Dissolved (as P) (mg/L)		7.03	5.95	5.35	6.30	7.92	6.61	8.49	6.89	6.99	6.44	7.19	7.11
Phosph (P)-Dis Inorg (mg/L)		7.64	6.53	5.30	6.52	8.02	7.50	8.60	6.61	7.01	7.06	5.95	7.26
Phosph (P)-Dis Org (mg/L)		<0.767	<0.626	<0.528	<0.673	<0.803	<0.744	<0.830	<0.652	<1.30	<0.697	1.30	<1.43
Phosph (P)-Tot Dis (mg/L)		7.75	6.12	5.32	6.92	8.12	7.47	8.17	6.51	7.26	6.98	7.25	8.04
Phosph (P)-Tot Inorg (mg/L)		7.78	6.60	5.22	6.61	8.06	7.50	8.64	6.59	6.85	6.80	5.95	7.27
Phosphorus - Total (mg/L)		7.76	6.16	5.26	6.53	8.14	7.14	8.18	6.53	7.62	6.64	7.58	7.98
Total Kjeldahl Nitrogen (mg/L)		1.46	2.54	1.73	1.56	1.29	1.29	1.79	1.49	2.22	1.33	4.76	2.52
Total Organic Carbon (mg/L)		12.40	13.40	14.00	15.00	14.60	9.84	10.90	10.10	11.60	8.87	11.30	12.10
Benzene (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
F1 (C6-C10) (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (C10-C16) (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34) (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F4 (C34-C50) (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Toluene (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Total Hydrocarbons (C6-C50) (mg/L)		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40		<0.40	<0.40	<0.40
Xylenes (mg/L)		<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
E. Coli (MPN/100mL)		<1.0	<1.0	<1.0	<1.0	<1.0	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fecal Coliforms (CFU/100mL)	20	<1.0	<1.0	<1.0	<1.0	<1.0	4.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Coliform (MPN/100mL)		<1.0	<1.0	<1.0	<1.0	1.00	12.10	5.20	3.10	<1.0	<1.0	<1.0	<1.0

Note:
EQC = effluent quality criteria
Orthophsphate dissolved (as P) (mg/L) is higher than Phosphorus – Total (mg/L) on March 2, July 4, August 2 indicating possible erroneous laboratory analysis.

: Indicates exceedance of MGC

G07_C Summary of Daily Effluent Volume Measurements at SNP-07

Date	Daily Effluent Volume (m^3)
1-Jan-2022	55
2-Jan-2022	65
3-Jan-2022	55
4-Jan-2022	65
5-Jan-2022	68
6-Jan-2022	77
7-Jan-2022	71
8-Jan-2022	62
9-Jan-2022	66
10-Jan-2022	76
11-Jan-2022	70
12-Jan-2022	69
13-Jan-2022	73
14-Jan-2022	65
15-Jan-2022	83
16-Jan-2022	71
17-Jan-2022	82
18-Jan-2022	78
19-Jan-2022	68
20-Jan-2022	68
21-Jan-2022	72
22-Jan-2022	63
23-Jan-2022	77
24-Jan-2022	78
25-Jan-2022	56
26-Jan-2022	66
27-Jan-2022	73
28-Jan-2022	74
29-Jan-2022	75
30-Jan-2022	73
31-Jan-2022	76
1-Feb-2022	84
2-Feb-2022	72
3-Feb-2022	83
4-Feb-2022	82
5-Feb-2022	91
6-Feb-2022	79
7-Feb-2022	71
8-Feb-2022	99
9-Feb-2022	58
10-Feb-2022	83
11-Feb-2022	87
12-Feb-2022	82
13-Feb-2022	76
14-Feb-2022	77
15-Feb-2022	77
16-Feb-2022	78
17-Feb-2022	84
18-Feb-2022	80
19-Feb-2022	72
20-Feb-2022	75
21-Feb-2022	77

Date	Daily Effluent Volume (m^3)
22-Feb-2022	78
23-Feb-2022	77
24-Feb-2022	71
25-Feb-2022	89
26-Feb-2022	76
27-Feb-2022	72
28-Feb-2022	75
1-Mar-2022	84
2-Mar-2022	69
3-Mar-2022	71
4-Mar-2022	86
5-Mar-2022	76
6-Mar-2022	76
7-Mar-2022	88
8-Mar-2022	77
9-Mar-2022	85
10-Mar-2022	75
11-Mar-2022	74
12-Mar-2022	76
13-Mar-2022	83
14-Mar-2022	84
15-Mar-2022	59
16-Mar-2022	94
17-Mar-2022	68
18-Mar-2022	72
19-Mar-2022	72
20-Mar-2022	78
21-Mar-2022	78
22-Mar-2022	67
23-Mar-2022	90
24-Mar-2022	78
25-Mar-2022	87
26-Mar-2022	79
27-Mar-2022	82
28-Mar-2022	87
29-Mar-2022	81
30-Mar-2022	76
31-Mar-2022	78
1-Apr-2022	77
2-Apr-2022	73
3-Apr-2022	68
4-Apr-2022	77
5-Apr-2022	80
6-Apr-2022	74
7-Apr-2022	72
8-Apr-2022	71
9-Apr-2022	74
10-Apr-2022	93
11-Apr-2022	77
12-Apr-2022	69
13-Apr-2022	89
14-Apr-2022	75
15-Apr-2022	73

Date	Daily Effluent Volume (m^3)
16-Apr-2022	91
17-Apr-2022	74
18-Apr-2022	96
19-Apr-2022	60
20-Apr-2022	81
21-Apr-2022	76
22-Apr-2022	86
23-Apr-2022	64
24-Apr-2022	79
25-Apr-2022	82
26-Apr-2022	71
27-Apr-2022	75
28-Apr-2022	71
29-Apr-2022	73
30-Apr-2022	66
1-May-2022	78
2-May-2022	70
3-May-2022	67
4-May-2022	66
5-May-2022	83
6-May-2022	78
7-May-2022	69
8-May-2022	69
9-May-2022	84
10-May-2022	71
11-May-2022	85
12-May-2022	80
13-May-2022	79
14-May-2022	78
15-May-2022	76
16-May-2022	85
17-May-2022	79
18-May-2022	83
19-May-2022	79
20-May-2022	74
21-May-2022	80
22-May-2022	81
23-May-2022	63
24-May-2022	53
25-May-2022	61
26-May-2022	69
27-May-2022	82
28-May-2022	72
29-May-2022	81
30-May-2022	71
31-May-2022	73
1-Jun-2022	83
2-Jun-2022	83
3-Jun-2022	75
4-Jun-2022	83
5-Jun-2022	86
6-Jun-2022	71
7-Jun-2022	73

Date	Daily Effluent Volume (m^3)
8-Jun-2022	74
9-Jun-2022	74
10-Jun-2022	70
11-Jun-2022	68
12-Jun-2022	74
13-Jun-2022	75
14-Jun-2022	90
15-Jun-2022	75
16-Jun-2022	73
17-Jun-2022	92
18-Jun-2022	68
19-Jun-2022	69
20-Jun-2022	68
21-Jun-2022	70
22-Jun-2022	68
23-Jun-2022	69
24-Jun-2022	64
25-Jun-2022	79
26-Jun-2022	68
27-Jun-2022	67
28-Jun-2022	81
29-Jun-2022	74
30-Jun-2022	89
1-Jul-2022	66
2-Jul-2022	75
3-Jul-2022	77
4-Jul-2022	83
5-Jul-2022	72
6-Jul-2022	77
7-Jul-2022	56
8-Jul-2022	91
9-Jul-2022	76
10-Jul-2022	77
11-Jul-2022	69
12-Jul-2022	89
13-Jul-2022	82
14-Jul-2022	69
15-Jul-2022	84
16-Jul-2022	73
17-Jul-2022	75
18-Jul-2022	81
19-Jul-2022	61
20-Jul-2022	82
21-Jul-2022	78
22-Jul-2022	69
23-Jul-2022	75
24-Jul-2022	65
25-Jul-2022	76
26-Jul-2022	74
27-Jul-2022	69
28-Jul-2022	75
29-Jul-2022	77
30-Jul-2022	70

Date	Daily Effluent Volume (m^3)
31-Jul-2022	63
1-Aug-2022	65
2-Aug-2022	78
3-Aug-2022	73
4-Aug-2022	89
5-Aug-2022	63
6-Aug-2022	74
7-Aug-2022	71
8-Aug-2022	77
9-Aug-2022	69
10-Aug-2022	73
11-Aug-2022	63
12-Aug-2022	69
13-Aug-2022	68
14-Aug-2022	60
15-Aug-2022	67
16-Aug-2022	71
17-Aug-2022	72
18-Aug-2022	67
19-Aug-2022	81
20-Aug-2022	68
21-Aug-2022	77
22-Aug-2022	74
23-Aug-2022	75
24-Aug-2022	85
25-Aug-2022	64
26-Aug-2022	74
27-Aug-2022	60
28-Aug-2022	77
29-Aug-2022	73
30-Aug-2022	76
31-Aug-2022	72
1-Sep-2022	93
2-Sep-2022	70
3-Sep-2022	74
4-Sep-2022	73
5-Sep-2022	75
6-Sep-2022	70
7-Sep-2022	71
8-Sep-2022	70
9-Sep-2022	79
10-Sep-2022	75
11-Sep-2022	75
12-Sep-2022	76
13-Sep-2022	83
14-Sep-2022	70
15-Sep-2022	87
16-Sep-2022	85
17-Sep-2022	67
18-Sep-2022	69
19-Sep-2022	79
20-Sep-2022	66
21-Sep-2022	72

Date	Daily Effluent Volume (m^3)
22-Sep-2022	83
23-Sep-2022	84
24-Sep-2022	75
25-Sep-2022	84
26-Sep-2022	79
27-Sep-2022	84
28-Sep-2022	77
29-Sep-2022	88
30-Sep-2022	80
1-Oct-2022	77
2-Oct-2022	76
3-Oct-2022	86
4-Oct-2022	71
5-Oct-2022	83
6-Oct-2022	71
7-Oct-2022	74
8-Oct-2022	78
9-Oct-2022	73
10-Oct-2022	70
11-Oct-2022	82
12-Oct-2022	81
13-Oct-2022	79
14-Oct-2022	73
15-Oct-2022	76
16-Oct-2022	85
17-Oct-2022	74
18-Oct-2022	94
19-Oct-2022	81
20-Oct-2022	88
21-Oct-2022	82
22-Oct-2022	74
23-Oct-2022	80
24-Oct-2022	85
25-Oct-2022	86
26-Oct-2022	81
27-Oct-2022	86
28-Oct-2022	71
29-Oct-2022	83
30-Oct-2022	86
31-Oct-2022	89
1-Nov-2022	74
2-Nov-2022	82
3-Nov-2022	79
4-Nov-2022	73
5-Nov-2022	78
6-Nov-2022	79
7-Nov-2022	84
8-Nov-2022	71
9-Nov-2022	78
10-Nov-2022	75
11-Nov-2022	77
12-Nov-2022	77
13-Nov-2022	71

Date	Daily Effluent Volume (m^3)
14-Nov-2022	82
15-Nov-2022	92
16-Nov-2022	75
17-Nov-2022	80
18-Nov-2022	84
19-Nov-2022	72
20-Nov-2022	75
21-Nov-2022	79
22-Nov-2022	84
23-Nov-2022	73
24-Nov-2022	82
25-Nov-2022	76
26-Nov-2022	96
27-Nov-2022	79
28-Nov-2022	85
29-Nov-2022	89
30-Nov-2022	82
1-Dec-2022	99
2-Dec-2022	79
3-Dec-2022	87
4-Dec-2022	79
5-Dec-2022	89
6-Dec-2022	78
7-Dec-2022	87
8-Dec-2022	81
9-Dec-2022	72
10-Dec-2022	86
11-Dec-2022	81
12-Dec-2022	85
13-Dec-2022	92
14-Dec-2022	89
15-Dec-2022	81
16-Dec-2022	83
17-Dec-2022	73
18-Dec-2022	85
19-Dec-2022	74
20-Dec-2022	80
21-Dec-2022	71
22-Dec-2022	81
23-Dec-2022	57
24-Dec-2022	75
25-Dec-2022	72
26-Dec-2022	87
27-Dec-2022	71
28-Dec-2022	68
29-Dec-2022	81
30-Dec-2022	73
31-Dec-2022	77

G08 Summary of Sampling Requirements and Sample Dates at SNP 08 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-08	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously throughout 2022, when discharge is active
		Daily (when sump is active)	Physical parameters	Daily throughout 2022, when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly throughout 2022, when discharge is active
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	Monthy in 2022 when sump is active

G08_A Summary of Daily Monitoring of Physical Parameters at SNP-08

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	3-Jan-2022	24.52	3.12	8.33	6,533.07	2.89	2.09	1.35
SNP-08 5034 Pit	4-Jan-2022	86.78	10.39	8.54	6,900.21	5.30	9.95	6.42
SNP-08 5034 Pit	5-Jan-2022	23.79	3.12	8.70	7,223.99	1.53	6.10	3.93
SNP-08 5034 Pit	9-Jan-2022	55.63	6.88	7.99	7,561.20	3.51	102.80	66.32
SNP-08 5034 Pit	12-Jan-2022	44.40	5.15	9.29	6,406.08	5.69	0.23	0.25
SNP-08 5034 Pit	17-Jan-2022	39.97	5.23	8.84	7,168.84	1.41	31.84	20.54
SNP-08 5034 Pit	18-Jan-2022	88.57	10.34	8.89	6,276.10	6.08	0.21	0.13
SNP-08 5034 Pit	19-Jan-2022	93.31	11	8.50	6690	6	2.43	1.57
SNP-08 5034 Pit	20-Jan-2022	53.90	6.61	8.35	6,289.70	5.72	0	0
SNP-08 5034 Pit	25-Jan-2022	32.12	3.34	8.26	6,897.75	9.38	0.45	0.24
SNP-08 5034 Pit	26-Jan-2022	26.80	2.87	8.10	6,518.77	9.41	0.90	0.58
SNP-08 5034 Pit	27-Jan-2022	28.54	3.07	8	6,121.20	9.04	0.46	0.29
SNP-08 5034 Pit	1-Feb-2022	26.39	3.24	7.72	5,726.02	5.07	2.35	1.51
SNP-08 5034 Pit	2-Feb-2022	22.38	2.48	8.17	5,566.47	8.09	0	0
SNP-08 5034 Pit	3-Feb-2022	20.34	2.23	8.35	5918	8.60	0	0
SNP-08 5034 Pit	4-Feb-2022	19.90	2.16	8.32	5649	9.52	0	0
SNP-08 5034 Pit	5-Feb-2022	22.74	2.10	8.24	5,429.88	15.90	0	0
SNP-08 5034 Pit	6-Feb-2022	92.45	9.62	8.23	5,863.36	2.80	0.84	0.54
SNP-08 5034 Pit	7-Feb-2022	21.34	2.58	8.15	5,941.82	3.38	1.93	1.25
SNP-08 5034 Pit	8-Feb-2022	21.89	2.63	8.14	6,000.97	2.58	0.13	0.08
SNP-08 5034 Pit	9-Feb-2022	24.20	2.97	8.09	5,925.52	2.70	0.79	0.51
SNP-08 5034 Pit	10-Feb-2022	23.45	3.04	8.08	5,914.30	2.04	0.76	0.49
SNP-08 5034 Pit	11-Feb-2022	26.19	3.42	8.04	5,950.17	1.79	1.01	0.65
SNP-08 5034 Pit	12-Feb-2022	23.86	3.10	8.05	5,971.06	1.87	0.00	0.00
SNP-08 5034 Pit	16-Feb-2022	22.03	2.86	7.90	6,985.90	1.66	2.90	1.87
SNP-08 5034 Pit	17-Feb-2022	18.60	2.44	8.08	6,501.73	1.08	0.91	0.59
SNP-08 5034 Pit	18-Feb-2022	38.01	4.54	7.07	6,618.50	4.74	4.30	61.47
SNP-08 5034 Pit	19-Feb-2022	24.77	3.02	7.56	6,389.75	3.80	0	0
SNP-08 5034 Pit	20-Feb-2022	23.50	2.94	7.08	6,479.31	3.36	0	0
SNP-08 5034 Pit	21-Feb-2022	21.83	2.73	7.52	6,428.75	3.48	0	0
SNP-08 5034 Pit	22-Feb-2022	11.86	1.52	8.70	6,394.40	2.74	0	0
SNP-08 5034 Pit	23-Feb-2022	22.22	2.67	8.17	6,191.64	4.67	0.19	0.13
SNP-08 5034 Pit	24-Feb-2022	25.30	3	8.14	5,994.60	4.80	0	0
SNP-08 5034 Pit	26-Feb-2022	22.70	2.80	8.11	5,527.90	4.10	3.90	2.50
SNP-08 5034 Pit	27-Feb-2022	30.90	3.70	8.09	6,239.70	4.80	2.20	1.50
SNP-08 5034 Pit	28-Feb-2022	18.70	2.40	8.11	6,498.30	1.80	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	1-Mar-2022	38.90	4.70	8.12	6,322.70	4.60	0	0
SNP-08 5034 Pit	2-Mar-2022	22.10	2.80	8.13	6,259.10	3.60	172.80	111.50
SNP-08 5034 Pit	3-Mar-2022	28.40	3.50	8.22	6,179.10	4.50	0	0
SNP-08 5034 Pit	4-Mar-2022	33.90	4	8.11	6,231.60	5.70	0	0
SNP-08 5034 Pit	5-Mar-2022	33.40	4	8.14	6,124.80	5.40	1.70	1.10
SNP-08 5034 Pit	6-Mar-2022	24.20	2.80	8.09	6219	5.80	0	0
SNP-08 5034 Pit	7-Mar-2022	37.18	4.49	8.46	6,103.04	4.65	0	0
SNP-08 5034 Pit	8-Mar-2022	34.32	4.30	7.91	5,906.56	3.49	0	0
SNP-08 5034 Pit	9-Mar-2022	37.52	4.72	7.85	6,005.67	2.79	0	0
SNP-08 5034 Pit	11-Mar-2022	35.76	2.24	7.83	5,488.25	5.11	2.35	1.46
SNP-08 5034 Pit	12-Mar-2022	38.05	4.62	7.97	6,215.62	3.90	55.49	35.80
SNP-08 5034 Pit	13-Mar-2022	39.55	4.93	8.05	5,936.18	2.99	0	0
SNP-08 5034 Pit	14-Mar-2022	32.18	4.09	8.07	5,945.09	2.29	0	0
SNP-08 5034 Pit	15-Mar-2022	37.04	4.44	7.67	5,932.98	4.39	0	0
SNP-08 5034 Pit	16-Mar-2022	33.65	4.05	7.80	5,963.36	4.25	0	0
SNP-08 5034 Pit	17-Mar-2022	35.11	4.15	7.88	5,776.24	4.91	0	0
SNP-08 5034 Pit	18-Mar-2022	30.42	3.76	7.91	5,759.81	3.39	0	0
SNP-08 5034 Pit	19-Mar-2022	28.77	3.45	7.83	5,877.95	4.63	0	0
SNP-08 5034 Pit	20-Mar-2022	28.14	3.39	7.79	6013	4.48	0	0
SNP-08 5034 Pit	21-Mar-2022	31.34	3.75	7.79	5,990.79	4.59	0	0
SNP-08 5034 Pit	22-Mar-2022	31.35	3.79	7.80	5,928.85	4.42	0.76	0.49
SNP-08 5034 Pit	23-Mar-2022	34.56	4.14	7.82	5,898.61	4.52	0	0
SNP-08 5034 Pit	25-Mar-2022	28.09	3.66	7.85	6,096.83	2.31	2.19	1.41
SNP-08 5034 Pit	26-Mar-2022	41.80	5.35	8.08	6,046.96	2.77	29.28	18.89
SNP-08 5034 Pit	27-Mar-2022	37.22	4.62	7.85	5,797.36	3.54	0	0
SNP-08 5034 Pit	28-Mar-2022	36.68	4.45	7.73	5,771.84	4.19	0	0
SNP-08 5034 Pit	29-Mar-2022	32.92	3.91	7.71	5,764.70	4.93	0	0
SNP-08 5034 Pit	30-Mar-2022	31.74	4.01	7.69	5,815.67	2.74	0	0
SNP-08 5034 Pit	31-Mar-2022	32.54	3.90	7.71	5,785.03	4.53	0	0
SNP-08 5034 Pit	1-Apr-2022	32.89	4.12	7.74	5,749.35	3	0	0
SNP-08 5034 Pit	2-Apr-2022	28.78	3.56	7.79	5,850.22	3.57	0	0
SNP-08 5034 Pit	3-Apr-2022	38.08	4.67	7.65	5,632.73	3.79	24.89	16.06
SNP-08 5034 Pit	4-Apr-2022	23.53	2.77	7.99	6,711.36	4.67	0	0
SNP-08 5034 Pit	5-Apr-2022	31	3.50	7.80	6,015.40	6.90	0	0
SNP-08 5034 Pit	6-Apr-2022	28.70	3.40	7.54	5,942.20	5.60	0	0
SNP-08 5034 Pit	7-Apr-2022	26.30	3.10	7.87	6,031.20	5.70	0	0
SNP-08 5034 Pit	8-Apr-2022	31.90	3.70	7.74	5,533.60	6.10	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	10-Apr-2022	48.40	6.20	7.80	4,529.80	2.30	0	0
SNP-08 5034 Pit	11-Apr-2022	23.80	2.90	7.61	6,224.30	4.80	0	0
SNP-08 5034 Pit	12-Apr-2022	29.20	3.60	7.54	7,078.40	4.30	0	0
SNP-08 5034 Pit	13-Apr-2022	38.08	4.58	8.33	5,823.96	5.62	0	0
SNP-08 5034 Pit	14-Apr-2022	33.09	4.07	8.36	5,738.72	4.34	0	0
SNP-08 5034 Pit	15-Apr-2022	32.60	4.10	8.83	5658	3.50	0	0
SNP-08 5034 Pit	16-Apr-2022	31.02	3.90	8.33	5,731.48	3.39	0	0
SNP-08 5034 Pit	17-Apr-2022	28.40	3.44	8.27	5,700.76	4.64	0	0
SNP-08 5034 Pit	18-Apr-2022	29.77	3.56	6.87	5,758.06	5.00	0	0
SNP-08 5034 Pit	19-Apr-2022	33.19	3.91	7.72	5,516.44	5.43	0	0
SNP-08 5034 Pit	20-Apr-2022	36.03	4.40	7.69	5,692.12	4.10	0	0
SNP-08 5034 Pit	21-Apr-2022	38.49	4.39	7.51	5,329.49	6.63	0	0
SNP-08 5034 Pit	22-Apr-2022	29.07	3.41	7.57	5,380.24	5.79	0.21	0.14
SNP-08 5034 Pit	23-Apr-2022	27.18	3.32	7.75	5,397.76	4.71	0	0
SNP-08 5034 Pit	24-Apr-2022	30.14	3.86	7.73	5,205.67	3.05	0	0
SNP-08 5034 Pit	25-Apr-2022	26.07	3.19	6.90	5,712.32	4.44	0	0
SNP-08 5034 Pit	26-Apr-2022	71.63	8.36	7.58	5,196.33	5.95	211.51	136.46
SNP-08 5034 Pit	27-Apr-2022	28.45	3.34	7.93	5,951.57	5.64	2.13	1.31
SNP-08 5034 Pit	28-Apr-2022	28.77	3.44	7.95	5,775.23	5.01	0	0
SNP-08 5034 Pit	29-Apr-2022	28.98	3.56	7.99	5,777.82	4.37	19.48	12.57
SNP-08 5034 Pit	30-Apr-2022	34.94	4.30	7.97	5,186.40	4.43	0.49	0.32
SNP-08 5034 Pit	1-May-2022	29.11	3.52	7.51	6,296.73	4.85	62.15	40.10
SNP-08 5034 Pit	2-May-2022	44.77	5.47	7.69	4,995.89	4.51	0	0
SNP-08 5034 Pit	3-May-2022	36.09	4.30	7.70	5,834.99	5.02	1.51	0.97
SNP-08 5034 Pit	4-May-2022	33.24	3.92	7.74	5,775.96	5.06	1.12	0.72
SNP-08 5034 Pit	5-May-2022	52.89	6.16	7.59	5,141.07	5.49	4.64	3.00
SNP-08 5034 Pit	6-May-2022	40.60	4.67	7.57	4,933.38	6.15	9.96	6.43
SNP-08 5034 Pit	7-May-2022	37.26	4.40	7.66	5,298.09	4.83	2.52	1.62
SNP-08 5034 Pit	8-May-2022	31.62	3.93	7.68	5,435.91	3.01	0	0
SNP-08 5034 Pit	9-May-2022	33.57	3.98	7.73	5,809.42	4.89	0	0
SNP-08 5034 Pit	10-May-2022	28.47	3.54	7.63	5,837.19	3.11	0	0
SNP-08 5034 Pit	12-May-2022	32.17	4.06	7.66	5,886.74	3.09	0	0
SNP-08 5034 Pit	13-May-2022	22.15	3.95	7.78	5,505.73	4	0	0
SNP-08 5034 Pit	14-May-2022	38.74	4.76	7.64	5,678.56	3.94	1.74	1.12
SNP-08 5034 Pit	15-May-2022	48.90	6.15	7.73	4,820.68	3.43	0	0
SNP-08 5034 Pit	16-May-2022	53.63	6.74	7.43	4,754.37	3.46	3.30	2.13
SNP-08 5034 Pit	17-May-2022	44.28	5.25	7.64	5,085.54	5.60	2.04	1.32

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	18-May-2022	44.94	5.55	7.63	5,068.70	3.96	0	0
SNP-08 5034 Pit	19-May-2022	41.01	4.90	7.66	4,827.81	5.40	2.39	1.54
SNP-08 5034 Pit	20-May-2022	40.68	4.87	7.67	5,116.43	5.40	2.39	1.54
SNP-08 5034 Pit	21-May-2022	42.39	5.11	7.70	4,128.21	4.89	1.31	0.83
SNP-08 5034 Pit	22-May-2022	72.76	8.80	7.92	2,984.85	4.92	52.09	33.60
SNP-08 5034 Pit	23-May-2022	59.75	6.99	7.72	3,886.45	5.99	7.28	4.69
SNP-08 5034 Pit	24-May-2022	50.12	6.16	7.72	4,245.34	4.02	0	0
SNP-08 5034 Pit	25-May-2022	50.35	5.91	7.61	4,351.44	5.78	35.51	22.91
SNP-08 5034 Pit	26-May-2022	48.55	5.59	7.68	4,432.01	3.07	19.31	12.46
SNP-08 5034 Pit	2-Jun-2022	58.09	7.02	7.03	4,007.30	5.04	30.03	19.37
SNP-08 5034 Pit	3-Jun-2022	54.41	6.30	7.60	3,898.53	6.37	37.86	24.43
SNP-08 5034 Pit	4-Jun-2022	59.09	6.80	7.38	3,753.90	6.61	27.93	18.02
SNP-08 5034 Pit	6-Jun-2022	48.60	5.74	7.47	3,570.49	5.89	25.04	16.32
SNP-08 5034 Pit	7-Jun-2022	42.21	4.88	7.75	3,768.01	6.66	7.19	4.64
SNP-08 5034 Pit	8-Jun-2022	44.31	5.05	7.83	3,859.31	7.07	3.04	1.90
SNP-08 5034 Pit	9-Jun-2022	54.76	6.09	7.76	4,299.80	7.87	0.31	0.20
SNP-08 5034 Pit	10-Jun-2022	43.15	4.89	7.70	4,377.55	6.90	0.68	0.44
SNP-08 5034 Pit	13-Jun-2022	76.10	8.31	NA	2,684.28	8.56	3.30	2.13
SNP-08 5034 Pit	14-Jun-2022	64.40	7.10	7.68	3,198.75	8.38	0	0
SNP-08 5034 Pit	15-Jun-2022	56.09	6.34	7.67	3,457.56	7.54	0	0
SNP-08 5034 Pit	16-Jun-2022	60.48	6.90	7.65	3,649.02	7.38	0	0
SNP-08 5034 Pit	17-Jun-2022	51.17	5.80	7.64	3,833.67	7.46	0	0
SNP-08 5034 Pit	17-Jun-2022	52.81	5.85	7.65	3,817.81	8.19	0	0
SNP-08 5034 Pit	18-Jun-2022	54.87	5.94	7.62	3,924.45	9.03	0	0
SNP-08 5034 Pit	19-Jun-2022	51.30	5.45	7.62	4,057.94	9.78	0	0
SNP-08 5034 Pit	20-Jun-2022	50.73	5.64	7.57	4,307.00	8.00	0	0
SNP-08 5034 Pit	21-Jun-2022	51.37	5.93	7.56	4,295.80	6.57	0	0
SNP-08 5034 Pit	22-Jun-2022	51.26	5.78	7.55	4,445.96	7.43	0	0
SNP-08 5034 Pit	23-Jun-2022	44.61	4.94	7.60	4,357.01	8.28	0	0
SNP-08 5034 Pit	24-Jun-2022	76.17	8.03	7.64	5.38	11.03	0	0
SNP-08 5034 Pit	25-Jun-2022	52.75	5.92	7.59	4,494.37	7.75	0	0
SNP-08 5034 Pit	26-Jun-2022	51.85	5.68	7.57	4,310.59	8.75	0	0
SNP-08 5034 Pit	27-Jun-2022	49.85	5.55	7.54	4,242.06	8.24	0	0
SNP-08 5034 Pit	28-Jun-2022	53.92	5.93	7.60	4,317.77	8.36	0.06	0.04
SNP-08 5034 Pit	30-Jun-2022	44.66	5.09	7.52	4,583.77	7.03	0	0
SNP-08 5034 Pit	1-Jul-2022	44.47	5.10	7.71	4,955.79	6.82	0	0
SNP-08 5034 Pit	2-Jul-2022	46.42	5.25	7.49	5,480.29	7.23	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	4-Jul-2022	55.52	6.14	7.61	5,270.40	8.27	0	0
SNP-08 5034 Pit	7-Jul-2022	52.73	5.79	7.16	4,477.36	8.56	0	0
SNP-08 5034 Pit	14-Jul-2022	67.73	6.69	7.45	3,363.27	12.32	0	0
SNP-08 5034 Pit	15-Jul-2022	50.08	5.18	7.98	3,747.03	10.77	0	0
SNP-08 5034 Pit	16-Jul-2022	37.58	4.01	7.69	4,265.36	9.60	0	0
SNP-08 5034 Pit	17-Jul-2022	48.19	5.01	7.09	4,106.63	10.68	0	0
SNP-08 5034 Pit	18-Jul-2022	26.64	2.96	7.13	4,585.36	7.31	0	0
SNP-08 5034 Pit	19-Jul-2022	58.78	6.10	6.70	4,290.05	10.06	4.90	3.16
SNP-08 5034 Pit	20-Jul-2022	50.40	5.30	7.26	3,894.04	9.89	43.99	28.38
SNP-08 5034 Pit	21-Jul-2022	46.43	4.97	7.21	4,073.81	9.44	0	0
SNP-08 5034 Pit	22-Jul-2022	48.00	5.13	7.28	4,005.61	9.78	0	0
SNP-08 5034 Pit	23-Jul-2022	43.66	4.59	7.34	4,143.89	10.40	0	0
SNP-08 5034 Pit	25-Jul-2022	41.53	4.40	6.97	4,608.06	9.72	0	0
SNP-08 5034 Pit	26-Jul-2022	37.66	4.06	7.28	4,556.65	9.17	0	0
SNP-08 5034 Pit	27-Jul-2022	41.49	4.45	7.27	4,795.50	9.53	0	0
SNP-08 5034 Pit	28-Jul-2022	39.72	4.22	7.33	4,801.85	9.68	0	0
SNP-08 5034 Pit	29-Jul-2022	46.90	4.88	7.28	4,683.79	10.70	20.85	13.45
SNP-08 5034 Pit	30-Jul-2022	41.05	4.35	6.43	4,793.24	9.88	0	0
SNP-08 5034 Pit	31-Jul-2022	44.00	4.76	7.09	4,765.83	9.08	0	0
SNP-08 5034 Pit	1-Aug-2022	64.01	6.59	6.31	5,057.18	10.82	10.41	7.11
SNP-08 5034 Pit	2-Aug-2022	44.91	4.73	6.39	4,971.79	9.91	0	0
SNP-08 5034 Pit	7-Aug-2022	43.60	4.66	7.67	3,391.97	9.32	1.08	0.78
SNP-08 5034 Pit	8-Aug-2022	36.41	3.99	7.81	5,446.15	8.18	0.17	0.11
SNP-08 5034 Pit	9-Aug-2022	39.22	4.28	7.58	5,073.26	8.75	1.61	1.04
SNP-08 5034 Pit	10-Aug-2022	36.60	3.97	7.89	5,761.72	8.57	2.62	1.69
SNP-08 5034 Pit	13-Aug-2022	34.01	3.54	8.32	6,636.59	10.35	36.58	23.60
SNP-08 5034 Pit	14-Aug-2022	34.37	3.65	8.30	6,079.34	9.60	505.49	326.12
SNP-08 5034 Pit	15-Aug-2022	77.50	8.30	8.33	6,024.77	9.08	28.61	18.46
SNP-08 5034 Pit	20-Aug-2022	36.06	3.95	8.97	5,857.74	7.92	1.31	0.86
SNP-08 5034 Pit	21-Aug-2022	24.32	2.74	8.95	5,848.58	7.48	0	0
SNP-08 5034 Pit	22-Aug-2022	33.01	3.75	9.02	5,872.26	6.84	18.34	11.83
SNP-08 5034 Pit	27-Aug-2022	51.59	5.54	6.94	5,292.42	8.60	1.20	0.77
SNP-08 5034 Pit	30-Aug-2022	23.38	2.68	8.62	6,253.15	6.49	1.63	1.05
SNP-08 5034 Pit	31-Aug-2022	29.87	3.46	8.63	6,052.79	5.63	4.60	2.95
SNP-08 5034 Pit	2-Sep-2022	30.19	3.35	8.86	5,793.22	7.56	0	0
SNP-08 5034 Pit	3-Sep-2022	29.03	3.20	8.61	5,767.21	7.86	0	0
SNP-08 5034 Pit	4-Sep-2022	28.96	3.06	8.50	5,706.86	9.36	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	6-Sep-2022	60.86	6.63	8.21	3,174.88	8.48	0	0
SNP-08 5034 Pit	8-Sep-2022	58.79	6.49	8.45	4,344.13	7.77	99.02	63.88
SNP-08 5034 Pit	10-Sep-2022	40.24	4.47	8.21	4,922.89	7.26	0.44	0.29
SNP-08 5034 Pit	11-Sep-2022	46.52	5.23	8.31	5,029.69	7.12	1.17	0.75
SNP-08 5034 Pit	13-Sep-2022	46.05	5.20	7.72	4,978.19	7.09	5.31	3.43
SNP-08 5034 Pit	14-Sep-2022	45.15	5.14	8.10	5,244.53	6.66	11.80	7.62
SNP-08 5034 Pit	15-Sep-2022	33.87	4.04	8.37	5,524.67	5.01	60.35	38.93
SNP-08 5034 Pit	19-Sep-2022	57.23	6.34	8.28	4,594.90	8.02	0	0
SNP-08 5034 Pit	20-Sep-2022	49.91	5.81	8.51	3,746.10	6.13	0	0
SNP-08 5034 Pit	21-Sep-2022	50.47	5.67	8.37	3,590.66	7.70	0	0
SNP-08 5034 Pit	22-Sep-2022	67.46	7.66	8.36	3,586.36	6.46	16.81	10.84
SNP-08 5034 Pit	23-Sep-2022	45.32	4.93	8.21	3,689.79	7.66	0	0
SNP-08 5034 Pit	24-Sep-2022	44.71	4.95	8.42	3,958.30	7.08	0.49	0.32
SNP-08 5034 Pit	25-Sep-2022	44.18	5.20	8.50	4,047.99	5.74	0.90	0.58
SNP-08 5034 Pit	26-Sep-2022	43.51	4.92	8.32	3,718.14	7.36	0	0
SNP-08 5034 Pit	27-Sep-2022	54.16	5.82	8.16	3,261.15	8.94	0.23	0.15
SNP-08 5034 Pit	28-Sep-2022	50.29	5.41	8.07	3,484.11	9.19	0	0
SNP-08 5034 Pit	29-Sep-2022	74.38	8.76	8.32	3,735.27	6.12	1.28	0.82
SNP-08 5034 Pit	30-Sep-2022	52.10	5.97	8.35	3,895.21	7.08	0.33	0.21
SNP-08 5034 Pit	2-Oct-2022	57.50	5.97	8.34	3,963.30	9.66	0.08	0.05
SNP-08 5034 Pit	7-Oct-2022	64.77	7.54	8.17	4,155.12	6.27	1.99	1.28
SNP-08 5034 Pit	8-Oct-2022	63.21	7.43	8.10	4,712.10	5.71	9.59	6.24
SNP-08 5034 Pit	9-Oct-2022	47.22	5.62	8.22	4,699.26	4.96	12.84	8.29
SNP-08 5034 Pit	10-Oct-2022	42.40	4.80	8.27	4,921.99	5.71	60.04	38.74
SNP-08 5034 Pit	11-Oct-2022	45.87	5.42	8.20	4,819.45	4.29	0	0
SNP-08 5034 Pit	14-Oct-2022	47.22	5.45	8.05	5,079.32	5.90	4.23	2.73
SNP-08 5034 Pit	17-Oct-2022	40.36	4.62	8.44	4,952.26	6.35	0	0
SNP-08 5034 Pit	18-Oct-2022	40.88	4.68	8.29	4,802.59	6.24	1.39	0.90
SNP-08 5034 Pit	19-Oct-2022	45.29	5.11	8.03	4,846.61	7.03	0	0
SNP-08 5034 Pit	20-Oct-2022	44.05	4.91	8.12	4,863.19	6.81	0.36	0.23
SNP-08 5034 Pit	22-Oct-2022	48.30	5.44	8.29	4,941.55	7.02	2.88	1.86
SNP-08 5034 Pit	23-Oct-2022	43.28	4.89	8.29	4,912.40	7.33	0	0
SNP-08 5034 Pit	24-Oct-2022	44.21	5.06	7.68	5,081.42	6.43	0	0
SNP-08 5034 Pit	25-Oct-2022	56.96	6.28	7.95	4,873.72	7.95	0.45	0.29
SNP-08 5034 Pit	26-Oct-2022	47.53	5.56	7.88	5,723.23	5.22	0	0
SNP-08 5034 Pit	27-Oct-2022	47.44	5.29	8.05	6,047.42	6.30	0	0
SNP-08 5034 Pit	28-Oct-2022	42.87	4.92	8.05	5,642.19	5.44	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-08 5034 Pit	29-Oct-2022	47.74	5.38	8.01	6,066.56	6.72	0	0
SNP-08 5034 Pit	30-Oct-2022	47.81	5.72	8.13	6,136.75	4.12	0	0
SNP-08 5034 Pit	31-Oct-2022	47.10	5.49	7.84	5,904.33	5.51	0	0
SNP-08 5034 Pit	1-Nov-2022	77.48	7.16	7.84	5,731.16	16.13	0	0
SNP-08 5034 Pit	2-Nov-2022	42.86	5.15	7.88	5,750.46	5.12	0	0
SNP-08 5034 Pit	3-Nov-2022	42.88	5.04	7.99	5,801.53	5.45	0	0
SNP-08 5034 Pit	4-Nov-2022	41.26	4.58	7.92	5,923.83	6.93	0	0
SNP-08 5034 Pit	5-Nov-2022	48.75	5.87	7.91	6,166.40	4.23	0.02	0.01
SNP-08 5034 Pit	6-Nov-2022	43.55	5.21	7.92	6,149.43	5.16	0	0
SNP-08 5034 Pit	8-Nov-2022	56.42	7.33	8.13	6,634.35	2.07	6.10	3.94
SNP-08 5034 Pit	9-Nov-2022	34.58	4.33	8.05	6,352.71	3.27	0	0
SNP-08 5034 Pit	11-Nov-2022	60.33	7.74	8.19	4,233.38	2.58	0	0
SNP-08 5034 Pit	12-Nov-2022	46.44	5.39	8.02	6,435.97	5.90	3.38	2.19
SNP-08 5034 Pit	13-Nov-2022	48.08	5.38	7.92	6,509.75	6.97	3.80	2.45
SNP-08 5034 Pit	14-Nov-2022	48.87	5.22	7.96	6,648.06	9.53	0	0
SNP-08 5034 Pit	15-Nov-2022	40.80	4.56	7.88	7,305.01	7.37	47.74	30.80
SNP-08 5034 Pit	16-Nov-2022	31.80	3.93	7.83	5,873.50	4.58	0	0
SNP-08 5034 Pit	17-Nov-2022	42.65	5.02	7.53	6,020.03	5.64	0	0
SNP-08 5034 Pit	18-Nov-2022	45.32	5.11	7.41	5,858.55	7.30	0	0
SNP-08 5034 Pit	19-Nov-2022	42.05	4.56	7.33	5,963.93	8.25	2.13	1.38
SNP-08 5034 Pit	24-Nov-2022	52.39	6.37	7.95	6,126.35	3.86	29.23	18.86
SNP-08 5034 Pit	25-Nov-2022	40.89	4.65	7.81	6,175.97	5.77	0.00	0.00
SNP-08 5034 Pit	26-Nov-2022	37.19	4.47	7.96	5,938.88	4.41	0	0
SNP-08 5034 Pit	27-Nov-2022	42.50	4.80	7.75	5,871.31	6.94	0	0
SNP-08 5034 Pit	28-Nov-2022	43.27	5.20	7.51	5,796.08	5.12	0	0
SNP-08 5034 Pit	14-Dec-2022	30.46	3.82	8.70	5,082.49	3.29	8.45	5.45
SNP-08 5034 Pit	15-Dec-2022	44.46	5.26	8.60	5,002.54	5.45	1.32	0.85
SNP-08 5034 Pit	16-Dec-2022	40.81	4.87	8.66	5,077.06	5.30	4.89	3.15
SNP-08 5034 Pit	17-Dec-2022	43.16	5.19	8.38	5,223.08	5.45	0.44	0.28
SNP-08 5034 Pit	18-Dec-2022	35.97	4.33	8.38	5,248.17	5.44	10.07	6.50
SNP-08 5034 Pit	23-Dec-2022	57.63	6.99	8.41	5,953.70	4.96	1.64	1.06
SNP-08 5034 Pit	26-Dec-2022	65.27	8.25	8.42	5,579.83	2.82	58.89	37.99
SNP-08 5034 Pit	27-Dec-2022	43.27	4.98	8.21	5,602.79	6.11	0.45	0.29
SNP-08 5034 Pit	28-Dec-2022	31.66	3.59	8.06	6,043.08	6.52	0.56	0.36
SNP-08 5034 Pit	29-Dec-2022	31.75	3.70	8.28	6,021.20	5.42	1.08	0.69
SNP-08 5034 Pit	30-Dec-2022	23.15	2.70	8.03	6,821.36	5.17	0	0

G08_B Summary of Weekly and Monthly Water Quality Results at SNP-08

Date	3-Jan-2022	11-Jan-2022	17-Jan-2022	25-Jan-2022	1-Feb-2022	7-Feb-2022	17-Feb-2022	24-Feb-2022	2-Mar-2022	7-Mar-2022	14-Mar-2022
Conductivity (µS/cm)	6700	6450	7040	6890	5980	5950	6570	6240	6200	6320	5810
pH	7.67	8.21	7.80	7.61	7.65	7.68	7.64	7.70	7.75	7.74	7.81
Total Suspended Solids (mg/L)	4.10	12.00	16.50	<1.0	9.00	2.20	1.30	<1.0	<1.0	1.60	<1.0
Turbidity (NTU)	1.98	6.59	11.00	0.52	5.40	0.88	0.81	0.26	0.35	0.35	0.23
Alkalinity, Bicarbonate (mg/L)	43.10	24.50	34.40	33.60	65.10	41.70	40.30	51.60	51.50	58.80	61.50
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	43.10	24.50	34.40	33.60	65.10	41.70	40.30	51.60	51.50	58.80	61.50
Calcium (Ca)-Total (mg/L)	612				507				583		
Chloride (mg/L)	2010	2060	2160	2160	1780	2000	2120	1960	1900	2240	1840
Fluoride (mg/L)	0.35	<0.500	<0.500	<0.500	0.42	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Hardness (as CaCO3) (mg/L)	1950	1800	1920	2020	1740	1760	1920	1730	1820	1910	1540
Magnesium (Mg)-Total (mg/L)	88.70				85.10				99.20		
Potassium (K)-Total (mg/L)	32.80				21.10				16.90		
Silicate (as SiO2) (mg/L)	7.75	6.37	6.49	8.66	9.44	8.91	8.12	9.92	10.00	10.20	10.90
Sodium (Na)-Total (mg/L)	544				489				570		
Sulfate (mg/L)	288	281	297	317	292	302	297	284	297	330	286
TDS (mg/L)	4480	4370	4510	4240	3720	3970	3990	3700	3670	4850	3690
Ammonia, Total (as N) (mg/L)	9.14	17.20	16.30	17.50	10.80	7.43	4.14	5.65	10.90	5.42	5.34
Nitrate and Nitrite (mg/L)	8.26	13.90	14.50	21.80	9.83	7.09	3.95	6.63	12.00	6.17	5.01
Nitrate as Nitrogen (mg/L)	7.64	13.50	13.70	20.80	9.04	6.56	3.68	6.22	11.50	5.96	4.72
Nitrite as Nitrogen (mg/L)	0.62	0.41	0.81	0.99	0.79	0.53	0.27	0.41	0.49	0.21	0.29
Orthophosphate-Dissolved (as P) (mg/L)	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	<0.0014	<0.0014	0.00	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.01	0.01	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.01	0.01	0.05	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	11.60	18.40	17.70	19.10	11.80	7.97	5.14	6.37	11.30	5.92	5.22
Total Organic Carbon (mg/L)	2.55	3.27	2.63	3.81	2.38	3.86	2.21	2.18	4.21	2.35	4.18
Aluminum (Al)-Total (mg/L)	0.18				0.09				<0.0150		
Antimony (Sb)-Total (mg/L)	<0.00050				<0.00050				<0.00050		
Arsenic (As)-Total (mg/L)	0.00				0.00				0.00		
Barium (Ba)-Total (mg/L)	0.06				0.05				0.05		
Beryllium (Be)-Total (mg/L)	<0.000100				<0.000100				<0.000100		
Bismuth (Bi)-Total (mg/L)	<0.000250				<0.000250				<0.000250		
Boron (B)-Total (mg/L)	1.47				0.99				0.97		
Cadmium (Cd)-Total (mg/L)	<0.0000250				<0.0000250				<0.0000250		
Cesium (Cs)-Total (mg/L)	0.00				0.00				0.00		

Date	3-Jan-2022	11-Jan-2022	17-Jan-2022	25-Jan-2022	1-Feb-2022	7-Feb-2022	17-Feb-2022	24-Feb-2022	2-Mar-2022	7-Mar-2022	14-Mar-2022
Chromium (Cr)-Total (mg/L)	<0.00050				<0.00050				<0.00050		
Cobalt (Co)-Total (mg/L)	0.00				0.00				0.00		
Copper (Cu)-Total (mg/L)	0.00				0.00				0.01		
Iron (Fe)-Total (mg/L)	0.30				0.16				0.10		
Lead (Pb)-Total (mg/L)	<0.000150				<0.000150				<0.000150		
Lithium (Li)-Total (mg/L)	0.11				0.10				0.11		
Manganese (Mn)-Total (mg/L)	0.05				0.05				0.05		
Mercury (Hg)-Total (mg/L)	<0.0000050				<0.0000050				<0.0000050		
Molybdenum (Mo)-Total (mg/L)	0.01				0.01				0.01		
Nickel (Ni)-Total (mg/L)	0.01				0.02				0.04		
Rubidium (Rb)-Total (mg/L)	0.04				0.03				0.03		
Selenium (Se)-Total (mg/L)	<0.000250				<0.000250				<0.000250		
Silver (Ag)-Total (mg/L)	<0.000050				<0.000050				<0.000050		
Strontium (Sr)-Total (mg/L)	12.90				10.80				12.00		
Sulfur (S)-Total (mg/L)	107				99.60				112		
Tellurium (Te)-Total (mg/L)	0.00				<0.00100				0.00		
Thallium (Tl)-Total (mg/L)	<0.000050				<0.000050				<0.000050		
Thorium (Th)-Total (mg/L)	<0.00050				<0.00050				<0.00050		
Tin (Sn)-Total (mg/L)	<0.000250				<0.000250				<0.000250		
Titanium (Ti)-Total (mg/L)	0.00				0.00				<0.00150		
Tungsten (W)-Total (mg/L)	<0.00050				<0.00050				<0.00050		
Uranium (U)-Total (mg/L)	0.00				0.00				0.00		
Vanadium (V)-Total (mg/L)	<0.00250				<0.00250				<0.00250		
Zinc (Zn)-Total (mg/L)	<0.0075				<0.0075				<0.0075		
Zirconium (Zr)-Total (mg/L)	<0.00100				<0.00100				<0.00100		
Aluminum (Al)-Dissolved (mg/L)	0.02				0.01				0.00		
Antimony (Sb)-Dissolved (mg/L)	<0.00050				<0.00050				<0.00020		
Arsenic (As)-Dissolved (mg/L)	0.00				0.00				0.00		
Barium (Ba)-Dissolved (mg/L)	0.06				0.06				0.05		
Beryllium (Be)-Dissolved (mg/L)	<0.000100				<0.000100				<0.000040		
Bismuth (Bi)-Dissolved (mg/L)	<0.000250				<0.000250				<0.000100		
Boron (B)-Dissolved (mg/L)	1.68				1.04				0.98		
Cadmium (Cd)-Dissolved (mg/L)	<0.0000250				<0.0000250				<0.0000100		
Calcium (Ca)-Dissolved (mg/L)	636	563	601	606	543	544	600	547	566	602	485
Cesium (Cs)-Dissolved (mg/L)	0.00				0.00				0.00		
Chromium (Cr)-Dissolved (mg/L)	<0.00250				<0.00050				<0.00100		
Cobalt (Co)-Dissolved (mg/L)	0.00				0.00				0.00		
Copper (Cu)-Dissolved (mg/L)	0.00				0.00				0.01		
Iron (Fe)-Dissolved (mg/L)	0.04				<0.0250				0.05		

Date	3-Jan-2022	11-Jan-2022	17-Jan-2022	25-Jan-2022	1-Feb-2022	7-Feb-2022	17-Feb-2022	24-Feb-2022	2-Mar-2022	7-Mar-2022	14-Mar-2022
Lead (Pb)-Dissolved (mg/L)	<0.000150				<0.000150				<0.000060		
Lithium (Li)-Dissolved (mg/L)	0.11				0.11				0.11		
Magnesium (Mg)-Dissolved (mg/L)	88.20	96.60	102	122	92.80	98.90	103	88.30	98.70	99.00	80.10
Manganese (Mn)-Dissolved (mg/L)	0.05				0.05				0.05		
Mercury (Hg)-Dissolved (mg/L)	<0.0000050				<0.0000050				<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)	0.01				0.02				0.01		
Nickel (Ni)-Dissolved (mg/L)	0.02				0.02				0.04		
Phosphorus - Dissolved (mg/L)	<0.050				<0.050				<0.020		
Potassium (K)-Dissolved (mg/L)	31.90	34.60	32.30	29.00	22.70	21.50	18.50	14.80	18.90	13.60	12.80
Rubidium (Rb)-Dissolved (mg/L)	0.04				0.04				0.03		
Selenium (Se)-Dissolved (mg/L)	<0.000250				<0.000250				<0.000100		
Silver (Ag)-Dissolved (mg/L)	<0.000050				<0.000050				<0.000020		
Sodium (Na)-Dissolved (mg/L)	607	551	545	606	532	548	570	560	598	547	499
Strontium (Sr)-Dissolved (mg/L)	13.20				11.80				12.40		
Sulfur (S)-Dissolved (mg/L)	105				110				116		
Tellurium (Te)-Dissolved (mg/L)	0.00				0.00				0.00		
Thallium (Tl)-Dissolved (mg/L)	<0.000050				<0.000050				0.00		
Thorium (Th)-Dissolved (mg/L)	<0.00050				<0.00050				<0.00020		
Tin (Sn)-Dissolved (mg/L)	<0.000250				<0.000250				<0.000100		
Titanium (Ti)-Dissolved (mg/L)	<0.00150				<0.00150				<0.00060		
Tungsten (W)-Dissolved (mg/L)	<0.00050				<0.00050				0.00		
Uranium (U)-Dissolved (mg/L)	0.00				0.00				0.00		
Vanadium (V)-Dissolved (mg/L)	<0.00250				<0.00250				<0.00100		
Zinc (Zn)-Dissolved (mg/L)	<0.0050				<0.0050				<0.0020		
Zirconium (Zr)-Dissolved (mg/L)	<0.00150				<0.00150				<0.00060		
Benzene (mg/L)	0.06				0.00				0.01		
Ethylbenzene (mg/L)	0.00				0.00				0.00		
F1 (C6-C10) (mg/L)	<0.10				<0.10				<0.10		
F2 (C10-C16) (mg/L)	0.20				<0.10				<0.10		
F3 (C16-C34) (mg/L)	<0.25				<0.25				<0.25		
F4 (C34-C50) (mg/L)	<0.25				<0.25				<0.25		
Toluene (mg/L)	0.03				0.00				0.00		
Total Hydrocarbons (C6-C50) (mg/L)	<0.40				<0.40				<0.40		
Xylenes (mg/L)	0.01				0.00				0.00		
Th-228 (Bq/L)	0.01				0.01				<0.005		
Th-230 (Bq/L)	<0.0038				<0.0042				<0.0041		
Th-232 (Bq/L)	<0.00096				0.00				<0.0013		
U-234 (Bq/L)	0.09				0.15				0.19		
U-235 (Bq/L)	<0.0041				0.00				0.00		

Date	3-Jan-2022	11-Jan-2022	17-Jan-2022	25-Jan-2022	1-Feb-2022	7-Feb-2022	17-Feb-2022	24-Feb-2022	2-Mar-2022	7-Mar-2022	14-Mar-2022
U-238 (Bq/L)	0.02				0.05				0.04		

G08_B

Date	21-Mar-2022	28-Mar-2022	4-Apr-2022	11-Apr-2022	18-Apr-2022	25-Apr-2022	1-May-2022	10-May-2022	15-May-2022	24-May-2022	24-May-2022
Conductivity (µS/cm)	5940	5790	6800	6740	5810	5960	5990	5610	4950	3930	3930
pH	7.80	7.74	7.68	7.82	7.90	7.82	7.86	7.83	7.90	7.96	7.96
Total Suspended Solids (mg/L)	<1.0	<1.0	1.20	<1.0	<1.0	<1.0	4.90	<1.0	2.50	3.50	3.50
Turbidity (NTU)	0.22	0.32	0.30	0.49	0.11	0.15	1.40	0.34	0.27	0.33	0.33
Alkalinity, Bicarbonate (mg/L)	64.70	65.30	66.00	61.70	61.30	61.10	63.40	59.40	57.60	75.60	75.60
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	64.70	65.30	66.00	61.70	61.30	61.10	63.40	59.40	57.60	75.60	75.60
Calcium (Ca)-Total (mg/L)			596				532				
Chloride (mg/L)	1870	1690	2090	1800	1730	1810	1850	1660	1380	1100	1100
Fluoride (mg/L)	0.56	0.48	0.52	<0.500	<0.500	0.51	<0.500	<0.500	0.50	0.47	0.47
Hardness (as CaCO3) (mg/L)	1720	1690	2080	1830	1630	1800	1720	1660	1350	1140	1140
Magnesium (Mg)-Total (mg/L)			106				86.40				
Potassium (K)-Total (mg/L)			13.70				13.00				
Silicate (as SiO2) (mg/L)	11.00	11.20	10.70	10.60	10.40	10.20	10.70	10.10	9.01	9.27	9.27
Sodium (Na)-Total (mg/L)			592				551				
Sulfate (mg/L)	294	270	305	250	262	263	275	250	231	212	212
TDS (mg/L)	3720	3360	4120	3880	3350	3530	3680	3470	2940	2380	2380
Ammonia, Total (as N) (mg/L)	7.45	4.68	4.60	5.52	7.93	5.82	5.19	4.77	5.38	7.90	7.90
Nitrate and Nitrite (mg/L)	12.00	5.30	5.51	6.63	8.74	7.94	7.76	5.45	8.68	12.50	12.50
Nitrate as Nitrogen (mg/L)	11.70	5.06	5.26	6.35	8.33	7.55	7.43	5.12	8.32	11.70	11.70
Nitrite as Nitrogen (mg/L)	0.30	0.24	0.25	0.28	0.41	0.39	0.33	0.33	0.36	0.80	0.80
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0020	0.00	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	9.46	5.34	5.09	5.71	8.85	6.49	5.70	5.22	6.28	8.25	8.25
Total Organic Carbon (mg/L)	2.59	4.72	3.53	3.53	2.22	1.92	2.00	2.19	2.34	2.82	2.82
Aluminum (Al)-Total (mg/L)			<0.0150				0.03				
Antimony (Sb)-Total (mg/L)			<0.00050				<0.00020				
Arsenic (As)-Total (mg/L)			0.00				0.00				
Barium (Ba)-Total (mg/L)			0.04				0.04				
Beryllium (Be)-Total (mg/L)			<0.000100				<0.000040				
Bismuth (Bi)-Total (mg/L)			<0.000250				<0.000100				
Boron (B)-Total (mg/L)			0.93				0.94				
Cadmium (Cd)-Total (mg/L)			<0.0000250				<0.0000100				
Cesium (Cs)-Total (mg/L)			0.00				0.00				

Date	21-Mar-2022	28-Mar-2022	4-Apr-2022	11-Apr-2022	18-Apr-2022	25-Apr-2022	1-May-2022	10-May-2022	15-May-2022	24-May-2022	24-May-2022
Chromium (Cr)-Total (mg/L)			<0.00050				<0.00020				
Cobalt (Co)-Total (mg/L)			0.00				0.00				
Copper (Cu)-Total (mg/L)			<0.00075				0.00				
Iron (Fe)-Total (mg/L)			0.10				0.07				
Lead (Pb)-Total (mg/L)			<0.000150				<0.000060				
Lithium (Li)-Total (mg/L)			0.10				0.09				
Manganese (Mn)-Total (mg/L)			0.07				0.06				
Mercury (Hg)-Total (mg/L)			<0.0000050				<0.0000050				
Molybdenum (Mo)-Total (mg/L)			0.01				0.01				
Nickel (Ni)-Total (mg/L)			0.02				0.01				
Rubidium (Rb)-Total (mg/L)			0.02				0.02				
Selenium (Se)-Total (mg/L)			<0.000250				<0.000100				
Silver (Ag)-Total (mg/L)			<0.000050				<0.000020				
Strontium (Sr)-Total (mg/L)			13.40				12.00				
Sulfur (S)-Total (mg/L)			114				113				
Tellurium (Te)-Total (mg/L)			<0.00100				0.00				
Thallium (Tl)-Total (mg/L)			<0.000050				0.00				
Thorium (Th)-Total (mg/L)			<0.00050				<0.00020				
Tin (Sn)-Total (mg/L)			<0.000250				<0.000100				
Titanium (Ti)-Total (mg/L)			<0.00150				<0.00090				
Tungsten (W)-Total (mg/L)			0.00				0.00				
Uranium (U)-Total (mg/L)			0.01				0.01				
Vanadium (V)-Total (mg/L)			<0.00250				<0.00100				
Zinc (Zn)-Total (mg/L)			<0.0075				<0.0030				
Zirconium (Zr)-Total (mg/L)			<0.00100				<0.00040				
Aluminum (Al)-Dissolved (mg/L)			0.01				0.00				
Antimony (Sb)-Dissolved (mg/L)			<0.00050				<0.00020				
Arsenic (As)-Dissolved (mg/L)			0.00				0.00				
Barium (Ba)-Dissolved (mg/L)			0.04				0.04				
Beryllium (Be)-Dissolved (mg/L)			<0.000100				<0.000040				
Bismuth (Bi)-Dissolved (mg/L)			<0.000250				<0.000100				
Boron (B)-Dissolved (mg/L)			1.01				0.99				
Cadmium (Cd)-Dissolved (mg/L)			<0.0000250				<0.0000100				
Calcium (Ca)-Dissolved (mg/L)	542	527	651	585	506	558	544	527	422	348	348
Cesium (Cs)-Dissolved (mg/L)			0.00				0.00				
Chromium (Cr)-Dissolved (mg/L)			<0.00050				<0.00020				
Cobalt (Co)-Dissolved (mg/L)			0.00				0.00				
Copper (Cu)-Dissolved (mg/L)			<0.00075				0.00				
Iron (Fe)-Dissolved (mg/L)			<0.0250				<0.0100				

Date	21-Mar-2022	28-Mar-2022	4-Apr-2022	11-Apr-2022	18-Apr-2022	25-Apr-2022	1-May-2022	10-May-2022	15-May-2022	24-May-2022	24-May-2022
Lead (Pb)-Dissolved (mg/L)			<0.000150				<0.000060				
Lithium (Li)-Dissolved (mg/L)			0.11				0.10				
Magnesium (Mg)-Dissolved (mg/L)	88.10	90.80	111	89.50	88.10	97.70	87.90	85.00	72.00	67.10	67.10
Manganese (Mn)-Dissolved (mg/L)			0.07				0.06				
Mercury (Hg)-Dissolved (mg/L)			<0.0000050				<0.0000050				
Molybdenum (Mo)-Dissolved (mg/L)			0.01				0.01				
Nickel (Ni)-Dissolved (mg/L)			0.02				0.01				
Phosphorus - Dissolved (mg/L)			<0.050				<0.020				
Potassium (K)-Dissolved (mg/L)	13.90	13.00	15.40	13.40	14.20	14.60	12.70	14.40	13.50	19.60	19.60
Rubidium (Rb)-Dissolved (mg/L)			0.02				0.02				
Selenium (Se)-Dissolved (mg/L)			<0.000250				<0.000100				
Silver (Ag)-Dissolved (mg/L)			<0.000050				<0.000020				
Sodium (Na)-Dissolved (mg/L)	519	544	630	552	566	598	549	529	434	324	324
Strontium (Sr)-Dissolved (mg/L)			13.70				12.20				
Sulfur (S)-Dissolved (mg/L)			117				110				
Tellurium (Te)-Dissolved (mg/L)			0.00				0.00				
Thallium (Tl)-Dissolved (mg/L)			<0.000050				0.00				
Thorium (Th)-Dissolved (mg/L)			<0.00050				<0.00020				
Tin (Sn)-Dissolved (mg/L)			<0.000250				<0.000100				
Titanium (Ti)-Dissolved (mg/L)			<0.00150				<0.00060				
Tungsten (W)-Dissolved (mg/L)			0.00				0.00				
Uranium (U)-Dissolved (mg/L)			0.01				0.01				
Vanadium (V)-Dissolved (mg/L)			<0.00250				<0.00100				
Zinc (Zn)-Dissolved (mg/L)			<0.0050				<0.0020				
Zirconium (Zr)-Dissolved (mg/L)			<0.00150				<0.00040				
Benzene (mg/L)			0.00				0.00				
Ethylbenzene (mg/L)			<0.00050				<0.00050				
F1 (C6-C10) (mg/L)			<0.10				<0.10				
F2 (C10-C16) (mg/L)			<0.10				<0.10				
F3 (C16-C34) (mg/L)			<0.25				<0.25				
F4 (C34-C50) (mg/L)			<0.25				<0.25				
Toluene (mg/L)			0.00				0.00				
Total Hydrocarbons (C6-C50) (mg/L)			<0.40				<0.40				
Xylenes (mg/L)			<0.00075				<0.00075				
Th-228 (Bq/L)			0.01				<0.0062				
Th-230 (Bq/L)			<0.004				<0.0043				
Th-232 (Bq/L)			<0.0014				<0.0019				
U-234 (Bq/L)			0.35				0.30				
U-235 (Bq/L)			0.01				0.01				

Date	21-Mar-2022	28-Mar-2022	4-Apr-2022	11-Apr-2022	18-Apr-2022	25-Apr-2022	1-May-2022	10-May-2022	15-May-2022	24-May-2022	24-May-2022
U-238 (Bq/L)			0.08				0.07				

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Date	2-Jun-2022	6-Jun-2022	13-Jun-2022	21-Jun-2022	28-Jun-2022	4-Jul-2022	7-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022
Conductivity (µS/cm)	3980	3460	2750	4400	4460	5270	4660	3360	3710	4180	4050
pH	7.85	7.83	7.89	7.96	7.93	7.97	7.98	8.00	7.97	7.90	7.89
Total Suspended Solids (mg/L)	29.30	19.40	10.60	<1.0	3.90	<1.0	1.40	1.20	<1.0	<1.0	<1.0
Turbidity (NTU)	20.30	9.81	2.17	0.18	0.66	0.26	0.26	0.27	0.19	0.18	0.35
Alkalinity, Bicarbonate (mg/L)	89.00	89.40	98.90	86.70	69.10	81.30	92.30	121	89.90	75.90	68.70
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	89.00	89.40	98.90	86.70	69.10	81.30	92.30	121	89.90	75.90	68.70
Calcium (Ca)-Total (mg/L)	338					516					
Chloride (mg/L)	1060	905	632	1140	1210	1620	1260	790	972	1160	1120
Fluoride (mg/L)	0.59	0.58	0.65	0.59	0.48	<0.500	0.51	0.63	0.50	0.49	0.47
Hardness (as CaCO3) (mg/L)	1060	1000	849	1220	1240	1630	1330	1040	1060	1170	1070
Magnesium (Mg)-Total (mg/L)	67.80					82.30					
Potassium (K)-Total (mg/L)	22.10					17.40					
Silicate (as SiO2) (mg/L)	10.20	9.26	8.53	9.50	9.24	9.03	9.13	10.10	9.96	9.88	9.80
Sodium (Na)-Total (mg/L)	331					458					
Sulfate (mg/L)	220	199	182	235	243	286	247	228	239	256	232
TDS (mg/L)	2650	2370	2850	3490	3520	3440	3240	2280	2340	2460	2350
Ammonia, Total (as N) (mg/L)	9.09	9.33	5.32	6.66	4.95	5.72	7.23	11.50	8.58	7.56	5.76
Nitrate and Nitrite (mg/L)	10.80	14.70	21.20	14.40	14.70	11.70	19.60	31.40	19.70	15.60	9.27
Nitrate as Nitrogen (mg/L)	9.98	13.90	20.80	14.10	14.50	11.30	19.00	30.90	19.30	15.30	9.06
Nitrite as Nitrogen (mg/L)	0.83	0.76	0.41	0.29	0.17	0.40	0.62	0.52	0.43	0.32	0.21
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.04	<0.0020	0.00	<0.0020	<0.0020	<0.0020	<0.0020	0.00	0.00	0.00	0.00
Phosph (P)-Tot Dis (mg/L)	0.04	0.00	0.01	0.00	<0.0010	0.00	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total Kjeldahl Nitrogen (mg/L)	10.10	10.50	9.63	8.14	5.87	7.19	8.51	12.60	10.30	9.29	6.44
Total Organic Carbon (mg/L)	5.01	2.67	2.38	4.04	3.41	2.74	2.10	2.28	2.25	2.13	2.10
Aluminum (Al)-Total (mg/L)	1.09					0.02					
Antimony (Sb)-Total (mg/L)	0.00					<0.00020					
Arsenic (As)-Total (mg/L)	0.00					0.00					
Barium (Ba)-Total (mg/L)	0.07					0.06					
Beryllium (Be)-Total (mg/L)	0.00					<0.000040					
Bismuth (Bi)-Total (mg/L)	<0.000050					<0.000100					
Boron (B)-Total (mg/L)	0.80					0.81					
Cadmium (Cd)-Total (mg/L)	<0.0000250					<0.0000200					
Cesium (Cs)-Total (mg/L)	0.00					0.00					

Date	2-Jun-2022	6-Jun-2022	13-Jun-2022	21-Jun-2022	28-Jun-2022	4-Jul-2022	7-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022
Chromium (Cr)-Total (mg/L)	0.09					<0.00020					
Cobalt (Co)-Total (mg/L)	0.00					0.00					
Copper (Cu)-Total (mg/L)	0.01					0.01					
Iron (Fe)-Total (mg/L)	2.24					0.07					
Lead (Pb)-Total (mg/L)	0.00					0.00					
Lithium (Li)-Total (mg/L)	0.11					0.10					
Manganese (Mn)-Total (mg/L)	0.09					0.09					
Mercury (Hg)-Total (mg/L)	<0.0000050					<0.0000050					
Molybdenum (Mo)-Total (mg/L)	0.03					0.02					
Nickel (Ni)-Total (mg/L)	0.02					0.01					
Rubidium (Rb)-Total (mg/L)	0.04					0.03					
Selenium (Se)-Total (mg/L)	0.00					<0.000100					
Silver (Ag)-Total (mg/L)	0.00					0.00					
Strontium (Sr)-Total (mg/L)	6.79					10.10					
Sulfur (S)-Total (mg/L)	74.50					107					
Tellurium (Te)-Total (mg/L)	0.00					0.00					
Thallium (Tl)-Total (mg/L)	0.00					0.00					
Thorium (Th)-Total (mg/L)	0.00					<0.00020					
Tin (Sn)-Total (mg/L)	0.00					<0.000100					
Titanium (Ti)-Total (mg/L)	0.04					<0.00060					
Tungsten (W)-Total (mg/L)	0.00					0.00					
Uranium (U)-Total (mg/L)	0.01					0.01					
Vanadium (V)-Total (mg/L)	0.00					<0.00100					
Zinc (Zn)-Total (mg/L)	0.00					<0.0030					
Zirconium (Zr)-Total (mg/L)	<0.00160					<0.00040					
Aluminum (Al)-Dissolved (mg/L)	0.00					0.00					
Antimony (Sb)-Dissolved (mg/L)	0.00					<0.00020					
Arsenic (As)-Dissolved (mg/L)	0.00					0.00					
Barium (Ba)-Dissolved (mg/L)	0.07					0.05					
Beryllium (Be)-Dissolved (mg/L)	<0.000020					<0.000040					
Bismuth (Bi)-Dissolved (mg/L)	<0.000050					<0.000100					
Boron (B)-Dissolved (mg/L)	0.68					0.77					
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100					<0.0000200					
Calcium (Ca)-Dissolved (mg/L)	318	292	241	372	381	439	413	307	319	353	330
Cesium (Cs)-Dissolved (mg/L)	0.00					0.00					
Chromium (Cr)-Dissolved (mg/L)	0.00					<0.00100					
Cobalt (Co)-Dissolved (mg/L)	0.00					0.00					
Copper (Cu)-Dissolved (mg/L)	0.01					0.01					
Iron (Fe)-Dissolved (mg/L)	0.06					0.03					

Date	2-Jun-2022	6-Jun-2022	13-Jun-2022	21-Jun-2022	28-Jun-2022	4-Jul-2022	7-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022
Lead (Pb)-Dissolved (mg/L)	<0.000030					<0.000060					
Lithium (Li)-Dissolved (mg/L)	0.10					0.08					
Magnesium (Mg)-Dissolved (mg/L)	65.00	65.80	60.10	70.60	69.60	69.00	73.40	65.80	64.60	69.80	59.80
Manganese (Mn)-Dissolved (mg/L)	0.06					0.08					
Mercury (Hg)-Dissolved (mg/L)	<0.0000050					<0.0000050					
Molybdenum (Mo)-Dissolved (mg/L)	0.03					0.02					
Nickel (Ni)-Dissolved (mg/L)	0.01					0.01					
Phosphorus - Dissolved (mg/L)	<0.010					<0.100					
Potassium (K)-Dissolved (mg/L)	23.60	25.60	23.60	16.00	16.50	16.20	18.00	23.80	20.40	19.70	16.40
Rubidium (Rb)-Dissolved (mg/L)	0.04					0.02					
Selenium (Se)-Dissolved (mg/L)	0.00					<0.000100					
Silver (Ag)-Dissolved (mg/L)	0.00					0.00					
Sodium (Na)-Dissolved (mg/L)	335	291	198	330	372	387	355	220	278	336	328
Strontium (Sr)-Dissolved (mg/L)	6.50					10.20					
Sulfur (S)-Dissolved (mg/L)	85.50					104					
Tellurium (Te)-Dissolved (mg/L)	0.00					0.00					
Thallium (Tl)-Dissolved (mg/L)	0.00					0.00					
Thorium (Th)-Dissolved (mg/L)	<0.00010					<0.00020					
Tin (Sn)-Dissolved (mg/L)	<0.000050					<0.000100					
Titanium (Ti)-Dissolved (mg/L)	<0.00030					<0.00060					
Tungsten (W)-Dissolved (mg/L)	0.00					0.00					
Uranium (U)-Dissolved (mg/L)	0.01					0.01					
Vanadium (V)-Dissolved (mg/L)	<0.00050					<0.00100					
Zinc (Zn)-Dissolved (mg/L)	<0.0010					<0.0020					
Zirconium (Zr)-Dissolved (mg/L)	<0.00030					<0.00060					
Benzene (mg/L)	0.06					0.00					
Ethylbenzene (mg/L)	0.00					<0.00050					
F1 (C6-C10) (mg/L)	<0.10					<0.10					
F2 (C10-C16) (mg/L)	0.10					<0.10					
F3 (C16-C34) (mg/L)	<0.25					<0.25					
F4 (C34-C50) (mg/L)	<0.25					<0.25					
Toluene (mg/L)	0.02					0.00					
Total Hydrocarbons (C6-C50) (mg/L)	<0.40					<0.38					
Xylenes (mg/L)	0.00					<0.00050					
Th-228 (Bq/L)	<0.0046					0.01					
Th-230 (Bq/L)	<0.0036					0.01					
Th-232 (Bq/L)	<0.0016					<0.00089					
U-234 (Bq/L)	0.47					0.49					
U-235 (Bq/L)	0.01					0.01					

Date	2-Jun-2022	6-Jun-2022	13-Jun-2022	21-Jun-2022	28-Jun-2022	4-Jul-2022	7-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022
U-238 (Bq/L)	0.15					0.16					

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Date	18-Jul-2022	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Conductivity (µS/cm)	4580	4390	3970	4070	3790	4040	4310	4330	4680	4740	4500
pH	7.81	7.92	7.92	7.92	7.89	7.88	7.99	7.92	7.75	7.75	7.98
Total Suspended Solids (mg/L)	<1.0	5.10	6.20	<1.0	<1.0	2.20	<1.0	1.90	1.10	2.00	<1.0
Turbidity (NTU)	0.22	3.38	1.91	0.18	0.15	0.36	0.30	0.51	0.24	0.39	0.33
Alkalinity, Bicarbonate (mg/L)	78.10	81.80	73.10	74.30	79.80	77.90	93.20	78.20	84.00	76.80	87.00
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	78.10	81.80	73.10	74.30	79.80	77.90	93.20	78.20	84.00	76.80	87.00
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1260	1150	1020	1040	988	1070	1180	1220	1300	1270	1220
Fluoride (mg/L)	0.53	0.56	0.59	0.59	0.53	0.62	0.41	0.41	0.50	0.44	0.54
Hardness (as CaCO3) (mg/L)	1330	1290	1150	1190	1140	1200	1420	1400	1510	1400	1390
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	9.51	9.18	9.31	9.60	9.70	9.61	9.97	9.79	9.56	9.81	9.77
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	272	296	296	305	320	345	378	370	370	366	362
TDS (mg/L)	3360	2900	2800	3660	3280	2600	3220	3240	3130	3080	2760
Ammonia, Total (as N) (mg/L)	7.21	6.94	5.37	4.99	5.34	5.25	11.20	10.50	9.54	14.80	19.80
Nitrate and Nitrite (mg/L)	14.90	20.60	18.70	17.40	16.30	17.80	23.80	21.80	21.70	27.50	36.30
Nitrate as Nitrogen (mg/L)	14.60	20.30	18.50	17.20	16.10	17.60	23.50	21.60	21.40	27.20	35.90
Nitrite as Nitrogen (mg/L)	0.27	0.26	0.19	0.20	0.21	0.26	0.25	0.23	0.31	0.28	0.36
Orthophosphate-Dissolved (as P) (mg/L)	0.00	<0.0010	0.00	0.00	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	0.00	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.0020	0.00	<0.0020	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	<0.0010	0.00	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00	0.00	<0.0010	<0.0010	0.00	0.00	0.00	<0.0010	0.00	<0.0010
Phosphorus - Total (mg/L)	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	8.50	8.21	7.40	6.06	6.80	7.44	12.80	5.50	11.40	17.00	22.00
Total Organic Carbon (mg/L)	2.17	2.19	2.36	2.17	2.51	2.49	2.71	2.33	2.04	2.60	2.36
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	18-Jul-2022	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	410	388	347	355	349	361	425	420	453	421	431
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	18-Jul-2022	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	75.40	77.10	68.70	73.00	65.60	73.00	88.10	84.60	91.50	86.10	77.00
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	21.90	21.80	20.30	20.60	18.10	19.50	20.40	20.10	21.00	20.60	19.40
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	402	329	305	309	314	340	341	365	394	397	338
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	18-Jul-2022	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
U-238 (Bq/L)											

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Date	30-Jul-2022	31-Jul-2022	1-Aug-2022	2-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	13-Aug-2022	14-Aug-2022	15-Aug-2022
Conductivity (µS/cm)	4520	4530	4820	4870	4970	5400	5100	5620	6350	6110	5940
pH	7.97	7.99	7.94	7.88	7.93	7.94	7.97	7.76	7.60	7.61	7.58
Total Suspended Solids (mg/L)	<1.0	1.50	6.50	1.30	5.50	4.30	4.10	7.50	70.70	440	41.10
Turbidity (NTU)	0.24	0.36	4.07	0.23	1.76	0.64	0.59	5.17	53.70	241	36.60
Alkalinity, Bicarbonate (mg/L)	88.20	88.50	74.90	76.10	63.20	57.20	60.70	52.50	31.30	24.10	20.80
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	88.20	88.50	74.90	76.10	63.20	57.20	60.70	52.50	31.30	24.10	20.80
Calcium (Ca)-Total (mg/L)				455							
Chloride (mg/L)	1290	1280	1440	1440	1520	1630	1500	1750	2030	1970	1820
Fluoride (mg/L)	0.57	0.55	0.53	0.72	<0.500	0.57	0.54	<0.500	<0.500	<0.500	<0.500
Hardness (as CaCO3) (mg/L)	1430	1440	1520	1560	1490	1570	1440	1680	1860	1810	1640
Magnesium (Mg)-Total (mg/L)				87.80							
Potassium (K)-Total (mg/L)				18.80							
Silicate (as SiO2) (mg/L)	9.82	9.95	9.74	9.29	8.31	7.91	8.32	7.53	5.65	4.66	4.40
Sodium (Na)-Total (mg/L)				418							
Sulfate (mg/L)	354	353	350	337	256	265	265	253	215	172	186
TDS (mg/L)	3280	2480	3640	4820	3670	3810	3630	4360	4300	4010	3530
Ammonia, Total (as N) (mg/L)	13.20	14.20	8.67	9.63	12.90	12.60	12.00	11.10	10.90	11.80	13.40
Nitrate and Nitrite (mg/L)	26.40	29.80	18.50	20.80	16.80	16.20	16.50	15.80	16.50	17.00	21.40
Nitrate as Nitrogen (mg/L)	25.90	29.30	18.20	20.50	16.50	15.90	16.10	15.30	16.00	16.60	21.10
Nitrite as Nitrogen (mg/L)	0.47	0.46	0.34	0.34	0.34	0.36	0.42	0.50	0.51	0.35	0.30
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	<0.0010	0.00	0.00	<0.0010		0.12	0.03
Phosph (P)-Dis Org (mg/L)	<0.0020	0.00	0.00	<0.0020	0.01	<0.0020	<0.0020	<0.0020		<0.0244	<0.0026
Phosph (P)-Tot Dis (mg/L)	<0.0010	0.00	0.00	<0.0010	0.01	0.00	0.00	<0.0020		0.14	0.00
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	0.01	<0.0010	0.00	<0.0010	0.00	0.00	0.05	0.40	0.02
Phosphorus - Total (mg/L)	<0.0010	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.05	0.42	0.02
Total Kjeldahl Nitrogen (mg/L)	15.40	17.00	10.60	11.30	13.90	12.90	12.00	12.00	11.50	13.80	13.80
Total Organic Carbon (mg/L)	2.50	2.47	2.15	2.21	2.40	2.32	2.29	2.32	2.08	2.18	2.22
Aluminum (Al)-Total (mg/L)				0.02							
Antimony (Sb)-Total (mg/L)				<0.00020							
Arsenic (As)-Total (mg/L)				0.00							
Barium (Ba)-Total (mg/L)				0.05							
Beryllium (Be)-Total (mg/L)				<0.000100							
Bismuth (Bi)-Total (mg/L)				<0.000100							
Boron (B)-Total (mg/L)				0.92							
Cadmium (Cd)-Total (mg/L)				<0.0000100							
Cesium (Cs)-Total (mg/L)				0.00							

Date	30-Jul-2022	31-Jul-2022	1-Aug-2022	2-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	13-Aug-2022	14-Aug-2022	15-Aug-2022
Chromium (Cr)-Total (mg/L)				<0.00050							
Cobalt (Co)-Total (mg/L)				0.00							
Copper (Cu)-Total (mg/L)				0.00							
Iron (Fe)-Total (mg/L)				0.06							
Lead (Pb)-Total (mg/L)				<0.000100							
Lithium (Li)-Total (mg/L)				0.10							
Manganese (Mn)-Total (mg/L)				0.13							
Mercury (Hg)-Total (mg/L)				<0.0000050							
Molybdenum (Mo)-Total (mg/L)				0.03							
Nickel (Ni)-Total (mg/L)				0.01							
Rubidium (Rb)-Total (mg/L)				0.03							
Selenium (Se)-Total (mg/L)				0.00							
Silver (Ag)-Total (mg/L)				<0.000020							
Strontium (Sr)-Total (mg/L)				9.15							
Sulfur (S)-Total (mg/L)				124							
Tellurium (Te)-Total (mg/L)				0.00							
Thallium (Tl)-Total (mg/L)				<0.000050							
Thorium (Th)-Total (mg/L)				<0.00020							
Tin (Sn)-Total (mg/L)				<0.00020							
Titanium (Ti)-Total (mg/L)				<0.0100							
Tungsten (W)-Total (mg/L)				0.00							
Uranium (U)-Total (mg/L)				0.02							
Vanadium (V)-Total (mg/L)				0.00							
Zinc (Zn)-Total (mg/L)				<0.0060							
Zirconium (Zr)-Total (mg/L)				<0.00040							
Aluminum (Al)-Dissolved (mg/L)				0.01							
Antimony (Sb)-Dissolved (mg/L)				<0.00020							
Arsenic (As)-Dissolved (mg/L)				0.00							
Barium (Ba)-Dissolved (mg/L)				0.05							
Beryllium (Be)-Dissolved (mg/L)				<0.000100							
Bismuth (Bi)-Dissolved (mg/L)				<0.000100							
Boron (B)-Dissolved (mg/L)				0.92							
Cadmium (Cd)-Dissolved (mg/L)				<0.0000200							
Calcium (Ca)-Dissolved (mg/L)	429	430	461	490	451	491	448	522	577	571	519
Cesium (Cs)-Dissolved (mg/L)				0.00							
Chromium (Cr)-Dissolved (mg/L)				<0.00050							
Cobalt (Co)-Dissolved (mg/L)				0.00							
Copper (Cu)-Dissolved (mg/L)				0.00							
Iron (Fe)-Dissolved (mg/L)				0.03							

Date	30-Jul-2022	31-Jul-2022	1-Aug-2022	2-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	13-Aug-2022	14-Aug-2022	15-Aug-2022
Lead (Pb)-Dissolved (mg/L)				<0.000100							
Lithium (Li)-Dissolved (mg/L)				0.10							
Magnesium (Mg)-Dissolved (mg/L)	87.60	90.00	90.50	83.10	88.60	83.30	79.00	90.70	101	93.90	83.60
Manganese (Mn)-Dissolved (mg/L)				0.13							
Mercury (Hg)-Dissolved (mg/L)				<0.0000050							
Molybdenum (Mo)-Dissolved (mg/L)				0.03							
Nickel (Ni)-Dissolved (mg/L)				0.01							
Phosphorus - Dissolved (mg/L)				<0.300							
Potassium (K)-Dissolved (mg/L)	19.90	20.40	19.00	18.60	25.20	25.20	24.30	28.30	39.10	39.90	32.40
Rubidium (Rb)-Dissolved (mg/L)				0.03							
Selenium (Se)-Dissolved (mg/L)				<0.000100							
Silver (Ag)-Dissolved (mg/L)				<0.000020							
Sodium (Na)-Dissolved (mg/L)	393	399	445	400	451	486	459	547	600	575	536
Strontium (Sr)-Dissolved (mg/L)				9.32							
Sulfur (S)-Dissolved (mg/L)				126							
Tellurium (Te)-Dissolved (mg/L)				0.00							
Thallium (Tl)-Dissolved (mg/L)				0.00							
Thorium (Th)-Dissolved (mg/L)				<0.00020							
Tin (Sn)-Dissolved (mg/L)				<0.00020							
Titanium (Ti)-Dissolved (mg/L)				<0.0100							
Tungsten (W)-Dissolved (mg/L)				0.00							
Uranium (U)-Dissolved (mg/L)				0.01							
Vanadium (V)-Dissolved (mg/L)				<0.00100							
Zinc (Zn)-Dissolved (mg/L)				<0.0020							
Zirconium (Zr)-Dissolved (mg/L)				<0.00040							
Benzene (mg/L)				<0.00050							
Ethylbenzene (mg/L)				<0.00050							
F1 (C6-C10) (mg/L)				<0.10							
F2 (C10-C16) (mg/L)				<0.10							
F3 (C16-C34) (mg/L)				<0.25							
F4 (C34-C50) (mg/L)				<0.25							
Toluene (mg/L)				<0.00050							
Total Hydrocarbons (C6-C50) (mg/L)				<0.40							
Xylenes (mg/L)				<0.00075							
Th-228 (Bq/L)				0.01							
Th-230 (Bq/L)				<0.0041							
Th-232 (Bq/L)				<0.0012							
U-234 (Bq/L)				0.64							
U-235 (Bq/L)				0.03							

Date	30-Jul-2022	31-Jul-2022	1-Aug-2022	2-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	13-Aug-2022	14-Aug-2022	15-Aug-2022
U-238 (Bq/L)				0.20							

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Date	21-Aug-2022	22-Aug-2022	27-Aug-2022	30-Aug-2022	31-Aug-2022	6-Sep-2022	8-Sep-2022	11-Sep-2022	13-Sep-2022	14-Sep-2022	15-Sep-2022
Conductivity (µS/cm)	5470	5480	5300	6080	5900	3170	4370	4970	4860	5220	5250
pH	8.50	8.62	7.93	7.79	7.83	7.93	7.76	7.93	7.84	7.85	7.81
Total Suspended Solids (mg/L)	3.00	46.10	4.00	7.20	7.40	<1.0	60.60	1.30	4.70	10.60	57.40
Turbidity (NTU)	1.72	35.90	3.88	4.75	6.04	0.54	52.50	1.43	3.86	6.53	40.90
Alkalinity, Bicarbonate (mg/L)	10.90	13.90	172	48.00	54.10	117	43.20	71.60	77.30	72.30	61.90
Alkalinity, Carbonate (mg/L)	7.40	10.80	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	14.80	19.50	172	48.00	54.10	117	43.20	71.60	77.30	72.30	61.90
Calcium (Ca)-Total (mg/L)						273					
Chloride (mg/L)	1640	1690	1500	1820	1780	727	1200	1420	1390	1640	1600
Fluoride (mg/L)	<0.500	<0.500	<0.500	<0.500	<0.500	0.42	0.29	<0.500	<0.500	<0.500	0.31
Hardness (as CaCO3) (mg/L)	1480	1480	1650	1760	1660	915	1250	1410	1460	1430	1480
Magnesium (Mg)-Total (mg/L)						69.40					
Potassium (K)-Total (mg/L)						38.30					
Silicate (as SiO2) (mg/L)	3.93	4.15	11.90	8.00	8.38	10.30	8.23	9.38	10.10	10.30	9.59
Sodium (Na)-Total (mg/L)						214					
Sulfate (mg/L)	186	190	181	214	228	250	262	243	260	269	266
TDS (mg/L)	3460	3560	3390	3760	3580	2070	2980	4100	3280	3670	3860
Ammonia, Total (as N) (mg/L)	8.46	9.12	18.60	12.40	12.70	14.20	11.10	9.33	7.44	7.82	9.64
Nitrate and Nitrite (mg/L)	16.20	22.60	48.50	24.80	21.50	35.30	27.40	19.00	15.90	15.50	14.80
Nitrate as Nitrogen (mg/L)	15.80	22.20	47.60	24.30	21.00	34.40	26.50	18.40	15.40	15.00	14.30
Nitrite as Nitrogen (mg/L)	0.38	0.45	0.94	0.54	0.54	0.94	0.87	0.60	0.52	0.52	0.53
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	<0.0010	<0.0010	0.00	<0.0010	<0.0010	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	0.03	0.01	<0.0020	<0.0020	<0.0020	0.03	0.00	<0.0020	0.00	0.05
Phosph (P)-Tot Dis (mg/L)	0.00	0.03	0.01	0.00	<0.0010	0.00	0.04	0.00	0.00	0.01	0.06
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.03	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.01
Phosphorus - Total (mg/L)	0.00	0.04	0.01	0.01	0.01	0.02	0.07	0.01	0.01	0.01	0.07
Total Kjeldahl Nitrogen (mg/L)	9.43	9.98	18.60	12.60	13.70	12.50	13.50	11.50	8.73	7.45	10.20
Total Organic Carbon (mg/L)	2.06	2.22	3.20	2.42	2.74	2.88	2.56	2.37	2.05	2.69	2.42
Aluminum (Al)-Total (mg/L)						0.01					
Antimony (Sb)-Total (mg/L)						0.00					
Arsenic (As)-Total (mg/L)						0.00					
Barium (Ba)-Total (mg/L)						0.07					
Beryllium (Be)-Total (mg/L)						<0.000020					
Bismuth (Bi)-Total (mg/L)						<0.000050					
Boron (B)-Total (mg/L)						0.94					
Cadmium (Cd)-Total (mg/L)						<0.0000150					
Cesium (Cs)-Total (mg/L)						0.00					

Date	21-Aug-2022	22-Aug-2022	27-Aug-2022	30-Aug-2022	31-Aug-2022	6-Sep-2022	8-Sep-2022	11-Sep-2022	13-Sep-2022	14-Sep-2022	15-Sep-2022
Chromium (Cr)-Total (mg/L)						0.00					
Cobalt (Co)-Total (mg/L)						0.00					
Copper (Cu)-Total (mg/L)						0.01					
Iron (Fe)-Total (mg/L)						0.20					
Lead (Pb)-Total (mg/L)						<0.000030					
Lithium (Li)-Total (mg/L)						0.09					
Manganese (Mn)-Total (mg/L)						0.05					
Mercury (Hg)-Total (mg/L)						<0.0000050					
Molybdenum (Mo)-Total (mg/L)						0.06					
Nickel (Ni)-Total (mg/L)						0.03					
Rubidium (Rb)-Total (mg/L)						0.05					
Selenium (Se)-Total (mg/L)						0.00					
Silver (Ag)-Total (mg/L)						<0.000010					
Strontium (Sr)-Total (mg/L)						5.71					
Sulfur (S)-Total (mg/L)						96.80					
Tellurium (Te)-Total (mg/L)						0.00					
Thallium (Tl)-Total (mg/L)						0.00					
Thorium (Th)-Total (mg/L)						<0.00010					
Tin (Sn)-Total (mg/L)						<0.000050					
Titanium (Ti)-Total (mg/L)						0.00					
Tungsten (W)-Total (mg/L)						0.00					
Uranium (U)-Total (mg/L)						0.02					
Vanadium (V)-Total (mg/L)						0.00					
Zinc (Zn)-Total (mg/L)						<0.0015					
Zirconium (Zr)-Total (mg/L)						<0.00020					
Aluminum (Al)-Dissolved (mg/L)						<0.0010					
Antimony (Sb)-Dissolved (mg/L)						0.00					
Arsenic (As)-Dissolved (mg/L)						0.00					
Barium (Ba)-Dissolved (mg/L)						0.07					
Beryllium (Be)-Dissolved (mg/L)						<0.000020					
Bismuth (Bi)-Dissolved (mg/L)						<0.000050					
Boron (B)-Dissolved (mg/L)						0.90					
Cadmium (Cd)-Dissolved (mg/L)						<0.0000150					
Calcium (Ca)-Dissolved (mg/L)	489	484	456	530	507	251	367	426	455	443	457
Cesium (Cs)-Dissolved (mg/L)						0.00					
Chromium (Cr)-Dissolved (mg/L)						<0.00010					
Cobalt (Co)-Dissolved (mg/L)						0.00					
Copper (Cu)-Dissolved (mg/L)						0.01					
Iron (Fe)-Dissolved (mg/L)						0.12					

Date	21-Aug-2022	22-Aug-2022	27-Aug-2022	30-Aug-2022	31-Aug-2022	6-Sep-2022	8-Sep-2022	11-Sep-2022	13-Sep-2022	14-Sep-2022	15-Sep-2022
Lead (Pb)-Dissolved (mg/L)						<0.000030					
Lithium (Li)-Dissolved (mg/L)						0.09					
Magnesium (Mg)-Dissolved (mg/L)	63.80	66.80	124	106	95.50	70.00	80.90	83.70	77.50	78.60	81.80
Manganese (Mn)-Dissolved (mg/L)						0.05					
Mercury (Hg)-Dissolved (mg/L)						<0.0000050					
Molybdenum (Mo)-Dissolved (mg/L)						0.05					
Nickel (Ni)-Dissolved (mg/L)						0.03					
Phosphorus - Dissolved (mg/L)						<0.010					
Potassium (K)-Dissolved (mg/L)	36.80	41.60	57.00	49.60	45.50	36.90	41.80	29.20	27.00	25.90	26.00
Rubidium (Rb)-Dissolved (mg/L)						0.05					
Selenium (Se)-Dissolved (mg/L)						0.00					
Silver (Ag)-Dissolved (mg/L)						<0.000010					
Sodium (Na)-Dissolved (mg/L)	513	503	372	485	493	213	291	423	400	423	449
Strontium (Sr)-Dissolved (mg/L)						5.62					
Sulfur (S)-Dissolved (mg/L)						100					
Tellurium (Te)-Dissolved (mg/L)						0.00					
Thallium (Tl)-Dissolved (mg/L)						0.00					
Thorium (Th)-Dissolved (mg/L)						<0.00010					
Tin (Sn)-Dissolved (mg/L)						<0.000050					
Titanium (Ti)-Dissolved (mg/L)						<0.00030					
Tungsten (W)-Dissolved (mg/L)						0.00					
Uranium (U)-Dissolved (mg/L)						0.02					
Vanadium (V)-Dissolved (mg/L)						<0.00050					
Zinc (Zn)-Dissolved (mg/L)						<0.0010					
Zirconium (Zr)-Dissolved (mg/L)						<0.00030					
Benzene (mg/L)						0.02					
Ethylbenzene (mg/L)						0.00					
F1 (C6-C10) (mg/L)						<0.10					
F2 (C10-C16) (mg/L)						<0.10					
F3 (C16-C34) (mg/L)						<0.25					
F4 (C34-C50) (mg/L)						<0.25					
Toluene (mg/L)						0.01					
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)						0.00					
Th-228 (Bq/L)						<0.4					
Th-230 (Bq/L)						<30					
Th-232 (Bq/L)						<0.001					
U-234 (Bq/L)						0.23					
U-235 (Bq/L)						0.01					

Date	21-Aug-2022	22-Aug-2022	27-Aug-2022	30-Aug-2022	31-Aug-2022	6-Sep-2022	8-Sep-2022	11-Sep-2022	13-Sep-2022	14-Sep-2022	15-Sep-2022
U-238 (Bq/L)						0.23					

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Date	19-Sep-2022	20-Sep-2022	21-Sep-2022	21-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	26-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Conductivity (µS/cm)	4680	4810	4640	4680	4640	4830	5330	5180	4150	4620	4800
pH	7.82	7.79	7.92	7.82	7.93	7.87	7.87	7.89	7.81	7.85	7.83
Total Suspended Solids (mg/L)	<1.0	1.20	<1.0	<1.0	<1.0	<1.0	2.10	1.80	1.10	1.10	<1.0
Turbidity (NTU)	0.57	0.46	0.30	0.57	0.36	0.28	1.33	1.04	1.19	0.20	0.33
Alkalinity, Bicarbonate (mg/L)	57.30	53.10	50.40	57.30	58.70	55.90	55.50	58.70	57.30	55.50	51.20
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	57.30	53.10	50.40	57.30	58.70	55.90	55.50	58.70	57.30	55.50	51.20
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1330	1350	1340	1330	1350	1310	1490	1450	1180	1300	1390
Fluoride (mg/L)	0.36	0.37	0.44	0.36	0.42	0.34	0.31	0.32	0.40	0.40	0.41
Hardness (as CaCO3) (mg/L)	1300	1370	1300	1300	1340	1320	1440	1420	1330	1320	1390
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	9.57	9.42	10.50	9.57	10.80	12.20	11.80	12.00	12.00	11.40	11.10
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	263	246	266	263	268	264	278	270	252	253	256
TDS (mg/L)	3000	3020	3090	3000	3050	2820	3080	3060	3440	2940	3120
Ammonia, Total (as N) (mg/L)	5.83	5.99	6.08	5.83	6.16	5.84	6.80	7.06	5.07	4.48	4.35
Nitrate and Nitrite (mg/L)	12.20	12.20	16.50	12.20	16.80	12.70	13.20	13.50	14.20	12.10	11.00
Nitrate as Nitrogen (mg/L)	11.80	11.90	16.10	11.80	16.40	12.40	12.90	13.20	14.00	11.90	10.80
Nitrite as Nitrogen (mg/L)	0.40	0.34	0.42	0.40	0.40	0.28	0.30	0.29	0.23	0.18	0.16
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	0.00	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	0.00	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	0.00	<0.0020	0.00	0.00	0.00	<0.0020	<0.0020	0.01	<0.0020	0.01	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	<0.0010	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	7.72	7.62	6.88	7.72	7.27	6.48	7.46	7.61	5.96	5.07	5.14
Total Organic Carbon (mg/L)	2.29	2.10	2.20	2.29	2.09	2.14	2.09	2.15	2.16	2.21	2.24
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	19-Sep-2022	20-Sep-2022	21-Sep-2022	21-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	26-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	404	423	396	404	410	406	444	438	408	405	430
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	19-Sep-2022	20-Sep-2022	21-Sep-2022	21-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	26-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	70.70	76.00	75.10	70.70	76.50	74.70	80.60	80.40	74.70	76.30	76.00
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	21.90	22.10	22.60	21.90	23.30	20.60	21.80	22.90	19.80	20.30	21.10
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	400	392	370	400	377	394	433	432	346	379	390
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	19-Sep-2022	20-Sep-2022	21-Sep-2022	21-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	26-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
U-238 (Bq/L)											

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Date	30-Sep-2022	2-Oct-2022	7-Oct-2022	10-Oct-2022	11-Oct-2022	17-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022
Conductivity (µS/cm)	4960	5030	4680	5340	5130	4760	4840	4700	4710	4890	4970
pH	7.82	7.82	7.85	7.48	7.83	7.91	7.95	7.87	7.87	7.77	7.76
Total Suspended Solids (mg/L)	<1.0	5.70	2.10	59.00	1.50	1.70	3.10	1.20	3.30	1.30	1.40
Turbidity (NTU)	0.32	0.36	1.00	24.40	0.82	0.81	1.62	0.48	0.48	0.43	0.28
Alkalinity, Bicarbonate (mg/L)	50.30	50.00	54.50	51.00	51.20	68.90	62.60	56.20	54.60	51.40	50.40
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	50.30	50.00	54.50	51.00	51.20	68.90	62.60	56.20	54.60	51.40	50.40
Calcium (Ca)-Total (mg/L)			411								
Chloride (mg/L)	1450	1440	1320	1590	1520	1400	1460	1340	1390	1470	1490
Fluoride (mg/L)	0.41	0.43	0.46	<0.500	<0.500	0.40	0.46	0.34	0.38	0.37	0.38
Hardness (as CaCO3) (mg/L)	1390	1430	1400	1700	1440	1520	1560	1400	1330	1580	1410
Magnesium (Mg)-Total (mg/L)			78.30								
Potassium (K)-Total (mg/L)			20.30								
Silicate (as SiO2) (mg/L)	10.90	10.90	10.00	9.84	10.50	11.80	11.40	11.50	11	10.40	11.10
Sodium (Na)-Total (mg/L)			354								
Sulfate (mg/L)	261	264	260	265	264	258	275	251	258	261	262
TDS (mg/L)	3310	3540	2770	4640	3230	3010	3280	3340	3110	4280	3060
Ammonia, Total (as N) (mg/L)	4.53	4.21	3.74	4.70	8.82	5.70	5.04	4.35	3.61	3.19	3.15
Nitrate and Nitrite (mg/L)	11.00	10.20	13.40	9.97	19.20	10.50	9.68	7.84	6.63	5.56	5.57
Nitrate as Nitrogen (mg/L)	10.80	10.00	13.10	9.59	18.80	10.10	9.33	7.61	6.42	5.36	5.35
Nitrite as Nitrogen (mg/L)	0.18	0.16	0.26	0.38	0.39	0.43	0.35	0.23	0.21	0.20	0.22
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	0.00	<0.0020	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	<0.0010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00	<0.0010	0.00	<0.0010	0.00	0.00	<0.0010	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	4.94	4.40	4.72	5.51	10.10	7.09	5.57	5.67	4.16	3.97	3.18
Total Organic Carbon (mg/L)	2.02	1.89	2.04	2.73	2.94	2.23	2.36	2.01	1.83	2.39	1.64
Aluminum (Al)-Total (mg/L)			0.05								
Antimony (Sb)-Total (mg/L)			0.00								
Arsenic (As)-Total (mg/L)			0.00								
Barium (Ba)-Total (mg/L)			0.06								
Beryllium (Be)-Total (mg/L)			<0.000040								
Bismuth (Bi)-Total (mg/L)			<0.000100								
Boron (B)-Total (mg/L)			1.09								
Cadmium (Cd)-Total (mg/L)			<0.0000100								
Cesium (Cs)-Total (mg/L)			0.00								

Date	30-Sep-2022	2-Oct-2022	7-Oct-2022	10-Oct-2022	11-Oct-2022	17-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022
Chromium (Cr)-Total (mg/L)			0.00								
Cobalt (Co)-Total (mg/L)			0.00								
Copper (Cu)-Total (mg/L)			0.00								
Iron (Fe)-Total (mg/L)			0.13								
Lead (Pb)-Total (mg/L)			<0.000060								
Lithium (Li)-Total (mg/L)			0.07								
Manganese (Mn)-Total (mg/L)			0.06								
Mercury (Hg)-Total (mg/L)			<0.0000050								
Molybdenum (Mo)-Total (mg/L)			0.04								
Nickel (Ni)-Total (mg/L)			0.02								
Rubidium (Rb)-Total (mg/L)			0.03								
Selenium (Se)-Total (mg/L)			0.00								
Silver (Ag)-Total (mg/L)			<0.000020								
Strontium (Sr)-Total (mg/L)			9.30								
Sulfur (S)-Total (mg/L)			97.30								
Tellurium (Te)-Total (mg/L)			<0.00040								
Thallium (Tl)-Total (mg/L)			0.00								
Thorium (Th)-Total (mg/L)			<0.00020								
Tin (Sn)-Total (mg/L)			<0.000100								
Titanium (Ti)-Total (mg/L)			0.00								
Tungsten (W)-Total (mg/L)			0.00								
Uranium (U)-Total (mg/L)			0.01								
Vanadium (V)-Total (mg/L)			<0.00100								
Zinc (Zn)-Total (mg/L)			<0.0030								
Zirconium (Zr)-Total (mg/L)			<0.00040								
Aluminum (Al)-Dissolved (mg/L)			0.00								
Antimony (Sb)-Dissolved (mg/L)			0.00								
Arsenic (As)-Dissolved (mg/L)			0.00								
Barium (Ba)-Dissolved (mg/L)			0.06								
Beryllium (Be)-Dissolved (mg/L)			<0.000040								
Bismuth (Bi)-Dissolved (mg/L)			<0.000100								
Boron (B)-Dissolved (mg/L)			0.88								
Cadmium (Cd)-Dissolved (mg/L)			<0.0000100								
Calcium (Ca)-Dissolved (mg/L)	429	447	429	534	442	479	492	426	408	494	435
Cesium (Cs)-Dissolved (mg/L)			0.00								
Chromium (Cr)-Dissolved (mg/L)			<0.00020								
Cobalt (Co)-Dissolved (mg/L)			0.00								
Copper (Cu)-Dissolved (mg/L)			0.00								
Iron (Fe)-Dissolved (mg/L)			0.01								

Date	30-Sep-2022	2-Oct-2022	7-Oct-2022	10-Oct-2022	11-Oct-2022	17-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022
Lead (Pb)-Dissolved (mg/L)			<0.000060								
Lithium (Li)-Dissolved (mg/L)			0.08								
Magnesium (Mg)-Dissolved (mg/L)	77.20	76.10	79.80	88.50	81.40	79.60	81.80	82.10	76.10	84.60	79.40
Manganese (Mn)-Dissolved (mg/L)			0.05								
Mercury (Hg)-Dissolved (mg/L)			<0.0000050								
Molybdenum (Mo)-Dissolved (mg/L)			0.04								
Nickel (Ni)-Dissolved (mg/L)			0.02								
Phosphorus - Dissolved (mg/L)			<0.020								
Potassium (K)-Dissolved (mg/L)	20.80	20.70	22.20	22.50	20.60	19.30	19.10	19.40	16.70	18.00	17.00
Rubidium (Rb)-Dissolved (mg/L)			0.03								
Selenium (Se)-Dissolved (mg/L)			<0.000100								
Silver (Ag)-Dissolved (mg/L)			<0.000020								
Sodium (Na)-Dissolved (mg/L)	399	397	369	500	450	414	410	402	392	452	436
Strontium (Sr)-Dissolved (mg/L)			9.55								
Sulfur (S)-Dissolved (mg/L)			99.80								
Tellurium (Te)-Dissolved (mg/L)			<0.00040								
Thallium (Tl)-Dissolved (mg/L)			0.00								
Thorium (Th)-Dissolved (mg/L)			<0.00020								
Tin (Sn)-Dissolved (mg/L)			<0.000100								
Titanium (Ti)-Dissolved (mg/L)			<0.00060								
Tungsten (W)-Dissolved (mg/L)			0.00								
Uranium (U)-Dissolved (mg/L)			0.01								
Vanadium (V)-Dissolved (mg/L)			<0.00100								
Zinc (Zn)-Dissolved (mg/L)			<0.0020								
Zirconium (Zr)-Dissolved (mg/L)			<0.00040								
Benzene (mg/L)			0.00								
Ethylbenzene (mg/L)			<0.00050								
F1 (C6-C10) (mg/L)			<0.10								
F2 (C10-C16) (mg/L)			<0.10								
F3 (C16-C34) (mg/L)			<0.25								
F4 (C34-C50) (mg/L)			<0.25								
Toluene (mg/L)			0.00								
Total Hydrocarbons (C6-C50) (mg/L)			<0.40								
Xylenes (mg/L)			<0.00075								
Th-228 (Bq/L)			<0.4								
Th-230 (Bq/L)			<20								
Th-232 (Bq/L)			<0.001								
U-234 (Bq/L)			0.16								
U-235 (Bq/L)			0.01								

Date	30-Sep-2022	2-Oct-2022	7-Oct-2022	10-Oct-2022	11-Oct-2022	17-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022
U-238 (Bq/L)			0.16								

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Date	25-Oct-2022	26-Oct-2022	27-Oct-2022	28-Oct-2022	30-Oct-2022	31-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	8-Nov-2022	11-Nov-2022
Conductivity (µS/cm)		5070	5240	4960	5340	5150	5010	5050	5110	5920	5850
pH		7.79	7.76	7.83	7.76	7.78	7.78	7.81	7.82	7.69	7.71
Total Suspended Solids (mg/L)		<1.0	1.40	2.70	<1.0	<1.0	1.40	<1.0	<1.0	6.90	4.90
Turbidity (NTU)		0.16	1.46	0.54	0.39	0.22	0.20	<0.10	<0.10	4.39	1.58
Alkalinity, Bicarbonate (mg/L)		48.40	42.50	49.00	49.10	49.20	53.10	54.20	54.60	40.70	40.40
Alkalinity, Carbonate (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)		48.40	42.50	49.00	49.10	49.20	53.10	54.20	54.60	40.70	40.40
Calcium (Ca)-Total (mg/L)							438				
Chloride (mg/L)		1510	1640	1500	1660	1580	1530	1440	1500	1810	1780
Fluoride (mg/L)		0.40	<0.500	<0.500	0.42	0.41	0.41	0.38	0.41	<0.500	<0.500
Hardness (as CaCO3) (mg/L)		1420	1660	1380	1660	1590	1520	1600	1620	1790	1680
Magnesium (Mg)-Total (mg/L)							82.40				
Potassium (K)-Total (mg/L)							16.70				
Silicate (as SiO2) (mg/L)		10.70	11.70	10.50	10.20	11.00	11.20	11.00	11.30	10.60	11.00
Sodium (Na)-Total (mg/L)							454				
Sulfate (mg/L)		264	251	261	272	270	265	247	258	294	302
TDS (mg/L)		3300	3430	3250	3320	3090	2910	2900	2860	3100	3500
Ammonia, Total (as N) (mg/L)	2.94	2.77	3.29	2.84	2.67	2.73	2.39	2.49	2.53	2.83	2.88
Nitrate and Nitrite (mg/L)		5.58	4.68	5.42	4.77	4.50	4.75	4.27	4.21	2.67	2.12
Nitrate as Nitrogen (mg/L)		5.41	4.50	5.26	4.53	4.30	4.59	4.12	4.05	2.54	1.96
Nitrite as Nitrogen (mg/L)		0.17	0.18	0.17	0.24	0.20	0.16	0.15	0.16	0.13	0.16
Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)		0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Total Kjeldahl Nitrogen (mg/L)	3.91	3.69	4.01	3.08	3.25	3.10	3.21	3.14	2.95	3.26	3.34
Total Organic Carbon (mg/L)	1.94	2.03	1.69	1.87	2.05	1.89	1.87	2.23	2.39	2.18	1.95
Aluminum (Al)-Total (mg/L)							<0.0150				
Antimony (Sb)-Total (mg/L)							<0.00050				
Arsenic (As)-Total (mg/L)							0.00				
Barium (Ba)-Total (mg/L)							0.06				
Beryllium (Be)-Total (mg/L)							<0.000100				
Bismuth (Bi)-Total (mg/L)							<0.000250				
Boron (B)-Total (mg/L)							0.85				
Cadmium (Cd)-Total (mg/L)							<0.0000250				
Cesium (Cs)-Total (mg/L)							0.00				

Date	25-Oct-2022	26-Oct-2022	27-Oct-2022	28-Oct-2022	30-Oct-2022	31-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	8-Nov-2022	11-Nov-2022
Chromium (Cr)-Total (mg/L)							<0.00050				
Cobalt (Co)-Total (mg/L)							<0.000250				
Copper (Cu)-Total (mg/L)							<0.00075				
Iron (Fe)-Total (mg/L)							<0.0250				
Lead (Pb)-Total (mg/L)							<0.000150				
Lithium (Li)-Total (mg/L)							0.08				
Manganese (Mn)-Total (mg/L)							0.05				
Mercury (Hg)-Total (mg/L)							<0.0000050				
Molybdenum (Mo)-Total (mg/L)							0.02				
Nickel (Ni)-Total (mg/L)							0.03				
Rubidium (Rb)-Total (mg/L)							0.02				
Selenium (Se)-Total (mg/L)							<0.000250				
Silver (Ag)-Total (mg/L)							0.00				
Strontium (Sr)-Total (mg/L)							10.20				
Sulfur (S)-Total (mg/L)							96.00				
Tellurium (Te)-Total (mg/L)							<0.00100				
Thallium (Tl)-Total (mg/L)							<0.000050				
Thorium (Th)-Total (mg/L)							<0.00050				
Tin (Sn)-Total (mg/L)							<0.000250				
Titanium (Ti)-Total (mg/L)							<0.00150				
Tungsten (W)-Total (mg/L)							<0.00050				
Uranium (U)-Total (mg/L)							0.01				
Vanadium (V)-Total (mg/L)							<0.00250				
Zinc (Zn)-Total (mg/L)							<0.0075				
Zirconium (Zr)-Total (mg/L)							<0.00100				
Aluminum (Al)-Dissolved (mg/L)							0.01				
Antimony (Sb)-Dissolved (mg/L)							<0.00050				
Arsenic (As)-Dissolved (mg/L)							0.00				
Barium (Ba)-Dissolved (mg/L)							0.05				
Beryllium (Be)-Dissolved (mg/L)							<0.000100				
Bismuth (Bi)-Dissolved (mg/L)							<0.000250				
Boron (B)-Dissolved (mg/L)							0.91				
Cadmium (Cd)-Dissolved (mg/L)							<0.0000250				
Calcium (Ca)-Dissolved (mg/L)		440	525	423	521	491	469	498	508	561	527
Cesium (Cs)-Dissolved (mg/L)							0.00				
Chromium (Cr)-Dissolved (mg/L)							<0.00050				
Cobalt (Co)-Dissolved (mg/L)							<0.000250				
Copper (Cu)-Dissolved (mg/L)							<0.00075				
Iron (Fe)-Dissolved (mg/L)							<0.0250				

Date	25-Oct-2022	26-Oct-2022	27-Oct-2022	28-Oct-2022	30-Oct-2022	31-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	8-Nov-2022	11-Nov-2022
Lead (Pb)-Dissolved (mg/L)							<0.000150				
Lithium (Li)-Dissolved (mg/L)							0.08				
Magnesium (Mg)-Dissolved (mg/L)		79.40	84.70	78.70	88.30	87.60	84.30	86.30	86.30	93.80	87.30
Manganese (Mn)-Dissolved (mg/L)							0.05				
Mercury (Hg)-Dissolved (mg/L)							<0.0000050				
Molybdenum (Mo)-Dissolved (mg/L)							0.02				
Nickel (Ni)-Dissolved (mg/L)							0.03				
Phosphorus - Dissolved (mg/L)							<0.050				
Potassium (K)-Dissolved (mg/L)		16.40	17.70	16.10	15.90	16.10	16.00	16.20	16.10	17.60	18.30
Rubidium (Rb)-Dissolved (mg/L)							0.02				
Selenium (Se)-Dissolved (mg/L)							<0.000250				
Silver (Ag)-Dissolved (mg/L)							<0.000050				
Sodium (Na)-Dissolved (mg/L)		419	463	420	455	449	426	461	464	492	535
Strontium (Sr)-Dissolved (mg/L)							10.50				
Sulfur (S)-Dissolved (mg/L)							95.30				
Tellurium (Te)-Dissolved (mg/L)							<0.00100				
Thallium (Tl)-Dissolved (mg/L)							<0.000050				
Thorium (Th)-Dissolved (mg/L)							<0.00050				
Tin (Sn)-Dissolved (mg/L)							<0.000250				
Titanium (Ti)-Dissolved (mg/L)							<0.00150				
Tungsten (W)-Dissolved (mg/L)							<0.00050				
Uranium (U)-Dissolved (mg/L)							0.01				
Vanadium (V)-Dissolved (mg/L)							<0.00250				
Zinc (Zn)-Dissolved (mg/L)							<0.0050				
Zirconium (Zr)-Dissolved (mg/L)							<0.00100				
Benzene (mg/L)							<0.00050				
Ethylbenzene (mg/L)							<0.00050				
F1 (C6-C10) (mg/L)							<0.10				
F2 (C10-C16) (mg/L)							<0.10				
F3 (C16-C34) (mg/L)							<0.25				
F4 (C34-C50) (mg/L)							<0.25				
Toluene (mg/L)							<0.00050				
Total Hydrocarbons (C6-C50) (mg/L)							<0.40				
Xylenes (mg/L)							<0.00075				
Th-228 (Bq/L)							0.60				
Th-230 (Bq/L)							<20				
Th-232 (Bq/L)							nr				
U-234 (Bq/L)							0.12				
U-235 (Bq/L)							0.01				

Date	25-Oct-2022	26-Oct-2022	27-Oct-2022	28-Oct-2022	30-Oct-2022	31-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	8-Nov-2022	11-Nov-2022
U-238 (Bq/L)							0.12				

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Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	16-Nov-2022	17-Nov-2022	18-Nov-2022	19-Nov-2022	24-Nov-2022	25-Nov-2022	26-Nov-2022
Conductivity (µS/cm)	5680	5750	5970	6450	5960	6000	5750	5940	6150	6190	5910
pH	7.81	7.79	7.78	7.73	7.57	7.61	7.67	7.78	7.69	7.75	7.85
Total Suspended Solids (mg/L)	5.80	5.70	2.20	37.00	<1.0	1.20	<1.0	<1.0	23.50	1.30	1.90
Turbidity (NTU)	3.26	3.19	0.35	16.00	0.55	0.34	0.35	0.56	14.90	0.67	0.78
Alkalinity, Bicarbonate (mg/L)	51.50	48.30	49.50	41.80	51.70	51.20	50.30	50.60	44.50	50.80	67.00
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	51.50	48.30	49.50	41.80	51.70	51.20	50.30	50.60	44.50	50.80	67.00
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1820	1840	1900	2080	1830	1860	1810	1850	1890	1850	1780
Fluoride (mg/L)	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.54	<0.500	<0.500
Hardness (as CaCO3) (mg/L)	1670	1740	1720	1920	1750	1710	1700	1750	1910	1670	1650
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	10.70	10.30	10.20	10.30	10.30	10.20	10.70	10.70	11.90	10.90	11.70
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	309	305	309	321	292	290	298	304	316	392	322
TDS (mg/L)	3470	3420	3660	4200	3660	3970	4740	4780	3740	3490	3300
Ammonia, Total (as N) (mg/L)	2.46	2.27	2.32	2.32	2.08	2.11	2.16	2.13	2.92	2.52	3.06
Nitrate and Nitrite (mg/L)	2.17	2.53	3.21	2.26	2.61	2.56	2.73	2.78	3.48	3.12	5.27
Nitrate as Nitrogen (mg/L)	2.04	2.35	3.03	2.04	2.41	2.34	2.50	2.49	3.22	2.84	4.71
Nitrite as Nitrogen (mg/L)	0.13	0.18	0.18	0.22	0.20	0.22	0.23	0.29	0.26	0.28	0.56
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	0.00	<0.0020	0.01	<0.0020	<0.0020	<0.0020	<0.0020	0.01	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.01	<0.0010	<0.0010	<0.0010	0.00	0.01	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.01	<0.0010	<0.0010	<0.0010	0.00	0.02	0.00	0.00
Phosphorus - Total (mg/L)	0.01	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	2.78	2.64	2.64	2.73	2.22	2.29	2.27	2.29	3.15	2.53	3.20
Total Organic Carbon (mg/L)	2.25	1.96	1.89	1.81	1.80	1.81	1.76	1.75	1.88	1.91	2.52
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	16-Nov-2022	17-Nov-2022	18-Nov-2022	19-Nov-2022	24-Nov-2022	25-Nov-2022	26-Nov-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	528	552	541	615	549	535	538	552	590	522	511
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	16-Nov-2022	17-Nov-2022	18-Nov-2022	19-Nov-2022	24-Nov-2022	25-Nov-2022	26-Nov-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	85.00	88.40	90.90	94.30	92.50	91.60	86.00	90.60	107	89.90	90.70
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	16.40	16.80	16.20	16.80	16.70	16.30	15.70	16.00	21.60	16.50	16.60
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	516	530	537	615	502	510	534	549	573	499	485
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	16-Nov-2022	17-Nov-2022	18-Nov-2022	19-Nov-2022	24-Nov-2022	25-Nov-2022	26-Nov-2022
U-238 (Bq/L)											

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Date	27-Nov-2022	28-Nov-2022	14-Dec-2022	23-Dec-2022	27-Dec-2022
Conductivity (µS/cm)	5920	5720	4830	5970	5680
pH	7.86	7.82	7.65	7.77	7.79
Total Suspended Solids (mg/L)	<1.0	3.00	11.50	2.30	<1.0
Turbidity (NTU)	0.17	0.33	3.17	3.27	0.60
Alkalinity, Bicarbonate (mg/L)	70.00	68.30	36.70	42.70	49.40
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	70.00	68.30	36.70	42.70	49.40
Calcium (Ca)-Total (mg/L)			377		
Chloride (mg/L)	1680	1710	1520	1900	1800
Fluoride (mg/L)	0.34	<0.500	0.33	0.56	0.51
Hardness (as CaCO3) (mg/L)	1550	1610	1380	1540	1540
Magnesium (Mg)-Total (mg/L)			75.60		
Potassium (K)-Total (mg/L)			23.00		
Silicate (as SiO2) (mg/L)	12.20	12.30	8.54	7.83	8.62
Sodium (Na)-Total (mg/L)			457		
Sulfate (mg/L)	301	6.19	212	215	231
TDS (mg/L)	3460	3640	2820	3350	3330
Ammonia, Total (as N) (mg/L)	4.27	4.29	11.40	16.70	14.00
Nitrate and Nitrite (mg/L)	7.36	7.32	4.11	5.93	4.24
Nitrate as Nitrogen (mg/L)	6.53	6.65	3.85	3.74	2.47
Nitrite as Nitrogen (mg/L)	0.83	0.67	0.26	2.19	1.77
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	0.00	0.01	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	0.00	0.01	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.01	0.01	<0.0010
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	0.01	0.01	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.02	0.01	0.00
Total Kjeldahl Nitrogen (mg/L)	4.45	4.42	11.00	17.70	13.80
Total Organic Carbon (mg/L)	3.20	3.08	4.82	3.41	2.66
Aluminum (Al)-Total (mg/L)			0.20		
Antimony (Sb)-Total (mg/L)			<0.00020		
Arsenic (As)-Total (mg/L)			0.00		
Barium (Ba)-Total (mg/L)			0.07		
Beryllium (Be)-Total (mg/L)			<0.000040		
Bismuth (Bi)-Total (mg/L)			<0.000100		
Boron (B)-Total (mg/L)			1.37		
Cadmium (Cd)-Total (mg/L)			<0.0000100		
Cesium (Cs)-Total (mg/L)			0.00		

Date	27-Nov-2022	28-Nov-2022	14-Dec-2022	23-Dec-2022	27-Dec-2022
Chromium (Cr)-Total (mg/L)			0.00		
Cobalt (Co)-Total (mg/L)			0.00		
Copper (Cu)-Total (mg/L)			0.00		
Iron (Fe)-Total (mg/L)			0.44		
Lead (Pb)-Total (mg/L)			0.00		
Lithium (Li)-Total (mg/L)			0.09		
Manganese (Mn)-Total (mg/L)			0.03		
Mercury (Hg)-Total (mg/L)			<0.0000050		
Molybdenum (Mo)-Total (mg/L)			0.02		
Nickel (Ni)-Total (mg/L)			0.02		
Rubidium (Rb)-Total (mg/L)			0.05		
Selenium (Se)-Total (mg/L)			<0.000100		
Silver (Ag)-Total (mg/L)			<0.000020		
Strontium (Sr)-Total (mg/L)			10.30		
Sulfur (S)-Total (mg/L)			82.10		
Tellurium (Te)-Total (mg/L)			0.00		
Thallium (Tl)-Total (mg/L)			0.00		
Thorium (Th)-Total (mg/L)			<0.00020		
Tin (Sn)-Total (mg/L)			<0.000100		
Titanium (Ti)-Total (mg/L)			0.01		
Tungsten (W)-Total (mg/L)			<0.00020		
Uranium (U)-Total (mg/L)			0.00		
Vanadium (V)-Total (mg/L)			0.00		
Zinc (Zn)-Total (mg/L)			<0.0030		
Zirconium (Zr)-Total (mg/L)			<0.00040		
Aluminum (Al)-Dissolved (mg/L)			0.00		
Antimony (Sb)-Dissolved (mg/L)			0.00		
Arsenic (As)-Dissolved (mg/L)			0.00		
Barium (Ba)-Dissolved (mg/L)			0.07		
Beryllium (Be)-Dissolved (mg/L)			<0.000020		
Bismuth (Bi)-Dissolved (mg/L)			<0.000050		
Boron (B)-Dissolved (mg/L)			1.46		
Cadmium (Cd)-Dissolved (mg/L)			<0.0000050		
Calcium (Ca)-Dissolved (mg/L)	476	496	414	494	500
Cesium (Cs)-Dissolved (mg/L)			0.00		
Chromium (Cr)-Dissolved (mg/L)			<0.00010		
Cobalt (Co)-Dissolved (mg/L)			0.00		
Copper (Cu)-Dissolved (mg/L)			0.00		
Iron (Fe)-Dissolved (mg/L)			0.03		

Date	27-Nov-2022	28-Nov-2022	14-Dec-2022	23-Dec-2022	27-Dec-2022
Lead (Pb)-Dissolved (mg/L)			<0.000030		
Lithium (Li)-Dissolved (mg/L)			0.11		
Magnesium (Mg)-Dissolved (mg/L)	88.60	89.80	85.10	74.90	69.70
Manganese (Mn)-Dissolved (mg/L)			0.02		
Mercury (Hg)-Dissolved (mg/L)			<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)			0.02		
Nickel (Ni)-Dissolved (mg/L)			0.02		
Phosphorus - Dissolved (mg/L)			<0.010		
Potassium (K)-Dissolved (mg/L)	17.30	16.90	28.30	32.40	27.50
Rubidium (Rb)-Dissolved (mg/L)			0.07		
Selenium (Se)-Dissolved (mg/L)			<0.000050		
Silver (Ag)-Dissolved (mg/L)			<0.000010		
Sodium (Na)-Dissolved (mg/L)	498	469	519	539	510
Strontium (Sr)-Dissolved (mg/L)			11.10		
Sulfur (S)-Dissolved (mg/L)			86.80		
Tellurium (Te)-Dissolved (mg/L)			0.00		
Thallium (Tl)-Dissolved (mg/L)			0.00		
Thorium (Th)-Dissolved (mg/L)			<0.00010		
Tin (Sn)-Dissolved (mg/L)			<0.000050		
Titanium (Ti)-Dissolved (mg/L)			<0.00030		
Tungsten (W)-Dissolved (mg/L)			<0.00010		
Uranium (U)-Dissolved (mg/L)			0.00		
Vanadium (V)-Dissolved (mg/L)			0.00		
Zinc (Zn)-Dissolved (mg/L)			<0.0010		
Zirconium (Zr)-Dissolved (mg/L)			<0.00030		
Benzene (mg/L)			0.05		
Ethylbenzene (mg/L)			0.00		
F1 (C6-C10) (mg/L)			<0.10		
F2 (C10-C16) (mg/L)			<0.10		
F3 (C16-C34) (mg/L)			<0.25		
F4 (C34-C50) (mg/L)			<0.25		
Toluene (mg/L)			0.02		
Total Hydrocarbons (C6-C50) (mg/L)			<0.40		
Xylenes (mg/L)			0.00		
Th-228 (Bq/L)			<0.3		
Th-230 (Bq/L)			<20		
Th-232 (Bq/L)			<0.001		
U-234 (Bq/L)			0.04		
U-235 (Bq/L)			0.00		

Date	27-Nov-2022	28-Nov-2022	14-Dec-2022	23-Dec-2022	27-Dec-2022
U-238 (Bq/L)			0.04		

G08_C Summary of Flow Data at SNP-08

Date	Daily Effluent Volume (m^3)
1-Jan-2022	3489.125
2-Jan-2022	5134.40625
3-Jan-2022	2369.96875
4-Jan-2022	1121.3125
5-Jan-2022	3810.8125
6-Jan-2022	5311.484375
7-Jan-2022	5377.546875
8-Jan-2022	5250.53125
9-Jan-2022	4236.609375
10-Jan-2022	3086.9375
11-Jan-2022	2792.6875
12-Jan-2022	1681.9375
13-Jan-2022	2454.71875
14-Jan-2022	4981.4375
15-Jan-2022	5556.96875
16-Jan-2022	5489.375
17-Jan-2022	3173.71875
18-Jan-2022	4701.59375
19-Jan-2022	2183.59375
20-Jan-2022	1328.96875
21-Jan-2022	5131.125
22-Jan-2022	5488.875
23-Jan-2022	3934.21875
24-Jan-2022	2717.375
25-Jan-2022	2717.375
26-Jan-2022	
27-Jan-2022	2556.88
28-Jan-2022	1362.7
29-Jan-2022	
30-Jan-2022	
31-Jan-2022	
1-Feb-2022	809.8
2-Feb-2022	1446
3-Feb-2022	1420
4-Feb-2022	1561.87
5-Feb-2022	1490.88
6-Feb-2022	1241.25
7-Feb-2022	1265.12
8-Feb-2022	1282.75
9-Feb-2022	1220.25
10-Feb-2022	1217.5
11-Feb-2022	1195.38
12-Feb-2022	1020.75
13-Feb-2022	961.37
14-Feb-2022	
15-Feb-2022	
16-Feb-2022	2377.88
17-Feb-2022	2210.12
18-Feb-2022	2129.88
19-Feb-2022	1147.25
20-Feb-2022	1311.5
21-Feb-2022	

Date	Daily Effluent Volume (m^3)
22-Feb-2022	2707.65
23-Feb-2022	568.1
24-Feb-2022	1374.62
25-Feb-2022	138.05
26-Feb-2022	1159.58
27-Feb-2022	1569.17
28-Feb-2022	1051.59
1-Mar-2022	1724.95
2-Mar-2022	1009.66
3-Mar-2022	1348.38
4-Mar-2022	
5-Mar-2022	1883.87
6-Mar-2022	1112.38
7-Mar-2022	1221.12
8-Mar-2022	1252.88
9-Mar-2022	498.75
10-Mar-2022	
11-Mar-2022	1200.62
12-Mar-2022	657.88
13-Mar-2022	1892.87
14-Mar-2022	1201
15-Mar-2022	922.13
16-Mar-2022	1194.37
17-Mar-2022	1142.4
18-Mar-2022	1165.35
19-Mar-2022	1108.25
20-Mar-2022	1257.38
21-Mar-2022	1159.87
22-Mar-2022	1178.13
23-Mar-2022	617.5
24-Mar-2022	595.87
25-Mar-2022	1060.88
26-Mar-2022	1694.87
27-Mar-2022	869
28-Mar-2022	1174.88
29-Mar-2022	629.48
30-Mar-2022	1522.77
31-Mar-2022	1141.37
1-Apr-2022	348
2-Apr-2022	588
3-Apr-2022	1078
4-Apr-2022	912.125
5-Apr-2022	739
6-Apr-2022	826.25
7-Apr-2022	908.625
8-Apr-2022	460.125
9-Apr-2022	
10-Apr-2022	959.75
11-Apr-2022	1260.875
12-Apr-2022	1114.75
13-Apr-2022	1405
14-Apr-2022	1275.875
15-Apr-2022	1342.5

Date	Daily Effluent Volume (m^3)
16-Apr-2022	1397.125
17-Apr-2022	1333.75
18-Apr-2022	931.125
19-Apr-2022	1253.25
20-Apr-2022	1145.375
21-Apr-2022	1065
22-Apr-2022	1011.5
23-Apr-2022	1014.25
24-Apr-2022	1244.75
25-Apr-2022	890.125
26-Apr-2022	510.5
27-Apr-2022	1227
28-Apr-2022	1182
29-Apr-2022	1206.125
30-Apr-2022	1038.25
1-May-2022	774.375
2-May-2022	1258.375
3-May-2022	1251.875
4-May-2022	1185
5-May-2022	1092.75
6-May-2022	1194.75
7-May-2022	1245.75
8-May-2022	1389.75
9-May-2022	1153
10-May-2022	1186.125
11-May-2022	658.375
12-May-2022	1818.75
13-May-2022	2022.25
14-May-2022	1740.75
15-May-2022	1339.375
16-May-2022	2562.875
17-May-2022	1330.75
18-May-2022	1144.75
19-May-2022	1834.125
20-May-2022	1691.875
21-May-2022	2040.5
22-May-2022	4319.75
23-May-2022	1885.875
24-May-2022	1759
25-May-2022	1252.125
26-May-2022	1663.875
27-May-2022	
28-May-2022	
29-May-2022	
30-May-2022	
31-May-2022	
1-Jun-2022	
2-Jun-2022	2762.5
3-Jun-2022	1785.25
4-Jun-2022	1768.625
5-Jun-2022	NA
6-Jun-2022	NA
7-Jun-2022	NA

Date	Daily Effluent Volume (m^3)
8-Jun-2022	NA
9-Jun-2022	NA
10-Jun-2022	NA
11-Jun-2022	
12-Jun-2022	1230.5
13-Jun-2022	885.13
14-Jun-2022	2418.875
15-Jun-2022	2583.75
16-Jun-2022	2651
17-Jun-2022	2636.125
18-Jun-2022	2602.375
19-Jun-2022	2777.3
20-Jun-2022	1369.125
21-Jun-2022	2019.25
22-Jun-2022	1570
23-Jun-2022	2687.375
24-Jun-2022	1017
25-Jun-2022	1754.875
26-Jun-2022	1706.625
27-Jun-2022	1496
28-Jun-2022	1203.375
29-Jun-2022	1411.375
30-Jun-2022	1895.25
1-Jul-2022	2120.5
2-Jul-2022	1270.375
3-Jul-2022	
4-Jul-2022	2248.625
5-Jul-2022	209.125
6-Jul-2022	1553.25
7-Jul-2022	1864
8-Jul-2022	66.375
9-Jul-2022	153.625
10-Jul-2022	
11-Jul-2022	
12-Jul-2022	
13-Jul-2022	
14-Jul-2022	1344.556519
15-Jul-2022	2584.708496
16-Jul-2022	1905.625977
17-Jul-2022	1293.678711
18-Jul-2022	2676.946289
19-Jul-2022	3430
20-Jul-2022	
21-Jul-2022	5085
22-Jul-2022	3777
23-Jul-2022	2491
24-Jul-2022	3415
25-Jul-2022	2139.226563
26-Jul-2022	2532.658203
27-Jul-2022	1751.021484
28-Jul-2022	1988.894531
29-Jul-2022	1897.082031
30-Jul-2022	1906.652344

Date	Daily Effluent Volume (m^3)
31-Jul-2022	1861.957031
1-Aug-2022	2534.507813
2-Aug-2022	1193.160156
3-Aug-2022	
4-Aug-2022	
5-Aug-2022	
6-Aug-2022	1999.761719
7-Aug-2022	2607.703125
8-Aug-2022	1262.214844
9-Aug-2022	1721.742188
10-Aug-2022	1365.972656
11-Aug-2022	23.7734375
12-Aug-2022	252.1796875
13-Aug-2022	2990.171875
14-Aug-2022	3030.90625
15-Aug-2022	1162.238281
16-Aug-2022	
17-Aug-2022	
18-Aug-2022	
19-Aug-2022	232.96875
20-Aug-2022	4108.085938
21-Aug-2022	3593.476563
22-Aug-2022	2541.226563
23-Aug-2022	657.2109375
24-Aug-2022	
25-Aug-2022	
26-Aug-2022	
27-Aug-2022	1390.0625
28-Aug-2022	
29-Aug-2022	
30-Aug-2022	4287.375
31-Aug-2022	2390.140625
1-Sep-2022	1515.625
2-Sep-2022	2422.882813
3-Sep-2022	2034.242188
4-Sep-2022	1765.398438
5-Sep-2022	999.1640625
6-Sep-2022	1770.773438
7-Sep-2022	1819.851563
8-Sep-2022	2039.585938
9-Sep-2022	2616.625
10-Sep-2022	3413
11-Sep-2022	1811.617188
12-Sep-2022	921.1640625
13-Sep-2022	2880.46875
14-Sep-2022	2859.859375
15-Sep-2022	1650.476563
16-Sep-2022	
17-Sep-2022	
18-Sep-2022	1821.375
19-Sep-2022	3387.875
20-Sep-2022	1995.75
21-Sep-2022	1360

Date	Daily Effluent Volume (m^3)
22-Sep-2022	2570.125
23-Sep-2022	2603.875
24-Sep-2022	2560.375
25-Sep-2022	2079.625
26-Sep-2022	1006.867188
27-Sep-2022	1023.05
28-Sep-2022	1970.2
29-Sep-2022	1851.88
30-Sep-2022	1591
1-Oct-2022	518
2-Oct-2022	2409.25
3-Oct-2022	1046
4-Oct-2022	
5-Oct-2022	
6-Oct-2022	
7-Oct-2022	3118.37
8-Oct-2022	4169.25
9-Oct-2022	2639.75
10-Oct-2022	2277.63
11-Oct-2022	1868
12-Oct-2022	1474.875
13-Oct-2022	816.25
14-Oct-2022	1904.578125
15-Oct-2022	922.703125
16-Oct-2022	1340.625
17-Oct-2022	1592.007813
18-Oct-2022	1105.523438
19-Oct-2022	1855.46875
20-Oct-2022	1825.125
21-Oct-2022	1096.875
22-Oct-2022	1843.5625
23-Oct-2022	1241.632813
24-Oct-2022	1342.242188
25-Oct-2022	1647.976563
26-Oct-2022	1403.666667
27-Oct-2022	1403.666667
28-Oct-2022	1403.666667
29-Oct-2022	1456
30-Oct-2022	1267
31-Oct-2022	1063
1-Nov-2022	1113
2-Nov-2022	1214
3-Nov-2022	1165
4-Nov-2022	1150
5-Nov-2022	1264
6-Nov-2022	768
7-Nov-2022	768
8-Nov-2022	1526
9-Nov-2022	642
10-Nov-2022	777
11-Nov-2022	1339
12-Nov-2022	1539
13-Nov-2022	1402.421875

Date	Daily Effluent Volume (m^3)
14-Nov-2022	706.5625
15-Nov-2022	817.875
16-Nov-2022	1466.328125
17-Nov-2022	1097.640625
18-Nov-2022	1261.4375
19-Nov-2022	586
20-Nov-2022	
21-Nov-2022	
22-Nov-2022	1003.13
23-Nov-2022	429.17
24-Nov-2022	1955.7
25-Nov-2022	1396
26-Nov-2022	1386.1
27-Nov-2022	1040.28
28-Nov-2022	565.62
29-Nov-2022	
30-Nov-2022	
1-Dec-2022	
2-Dec-2022	
3-Dec-2022	
4-Dec-2022	
5-Dec-2022	
6-Dec-2022	
7-Dec-2022	
8-Dec-2022	
9-Dec-2022	
10-Dec-2022	
11-Dec-2022	
12-Dec-2022	
13-Dec-2022	
14-Dec-2022	2901
15-Dec-2022	2643
16-Dec-2022	2643
17-Dec-2022	1533
18-Dec-2022	1471
19-Dec-2022	
20-Dec-2022	
21-Dec-2022	
22-Dec-2022	2809.5
23-Dec-2022	2809.5
24-Dec-2022	
25-Dec-2022	
26-Dec-2022	2253.5
27-Dec-2022	2706.8
28-Dec-2022	1496.7
29-Dec-2022	1073.5
30-Dec-2022	578.38
31-Dec-2022	

G09 Summary of Sampling Requirements and Sample Dates at SNP 09 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-09	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2022 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2022 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2022 when discharge is active
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	Monthy in 2022 when sump is active

G09_A Summary of Daily Monitoring of Physical Parameters at SNP-09

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-09 Hearne Pit	6-Jan-2022	51.31	6.18	7.69	6,139.37	3.83	145.55	93.91
SNP-09 Hearne Pit	12-Jan-2022	55.48	7.03	8.11	6,145.99	2.25	35.20	22.71
SNP-09 Hearne Pit	14-Jan-2022	62.35	7.29	7.78	5,830.34	5.13	32.43	20.56
SNP-09 Hearne Pit	15-Jan-2022	40.75	5.29	7.94	5,843.68	1.62	33.19	21.41
SNP-09 Hearne Pit	23-Jan-2022	80.30	10.47	8.13	6005	3.45	13.83	8.92
SNP-09 Hearne Pit	24-Jan-2022	68.96	6.30	7.33	5,987.47	16.66	8.87	5.72
SNP-09 Hearne Pit	10-Feb-2022	71.05	9.69	7.83	6,843.62	0.11	41.94	27.06
SNP-09 Hearne Pit	28-Feb-2022	55.70	7.40	8.03	7,048.10	0.90	24.20	15.40
SNP-09 Hearne Pit	9-Mar-2022	42.54	5.74	7.84	4,327.25	0.47	2.55	1.64
SNP-09 Hearne Pit	10-Mar-2022	36.49	5.12	7.95	5,470.73	1.21	0.35	0.23
SNP-09 Hearne Pit	15-Mar-2022	68.83	68.83	7.89	5,795.55	0.56	2,227.24	1,435.88
SNP-09 Hearne Pit	16-Mar-2022	54.73	6.95	8.05	5,743.01	2.18	30.25	19.52
SNP-09 Hearne Pit	19-Mar-2022	59.35	7.15	7.51	6,445.73	4.25	10.34	6.67
SNP-09 Hearne Pit	20-Mar-2022	37.69	4.66	7.46	6,005.99	3.48	280.55	181
SNP-09 Hearne Pit	21-Mar-2022	36.01	4.33	7.49	5,609.98	4.37	8.58	5.53
SNP-09 Hearne Pit	22-Mar-2022	36.04	4.45	7.54	5,707.87	3.61	7.94	5.12
SNP-09 Hearne Pit	29-Mar-2022	84.56	10.86	7.76	7,230.78	1.74	23.14	14.93
SNP-09 Hearne Pit	8-Apr-2022	50.60	5.90	7.98	6,957.10	5.30	4.50	2.90
SNP-09 Hearne Pit	9-Apr-2022	48.40	5.90	7.98	5,843.50	3.90	103.40	66.70
SNP-09 Hearne Pit	10-Apr-2022	48.30	5.90	8.03	5,744.10	4.10	68	44
SNP-09 Hearne Pit	15-Apr-2022	53.40	6.50	8.88	6,048.50	4.30	372.90	240.60
SNP-09 Hearne Pit	16-Apr-2022	38.47	4.78	8.48	5,858.64	3.80	18.73	11.90
SNP-09 Hearne Pit	20-Apr-2022	40.28	4.74	7.81	5,326.43	5.54	12.75	8.23
SNP-09 Hearne Pit	26-Apr-2022	44.05	5.21	7.97	5,019.26	5.48	33.33	21.50
SNP-09 Hearne Pit	27-Apr-2022	100.85	11.00	8.20	11.26	9.41	0	0
SNP-09 Hearne Pit	28-Apr-2022	39.98	5.02	8.18	4,068.63	3.38	3.97	2.56
SNP-09 Hearne Pit	30-Apr-2022	66.98	8.30	8.22	5,098.73	4.18	12.83	8.27
SNP-09 Hearne Pit	1-May-2022	37.36	4.35	7.74	4,903.90	6.50	2.81	1.81
SNP-09 Hearne Pit	2-May-2022	39.39	4.71	7.79	4,813.81	5.34	12.10	7.80
SNP-09 Hearne Pit	5-May-2022	74.84	8.81	7.91	4,592.22	5.13	83.88	54.12
SNP-09 Hearne Pit	6-May-2022	57.55	6.76	8.02	2,907.72	5.53	820.23	529.18
SNP-09 Hearne Pit	7-May-2022	72.50	8.87	8.16	1,741.33	3.84	434.85	280.60
SNP-09 Hearne Pit	8-May-2022	59.72	7.31	8.08	2,966.26	3.87	25.23	16.28
SNP-09 Hearne Pit	9-May-2022	44.82	5.45	7.90	4,587.79	4.03	17.21	11.10
SNP-09 Hearne Pit	10-May-2022	41.93	5.15	7.91	4,805.93	3.64	9.25	5.97
SNP-09 Hearne Pit	11-May-2022	35.44	4.30	7.94	4,994.36	4.39	8.00	5.16

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-09 Hearne Pit	12-May-2022	42.11	5.07	7.94	4,859.56	4.95	27.99	18.05
SNP-09 Hearne Pit	13-May-2022	83.95	10.43	8.02	1,341.60	4.17	6,370.67	4,110.11
SNP-09 Hearne Pit	15-May-2022	68.52	8.42	8.01	2,128.72	4.66	214.33	138.63
SNP-09 Hearne Pit	16-May-2022	71.69	7.63	7.98	2,117.74	10.47	28.09	18.12
SNP-09 Hearne Pit	17-May-2022	78.15	7.38	7.95	2,133.49	15.80	6.65	4.29
SNP-09 Hearne Pit	18-May-2022	58.11	7.10	8.01	2,488.35	4.64	6.88	4.44
SNP-09 Hearne Pit	19-May-2022	64.48	7.89	8.05	3,099.84	4.61	13.88	9.04
SNP-09 Hearne Pit	23-May-2022	53.03	6.32	8.07	3,214.07	5.35	21.00	13.55
SNP-09 Hearne Pit	24-May-2022	63.63	7.71	8.75	3,776.71	4.62	848.08	547.15
SNP-09 Hearne Pit	1-Jun-2022	65.57	7.64	9.19	4,123.98	6.50	16.91	10.91
SNP-09 Hearne Pit	2-Jun-2022	52.56	6.19	8.32	3,824.73	6.05	0	0
SNP-09 Hearne Pit	3-Jun-2022	48.67	5.52	8.44	3,819.75	7.17	1.92	1.31
SNP-09 Hearne Pit	4-Jun-2022	50.96	5.43	7.94	3,656.63	9.76	23.55	14.86
SNP-09 Hearne Pit	6-Jun-2022	70.02	7.22	8.86	4,362.12	11.30	32.97	21.27
SNP-09 Hearne Pit	7-Jun-2022	39.24	4.28	8.64	3,850.80	8.92	9.35	6.03
SNP-09 Hearne Pit	11-Jun-2022	35.53	3.86	8.45	3,657.63	8.64	2.83	1.81
SNP-09 Hearne Pit	12-Jun-2022	39.74	4.27	8.63	3,580.66	8.95	3.63	2.34
SNP-09 Hearne Pit	13-Jun-2022	51.28	5.60	8.40	3,506.93	8.42	22.16	14.30
SNP-09 Hearne Pit	15-Jun-2022	42.46	4.63	8.31	3,478.92	9.05	2.61	1.69
SNP-09 Hearne Pit	16-Jun-2022	50.08	5.73	8.56	3,645.04	7.25	0.85	0.55
SNP-09 Hearne Pit	23-Jun-2022	48.53	5.54	8.28	3,784.98	7.14	0	0
SNP-09 Hearne Pit	24-Jun-2022	57.41	6.16	8.28	4,042.70	9.61	0	0
SNP-09 Hearne Pit	27-Jun-2022	50.89	5.80	9.01	6,596.96	6.86	87.62	56.53
SNP-09 Hearne Pit	4-Jul-2022	44.39	5.26	8.54	3,902.04	5.90	107.74	69.51
SNP-09 Hearne Pit	5-Jul-2022	54.09	5.86	7.38	4,733.31	9.22	9.35	6.03
SNP-09 Hearne Pit	6-Jul-2022	48.94	5.33	8.37	3,319.69	9.06	5.77	3.72
SNP-09 Hearne Pit	10-Jul-2022	49.12	5.29	8.43	4,118.21	9.06	0	0
SNP-09 Hearne Pit	11-Jul-2022	43.53	4.69	8.30	4,283.52	9.09	15.91	10.27
SNP-09 Hearne Pit	14-Jul-2022	57.69	5.99	8.41	5,080.51	9.74	0	0
SNP-09 Hearne Pit	15-Jul-2022	54.51	5.80	8.26	4,392.92	9.45	0	0
SNP-09 Hearne Pit	16-Jul-2022	58.00	6.40	7.87	5,009.81	8.04	0.62	0.40
SNP-09 Hearne Pit	17-Jul-2022	55.78	6.08	7.74	4,349.87	8.58	0	0
SNP-09 Hearne Pit	18-Jul-2022	46.47	4.98	7.86	4,223.01	8.89	0	0
SNP-09 Hearne Pit	19-Jul-2022	54.31	5.74	7.64	4,023.12	9.44	0	0
SNP-09 Hearne Pit	20-Jul-2022	54.18	5.87	8.05	3,755.17	8.64	0	0
SNP-09 Hearne Pit	21-Jul-2022	53.83	5.84	8.13	3,870.32	8.82	16.33	10.53
SNP-09 Hearne Pit	22-Jul-2022	51.59	5.64	8.13	3,359.04	8.87	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-09 Hearne Pit	23-Jul-2022	48.92	5.08	7.97	3,400.41	10.99	0	0
SNP-09 Hearne Pit	24-Jul-2022	49.29	5.10	8.12	3,503.10	10.85	0	0
SNP-09 Hearne Pit	25-Jul-2022	49.10	5.17	7.87	3,582.39	10.18	0	0
SNP-09 Hearne Pit	26-Jul-2022	66.67	7.28	7.96	3,534.03	8.79	17.11	11.04
SNP-09 Hearne Pit	27-Jul-2022	54.62	5.70	8.10	3,698.43	10.78	0	0
SNP-09 Hearne Pit	28-Jul-2022	81.26	8.34	7.92	3,699.50	11.36	19.79	12.81
SNP-09 Hearne Pit	29-Jul-2022	60.29	6.30	7.97	3,737.33	10.60	4.11	2.65
SNP-09 Hearne Pit	30-Jul-2022	55.56	5.77	7.56	3,884.81	10.83	0	0
SNP-09 Hearne Pit	2-Aug-2022	49.53	5.51	7.97	4,032.79	7.69	0	0
SNP-09 Hearne Pit	3-Aug-2022	49.51	5.39	7.83	3,679.19	8.81	2.25	1.45
SNP-09 Hearne Pit	4-Aug-2022	49.46	5.33	7.28	3,708.29	9.27	7.56	4.88
SNP-09 Hearne Pit	6-Aug-2022	82.47	8.89	7.85	3,980.57	8.84	23.95	15.45
SNP-09 Hearne Pit	7-Aug-2022	52.65	5.60	8.00	3,694.48	9.50	24.45	15.77
SNP-09 Hearne Pit	8-Aug-2022	50.55	5.40	8.02	3,841.85	9.51	17.02	10.98
SNP-09 Hearne Pit	9-Aug-2022	46.73	4.92	8.00	3,878.12	10.46	8.32	5.37
SNP-09 Hearne Pit	10-Aug-2022	51.71	5.18	7.79	3,824.45	12.27	5.11	3.30
SNP-09 Hearne Pit	11-Aug-2022	58.56	6.04	7.77	4,018.00	11.06	1.31	0.91
SNP-09 Hearne Pit	15-Aug-2022	64.02	6.78	8.01	3,970.97	9.96	0.70	0.45
SNP-09 Hearne Pit	16-Aug-2022	52.74	5.31	7.90	3,895.29	11.89	0	0
SNP-09 Hearne Pit	17-Aug-2022	55.90	5.69	7.90	4,128.03	11.86	0.09	0.06
SNP-09 Hearne Pit	18-Aug-2022	47.84	5.02	7.95	4,049.88	10.51	0	0
SNP-09 Hearne Pit	19-Aug-2022	48.46	5.11	8.05	4,128.02	10.02	0	0
SNP-09 Hearne Pit	26-Aug-2022	59.47	6.13	8.27	3,968.68	10.48	0.13	0.08
SNP-09 Hearne Pit	27-Aug-2022	50.11	5.33	8.10	3,668.01	9.19	0	0
SNP-09 Hearne Pit	28-Aug-2022	50.25	5.41	7.99	3,408.32	8.90	0	0
SNP-09 Hearne Pit	29-Aug-2022	50.20	5.62	8.74	3,694.73	7.50	0	0
SNP-09 Hearne Pit	30-Aug-2022	54.40	5.82	8.76	4,001.98	9.57	0	0
SNP-09 Hearne Pit	31-Aug-2022	61.44	6.81	8.75	3,810.95	7.69	0	0
SNP-09 Hearne Pit	1-Sep-2022	59.88	6.44	8.77	3,781.22	9.04	0	0
SNP-09 Hearne Pit	2-Sep-2022	57.46	6.12	8.80	3,640.13	9.50	0	0
SNP-09 Hearne Pit	3-Sep-2022	54.99	5.58	8.83	3,364.34	11.65	0	0
SNP-09 Hearne Pit	4-Sep-2022	49.29	4.97	8.60	3,609.72	11.67	0	0
SNP-09 Hearne Pit	5-Sep-2022	52.52	5.24	8.86	3,461.78	11.84	0	0
SNP-09 Hearne Pit	6-Sep-2022	57.71	6.25	8.72	3,765.59	8.57	0	0
SNP-09 Hearne Pit	8-Sep-2022	62.30	6.97	8.45	3,683.94	7.28	0	0
SNP-09 Hearne Pit	10-Sep-2022	64.51	7.10	8.50	3,761.73	7.75	0.03	0.02
SNP-09 Hearne Pit	11-Sep-2022	61.64	6.89	8.58	3,730.10	7.56	0	0

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-09 Hearne Pit	12-Sep-2022	80.29	8.78	8.53	3,421.34	8.83	0	0
SNP-09 Hearne Pit	13-Sep-2022	69.48	7.82	8.25	3,319.76	7.40	9.49	6.12
SNP-09 Hearne Pit	22-Sep-2022	46.73	4.89	7.74	3,254.82	9.79	44.98	29.02
SNP-09 Hearne Pit	23-Sep-2022	54.68	5.86	7.95	3,321.61	8.31	7.62	4.92
SNP-09 Hearne Pit	24-Sep-2022	56.41	6.12	8.21	3,344.76	8.01	4.05	2.61
SNP-09 Hearne Pit	25-Sep-2022	51.86	5.96	8.44	3,548.06	6.72	78.29	50.51
SNP-09 Hearne Pit	27-Sep-2022	66.87	6.34	8.16	3,333.35	14.18	5.42	3.53
SNP-09 Hearne Pit	28-Sep-2022	52.24	5.53	7.80	3,504.84	9.92	1.06	0.76
SNP-09 Hearne Pit	29-Sep-2022	54.92	6.09	8.06	3,400.20	8.55	3.38	2.22
SNP-09 Hearne Pit	30-Sep-2022	57.76	6.28	8.15	3,171.89	9.30	5.85	4.05
SNP-09 Hearne Pit	1-Oct-2022	48.09	5.14	8.16	3,158.01	9.61	0.74	0.47
SNP-09 Hearne Pit	2-Oct-2022	52.07	5.44	8.27	3,138.53	9.56	0.63	0.41
SNP-09 Hearne Pit	3-Oct-2022	62.53	6.76	8.08	3,556.84	9.22	2.38	1.53
SNP-09 Hearne Pit	4-Oct-2022	74.15	8.11	8.57	3,440.63	9.02	17.52	11.30
SNP-09 Hearne Pit	5-Oct-2022	50.56	5.89	8.27	3,515.22	6.92	8.67	5.59
SNP-09 Hearne Pit	6-Oct-2022	61.08	6.81	8.27	3,670.33	7.87	11.58	7.47
SNP-09 Hearne Pit	7-Oct-2022	55.54	6.22	8.26	3,679.38	7.83	1.93	1.25
SNP-09 Hearne Pit	8-Oct-2022	47.72	5.40	8.27	3,584.60	7.39	1.91	1.23
SNP-09 Hearne Pit	9-Oct-2022	42.27	5.00	8.59	3,930.26	5.33	7.71	4.97
SNP-09 Hearne Pit	11-Oct-2022	90.12	10.04	8.29	4,466.73	6.77	35.19	22.75
SNP-09 Hearne Pit	12-Oct-2022	59.32	6.97	8.15	3,748.58	5.51	8.22	5.30
SNP-09 Hearne Pit	13-Oct-2022	59.32	6.97	8.11	3,748.58	5.51	8.22	5.30
SNP-09 Hearne Pit	14-Oct-2022	51.09	5.86	8.03	3,631.45	6.41	2.20	1.42
SNP-09 Hearne Pit	15-Oct-2022	52.22	6.21	8.12	3,565.64	5.78	1.07	0.69
SNP-09 Hearne Pit	16-Oct-2022	64.31	7.47	8.05	3,487.32	6.64	1.67	1.08
SNP-09 Hearne Pit	18-Oct-2022	58.53	6.85	8.20	3,785.06	5.56	1.50	0.97
SNP-09 Hearne Pit	19-Oct-2022	74.79	8.58	8.27	3,962.05	6.46	1,155.64	745.57
SNP-09 Hearne Pit	20-Oct-2022	57.11	6.49	8.11	3,499.38	6.19	7.39	4.77
SNP-09 Hearne Pit	21-Oct-2022	65.80	7.12	8.06	3,757.84	8.42	5.82	3.75
SNP-09 Hearne Pit	22-Oct-2022	54.46	5.91	8.19	3,724.91	8.79	2.01	1.30
SNP-09 Hearne Pit	23-Oct-2022	51.37	5.81	8.13	3,824.04	7.41	1.19	0.77
SNP-09 Hearne Pit	24-Oct-2022	48.18	5.58	7.76	3,877.26	6.13	0.03	0.02
SNP-09 Hearne Pit	1-Nov-2022	84.23	8.11	7.59	4,246.52	14.53	7.32	4.72
SNP-09 Hearne Pit	2-Nov-2022	58.04	7.19	8.10	4,368.23	4.11	18.70	12.06
SNP-09 Hearne Pit	3-Nov-2022	49.16	6.09	7.92	4,562.96	3.60	0	0
SNP-09 Hearne Pit	4-Nov-2022	50.70	5.95	7.87	4,784.81	4.85	0	0
SNP-09 Hearne Pit	5-Nov-2022	54.29	6.27	7.90	4,927.59	5.92	0.33	0.21

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-09 Hearne Pit	9-Nov-2022	103.20	13.78	7.91	6,007.53	0.94	33.40	21.55
SNP-09 Hearne Pit	10-Nov-2022	60.56	7.45	7.99	4,228.31	4.34	0	0
SNP-09 Hearne Pit	11-Nov-2022	49.65	5.96	7.93	6,630.55	4.75	2.60	1.68
SNP-09 Hearne Pit	12-Nov-2022	44.64	5.23	7.95	4,448.50	5.80	0	0
SNP-09 Hearne Pit	13-Nov-2022	41.95	4.88	7.84	4,530.34	5.77	0	0
SNP-09 Hearne Pit	14-Nov-2022	71.17	8.35	7.85	4,634.21	5.96	0	0
SNP-09 Hearne Pit	15-Nov-2022	61.88	6.56	7.78	4,752.23	9.94	19.87	12.80
SNP-09 Hearne Pit	18-Nov-2022	88.72	10.50	7.74	5,020.33	5.37	25.04	16.26
SNP-09 Hearne Pit	19-Nov-2022	34.31	4.05	7.85	3,978.24	5.10	0.19	0.20
SNP-09 Hearne Pit	22-Nov-2022	58.09	6.68	7.72	3,713.62	5.80	21.18	13.71
SNP-09 Hearne Pit	26-Nov-2022	48.24	5.77	8.01	4,170.60	4.77	83.37	53.80
SNP-09 Hearne Pit	27-Nov-2022	48.15	5.69	7.74	4,323.32	5.39	5.59	3.61
SNP-09 Hearne Pit	28-Nov-2022	43.56	5.32	7.88	4,263.16	4.75	153.51	99.04
SNP-09 Hearne Pit	30-Nov-2022	77.43	7.90	7.30	4,244.33	11.71	1.91	1.23
SNP-09 Hearne Pit	1-Dec-2022	52.03	5.54	7.36	4,313.83	9.39	5.94	3.83
SNP-09 Hearne Pit	5-Dec-2022	70.97	8.17	7.29	4,295.90	6.62	17.04	10.99
SNP-09 Hearne Pit	10-Dec-2022	63.81	7.30	7.95	4,361.89	6.81	29.80	19.23
SNP-09 Hearne Pit	11-Dec-2022	65.40	7.16	7.65	4,159.58	8.88	15.55	10.03
SNP-09 Hearne Pit	12-Dec-2022	53.46	6.29	7.67	4,172.27	5.78	4.74	3.06
SNP-09 Hearne Pit	13-Dec-2022	44.08	5.11	7.65	4,264.31	5.96	232.96	150.30
SNP-09 Hearne Pit	18-Dec-2022	49.27	6.08	7.78	4,358.16	4.57	36.35	23.45
SNP-09 Hearne Pit	19-Dec-2022	51.54	6.13	7.88	4,099.95	6.21	9.87	6.37
SNP-09 Hearne Pit	20-Dec-2022	58.29	6.94	7.75	4,485.69	6.29	5.40	3.49
SNP-09 Hearne Pit	26-Dec-2022	69.61	8.89	7.84	4,397.64	3.58	5.09	3.28
SNP-09 Hearne Pit	27-Dec-2022	80.80	8.73	7.97	3,796.35	8.92	2.99	1.93
SNP-09 Hearne Pit	28-Dec-2022	81.55	7.62	7.82	4,885.95	15.17	5.44	3.51

G09_B Summary of Weekly and Monthly Water Quality Results at SNP-09

Date	6-Jan-2022	11-Jan-2022	23-Jan-2022	10-Feb-2022	28-Feb-2022	9-Mar-2022	16-Mar-2022	21-Mar-2022	29-Mar-2022	8-Apr-2022	15-Apr-2022
Conductivity (µS/cm)	5690	5490	5800	6930	7250	4430	5750	5550	7260	7290	6640
pH	7.91	7.81	7.70	7.76	7.80	7.79	7.62	7.79	7.63	7.69	7.87
Total Suspended Solids (mg/L)	74.70	82.90	9.90	25.50	21.10	4.60	35.90	10.00	6.80	12.80	430
Turbidity (NTU)	29.00	36.00	6.84	7.99	10.00	2.13	17.20	6.64	4.81	6.96	201
Alkalinity, Bicarbonate (mg/L)	99.20	99.80	77.80	78.00	69.70	105	105	106	83.00	90.00	71
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	99.20	99.80	77.80	78.00	69.70	105	105	106	83.00	90.00	71
Calcium (Ca)-Total (mg/L)	477			721		377				604	
Chloride (mg/L)	1520	1510	1500	2020	2150	1170	1560	1580	2100	1690	1800
Fluoride (mg/L)	0.47	<0.500	0.74	0.75	0.92	0.73	0.38	0.66	0.79	<0.500	<0.500
Hardness (as CaCO3) (mg/L)	1890	1860	1880	2600	2490	1440	1650	1690	2220	2640	2150
Magnesium (Mg)-Total (mg/L)	182			201		107				271	
Potassium (K)-Total (mg/L)	31.50			26.70		17.40				53.20	
Silicate (as SiO2) (mg/L)	10.90	11.20	9.65	9.48	8.49	11.00	8.50	9.15	8.50	13.20	11
Sodium (Na)-Total (mg/L)	377			559		331				455	
Sulfate (mg/L)	411	424	410	496	492	398	400	402	497	367	418
TDS (mg/L)	3540	3810	3670	4290	4160	2680	3200	3350	4230	4110	3980
Ammonia, Total (as N) (mg/L)	12.90	15.60	8.80	9.99	5.04	6.33	52.40	35.90	39.80	29.80	31.50
Nitrate and Nitrite (mg/L)	25.90	34.00	9.41	17.90	4.70	8.75	52.90	40.20	47.50	155	81.90
Nitrate as Nitrogen (mg/L)	23.70	31.70	8.65	16.40	4.13	8.09	50.60	38.70	45.60	153	80.70
Nitrite as Nitrogen (mg/L)	2.18	2.32	0.76	1.52	0.57	0.66	2.26	1.52	1.90	2.24	1.19
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.00	<0.0010	0.00	<0.0010	<0.0010	<0.0010	0.01	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	0.00	0.00	<0.0186	<0.0014	0.00
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.18	0.00	0.01
Phosph (P)-Tot Inorg (mg/L)	0.05	0.02	0.01	0.03	0.01	0.01	0.02	0.01	0.22	0.00	0.11
Phosphorus - Total (mg/L)	0.08	0.04	0.01	0.03	0.02	0.01	0.04	0.01	0.25	0.01	0.34
Total Kjeldahl Nitrogen (mg/L)	15.60	16.50	10.60	10.40	5.39	8.52	52.00	39.20	42.00	16.50	28
Total Organic Carbon (mg/L)	4.66	4.12	2.64	4.98	2.56	5.85	9.21	6.92	7.04	9.50	7.33
Aluminum (Al)-Total (mg/L)	2.52			0.51		0.10				0.45	
Antimony (Sb)-Total (mg/L)	0.00			<0.00050		<0.00020				0.00	
Arsenic (As)-Total (mg/L)	0.00			0.00		0.00				0.00	
Barium (Ba)-Total (mg/L)	0.25			0.10		0.05				0.19	
Beryllium (Be)-Total (mg/L)	0.00			<0.000100		<0.000040				<0.000040	
Bismuth (Bi)-Total (mg/L)	<0.000100			<0.000250		<0.000100				<0.000100	
Boron (B)-Total (mg/L)	1.95			1.32		0.76				3.11	
Cadmium (Cd)-Total (mg/L)	<0.0000100			<0.0000250		<0.0000100				<0.0000200	
Cesium (Cs)-Total (mg/L)	0.00			0.00		0.00				0.00	

Date	6-Jan-2022	11-Jan-2022	23-Jan-2022	10-Feb-2022	28-Feb-2022	9-Mar-2022	16-Mar-2022	21-Mar-2022	29-Mar-2022	8-Apr-2022	15-Apr-2022
Chromium (Cr)-Total (mg/L)	0.02			0.00		0.00				0.00	
Cobalt (Co)-Total (mg/L)	0.00			0.00		0.00				0.00	
Copper (Cu)-Total (mg/L)	0.00			0.00		0.00				0.02	
Iron (Fe)-Total (mg/L)	2.85			0.85		0.18				1.13	
Lead (Pb)-Total (mg/L)	0.00			0.00		<0.000060				<0.000060	
Lithium (Li)-Total (mg/L)	0.09			0.11		0.08				0.12	
Manganese (Mn)-Total (mg/L)	0.20			0.20		0.15				0.19	
Mercury (Hg)-Total (mg/L)	<0.0000050			<0.0000050		<0.0000050				<0.0000050	
Molybdenum (Mo)-Total (mg/L)	0.02			0.03		0.02				0.03	
Nickel (Ni)-Total (mg/L)	0.09			0.01		0.00				0.18	
Rubidium (Rb)-Total (mg/L)	0.03			0.03		0.02				0.05	
Selenium (Se)-Total (mg/L)	<0.000100			<0.000250		<0.000100				0.00	
Silver (Ag)-Total (mg/L)	<0.000020			<0.000050		<0.000020				0.00	
Strontium (Sr)-Total (mg/L)	8.09			14.70		6.78				11.00	
Sulfur (S)-Total (mg/L)	146			214		153				164	
Tellurium (Te)-Total (mg/L)	0.00			0.00		0.00				0.00	
Thallium (Tl)-Total (mg/L)	<0.000020			<0.000050		<0.000020				<0.000020	
Thorium (Th)-Total (mg/L)	0.00			<0.00050		<0.00020				<0.00020	
Tin (Sn)-Total (mg/L)	<0.000100			<0.000250		<0.000100				<0.000100	
Titanium (Ti)-Total (mg/L)	0.05			0.02		0.00				0.00	
Tungsten (W)-Total (mg/L)	0.00			0.00		0.00				0.00	
Uranium (U)-Total (mg/L)	0.01			0.03		0.02				0.01	
Vanadium (V)-Total (mg/L)	0.00			<0.00250		0.00				0.00	
Zinc (Zn)-Total (mg/L)	0.00			<0.0075		<0.0030				<0.0030	
Zirconium (Zr)-Total (mg/L)	0.00			<0.00100		<0.00040				<0.00040	
Aluminum (Al)-Dissolved (mg/L)	0.00			<0.0050		0.00				<0.0020	
Antimony (Sb)-Dissolved (mg/L)	0.00			<0.00050		<0.00020				0.00	
Arsenic (As)-Dissolved (mg/L)	0.00			0.00		0.00				0.00	
Barium (Ba)-Dissolved (mg/L)	0.11			0.09		0.05				0.17	
Beryllium (Be)-Dissolved (mg/L)	<0.000040			<0.000100		<0.000040				<0.000040	
Bismuth (Bi)-Dissolved (mg/L)	<0.000100			<0.000250		<0.000100				<0.000100	
Boron (B)-Dissolved (mg/L)	2.10			1.09		0.75				2.96	
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100			<0.0000250		<0.0000100				<0.0000100	
Calcium (Ca)-Dissolved (mg/L)	485	467	544	726	724	394	462	482	662	597	548
Cesium (Cs)-Dissolved (mg/L)	0.00			0.00		0.00				0.00	
Chromium (Cr)-Dissolved (mg/L)	<0.00020			<0.00050		<0.00100				<0.00020	
Cobalt (Co)-Dissolved (mg/L)	0.00			0.00		0.00				0.00	
Copper (Cu)-Dissolved (mg/L)	0.00			0.00		0.00				0.02	
Iron (Fe)-Dissolved (mg/L)	0.08			0.05		0.02				0.45	

Date	6-Jan-2022	11-Jan-2022	23-Jan-2022	10-Feb-2022	28-Feb-2022	9-Mar-2022	16-Mar-2022	21-Mar-2022	29-Mar-2022	8-Apr-2022	15-Apr-2022
Lead (Pb)-Dissolved (mg/L)	<0.000060			<0.000150		<0.000060				<0.000060	
Lithium (Li)-Dissolved (mg/L)	0.10			0.10		0.07				0.12	
Magnesium (Mg)-Dissolved (mg/L)	165	169	128	191	165	110	120	119	139	280	189
Manganese (Mn)-Dissolved (mg/L)	0.17			0.18		0.13				0.18	
Mercury (Hg)-Dissolved (mg/L)	<0.0000050			<0.0000050		<0.0000050				<0.0000050	
Molybdenum (Mo)-Dissolved (mg/L)	0.02			0.03		0.02				0.03	
Nickel (Ni)-Dissolved (mg/L)	0.02			0.01		0.00				0.16	
Phosphorus - Dissolved (mg/L)	<0.020			<0.050		<0.020				<0.020	
Potassium (K)-Dissolved (mg/L)	30.20	32.60	19.10	24.90	18.40	15.20	39.10	33.20	35.00	50.90	40.80
Rubidium (Rb)-Dissolved (mg/L)	0.03			0.03		0.01				0.04	
Selenium (Se)-Dissolved (mg/L)	<0.000100			<0.000250		<0.000100				0.00	
Silver (Ag)-Dissolved (mg/L)	<0.000020			<0.000050		<0.000020				0.00	
Sodium (Na)-Dissolved (mg/L)	395	360	423	506	546	303	399	399	509	449	461
Strontium (Sr)-Dissolved (mg/L)	8.68			12.40		7.01				9.55	
Sulfur (S)-Dissolved (mg/L)	157			179		136				169	
Tellurium (Te)-Dissolved (mg/L)	0.00			<0.00100		0.00				0.00	
Thallium (Tl)-Dissolved (mg/L)	<0.000020			<0.000050		<0.000020				<0.000020	
Thorium (Th)-Dissolved (mg/L)	<0.00020			<0.00050		<0.00020				<0.00020	
Tin (Sn)-Dissolved (mg/L)	<0.000100			<0.000250		<0.000100				<0.000100	
Titanium (Ti)-Dissolved (mg/L)	<0.00060			<0.00150		<0.00060				<0.00060	
Tungsten (W)-Dissolved (mg/L)	0.00			0.00		0.00				0.00	
Uranium (U)-Dissolved (mg/L)	0.01			0.02		0.01				0.01	
Vanadium (V)-Dissolved (mg/L)	<0.00100			<0.00250		<0.00100				<0.00100	
Zinc (Zn)-Dissolved (mg/L)	<0.0020			<0.0050		<0.0020				<0.0020	
Zirconium (Zr)-Dissolved (mg/L)	<0.00060			<0.00100		<0.00060				<0.00040	
Benzene (mg/L)	0.13			0.00		0.00				0.48	
Ethylbenzene (mg/L)	0.00			0.00		0.00				0.02	
F1 (C6-C10) (mg/L)	0.19			<0.10		<0.10				0.90	
F2 (C10-C16) (mg/L)	0.22			0.10		0.12				0.53	
F3 (C16-C34) (mg/L)	<0.25			<0.25		<0.25				<0.25	
F4 (C34-C50) (mg/L)	<0.25			<0.25		<0.25				<0.25	
Toluene (mg/L)	0.04			0.00		0.00				0.15	
Total Hydrocarbons (C6-C50) (mg/L)	0.41			<0.40		<0.40				1.43	
Xylenes (mg/L)	0.02			0.00		0.00				0.07	
Th-228 (Bq/L)	0.01			0.01		0.01				<0.0069	
Th-230 (Bq/L)	0.01			<0.004		<0.0038				<0.0045	
Th-232 (Bq/L)	0.00			0.00		<0.0012				<0.0018	
U-234 (Bq/L)	0.75			1.30		0.78				0.43	
U-235 (Bq/L)	0.01			0.02		0.01				0.01	

Date	6-Jan-2022	11-Jan-2022	23-Jan-2022	10-Feb-2022	28-Feb-2022	9-Mar-2022	16-Mar-2022	21-Mar-2022	29-Mar-2022	8-Apr-2022	15-Apr-2022
U-238 (Bq/L)	0.17			0.30		0.20				0.12	

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Date	20-Apr-2022	26-Apr-2022	1-May-2022	10-May-2022	17-May-2022	24-May-2022	24-May-2022	1-Jun-2022	4-Jun-2022	6-Jun-2022	13-Jun-2022
Conductivity (µS/cm)	5850	5230	4830	4610	2150	3440	3440	3750		4260	3590
pH	7.98	7.86	7.87	7.85	7.74	7.60	7.60	7.61		7.65	7.62
Total Suspended Solids (mg/L)	21.30	43.70	7.00	9.60	5.00	38.80	38.80	13.50		22.50	1.30
Turbidity (NTU)	8.78	19.40	1.30	4.27	4.73	1230	1230	7.44		14.90	6.06
Alkalinity, Bicarbonate (mg/L)	75.30	69.40	66.60	61.00	63.40	58.10	58.10	41.50	91.10	31.50	48.30
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	75.30	69.40	66.60	61.00	63.40	58.10	58.10	41.50	91.10	31.50	48.30
Calcium (Ca)-Total (mg/L)			429					266			
Chloride (mg/L)	1570	1410	1410	1280	493	914	914	1020	898	1190	903
Fluoride (mg/L)	0.59	<0.500	0.57	0.50	0.54	0.39	0.39	0.49	0.58	0.39	0.59
Hardness (as CaCO3) (mg/L)	1940	3460	1540	1500	594	1000	1000	1030	1110	1240	1080
Magnesium (Mg)-Total (mg/L)			118					94.40			
Potassium (K)-Total (mg/L)			21.30					38.60			
Silicate (as SiO2) (mg/L)	9.27	9.23	8.81	7.92	5.92	7.18	7.18	5.88	8.20	4.72	6.38
Sodium (Na)-Total (mg/L)			347					248			
Sulfate (mg/L)	392	352	377	312	165	205	205	195	256	119	225
TDS (mg/L)	3670	3620	2950	3050	1360	2120	2120	2550	2650	2580	2240
Ammonia, Total (as N) (mg/L)	18.80	15.00	11.20	7.92	8.00	23.20	23.20	30.80	22.90	31.80	9.22
Nitrate and Nitrite (mg/L)	32.80	18.00	14.50	13.30	14.20	27.40	27.40	20.60	22.10	21.20	20.70
Nitrate as Nitrogen (mg/L)	32.00	17.30	13.60	12.30	13.40	26.40	26.40	19.80	20.80	20.50	19.80
Nitrite as Nitrogen (mg/L)	0.85	0.67	0.89	1.02	0.86	1.02	1.02	0.85	1.34	0.66	0.89
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	0.00	0.00	<0.0020	0.00	0.00	0.00	0.01		0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01		0.01	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00	0.02	0.01	0.01	0.01	0.02	0.02	0.01		0.00	0.00
Phosphorus - Total (mg/L)	0.03	0.04	0.01	0.01	0.02	1.56	1.56	0.02		0.02	0.01
Total Kjeldahl Nitrogen (mg/L)	21.40	17.40	10.90	9.40	9.15	23.70	23.70	30.40		34.50	17.80
Total Organic Carbon (mg/L)	4.72	3.61	3.10	2.81	5.28	7.55	7.55	4.01		4.51	3.20
Aluminum (Al)-Total (mg/L)			0.06					0.06			
Antimony (Sb)-Total (mg/L)			0.00					0.00			
Arsenic (As)-Total (mg/L)			0.00					0.00			
Barium (Ba)-Total (mg/L)			0.05					0.20			
Beryllium (Be)-Total (mg/L)			<0.000020					<0.000020			
Bismuth (Bi)-Total (mg/L)			<0.000050					<0.000050			
Boron (B)-Total (mg/L)			1.20					1.39			
Cadmium (Cd)-Total (mg/L)			<0.0000100					<0.0000100			
Cesium (Cs)-Total (mg/L)			0.00					0.00			

Date	20-Apr-2022	26-Apr-2022	1-May-2022	10-May-2022	17-May-2022	24-May-2022	24-May-2022	1-Jun-2022	4-Jun-2022	6-Jun-2022	13-Jun-2022
Chromium (Cr)-Total (mg/L)			0.00					0.00			
Cobalt (Co)-Total (mg/L)			0.00					0.00			
Copper (Cu)-Total (mg/L)			0.00					0.01			
Iron (Fe)-Total (mg/L)			0.18					0.19			
Lead (Pb)-Total (mg/L)			<0.000030					0.00			
Lithium (Li)-Total (mg/L)			0.07					0.07			
Manganese (Mn)-Total (mg/L)			0.13					0.06			
Mercury (Hg)-Total (mg/L)			<0.0000050					<0.0000050			
Molybdenum (Mo)-Total (mg/L)			0.03					0.02			
Nickel (Ni)-Total (mg/L)			0.02					0.02			
Rubidium (Rb)-Total (mg/L)			0.02					0.07			
Selenium (Se)-Total (mg/L)			0.00					0.00			
Silver (Ag)-Total (mg/L)			<0.000010					0.00			
Strontium (Sr)-Total (mg/L)			8.34					4.96			
Sulfur (S)-Total (mg/L)			151					75.80			
Tellurium (Te)-Total (mg/L)			0.00					0.00			
Thallium (Tl)-Total (mg/L)			<0.000010					0.00			
Thorium (Th)-Total (mg/L)			<0.00010					<0.00010			
Tin (Sn)-Total (mg/L)			<0.000050					<0.000050			
Titanium (Ti)-Total (mg/L)			<0.00120					0.00			
Tungsten (W)-Total (mg/L)			0.00					0.00			
Uranium (U)-Total (mg/L)			0.01					0.01			
Vanadium (V)-Total (mg/L)			0.00					<0.00050			
Zinc (Zn)-Total (mg/L)			<0.0015					<0.0015			
Zirconium (Zr)-Total (mg/L)			<0.00020					<0.00020			
Aluminum (Al)-Dissolved (mg/L)			<0.0020					0.00			
Antimony (Sb)-Dissolved (mg/L)			0.00					0.00			
Arsenic (As)-Dissolved (mg/L)			0.00					0.00			
Barium (Ba)-Dissolved (mg/L)			0.04					0.20			
Beryllium (Be)-Dissolved (mg/L)			<0.000040					<0.000020			
Bismuth (Bi)-Dissolved (mg/L)			<0.000100					<0.000050			
Boron (B)-Dissolved (mg/L)			1.23					1.35			
Cadmium (Cd)-Dissolved (mg/L)			<0.0000100					<0.0000050			
Calcium (Ca)-Dissolved (mg/L)	530	958	420	396	163	254	254	256	293	331	294
Cesium (Cs)-Dissolved (mg/L)			0.00					0.00			
Chromium (Cr)-Dissolved (mg/L)			<0.00020					<0.00010			
Cobalt (Co)-Dissolved (mg/L)			0.00					0.00			
Copper (Cu)-Dissolved (mg/L)			0.00					0.01			
Iron (Fe)-Dissolved (mg/L)			0.04					0.03			

Date	20-Apr-2022	26-Apr-2022	1-May-2022	10-May-2022	17-May-2022	24-May-2022	24-May-2022	1-Jun-2022	4-Jun-2022	6-Jun-2022	13-Jun-2022
Lead (Pb)-Dissolved (mg/L)			<0.000060					<0.000030			
Lithium (Li)-Dissolved (mg/L)			0.07					0.08			
Magnesium (Mg)-Dissolved (mg/L)	149	260	119	124	45.50	89.90	89.90	94.80	91.70	99.90	83.90
Manganese (Mn)-Dissolved (mg/L)			0.13					0.04			
Mercury (Hg)-Dissolved (mg/L)			<0.0000050					<0.0000050			
Molybdenum (Mo)-Dissolved (mg/L)			0.03					0.02			
Nickel (Ni)-Dissolved (mg/L)			0.01					0.01			
Phosphorus - Dissolved (mg/L)			<0.020					<0.010			
Potassium (K)-Dissolved (mg/L)	30.60	53.40	21.60	23.20	18.40	30.90	30.90	39.30	32.60	56.10	29.90
Rubidium (Rb)-Dissolved (mg/L)			0.02					0.07			
Selenium (Se)-Dissolved (mg/L)			<0.000100					0.00			
Silver (Ag)-Dissolved (mg/L)			<0.000020					<0.000010			
Sodium (Na)-Dissolved (mg/L)	453	791	343	312	141	262	262	252	252	309	270
Strontium (Sr)-Dissolved (mg/L)			8.15					4.89			
Sulfur (S)-Dissolved (mg/L)			142					74.70			
Tellurium (Te)-Dissolved (mg/L)			0.00					0.00			
Thallium (Tl)-Dissolved (mg/L)			<0.000020					0.00			
Thorium (Th)-Dissolved (mg/L)			<0.00020					<0.00010			
Tin (Sn)-Dissolved (mg/L)			<0.000100					<0.000050			
Titanium (Ti)-Dissolved (mg/L)			<0.00060					<0.00030			
Tungsten (W)-Dissolved (mg/L)			0.00					0.00			
Uranium (U)-Dissolved (mg/L)			0.01					0.01			
Vanadium (V)-Dissolved (mg/L)			<0.00100					<0.00050			
Zinc (Zn)-Dissolved (mg/L)			<0.0020					<0.0010			
Zirconium (Zr)-Dissolved (mg/L)			<0.00040					<0.00030			
Benzene (mg/L)			0.03					0.07			
Ethylbenzene (mg/L)			0.00					0.00			
F1 (C6-C10) (mg/L)			0.12					<0.10			
F2 (C10-C16) (mg/L)			0.16					0.16			
F3 (C16-C34) (mg/L)			<0.25					<0.25			
F4 (C34-C50) (mg/L)			<0.25					<0.25			
Toluene (mg/L)			0.01					0.03			
Total Hydrocarbons (C6-C50) (mg/L)			<0.40					<0.40			
Xylenes (mg/L)			0.01					0.01			
Th-228 (Bq/L)			<0.0061					<0.0042			
Th-230 (Bq/L)			<0.0047					<0.0038			
Th-232 (Bq/L)			<0.002					0.00			
U-234 (Bq/L)			0.56					0.25			
U-235 (Bq/L)			0.02					0.01			

Date	20-Apr-2022	26-Apr-2022	1-May-2022	10-May-2022	17-May-2022	24-May-2022	24-May-2022	1-Jun-2022	4-Jun-2022	6-Jun-2022	13-Jun-2022
U-238 (Bq/L)			0.15					0.08			

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Date	23-Jun-2022	5-Jul-2022	6-Jul-2022	10-Jul-2022	11-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022	18-Jul-2022	19-Jul-2022
Conductivity (µS/cm)	3770	4750	3310	4100	4300	5110	4320	4910	4290	4260	4070
pH	7.76	7.78	7.86	7.72	7.90	7.79	7.89	7.78	7.88	7.89	7.92
Total Suspended Solids (mg/L)	<1.0	9.50	5.50	<1.0	21.80	1.20	<1.0	4.00	<1.0	<1.0	<1.0
Turbidity (NTU)	0.58	7.15	3.36	0.28	13.10	0.51	0.22	1.42	0.33	0.44	0.19
Alkalinity, Bicarbonate (mg/L)	62.90	52.40	56.80	52.00	64.00	51.20	55.70	36.50	48.40	59.60	48.50
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	62.90	52.40	56.80	52.00	64.00	51.20	55.70	36.50	48.40	59.60	48.50
Calcium (Ca)-Total (mg/L)		446	280								
Chloride (mg/L)	1000	1330	896	1160	1150	1400	1240	1400	1180	1140	1030
Fluoride (mg/L)	0.66	0.44	0.72	0.52	0.55	0.54	0.68	0.53	0.64	0.66	0.72
Hardness (as CaCO3) (mg/L)	1160	1550	1040	1290	1360	1580	1380	1560	1380	1400	1200
Magnesium (Mg)-Total (mg/L)		106	63.10								
Potassium (K)-Total (mg/L)		24.30	20.10								
Silicate (as SiO2) (mg/L)	7.27	6.50	6.62	6.32	7.74	6.72	6.56	5.77	6.63	7.32	6.80
Sodium (Na)-Total (mg/L)		346	221								
Sulfate (mg/L)	312	310	245	281	325	339	339	319	334	359	372
TDS (mg/L)	2950	3690	2800	3140	3180	3400	2560	2820	2500	3040	2830
Ammonia, Total (as N) (mg/L)	8.72	10.40	9.34	7.63	10.30	6.50	5.99	6.65	5.44	5.54	6.25
Nitrate and Nitrite (mg/L)	13.30	12.30	10.40	9.74	16.80	9.76	10.00	10.20	9.68	13.80	16.70
Nitrate as Nitrogen (mg/L)	12.60	11.60	9.71	9.27	16.20	9.42	9.58	9.78	9.19	13.20	16.10
Nitrite as Nitrogen (mg/L)	0.68	0.70	0.70	0.47	0.60	0.34	0.43	0.43	0.49	0.62	0.64
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	<0.0020	0.00
Phosph (P)-Tot Dis (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	<0.0010
Phosphorus - Total (mg/L)	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.01	0.00	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	9.79	13.10	11.50	9.46	12.90	7.88	7.74	7.90	6.94	7.30	8.29
Total Organic Carbon (mg/L)	2.43	2.80	2.27	2.31	2.45	2.41	2.22	2.18	2.25	2.47	2.68
Aluminum (Al)-Total (mg/L)		0.12									
Antimony (Sb)-Total (mg/L)		0.00									
Arsenic (As)-Total (mg/L)		0.00									
Barium (Ba)-Total (mg/L)		0.13									
Beryllium (Be)-Total (mg/L)		<0.000040									
Bismuth (Bi)-Total (mg/L)		<0.000100									
Boron (B)-Total (mg/L)		1.38									
Cadmium (Cd)-Total (mg/L)		<0.0000100									
Cesium (Cs)-Total (mg/L)		0.00									

Date	23-Jun-2022	5-Jul-2022	6-Jul-2022	10-Jul-2022	11-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022	18-Jul-2022	19-Jul-2022
Chromium (Cr)-Total (mg/L)		<0.00100									
Cobalt (Co)-Total (mg/L)		0.00									
Copper (Cu)-Total (mg/L)		0.01									
Iron (Fe)-Total (mg/L)		0.32									
Lead (Pb)-Total (mg/L)		<0.000100									
Lithium (Li)-Total (mg/L)		0.08									
Manganese (Mn)-Total (mg/L)		0.09									
Mercury (Hg)-Total (mg/L)		0.00									
Molybdenum (Mo)-Total (mg/L)		0.02									
Nickel (Ni)-Total (mg/L)		0.02									
Rubidium (Rb)-Total (mg/L)		0.04									
Selenium (Se)-Total (mg/L)		<0.000100									
Silver (Ag)-Total (mg/L)		<0.000020									
Strontium (Sr)-Total (mg/L)		9.31									
Sulfur (S)-Total (mg/L)		123									
Tellurium (Te)-Total (mg/L)		0.00									
Thallium (Tl)-Total (mg/L)		0.00									
Thorium (Th)-Total (mg/L)		<0.00020									
Tin (Sn)-Total (mg/L)		<0.00020									
Titanium (Ti)-Total (mg/L)		0.00									
Tungsten (W)-Total (mg/L)		0.00									
Uranium (U)-Total (mg/L)		0.01									
Vanadium (V)-Total (mg/L)		<0.00100									
Zinc (Zn)-Total (mg/L)		<0.0060									
Zirconium (Zr)-Total (mg/L)		<0.00040									
Aluminum (Al)-Dissolved (mg/L)		<0.0020									
Antimony (Sb)-Dissolved (mg/L)		0.00									
Arsenic (As)-Dissolved (mg/L)		0.00									
Barium (Ba)-Dissolved (mg/L)		0.11									
Beryllium (Be)-Dissolved (mg/L)		<0.000040									
Bismuth (Bi)-Dissolved (mg/L)		<0.000100									
Boron (B)-Dissolved (mg/L)		1.21									
Cadmium (Cd)-Dissolved (mg/L)		<0.0000100									
Calcium (Ca)-Dissolved (mg/L)	333	430	301	351	386	456	388	437	387	389	328
Cesium (Cs)-Dissolved (mg/L)		0.00									
Chromium (Cr)-Dissolved (mg/L)		<0.00050									
Cobalt (Co)-Dissolved (mg/L)		0.00									
Copper (Cu)-Dissolved (mg/L)		0.01									
Iron (Fe)-Dissolved (mg/L)		0.03									

Date	23-Jun-2022	5-Jul-2022	6-Jul-2022	10-Jul-2022	11-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022	18-Jul-2022	19-Jul-2022
Lead (Pb)-Dissolved (mg/L)		<0.000100									
Lithium (Li)-Dissolved (mg/L)		0.08									
Magnesium (Mg)-Dissolved (mg/L)	80.80	101	70.40	99.60	95.60	106	101	115	100	104	92.40
Manganese (Mn)-Dissolved (mg/L)		0.07									
Mercury (Hg)-Dissolved (mg/L)		<0.0000050									
Molybdenum (Mo)-Dissolved (mg/L)		0.02									
Nickel (Ni)-Dissolved (mg/L)		0.02									
Phosphorus - Dissolved (mg/L)		<0.100									
Potassium (K)-Dissolved (mg/L)	20.00	24.00	20.90	23.00	21.80	19.80	21.30	23.10	20.00	21.50	18.70
Rubidium (Rb)-Dissolved (mg/L)		0.04									
Selenium (Se)-Dissolved (mg/L)		<0.000100									
Silver (Ag)-Dissolved (mg/L)		<0.000020									
Sodium (Na)-Dissolved (mg/L)	263	322	244	280	300	353	298	331	285	321	261
Strontium (Sr)-Dissolved (mg/L)		8.74									
Sulfur (S)-Dissolved (mg/L)		120									
Tellurium (Te)-Dissolved (mg/L)		0.00									
Thallium (Tl)-Dissolved (mg/L)		0.00									
Thorium (Th)-Dissolved (mg/L)		<0.00020									
Tin (Sn)-Dissolved (mg/L)		<0.00020									
Titanium (Ti)-Dissolved (mg/L)		<0.00060									
Tungsten (W)-Dissolved (mg/L)		0.00									
Uranium (U)-Dissolved (mg/L)		0.01									
Vanadium (V)-Dissolved (mg/L)		<0.00100									
Zinc (Zn)-Dissolved (mg/L)		<0.0020									
Zirconium (Zr)-Dissolved (mg/L)		<0.00040									
Benzene (mg/L)		0.03									
Ethylbenzene (mg/L)		0.00									
F1 (C6-C10) (mg/L)		<0.10									
F2 (C10-C16) (mg/L)		<0.10									
F3 (C16-C34) (mg/L)		<0.25									
F4 (C34-C50) (mg/L)		<0.25									
Toluene (mg/L)		0.01									
Total Hydrocarbons (C6-C50) (mg/L)		<0.38									
Xylenes (mg/L)		0.00									
Th-228 (Bq/L)		0.00									
Th-230 (Bq/L)		<0.0042									
Th-232 (Bq/L)		<0.0016									
U-234 (Bq/L)		0.40									
U-235 (Bq/L)		0.01									

Date	23-Jun-2022	5-Jul-2022	6-Jul-2022	10-Jul-2022	11-Jul-2022	14-Jul-2022	15-Jul-2022	16-Jul-2022	17-Jul-2022	18-Jul-2022	19-Jul-2022
U-238 (Bq/L)		0.09									

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Date	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	24-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Conductivity (µS/cm)	4070	3820	3710	3180	3330	3470	3300	3360	3540	3630	3630
pH	7.92	7.96	7.96	7.77	7.94	7.91	7.92	7.93	8.11	7.92	7.84
Total Suspended Solids (mg/L)	<1.0	1.40	<1.0	<1.0	<1.0	1.00	39.50	1.20	<1.0	32.40	<1.0
Turbidity (NTU)	0.19	0.38	0.24	0.40	0.17	0.23	15.40	0.24	0.10	14.30	<0.10
Alkalinity, Bicarbonate (mg/L)	48.50	57.50	52.00	55.40	54.30	54.50	63.60	59.10	58.30	61.00	55.70
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	48.50	57.50	52.00	55.40	54.30	54.50	63.60	59.10	58.30	61.00	55.70
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1030	910	879	752	786	817	824	864	910	918	969
Fluoride (mg/L)	0.72	0.79	0.73	0.70	0.75	0.73	0.59	0.56	0.64	0.74	0.70
Hardness (as CaCO3) (mg/L)	1200	1290	1160	1020	1070	1110	1190	1210	1210	1170	1190
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	6.80	7.50	7.20	7.39	7.52	7.61	8.28	7.66	7.32	7.72	7.28
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	372	404	413	411	422	418	428	420	405	414	395
TDS (mg/L)	2830	2810	3260	2750	2170	2560	2510	2590	2350	2550	2200
Ammonia, Total (as N) (mg/L)	6.25	5.78	5.00	5.80	4.87	5.00	4.15	4.41	4.28	4.37	4.11
Nitrate and Nitrite (mg/L)	16.70	18.40	16.60	17.80	16.90	15.10	14.30	14.30	12.30	12.10	11.70
Nitrate as Nitrogen (mg/L)	16.10	17.70	16.00	17.20	16.30	14.50	13.70	13.80	11.80	11.60	11.20
Nitrite as Nitrogen (mg/L)	0.64	0.69	0.61	0.62	0.64	0.62	0.56	0.55	0.49	0.51	0.52
Orthophosphate-Dissolved (as P) (mg/L)	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	0.00	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.00	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	0.00	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	<0.0010	0.00	0.04	<0.0010	<0.0010	0.03	<0.0010
Phosphorus - Total (mg/L)	<0.0010	<0.0010	0.00	0.00	0.00	<0.0010	0.05	0.00	<0.0010	0.04	0.00
Total Kjeldahl Nitrogen (mg/L)	8.29	9.35	8.23	8.46	10.40	8.38	7.13	6.76	5.77	5.52	5.20
Total Organic Carbon (mg/L)	2.68	2.78	4.54	2.79	2.84	2.92	2.59	3	2.65	2.74	2.68
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	24-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	328	357	314	284	300	310	327	337	338	325	345
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	24-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	92.40	96.40	90.70	75.60	78.90	81.80	91	89.30	88.50	87.80	78.90
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	18.70	20.90	18.80	17.00	16.90	16.00	15.70	16.30	16.60	16.50	15.90
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	261	276	260	237	250	262	257	254	275	276	264
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	19-Jul-2022	20-Jul-2022	21-Jul-2022	22-Jul-2022	23-Jul-2022	24-Jul-2022	25-Jul-2022	26-Jul-2022	27-Jul-2022	28-Jul-2022	29-Jul-2022
U-238 (Bq/L)											

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Date	30-Jul-2022	2-Aug-2022	3-Aug-2022	4-Aug-2022	6-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	11-Aug-2022	15-Aug-2022
Conductivity (µS/cm)	3590	4060	3610	3590	3700	4110	3840	3820	3790	3780	3920
pH	7.95	8.01	7.94	7.93	7.84	7.82	8.01	7.99	7.98	8.02	8.05
Total Suspended Solids (mg/L)	1.40	1.20	2.10	5.10	13.90	9.10	7.10	8.10	4.80	2.90	3.20
Turbidity (NTU)	0.24	0.94	2.28	4.32	10.20	10.50	3.92	5.05	2.98	1.82	0.69
Alkalinity, Bicarbonate (mg/L)	57.30	56.70	58.90	61.20	62.60	49.90	61.90	58.30	67.30	69.10	65.90
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	57.30	56.70	58.90	61.20	62.60	49.90	61.90	58.30	67.30	69.10	65.90
Calcium (Ca)-Total (mg/L)		366									
Chloride (mg/L)	988	1050	953	954	1110	1080	1040	1030	1020	1020	1070
Fluoride (mg/L)	0.71	0.90	0.68	0.72	0.71	0.70	0.74	0.73	0.72	0.76	0.94
Hardness (as CaCO3) (mg/L)	1250	1290	1230	1220	1300	1190	1240	1220	1260	1280	1220
Magnesium (Mg)-Total (mg/L)		86.50									
Potassium (K)-Total (mg/L)		17.40									
Silicate (as SiO2) (mg/L)	7.44	7.13	7.58	7.57	6.61	7.55	7.77	7.67	8.01	8.17	7.94
Sodium (Na)-Total (mg/L)		292									
Sulfate (mg/L)	391	373	374	357	342	338	360	364	344	338	347
TDS (mg/L)	2830	3710	3000	3600	3270	3120	2980	2780	3170	2560	2680
Ammonia, Total (as N) (mg/L)	3.91	4.24	4.06	3.18	3.74	3.20	2.94	3.16	3.00	3.04	7.23
Nitrate and Nitrite (mg/L)	10.90	10.20	10.10	8.60	7.19	7.04	12.50	10.40	12.20	11.70	11.30
Nitrate as Nitrogen (mg/L)	10.40	9.75	9.65	8.18	6.82	6.69	12.00	9.87	11.60	11.10	10.80
Nitrite as Nitrogen (mg/L)	0.53	0.42	0.49	0.42	0.37	0.35	0.55	0.52	0.55	0.57	0.51
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.01	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0020	0.00	<0.0020
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.00	0.01	0.00	0.00	0.00	0.00	<0.0010	<0.0010	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	5.28	5.11	5.62	4.86	5.16	5.51	5.70	5.03	5.50	5.61	7.58
Total Organic Carbon (mg/L)	2.38	2.71	2.59	3.21	3.93	5.57	9.87	3.80	3.39	3.48	3.39
Aluminum (Al)-Total (mg/L)		0.03									
Antimony (Sb)-Total (mg/L)		0.00									
Arsenic (As)-Total (mg/L)		0.00									
Barium (Ba)-Total (mg/L)		0.07									
Beryllium (Be)-Total (mg/L)		<0.000100									
Bismuth (Bi)-Total (mg/L)		<0.000100									
Boron (B)-Total (mg/L)		1.26									
Cadmium (Cd)-Total (mg/L)		<0.0000100									
Cesium (Cs)-Total (mg/L)		0.00									

Date	30-Jul-2022	2-Aug-2022	3-Aug-2022	4-Aug-2022	6-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	11-Aug-2022	15-Aug-2022
Chromium (Cr)-Total (mg/L)		<0.00050									
Cobalt (Co)-Total (mg/L)		0.00									
Copper (Cu)-Total (mg/L)		<0.00100									
Iron (Fe)-Total (mg/L)		0.04									
Lead (Pb)-Total (mg/L)		<0.000100									
Lithium (Li)-Total (mg/L)		0.07									
Manganese (Mn)-Total (mg/L)		0.08									
Mercury (Hg)-Total (mg/L)		<0.0000050									
Molybdenum (Mo)-Total (mg/L)		0.04									
Nickel (Ni)-Total (mg/L)		0.01									
Rubidium (Rb)-Total (mg/L)		0.02									
Selenium (Se)-Total (mg/L)		0.00									
Silver (Ag)-Total (mg/L)		<0.000020									
Strontium (Sr)-Total (mg/L)		6.81									
Sulfur (S)-Total (mg/L)		130									
Tellurium (Te)-Total (mg/L)		0.00									
Thallium (Tl)-Total (mg/L)		<0.000050									
Thorium (Th)-Total (mg/L)		<0.00020									
Tin (Sn)-Total (mg/L)		<0.00020									
Titanium (Ti)-Total (mg/L)		<0.0100									
Tungsten (W)-Total (mg/L)		0.00									
Uranium (U)-Total (mg/L)		0.01									
Vanadium (V)-Total (mg/L)		<0.00100									
Zinc (Zn)-Total (mg/L)		<0.0060									
Zirconium (Zr)-Total (mg/L)		<0.00040									
Aluminum (Al)-Dissolved (mg/L)		0.01									
Antimony (Sb)-Dissolved (mg/L)		0.00									
Arsenic (As)-Dissolved (mg/L)		0.00									
Barium (Ba)-Dissolved (mg/L)		0.07									
Beryllium (Be)-Dissolved (mg/L)		<0.000100									
Bismuth (Bi)-Dissolved (mg/L)		<0.000100									
Boron (B)-Dissolved (mg/L)		1.22									
Cadmium (Cd)-Dissolved (mg/L)		<0.0000250									
Calcium (Ca)-Dissolved (mg/L)	345	379	342	341	370	335	355	346	354	365	346
Cesium (Cs)-Dissolved (mg/L)		0.00									
Chromium (Cr)-Dissolved (mg/L)		<0.00050									
Cobalt (Co)-Dissolved (mg/L)		0.00									
Copper (Cu)-Dissolved (mg/L)		0.00									
Iron (Fe)-Dissolved (mg/L)		<0.020									

Date	30-Jul-2022	2-Aug-2022	3-Aug-2022	4-Aug-2022	6-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	11-Aug-2022	15-Aug-2022
Lead (Pb)-Dissolved (mg/L)		<0.000100									
Lithium (Li)-Dissolved (mg/L)		0.06									
Magnesium (Mg)-Dissolved (mg/L)	94.10	83.90	91.00	89.10	92.30	86.00	86.60	85.50	90.60	90.00	87.50
Manganese (Mn)-Dissolved (mg/L)		0.08									
Mercury (Hg)-Dissolved (mg/L)		<0.0000050									
Molybdenum (Mo)-Dissolved (mg/L)		0.04									
Nickel (Ni)-Dissolved (mg/L)		0.01									
Phosphorus - Dissolved (mg/L)		<0.300									
Potassium (K)-Dissolved (mg/L)	16.70	17.20	17.40	16.50	17.90	15.70	16.00	16.10	16.50	16.30	16.80
Rubidium (Rb)-Dissolved (mg/L)		0.02									
Selenium (Se)-Dissolved (mg/L)		<0.000100									
Silver (Ag)-Dissolved (mg/L)		<0.000020									
Sodium (Na)-Dissolved (mg/L)	294	283	296	290	308	282	300	297	316	324	293
Strontium (Sr)-Dissolved (mg/L)		7.00									
Sulfur (S)-Dissolved (mg/L)		134									
Tellurium (Te)-Dissolved (mg/L)		0.00									
Thallium (Tl)-Dissolved (mg/L)		0.00									
Thorium (Th)-Dissolved (mg/L)		<0.00020									
Tin (Sn)-Dissolved (mg/L)		<0.00020									
Titanium (Ti)-Dissolved (mg/L)		<0.0100									
Tungsten (W)-Dissolved (mg/L)		0.00									
Uranium (U)-Dissolved (mg/L)		0.01									
Vanadium (V)-Dissolved (mg/L)		<0.00100									
Zinc (Zn)-Dissolved (mg/L)		<0.0020									
Zirconium (Zr)-Dissolved (mg/L)		<0.00040									
Benzene (mg/L)		0.00									
Ethylbenzene (mg/L)		<0.00050									
F1 (C6-C10) (mg/L)		<0.10									
F2 (C10-C16) (mg/L)		<0.10									
F3 (C16-C34) (mg/L)		<0.25									
F4 (C34-C50) (mg/L)		<0.25									
Toluene (mg/L)		0.00									
Total Hydrocarbons (C6-C50) (mg/L)		<0.40									
Xylenes (mg/L)		<0.00075									
Th-228 (Bq/L)		0.00									
Th-230 (Bq/L)		0.00									
Th-232 (Bq/L)		<0.0011									
U-234 (Bq/L)		0.43									
U-235 (Bq/L)		0.01									

Date	30-Jul-2022	2-Aug-2022	3-Aug-2022	4-Aug-2022	6-Aug-2022	7-Aug-2022	8-Aug-2022	9-Aug-2022	10-Aug-2022	11-Aug-2022	15-Aug-2022
U-238 (Bq/L)		0.12									

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Date	16-Aug-2022	17-Aug-2022	18-Aug-2022	26-Aug-2022	27-Aug-2022	28-Aug-2022	29-Aug-2022	30-Aug-2022	31-Aug-2022	1-Sep-2022	5-Sep-2022
Conductivity (µS/cm)	3780	3940	3820	3960	3620	3390	3710	3820	3980	3880	3510
pH	7.98	7.95	8.05	8.03	8.01	7.98	7.96	8.00	7.99	7.96	8.01
Total Suspended Solids (mg/L)	1.20	2.50	100	4.20	1.30	<1.0	3.10	<1.0	<1.0	<1.0	<1.0
Turbidity (NTU)	0.48	1.07	0.41	0.54	0.47	0.72	0.68	0.37	0.20	0.22	0.25
Alkalinity, Bicarbonate (mg/L)	69.00	64.30	70.10	44.50	59.10	63.20	54.60	59.60	56.60	56.60	61.60
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	69.00	64.30	70.10	44.50	59.10	63.20	54.60	59.60	56.60	56.60	61.60
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1020	1090	1010	1140	991	887	1010	970	1020	976	892
Fluoride (mg/L)	0.80	0.78	0.88	0.68	0.76	0.81	0.68	0.67	0.62	0.72	0.79
Hardness (as CaCO3) (mg/L)	1160	1280	1200	1140	1100	1040	1080	1140	1200	1130	1060
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	8.38	8.13	8.58	6.75	8.03	8.48	7.44	8.16	8.15	7.73	8.13
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	332	337	321	275	333	336	309	315	319	305	341
TDS (mg/L)	3560	3360	3640	2690	2470	2220	2300	2490	2590	3030	2620
Ammonia, Total (as N) (mg/L)	5.30	5.73	8.42	9.05	11.00	8.42	10.90	8.79	10.80	8.73	4.48
Nitrate and Nitrite (mg/L)	10.50	10.30	12.20	13.40	18.30	15.20	17.80	16.50	19.70	14.90	9.27
Nitrate as Nitrogen (mg/L)	9.93	9.75	11.70	12.90	17.70	14.80	17.40	16.00	19.10	14.50	8.99
Nitrite as Nitrogen (mg/L)	0.56	0.52	0.47	0.46	0.58	0.44	0.44	0.47	0.58	0.45	0.28
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.01	<0.0020	<0.0020	0.00	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.01	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	<0.0010	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.00	<0.0010	0.00	0.00	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Kjeldahl Nitrogen (mg/L)	6.63	6.64	11.80	10.60	12.80	11.60	14.00	9.82	16.20	9.33	5.66
Total Organic Carbon (mg/L)	2.88	2.81	2.47	2.65	2.49	2.30	2.51	2.30	2.44	2.11	2.14
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	16-Aug-2022	17-Aug-2022	18-Aug-2022	26-Aug-2022	27-Aug-2022	28-Aug-2022	29-Aug-2022	30-Aug-2022	31-Aug-2022	1-Sep-2022	5-Sep-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	324	365	332	311	300	282	302	314	329	313	293
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	16-Aug-2022	17-Aug-2022	18-Aug-2022	26-Aug-2022	27-Aug-2022	28-Aug-2022	29-Aug-2022	30-Aug-2022	31-Aug-2022	1-Sep-2022	5-Sep-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	85.10	90.20	90.40	88.10	84.80	81.20	79.20	86.70	91.70	83.70	80.20
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	15.50	17.00	16.00	30.00	23.50	18.60	20.40	16.40	18.30	17.00	13.90
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	292	319	314	304	276	269	281	281	291	283	266
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	16-Aug-2022	17-Aug-2022	18-Aug-2022	26-Aug-2022	27-Aug-2022	28-Aug-2022	29-Aug-2022	30-Aug-2022	31-Aug-2022	1-Sep-2022	5-Sep-2022
U-238 (Bq/L)											

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Date	6-Sep-2022	8-Sep-2022	11-Sep-2022	12-Sep-2022	13-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Conductivity (µS/cm)	3720	3590	3740	3550	3250	4160	4240	4470	4160	4380	4340
pH	7.81	7.93	7.96	7.95	7.99	7.87	8.02	7.92	7.95	8.02	7.98
Total Suspended Solids (mg/L)	<1.0	2.50	<1.0	<1.0	10.50	34.50	5.30	65.80	3.10	2.70	2.30
Turbidity (NTU)	0.24	0.50	0.32	0.32	4.95	23.40	3.42	41.30	1.92	1.84	1.41
Alkalinity, Bicarbonate (mg/L)	57.90	60.70	58.40	58.50	65.90	110	107	75.70	117	104	84.80
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	57.90	60.70	58.40	58.50	65.90	110	107	75.70	117	104	84.80
Calcium (Ca)-Total (mg/L)	325										
Chloride (mg/L)	970	926	971	932	817	968	1130	1240	1080	1200	1180
Fluoride (mg/L)	0.75	0.79	0.80	0.83	0.86	0.65	0.71	0.66	0.74	0.72	0.76
Hardness (as CaCO3) (mg/L)	1210	1430	1170	1160	1030	1290	1390	1460	1260	1360	1280
Magnesium (Mg)-Total (mg/L)	85.20										
Potassium (K)-Total (mg/L)	14.60										
Silicate (as SiO2) (mg/L)	7.96	9.23	7.95	8.01	8.38	9.20	8.70	7.87	9.79	8.64	8.34
Sodium (Na)-Total (mg/L)	279										
Sulfate (mg/L)	344	352	359	367	354	353	378	374	304	307	301
TDS (mg/L)	2520	2530	3140	2520	2320	2860	2860	3110	2670	2910	2760
Ammonia, Total (as N) (mg/L)	5.28	4.10	3.80	3.79	3.04	15.50	10.80	9.52	19.80	18.90	14.10
Nitrate and Nitrite (mg/L)	9.02	7.80	7.81	7.92	7.05	15.20	13.20	12.50	18.50	14.80	10.50
Nitrate as Nitrogen (mg/L)	8.75	7.55	7.58	7.70	6.87	14.50	12.70	12.10	17.80	14.20	9.98
Nitrite as Nitrogen (mg/L)	0.27	0.25	0.23	0.22	0.18	0.66	0.50	0.37	0.66	0.63	0.55
Orthophosphate-Dissolved (as P) (mg/L)	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	<0.0010	<0.0010	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	0.00	<0.0020	<0.0020	<0.0020	0.00	<0.0020	0.00	0.00	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	<0.0010	<0.0010	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.00	0.00	<0.0010	0.01	0.01	0.00	0.03	0.01	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.06	0.01	0.01	0.01
Total Kjeldahl Nitrogen (mg/L)	4.99	5.03	4.84	4.62	3.90	18.00	12.40	10.70	20.70	3.88	14.10
Total Organic Carbon (mg/L)	2.22	2.38	2.28	2.25	2.44	3.25	2.86	2.45	3.48	3.46	3.08
Aluminum (Al)-Total (mg/L)	0.01										
Antimony (Sb)-Total (mg/L)	0.00										
Arsenic (As)-Total (mg/L)	0.00										
Barium (Ba)-Total (mg/L)	0.06										
Beryllium (Be)-Total (mg/L)	<0.000040										
Bismuth (Bi)-Total (mg/L)	<0.000100										
Boron (B)-Total (mg/L)	0.98										
Cadmium (Cd)-Total (mg/L)	<0.0000100										
Cesium (Cs)-Total (mg/L)	0.00										

Date	6-Sep-2022	8-Sep-2022	11-Sep-2022	12-Sep-2022	13-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Chromium (Cr)-Total (mg/L)	<0.00020										
Cobalt (Co)-Total (mg/L)	0.00										
Copper (Cu)-Total (mg/L)	0.00										
Iron (Fe)-Total (mg/L)	0.05										
Lead (Pb)-Total (mg/L)	<0.000060										
Lithium (Li)-Total (mg/L)	0.06										
Manganese (Mn)-Total (mg/L)	0.07										
Mercury (Hg)-Total (mg/L)	<0.0000050										
Molybdenum (Mo)-Total (mg/L)	0.03										
Nickel (Ni)-Total (mg/L)	0.01										
Rubidium (Rb)-Total (mg/L)	0.02										
Selenium (Se)-Total (mg/L)	<0.000100										
Silver (Ag)-Total (mg/L)	<0.000020										
Strontium (Sr)-Total (mg/L)	6.51										
Sulfur (S)-Total (mg/L)	131										
Tellurium (Te)-Total (mg/L)	0.00										
Thallium (Tl)-Total (mg/L)	<0.000020										
Thorium (Th)-Total (mg/L)	<0.00020										
Tin (Sn)-Total (mg/L)	<0.000100										
Titanium (Ti)-Total (mg/L)	<0.00060										
Tungsten (W)-Total (mg/L)	0.00										
Uranium (U)-Total (mg/L)	0.01										
Vanadium (V)-Total (mg/L)	<0.00100										
Zinc (Zn)-Total (mg/L)	<0.0030										
Zirconium (Zr)-Total (mg/L)	<0.00040										
Aluminum (Al)-Dissolved (mg/L)	0.00										
Antimony (Sb)-Dissolved (mg/L)	0.00										
Arsenic (As)-Dissolved (mg/L)	0.00										
Barium (Ba)-Dissolved (mg/L)	0.06										
Beryllium (Be)-Dissolved (mg/L)	<0.000040										
Bismuth (Bi)-Dissolved (mg/L)	<0.000100										
Boron (B)-Dissolved (mg/L)	0.97										
Cadmium (Cd)-Dissolved (mg/L)	<0.0000150										
Calcium (Ca)-Dissolved (mg/L)	331	440	323	322	294	361	394	415	367	402	371
Cesium (Cs)-Dissolved (mg/L)	0.00										
Chromium (Cr)-Dissolved (mg/L)	<0.00020										
Cobalt (Co)-Dissolved (mg/L)	0.00										
Copper (Cu)-Dissolved (mg/L)	0.00										
Iron (Fe)-Dissolved (mg/L)	<0.0100										

Date	6-Sep-2022	8-Sep-2022	11-Sep-2022	12-Sep-2022	13-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
Lead (Pb)-Dissolved (mg/L)	<0.000060										
Lithium (Li)-Dissolved (mg/L)	0.06										
Magnesium (Mg)-Dissolved (mg/L)	93.10	81.40	87.50	86.00	72.40	95.00	99.70	102	82.70	87.80	84.80
Manganese (Mn)-Dissolved (mg/L)	0.07										
Mercury (Hg)-Dissolved (mg/L)	<0.0000050										
Molybdenum (Mo)-Dissolved (mg/L)	0.03										
Nickel (Ni)-Dissolved (mg/L)	0.01										
Phosphorus - Dissolved (mg/L)	<0.020										
Potassium (K)-Dissolved (mg/L)	14.30	28.90	14.00	14.00	12.10	27.30	25.00	23.20	34.00	30.60	26.80
Rubidium (Rb)-Dissolved (mg/L)	0.02										
Selenium (Se)-Dissolved (mg/L)	<0.000100										
Silver (Ag)-Dissolved (mg/L)	<0.000020										
Sodium (Na)-Dissolved (mg/L)	290	411	261	269	246	296	308	326	303	317	313
Strontium (Sr)-Dissolved (mg/L)	6.07										
Sulfur (S)-Dissolved (mg/L)	131										
Tellurium (Te)-Dissolved (mg/L)	<0.00040										
Thallium (Tl)-Dissolved (mg/L)	<0.000020										
Thorium (Th)-Dissolved (mg/L)	<0.00020										
Tin (Sn)-Dissolved (mg/L)	<0.000100										
Titanium (Ti)-Dissolved (mg/L)	<0.00060										
Tungsten (W)-Dissolved (mg/L)	0.00										
Uranium (U)-Dissolved (mg/L)	0.01										
Vanadium (V)-Dissolved (mg/L)	<0.00100										
Zinc (Zn)-Dissolved (mg/L)	<0.0020										
Zirconium (Zr)-Dissolved (mg/L)	<0.00060										
Benzene (mg/L)	0.00										
Ethylbenzene (mg/L)	<0.00050										
F1 (C6-C10) (mg/L)	<0.10										
F2 (C10-C16) (mg/L)	<0.10										
F3 (C16-C34) (mg/L)	<0.25										
F4 (C34-C50) (mg/L)	<0.25										
Toluene (mg/L)	0.00										
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)	<0.00075										
Th-228 (Bq/L)	see attached										
Th-230 (Bq/L)	see attached										
Th-232 (Bq/L)	<0.001										
U-234 (Bq/L)	0.09										
U-235 (Bq/L)	0.00										

Date	6-Sep-2022	8-Sep-2022	11-Sep-2022	12-Sep-2022	13-Sep-2022	22-Sep-2022	24-Sep-2022	25-Sep-2022	27-Sep-2022	28-Sep-2022	29-Sep-2022
U-238 (Bq/L)	see attached										

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Date	30-Sep-2022	1-Oct-2022	2-Oct-2022	3-Oct-2022	4-Oct-2022	5-Oct-2022	6-Oct-2022	7-Oct-2022	11-Oct-2022	12-Oct-2022	13-Oct-2022
Conductivity (µS/cm)	4010	4040	3960	4080	3810	3670	4170	4060	4720	4070	3880
pH	7.98	7.97	7.95	7.95	7.73	7.91	7.90	7.93	7.79	7.98	7.89
Total Suspended Solids (mg/L)	8.30	4.30	2.20	<1.0	10.90	4.90	11.90	2.10	21.70	7.40	19.10
Turbidity (NTU)	1.48	0.60	0.73	0.76	8.65	2.55	4.48	1.00	16.40	4.80	12.70
Alkalinity, Bicarbonate (mg/L)	81.50	76.20	72.80	66.40	51.70	63.30	58.20	61.00	50.50	67.10	71.70
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	81.50	76.20	72.80	66.40	51.70	63.30	58.20	61.00	50.50	67.10	71.70
Calcium (Ca)-Total (mg/L)				409							
Chloride (mg/L)	1090	1080	1060	1080	1020	1000	1100	1100	1420	1070	1060
Fluoride (mg/L)	0.78	0.78	0.78	0.73	0.83	0.77	0.89	0.95	0.72	0.67	0.80
Hardness (as CaCO3) (mg/L)	1240	1220	1160	1180	1080	1160	1340	1330	1540	1330	1270
Magnesium (Mg)-Total (mg/L)				87.30							
Potassium (K)-Total (mg/L)				21.10							
Silicate (as SiO2) (mg/L)	8.23	8.11	7.81	7.85	8.11	8.11	7.99	8.20	8.01	8.76	9.92
Sodium (Na)-Total (mg/L)				316							
Sulfate (mg/L)	297	302	300	326	290	327	340	353	382	345	332
TDS (mg/L)	3070	2820	2720	2850	2640	2890	2580	2570	3200	3220	3140
Ammonia, Total (as N) (mg/L)	11.60	9.39	8.10	7.02	7.24	4.83	3.96	3.52	4.26	5.82	7.28
Nitrate and Nitrite (mg/L)	8.42	7.02	6.44	5.70	5.74	3.89	3.49	3.31	4.90	11.20	21.40
Nitrate as Nitrogen (mg/L)	7.96	6.63	6.08	5.33	5.40	3.57	3.22	3.01	4.69	10.70	20.80
Nitrite as Nitrogen (mg/L)	0.46	0.39	0.36	0.37	0.34	0.32	0.27	0.30	0.21	0.51	0.66
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	0.00	<0.0010	0.00	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	<0.0020	0.00
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	<0.0010	0.00	<0.0010	<0.0010	0.00	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.01	0.00	<0.0010	0.00	0.00	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.03	0.01	0.02
Total Kjeldahl Nitrogen (mg/L)	11.10	9.09	8.32	7.80	7.88	4.75	4.19	3.88	4.97	7.04	8.99
Total Organic Carbon (mg/L)	2.64	2.53	2.49	3.34	2.45	2.42	2.28	2.12	2.98	3.53	3.81
Aluminum (Al)-Total (mg/L)				0.04							
Antimony (Sb)-Total (mg/L)				0.00							
Arsenic (As)-Total (mg/L)				0.00							
Barium (Ba)-Total (mg/L)				0.07							
Beryllium (Be)-Total (mg/L)				<0.000040							
Bismuth (Bi)-Total (mg/L)				<0.000100							
Boron (B)-Total (mg/L)				1.11							
Cadmium (Cd)-Total (mg/L)				<0.0000200							
Cesium (Cs)-Total (mg/L)				0.00							

Date	30-Sep-2022	1-Oct-2022	2-Oct-2022	3-Oct-2022	4-Oct-2022	5-Oct-2022	6-Oct-2022	7-Oct-2022	11-Oct-2022	12-Oct-2022	13-Oct-2022
Chromium (Cr)-Total (mg/L)				<0.00020							
Cobalt (Co)-Total (mg/L)				0.00							
Copper (Cu)-Total (mg/L)				0.00							
Iron (Fe)-Total (mg/L)				0.15							
Lead (Pb)-Total (mg/L)				<0.000060							
Lithium (Li)-Total (mg/L)				0.08							
Manganese (Mn)-Total (mg/L)				0.07							
Mercury (Hg)-Total (mg/L)				<0.0000050							
Molybdenum (Mo)-Total (mg/L)				0.02							
Nickel (Ni)-Total (mg/L)				0.01							
Rubidium (Rb)-Total (mg/L)				0.03							
Selenium (Se)-Total (mg/L)				<0.000100							
Silver (Ag)-Total (mg/L)				<0.000020							
Strontium (Sr)-Total (mg/L)				8.14							
Sulfur (S)-Total (mg/L)				125							
Tellurium (Te)-Total (mg/L)				0.00							
Thallium (Tl)-Total (mg/L)				<0.000020							
Thorium (Th)-Total (mg/L)				<0.00020							
Tin (Sn)-Total (mg/L)				<0.000100							
Titanium (Ti)-Total (mg/L)				0.00							
Tungsten (W)-Total (mg/L)				0.00							
Uranium (U)-Total (mg/L)				0.01							
Vanadium (V)-Total (mg/L)				<0.00100							
Zinc (Zn)-Total (mg/L)				<0.0030							
Zirconium (Zr)-Total (mg/L)				<0.00040							
Aluminum (Al)-Dissolved (mg/L)				0.00							
Antimony (Sb)-Dissolved (mg/L)				0.00							
Arsenic (As)-Dissolved (mg/L)				0.00							
Barium (Ba)-Dissolved (mg/L)				0.06							
Beryllium (Be)-Dissolved (mg/L)				<0.000040							
Bismuth (Bi)-Dissolved (mg/L)				<0.000100							
Boron (B)-Dissolved (mg/L)				1.06							
Cadmium (Cd)-Dissolved (mg/L)				<0.0000100							
Calcium (Ca)-Dissolved (mg/L)	365	360	338	347	327	331	397	395	469	376	354
Cesium (Cs)-Dissolved (mg/L)				0.00							
Chromium (Cr)-Dissolved (mg/L)				<0.00020							
Cobalt (Co)-Dissolved (mg/L)				0.00							
Copper (Cu)-Dissolved (mg/L)				0.00							
Iron (Fe)-Dissolved (mg/L)				0.02							

Date	30-Sep-2022	1-Oct-2022	2-Oct-2022	3-Oct-2022	4-Oct-2022	5-Oct-2022	6-Oct-2022	7-Oct-2022	11-Oct-2022	12-Oct-2022	13-Oct-2022
Lead (Pb)-Dissolved (mg/L)				<0.000060							
Lithium (Li)-Dissolved (mg/L)				0.07							
Magnesium (Mg)-Dissolved (mg/L)	80.10	78.10	76.50	75.00	64.30	81.20	83.90	82.80	90.00	94.30	93.20
Manganese (Mn)-Dissolved (mg/L)				0.06							
Mercury (Hg)-Dissolved (mg/L)				<0.0000050							
Molybdenum (Mo)-Dissolved (mg/L)				0.02							
Nickel (Ni)-Dissolved (mg/L)				0.01							
Phosphorus - Dissolved (mg/L)				<0.020							
Potassium (K)-Dissolved (mg/L)	24.80	21.80	20.90	18.60	21.80	17.00	17.60	15.60	19.80	17.30	17.70
Rubidium (Rb)-Dissolved (mg/L)				0.03							
Selenium (Se)-Dissolved (mg/L)				<0.000100							
Silver (Ag)-Dissolved (mg/L)				<0.000020							
Sodium (Na)-Dissolved (mg/L)	298	293	291	273	279	307	314	319	343	316	329
Strontium (Sr)-Dissolved (mg/L)				7.27							
Sulfur (S)-Dissolved (mg/L)				121							
Tellurium (Te)-Dissolved (mg/L)				0.00							
Thallium (Tl)-Dissolved (mg/L)				<0.000020							
Thorium (Th)-Dissolved (mg/L)				<0.00020							
Tin (Sn)-Dissolved (mg/L)				<0.000100							
Titanium (Ti)-Dissolved (mg/L)				<0.00060							
Tungsten (W)-Dissolved (mg/L)				0.00							
Uranium (U)-Dissolved (mg/L)				0.01							
Vanadium (V)-Dissolved (mg/L)				<0.00100							
Zinc (Zn)-Dissolved (mg/L)				<0.0020							
Zirconium (Zr)-Dissolved (mg/L)				<0.00040							
Benzene (mg/L)				0.03							
Ethylbenzene (mg/L)				0.00							
F1 (C6-C10) (mg/L)				<0.10							
F2 (C10-C16) (mg/L)				<0.10							
F3 (C16-C34) (mg/L)				<0.25							
F4 (C34-C50) (mg/L)				<0.25							
Toluene (mg/L)				0.01							
Total Hydrocarbons (C6-C50) (mg/L)				<0.40							
Xylenes (mg/L)				0.00							
Th-228 (Bq/L)				0.50							
Th-230 (Bq/L)				<20							
Th-232 (Bq/L)				<0.001							
U-234 (Bq/L)				0.11							
U-235 (Bq/L)				0.01							

Date	30-Sep-2022	1-Oct-2022	2-Oct-2022	3-Oct-2022	4-Oct-2022	5-Oct-2022	6-Oct-2022	7-Oct-2022	11-Oct-2022	12-Oct-2022	13-Oct-2022
U-238 (Bq/L)				0.11							

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Date	15-Oct-2022	16-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	9-Nov-2022
Conductivity (µS/cm)	3890	3770	3680	3790	3440	3810	3730	3770	3840	3990	5390
pH	8.03	8.02	8.00	7.90	7.96	7.90	7.90	7.88	7.84	7.80	7.80
Total Suspended Solids (mg/L)	2.10	2.40	<1.0	1040	6.00	2.70	<1.0	7.80	16.10	1.60	19.20
Turbidity (NTU)	1.20	1.62	1.01	565	2.68	0.98	0.60	3.65	5.88	0.25	15.20
Alkalinity, Bicarbonate (mg/L)	74.00	72.80	70.40	69.20	67.70	67.50	70.40	66.10	64.00	65.60	56.50
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	74.00	72.80	70.40	69.20	67.70	67.50	70.40	66.10	64.00	65.60	56.50
Calcium (Ca)-Total (mg/L)								357			
Chloride (mg/L)	1010	1030	1000	1040	906	984	972	1020	1010	1070	1560
Fluoride (mg/L)	0.90	0.73	0.83	0.71	0.75	0.81	0.68	0.73	0.83	0.83	0.63
Hardness (as CaCO3) (mg/L)	1240	1270	1280	1250	1050	1280	1310	1230	1340	1420	1800
Magnesium (Mg)-Total (mg/L)								85.40			
Potassium (K)-Total (mg/L)								14.20			
Silicate (as SiO2) (mg/L)	9.63	9.56	8.87	8.95	9.41	9.34	9.49	8.50	8.59	8.86	7.88
Sodium (Na)-Total (mg/L)								299			
Sulfate (mg/L)	360	374	379	349	358	388	386	373	361	379	432
TDS (mg/L)	2650	2630	2630	2850	2340	3120	2620	2480	2290	2450	3350
Ammonia, Total (as N) (mg/L)	4.09	3.90	3.28	4.07	3.65	2.55	3.11	2.22	3.40	3.48	2.26
Nitrate and Nitrite (mg/L)	12.70	11.40	6.46	8.52	7.99	6.14	14.00	2.80	7.77	14.00	5.31
Nitrate as Nitrogen (mg/L)	12.20	11.00	6.13	8.12	7.56	5.73	13.60	2.66	7.31	13.30	5.09
Nitrite as Nitrogen (mg/L)	0.47	0.38	0.33	0.41	0.43	0.41	0.37	0.14	0.46	0.71	0.22
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	0.00	0.00	0.29	<0.0020	0.00	<0.0020	0.00	0.00	<0.0020	0.01
Phosph (P)-Tot Dis (mg/L)	<0.0010	0.00	0.00	0.29	<0.0010	0.00	<0.0010	0.00	0.00	0.00	0.01
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	0.00	0.03	0.00	0.00	0.00	0.01	0.03	<0.0010	0.02
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.73	0.01	0.00	0.00	0.02	0.03	0.00	0.02
Total Kjeldahl Nitrogen (mg/L)	4.94	4.09	3.61	4.74	4.27	3.35	3.89	2.75	4.01	4.96	2.73
Total Organic Carbon (mg/L)	3.09	2.78	2.64	2.59	2.54	2.48	3.26	2.70	2.82	2.90	2.74
Aluminum (Al)-Total (mg/L)								0.23			
Antimony (Sb)-Total (mg/L)								0.00			
Arsenic (As)-Total (mg/L)								0.00			
Barium (Ba)-Total (mg/L)								0.04			
Beryllium (Be)-Total (mg/L)								<0.000040			
Bismuth (Bi)-Total (mg/L)								<0.000100			
Boron (B)-Total (mg/L)								0.94			
Cadmium (Cd)-Total (mg/L)								<0.0000100			
Cesium (Cs)-Total (mg/L)								0.00			

Date	15-Oct-2022	16-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	9-Nov-2022
Chromium (Cr)-Total (mg/L)								0.00			
Cobalt (Co)-Total (mg/L)								0.00			
Copper (Cu)-Total (mg/L)								0.00			
Iron (Fe)-Total (mg/L)								0.31			
Lead (Pb)-Total (mg/L)								<0.000060			
Lithium (Li)-Total (mg/L)								0.07			
Manganese (Mn)-Total (mg/L)								0.09			
Mercury (Hg)-Total (mg/L)								<0.0000050			
Molybdenum (Mo)-Total (mg/L)								0.04			
Nickel (Ni)-Total (mg/L)								0.02			
Rubidium (Rb)-Total (mg/L)								0.02			
Selenium (Se)-Total (mg/L)								<0.000100			
Silver (Ag)-Total (mg/L)								<0.000020			
Strontium (Sr)-Total (mg/L)								7.44			
Sulfur (S)-Total (mg/L)								143			
Tellurium (Te)-Total (mg/L)								0.00			
Thallium (Tl)-Total (mg/L)								0.00			
Thorium (Th)-Total (mg/L)								0.00			
Tin (Sn)-Total (mg/L)								<0.000100			
Titanium (Ti)-Total (mg/L)								0.00			
Tungsten (W)-Total (mg/L)								0.00			
Uranium (U)-Total (mg/L)								0.02			
Vanadium (V)-Total (mg/L)								0.00			
Zinc (Zn)-Total (mg/L)								<0.0030			
Zirconium (Zr)-Total (mg/L)								0.00			
Aluminum (Al)-Dissolved (mg/L)								0.01			
Antimony (Sb)-Dissolved (mg/L)								0.00			
Arsenic (As)-Dissolved (mg/L)								0.00			
Barium (Ba)-Dissolved (mg/L)								0.04			
Beryllium (Be)-Dissolved (mg/L)								<0.000040			
Bismuth (Bi)-Dissolved (mg/L)								<0.000100			
Boron (B)-Dissolved (mg/L)								0.96			
Cadmium (Cd)-Dissolved (mg/L)								<0.0000100			
Calcium (Ca)-Dissolved (mg/L)	346	369	378	360	293	367	375	354	383	401	533
Cesium (Cs)-Dissolved (mg/L)								0.00			
Chromium (Cr)-Dissolved (mg/L)								<0.00020			
Cobalt (Co)-Dissolved (mg/L)								0.00			
Copper (Cu)-Dissolved (mg/L)								0.00			
Iron (Fe)-Dissolved (mg/L)								<0.0100			

Date	15-Oct-2022	16-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	9-Nov-2022
Lead (Pb)-Dissolved (mg/L)								<0.000060			
Lithium (Li)-Dissolved (mg/L)								0.06			
Magnesium (Mg)-Dissolved (mg/L)	90.20	84.20	81.10	84.80	77.70	88.10	90.40	85.10	94.60	101	114
Manganese (Mn)-Dissolved (mg/L)								0.08			
Mercury (Hg)-Dissolved (mg/L)								<0.0000050			
Molybdenum (Mo)-Dissolved (mg/L)								0.03			
Nickel (Ni)-Dissolved (mg/L)								0.02			
Phosphorus - Dissolved (mg/L)								<0.020			
Potassium (K)-Dissolved (mg/L)	14.30	13.60	13.80	15.00	13.60	12.90	13.40	13.40	15.50	15.10	14.80
Rubidium (Rb)-Dissolved (mg/L)								0.02			
Selenium (Se)-Dissolved (mg/L)								<0.000100			
Silver (Ag)-Dissolved (mg/L)								<0.000020			
Sodium (Na)-Dissolved (mg/L)	309	298	294	301	269	303	299	278	307	320	381
Strontium (Sr)-Dissolved (mg/L)								6.95			
Sulfur (S)-Dissolved (mg/L)								131			
Tellurium (Te)-Dissolved (mg/L)								<0.00040			
Thallium (Tl)-Dissolved (mg/L)								0.00			
Thorium (Th)-Dissolved (mg/L)								<0.00020			
Tin (Sn)-Dissolved (mg/L)								<0.000100			
Titanium (Ti)-Dissolved (mg/L)								<0.00060			
Tungsten (W)-Dissolved (mg/L)								0.00			
Uranium (U)-Dissolved (mg/L)								0.02			
Vanadium (V)-Dissolved (mg/L)								<0.00100			
Zinc (Zn)-Dissolved (mg/L)								<0.0020			
Zirconium (Zr)-Dissolved (mg/L)								<0.00040			
Benzene (mg/L)								<0.00050			
Ethylbenzene (mg/L)								<0.00050			
F1 (C6-C10) (mg/L)								<0.10			
F2 (C10-C16) (mg/L)								<0.10			
F3 (C16-C34) (mg/L)								<0.25			
F4 (C34-C50) (mg/L)								<0.25			
Toluene (mg/L)								<0.00050			
Total Hydrocarbons (C6-C50) (mg/L)								<0.40			
Xylenes (mg/L)								<0.00075			
Th-228 (Bq/L)								<0.3			
Th-230 (Bq/L)								<30			
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	15-Oct-2022	16-Oct-2022	18-Oct-2022	19-Oct-2022	20-Oct-2022	23-Oct-2022	24-Oct-2022	1-Nov-2022	2-Nov-2022	3-Nov-2022	9-Nov-2022
U-238 (Bq/L)								0.18			

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Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	18-Nov-2022	19-Nov-2022	21-Nov-2022	22-Nov-2022	26-Nov-2022	27-Nov-2022	28-Nov-2022
Conductivity (µS/cm)	3900	3960	4030	4190	4930	3900	4060	4150	4170	4320	4200
pH	7.94	7.94	7.95	7.93	7.84	7.87	7.90	7.91	7.91	7.80	7.88
Total Suspended Solids (mg/L)	2.90	2.10	1.90	8.50	16.10	2.70	150	13.60	102	5.40	189
Turbidity (NTU)	0.52	0.53	0.62	3.64	11.60	1.32	41.10	3.56	63.70	3.13	79.90
Alkalinity, Bicarbonate (mg/L)	68.60	70.20	72.10	69.20	55.40	66.30	70.90	71.30	67.20	68.00	73.60
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	68.60	70.20	72.10	69.20	55.40	66.30	70.90	71.30	67.20	68.00	73.60
Calcium (Ca)-Total (mg/L)											
Chloride (mg/L)	1030	1050	1060	1130	1440	974	1140	1170	1170	1200	1110
Fluoride (mg/L)	0.74	0.73	0.70	0.65	0.60	0.70	0.73	0.73	0.83	0.71	0.63
Hardness (as CaCO3) (mg/L)	1310	1330	1340	1390	1620	1280	1290	1350	1260	1310	1320
Magnesium (Mg)-Total (mg/L)											
Potassium (K)-Total (mg/L)											
Silicate (as SiO2) (mg/L)	9.29	9.47	9.60	8.98	8.06	9.55	9.50	9.38	9.87	9.17	9.48
Sodium (Na)-Total (mg/L)											
Sulfate (mg/L)	376	375	372	377	396	348	377	373	390	371	17.76
TDS (mg/L)	2450	2520	2580	2780	4010	3140	2450	2590	2400	2690	2490
Ammonia, Total (as N) (mg/L)	3.26	3.16	3.29	2.83	1.98	3.51	2.88	2.51	2.72	2.35	2.34
Nitrate and Nitrite (mg/L)	12.40	13.30	12.80	10.70	3.92	10.40	10.80	10.30	9.70	8.19	8.32
Nitrate as Nitrogen (mg/L)	11.70	12.60	12.10	10.10	3.75	9.81	10.20	9.76	9.20	7.76	7.90
Nitrite as Nitrogen (mg/L)	0.66	0.74	0.72	0.61	0.17	0.58	0.65	0.57	0.50	0.43	0.42
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	0.00	0.00	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.37	0.00	<0.0020	<0.0020	0.28
Phosph (P)-Tot Dis (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.28
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.02	0.00	0.19	0.01	0.09	0.01	0.19
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.01	0.02	0.00	0.21	0.01	0.09	0.01	0.21
Total Kjeldahl Nitrogen (mg/L)	4.19	4.10	4.47	3.50	2.24	3.52	3.88	3.20	2.86	2.42	2.46
Total Organic Carbon (mg/L)	2.60	2.50	2.51	2.23	2.22	2.25	2.39	2.47	2.63	2.81	2.46
Aluminum (Al)-Total (mg/L)											
Antimony (Sb)-Total (mg/L)											
Arsenic (As)-Total (mg/L)											
Barium (Ba)-Total (mg/L)											
Beryllium (Be)-Total (mg/L)											
Bismuth (Bi)-Total (mg/L)											
Boron (B)-Total (mg/L)											
Cadmium (Cd)-Total (mg/L)											
Cesium (Cs)-Total (mg/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	18-Nov-2022	19-Nov-2022	21-Nov-2022	22-Nov-2022	26-Nov-2022	27-Nov-2022	28-Nov-2022
Chromium (Cr)-Total (mg/L)											
Cobalt (Co)-Total (mg/L)											
Copper (Cu)-Total (mg/L)											
Iron (Fe)-Total (mg/L)											
Lead (Pb)-Total (mg/L)											
Lithium (Li)-Total (mg/L)											
Manganese (Mn)-Total (mg/L)											
Mercury (Hg)-Total (mg/L)											
Molybdenum (Mo)-Total (mg/L)											
Nickel (Ni)-Total (mg/L)											
Rubidium (Rb)-Total (mg/L)											
Selenium (Se)-Total (mg/L)											
Silver (Ag)-Total (mg/L)											
Strontium (Sr)-Total (mg/L)											
Sulfur (S)-Total (mg/L)											
Tellurium (Te)-Total (mg/L)											
Thallium (Tl)-Total (mg/L)											
Thorium (Th)-Total (mg/L)											
Tin (Sn)-Total (mg/L)											
Titanium (Ti)-Total (mg/L)											
Tungsten (W)-Total (mg/L)											
Uranium (U)-Total (mg/L)											
Vanadium (V)-Total (mg/L)											
Zinc (Zn)-Total (mg/L)											
Zirconium (Zr)-Total (mg/L)											
Aluminum (Al)-Dissolved (mg/L)											
Antimony (Sb)-Dissolved (mg/L)											
Arsenic (As)-Dissolved (mg/L)											
Barium (Ba)-Dissolved (mg/L)											
Beryllium (Be)-Dissolved (mg/L)											
Bismuth (Bi)-Dissolved (mg/L)											
Boron (B)-Dissolved (mg/L)											
Cadmium (Cd)-Dissolved (mg/L)											
Calcium (Ca)-Dissolved (mg/L)	370	376	373	398	478	356	371	389	347	372	373
Cesium (Cs)-Dissolved (mg/L)											
Chromium (Cr)-Dissolved (mg/L)											
Cobalt (Co)-Dissolved (mg/L)											
Copper (Cu)-Dissolved (mg/L)											
Iron (Fe)-Dissolved (mg/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	18-Nov-2022	19-Nov-2022	21-Nov-2022	22-Nov-2022	26-Nov-2022	27-Nov-2022	28-Nov-2022
Lead (Pb)-Dissolved (mg/L)											
Lithium (Li)-Dissolved (mg/L)											
Magnesium (Mg)-Dissolved (mg/L)	94.10	94.90	99.00	96.20	103	96.00	89.40	91.80	95.90	92.90	93.30
Manganese (Mn)-Dissolved (mg/L)											
Mercury (Hg)-Dissolved (mg/L)											
Molybdenum (Mo)-Dissolved (mg/L)											
Nickel (Ni)-Dissolved (mg/L)											
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	13.10	13.20	12.80	13.00	15.20	14.10	12.30	12.40	14.40	12.50	12.60
Rubidium (Rb)-Dissolved (mg/L)											
Selenium (Se)-Dissolved (mg/L)											
Silver (Ag)-Dissolved (mg/L)											
Sodium (Na)-Dissolved (mg/L)	304	311	324	324	364	309	296	315	307	307	311
Strontium (Sr)-Dissolved (mg/L)											
Sulfur (S)-Dissolved (mg/L)											
Tellurium (Te)-Dissolved (mg/L)											
Thallium (Tl)-Dissolved (mg/L)											
Thorium (Th)-Dissolved (mg/L)											
Tin (Sn)-Dissolved (mg/L)											
Titanium (Ti)-Dissolved (mg/L)											
Tungsten (W)-Dissolved (mg/L)											
Uranium (U)-Dissolved (mg/L)											
Vanadium (V)-Dissolved (mg/L)											
Zinc (Zn)-Dissolved (mg/L)											
Zirconium (Zr)-Dissolved (mg/L)											
Benzene (mg/L)											
Ethylbenzene (mg/L)											
F1 (C6-C10) (mg/L)											
F2 (C10-C16) (mg/L)											
F3 (C16-C34) (mg/L)											
F4 (C34-C50) (mg/L)											
Toluene (mg/L)											
Total Hydrocarbons (C6-C50) (mg/L)											
Xylenes (mg/L)											
Th-228 (Bq/L)											
Th-230 (Bq/L)											
Th-232 (Bq/L)											
U-234 (Bq/L)											
U-235 (Bq/L)											

Date	12-Nov-2022	13-Nov-2022	14-Nov-2022	15-Nov-2022	18-Nov-2022	19-Nov-2022	21-Nov-2022	22-Nov-2022	26-Nov-2022	27-Nov-2022	28-Nov-2022
U-238 (Bq/L)											

G09_B

Date	5-Dec-2022	11-Dec-2022	18-Dec-2022	20-Dec-2022	26-Dec-2022
Conductivity (µS/cm)	4090	4240	4530	4640	4400
pH	7.84	7.85	7.88	7.98	7.87
Total Suspended Solids (mg/L)	15.70	8.10	35.30	4.80	7.80
Turbidity (NTU)	9.90	4.84	18.50	4.84	4.51
Alkalinity, Bicarbonate (mg/L)	66.50	69.50	72.30	75.40	75.00
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	66.50	69.50	72.30	75.40	75.00
Calcium (Ca)-Total (mg/L)	382				
Chloride (mg/L)	1130	1160	1200	1200	1280
Fluoride (mg/L)	0.75	0.76	0.90	0.65	0.74
Hardness (as CaCO3) (mg/L)	1390	1390	1470	1470	1460
Magnesium (Mg)-Total (mg/L)	100				
Potassium (K)-Total (mg/L)	13.80				
Silicate (as SiO2) (mg/L)	10.50	11.60	10.60	10.50	10.40
Sodium (Na)-Total (mg/L)	308				
Sulfate (mg/L)	379	386	400	386	429
TDS (mg/L)	2590	2740	2690	2290	2990
Ammonia, Total (as N) (mg/L)	2.75	4.43	3.55	4.51	3.58
Nitrate and Nitrite (mg/L)	7.92	15.80	6.12	4.69	3.85
Nitrate as Nitrogen (mg/L)	7.44	15.10	5.84	4.50	3.67
Nitrite as Nitrogen (mg/L)	0.48	0.71	0.28	0.19	0.18
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.01	0.01	0.01	0.01	0.01
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	<0.0010	0.00	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.02	0.01	0.02	0.01	0.01
Phosphorus - Total (mg/L)	0.02	0.01	0.02	0.01	0.01
Total Kjeldahl Nitrogen (mg/L)	2.83	4.44	4.25	4.45	3.90
Total Organic Carbon (mg/L)	3.19	2.79	2.95	2.16	2.31
Aluminum (Al)-Total (mg/L)	0.43				
Antimony (Sb)-Total (mg/L)	0.00				
Arsenic (As)-Total (mg/L)	0.00				
Barium (Ba)-Total (mg/L)	0.05				
Beryllium (Be)-Total (mg/L)	0.00				
Bismuth (Bi)-Total (mg/L)	<0.000050				
Boron (B)-Total (mg/L)	1.03				
Cadmium (Cd)-Total (mg/L)	<0.0000150				
Cesium (Cs)-Total (mg/L)	0.00				

Date	5-Dec-2022	11-Dec-2022	18-Dec-2022	20-Dec-2022	26-Dec-2022
Chromium (Cr)-Total (mg/L)	0.00				
Cobalt (Co)-Total (mg/L)	0.00				
Copper (Cu)-Total (mg/L)	0.00				
Iron (Fe)-Total (mg/L)	0.71				
Lead (Pb)-Total (mg/L)	0.00				
Lithium (Li)-Total (mg/L)	0.07				
Manganese (Mn)-Total (mg/L)	0.08				
Mercury (Hg)-Total (mg/L)	<0.0000050				
Molybdenum (Mo)-Total (mg/L)	0.04				
Nickel (Ni)-Total (mg/L)	0.04				
Rubidium (Rb)-Total (mg/L)	0.02				
Selenium (Se)-Total (mg/L)	0.00				
Silver (Ag)-Total (mg/L)	0.00				
Strontium (Sr)-Total (mg/L)	6.77				
Sulfur (S)-Total (mg/L)	140				
Tellurium (Te)-Total (mg/L)	0.00				
Thallium (Tl)-Total (mg/L)	0.00				
Thorium (Th)-Total (mg/L)	0.00				
Tin (Sn)-Total (mg/L)	0.00				
Titanium (Ti)-Total (mg/L)	0.01				
Tungsten (W)-Total (mg/L)	0.00				
Uranium (U)-Total (mg/L)	0.01				
Vanadium (V)-Total (mg/L)	0.00				
Zinc (Zn)-Total (mg/L)	0.01				
Zirconium (Zr)-Total (mg/L)	0.00				
Aluminum (Al)-Dissolved (mg/L)	0.00				
Antimony (Sb)-Dissolved (mg/L)	0.00				
Arsenic (As)-Dissolved (mg/L)	0.00				
Barium (Ba)-Dissolved (mg/L)	0.04				
Beryllium (Be)-Dissolved (mg/L)	<0.000040				
Bismuth (Bi)-Dissolved (mg/L)	<0.000100				
Boron (B)-Dissolved (mg/L)	0.98				
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100				
Calcium (Ca)-Dissolved (mg/L)	386	323	369	375	380
Cesium (Cs)-Dissolved (mg/L)	0.00				
Chromium (Cr)-Dissolved (mg/L)	<0.00020				
Cobalt (Co)-Dissolved (mg/L)	0.00				
Copper (Cu)-Dissolved (mg/L)	0.00				
Iron (Fe)-Dissolved (mg/L)	0.03				

Date	5-Dec-2022	11-Dec-2022	18-Dec-2022	20-Dec-2022	26-Dec-2022
Lead (Pb)-Dissolved (mg/L)	<0.000060				
Lithium (Li)-Dissolved (mg/L)	0.07				
Magnesium (Mg)-Dissolved (mg/L)	104	142	133	130	124
Manganese (Mn)-Dissolved (mg/L)	0.07				
Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
Molybdenum (Mo)-Dissolved (mg/L)	0.04				
Nickel (Ni)-Dissolved (mg/L)	0.03				
Phosphorus - Dissolved (mg/L)	<0.020				
Potassium (K)-Dissolved (mg/L)	13.60	14.00	13.70	14.00	13.50
Rubidium (Rb)-Dissolved (mg/L)	0.02				
Selenium (Se)-Dissolved (mg/L)	<0.000100				
Silver (Ag)-Dissolved (mg/L)	<0.000020				
Sodium (Na)-Dissolved (mg/L)	315	299	300	327	318
Strontium (Sr)-Dissolved (mg/L)	7.34				
Sulfur (S)-Dissolved (mg/L)	139				
Tellurium (Te)-Dissolved (mg/L)	0.00				
Thallium (Tl)-Dissolved (mg/L)	0.00				
Thorium (Th)-Dissolved (mg/L)	<0.00020				
Tin (Sn)-Dissolved (mg/L)	<0.000100				
Titanium (Ti)-Dissolved (mg/L)	<0.00060				
Tungsten (W)-Dissolved (mg/L)	0.00				
Uranium (U)-Dissolved (mg/L)	0.01				
Vanadium (V)-Dissolved (mg/L)	<0.00100				
Zinc (Zn)-Dissolved (mg/L)	0.00				
Zirconium (Zr)-Dissolved (mg/L)	<0.00040				
Benzene (mg/L)	0.00				
Ethylbenzene (mg/L)	<0.00050				
F1 (C6-C10) (mg/L)	<0.10				
F2 (C10-C16) (mg/L)	<0.10				
F3 (C16-C34) (mg/L)	<0.25				
F4 (C34-C50) (mg/L)	<0.25				
Toluene (mg/L)	0.00				
Total Hydrocarbons (C6-C50) (mg/L)	<0.40				
Xylenes (mg/L)	<0.00075				
Th-228 (Bq/L)	0.30				
Th-230 (Bq/L)	<20				
Th-232 (Bq/L)	0.00				
U-234 (Bq/L)	0.11				
U-235 (Bq/L)	0.01				

Date	5-Dec-2022	11-Dec-2022	18-Dec-2022	20-Dec-2022	26-Dec-2022
U-238 (Bq/L)	0.11				

G09_C Summary of Flow Data at SNP-09

Date	Daily Effluent Volume (m^3)
1-Jan-2022	
2-Jan-2022	
3-Jan-2022	145.875
4-Jan-2022	
5-Jan-2022	716.875
6-Jan-2022	1309.625
7-Jan-2022	100.75
8-Jan-2022	
9-Jan-2022	
10-Jan-2022	
11-Jan-2022	575
12-Jan-2022	1121.5
13-Jan-2022	551
14-Jan-2022	1156
15-Jan-2022	1391.375
16-Jan-2022	548.125
17-Jan-2022	742.75
18-Jan-2022	551.875
19-Jan-2022	377.5
20-Jan-2022	446
21-Jan-2022	307.75
22-Jan-2022	
23-Jan-2022	59.25
24-Jan-2022	1233.375
25-Jan-2022	415.9375
26-Jan-2022	222.8125
27-Jan-2022	150.90625
28-Jan-2022	145.03125
29-Jan-2022	1302.0625
30-Jan-2022	680.28125
31-Jan-2022	
1-Feb-2022	
2-Feb-2022	
3-Feb-2022	
4-Feb-2022	
5-Feb-2022	
6-Feb-2022	
7-Feb-2022	
8-Feb-2022	
9-Feb-2022	
10-Feb-2022	5601.375
11-Feb-2022	2182.75
12-Feb-2022	110.875
13-Feb-2022	
14-Feb-2022	
15-Feb-2022	
16-Feb-2022	
17-Feb-2022	8.375
18-Feb-2022	195.5
19-Feb-2022	219
20-Feb-2022	1533.375
21-Feb-2022	

Date	Daily Effluent Volume (m^3)
22-Feb-2022	
23-Feb-2022	
24-Feb-2022	
25-Feb-2022	
26-Feb-2022	
27-Feb-2022	2378.875
28-Feb-2022	1750.75
1-Mar-2022	770.875
2-Mar-2022	
3-Mar-2022	
4-Mar-2022	
5-Mar-2022	
6-Mar-2022	
7-Mar-2022	
8-Mar-2022	271.5625
9-Mar-2022	1349.53125
10-Mar-2022	1606.6875
11-Mar-2022	522
12-Mar-2022	
13-Mar-2022	
14-Mar-2022	
15-Mar-2022	381
16-Mar-2022	1702.9375
17-Mar-2022	1121.4375
18-Mar-2022	322
19-Mar-2022	1186.46875
20-Mar-2022	1220.53125
21-Mar-2022	1184.15625
22-Mar-2022	1052
23-Mar-2022	686.28125
24-Mar-2022	201.53125
25-Mar-2022	
26-Mar-2022	
27-Mar-2022	
28-Mar-2022	
29-Mar-2022	1087
30-Mar-2022	
31-Mar-2022	
1-Apr-2022	
2-Apr-2022	
3-Apr-2022	
4-Apr-2022	
5-Apr-2022	
6-Apr-2022	
7-Apr-2022	340.65625
8-Apr-2022	1863.1875
9-Apr-2022	1544.84375
10-Apr-2022	642.5
11-Apr-2022	
12-Apr-2022	
13-Apr-2022	
14-Apr-2022	223.5625
15-Apr-2022	2288.75

Date	Daily Effluent Volume (m^3)
16-Apr-2022	1196
17-Apr-2022	
18-Apr-2022	
19-Apr-2022	1249.15625
20-Apr-2022	1341.15625
21-Apr-2022	456.03125
22-Apr-2022	
23-Apr-2022	
24-Apr-2022	
25-Apr-2022	
26-Apr-2022	1125.6875
27-Apr-2022	1222.15625
28-Apr-2022	833.3125
29-Apr-2022	
30-Apr-2022	705.53125
1-May-2022	1147.75
2-May-2022	869.21875
3-May-2022	644.78125
4-May-2022	
5-May-2022	563
6-May-2022	1310
7-May-2022	1307
8-May-2022	1364
9-May-2022	1220.34375
10-May-2022	963.5
11-May-2022	928.71875
12-May-2022	830.96875
13-May-2022	994.28125
14-May-2022	1426.4375
15-May-2022	1973
16-May-2022	1336.1875
17-May-2022	1153.34375
18-May-2022	1303.34375
19-May-2022	423.15625
20-May-2022	
21-May-2022	
22-May-2022	269.75
23-May-2022	2860.625
24-May-2022	971.75
25-May-2022	
26-May-2022	
27-May-2022	
28-May-2022	
29-May-2022	
30-May-2022	
31-May-2022	182
1-Jun-2022	1983.625
2-Jun-2022	1967.5
3-Jun-2022	1713.875
4-Jun-2022	1121.75
5-Jun-2022	
6-Jun-2022	2294.75
7-Jun-2022	2380.125

Date	Daily Effluent Volume (m^3)
8-Jun-2022	
9-Jun-2022	NA
10-Jun-2022	NA
11-Jun-2022	NA
12-Jun-2022	NA
13-Jun-2022	192.13
14-Jun-2022	
15-Jun-2022	2251.87
16-Jun-2022	2393
17-Jun-2022	538.88
18-Jun-2022	
19-Jun-2022	
20-Jun-2022	
21-Jun-2022	2182.466797
22-Jun-2022	1238.445313
23-Jun-2022	1995.125977
24-Jun-2022	1686.616211
25-Jun-2022	1263.225586
26-Jun-2022	821.7714844
27-Jun-2022	299.5957031
28-Jun-2022	
29-Jun-2022	562.3476563
30-Jun-2022	664.6074219
1-Jul-2022	
2-Jul-2022	
3-Jul-2022	1267.013672
4-Jul-2022	1205.447266
5-Jul-2022	208.3125
6-Jul-2022	809.3496094
7-Jul-2022	247.0820313
8-Jul-2022	634.4121094
9-Jul-2022	699.484375
10-Jul-2022	1573.439453
11-Jul-2022	781.9160156
12-Jul-2022	1880.13
13-Jul-2022	
14-Jul-2022	702.37
15-Jul-2022	521.75
16-Jul-2022	1063.5
17-Jul-2022	1319.5
18-Jul-2022	1035
19-Jul-2022	1202.87
20-Jul-2022	
21-Jul-2022	2654
22-Jul-2022	1455.88
23-Jul-2022	1104.12
24-Jul-2022	814.5
25-Jul-2022	380.25
26-Jul-2022	779.63
27-Jul-2022	802.37
28-Jul-2022	670.38
29-Jul-2022	947.5
30-Jul-2022	1162.42

Date	Daily Effluent Volume (m^3)
31-Jul-2022	126.83
1-Aug-2022	
2-Aug-2022	4.88
3-Aug-2022	2292
4-Aug-2022	508.5
5-Aug-2022	328.12
6-Aug-2022	300.88
7-Aug-2022	1592.87
8-Aug-2022	922.88
9-Aug-2022	718.37
10-Aug-2022	808.33
11-Aug-2022	514.22
12-Aug-2022	
13-Aug-2022	
14-Aug-2022	214.58
15-Aug-2022	1171
16-Aug-2022	
17-Aug-2022	
18-Aug-2022	2264.12
19-Aug-2022	890
20-Aug-2022	421
21-Aug-2022	
22-Aug-2022	
23-Aug-2022	
24-Aug-2022	
25-Aug-2022	
26-Aug-2022	1695
27-Aug-2022	1620
28-Aug-2022	379.38
29-Aug-2022	1606.62
30-Aug-2022	1077
31-Aug-2022	
1-Sep-2022	1537
2-Sep-2022	764
3-Sep-2022	773
4-Sep-2022	749
5-Sep-2022	762
6-Sep-2022	780.25
7-Sep-2022	766.15
8-Sep-2022	892.6
9-Sep-2022	203.6
10-Sep-2022	1148
11-Sep-2022	975.1
12-Sep-2022	620.9
13-Sep-2022	770.2
14-Sep-2022	558.33
15-Sep-2022	
16-Sep-2022	
17-Sep-2022	189.27
18-Sep-2022	609.6
19-Sep-2022	
20-Sep-2022	
21-Sep-2022	1381.7

Date	Daily Effluent Volume (m^3)
22-Sep-2022	1940.18
23-Sep-2022	885.52
24-Sep-2022	921.8
25-Sep-2022	280.8
26-Sep-2022	
27-Sep-2022	1834.8
28-Sep-2022	825.89
29-Sep-2022	794.69
30-Sep-2022	786.42
1-Oct-2022	992.5
2-Oct-2022	189.83
3-Oct-2022	832.87
4-Oct-2022	958.38
5-Oct-2022	1143.75
6-Oct-2022	633
7-Oct-2022	801.12
8-Oct-2022	646.38
9-Oct-2022	393.87
10-Oct-2022	
11-Oct-2022	786.5
12-Oct-2022	1330
13-Oct-2022	1361.25
14-Oct-2022	756.75
15-Oct-2022	362.7
16-Oct-2022	1087.3
17-Oct-2022	235.63
18-Oct-2022	899.37
19-Oct-2022	338.5
20-Oct-2022	1650.5
21-Oct-2022	809
22-Oct-2022	749
23-Oct-2022	741
24-Oct-2022	604
25-Oct-2022	
26-Oct-2022	
27-Oct-2022	
28-Oct-2022	
29-Oct-2022	
30-Oct-2022	
31-Oct-2022	550.6
1-Nov-2022	1097
2-Nov-2022	1158.8
3-Nov-2022	1004
4-Nov-2022	905.7
5-Nov-2022	922.5
6-Nov-2022	350.6
7-Nov-2022	
8-Nov-2022	
9-Nov-2022	
10-Nov-2022	1142
11-Nov-2022	1101
12-Nov-2022	940
13-Nov-2022	922

Date	Daily Effluent Volume (m^3)
14-Nov-2022	448
15-Nov-2022	
16-Nov-2022	
17-Nov-2022	1126
18-Nov-2022	1325
19-Nov-2022	1947
20-Nov-2022	1085.375
21-Nov-2022	842.25
22-Nov-2022	1518.25
23-Nov-2022	
24-Nov-2022	
25-Nov-2022	1003
26-Nov-2022	1361.25
27-Nov-2022	791.875
28-Nov-2022	1241
29-Nov-2022	
30-Nov-2022	1147.5
1-Dec-2022	994.375
2-Dec-2022	240.5
3-Dec-2022	
4-Dec-2022	92.625
5-Dec-2022	1344.5
6-Dec-2022	425.125
7-Dec-2022	
8-Dec-2022	
9-Dec-2022	107.75
10-Dec-2022	1271
11-Dec-2022	1156.25
12-Dec-2022	1159.375
13-Dec-2022	900.25
14-Dec-2022	
15-Dec-2022	
16-Dec-2022	
17-Dec-2022	476
18-Dec-2022	1413.125
19-Dec-2022	1197.75
20-Dec-2022	979.25
21-Dec-2022	
22-Dec-2022	
23-Dec-2022	
24-Dec-2022	
25-Dec-2022	904
26-Dec-2022	1404.125
27-Dec-2022	1079.875
28-Dec-2022	523
29-Dec-2022	
30-Dec-2022	
31-Dec-2022	

G10 Summary of Sampling Requirements and Sample Dates at SNP 10 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-10	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	N/A
		Daily (when sump is active)	Physical parameters	N/A
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	N/A
		Monthly (when sump is active)	Physical parameters, major ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, BTEX, radionuclides	N/A

G11 Summary of Sampling Requirements and Sample Dates at SNP 11 in 2022

SNP Station	*Program*	Sampling Frequency	*Sampling Parameters*	*2022 Sampling Dates*
SNP 11	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	No seepage observed in both June and September Seepage Sampling Events. No samples collected.
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G12 Summary of Sampling Requirements and Sample Dates at SNP 12 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP 12	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	No seepage observed in both June and September Seepage Sampling Events. No samples collected.
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G14 Summary of Sampling Requirements and Sample Dates at SNP 14 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP 14	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	June 2 and September 30
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G14A_A Laboratory Analytical Results for Samples Collected at SNP-14 in 2022

Station	SNP-14-A	SNP-14-A
Date	2-Jun-2022	30-Sep-2022
Hardness (as CaCO3) (mg/L)	423	786
TDS (mg/L)	1,210.00	1,670.00
Alkalinity, Bicarbonate (mg/L)	2.7	20.2
Alkalinity, Carbonate (mg/L)	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0
Alkalinity, Total (mg/L)	2.7	20.2
Chloride (mg/L)	355	642
Fluoride (mg/L)	0.09	0.47
Silicate (as SiO2) (mg/L)	9	12
Sulfate (mg/L)	66	81
Calcium (Ca)-Total (mg/L)	114.00	221.00
Magnesium (Mg)-Total (mg/L)	34	52
Potassium (K)-Total (mg/L)	24.90	43.50
Sodium (Na)-Total (mg/L)	70.00	135.00
Ammonia, Total (as N) (mg/L)	0.75	0.50
Nitrate and Nitrite (mg/L)	8.89	16.20
Total Kjeldahl Nitrogen (mg/L)	1.26	0.69
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010
Phosphorus - Total (mg/L)	0.05	0.01
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020
Phosph (P)-Tot Inorg (mg/L)	0.00	0.00
Phosph (P)-Dis Inorg (mg/L)	0.00	<0.0010
Total Organic Carbon (mg/L)	2.14	2.79
Nitrate as Nitrogen (mg/L)	8.86	16.20
Nitrite as Nitrogen (mg/L)	0.0282	<0.0200
Phosph (P)-Tot Dis (mg/L)	0.00	<0.0010
Phosphorus - Dissolved (mg/L)	<0.010	<0.010
Aluminum (Al)-Total (mg/L)	1.28	0.43
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00	0.00
Barium (Ba)-Total (mg/L)	0.20	0.34
Beryllium (Be)-Total (mg/L)	0.00	0.00
Cadmium (Cd)-Total (mg/L)	0.00	0.00
Chromium (Cr)-Total (mg/L)	0.00	0.00
Cobalt (Co)-Total (mg/L)	0.0535	0.0175
Copper (Cu)-Total (mg/L)	0.00334	0.0119
Iron (Fe)-Total (mg/L)	1.70	0.19
Lead (Pb)-Total (mg/L)	0.00	0.00
Lithium (Li)-Total (mg/L)	0.01	0.01
Manganese (Mn)-Total (mg/L)	2.15	0.922
Molybdenum (Mo)-Total (mg/L)	0.00	0.01
Nickel (Ni)-Total (mg/L)	0.09	0.06

Station	SNP-14-A	SNP-14-A
Date	2-Jun-2022	30-Sep-2022
Rubidium (Rb)-Total (mg/L)	0.02	0.04
Selenium (Se)-Total (mg/L)	0.00014	0.000208
Strontium (Sr)-Total (mg/L)	1.19	2.67
Thallium (Tl)-Total (mg/L)	0.00	0.00
Titanium (Ti)-Total (mg/L)	0.0668	0.00069
Uranium (U)-Total (mg/L)	0.00	0.00
Vanadium (V)-Total (mg/L)	0.00	<0.00050
Zinc (Zn)-Total (mg/L)	0.15	0.05
Boron (B)-Total (mg/L)	1.02	1.65
Silver (Ag)-Total (mg/L)	0.00001	<0.000010
Tin (Sn)-Total (mg/L)	<0.000050	<0.000050
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050
Cesium (Cs)-Total (mg/L)	0.00	0.00
Sulfur (S)-Total (mg/L)	24.5	38.1
Tellurium (Te)-Total (mg/L)	0.00025	0.00053
Thorium (Th)-Total (mg/L)	0.00	0.00024
Tungsten (W)-Total (mg/L)	<0.00010	0.00018
Zirconium (Zr)-Total (mg/L)	0.00	<0.00020
Temperature (°C)		
pH	6.43	7.45
Conductivity (µS/cm)	1520	2340
Total Suspended Solids (mg/L)	67.50	19.10
Turbidity (NTU)	35.00	1.44
Dissolved Oxygen (mg/L)		
Specific Conductivity (µS/cm)		
Aluminum (Al)-Dissolved (mg/L)	0.0306	0.026
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00	0.00
Barium (Ba)-Dissolved (mg/L)	0.20	0.36
Beryllium (Be)-Dissolved (mg/L)	0	0
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.954	1.51
Cadmium (Cd)-Dissolved (mg/L)	0.00	0.00
Calcium (Ca)-Dissolved (mg/L)	108.00	227.00
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.0541	0.017
Copper (Cu)-Dissolved (mg/L)	0.00	0.01
Iron (Fe)-Dissolved (mg/L)	0.01	<0.0050
Lead (Pb)-Dissolved (mg/L)	<0.000030	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.0075	0.0137
Magnesium (Mg)-Dissolved (mg/L)	37.30	53.30
Manganese (Mn)-Dissolved (mg/L)	2.30	0.94

Station	SNP-14-A	SNP-14-A
Date	2-Jun-2022	30-Sep-2022
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00	0.01
Nickel (Ni)-Dissolved (mg/L)	0.09	0.06
Potassium (K)-Dissolved (mg/L)	25.10	43.70
Rubidium (Rb)-Dissolved (mg/L)	0.0209	0.0359
Selenium (Se)-Dissolved (mg/L)	0.00	0.00
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	73.50	132.00
Strontium (Sr)-Dissolved (mg/L)	1.18	2.55
Thallium (Tl)-Dissolved (mg/L)	0.00	0.00
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000025	0.00215
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.15	0.05
Cesium (Cs)-Dissolved (mg/L)	0.000058	0.00007
Sulfur (S)-Dissolved (mg/L)	26.50	33.40
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010
Tungsten (W)-Dissolved (mg/L)	<0.00010	0.00016
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030

G16 Summary of Sampling Requirements and Sample Dates at SNP 16 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP 16	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	27-Sep
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G16_A Laboratory Analytical Results for Samples Collected at SNP-16 in 2022

Station	**SNP-16**
Date	**27-Sep-2022**
Hardness (as CaCO3) (mg/L)	458
TDS (mg/L)	909.00
Alkalinity, Bicarbonate (mg/L)	99.2
Alkalinity, Carbonate (mg/L)	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0
Alkalinity, Total (mg/L)	99.2
Chloride (mg/L)	99.2
Fluoride (mg/L)	0.72
Silicate (as SiO2) (mg/L)	7
Sulfate (mg/L)	274
Calcium (Ca)-Total (mg/L)	113.00
Magnesium (Mg)-Total (mg/L)	44
Potassium (K)-Total (mg/L)	19.70
Sodium (Na)-Total (mg/L)	75.80
Ammonia, Total (as N) (mg/L)	0.30
Nitrate and Nitrite (mg/L)	32.30
Total Kjeldahl Nitrogen (mg/L)	<0.050
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010
Phosphorus - Total (mg/L)	0.00
Phosph (P)-Dis Org (mg/L)	0.00
Phosph (P)-Tot Inorg (mg/L)	0.00
Phosph (P)-Dis Inorg (mg/L)	<0.0010
Total Organic Carbon (mg/L)	4.79
Nitrate as Nitrogen (mg/L)	32.20
Nitrite as Nitrogen (mg/L)	0.0822
Phosph (P)-Tot Dis (mg/L)	0.00
Phosphorus - Dissolved (mg/L)	<0.010
Aluminum (Al)-Total (mg/L)	0.02
Antimony (Sb)-Total (mg/L)	0.00
Arsenic (As)-Total (mg/L)	0.00
Barium (Ba)-Total (mg/L)	0.07
Beryllium (Be)-Total (mg/L)	<0.000020
Cadmium (Cd)-Total (mg/L)	<0.0000150
Chromium (Cr)-Total (mg/L)	<0.00010
Cobalt (Co)-Total (mg/L)	0.0006
Copper (Cu)-Total (mg/L)	0.00102
Iron (Fe)-Total (mg/L)	0.04
Lead (Pb)-Total (mg/L)	0.00
Lithium (Li)-Total (mg/L)	0.02
Manganese (Mn)-Total (mg/L)	0.0906
Molybdenum (Mo)-Total (mg/L)	0.04
Nickel (Ni)-Total (mg/L)	0.00

Station	SNP-16
Date	27-Sep-2022
Rubidium (Rb)-Total (mg/L)	0.01
Selenium (Se)-Total (mg/L)	0.000227
Strontium (Sr)-Total (mg/L)	1.30
Thallium (Tl)-Total (mg/L)	<0.000010
Titanium (Ti)-Total (mg/L)	<0.00060
Uranium (U)-Total (mg/L)	0.03
Vanadium (V)-Total (mg/L)	0.00
Zinc (Zn)-Total (mg/L)	<0.0015
Boron (B)-Total (mg/L)	0.71
Silver (Ag)-Total (mg/L)	<0.000010
Tin (Sn)-Total (mg/L)	<0.000050
Mercury (Hg)-Total (mg/L)	<0.0000050
Bismuth (Bi)-Total (mg/L)	<0.000050
Cesium (Cs)-Total (mg/L)	0.00
Sulfur (S)-Total (mg/L)	105
Tellurium (Te)-Total (mg/L)	0.00026
Thorium (Th)-Total (mg/L)	<0.00010
Tungsten (W)-Total (mg/L)	0.00032
Zirconium (Zr)-Total (mg/L)	<0.00020
Temperature (°C)	
pH	8.19
Conductivity (µS/cm)	1260
Total Suspended Solids (mg/L)	<1.0
Turbidity (NTU)	0.24
Dissolved Oxygen (mg/L)	
Specific Conductivity (µS/cm)	
Aluminum (Al)-Dissolved (mg/L)	0.0069
Antimony (Sb)-Dissolved (mg/L)	0.00011
Arsenic (As)-Dissolved (mg/L)	0.00
Barium (Ba)-Dissolved (mg/L)	0.07
Beryllium (Be)-Dissolved (mg/L)	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050
Boron (B)-Dissolved (mg/L)	0.6
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100
Calcium (Ca)-Dissolved (mg/L)	107.00
Chromium (Cr)-Dissolved (mg/L)	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.000533
Copper (Cu)-Dissolved (mg/L)	0.00
Iron (Fe)-Dissolved (mg/L)	0.02
Lead (Pb)-Dissolved (mg/L)	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.0173
Magnesium (Mg)-Dissolved (mg/L)	46.40
Manganese (Mn)-Dissolved (mg/L)	0.09

Station	SNP-16
Date	27-Sep-2022
Mercury (Hg)-Dissolved (mg/L)	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.03
Nickel (Ni)-Dissolved (mg/L)	0.00
Potassium (K)-Dissolved (mg/L)	21.10
Rubidium (Rb)-Dissolved (mg/L)	0.0115
Selenium (Se)-Dissolved (mg/L)	0.00
Silver (Ag)-Dissolved (mg/L)	<0.000010
Sodium (Na)-Dissolved (mg/L)	73.20
Strontium (Sr)-Dissolved (mg/L)	1.3
Thallium (Tl)-Dissolved (mg/L)	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.000050
Titanium (Ti)-Dissolved (mg/L)	<0.00030
Uranium (U)-Dissolved (mg/L)	0.0287
Vanadium (V)-Dissolved (mg/L)	0.00054
Zinc (Zn)-Dissolved (mg/L)	<0.0010
Cesium (Cs)-Dissolved (mg/L)	0.000026
Sulfur (S)-Dissolved (mg/L)	94.40
Tellurium (Te)-Dissolved (mg/L)	<0.00020
Thorium (Th)-Dissolved (mg/L)	<0.00010
Tungsten (W)-Dissolved (mg/L)	0.00031
Zirconium (Zr)-Dissolved (mg/L)	<0.00030
F2 (C10-C16) (mg/L)	<0.10
F3 (C16-C34) (mg/L)	<0.25
F4 (C34-C50) (mg/L)	<0.25
Toluene (mg/L)	<0.00050
Total Hydrocarbons (C6-C50) (mg/L)	<0.40
Xylenes (mg/L)	<0.00075

G17 Summary of Sampling Requirements and Sample Dates at SNP 17 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP 17	Operations	Bi-Annual (during spring freshet and late summer or fall)	Flow, volume, physical parameters, major ions, nutrients, total and dissolved metals	No seepage observed in both June and September Seepage Sampling Events. No samples collected.
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G18 Summary of Sampling Requirements and Sample Dates at SNP 18 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-18	Operations (Discharge from Water Management Pond	Daily (during Discharge)	Flow (m^3/s) and Volume (m^3) at Lake N11 outlet	June 2 to August 14

G19 Summary of Sampling Requirements and Sample Dates at SNP 19 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-19	Construction (Drawdown of Kennaday Lake)	Daily (during Drawdown)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	NA
	Operations (Discharge from Water Management Pond	Daily (during Discharge)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	DSFM: June 2 to August 15 Discharge from Lake A1: August 16 to August 31

G20 Summary of Sampling Requirements and Sample Dates at SNP 20 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-20	Operations (During Discharge from the Water Management Pond)	Twice (at the beginning of Discharge period and on final day of Discharge period)	Toxicity	10-Aug

G20_A Summary of Toxicity Results at SNP-20

Endpoint	10-Aug-22
	% v/v (95% CL) or Mean ± SD)
Chronic Toxicity - Freshwater Algae (*P. subcapitata*)	
Cell Yields IC25	>91
Acute Toxicity - Fish (*C. dubia*)	
Survival LC50	>100
Reproduction IC25	>100
Acute Toxicity - Fish (*P. promelas)*	
Survival LC50	>100
Biomass IC25	>100
Acute Toxicity - Fish (*O. mykiss*)	
Survival LC50	>100
Acute Toxicity - Invertebrate (*D. magna*)	
Survival LC50	>100
Immobility EC50	>100

Note:
LC = lethal concentration; IC = inhibition concentration; EC = effective concentration; ND = No data

G21 Summary of Sampling Requirements and Sample Dates at SNP 21 in 2022

SNP Station	Program	Sampling Frequency	Sampling Parameters	2022 Sampling Dates
SNP-21	Operations (During Discharge to CP1)	Monthly	Physical parameters, major ions, nutrients, total metals, water elevation	Monthly throughout 2022

G21_A Summary of Monthly Water Quality Results at SNP-21

Station	SNP-21-MID	SNP-21-MID	SNP-21-MID	SNP-21-BOT	SNP-21-MID	SNP-21-2m	SNP-21-3m	SNP-21-6m	SNP-21-3m	SNP-21-5m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-2m	SNP-21-5m	SNP-21-3m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	5-Mar-2022	3-Apr-2022	13-May-2022	29-Jun-2022	29-Jun-2022	13-Jul-2022	13-Jul-2022	14-Aug-2022	1-Sep-2022	2-Sep-2022	3-Oct-2022	22-Nov-2022	22-Nov-2022	11-Dec-2022
Conductivity (µS/cm)	2430	2730	3220	4170	3490	3500	1530	4640	1630	4340	2010	2090	2090	2200	2530	3030	2750
pH	6.65	6.93	6.63	6.78	6.46	7.24	7.02	7.44	7.08	7.41	7.21	6.97	6.97	6.98	7.10	7.14	6.92
Total Suspended Solids (mg/L)	<1.0	2.50	1.70	2.90	1.40	3.50	5.10	5.90	2.50	5.10	2.90	4.10	4.10	8.90	5.80	5.10	3.70
Turbidity (NTU)	1.21	1.11	1.42	1.45	1.48	1.90	1.84	1.96	1.12	2.41	2.56	2.03	2.03	3.01	2.32	1.87	2.10
Alkalinity, Bicarbonate (mg/L)	14.70	16.10	17.00	20.40	17.40	16.80	9.40	30.40	8.90	22.70	9.30	8.70	8.70	8	9.30	15.50	10.10
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	14.70	16.10	17.00	20.40	17.40	16.80	9.40	30.40	8.90	22.70	9.30	8.70	8.70	8	9.30	15.50	10.10
Calcium (Ca)-Total (mg/L)	201	256	267	353	290	359	127	421	132	368	174	166	166	188	208	254	236
Chloride (mg/L)	624	749	838	1160	939	940	393	1230	420	1230	540	585	585	608	712	848	762
Fluoride (mg/L)	0.24	<0.500	0.26	0.28	0.26	<0.200	0.12	0.21	0.15	0.25	<0.200	0.18	0.18	<0.200	<0.200	<0.200	<0.200
Hardness (as CaCO3) (mg/L)	717	793	918	1150	1030	1090	420	1350	439	1150	579	569	569	625	726	841	781
Magnesium (Mg)-Total (mg/L)	42.40	54.70	54.10	66.30	55.60	66.40	25.00	73.30	27.20	69.00	34.30	36.20	36.20	37.70	42.70	49.00	47.40
Potassium (K)-Total (mg/L)	12.60	15.80	16.90	18.20	17.90	20.40	8.22	16.50	8.28	15.60	10.20	11.30	11.30	11.20	12.50	12.60	14.50
Silicate (as SiO2) (mg/L)	2.82	3.47	4.01	5.15	4.62	4.86	0.52	6.10	<0.50	4.56	0.83	0.82	0.82	0.98	1.30	2.94	62.70
Sodium (Na)-Total (mg/L)	196	220	263	358	270	325	119	409	128	358	163	179	179	175	205	251	236
Sulfate (mg/L)	188	217	234	242	247	242	98.90	229	105	246	130	138	138	136	160	172	180
TDS (mg/L)	1560	1750	2000	2420	1880	2420	1310	3580	1000	2580	2020	1890	1890	1610	1680	1850	1510
Ammonia, Total (as N) (mg/L)	1.83	1.91	2.44	4.39	2.75	2.74	0.64	3.11	0.56	2.96	0.61	0.48	0.48	0.34	0.36	0.70	0.39
Nitrate and Nitrite (mg/L)	11.10	13.10	13.50	11.80	14.90	13.50	4.97	7.96	5.05	9.91	5.74	5.47	5.47	5.68	6.63	5.61	6.93
Nitrate as Nitrogen (mg/L)	11.00	13.00	13.40	11.70	14.80	13.40	4.93	7.92	5.02	9.84	5.70	5.44	5.44	5.66	6.60	5.57	6.90
Nitrite as Nitrogen (mg/L)	0.06	0.06	0.08	0.11	0.08	0.09	0.04	0.04	0.03	0.07	0.04	0.03	0.03	0.02	0.03	0.04	0.03
Orthophosphate-Dissolved (as P) (mg/L)	0.00	0.00	0.00	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0014	0.00	0.00	0.00	0.00	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	0.00	<0.0020	0.00	0.00	0.00
Phosph (P)-Tot Dis (mg/L)	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	0.00	0.00	0.00	0.01
Phosph (P)-Tot Inorg (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Phosphorus - Total (mg/L)	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02
Total Kjeldahl Nitrogen (mg/L)	2.49	2.42	3.04	4.76	3.25	3.19	1.24	3.73	1.14	2.99	1.08	1.24	1.24	1.26	1.24	1.28	1.22
Total Organic Carbon (mg/L)	6.64	7.58	7.44	5.43	7.67	6.90	4.55	4.36	4.64	6.62	7.62	8.32	8.32	7.62	9.58	7.43	9.07
Aluminum (Al)-Total (mg/L)	0.08	0.09	0.11	0.10	0.12	0.15	0.05	0.08	0.02	0.08	0.04	0.04	0.04	0.12	0.05	0.05	0.05
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	0.00	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Total (mg/L)	0.08	0.10	0.12	0.10	0.11	0.12	0.05	0.10	0.05	0.10	0.07	0.08	0.08	0.08	0.09	0.08	0.11
Beryllium (Be)-Total (mg/L)	0.00	0.00	<0.000040	<0.000040	<0.000040	<0.000040	<0.000100	<0.000100	<0.000020	<0.000040	<0.000020	<0.000100	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000100	<0.000050	<0.000100	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	0.52	0.60	0.62	0.75	0.73	0.80	0.29	0.78	0.27	0.68	0.36	0.39	0.39	0.41	0.47	0.52	0.58
Cadmium (Cd)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cesium (Cs)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Total (mg/L)	<0.00010	0.00	0.00	0.00	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	0.00	<0.00010	<0.00050	<0.00050	0.00	<0.00010	0.00	0.00
Cobalt (Co)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper (Cu)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iron (Fe)-Total (mg/L)	0.24	0.20	0.28	0.24	0.33	0.39	0.24	0.30	0.07	0.33	0.09	0.16	0.16	0.28	0.15	0.14	0.15
Lead (Pb)-Total (mg/L)	<0.000030	<0.000030	<0.000060	<0.000060	<0.000060	<0.000060	0.00	<0.000100	<0.000030	<0.000060	<0.000030	<0.000050	<0.000050	0.00	<0.000030	0.00	<0.000030
Lithium (Li)-Total (mg/L)	0.04	0.05	0.06	0.07	0.06	0.06	0.03	0.07	0.03	0.06	0.03	0.03	0.03	0.03	0.04	0.05	0.04
Manganese (Mn)-Total (mg/L)	0.69	0.93	1.04	0.65	1.14	1.23	0.55	0.86	0.44	1.16	0.37	0.41	0.41	0.40	0.47	0.38	0.56
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Nickel (Ni)-Total (mg/L)	0.04	0.06	0.06	0.05	0.07	0.07	0.03	0.04	0.03	0.05	0.03	0.03	0.03	0.03	0.04	0.03	0.04
Rubidium (Rb)-Total (mg/L)	0.02	0.02	0.02	0.03	0.02	0.03	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Total (mg/L)	0.00	0.00	<0.000100	<0.000100	0.00	0.00	<0.000100	<0.000100	0.00	<0.000100	0.00	<0.000100	<0.000100	0.00	0.00	<0.000050	0.00
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000020	<0.000010	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00	<0.000010
Strontium (Sr)-Total (mg/L)	3.90	4.83	5.41	7.71	5.90	6.67	2.48	8.51	2.54	7.55	3.37	3.48	3.48	3.90	4.22	5.32	4.74
Sulfur (S)-Total (mg/L)	72.50	78.60	86.90	87.90	90.80	96.20	39.80	103	39.10	89.60	50.30	52.90	52.90	53.40	64.50	70.40	72.50
Tellurium (Te)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station	SNP-21-MID	SNP-21-MID	SNP-21-MID	SNP-21-BOT	SNP-21-MID	SNP-21-2m	SNP-21-3m	SNP-21-6m	SNP-21-3m	SNP-21-5m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-2m	SNP-21-5m	SNP-21-3m
Date	10-Jan-2022	7-Feb-2022	5-Mar-2022	5-Mar-2022	3-Apr-2022	13-May-2022	29-Jun-2022	29-Jun-2022	13-Jul-2022	13-Jul-2022	14-Aug-2022	1-Sep-2022	2-Sep-2022	3-Oct-2022	22-Nov-2022	22-Nov-2022	11-Dec-2022
Thallium (Tl)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.000050	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	0.00	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.000050	<0.000050	<0.000100	<0.000100	<0.000100	<0.000100	0.00	0.00	0.00	0.00	<0.000050	0.00	0.00	0.00	<0.000050	<0.000050	<0.000050
Titanium (Ti)-Total (mg/L)	0.00	0.00	<0.00060	0.00	<0.00060	<0.00060	<0.0100	<0.0100	<0.00030	<0.00060	0.00	<0.0100	<0.0100	0.00	0.00	0.00	<0.00090
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00050	<0.00100	<0.00050	<0.00100	<0.00100	0.00	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.04	0.05	0.05	0.03	0.05	0.06	0.02	0.03	0.01	0.04	0.01	0.01	0.01	0.02	0.02	0.02	0.03
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00040	<0.00020	<0.00040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Aluminum (Al)-Dissolved (mg/L)	0.04	0.06	0.08	0.04	0.08	0.08	0.01	0.03	0.01	0.03	0.01	0.01	0.01	0.02	0.02	0.02	0.01
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00
Arsenic (As)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.00020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Dissolved (mg/L)	0.08	0.11	0.12	0.10	0.12	0.13	0.05	0.09	0.05	0.10	0.06	0.08	0.08	0.08	0.09	0.08	0.10
Beryllium (Be)-Dissolved (mg/L)	<0.000020	0.00	0.00	<0.000040	<0.000040	0.00	<0.000100	<0.000100	<0.000020	<0.000040	<0.000100	<0.000100	<0.000100	<0.000020	<0.000040	<0.000040	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000100	<0.000100	<0.000050	<0.000050	<0.000100	<0.000050	<0.000100	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100	<0.000100	<0.000050
Boron (B)-Dissolved (mg/L)	0.50	0.52	0.58	0.69	0.75	0.73	0.28	0.78	0.28	0.68	0.36	0.38	0.38	0.44	0.51	0.54	0.47
Cadmium (Cd)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcium (Ca)-Dissolved (mg/L)	216	234	275	356	306	332	122	398	132	356	177	170	170	187	220	258	241
Cesium (Cs)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020	<0.00100	0.00	<0.00050	<0.00050	<0.00010	<0.00020	<0.00010	<0.00050	<0.00050	<0.00010	<0.00020	<0.00020	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper (Cu)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iron (Fe)-Dissolved (mg/L)	0.08	0.07	0.10	0.07	0.09	0.09	0.04	0.03	0.01	0.04	0.03	0.03	0.03	0.08	0.09	0.06	0.07
Lead (Pb)-Dissolved (mg/L)	<0.000030	<0.000030	<0.000030	<0.000060	<0.000060	<0.000030	<0.000050	<0.000100	<0.000030	<0.000060	<0.000030	<0.000050	<0.000050	<0.000030	<0.000060	<0.000060	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.04	0.05	0.06	0.07	0.06	0.07	0.03	0.07	0.02	0.05	0.03	0.03	0.03	0.03	0.04	0.05	0.04
Magnesium (Mg)-Dissolved (mg/L)	43.10	50.60	56.30	64.50	65.60	63.30	25.10	69.40	26.50	64.20	33.30	35.10	35.10	38.30	43.00	47.80	43.60
Manganese (Mn)-Dissolved (mg/L)	0.71	0.92	1.08	0.65	1.24	1.30	0.46	0.79	0.33	1.05	0.31	0.35	0.35	0.37	0.46	0.36	0.52
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Nickel (Ni)-Dissolved (mg/L)	0.04	0.06	0.06	0.04	0.07	0.07	0.03	0.04	0.03	0.05	0.03	0.03	0.03	0.03	0.04	0.03	0.04
Phosphorus - Dissolved (mg/L)	<0.010	<0.010	0.01	<0.020	<0.020	<0.010	<0.300	<0.300	<0.010	<0.020	<0.010	<0.300	<0.300	<0.010	<0.020	<0.020	0.01
Potassium (K)-Dissolved (mg/L)	13.90	15.80	18.10	18.40	20.30	18.70	8.52	16.30	7.83	15.60	10.10	11.00	11.00	11	13.40	13.10	13.00
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.03	0.03	0.03	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Dissolved (mg/L)	0.00	0.00	0.00	<0.000100	<0.000100	0.00	<0.000050	<0.000100	<0.000050	<0.000100	<0.000050	0.00	0.00	0.00	<0.000100	<0.000100	0.00
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000010	<0.000010	<0.000020	<0.000010	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000010
Sodium (Na)-Dissolved (mg/L)	193	216	265	347	294	302	120	385	122	326	156	174	174	183	208	246	222
Strontium (Sr)-Dissolved (mg/L)	4.17	4.60	5.61	7.81	6.13	6.41	2.52	8.28	2.55	7.17	3.35	3.49	3.49	3.73	4.31	5.46	4.88
Sulfur (S)-Dissolved (mg/L)	70.00	75.00	91.40	89.90	100	96.90	41.20	106	39.10	86.40	52.00	51.50	51.50	53.20	60.90	64.30	66.30
Tellurium (Te)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.00020	0.00	<0.00020	0.00	<0.00020	0.00	0.00	0.00	<0.00040	<0.00040	0.00
Thallium (Tl)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000100	<0.000100	<0.000050	0.00	<0.00020	0.00	0.00	<0.000050	0.00	0.00	0.00	<0.000100	<0.000100	<0.000050
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00060	<0.00060	<0.00030	<0.0100	<0.0100	<0.00030	<0.00060	<0.0100	<0.0100	<0.0100	<0.00030	<0.00060	<0.00060	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010
Uranium (U)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00100	<0.00100	<0.00050	<0.00100	<0.00100	<0.00050	<0.00100	<0.00100	<0.00100	<0.00100	<0.00050	<0.00100	<0.00100	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.03	0.04	0.05	0.03	0.05	0.06	0.01	0.03	0.01	0.04	0.01	0.01	0.01	0.02	0.02	0.02	0.03
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00040	<0.00060	<0.00030	<0.00020	<0.00040	<0.00030	<0.00040	<0.00030	<0.00020	<0.00020	<0.00030	<0.00060	<0.00060	<0.00030

G21_B Water Surface Elevations at SNP-21 (Collection Pond 1)

Date	Monthly Average Water Elevation (masl)
Jan-2022	417.27
Feb-2022	417.31
Mar-2022	417.36
Apr-2022	417.40
May-2022	417.65
Jun-2022	417.84
Jul-2022	417.72
Aug-2022	417.69
Sep-2022	418.00
Oct-2022	418.15
Nov-2022	418.20
Dec-2022	418.21

G_MET_A Mean, Minimum and Maximum Daily Temperatures at the Gahcho Kué Mine in 2022

	Temperature (°C)		
Date	Mean	Min	Max
1-Jan-2022	-34.8	-38.2	-31.2
2-Jan-2022	-35.5	-38.6	-33.8
3-Jan-2022	-31.9	-35.6	-28.1
4-Jan-2022	-30.1	-35.0	-26.6
5-Jan-2022	-34.7	-36.5	-31.4
6-Jan-2022	-27.9	-33.0	-23.9
7-Jan-2022	-30.2	-34.5	-24.0
8-Jan-2022	-31.7	-34.7	-29.6
9-Jan-2022	-34.0	-35.8	-30.7
10-Jan-2022	-31.4	-35.0	-28.4
11-Jan-2022	-33.8	-35.2	-31.6
12-Jan-2022	-31.5	-34.2	-25.8
13-Jan-2022	-22.0	-27.1	-20.0
14-Jan-2022	-19.5	-26.0	-13.8
15-Jan-2022	-32.5	-35.9	-25.9
16-Jan-2022	-37.6	-39.7	-35.3
17-Jan-2022	-38.0	-39.8	-35.4
18-Jan-2022	-31.8	-36.7	-28.8
19-Jan-2022	-31.1	-34.5	-27.0
20-Jan-2022	-26.5	-28.4	-24.9
21-Jan-2022	-32.8	-34.9	-26.5
22-Jan-2022	-34.9	-36.9	-33.0
23-Jan-2022	-35.0	-37.0	-32.7
24-Jan-2022	-32.5	-35.2	-26.6
25-Jan-2022	-22.1	-30.9	-18.2
26-Jan-2022	-28.7	-33.2	-19.9
27-Jan-2022	-23.6	-30.1	-17.7
28-Jan-2022	-28.1	-32.1	-25.7
29-Jan-2022	-32.6	-35.5	-29.7
30-Jan-2022	-31.7	-36.0	-28.1
31-Jan-2022	-32.4	-36.0	-29.5
1-Feb-2022	-34.1	-37.4	-30.8
2-Feb-2022	-36.4	-38.4	-33.8
3-Feb-2022	-34.4	-38.0	-31.5
4-Feb-2022	-34.4	-36.4	-31.3
5-Feb-2022	-33.9	-36.6	-30.0
6-Feb-2022	-28.5	-32.2	-21.3
7-Feb-2022	-21.2	-27.7	-18.3
8-Feb-2022	-30.9	-33.1	-27.6
9-Feb-2022	-33.7	-36.1	-29.5
10-Feb-2022	-38.1	-39.8	-36.0
11-Feb-2022	-32.2	-39.7	-28.5
12-Feb-2022	-34.4	-38.2	-31.1
13-Feb-2022	-35.5	-38.9	-30.5
14-Feb-2022	-31.0	-36.0	-27.5
15-Feb-2022	-35.5	-38.4	-28.1
16-Feb-2022	-35.3	-37.1	-33.0
17-Feb-2022	-32.5	-36.6	-28.5
18-Feb-2022	-32.3	-35.8	-30.1
19-Feb-2022	-37.2	-39.5	-35.0
20-Feb-2022	-36.6	-39.8	-32.4
21-Feb-2022	-34.5	-38.3	-30.1

Date	Temperature (°C)		
	Mean	Min	Max
22-Feb-2022	-30.7	-33.7	-26.7
23-Feb-2022	-28.3	-33.5	-23.5
24-Feb-2022	-20.8	-24.5	-16.1
25-Feb-2022	-26.3	-29.8	-22.4
26-Feb-2022	-30.2	-32.4	-27.7
27-Feb-2022	-29.5	-33.6	-24.2
28-Feb-2022	-27.8	-31.3	-23.2
1-Mar-2022	-32.1	-34.9	-29.4
2-Mar-2022	-27.0	-32.1	-20.2
3-Mar-2022	-24.1	-29.0	-16.2
4-Mar-2022	-15.2	-23.8	-10.7
5-Mar-2022	-16.2	-20.7	-11.9
6-Mar-2022	-18.4	-24.5	-13.8
7-Mar-2022	-18.0	-24.2	-13.2
8-Mar-2022	-22.6	-24.8	-20.4
9-Mar-2022	-24.9	-30.7	-20.3
10-Mar-2022	-28.5	-32.4	-21.9
11-Mar-2022	-20.2	-23.9	-18.1
12-Mar-2022	-25.0	-27.2	-23.1
13-Mar-2022	-27.5	-30.8	-24.5
14-Mar-2022	-25.5	-30.4	-20.6
15-Mar-2022	-23.3	-26.9	-19.6
16-Mar-2022	-21.8	-26.4	-17.3
17-Mar-2022	-16.4	-20.8	-12.0
18-Mar-2022	-21.7	-24.7	-17.9
19-Mar-2022	-16.8	-23.5	-10.1
20-Mar-2022	-14.0	-20.9	-7.4
21-Mar-2022	-6.8	-11.7	-4.1
22-Mar-2022	-17.1	-24.0	-11.1
23-Mar-2022	-20.5	-22.7	-19.1
24-Mar-2022	-25.6	-33.9	-20.9
25-Mar-2022	-33.5	-37.4	-29.7
26-Mar-2022	-29.1	-35.5	-22.4
27-Mar-2022	-27.0	-33.1	-20.7
28-Mar-2022	-24.7	-29.6	-20.0
29-Mar-2022	-21.6	-28.5	-16.0
30-Mar-2022	-26.2	-31.2	-21.8
31-Mar-2022	-18.1	-25.0	-10.3
1-Apr-2022	-28.5	-32.4	-21.2
2-Apr-2022	-25.8	-32.7	-20.2
3-Apr-2022	-20.1	-23.4	-15.9
4-Apr-2022	-11.7	-21.4	-6.1
5-Apr-2022	-2.6	-8.2	2.7
6-Apr-2022	-7.3	-11.3	-3.3
7-Apr-2022	-5.0	-11.5	2.7
8-Apr-2022	-6.5	-13.0	-2.1
9-Apr-2022	-13.0	-17.1	-7.7
10-Apr-2022	-18.9	-22.0	-17.0
11-Apr-2022	-21.5	-26.8	-19.4
12-Apr-2022	-25.2	-29.9	-21.3
13-Apr-2022	-21.2	-27.0	-15.1
14-Apr-2022	-15.1	-21.4	-10.1
15-Apr-2022	-19.0	-24.8	-11.8

Date	Temperature (°C)		
	Mean	Min	Max
16-Apr-2022	-24.6	-29.0	-21.3
17-Apr-2022	-20.3	-26.7	-14.7
18-Apr-2022	-14.7	-17.1	-11.2
19-Apr-2022	-13.8	-20.3	-9.0
20-Apr-2022	-16.0	-21.0	-13.2
21-Apr-2022	-9.1	-22.4	-1.3
22-Apr-2022	-14.0	-19.9	-6.1
23-Apr-2022	-19.5	-23.1	-15.3
24-Apr-2022	-15.0	-22.7	-7.0
25-Apr-2022	-9.1	-16.0	-1.7
26-Apr-2022	-5.2	-11.3	0.6
27-Apr-2022	-5.7	-11.2	-0.1
28-Apr-2022	-8.5	-12.9	-4.5
29-Apr-2022	-13.0	-18.1	-9.7
30-Apr-2022	-12.1	-20.2	-4.1
1-May-2022	-7.0	-15.5	1.3
2-May-2022	-5.7	-13.3	0.6
3-May-2022	-5.0	-11.3	0.6
4-May-2022	-2.0	-6.5	1.7
5-May-2022	3.8	-1.1	9.1
6-May-2022	2.1	-1.3	5.4
7-May-2022	-0.8	-2.3	0.6
8-May-2022	-6.8	-9.8	-2.2
9-May-2022	-9.7	-11.3	-8.2
10-May-2022	-6.4	-8.6	-4.5
11-May-2022	-5.3	-7.2	-2.8
12-May-2022	-0.7	-4.8	4.0
13-May-2022	-0.1	-4.8	4.4
14-May-2022	-0.3	-5.2	4.0
15-May-2022	-0.8	-4.2	1.8
16-May-2022	0.1	-1.8	3.0
17-May-2022	-1.4	-4.4	2.1
18-May-2022	-3.7	-6.7	0.6
19-May-2022	0.1	-8.2	6.1
20-May-2022	5.0	-4.4	12.8
21-May-2022	2.6	-2.6	7.4
22-May-2022	-4.5	-5.8	-2.4
23-May-2022	-1.3	-5.9	4.2
24-May-2022	3.0	-3.6	8.7
25-May-2022	6.4	-0.4	11.9
26-May-2022	8.0	-0.7	15.3
27-May-2022	10.1	4.2	16.3
28-May-2022	7.8	1.2	11.6
29-May-2022	4.4	-1.5	10.0
30-May-2022	3.9	0.4	9.0
31-May-2022	7.7	-1.7	16.0
1-Jun-2022	4.8	-0.5	11.4
2-Jun-2022	6.7	-1.2	14.8
3-Jun-2022	11.1	4.3	19.7
4-Jun-2022	15.1	7.2	22.8
5-Jun-2022	14.5	6.6	21.1
6-Jun-2022	15.6	6.4	22.3
7-Jun-2022	18.3	9.5	23.8

Date	Temperature (°C)		
	Mean	Min	Max
8-Jun-2022	18.3	9.5	26.4
9-Jun-2022	19.7	11.8	25.5
10-Jun-2022	18.9	11.3	26.5
11-Jun-2022	17.3	8.1	23.9
12-Jun-2022	14.4	8.2	19.2
13-Jun-2022	15.3	10.2	21.2
14-Jun-2022	16.2	9.0	22.4
15-Jun-2022	10.4	4.9	13.9
16-Jun-2022	7.1	2.9	12.0
17-Jun-2022	11.2	4.8	17.8
18-Jun-2022	13.3	7.6	19.7
19-Jun-2022	13.3	7.3	18.6
20-Jun-2022	13.3	5.8	22.5
21-Jun-2022	10.0	5.0	14.8
22-Jun-2022	12.3	5.8	16.9
23-Jun-2022	14.4	7.7	20.9
24-Jun-2022	13.6	9.2	18.1
25-Jun-2022	13.3	7.7	19.8
26-Jun-2022	9.4	6.3	14.7
27-Jun-2022	11.4	4.6	16.4
28-Jun-2022	10.3	2.3	15.4
29-Jun-2022	6.1	1.2	12.1
30-Jun-2022	10.6	3.2	16.4
1-Jul-2022	ND	ND	ND
2-Jul-2022	ND	ND	ND
3-Jul-2022	ND	ND	ND
4-Jul-2022	ND	ND	ND
5-Jul-2022	ND	ND	ND
6-Jul-2022	ND	ND	ND
7-Jul-2022	ND	ND	ND
8-Jul-2022	ND	ND	ND
9-Jul-2022	ND	ND	ND
10-Jul-2022	ND	ND	ND
11-Jul-2022	ND	ND	ND
12-Jul-2022	ND	ND	ND
13-Jul-2022	17.2	12.4	22.7
14-Jul-2022	13.7	12.0	16.2
15-Jul-2022	13.8	11.1	17.3
16-Jul-2022	10.1	8.1	13.1
17-Jul-2022	12.7	8.4	16.8
18-Jul-2022	16.5	12.4	22.1
19-Jul-2022	12.4	10.9	16.0
20-Jul-2022	11.3	10.1	13.0
21-Jul-2022	13.6	8.5	18.5
22-Jul-2022	16.2	8.9	22.0
23-Jul-2022	17.3	10.8	23.2
24-Jul-2022	16.4	11.9	21.8
25-Jul-2022	14.8	11.5	19.0
26-Jul-2022	15.8	9.8	21.5
27-Jul-2022	16.7	11.7	24.1
28-Jul-2022	13.1	10.2	18.0
29-Jul-2022	12.3	8.1	17.5
30-Jul-2022	12.0	9.0	16.3

Date	Temperature (°C)		
	Mean	Min	Max
31-Jul-2022	10.9	7.0	15.2
1-Aug-2022	12.0	7.1	17.1
2-Aug-2022	10.1	6.6	14.3
3-Aug-2022	10.1	7.2	14.2
4-Aug-2022	10.6	6.4	14.7
5-Aug-2022	11.3	8.4	15.3
6-Aug-2022	12.8	8.0	18.1
7-Aug-2022	12.9	9.0	18.2
8-Aug-2022	12.5	7.0	18.2
9-Aug-2022	14.4	7.5	20.3
10-Aug-2022	16.6	9.6	24.3
11-Aug-2022	12.2	7.5	16.2
12-Aug-2022	15.6	9.7	21.8
13-Aug-2022	17.5	10.8	23.7
14-Aug-2022	19.1	10.6	25.9
15-Aug-2022	20.8	12.5	28.1
16-Aug-2022	18.7	15.5	23.3
17-Aug-2022	18.3	12.7	24.5
18-Aug-2022	19.9	13.9	25.6
19-Aug-2022	17.9	11.7	23.3
20-Aug-2022	12.9	10.4	16.5
21-Aug-2022	11.1	6.4	16.0
22-Aug-2022	10.9	2.2	16.0
23-Aug-2022	6.8	1.5	11.8
24-Aug-2022	9.4	6.1	14.3
25-Aug-2022	12.1	7.7	18.2
26-Aug-2022	14.7	10.6	23.6
27-Aug-2022	11.6	7.4	16.0
28-Aug-2022	8.8	6.8	10.9
29-Aug-2022	7.1	5.1	10.3
30-Aug-2022	6.6	2.7	11.2
31-Aug-2022	6.5	4.5	8.8
1-Sep-2022	5.1	3.4	7.6
2-Sep-2022	7.8	1.8	12.9
3-Sep-2022	12.9	5.0	20.1
4-Sep-2022	14.0	6.7	21.0
5-Sep-2022	13.6	11.0	18.1
6-Sep-2022	8.1	5.7	11.2
7-Sep-2022	6.0	4.8	7.2
8-Sep-2022	3.8	2.9	5.7
9-Sep-2022	4.6	3.4	7.0
10-Sep-2022	4.1	2.2	6.7
11-Sep-2022	3.8	1.8	6.1
12-Sep-2022	4.0	1.4	7.4
13-Sep-2022	6.7	3.0	12.7
14-Sep-2022	9.0	2.6	17.3
15-Sep-2022	5.1	2.4	9.0
16-Sep-2022	10.5	4.0	18.1
17-Sep-2022	7.3	4.1	11.0
18-Sep-2022	7.2	1.0	13.5
19-Sep-2022	7.3	2.8	12.4
20-Sep-2022	6.0	3.1	10.5
21-Sep-2022	7.5	1.0	13.2

Date	Temperature (°C)		
	Mean	Min	Max
22-Sep-2022	9.9	4.7	15.5
23-Sep-2022	9.4	7.1	12.5
24-Sep-2022	2.7	-0.7	8.4
25-Sep-2022	0.8	-1.7	3.7
26-Sep-2022	3.9	0.3	9.4
27-Sep-2022	10.1	4.5	16.7
28-Sep-2022	4.6	0.1	8.5
29-Sep-2022	0.5	-2.7	4.3
30-Sep-2022	3.6	-3.0	9.0
1-Oct-2022	9.2	6.5	12.4
2-Oct-2022	6.2	-0.4	11.4
3-Oct-2022	-0.1	-4.0	4.8
4-Oct-2022	-3.4	-4.4	-1.6
5-Oct-2022	-3.5	-5.6	0.0
6-Oct-2022	2.5	-2.6	6.6
7-Oct-2022	3.1	0.7	5.6
8-Oct-2022	4.4	0.3	9.0
9-Oct-2022	5.7	2.1	9.3
10-Oct-2022	5.7	3.0	9.0
11-Oct-2022	1.3	-0.9	4.6
12-Oct-2022	-1.9	-3.2	-0.3
13-Oct-2022	-2.8	-7.9	0.3
14-Oct-2022	-0.4	-4.0	2.1
15-Oct-2022	-5.1	-6.2	-3.9
16-Oct-2022	-4.7	-6.7	-2.8
17-Oct-2022	-0.1	-2.8	3.3
18-Oct-2022	1.6	0.1	4.0
19-Oct-2022	0.9	-0.6	3.2
20-Oct-2022	-0.5	-4.1	3.0
21-Oct-2022	-5.9	-8.4	-4.0
22-Oct-2022	-6.8	-8.3	-5.2
23-Oct-2022	-6.7	-8.3	-4.6
24-Oct-2022	-4.4	-7.2	-2.0
25-Oct-2022	-7.1	-11.3	-4.3
26-Oct-2022	-8.4	-10.5	-4.2
27-Oct-2022	-3.8	-7.0	-1.8
28-Oct-2022	-9.1	-12.7	-7.0
29-Oct-2022	-12.8	-16.3	-10.9
30-Oct-2022	-12.3	-16.1	-10.6
31-Oct-2022	-19.4	-21.9	-16.0
1-Nov-2022	-18.8	-22.0	-17.5
2-Nov-2022	-18.6	-20.3	-17.6
3-Nov-2022	-18.0	-22.7	-15.4
4-Nov-2022	-13.9	-17.2	-12.0
5-Nov-2022	-17.6	-21.9	-15.3
6-Nov-2022	-22.2	-24.8	-19.1
7-Nov-2022	-22.3	-25.0	-17.6
8-Nov-2022	-16.8	-21.7	-13.5
9-Nov-2022	-20.5	-23.9	-16.3
10-Nov-2022	-22.8	-24.9	-20.1
11-Nov-2022	-17.9	-25.6	-12.0
12-Nov-2022	-8.9	-12.1	-7.4
13-Nov-2022	-7.3	-9.6	-3.7

Date	Temperature (°C)		
	Mean	Min	Max
14-Nov-2022	-14.5	-16.6	-7.3
15-Nov-2022	-9.4	-14.3	-4.4
16-Nov-2022	-19.3	-22.7	-12.8
17-Nov-2022	-10.6	-16.2	-5.7
18-Nov-2022	-9.7	-13.3	-5.4
19-Nov-2022	-5.7	-7.2	-4.6
20-Nov-2022	-9.1	-12.0	-4.6
21-Nov-2022	-13.4	-17.1	-12.0
22-Nov-2022	-10.7	-12.5	-9.5
23-Nov-2022	-13.0	-15.0	-10.1
24-Nov-2022	-12.3	-14.9	-9.6
25-Nov-2022	-10.1	-15.0	-8.0
26-Nov-2022	-16.9	-21.1	-13.9
27-Nov-2022	-14.4	-20.0	-12.3
28-Nov-2022	-26.5	-32.7	-19.9
29-Nov-2022	-31.4	-33.7	-28.4
30-Nov-2022	-28.9	-30.8	-26.8
1-Dec-2022	-27.0	-30.3	-24.2
2-Dec-2022	-33.4	-39.3	-26.6
3-Dec-2022	-33.3	-39.3	-26.3
4-Dec-2022	-32.5	-36.2	-26.0
5-Dec-2022	-32.4	-33.8	-30.6
6-Dec-2022	-28.4	-31.6	-27.2
7-Dec-2022	-30.5	-35.0	-27.2
8-Dec-2022	-27.3	-30.1	-23.9
9-Dec-2022	-21.7	-24.0	-20.7
10-Dec-2022	-20.6	-21.3	-19.8
11-Dec-2022	-22.9	-26.2	-20.1
12-Dec-2022	-24.2	-27.3	-20.7
13-Dec-2022	-15.9	-22.6	-12.9
14-Dec-2022	-17.8	-22.8	-14.5
15-Dec-2022	-19.5	-22.0	-15.7
16-Dec-2022	-23.2	-26.8	-19.3
17-Dec-2022	-27.6	-33.2	-19.7
18-Dec-2022	-32.5	-33.6	-31.2
19-Dec-2022	-32.8	-34.8	-31.3
20-Dec-2022	-33.7	-37.6	-30.0
21-Dec-2022	-32.8	-35.4	-30.5
22-Dec-2022	-33.6	-35.0	-31.9
23-Dec-2022	-34.6	-37.6	-30.6
24-Dec-2022	-33.8	-36.1	-31.7
25-Dec-2022	-36.0	-37.8	-33.7
26-Dec-2022	-34.3	-35.7	-32.8
27-Dec-2022	-27.1	-33.1	-22.0
28-Dec-2022	-18.8	-22.0	-17.6
29-Dec-2022	-17.8	-18.4	-16.7
30-Dec-2022	-15.6	-16.9	-14.8
31-Dec-2022	-15.4	-18.6	-14.3

Note: ND = No Data

G_MET_B Daily Precipitation at the Gahcho Kué Mine in 2022

Date	Precipitation (mm)
1-Jan-2022	0.00
2-Jan-2022	0.00
3-Jan-2022	0.00
4-Jan-2022	0.00
5-Jan-2022	0.00
6-Jan-2022	0.00
7-Jan-2022	0.00
8-Jan-2022	0.00
9-Jan-2022	0.00
10-Jan-2022	0.00
11-Jan-2022	0.00
12-Jan-2022	0.00
13-Jan-2022	0.00
14-Jan-2022	0.00
15-Jan-2022	0.00
16-Jan-2022	0.00
17-Jan-2022	0.00
18-Jan-2022	0.00
19-Jan-2022	0.00
20-Jan-2022	0.00
21-Jan-2022	0.00
22-Jan-2022	0.00
23-Jan-2022	0.00
24-Jan-2022	0.00
25-Jan-2022	0.91
26-Jan-2022	0.00
27-Jan-2022	0.00
28-Jan-2022	0.00
29-Jan-2022	0.00
30-Jan-2022	0.00
31-Jan-2022	0.00
1-Feb-2022	0.00
2-Feb-2022	0.00
3-Feb-2022	0.00
4-Feb-2022	0.00
5-Feb-2022	0.00
6-Feb-2022	0.00
7-Feb-2022	0.00
8-Feb-2022	0.00
9-Feb-2022	0.00
10-Feb-2022	0.00
11-Feb-2022	0.00
12-Feb-2022	0.00
13-Feb-2022	0.00
14-Feb-2022	0.00
15-Feb-2022	0.00
16-Feb-2022	0.00
17-Feb-2022	0.00
18-Feb-2022	0.00
19-Feb-2022	0.00
20-Feb-2022	0.00
21-Feb-2022	0.00

Date	Precipitation (mm)
22-Feb-2022	0.00
23-Feb-2022	0.00
24-Feb-2022	0.00
25-Feb-2022	0.00
26-Feb-2022	0.00
27-Feb-2022	3.23
28-Feb-2022	0.00
1-Mar-2022	0.00
2-Mar-2022	0.00
3-Mar-2022	0.00
4-Mar-2022	0.00
5-Mar-2022	0.00
6-Mar-2022	5.21
7-Mar-2022	0.00
8-Mar-2022	0.20
9-Mar-2022	0.00
10-Mar-2022	0.00
11-Mar-2022	0.00
12-Mar-2022	0.00
13-Mar-2022	0.29
14-Mar-2022	0.00
15-Mar-2022	0.00
16-Mar-2022	0.00
17-Mar-2022	0.00
18-Mar-2022	0.00
19-Mar-2022	0.00
20-Mar-2022	0.00
21-Mar-2022	1.29
22-Mar-2022	0.44
23-Mar-2022	3.24
24-Mar-2022	0.00
25-Mar-2022	0.00
26-Mar-2022	0.00
27-Mar-2022	0.00
28-Mar-2022	0.00
29-Mar-2022	0.10
30-Mar-2022	0.00
31-Mar-2022	0.00
1-Apr-2022	0.00
2-Apr-2022	0.00
3-Apr-2022	0.00
4-Apr-2022	0.00
5-Apr-2022	0.00
6-Apr-2022	0.00
7-Apr-2022	0.00
8-Apr-2022	0.99
9-Apr-2022	14.19
10-Apr-2022	1.85
11-Apr-2022	0.00
12-Apr-2022	0.00
13-Apr-2022	0.00
14-Apr-2022	0.00
15-Apr-2022	0.00

Date	Precipitation (mm)
16-Apr-2022	0.00
17-Apr-2022	0.00
18-Apr-2022	0.00
19-Apr-2022	0.00
20-Apr-2022	0.00
21-Apr-2022	0.00
22-Apr-2022	0.00
23-Apr-2022	0.00
24-Apr-2022	0.00
25-Apr-2022	0.00
26-Apr-2022	0.00
27-Apr-2022	0.00
28-Apr-2022	0.00
29-Apr-2022	0.00
30-Apr-2022	0.00
1-May-2022	0.00
2-May-2022	0.00
3-May-2022	0.00
4-May-2022	0.00
5-May-2022	0.00
6-May-2022	0.00
7-May-2022	14.85
8-May-2022	17.39
9-May-2022	17.86
10-May-2022	0.15
11-May-2022	0.00
12-May-2022	0.00
13-May-2022	0.00
14-May-2022	0.00
15-May-2022	0.00
16-May-2022	0.00
17-May-2022	0.00
18-May-2022	0.00
19-May-2022	0.00
20-May-2022	0.00
21-May-2022	0.75
22-May-2022	0.00
23-May-2022	0.00
24-May-2022	0.00
25-May-2022	0.00
26-May-2022	0.00
27-May-2022	0.00
28-May-2022	0.00
29-May-2022	0.00
30-May-2022	0.00
31-May-2022	0.00
1-Jun-2022	0.00
2-Jun-2022	0.00
3-Jun-2022	1.17
4-Jun-2022	0.00
5-Jun-2022	0.00
6-Jun-2022	0.00
7-Jun-2022	0.00

Date	Precipitation (mm)
8-Jun-2022	0.00
9-Jun-2022	0.00
10-Jun-2022	0.00
11-Jun-2022	0.78
12-Jun-2022	0.00
13-Jun-2022	0.63
14-Jun-2022	0.00
15-Jun-2022	0.00
16-Jun-2022	0.00
17-Jun-2022	0.08
18-Jun-2022	0.00
19-Jun-2022	0.00
20-Jun-2022	0.33
21-Jun-2022	0.76
22-Jun-2022	0.00
23-Jun-2022	0.00
24-Jun-2022	0.00
25-Jun-2022	2.52
26-Jun-2022	0.18
27-Jun-2022	0.00
28-Jun-2022	0.76
29-Jun-2022	0.00
30-Jun-2022	0.00
1-Jul-2022	0.00
2-Jul-2022	0.00
3-Jul-2022	0.00
4-Jul-2022	0.00
5-Jul-2022	0.00
6-Jul-2022	0.00
7-Jul-2022	0.00
8-Jul-2022	0.00
9-Jul-2022	4.07
10-Jul-2022	0.00
11-Jul-2022	0.00
12-Jul-2022	7.75
13-Jul-2022	0.00
14-Jul-2022	4.25
15-Jul-2022	0.00
16-Jul-2022	15.52
17-Jul-2022	11.20
18-Jul-2022	0.47
19-Jul-2022	0.61
20-Jul-2022	19.54
21-Jul-2022	0.00
22-Jul-2022	0.00
23-Jul-2022	0.00
24-Jul-2022	0.00
25-Jul-2022	0.00
26-Jul-2022	3.05
27-Jul-2022	0.00
28-Jul-2022	0.78
29-Jul-2022	0.00
30-Jul-2022	1.37

Date	Precipitation (mm)
31-Jul-2022	0.00
1-Aug-2022	0.00
2-Aug-2022	0.17
3-Aug-2022	0.00
4-Aug-2022	3.76
5-Aug-2022	0.00
6-Aug-2022	0.00
7-Aug-2022	0.00
8-Aug-2022	0.00
9-Aug-2022	0.00
10-Aug-2022	0.00
11-Aug-2022	0.00
12-Aug-2022	0.00
13-Aug-2022	0.00
14-Aug-2022	0.00
15-Aug-2022	0.00
16-Aug-2022	0.08
17-Aug-2022	0.00
18-Aug-2022	0.00
19-Aug-2022	0.00
20-Aug-2022	7.28
21-Aug-2022	0.41
22-Aug-2022	0.42
23-Aug-2022	0.86
24-Aug-2022	3.34
25-Aug-2022	0.00
26-Aug-2022	3.01
27-Aug-2022	0.00
28-Aug-2022	1.71
29-Aug-2022	0.82
30-Aug-2022	0.00
31-Aug-2022	14.82
1-Sep-2022	0.31
2-Sep-2022	0.00
3-Sep-2022	0.00
4-Sep-2022	0.00
5-Sep-2022	0.73
6-Sep-2022	3.92
7-Sep-2022	0.50
8-Sep-2022	7.85
9-Sep-2022	0.00
10-Sep-2022	2.66
11-Sep-2022	2.30
12-Sep-2022	0.27
13-Sep-2022	0.69
14-Sep-2022	0.00
15-Sep-2022	0.00
16-Sep-2022	0.00
17-Sep-2022	0.00
18-Sep-2022	0.00
19-Sep-2022	0.00
20-Sep-2022	0.00
21-Sep-2022	0.00

Date	Precipitation (mm)
22-Sep-2022	0.00
23-Sep-2022	3.38
24-Sep-2022	0.00
25-Sep-2022	0.00
26-Sep-2022	0.00
27-Sep-2022	0.13
28-Sep-2022	0.00
29-Sep-2022	0.00
30-Sep-2022	0.00
1-Oct-2022	0.00
2-Oct-2022	3.39
3-Oct-2022	0.00
4-Oct-2022	0.00
5-Oct-2022	0.00
6-Oct-2022	0.00
7-Oct-2022	1.83
8-Oct-2022	0.00
9-Oct-2022	0.00
10-Oct-2022	3.38
11-Oct-2022	0.00
12-Oct-2022	1.97
13-Oct-2022	29.30
14-Oct-2022	0.19
15-Oct-2022	0.00
16-Oct-2022	0.00
17-Oct-2022	0.00
18-Oct-2022	0.00
19-Oct-2022	5.44
20-Oct-2022	4.10
21-Oct-2022	0.00
22-Oct-2022	0.00
23-Oct-2022	0.00
24-Oct-2022	0.10
25-Oct-2022	0.00
26-Oct-2022	2.07
27-Oct-2022	1.31
28-Oct-2022	1.80
29-Oct-2022	0.00
30-Oct-2022	0.49
31-Oct-2022	0.00
1-Nov-2022	0.62
2-Nov-2022	0.00
3-Nov-2022	0.00
4-Nov-2022	0.15
5-Nov-2022	0.00
6-Nov-2022	0.00
7-Nov-2022	0.00
8-Nov-2022	0.10
9-Nov-2022	0.00
10-Nov-2022	0.00
11-Nov-2022	0.00
12-Nov-2022	2.13
13-Nov-2022	0.63

Date	Precipitation (mm)
14-Nov-2022	0.00
15-Nov-2022	1.70
16-Nov-2022	0.00
17-Nov-2022	0.38
18-Nov-2022	0.86
19-Nov-2022	0.00
20-Nov-2022	0.00
21-Nov-2022	0.00
22-Nov-2022	0.61
23-Nov-2022	0.62
24-Nov-2022	0.00
25-Nov-2022	1.80
26-Nov-2022	0.00
27-Nov-2022	0.00
28-Nov-2022	0.00
29-Nov-2022	0.00
30-Nov-2022	0.00
1-Dec-2022	0.00
2-Dec-2022	0.00
3-Dec-2022	0.18
4-Dec-2022	0.00
5-Dec-2022	0.00
6-Dec-2022	0.23
7-Dec-2022	0.00
8-Dec-2022	0.26
9-Dec-2022	0.15
10-Dec-2022	0.63
11-Dec-2022	0.00
12-Dec-2022	0.11
13-Dec-2022	0.00
14-Dec-2022	0.00
15-Dec-2022	0.00
16-Dec-2022	0.00
17-Dec-2022	0.00
18-Dec-2022	0.00
19-Dec-2022	0.00
20-Dec-2022	0.00
21-Dec-2022	0.00
22-Dec-2022	0.00
23-Dec-2022	0.00
24-Dec-2022	0.00
25-Dec-2022	0.00
26-Dec-2022	0.00
27-Dec-2022	0.00
28-Dec-2022	0.00
29-Dec-2022	0.19
30-Dec-2022	0.34
31-Dec-2022	1.49

Notes: The total monthly precipitation has been adjusted for the catch efficiency of the precipitation gauge
ND = No data available

G_MET_C Summary Results of Kennady Lake Evaporation Monitoring in 2022

Basis of Calculation	Evaporation Value (mm)				
	Jun 1 to Jun 30[(a)]	Jul 1 to Jul 31[(a)]	Aug 1 to Aug 31[(a)]	Sep 1 to Sep 30 [(a)]	1-Oct
Penman Combined Method	82.4	99.6	76.4	-3.8	-11
Priestly-Taylor Method	83	98.5	67.2	-14.2	-18
Estimated Baseline Average Monthly Value	38.1	106.7	82.7	57.5	0

Note: [(a)]Full monthly value

G_MET_D Summary of Hourly Wind Speed and Direction in 2022

Date	Wind Direction (°)	Wind speed (km/h)
1/1/22 0:00	341.60	4.55
1/1/22 1:00	342.10	2.92
1/1/22 2:00	301.80	0.74
1/1/22 3:00	301.20	3.05
1/1/22 4:00	345.40	2.07
1/1/22 5:00	27.50	0.65
1/1/22 6:00	240.20	0.52
1/1/22 7:00	350.90	1.59
1/1/22 8:00	334.40	2.00
1/1/22 9:00	21.50	1.05
1/1/22 10:00	289.80	0.90
1/1/22 11:00	2.44	1.67
1/1/22 12:00	337.90	1.55
1/1/22 13:00	37.39	2.88
1/1/22 14:00	358.40	1.72
1/1/22 15:00	27.78	2.82
1/1/22 16:00	27.08	2.84
1/1/22 17:00	28.95	2.94
1/1/22 18:00	30.44	3.12
1/1/22 19:00	24.25	2.64
1/1/22 20:00	28.72	3.78
1/1/22 21:00	29.92	4.09
1/1/22 22:00	14.30	3.37
1/1/22 23:00	20.54	4.13
1/2/22 0:00	20.99	4.57
1/2/22 1:00	19.60	4.28
1/2/22 2:00	7.20	3.77
1/2/22 3:00	11.15	4.37
1/2/22 4:00	11.47	4.85
1/2/22 5:00	3.18	4.96
1/2/22 6:00	355.40	4.98
1/2/22 7:00	350.00	5.18
1/2/22 8:00	347.80	4.40
1/2/22 9:00	358.60	5.55
1/2/22 10:00	356.40	6.38
1/2/22 11:00	351.50	6.75
1/2/22 12:00	346.50	7.49
1/2/22 13:00	350.30	5.97
1/2/22 14:00	335.10	5.42
1/2/22 15:00	342.30	6.11
1/2/22 16:00	328.50	5.43
1/2/22 17:00	316.00	5.92
1/2/22 18:00	313.30	5.94
1/2/22 19:00	323.80	6.16
1/2/22 20:00	327.80	6.08
1/2/22 21:00	318.90	6.45
1/2/22 22:00	307.60	6.69
1/2/22 23:00	321.60	8.63
1/3/22 0:00	320.70	7.20
1/3/22 1:00	320.80	7.26
1/3/22 2:00	317.00	7.60
1/3/22 3:00	314.40	8.61
1/3/22 4:00	322.90	8.95
1/3/22 5:00	330.30	8.86
1/3/22 6:00	322.10	6.97
1/3/22 7:00	308.20	6.84
1/3/22 8:00	324.70	7.54
1/3/22 9:00	322.40	6.98
1/3/22 10:00	326.10	7.36
1/3/22 11:00	306.60	7.56
1/3/22 12:00	318.90	7.87
1/3/22 13:00	316.20	7.59
1/3/22 14:00	328.80	8.83
1/3/22 15:00	334.80	8.62
1/3/22 16:00	330.80	7.69
1/3/22 17:00	340.40	7.39
1/3/22 18:00	343.60	6.30
1/3/22 19:00	345.00	6.62
1/3/22 20:00	347.70	6.46
1/3/22 21:00	339.70	6.21

Date	Wind Direction (°)	Wind speed (km/h)
1/3/22 22:00	346.90	6.51
1/3/22 23:00	342.10	6.67
1/4/22 0:00	343.70	6.38
1/4/22 1:00	347.30	6.38
1/4/22 2:00	358.10	6.87
1/4/22 3:00	358.90	6.43
1/4/22 4:00	355.20	5.63
1/4/22 5:00	333.50	5.00
1/4/22 6:00	321.30	5.09
1/4/22 7:00	317.50	5.12
1/4/22 8:00	310.00	5.31
1/4/22 9:00	322.90	4.90
1/4/22 10:00	311.50	4.59
1/4/22 11:00	300.20	4.34
1/4/22 12:00	275.90	4.64
1/4/22 13:00	286.30	5.10
1/4/22 14:00	281.10	5.60
1/4/22 15:00	286.70	6.02
1/4/22 16:00	283.50	5.25
1/4/22 17:00	289.60	6.72
1/4/22 18:00	273.60	4.83
1/4/22 19:00	272.10	5.32
1/4/22 20:00	272.70	5.34
1/4/22 21:00	289.60	7.08
1/4/22 22:00	292.60	9.13
1/4/22 23:00	286.60	7.37
1/5/22 0:00	285.60	9.28
1/5/22 1:00	288.00	10.45
1/5/22 2:00	283.50	9.46
1/5/22 3:00	282.80	9.04
1/5/22 4:00	273.80	6.04
1/5/22 5:00	286.40	14.45
1/5/22 6:00	283.90	14.79
1/5/22 7:00	280.40	15.89
1/5/22 8:00	276.10	13.49
1/5/22 9:00	279.80	15.04
1/5/22 10:00	285.10	17.40
1/5/22 11:00	274.90	16.28
1/5/22 12:00	270.60	12.50
1/5/22 13:00	278.10	19.25
1/5/22 14:00	284.20	20.89
1/5/22 15:00	272.80	16.96
1/5/22 16:00	273.10	18.21
1/5/22 17:00	267.20	17.66
1/5/22 18:00	263.40	20.66
1/5/22 19:00	263.90	20.32
1/5/22 20:00	254.10	21.05
1/5/22 21:00	252.20	20.08
1/5/22 22:00	252.80	19.70
1/5/22 23:00	250.20	22.45
1/6/22 0:00	237.80	24.03
1/6/22 1:00	235.80	25.00
1/6/22 2:00	235.00	29.16
1/6/22 3:00	233.90	36.04
1/6/22 4:00	226.60	42.16
1/6/22 5:00	230.00	41.36
1/6/22 6:00	227.80	40.46
1/6/22 7:00	228.30	39.78
1/6/22 8:00	231.70	39.89
1/6/22 9:00	233.40	38.59
1/6/22 10:00	243.90	30.89
1/6/22 11:00	239.10	33.77
1/6/22 12:00	243.90	31.39
1/6/22 13:00	253.80	31.18
1/6/22 14:00	255.20	30.38
1/6/22 15:00	255.50	29.12
1/6/22 16:00	249.10	23.53
1/6/22 17:00	248.40	24.49
1/6/22 18:00	246.60	21.80
1/6/22 19:00	255.30	26.74
1/6/22 20:00	249.60	21.26

Date	Wind Direction (°)	Wind speed (km/h)
1/6/22 21:00	260.50	25.17
1/6/22 22:00	269.70	19.40
1/6/22 23:00	274.40	17.85
1/7/22 0:00	256.90	20.10
1/7/22 1:00	268.50	20.19
1/7/22 2:00	282.20	20.35
1/7/22 3:00	290.60	16.38
1/7/22 4:00	306.70	17.10
1/7/22 5:00	285.40	10.27
1/7/22 6:00	290.90	15.83
1/7/22 7:00	304.30	18.78
1/7/22 8:00	296.10	17.88
1/7/22 9:00	292.70	19.19
1/7/22 10:00	286.60	16.77
1/7/22 11:00	280.10	18.32
1/7/22 12:00	278.10	18.44
1/7/22 13:00	299.50	27.21
1/7/22 14:00	283.50	17.83
1/7/22 15:00	274.30	12.95
1/7/22 16:00	272.50	16.02
1/7/22 17:00	265.50	15.75
1/7/22 18:00	270.70	13.15
1/7/22 19:00	270.70	16.78
1/7/22 20:00	276.90	18.51
1/7/22 21:00	290.20	19.73
1/7/22 22:00	273.80	19.21
1/7/22 23:00	268.20	17.82
1/8/22 0:00	266.50	17.58
1/8/22 1:00	279.80	19.83
1/8/22 2:00	291.70	23.68
1/8/22 3:00	292.50	20.73
1/8/22 4:00	288.30	19.70
1/8/22 5:00	284.30	15.94
1/8/22 6:00	275.30	15.29
1/8/22 7:00	281.70	17.69
1/8/22 8:00	285.70	21.63
1/8/22 9:00	295.40	24.19
1/8/22 10:00	303.90	27.60
1/8/22 11:00	295.60	25.27
1/8/22 12:00	295.60	25.30
1/8/22 13:00	301.10	32.04
1/8/22 14:00	293.20	28.46
1/8/22 15:00	294.20	27.31
1/8/22 16:00	290.90	25.83
1/8/22 17:00	281.30	21.37
1/8/22 18:00	285.70	26.16
1/8/22 19:00	296.60	29.38
1/8/22 20:00	304.20	30.64
1/8/22 21:00	306.10	38.81
1/8/22 22:00	306.00	32.33
1/8/22 23:00	301.30	28.94
1/9/22 0:00	301.20	29.95
1/9/22 1:00	298.70	28.05
1/9/22 2:00	293.30	30.38
1/9/22 3:00	298.00	32.83
1/9/22 4:00	299.20	32.76
1/9/22 5:00	300.50	32.33
1/9/22 6:00	299.80	34.67
1/9/22 7:00	297.30	31.46
1/9/22 8:00	298.80	32.69
1/9/22 9:00	298.80	33.26
1/9/22 10:00	295.90	28.53
1/9/22 11:00	295.90	23.81
1/9/22 12:00	275.70	15.40
1/9/22 13:00	282.70	21.51
1/9/22 14:00	291.50	23.96
1/9/22 15:00	287.20	19.83
1/9/22 16:00	288.30	21.05
1/9/22 17:00	288.00	21.65
1/9/22 18:00	273.60	19.72
1/9/22 19:00	289.70	26.26

Date	Wind Direction (°)	Wind speed (km/h)
1/9/22 20:00	275.70	22.29
1/9/22 21:00	269.50	19.63
1/9/22 22:00	270.20	23.50
1/9/22 23:00	268.20	19.93
1/10/22 0:00	278.50	22.17
1/10/22 1:00	263.00	21.32
1/10/22 2:00	257.70	20.28
1/10/22 3:00	252.60	23.62
1/10/22 4:00	257.60	26.23
1/10/22 5:00	269.40	20.04
1/10/22 6:00	261.70	21.40
1/10/22 7:00	260.70	21.75
1/10/22 8:00	245.50	16.09
1/10/22 9:00	252.80	16.83
1/10/22 10:00	253.60	18.89
1/10/22 11:00	261.20	17.69
1/10/22 12:00	261.60	15.04
1/10/22 13:00	255.00	14.42
1/10/22 14:00	265.80	16.96
1/10/22 15:00	273.90	18.48
1/10/22 16:00	283.40	16.70
1/10/22 17:00	288.20	13.62
1/10/22 18:00	280.80	14.86
1/10/22 19:00	290.90	19.23
1/10/22 20:00	283.40	15.96
1/10/22 21:00	292.80	19.51
1/10/22 22:00	293.40	18.79
1/10/22 23:00	293.40	18.33
1/11/22 0:00	312.50	23.49
1/11/22 1:00	324.20	22.34
1/11/22 2:00	322.50	19.22
1/11/22 3:00	316.60	15.78
1/11/22 4:00	314.20	19.99
1/11/22 5:00	307.70	20.44
1/11/22 6:00	304.10	20.66
1/11/22 7:00	308.80	20.53
1/11/22 8:00	304.40	20.21
1/11/22 9:00	308.20	20.23
1/11/22 10:00	306.40	16.70
1/11/22 11:00	315.00	13.40
1/11/22 12:00	295.40	14.21
1/11/22 13:00	286.40	19.41
1/11/22 14:00	286.60	21.52
1/11/22 15:00	275.80	13.41
1/11/22 16:00	275.70	16.42
1/11/22 17:00	286.00	20.06
1/11/22 18:00	283.30	19.20
1/11/22 19:00	270.50	15.66
1/11/22 20:00	271.60	11.39
1/11/22 21:00	279.10	10.51
1/11/22 22:00	271.70	13.28
1/11/22 23:00	269.20	13.53
1/12/22 0:00	272.80	13.34
1/12/22 1:00	268.40	16.46
1/12/22 2:00	278.70	14.18
1/12/22 3:00	276.80	10.88
1/12/22 4:00	286.40	14.58
1/12/22 5:00	278.30	6.55
1/12/22 6:00	293.80	7.56
1/12/22 7:00	324.30	7.60
1/12/22 8:00	283.40	10.85
1/12/22 9:00	292.40	14.50
1/12/22 10:00	307.00	12.31
1/12/22 11:00	309.10	13.20
1/12/22 12:00	303.80	9.14
1/12/22 13:00	313.30	9.44
1/12/22 14:00	308.10	8.82
1/12/22 15:00	312.60	8.92
1/12/22 16:00	298.40	11.14
1/12/22 17:00	303.00	7.55
1/12/22 18:00	353.10	3.02

Date	Wind Direction (°)	Wind speed (km/h)
1/12/22 19:00	118.90	5.97
1/12/22 20:00	199.10	8.04
1/12/22 21:00	264.50	4.45
1/12/22 22:00	194.20	7.65
1/12/22 23:00	220.20	8.64
1/13/22 0:00	221.90	7.12
1/13/22 1:00	202.90	12.87
1/13/22 2:00	206.80	10.66
1/13/22 3:00	209.50	13.34
1/13/22 4:00	224.40	11.85
1/13/22 5:00	216.60	18.21
1/13/22 6:00	216.00	21.78
1/13/22 7:00	213.80	19.15
1/13/22 8:00	223.00	14.26
1/13/22 9:00	216.60	17.41
1/13/22 10:00	227.30	17.74
1/13/22 11:00	256.00	17.94
1/13/22 12:00	257.60	17.49
1/13/22 13:00	263.80	16.94
1/13/22 14:00	274.10	15.22
1/13/22 15:00	277.80	13.22
1/13/22 16:00	262.90	10.45
1/13/22 17:00	277.30	12.10
1/13/22 18:00	280.80	13.50
1/13/22 19:00	266.30	10.68
1/13/22 20:00	273.50	10.14
1/13/22 21:00	245.50	9.07
1/13/22 22:00	245.70	10.10
1/13/22 23:00	229.80	8.92
1/14/22 0:00	217.70	13.00
1/14/22 1:00	246.60	21.86
1/14/22 2:00	232.40	22.98
1/14/22 3:00	217.80	21.89
1/14/22 4:00	222.50	22.20
1/14/22 5:00	214.60	21.82
1/14/22 6:00	203.30	24.81
1/14/22 7:00	194.20	25.54
1/14/22 8:00	203.60	21.53
1/14/22 9:00	197.20	22.94
1/14/22 10:00	193.10	28.91
1/14/22 11:00	196.90	26.59
1/14/22 12:00	193.40	32.44
1/14/22 13:00	198.50	35.89
1/14/22 14:00	208.50	34.24
1/14/22 15:00	239.30	27.35
1/14/22 16:00	258.60	25.60
1/14/22 17:00	277.20	20.09
1/14/22 18:00	293.90	24.63
1/14/22 19:00	312.90	21.78
1/14/22 20:00	336.00	23.32
1/14/22 21:00	4.61	27.15
1/14/22 22:00	18.56	26.86
1/14/22 23:00	23.59	23.53
1/15/22 0:00	22.24	27.23
1/15/22 1:00	14.17	19.24
1/15/22 2:00	19.35	21.26
1/15/22 3:00	18.28	17.82
1/15/22 4:00	20.41	17.31
1/15/22 5:00	28.28	16.52
1/15/22 6:00	37.88	19.55
1/15/22 7:00	32.88	15.42
1/15/22 8:00	29.75	16.19
1/15/22 9:00	33.93	17.96
1/15/22 10:00	34.60	18.68
1/15/22 11:00	30.80	18.58
1/15/22 12:00	18.09	8.29
1/15/22 13:00	6.36	11.84
1/15/22 14:00	5.62	12.09
1/15/22 15:00	8.23	13.74
1/15/22 16:00	341.30	11.76
1/15/22 17:00	349.70	13.29

Date	Wind Direction (°)	Wind speed (km/h)
1/15/22 18:00	355.00	8.11
1/15/22 19:00	323.30	9.82
1/15/22 20:00	310.10	13.34
1/15/22 21:00	307.60	12.90
1/15/22 22:00	308.90	10.90
1/15/22 23:00	318.30	13.32
1/16/22 0:00	332.00	13.26
1/16/22 1:00	322.30	14.34
1/16/22 2:00	328.50	10.93
1/16/22 3:00	327.90	10.48
1/16/22 4:00	335.10	9.91
1/16/22 5:00	323.90	8.73
1/16/22 6:00	336.30	10.00
1/16/22 7:00	342.70	8.61
1/16/22 8:00	346.10	6.70
1/16/22 9:00	334.20	11.67
1/16/22 10:00	331.20	12.97
1/16/22 11:00	328.80	11.40
1/16/22 12:00	310.60	12.06
1/16/22 13:00	321.90	11.13
1/16/22 14:00	315.10	9.10
1/16/22 15:00	328.50	8.99
1/16/22 16:00	334.20	7.53
1/16/22 17:00	331.90	9.32
1/16/22 18:00	322.10	9.54
1/16/22 19:00	344.30	9.76
1/16/22 20:00	348.00	9.91
1/16/22 21:00	347.30	9.61
1/16/22 22:00	4.90	7.97
1/16/22 23:00	340.40	7.15
1/17/22 0:00	291.70	11.20
1/17/22 1:00	319.60	7.10
1/17/22 2:00	358.40	9.95
1/17/22 3:00	333.60	8.48
1/17/22 4:00	300.60	10.77
1/17/22 5:00	333.90	11.75
1/17/22 6:00	337.10	8.66
1/17/22 7:00	341.60	8.64
1/17/22 8:00	327.70	10.68
1/17/22 9:00	305.70	13.46
1/17/22 10:00	328.30	14.62
1/17/22 11:00	317.40	12.14
1/17/22 12:00	322.90	11.06
1/17/22 13:00	333.70	12.83
1/17/22 14:00	338.10	10.98
1/17/22 15:00	331.50	10.50
1/17/22 16:00	328.50	12.82
1/17/22 17:00	326.10	12.77
1/17/22 18:00	322.00	11.40
1/17/22 19:00	317.60	13.08
1/17/22 20:00	316.10	13.82
1/17/22 21:00	313.80	14.12
1/17/22 22:00	317.60	14.88
1/17/22 23:00	311.70	15.05
1/18/22 0:00	310.70	14.91
1/18/22 1:00	308.20	13.45
1/18/22 2:00	312.00	16.30
1/18/22 3:00	306.20	16.76
1/18/22 4:00	312.20	17.54
1/18/22 5:00	311.80	18.70
1/18/22 6:00	313.90	19.52
1/18/22 7:00	314.90	16.69
1/18/22 8:00	319.30	15.39
1/18/22 9:00	328.60	15.17
1/18/22 10:00	323.80	14.10
1/18/22 11:00	320.00	15.75
1/18/22 12:00	324.40	15.39
1/18/22 13:00	313.60	18.03
1/18/22 14:00	306.70	15.19
1/18/22 15:00	308.30	15.72
1/18/22 16:00	299.90	17.51

Date	Wind Direction (°)	Wind speed (km/h)
1/18/22 17:00	298.40	13.42
1/18/22 18:00	300.00	12.86
1/18/22 19:00	291.90	13.41
1/18/22 20:00	283.10	14.05
1/18/22 21:00	276.70	9.58
1/18/22 22:00	273.80	5.75
1/18/22 23:00	279.20	13.97
1/19/22 0:00	266.50	6.28
1/19/22 1:00	255.50	7.08
1/19/22 2:00	248.90	10.21
1/19/22 3:00	244.60	14.34
1/19/22 4:00	251.20	15.02
1/19/22 5:00	240.50	15.05
1/19/22 6:00	235.00	10.71
1/19/22 7:00	238.30	11.41
1/19/22 8:00	239.80	14.09
1/19/22 9:00	223.50	14.18
1/19/22 10:00	200.60	14.37
1/19/22 11:00	193.60	15.25
1/19/22 12:00	199.70	17.24
1/19/22 13:00	203.80	14.77
1/19/22 14:00	197.90	18.47
1/19/22 15:00	197.60	17.86
1/19/22 16:00	199.50	19.13
1/19/22 17:00	192.60	17.59
1/19/22 18:00	173.70	6.94
1/19/22 19:00	189.50	14.32
1/19/22 20:00	185.50	19.45
1/19/22 21:00	198.10	20.91
1/19/22 22:00	208.10	20.13
1/19/22 23:00	196.60	16.53
1/20/22 0:00	195.20	11.70
1/20/22 1:00	199.30	15.20
1/20/22 2:00	201.60	12.70
1/20/22 3:00	207.60	10.00
1/20/22 4:00	201.60	9.27
1/20/22 5:00	196.20	8.28
1/20/22 6:00	171.60	4.44
1/20/22 7:00	194.30	3.95
1/20/22 8:00	208.00	4.05
1/20/22 9:00	242.40	2.15
1/20/22 10:00	18.42	1.85
1/20/22 11:00	24.01	6.79
1/20/22 12:00	40.66	10.22
1/20/22 13:00	37.75	8.12
1/20/22 14:00	9.66	13.88
1/20/22 15:00	16.05	19.40
1/20/22 16:00	17.49	22.48
1/20/22 17:00	25.06	27.01
1/20/22 18:00	24.18	32.15
1/20/22 19:00	20.18	32.33
1/20/22 20:00	9.48	32.65
1/20/22 21:00	0.58	32.90
1/20/22 22:00	357.90	34.70
1/20/22 23:00	351.30	37.12
1/21/22 0:00	349.10	31.64
1/21/22 1:00	339.60	33.23
1/21/22 2:00	331.00	34.13
1/21/22 3:00	327.40	36.83
1/21/22 4:00	326.60	33.98
1/21/22 5:00	326.30	31.90
1/21/22 6:00	327.70	33.05
1/21/22 7:00	325.40	27.96
1/21/22 8:00	314.90	26.51
1/21/22 9:00	308.10	25.95
1/21/22 10:00	298.70	24.99
1/21/22 11:00	294.70	25.53
1/21/22 12:00	290.00	24.89
1/21/22 13:00	289.60	30.64
1/21/22 14:00	273.80	23.94
1/21/22 15:00	272.50	20.20

Date	Wind Direction (°)	Wind speed (km/h)
1/21/22 16:00	276.80	25.02
1/21/22 17:00	270.70	20.56
1/21/22 18:00	280.20	28.14
1/21/22 19:00	286.90	25.17
1/21/22 20:00	302.10	27.30
1/21/22 21:00	327.30	21.95
1/21/22 22:00	332.60	19.03
1/21/22 23:00	311.30	16.92
1/22/22 0:00	314.60	19.14
1/22/22 1:00	322.60	17.42
1/22/22 2:00	327.60	16.89
1/22/22 3:00	300.40	19.18
1/22/22 4:00	299.90	15.00
1/22/22 5:00	293.10	12.11
1/22/22 6:00	291.90	17.29
1/22/22 7:00	285.10	12.87
1/22/22 8:00	283.90	14.12
1/22/22 9:00	277.90	15.45
1/22/22 10:00	292.00	17.04
1/22/22 11:00	309.30	15.78
1/22/22 12:00	295.10	12.63
1/22/22 13:00	276.90	14.73
1/22/22 14:00	283.70	20.20
1/22/22 15:00	280.80	20.21
1/22/22 16:00	292.00	18.29
1/22/22 17:00	289.80	12.15
1/22/22 18:00	288.90	12.76
1/22/22 19:00	258.50	5.59
1/22/22 20:00	288.40	12.27
1/22/22 21:00	296.90	15.96
1/22/22 22:00	334.20	16.11
1/22/22 23:00	343.10	14.62
1/23/22 0:00	348.70	10.73
1/23/22 1:00	336.60	8.58
1/23/22 2:00	319.30	9.46
1/23/22 3:00	329.80	10.86
1/23/22 4:00	329.00	11.96
1/23/22 5:00	337.10	9.77
1/23/22 6:00	345.10	9.58
1/23/22 7:00	351.40	12.52
1/23/22 8:00	328.70	11.55
1/23/22 9:00	313.00	13.42
1/23/22 10:00	328.60	14.26
1/23/22 11:00	314.30	12.80
1/23/22 12:00	305.40	9.63
1/23/22 13:00	304.40	12.23
1/23/22 14:00	315.10	12.27
1/23/22 15:00	329.40	11.47
1/23/22 16:00	327.30	10.25
1/23/22 17:00	305.30	11.98
1/23/22 18:00	300.40	12.87
1/23/22 19:00	298.80	13.41
1/23/22 20:00	306.90	12.67
1/23/22 21:00	310.70	13.30
1/23/22 22:00	313.20	12.94
1/23/22 23:00	312.40	11.72
1/24/22 0:00	307.40	12.90
1/24/22 1:00	306.40	12.39
1/24/22 2:00	317.90	12.28
1/24/22 3:00	309.40	11.99
1/24/22 4:00	302.50	11.84
1/24/22 5:00	307.60	10.56
1/24/22 6:00	305.20	10.78
1/24/22 7:00	313.10	12.52
1/24/22 8:00	314.70	11.73
1/24/22 9:00	314.50	11.56
1/24/22 10:00	316.00	9.98
1/24/22 11:00	305.50	8.73
1/24/22 12:00	303.60	9.54
1/24/22 13:00	292.00	12.45
1/24/22 14:00	295.40	9.80

Date	Wind Direction (°)	Wind speed (km/h)
1/24/22 15:00	283.10	8.67
1/24/22 16:00	254.90	4.74
1/24/22 17:00	235.60	6.55
1/24/22 18:00	230.80	5.34
1/24/22 19:00	220.00	6.83
1/24/22 20:00	220.60	9.54
1/24/22 21:00	219.60	10.87
1/24/22 22:00	218.40	16.89
1/24/22 23:00	213.70	18.18
1/25/22 0:00	213.40	15.35
1/25/22 1:00	204.50	15.96
1/25/22 2:00	197.30	15.69
1/25/22 3:00	190.30	13.86
1/25/22 4:00	186.50	19.56
1/25/22 5:00	186.10	17.48
1/25/22 6:00	197.90	24.57
1/25/22 7:00	207.20	26.18
1/25/22 8:00	205.70	19.95
1/25/22 9:00	186.80	8.85
1/25/22 10:00	184.10	7.59
1/25/22 11:00	199.90	6.94
1/25/22 12:00	205.60	0.06
1/25/22 13:00	0.00	0.00
1/25/22 14:00	0.00	0.00
1/25/22 15:00	338.10	2.26
1/25/22 16:00	353.30	12.66
1/25/22 17:00	342.30	19.38
1/25/22 18:00	357.30	18.91
1/25/22 19:00	13.26	22.01
1/25/22 20:00	17.86	20.83
1/25/22 21:00	13.05	19.89
1/25/22 22:00	26.86	21.00
1/25/22 23:00	27.85	22.98
1/26/22 0:00	28.35	22.76
1/26/22 1:00	29.71	22.58
1/26/22 2:00	26.29	23.54
1/26/22 3:00	26.77	24.60
1/26/22 4:00	37.07	26.93
1/26/22 5:00	46.76	22.12
1/26/22 6:00	43.95	20.83
1/26/22 7:00	31.51	18.47
1/26/22 8:00	25.00	14.59
1/26/22 9:00	26.76	11.13
1/26/22 10:00	17.81	15.18
1/26/22 11:00	20.08	15.41
1/26/22 12:00	20.36	19.00
1/26/22 13:00	331.60	10.94
1/26/22 14:00	312.30	13.64
1/26/22 15:00	327.20	12.54
1/26/22 16:00	311.90	8.69
1/26/22 17:00	269.50	7.06
1/26/22 18:00	248.70	10.00
1/26/22 19:00	223.20	7.91
1/26/22 20:00	209.80	10.98
1/26/22 21:00	236.70	21.49
1/26/22 22:00	229.90	22.22
1/26/22 23:00	237.00	24.13
1/27/22 0:00	251.50	23.21
1/27/22 1:00	272.40	21.61
1/27/22 2:00	281.50	23.64
1/27/22 3:00	286.80	19.77
1/27/22 4:00	303.30	20.70
1/27/22 5:00	299.70	23.73
1/27/22 6:00	310.20	26.50
1/27/22 7:00	324.40	29.12
1/27/22 8:00	310.90	22.20
1/27/22 9:00	297.70	19.72
1/27/22 10:00	291.60	22.79
1/27/22 11:00	300.10	24.61
1/27/22 12:00	295.50	21.03
1/27/22 13:00	297.20	16.76

Date	Wind Direction (°)	Wind speed (km/h)
1/27/22 14:00	286.60	14.90
1/27/22 15:00	273.10	8.88
1/27/22 16:00	282.70	10.61
1/27/22 17:00	283.50	7.88
1/27/22 18:00	285.30	15.33
1/27/22 19:00	302.40	16.43
1/27/22 20:00	304.90	15.84
1/27/22 21:00	308.20	14.74
1/27/22 22:00	302.10	16.41
1/27/22 23:00	311.00	14.84
1/28/22 0:00	295.90	13.69
1/28/22 1:00	308.40	10.35
1/28/22 2:00	335.50	8.99
1/28/22 3:00	294.10	12.29
1/28/22 4:00	293.70	8.76
1/28/22 5:00	315.50	7.08
1/28/22 6:00	336.60	8.55
1/28/22 7:00	343.50	5.16
1/28/22 8:00	42.58	4.62
1/28/22 9:00	127.80	2.97
1/28/22 10:00	149.60	2.37
1/28/22 11:00	118.50	5.27
1/28/22 12:00	70.82	5.80
1/28/22 13:00	97.40	4.98
1/28/22 14:00	42.18	4.04
1/28/22 15:00	350.90	5.85
1/28/22 16:00	8.71	9.33
1/28/22 17:00	18.06	9.37
1/28/22 18:00	14.00	7.94
1/28/22 19:00	336.50	8.73
1/28/22 20:00	349.30	12.24
1/28/22 21:00	348.60	11.35
1/28/22 22:00	342.90	9.83
1/28/22 23:00	322.10	7.83
1/29/22 0:00	310.80	9.82
1/29/22 1:00	314.00	9.26
1/29/22 2:00	290.50	8.64
1/29/22 3:00	280.60	7.42
1/29/22 4:00	286.60	8.14
1/29/22 5:00	292.30	10.02
1/29/22 6:00	284.80	10.77
1/29/22 7:00	279.00	8.38
1/29/22 8:00	280.30	8.57
1/29/22 9:00	259.20	8.01
1/29/22 10:00	267.80	12.35
1/29/22 11:00	277.60	11.45
1/29/22 12:00	273.70	13.73
1/29/22 13:00	282.20	13.80
1/29/22 14:00	287.60	15.42
1/29/22 15:00	290.40	15.81
1/29/22 16:00	312.30	14.79
1/29/22 17:00	301.20	16.79
1/29/22 18:00	309.80	16.37
1/29/22 19:00	318.30	13.24
1/29/22 20:00	312.10	16.72
1/29/22 21:00	301.90	13.49
1/29/22 22:00	314.00	12.94
1/29/22 23:00	315.10	9.68
1/30/22 0:00	312.70	11.10
1/30/22 1:00	316.20	8.29
1/30/22 2:00	284.00	6.74
1/30/22 3:00	280.90	7.25
1/30/22 4:00	293.20	9.24
1/30/22 5:00	283.50	10.48
1/30/22 6:00	301.90	12.85
1/30/22 7:00	309.60	11.65
1/30/22 8:00	300.30	11.13
1/30/22 9:00	291.20	11.19
1/30/22 10:00	292.90	11.30
1/30/22 11:00	286.50	9.40
1/30/22 12:00	276.90	9.34

Date	Wind Direction (°)	Wind speed (km/h)
1/30/22 13:00	286.50	11.28
1/30/22 14:00	289.00	9.43
1/30/22 15:00	286.90	12.17
1/30/22 16:00	287.70	13.29
1/30/22 17:00	297.50	11.58
1/30/22 18:00	302.50	11.28
1/30/22 19:00	304.10	12.24
1/30/22 20:00	305.10	10.21
1/30/22 21:00	297.70	8.75
1/30/22 22:00	282.20	10.29
1/30/22 23:00	304.20	11.76
1/31/22 0:00	311.80	12.53
1/31/22 1:00	305.90	13.79
1/31/22 2:00	315.20	12.45
1/31/22 3:00	305.60	11.15
1/31/22 4:00	305.20	14.88
1/31/22 5:00	306.20	20.05
1/31/22 6:00	311.60	21.18
1/31/22 7:00	312.40	18.19
1/31/22 8:00	302.70	17.68
1/31/22 9:00	298.50	22.37
1/31/22 10:00	293.20	22.02
1/31/22 11:00	295.60	20.05
1/31/22 12:00	298.30	18.34
1/31/22 13:00	301.20	20.33
1/31/22 14:00	309.60	22.86
1/31/22 15:00	299.60	18.58
1/31/22 16:00	293.70	19.83
1/31/22 17:00	301.20	23.21
1/31/22 18:00	306.30	22.31
1/31/22 19:00	318.00	21.57
1/31/22 20:00	314.30	19.74
1/31/22 21:00	317.80	17.81
1/31/22 22:00	316.50	15.25
1/31/22 23:00	321.60	17.27
2/1/22 0:00	320.30	15.27
2/1/22 1:00	322.40	18.17
2/1/22 2:00	328.30	20.77
2/1/22 3:00	331.60	21.94
2/1/22 4:00	334.50	22.52
2/1/22 5:00	338.70	22.66
2/1/22 6:00	333.90	19.86
2/1/22 7:00	331.10	19.89
2/1/22 8:00	329.70	19.28
2/1/22 9:00	330.70	23.68
2/1/22 10:00	329.90	25.37
2/1/22 11:00	326.40	27.44
2/1/22 12:00	330.80	24.37
2/1/22 13:00	327.10	28.47
2/1/22 14:00	314.00	19.88
2/1/22 15:00	307.20	21.95
2/1/22 16:00	305.70	23.20
2/1/22 17:00	306.00	26.34
2/1/22 18:00	308.20	21.17
2/1/22 19:00	302.30	16.36
2/1/22 20:00	292.00	22.68
2/1/22 21:00	287.60	25.72
2/1/22 22:00	279.70	19.78
2/1/22 23:00	282.20	20.83
2/2/22 0:00	279.50	20.96
2/2/22 1:00	270.80	15.36
2/2/22 2:00	274.60	20.96
2/2/22 3:00	284.80	24.54
2/2/22 4:00	268.10	16.64
2/2/22 5:00	267.00	19.88
2/2/22 6:00	270.50	16.13
2/2/22 7:00	278.90	12.40
2/2/22 8:00	275.70	15.80
2/2/22 9:00	274.90	17.02
2/2/22 10:00	272.10	15.14
2/2/22 11:00	280.20	17.23

Date	Wind Direction (°)	Wind speed (km/h)
2/2/22 12:00	279.10	18.21
2/2/22 13:00	280.90	18.02
2/2/22 14:00	276.60	12.68
2/2/22 15:00	282.10	14.66
2/2/22 16:00	277.90	11.46
2/2/22 17:00	285.00	15.09
2/2/22 18:00	284.70	16.44
2/2/22 19:00	288.10	14.07
2/2/22 20:00	282.90	12.12
2/2/22 21:00	279.70	13.24
2/2/22 22:00	285.50	21.74
2/2/22 23:00	285.80	21.07
2/3/22 0:00	273.80	14.22
2/3/22 1:00	273.20	16.23
2/3/22 2:00	277.40	19.64
2/3/22 3:00	281.70	18.16
2/3/22 4:00	302.70	25.30
2/3/22 5:00	306.10	27.85
2/3/22 6:00	309.60	28.04
2/3/22 7:00	304.10	23.47
2/3/22 8:00	314.00	22.41
2/3/22 9:00	313.20	22.04
2/3/22 10:00	308.90	28.94
2/3/22 11:00	305.80	28.87
2/3/22 12:00	307.90	28.60
2/3/22 13:00	300.70	27.97
2/3/22 14:00	278.50	24.73
2/3/22 15:00	280.50	21.57
2/3/22 16:00	285.90	26.71
2/3/22 17:00	260.90	23.92
2/3/22 18:00	266.50	26.08
2/3/22 19:00	264.20	26.46
2/3/22 20:00	270.60	19.52
2/3/22 21:00	270.50	21.99
2/3/22 22:00	274.50	25.45
2/3/22 23:00	271.50	25.68
2/4/22 0:00	270.70	26.14
2/4/22 1:00	280.20	27.48
2/4/22 2:00	274.10	23.17
2/4/22 3:00	273.70	24.66
2/4/22 4:00	272.40	19.58
2/4/22 5:00	271.10	16.05
2/4/22 6:00	263.30	15.30
2/4/22 7:00	257.90	17.30
2/4/22 8:00	275.40	20.62
2/4/22 9:00	283.40	11.80
2/4/22 10:00	257.30	11.20
2/4/22 11:00	250.60	16.80
2/4/22 12:00	266.10	14.06
2/4/22 13:00	273.90	16.95
2/4/22 14:00	267.40	10.68
2/4/22 15:00	279.00	10.68
2/4/22 16:00	271.80	11.82
2/4/22 17:00	258.10	11.93
2/4/22 18:00	270.20	13.73
2/4/22 19:00	280.20	10.89
2/4/22 20:00	284.80	14.54
2/4/22 21:00	255.20	10.11
2/4/22 22:00	279.50	12.72
2/4/22 23:00	262.00	9.62
2/5/22 0:00	257.80	7.80
2/5/22 1:00	277.60	11.22
2/5/22 2:00	290.80	13.57
2/5/22 3:00	294.90	9.76
2/5/22 4:00	306.20	6.93
2/5/22 5:00	293.70	11.46
2/5/22 6:00	292.20	10.98
2/5/22 7:00	310.60	9.64
2/5/22 8:00	290.40	4.13
2/5/22 9:00	275.70	3.22
2/5/22 10:00	270.50	0.91

Date	Wind Direction (°)	Wind speed (km/h)
2/5/22 11:00	198.30	3.63
2/5/22 12:00	206.50	6.97
2/5/22 13:00	214.50	3.83
2/5/22 14:00	203.40	1.87
2/5/22 15:00	190.60	7.11
2/5/22 16:00	176.90	5.35
2/5/22 17:00	179.70	8.64
2/5/22 18:00	147.40	6.03
2/5/22 19:00	171.60	7.25
2/5/22 20:00	178.60	9.96
2/5/22 21:00	176.90	11.82
2/5/22 22:00	186.40	13.54
2/5/22 23:00	190.70	17.73
2/6/22 0:00	198.80	17.87
2/6/22 1:00	201.10	16.59
2/6/22 2:00	204.60	13.79
2/6/22 3:00	198.90	14.39
2/6/22 4:00	202.90	16.50
2/6/22 5:00	200.80	17.86
2/6/22 6:00	199.80	16.96
2/6/22 7:00	196.00	18.67
2/6/22 8:00	189.20	17.21
2/6/22 9:00	191.90	17.04
2/6/22 10:00	199.00	10.70
2/6/22 11:00	199.80	12.92
2/6/22 12:00	187.70	15.10
2/6/22 13:00	190.80	11.58
2/6/22 14:00	192.80	11.33
2/6/22 15:00	189.60	12.75
2/6/22 16:00	172.40	10.88
2/6/22 17:00	117.50	7.93
2/6/22 18:00	117.00	9.39
2/6/22 19:00	102.40	13.33
2/6/22 20:00	121.50	13.58
2/6/22 21:00	124.10	13.00
2/6/22 22:00	115.50	9.41
2/6/22 23:00	136.20	9.77
2/7/22 0:00	149.30	8.95
2/7/22 1:00	148.10	6.51
2/7/22 2:00	239.60	5.49
2/7/22 3:00	279.30	0.98
2/7/22 4:00	211.70	2.69
2/7/22 5:00	200.10	2.72
2/7/22 6:00	216.20	6.56
2/7/22 7:00	240.60	5.15
2/7/22 8:00	261.70	5.94
2/7/22 9:00	267.00	6.99
2/7/22 10:00	275.70	5.92
2/7/22 11:00	313.50	5.15
2/7/22 12:00	297.60	10.69
2/7/22 13:00	302.00	10.00
2/7/22 14:00	331.40	15.79
2/7/22 15:00	355.30	23.22
2/7/22 16:00	11.89	25.39
2/7/22 17:00	15.90	27.07
2/7/22 18:00	15.16	35.82
2/7/22 19:00	26.17	34.85
2/7/22 20:00	26.33	35.39
2/7/22 21:00	22.12	29.77
2/7/22 22:00	22.37	26.31
2/7/22 23:00	25.71	25.06
2/8/22 0:00	18.67	25.30
2/8/22 1:00	16.83	28.03
2/8/22 2:00	20.36	30.82
2/8/22 3:00	18.22	27.13
2/8/22 4:00	26.13	23.67
2/8/22 5:00	28.87	21.27
2/8/22 6:00	28.83	14.53
2/8/22 7:00	18.07	11.80
2/8/22 8:00	23.64	15.48
2/8/22 9:00	24.29	14.30

Date	Wind Direction (°)	Wind speed (km/h)
2/8/22 10:00	36.81	13.67
2/8/22 11:00	34.90	12.43
2/8/22 12:00	43.40	13.86
2/8/22 13:00	50.36	11.15
2/8/22 14:00	105.60	3.91
2/8/22 15:00	77.96	3.23
2/8/22 16:00	36.93	6.58
2/8/22 17:00	49.02	6.39
2/8/22 18:00	101.90	7.84
2/8/22 19:00	154.90	7.57
2/8/22 20:00	153.50	5.38
2/8/22 21:00	76.38	2.71
2/8/22 22:00	115.70	2.92
2/8/22 23:00	345.60	3.08
2/9/22 0:00	33.64	1.88
2/9/22 1:00	26.02	5.02
2/9/22 2:00	36.56	4.03
2/9/22 3:00	3.15	1.36
2/9/22 4:00	0.74	6.02
2/9/22 5:00	16.82	10.84
2/9/22 6:00	26.38	8.71
2/9/22 7:00	2.74	5.58
2/9/22 8:00	341.60	7.25
2/9/22 9:00	331.10	6.60
2/9/22 10:00	351.90	6.87
2/9/22 11:00	4.64	4.77
2/9/22 12:00	25.87	8.19
2/9/22 13:00	36.12	9.71
2/9/22 14:00	63.25	9.63
2/9/22 15:00	79.19	8.04
2/9/22 16:00	92.40	10.76
2/9/22 17:00	78.63	11.02
2/9/22 18:00	77.93	10.59
2/9/22 19:00	84.20	17.22
2/9/22 20:00	85.30	20.07
2/9/22 21:00	93.40	17.24
2/9/22 22:00	81.60	23.00
2/9/22 23:00	78.73	22.56
2/10/22 0:00	73.48	23.18
2/10/22 1:00	83.70	21.36
2/10/22 2:00	73.38	25.61
2/10/22 3:00	76.65	25.84
2/10/22 4:00	67.12	26.56
2/10/22 5:00	70.62	22.04
2/10/22 6:00	79.82	20.33
2/10/22 7:00	73.89	19.49
2/10/22 8:00	67.73	12.70
2/10/22 9:00	69.22	17.39
2/10/22 10:00	73.79	15.22
2/10/22 11:00	73.08	17.84
2/10/22 12:00	85.80	16.12
2/10/22 13:00	94.40	14.54
2/10/22 14:00	86.80	13.02
2/10/22 15:00	71.32	11.72
2/10/22 16:00	82.50	12.93
2/10/22 17:00	87.20	11.13
2/10/22 18:00	79.00	9.94
2/10/22 19:00	85.50	6.70
2/10/22 20:00	68.99	6.99
2/10/22 21:00	89.60	8.88
2/10/22 22:00	124.00	8.95
2/10/22 23:00	131.80	5.96
2/11/22 0:00	172.40	6.47
2/11/22 1:00	190.40	11.09
2/11/22 2:00	195.30	14.62
2/11/22 3:00	195.70	14.67
2/11/22 4:00	189.10	11.27
2/11/22 5:00	201.20	17.89
2/11/22 6:00	240.30	18.32
2/11/22 7:00	253.20	24.15
2/11/22 8:00	251.80	19.77

Date	Wind Direction (°)	Wind speed (km/h)
2/11/22 9:00	273.80	22.60
2/11/22 10:00	281.10	20.21
2/11/22 11:00	270.00	14.35
2/11/22 12:00	284.90	19.35
2/11/22 13:00	274.30	16.07
2/11/22 14:00	276.10	14.86
2/11/22 15:00	279.20	19.62
2/11/22 16:00	269.70	16.67
2/11/22 17:00	275.60	17.87
2/11/22 18:00	281.60	21.19
2/11/22 19:00	286.90	17.42
2/11/22 20:00	283.20	14.46
2/11/22 21:00	293.00	17.52
2/11/22 22:00	303.20	16.19
2/11/22 23:00	286.40	11.96
2/12/22 0:00	276.80	12.74
2/12/22 1:00	276.90	12.52
2/12/22 2:00	269.40	11.63
2/12/22 3:00	263.90	11.94
2/12/22 4:00	271.00	12.20
2/12/22 5:00	274.30	12.72
2/12/22 6:00	271.70	11.20
2/12/22 7:00	275.80	11.68
2/12/22 8:00	277.50	11.65
2/12/22 9:00	276.50	9.74
2/12/22 10:00	283.70	9.80
2/12/22 11:00	275.10	9.46
2/12/22 12:00	285.60	9.49
2/12/22 13:00	291.60	10.25
2/12/22 14:00	307.10	10.21
2/12/22 15:00	290.30	8.38
2/12/22 16:00	294.90	6.17
2/12/22 17:00	317.60	7.24
2/12/22 18:00	326.90	4.58
2/12/22 19:00	316.70	4.50
2/12/22 20:00	320.90	4.61
2/12/22 21:00	354.00	7.09
2/12/22 22:00	355.00	6.98
2/12/22 23:00	335.90	7.36
2/13/22 0:00	8.12	7.80
2/13/22 1:00	355.90	11.39
2/13/22 2:00	330.70	7.51
2/13/22 3:00	317.50	9.42
2/13/22 4:00	319.00	10.40
2/13/22 5:00	312.20	11.12
2/13/22 6:00	320.20	11.55
2/13/22 7:00	322.80	12.72
2/13/22 8:00	301.70	14.38
2/13/22 9:00	304.40	12.04
2/13/22 10:00	304.40	11.65
2/13/22 11:00	301.50	8.97
2/13/22 12:00	299.00	10.73
2/13/22 13:00	299.30	11.97
2/13/22 14:00	309.50	10.45
2/13/22 15:00	297.90	13.75
2/13/22 16:00	289.10	11.69
2/13/22 17:00	283.10	11.24
2/13/22 18:00	282.60	13.94
2/13/22 19:00	285.90	15.64
2/13/22 20:00	290.80	11.84
2/13/22 21:00	280.30	10.10
2/13/22 22:00	278.80	7.06
2/13/22 23:00	239.40	5.08
2/14/22 0:00	272.70	7.45
2/14/22 1:00	267.60	7.72
2/14/22 2:00	244.20	7.95
2/14/22 3:00	263.10	6.07
2/14/22 4:00	246.00	7.10
2/14/22 5:00	248.80	7.46
2/14/22 6:00	236.30	6.60
2/14/22 7:00	225.70	6.75

Date	Wind Direction (°)	Wind speed (km/h)
2/14/22 8:00	227.00	5.80
2/14/22 9:00	223.80	5.40
2/14/22 10:00	249.50	9.10
2/14/22 11:00	247.40	8.96
2/14/22 12:00	250.20	7.13
2/14/22 13:00	271.90	7.23
2/14/22 14:00	260.60	8.56
2/14/22 15:00	267.40	10.49
2/14/22 16:00	250.00	7.20
2/14/22 17:00	267.30	6.09
2/14/22 18:00	269.90	8.63
2/14/22 19:00	282.70	9.35
2/14/22 20:00	278.00	7.22
2/14/22 21:00	284.30	8.88
2/14/22 22:00	311.70	11.94
2/14/22 23:00	331.30	14.97
2/15/22 0:00	339.20	17.15
2/15/22 1:00	348.90	20.22
2/15/22 2:00	356.30	18.19
2/15/22 3:00	357.30	20.38
2/15/22 4:00	359.80	18.96
2/15/22 5:00	350.70	20.31
2/15/22 6:00	349.80	19.53
2/15/22 7:00	351.30	14.34
2/15/22 8:00	343.80	15.85
2/15/22 9:00	348.90	14.78
2/15/22 10:00	326.60	12.03
2/15/22 11:00	329.60	10.49
2/15/22 12:00	330.30	12.84
2/15/22 13:00	316.40	13.49
2/15/22 14:00	307.40	15.05
2/15/22 15:00	302.10	21.74
2/15/22 16:00	298.70	20.61
2/15/22 17:00	301.70	17.61
2/15/22 18:00	303.60	15.97
2/15/22 19:00	297.60	14.64
2/15/22 20:00	297.00	14.63
2/15/22 21:00	296.20	9.61
2/15/22 22:00	279.90	15.45
2/15/22 23:00	288.40	23.31
2/16/22 0:00	290.50	21.95
2/16/22 1:00	287.30	26.79
2/16/22 2:00	297.70	21.23
2/16/22 3:00	290.40	20.53
2/16/22 4:00	285.20	22.29
2/16/22 5:00	287.40	21.25
2/16/22 6:00	284.40	19.32
2/16/22 7:00	286.90	21.66
2/16/22 8:00	283.00	21.83
2/16/22 9:00	280.40	22.65
2/16/22 10:00	277.70	21.46
2/16/22 11:00	284.30	24.89
2/16/22 12:00	289.20	23.30
2/16/22 13:00	280.10	17.78
2/16/22 14:00	259.50	16.09
2/16/22 15:00	264.30	17.42
2/16/22 16:00	261.90	22.81
2/16/22 17:00	255.80	17.52
2/16/22 18:00	255.90	24.75
2/16/22 19:00	264.80	20.83
2/16/22 20:00	266.00	22.86
2/16/22 21:00	262.90	23.75
2/16/22 22:00	256.70	23.32
2/16/22 23:00	259.40	17.06
2/17/22 0:00	258.00	16.40
2/17/22 1:00	262.40	15.93
2/17/22 2:00	253.20	19.63
2/17/22 3:00	251.20	20.52
2/17/22 4:00	262.10	14.53
2/17/22 5:00	270.80	11.00
2/17/22 6:00	265.30	11.33

Date	Wind Direction (°)	Wind speed (km/h)
2/17/22 7:00	274.10	12.21
2/17/22 8:00	264.60	10.83
2/17/22 9:00	259.40	9.30
2/17/22 10:00	266.40	11.53
2/17/22 11:00	269.50	11.31
2/17/22 12:00	271.00	14.90
2/17/22 13:00	275.70	16.60
2/17/22 14:00	284.50	23.43
2/17/22 15:00	286.50	20.56
2/17/22 16:00	277.10	18.58
2/17/22 17:00	294.10	21.89
2/17/22 18:00	299.10	21.86
2/17/22 19:00	295.60	33.84
2/17/22 20:00	305.70	35.96
2/17/22 21:00	306.50	35.57
2/17/22 22:00	308.70	35.24
2/17/22 23:00	312.60	43.16
2/18/22 0:00	311.60	38.23
2/18/22 1:00	309.50	39.64
2/18/22 2:00	312.20	41.94
2/18/22 3:00	306.80	36.36
2/18/22 4:00	300.20	32.33
2/18/22 5:00	298.40	35.24
2/18/22 6:00	302.60	31.43
2/18/22 7:00	294.30	33.91
2/18/22 8:00	280.50	28.50
2/18/22 9:00	290.30	37.58
2/18/22 10:00	300.20	38.70
2/18/22 11:00	293.40	31.50
2/18/22 12:00	278.80	23.75
2/18/22 13:00	282.90	27.53
2/18/22 14:00	288.20	28.74
2/18/22 15:00	274.40	18.86
2/18/22 16:00	276.90	15.92
2/18/22 17:00	276.00	18.04
2/18/22 18:00	275.00	16.37
2/18/22 19:00	278.70	14.90
2/18/22 20:00	298.60	14.46
2/18/22 21:00	281.40	11.61
2/18/22 22:00	279.00	11.59
2/18/22 23:00	299.00	10.65
2/19/22 0:00	304.50	10.10
2/19/22 1:00	332.30	10.72
2/19/22 2:00	346.80	14.24
2/19/22 3:00	319.10	11.09
2/19/22 4:00	316.60	11.19
2/19/22 5:00	333.60	12.43
2/19/22 6:00	335.70	10.78
2/19/22 7:00	323.60	12.63
2/19/22 8:00	319.80	11.02
2/19/22 9:00	339.10	13.09
2/19/22 10:00	347.20	12.19
2/19/22 11:00	347.00	13.50
2/19/22 12:00	354.80	10.94
2/19/22 13:00	359.40	11.36
2/19/22 14:00	354.10	13.95
2/19/22 15:00	355.30	12.63
2/19/22 16:00	352.10	14.54
2/19/22 17:00	348.00	14.34
2/19/22 18:00	346.30	13.97
2/19/22 19:00	341.90	14.72
2/19/22 20:00	328.80	15.10
2/19/22 21:00	319.60	13.91
2/19/22 22:00	325.90	10.31
2/19/22 23:00	318.90	13.69
2/20/22 0:00	318.30	11.55
2/20/22 1:00	315.90	12.46
2/20/22 2:00	303.80	11.85
2/20/22 3:00	297.40	11.32
2/20/22 4:00	290.50	14.65
2/20/22 5:00	282.30	13.43

Date	Wind Direction (°)	Wind speed (km/h)
2/20/22 6:00	280.60	14.65
2/20/22 7:00	284.30	14.62
2/20/22 8:00	284.10	14.18
2/20/22 9:00	281.40	14.85
2/20/22 10:00	271.90	12.43
2/20/22 11:00	276.00	13.46
2/20/22 12:00	275.40	13.27
2/20/22 13:00	271.60	13.70
2/20/22 14:00	267.30	14.26
2/20/22 15:00	261.70	12.35
2/20/22 16:00	268.00	13.01
2/20/22 17:00	265.80	15.18
2/20/22 18:00	266.90	16.54
2/20/22 19:00	265.30	19.31
2/20/22 20:00	274.10	18.41
2/20/22 21:00	275.80	16.93
2/20/22 22:00	279.70	17.06
2/20/22 23:00	271.70	14.50
2/21/22 0:00	273.80	14.34
2/21/22 1:00	277.40	16.75
2/21/22 2:00	269.90	13.89
2/21/22 3:00	266.70	13.19
2/21/22 4:00	269.30	15.38
2/21/22 5:00	272.50	15.57
2/21/22 6:00	273.60	16.47
2/21/22 7:00	265.30	18.08
2/21/22 8:00	273.20	15.70
2/21/22 9:00	288.80	17.92
2/21/22 10:00	284.60	19.10
2/21/22 11:00	291.00	22.06
2/21/22 12:00	296.40	20.02
2/21/22 13:00	285.20	19.26
2/21/22 14:00	292.90	18.52
2/21/22 15:00	295.50	20.28
2/21/22 16:00	296.40	18.57
2/21/22 17:00	286.60	18.48
2/21/22 18:00	294.10	19.38
2/21/22 19:00	288.40	16.55
2/21/22 20:00	298.30	16.18
2/21/22 21:00	321.90	25.12
2/21/22 22:00	310.90	20.07
2/21/22 23:00	315.30	19.86
2/22/22 0:00	315.60	20.83
2/22/22 1:00	313.40	19.68
2/22/22 2:00	309.00	18.69
2/22/22 3:00	314.00	18.08
2/22/22 4:00	316.40	17.06
2/22/22 5:00	324.30	17.01
2/22/22 6:00	303.60	13.60
2/22/22 7:00	303.50	14.64
2/22/22 8:00	290.40	14.77
2/22/22 9:00	292.80	16.60
2/22/22 10:00	285.40	15.20
2/22/22 11:00	286.20	16.09
2/22/22 12:00	291.50	16.33
2/22/22 13:00	269.70	11.91
2/22/22 14:00	229.80	7.38
2/22/22 15:00	248.80	9.20
2/22/22 16:00	261.20	14.21
2/22/22 17:00	229.70	12.73
2/22/22 18:00	242.40	16.18
2/22/22 19:00	224.40	12.20
2/22/22 20:00	210.90	11.97
2/22/22 21:00	223.10	9.88
2/22/22 22:00	222.40	12.40
2/22/22 23:00	207.90	14.08
2/23/22 0:00	198.50	14.81
2/23/22 1:00	208.70	10.09
2/23/22 2:00	200.10	13.64
2/23/22 3:00	196.80	13.30
2/23/22 4:00	179.10	8.74

Date	Wind Direction (°)	Wind speed (km/h)
2/23/22 5:00	172.70	8.37
2/23/22 6:00	170.30	12.07
2/23/22 7:00	174.50	11.57
2/23/22 8:00	173.50	12.07
2/23/22 9:00	151.50	8.72
2/23/22 10:00	158.40	10.16
2/23/22 11:00	157.60	10.58
2/23/22 12:00	156.30	9.38
2/23/22 13:00	148.90	9.19
2/23/22 14:00	140.30	10.65
2/23/22 15:00	146.30	11.09
2/23/22 16:00	140.00	11.46
2/23/22 17:00	152.00	12.45
2/23/22 18:00	165.90	12.65
2/23/22 19:00	182.90	9.83
2/23/22 20:00	187.30	14.71
2/23/22 21:00	182.30	17.54
2/23/22 22:00	199.10	22.66
2/23/22 23:00	210.50	22.03
2/24/22 0:00	216.60	19.77
2/24/22 1:00	214.60	21.17
2/24/22 2:00	217.90	20.08
2/24/22 3:00	217.20	19.49
2/24/22 4:00	241.10	24.70
2/24/22 5:00	239.40	22.57
2/24/22 6:00	240.70	20.45
2/24/22 7:00	238.70	20.02
2/24/22 8:00	237.00	20.89
2/24/22 9:00	234.30	23.18
2/24/22 10:00	230.30	25.59
2/24/22 11:00	233.40	28.71
2/24/22 12:00	237.10	26.90
2/24/22 13:00	251.40	27.98
2/24/22 14:00	255.20	30.64
2/24/22 15:00	258.90	27.31
2/24/22 16:00	269.50	23.68
2/24/22 17:00	282.20	25.97
2/24/22 18:00	265.10	24.92
2/24/22 19:00	261.00	25.21
2/24/22 20:00	265.00	26.48
2/24/22 21:00	272.20	20.52
2/24/22 22:00	279.30	23.14
2/24/22 23:00	282.90	21.28
2/25/22 0:00	279.50	15.98
2/25/22 1:00	280.90	12.69
2/25/22 2:00	279.30	15.91
2/25/22 3:00	283.80	14.27
2/25/22 4:00	289.70	11.66
2/25/22 5:00	278.60	12.30
2/25/22 6:00	293.10	12.73
2/25/22 7:00	298.80	11.61
2/25/22 8:00	298.80	10.58
2/25/22 9:00	296.50	13.04
2/25/22 10:00	310.70	18.14
2/25/22 11:00	318.90	22.23
2/25/22 12:00	322.20	26.63
2/25/22 13:00	319.90	24.27
2/25/22 14:00	318.90	25.44
2/25/22 15:00	321.00	26.00
2/25/22 16:00	321.20	30.10
2/25/22 17:00	321.00	33.01
2/25/22 18:00	325.30	32.44
2/25/22 19:00	326.80	33.62
2/25/22 20:00	330.30	29.56
2/25/22 21:00	328.80	27.01
2/25/22 22:00	332.40	26.13
2/25/22 23:00	327.30	24.47
2/26/22 0:00	333.40	22.80
2/26/22 1:00	330.10	18.31
2/26/22 2:00	323.60	18.54
2/26/22 3:00	356.00	21.34

Date	Wind Direction (°)	Wind speed (km/h)
2/26/22 4:00	352.30	21.29
2/26/22 5:00	345.90	17.54
2/26/22 6:00	347.30	14.73
2/26/22 7:00	349.60	18.12
2/26/22 8:00	338.90	16.22
2/26/22 9:00	333.60	17.71
2/26/22 10:00	339.10	18.39
2/26/22 11:00	354.70	19.32
2/26/22 12:00	353.20	19.82
2/26/22 13:00	346.10	15.48
2/26/22 14:00	339.40	15.00
2/26/22 15:00	335.50	16.73
2/26/22 16:00	333.90	14.25
2/26/22 17:00	325.80	13.68
2/26/22 18:00	309.30	12.91
2/26/22 19:00	311.90	14.31
2/26/22 20:00	310.60	13.82
2/26/22 21:00	309.30	13.48
2/26/22 22:00	309.70	14.74
2/26/22 23:00	302.40	16.30
2/27/22 0:00	297.80	17.88
2/27/22 1:00	294.20	17.82
2/27/22 2:00	284.60	18.75
2/27/22 3:00	283.50	17.17
2/27/22 4:00	278.10	13.01
2/27/22 5:00	282.20	15.67
2/27/22 6:00	283.30	13.21
2/27/22 7:00	272.70	14.40
2/27/22 8:00	273.80	14.80
2/27/22 9:00	274.50	15.27
2/27/22 10:00	287.70	19.01
2/27/22 11:00	286.70	17.35
2/27/22 12:00	288.00	23.71
2/27/22 13:00	304.40	27.74
2/27/22 14:00	308.60	24.54
2/27/22 15:00	310.50	24.97
2/27/22 16:00	314.50	22.94
2/27/22 17:00	303.00	19.37
2/27/22 18:00	293.90	22.63
2/27/22 19:00	288.50	21.93
2/27/22 20:00	292.10	23.71
2/27/22 21:00	300.90	22.47
2/27/22 22:00	301.90	23.16
2/27/22 23:00	292.70	23.17
2/28/22 0:00	298.10	23.04
2/28/22 1:00	299.20	19.96
2/28/22 2:00	289.80	17.13
2/28/22 3:00	292.60	15.66
2/28/22 4:00	294.60	15.35
2/28/22 5:00	304.40	17.97
2/28/22 6:00	318.00	19.98
2/28/22 7:00	314.90	17.90
2/28/22 8:00	310.90	15.31
2/28/22 9:00	311.10	18.64
2/28/22 10:00	324.90	19.56
2/28/22 11:00	313.90	18.40
2/28/22 12:00	328.40	22.24
2/28/22 13:00	325.30	22.83
2/28/22 14:00	318.20	23.03
2/28/22 15:00	311.00	21.13
2/28/22 16:00	302.40	23.75
2/28/22 17:00	300.60	26.60
2/28/22 18:00	314.40	24.03
2/28/22 19:00	323.10	23.53
2/28/22 20:00	333.30	23.85
2/28/22 21:00	338.40	20.28
2/28/22 22:00	353.70	19.45
2/28/22 23:00	351.20	18.20
3/1/22 0:00	332.00	12.93
3/1/22 1:00	337.10	14.97
3/1/22 2:00	339.50	14.01

Date	Wind Direction (°)	Wind speed (km/h)
3/1/22 3:00	353.90	16.75
3/1/22 4:00	356.80	18.31
3/1/22 5:00	350.50	15.85
3/1/22 6:00	359.50	15.79
3/1/22 7:00	3.61	16.06
3/1/22 8:00	8.20	17.76
3/1/22 9:00	3.04	14.25
3/1/22 10:00	6.21	10.92
3/1/22 11:00	2.17	12.76
3/1/22 12:00	3.96	14.26
3/1/22 13:00	5.98	13.33
3/1/22 14:00	353.00	14.07
3/1/22 15:00	342.10	12.95
3/1/22 16:00	336.90	12.14
3/1/22 17:00	333.80	12.09
3/1/22 18:00	314.20	12.06
3/1/22 19:00	307.30	15.98
3/1/22 20:00	312.80	18.04
3/1/22 21:00	317.10	18.31
3/1/22 22:00	300.90	18.12
3/1/22 23:00	300.20	21.44
3/2/22 0:00	300.30	20.40
3/2/22 1:00	294.60	19.95
3/2/22 2:00	287.60	19.78
3/2/22 3:00	298.10	19.46
3/2/22 4:00	293.00	20.00
3/2/22 5:00	293.70	20.22
3/2/22 6:00	295.90	19.02
3/2/22 7:00	298.60	20.69
3/2/22 8:00	306.20	22.49
3/2/22 9:00	306.50	19.25
3/2/22 10:00	305.20	17.80
3/2/22 11:00	302.20	18.74
3/2/22 12:00	303.30	15.90
3/2/22 13:00	307.60	18.29
3/2/22 14:00	303.40	15.71
3/2/22 15:00	309.10	15.00
3/2/22 16:00	296.00	15.46
3/2/22 17:00	309.00	16.56
3/2/22 18:00	307.20	14.99
3/2/22 19:00	306.80	16.59
3/2/22 20:00	309.20	16.51
3/2/22 21:00	306.60	14.18
3/2/22 22:00	301.70	16.47
3/2/22 23:00	312.50	16.14
3/3/22 0:00	302.90	17.00
3/3/22 1:00	296.70	17.15
3/3/22 2:00	299.90	17.45
3/3/22 3:00	304.50	17.12
3/3/22 4:00	304.40	15.70
3/3/22 5:00	304.40	16.55
3/3/22 6:00	314.40	15.83
3/3/22 7:00	311.30	9.01
3/3/22 8:00	358.90	9.62
3/3/22 9:00	11.75	8.10
3/3/22 10:00	356.20	3.68
3/3/22 11:00	249.70	2.73
3/3/22 12:00	133.00	0.48
3/3/22 13:00	233.10	2.29
3/3/22 14:00	160.00	5.29
3/3/22 15:00	174.10	5.34
3/3/22 16:00	170.30	5.91
3/3/22 17:00	178.90	7.05
3/3/22 18:00	181.00	7.34
3/3/22 19:00	185.60	5.83
3/3/22 20:00	156.00	8.53
3/3/22 21:00	169.30	7.62
3/3/22 22:00	181.10	13.55
3/3/22 23:00	183.90	15.66
3/4/22 0:00	185.60	14.63
3/4/22 1:00	207.50	17.57

Date	Wind Direction (°)	Wind speed (km/h)
3/4/22 2:00	206.10	19.86
3/4/22 3:00	199.30	20.58
3/4/22 4:00	199.20	18.85
3/4/22 5:00	200.40	21.45
3/4/22 6:00	208.90	23.86
3/4/22 7:00	203.80	21.02
3/4/22 8:00	212.40	17.14
3/4/22 9:00	202.40	19.86
3/4/22 10:00	202.40	18.05
3/4/22 11:00	202.00	15.58
3/4/22 12:00	201.10	12.48
3/4/22 13:00	193.90	7.77
3/4/22 14:00	180.50	8.27
3/4/22 15:00	208.60	19.13
3/4/22 16:00	212.80	19.34
3/4/22 17:00	224.20	22.56
3/4/22 18:00	238.50	14.05
3/4/22 19:00	244.40	15.96
3/4/22 20:00	257.20	19.41
3/4/22 21:00	268.20	15.02
3/4/22 22:00	267.30	14.53
3/4/22 23:00	280.30	20.48
3/5/22 0:00	279.00	15.99
3/5/22 1:00	295.20	19.09
3/5/22 2:00	296.80	18.78
3/5/22 3:00	289.00	14.58
3/5/22 4:00	300.20	15.19
3/5/22 5:00	303.70	14.01
3/5/22 6:00	303.20	12.08
3/5/22 7:00	297.40	12.56
3/5/22 8:00	300.30	11.68
3/5/22 9:00	289.20	15.02
3/5/22 10:00	292.30	15.30
3/5/22 11:00	290.80	15.44
3/5/22 12:00	296.90	17.21
3/5/22 13:00	294.60	18.55
3/5/22 14:00	290.60	19.74
3/5/22 15:00	283.60	17.20
3/5/22 16:00	272.10	14.91
3/5/22 17:00	266.00	17.02
3/5/22 18:00	277.80	19.74
3/5/22 19:00	289.70	17.36
3/5/22 20:00	291.90	12.60
3/5/22 21:00	294.10	15.64
3/5/22 22:00	308.80	17.45
3/5/22 23:00	302.60	12.18
3/6/22 0:00	312.60	11.18
3/6/22 1:00	304.20	12.14
3/6/22 2:00	302.50	11.64
3/6/22 3:00	288.80	11.75
3/6/22 4:00	241.50	4.90
3/6/22 5:00	228.90	7.20
3/6/22 6:00	237.00	5.98
3/6/22 7:00	236.40	5.70
3/6/22 8:00	245.90	11.01
3/6/22 9:00	223.90	7.28
3/6/22 10:00	222.70	15.04
3/6/22 11:00	231.30	24.29
3/6/22 12:00	236.20	19.89
3/6/22 13:00	230.50	17.09
3/6/22 14:00	222.20	12.09
3/6/22 15:00	227.40	11.46
3/6/22 16:00	216.60	10.46
3/6/22 17:00	201.50	11.65
3/6/22 18:00	213.70	8.04
3/6/22 19:00	218.00	8.64
3/6/22 20:00	239.30	6.28
3/6/22 21:00	312.50	5.63
3/6/22 22:00	350.60	5.35
3/6/22 23:00	346.80	6.73
3/7/22 0:00	7.99	8.61

Date	Wind Direction (°)	Wind speed (km/h)
3/7/22 1:00	354.40	11.40
3/7/22 2:00	0.43	17.20
3/7/22 3:00	10.55	22.38
3/7/22 4:00	10.87	21.22
3/7/22 5:00	0.18	23.44
3/7/22 6:00	2.86	37.22
3/7/22 7:00	2.43	42.73
3/7/22 8:00	1.26	38.34
3/7/22 9:00	355.00	39.38
3/7/22 10:00	354.50	33.26
3/7/22 11:00	347.20	34.27
3/7/22 12:00	335.70	33.08
3/7/22 13:00	332.10	35.57
3/7/22 14:00	336.40	37.51
3/7/22 15:00	336.40	39.78
3/7/22 16:00	335.90	41.29
3/7/22 17:00	334.50	38.52
3/7/22 18:00	332.10	35.75
3/7/22 19:00	326.80	34.31
3/7/22 20:00	330.60	34.13
3/7/22 21:00	331.20	30.38
3/7/22 22:00	328.50	34.74
3/7/22 23:00	332.10	28.91
3/8/22 0:00	338.50	21.07
3/8/22 1:00	326.90	27.28
3/8/22 2:00	327.90	25.99
3/8/22 3:00	334.90	27.31
3/8/22 4:00	332.90	24.84
3/8/22 5:00	330.50	28.91
3/8/22 6:00	330.00	30.82
3/8/22 7:00	328.60	33.34
3/8/22 8:00	326.60	27.40
3/8/22 9:00	322.80	27.85
3/8/22 10:00	322.50	31.64
3/8/22 11:00	321.30	29.38
3/8/22 12:00	325.70	34.67
3/8/22 13:00	327.60	35.06
3/8/22 14:00	325.60	36.43
3/8/22 15:00	329.10	37.84
3/8/22 16:00	327.90	31.82
3/8/22 17:00	323.10	31.43
3/8/22 18:00	321.50	34.56
3/8/22 19:00	327.20	33.66
3/8/22 20:00	326.30	37.91
3/8/22 21:00	324.10	32.08
3/8/22 22:00	317.80	27.85
3/8/22 23:00	318.70	19.54
3/9/22 0:00	310.80	24.20
3/9/22 1:00	307.50	25.58
3/9/22 2:00	301.20	29.56
3/9/22 3:00	307.70	28.61
3/9/22 4:00	295.10	25.01
3/9/22 5:00	296.50	23.35
3/9/22 6:00	290.90	21.87
3/9/22 7:00	274.90	15.83
3/9/22 8:00	263.70	14.08
3/9/22 9:00	264.40	20.43
3/9/22 10:00	282.00	21.08
3/9/22 11:00	275.60	17.34
3/9/22 12:00	277.40	20.64
3/9/22 13:00	277.10	22.22
3/9/22 14:00	302.70	26.55
3/9/22 15:00	319.90	29.84
3/9/22 16:00	24.81	26.05
3/9/22 17:00	19.56	24.56
3/9/22 18:00	8.20	24.36
3/9/22 19:00	354.70	22.71
3/9/22 20:00	352.30	28.29
3/9/22 21:00	354.50	30.10
3/9/22 22:00	346.70	25.37
3/9/22 23:00	344.80	25.97

Date	Wind Direction (°)	Wind speed (km/h)
3/10/22 0:00	339.00	27.55
3/10/22 1:00	338.90	27.72
3/10/22 2:00	337.60	30.35
3/10/22 3:00	339.00	32.36
3/10/22 4:00	338.50	33.34
3/10/22 5:00	334.30	25.90
3/10/22 6:00	328.10	28.91
3/10/22 7:00	327.90	29.05
3/10/22 8:00	324.00	26.28
3/10/22 9:00	311.80	21.32
3/10/22 10:00	303.10	24.25
3/10/22 11:00	306.40	28.75
3/10/22 12:00	302.50	28.43
3/10/22 13:00	303.20	31.57
3/10/22 14:00	296.30	32.80
3/10/22 15:00	296.80	38.16
3/10/22 16:00	305.10	37.62
3/10/22 17:00	296.30	33.12
3/10/22 18:00	292.80	30.42
3/10/22 19:00	295.60	32.51
3/10/22 20:00	306.90	31.03
3/10/22 21:00	311.90	30.28
3/10/22 22:00	299.20	32.58
3/10/22 23:00	295.90	31.68
3/11/22 0:00	303.00	29.81
3/11/22 1:00	304.20	27.03
3/11/22 2:00	304.00	32.69
3/11/22 3:00	303.40	29.52
3/11/22 4:00	302.60	26.53
3/11/22 5:00	307.10	21.16
3/11/22 6:00	306.50	23.01
3/11/22 7:00	296.60	20.46
3/11/22 8:00	290.20	20.49
3/11/22 9:00	278.30	19.91
3/11/22 10:00	279.30	19.95
3/11/22 11:00	274.90	19.15
3/11/22 12:00	281.80	21.45
3/11/22 13:00	286.20	19.04
3/11/22 14:00	280.30	17.61
3/11/22 15:00	279.50	18.34
3/11/22 16:00	283.10	17.10
3/11/22 17:00	289.30	13.00
3/11/22 18:00	287.20	7.51
3/11/22 19:00	278.70	7.70
3/11/22 20:00	325.20	4.30
3/11/22 21:00	342.70	7.20
3/11/22 22:00	342.40	9.60
3/11/22 23:00	342.90	9.10
3/12/22 0:00	348.30	9.94
3/12/22 1:00	2.43	13.14
3/12/22 2:00	357.20	11.92
3/12/22 3:00	343.30	10.32
3/12/22 4:00	353.80	11.03
3/12/22 5:00	5.33	14.26
3/12/22 6:00	4.35	15.37
3/12/22 7:00	6.58	15.04
3/12/22 8:00	351.40	12.27
3/12/22 9:00	330.60	8.97
3/12/22 10:00	314.10	12.48
3/12/22 11:00	325.40	16.99
3/12/22 12:00	332.90	13.79
3/12/22 13:00	332.40	14.96
3/12/22 14:00	316.20	15.00
3/12/22 15:00	319.30	18.53
3/12/22 16:00	313.40	20.17
3/12/22 17:00	305.10	18.45
3/12/22 18:00	290.30	15.59
3/12/22 19:00	309.10	16.51
3/12/22 20:00	315.50	18.00
3/12/22 21:00	303.40	21.73
3/12/22 22:00	316.60	23.36

Date	Wind Direction (°)	Wind speed (km/h)
3/12/22 23:00	323.80	22.90
3/13/22 0:00	321.00	24.24
3/13/22 1:00	307.10	26.61
3/13/22 2:00	298.20	22.50
3/13/22 3:00	311.40	23.36
3/13/22 4:00	306.10	20.21
3/13/22 5:00	299.30	23.55
3/13/22 6:00	291.90	19.34
3/13/22 7:00	289.50	23.06
3/13/22 8:00	288.40	25.05
3/13/22 9:00	296.20	24.61
3/13/22 10:00	301.30	26.38
3/13/22 11:00	307.60	29.12
3/13/22 12:00	300.20	34.70
3/13/22 13:00	302.40	35.42
3/13/22 14:00	305.00	37.15
3/13/22 15:00	293.10	38.05
3/13/22 16:00	295.70	43.56
3/13/22 17:00	294.90	39.60
3/13/22 18:00	296.50	42.84
3/13/22 19:00	296.30	42.80
3/13/22 20:00	295.80	38.02
3/13/22 21:00	290.90	29.70
3/13/22 22:00	291.30	20.39
3/13/22 23:00	279.90	17.33
3/14/22 0:00	300.60	19.70
3/14/22 1:00	277.80	19.66
3/14/22 2:00	263.00	22.38
3/14/22 3:00	266.40	19.38
3/14/22 4:00	267.30	19.48
3/14/22 5:00	267.90	22.56
3/14/22 6:00	264.40	21.86
3/14/22 7:00	265.10	21.97
3/14/22 8:00	254.00	22.94
3/14/22 9:00	247.20	19.98
3/14/22 10:00	237.00	16.94
3/14/22 11:00	240.70	18.65
3/14/22 12:00	244.40	25.30
3/14/22 13:00	231.00	25.32
3/14/22 14:00	242.50	22.71
3/14/22 15:00	234.60	21.06
3/14/22 16:00	229.60	24.88
3/14/22 17:00	228.80	26.12
3/14/22 18:00	230.30	25.38
3/14/22 19:00	234.10	26.15
3/14/22 20:00	233.90	26.91
3/14/22 21:00	235.30	26.67
3/14/22 22:00	239.80	25.37
3/14/22 23:00	241.10	21.91
3/15/22 0:00	241.20	23.41
3/15/22 1:00	240.40	21.85
3/15/22 2:00	249.80	19.97
3/15/22 3:00	250.00	17.24
3/15/22 4:00	263.20	18.30
3/15/22 5:00	260.40	17.99
3/15/22 6:00	255.60	17.58
3/15/22 7:00	262.10	18.83
3/15/22 8:00	269.60	15.24
3/15/22 9:00	253.50	16.49
3/15/22 10:00	267.10	16.47
3/15/22 11:00	268.20	15.36
3/15/22 12:00	263.70	14.99
3/15/22 13:00	268.30	16.79
3/15/22 14:00	264.00	14.76
3/15/22 15:00	261.60	16.04
3/15/22 16:00	265.90	15.27
3/15/22 17:00	268.20	13.62
3/15/22 18:00	259.80	12.14
3/15/22 19:00	271.60	13.79
3/15/22 20:00	271.30	13.48
3/15/22 21:00	278.80	12.38

Date	Wind Direction (°)	Wind speed (km/h)
3/15/22 22:00	278.80	13.24
3/15/22 23:00	272.60	12.94
3/16/22 0:00	280.50	12.93
3/16/22 1:00	277.10	13.82
3/16/22 2:00	269.70	16.82
3/16/22 3:00	274.20	16.19
3/16/22 4:00	285.40	16.11
3/16/22 5:00	289.20	15.68
3/16/22 6:00	297.50	14.75
3/16/22 7:00	288.40	15.63
3/16/22 8:00	284.90	15.93
3/16/22 9:00	276.60	15.36
3/16/22 10:00	276.30	16.38
3/16/22 11:00	277.20	16.83
3/16/22 12:00	277.80	16.25
3/16/22 13:00	268.90	13.64
3/16/22 14:00	270.50	13.60
3/16/22 15:00	268.80	13.80
3/16/22 16:00	267.10	13.55
3/16/22 17:00	252.90	8.79
3/16/22 18:00	262.20	13.86
3/16/22 19:00	268.50	12.68
3/16/22 20:00	261.50	9.36
3/16/22 21:00	271.80	11.84
3/16/22 22:00	267.20	11.97
3/16/22 23:00	257.00	9.16
3/17/22 0:00	244.50	4.28
3/17/22 1:00	232.90	6.85
3/17/22 2:00	244.40	5.81
3/17/22 3:00	201.80	4.45
3/17/22 4:00	207.90	6.78
3/17/22 5:00	237.30	12.92
3/17/22 6:00	249.20	11.21
3/17/22 7:00	269.70	7.88
3/17/22 8:00	291.30	6.19
3/17/22 9:00	267.50	5.12
3/17/22 10:00	212.70	2.67
3/17/22 11:00	293.70	1.90
3/17/22 12:00	41.65	6.81
3/17/22 13:00	53.40	5.77
3/17/22 14:00	61.00	6.31
3/17/22 15:00	55.92	9.17
3/17/22 16:00	55.95	11.43
3/17/22 17:00	67.33	9.99
3/17/22 18:00	61.97	13.77
3/17/22 19:00	74.91	11.10
3/17/22 20:00	66.51	13.42
3/17/22 21:00	62.63	14.14
3/17/22 22:00	71.46	9.37
3/17/22 23:00	54.92	11.28
3/18/22 0:00	40.04	12.85
3/18/22 1:00	45.39	16.43
3/18/22 2:00	47.41	13.93
3/18/22 3:00	52.07	9.95
3/18/22 4:00	47.96	15.23
3/18/22 5:00	48.98	11.46
3/18/22 6:00	45.47	10.40
3/18/22 7:00	45.44	12.55
3/18/22 8:00	46.29	13.05
3/18/22 9:00	53.51	9.36
3/18/22 10:00	47.02	13.83
3/18/22 11:00	61.08	14.70
3/18/22 12:00	57.76	13.12
3/18/22 13:00	70.11	15.91
3/18/22 14:00	75.05	18.11
3/18/22 15:00	76.69	15.08
3/18/22 16:00	70.47	14.72
3/18/22 17:00	78.18	16.15
3/18/22 18:00	78.85	13.34
3/18/22 19:00	90.60	12.79
3/18/22 20:00	93.00	17.25

Date	Wind Direction (°)	Wind speed (km/h)
3/18/22 21:00	91.00	13.79
3/18/22 22:00	95.20	14.95
3/18/22 23:00	98.00	12.93
3/19/22 0:00	93.80	14.49
3/19/22 1:00	105.70	14.77
3/19/22 2:00	103.10	15.66
3/19/22 3:00	106.00	14.21
3/19/22 4:00	101.30	9.22
3/19/22 5:00	106.20	11.55
3/19/22 6:00	115.20	10.92
3/19/22 7:00	107.00	10.04
3/19/22 8:00	138.40	15.28
3/19/22 9:00	161.10	13.19
3/19/22 10:00	153.00	13.66
3/19/22 11:00	161.00	12.45
3/19/22 12:00	157.90	10.30
3/19/22 13:00	166.70	11.01
3/19/22 14:00	169.30	9.60
3/19/22 15:00	156.40	6.04
3/19/22 16:00	150.50	8.83
3/19/22 17:00	118.40	7.51
3/19/22 18:00	106.10	8.07
3/19/22 19:00	89.40	6.10
3/19/22 20:00	131.00	6.44
3/19/22 21:00	120.40	5.55
3/19/22 22:00	107.40	7.52
3/19/22 23:00	116.70	5.34
3/20/22 0:00	102.90	5.88
3/20/22 1:00	117.00	6.17
3/20/22 2:00	154.80	6.09
3/20/22 3:00	159.00	5.66
3/20/22 4:00	150.80	6.49
3/20/22 5:00	165.70	9.53
3/20/22 6:00	168.30	9.49
3/20/22 7:00	182.20	6.80
3/20/22 8:00	156.40	5.50
3/20/22 9:00	109.00	5.43
3/20/22 10:00	102.70	7.51
3/20/22 11:00	121.10	9.50
3/20/22 12:00	133.20	7.91
3/20/22 13:00	134.60	15.98
3/20/22 14:00	119.40	14.59
3/20/22 15:00	117.10	14.86
3/20/22 16:00	118.30	17.92
3/20/22 17:00	104.40	15.42
3/20/22 18:00	109.10	16.54
3/20/22 19:00	108.80	11.33
3/20/22 20:00	120.00	15.83
3/20/22 21:00	125.00	12.65
3/20/22 22:00	131.00	14.35
3/20/22 23:00	127.90	10.69
3/21/22 0:00	140.20	12.22
3/21/22 1:00	133.70	9.80
3/21/22 2:00	137.80	9.92
3/21/22 3:00	99.90	6.98
3/21/22 4:00	117.40	8.41
3/21/22 5:00	132.70	8.98
3/21/22 6:00	140.80	4.89
3/21/22 7:00	141.20	8.80
3/21/22 8:00	141.70	7.89
3/21/22 9:00	121.60	11.13
3/21/22 10:00	107.90	13.40
3/21/22 11:00	132.60	15.00
3/21/22 12:00	127.60	7.03
3/21/22 13:00	114.40	8.61
3/21/22 14:00	64.50	8.23
3/21/22 15:00	55.25	10.33
3/21/22 16:00	74.18	7.52
3/21/22 17:00	73.70	5.01
3/21/22 18:00	0.45	4.46
3/21/22 19:00	336.60	8.35

Date	Wind Direction (°)	Wind speed (km/h)
3/21/22 20:00	333.60	10.13
3/21/22 21:00	329.10	10.96
3/21/22 22:00	359.10	16.44
3/21/22 23:00	13.64	12.84
3/22/22 0:00	22.39	7.79
3/22/22 1:00	21.11	9.77
3/22/22 2:00	22.72	9.08
3/22/22 3:00	4.39	7.79
3/22/22 4:00	344.10	11.69
3/22/22 5:00	331.20	13.91
3/22/22 6:00	335.70	16.55
3/22/22 7:00	357.30	18.53
3/22/22 8:00	347.20	16.37
3/22/22 9:00	337.20	18.50
3/22/22 10:00	342.20	20.95
3/22/22 11:00	343.80	20.16
3/22/22 12:00	342.40	20.32
3/22/22 13:00	340.10	20.89
3/22/22 14:00	342.50	19.38
3/22/22 15:00	341.80	18.05
3/22/22 16:00	357.00	18.78
3/22/22 17:00	6.49	16.68
3/22/22 18:00	27.09	16.21
3/22/22 19:00	33.71	17.18
3/22/22 20:00	56.64	20.93
3/22/22 21:00	71.96	13.00
3/22/22 22:00	73.68	14.16
3/22/22 23:00	79.23	17.30
3/23/22 0:00	75.91	19.52
3/23/22 1:00	80.80	27.51
3/23/22 2:00	84.40	28.69
3/23/22 3:00	84.80	28.77
3/23/22 4:00	89.60	35.14
3/23/22 5:00	99.50	37.08
3/23/22 6:00	98.20	36.76
3/23/22 7:00	98.30	36.94
3/23/22 8:00	99.40	36.68
3/23/22 9:00	95.70	38.74
3/23/22 10:00	89.80	32.62
3/23/22 11:00	87.20	35.03
3/23/22 12:00	94.90	36.97
3/23/22 13:00	92.70	43.56
3/23/22 14:00	98.70	40.03
3/23/22 15:00	103.30	31.64
3/23/22 16:00	105.00	29.34
3/23/22 17:00	102.50	24.37
3/23/22 18:00	90.50	24.53
3/23/22 19:00	84.40	23.01
3/23/22 20:00	76.42	21.41
3/23/22 21:00	66.52	21.24
3/23/22 22:00	58.83	21.79
3/23/22 23:00	63.96	23.11
3/24/22 0:00	59.73	19.90
3/24/22 1:00	39.70	18.60
3/24/22 2:00	36.47	24.70
3/24/22 3:00	38.32	29.45
3/24/22 4:00	38.10	29.95
3/24/22 5:00	30.54	31.72
3/24/22 6:00	29.85	33.95
3/24/22 7:00	32.64	36.07
3/24/22 8:00	29.44	34.85
3/24/22 9:00	21.59	35.86
3/24/22 10:00	18.50	33.95
3/24/22 11:00	13.84	34.49
3/24/22 12:00	10.81	36.76
3/24/22 13:00	6.89	35.32
3/24/22 14:00	3.09	32.54
3/24/22 15:00	4.00	32.11
3/24/22 16:00	2.28	34.16
3/24/22 17:00	3.35	32.62
3/24/22 18:00	4.73	27.00

Date	Wind Direction (°)	Wind speed (km/h)
3/24/22 19:00	358.70	21.86
3/24/22 20:00	357.90	20.03
3/24/22 21:00	0.17	22.57
3/24/22 22:00	358.80	19.23
3/24/22 23:00	350.50	19.66
3/25/22 0:00	359.90	21.53
3/25/22 1:00	349.60	19.79
3/25/22 2:00	354.40	18.88
3/25/22 3:00	344.80	16.61
3/25/22 4:00	349.60	21.00
3/25/22 5:00	342.00	19.03
3/25/22 6:00	338.60	18.16
3/25/22 7:00	333.40	19.02
3/25/22 8:00	329.70	18.97
3/25/22 9:00	321.20	16.87
3/25/22 10:00	323.10	16.66
3/25/22 11:00	325.70	18.37
3/25/22 12:00	323.90	16.25
3/25/22 13:00	327.40	15.15
3/25/22 14:00	330.50	18.28
3/25/22 15:00	324.20	17.27
3/25/22 16:00	334.50	15.87
3/25/22 17:00	334.60	14.98
3/25/22 18:00	332.90	12.01
3/25/22 19:00	315.90	14.34
3/25/22 20:00	313.80	17.14
3/25/22 21:00	315.30	16.02
3/25/22 22:00	308.70	12.79
3/25/22 23:00	302.40	14.90
3/26/22 0:00	306.60	13.69
3/26/22 1:00	301.60	13.56
3/26/22 2:00	293.40	8.45
3/26/22 3:00	276.60	6.08
3/26/22 4:00	290.00	7.29
3/26/22 5:00	275.60	3.17
3/26/22 6:00	281.20	3.50
3/26/22 7:00	210.40	1.69
3/26/22 8:00	235.00	2.61
3/26/22 9:00	237.60	5.54
3/26/22 10:00	176.00	1.64
3/26/22 11:00	194.10	4.53
3/26/22 12:00	200.50	7.98
3/26/22 13:00	195.30	6.98
3/26/22 14:00	182.50	7.65
3/26/22 15:00	169.20	5.82
3/26/22 16:00	112.90	3.50
3/26/22 17:00	83.20	6.92
3/26/22 18:00	78.20	6.52
3/26/22 19:00	74.63	9.46
3/26/22 20:00	93.60	11.18
3/26/22 21:00	109.00	12.26
3/26/22 22:00	93.50	10.01
3/26/22 23:00	104.20	9.69
3/27/22 0:00	93.10	10.38
3/27/22 1:00	88.50	9.09
3/27/22 2:00	84.30	10.74
3/27/22 3:00	92.50	9.73
3/27/22 4:00	77.91	13.38
3/27/22 5:00	74.33	12.70
3/27/22 6:00	79.41	14.00
3/27/22 7:00	75.71	13.07
3/27/22 8:00	85.20	15.20
3/27/22 9:00	82.20	13.33
3/27/22 10:00	101.20	14.50
3/27/22 11:00	100.50	17.88
3/27/22 12:00	92.40	19.06
3/27/22 13:00	90.70	18.12
3/27/22 14:00	85.70	19.65
3/27/22 15:00	83.40	21.03
3/27/22 16:00	84.90	21.19
3/27/22 17:00	87.30	18.15

Date	Wind Direction (°)	Wind speed (km/h)
3/27/22 18:00	80.10	17.28
3/27/22 19:00	82.50	16.55
3/27/22 20:00	87.70	16.26
3/27/22 21:00	87.40	18.90
3/27/22 22:00	83.50	19.66
3/27/22 23:00	83.30	15.12
3/28/22 0:00	100.50	16.23
3/28/22 1:00	106.60	12.36
3/28/22 2:00	90.10	13.13
3/28/22 3:00	81.50	16.60
3/28/22 4:00	82.30	14.07
3/28/22 5:00	84.70	15.94
3/28/22 6:00	80.40	8.67
3/28/22 7:00	86.80	12.93
3/28/22 8:00	86.40	13.71
3/28/22 9:00	92.20	15.73
3/28/22 10:00	95.00	14.94
3/28/22 11:00	97.60	16.34
3/28/22 12:00	103.90	13.20
3/28/22 13:00	97.30	14.14
3/28/22 14:00	104.30	16.17
3/28/22 15:00	103.70	15.85
3/28/22 16:00	101.90	13.75
3/28/22 17:00	100.10	12.54
3/28/22 18:00	108.30	11.41
3/28/22 19:00	104.60	9.17
3/28/22 20:00	111.00	8.32
3/28/22 21:00	118.10	8.81
3/28/22 22:00	115.10	5.36
3/28/22 23:00	123.30	3.51
3/29/22 0:00	124.90	5.22
3/29/22 1:00	135.60	5.37
3/29/22 2:00	149.90	2.10
3/29/22 3:00	312.60	1.96
3/29/22 4:00	312.90	5.54
3/29/22 5:00	308.00	8.73
3/29/22 6:00	302.00	9.14
3/29/22 7:00	310.40	9.45
3/29/22 8:00	305.70	7.79
3/29/22 9:00	300.60	6.61
3/29/22 10:00	328.00	5.13
3/29/22 11:00	320.70	5.12
3/29/22 12:00	299.40	6.87
3/29/22 13:00	311.60	6.47
3/29/22 14:00	329.60	6.58
3/29/22 15:00	317.10	2.39
3/29/22 16:00	336.10	5.37
3/29/22 17:00	25.14	7.23
3/29/22 18:00	34.06	12.85
3/29/22 19:00	31.00	13.51
3/29/22 20:00	42.82	11.45
3/29/22 21:00	53.46	11.11
3/29/22 22:00	42.41	14.97
3/29/22 23:00	36.98	15.63
3/30/22 0:00	32.36	13.50
3/30/22 1:00	25.50	14.18
3/30/22 2:00	30.31	13.21
3/30/22 3:00	23.63	12.76
3/30/22 4:00	25.02	11.06
3/30/22 5:00	24.64	11.26
3/30/22 6:00	22.37	11.96
3/30/22 7:00	24.17	12.29
3/30/22 8:00	357.40	7.68
3/30/22 9:00	355.70	8.55
3/30/22 10:00	37.93	9.71
3/30/22 11:00	37.85	7.98
3/30/22 12:00	25.98	8.14
3/30/22 13:00	30.01	12.39
3/30/22 14:00	51.58	11.56
3/30/22 15:00	43.51	10.36
3/30/22 16:00	40.69	11.26

Date	Wind Direction (°)	Wind speed (km/h)
3/30/22 17:00	57.12	12.24
3/30/22 18:00	74.36	11.83
3/30/22 19:00	86.30	14.97
3/30/22 20:00	114.70	12.18
3/30/22 21:00	100.80	10.74
3/30/22 22:00	100.50	12.58
3/30/22 23:00	105.00	13.32
3/31/22 0:00	103.10	13.29
3/31/22 1:00	109.60	9.72
3/31/22 2:00	101.60	12.89
3/31/22 3:00	108.60	13.11
3/31/22 4:00	129.70	18.88
3/31/22 5:00	121.40	12.46
3/31/22 6:00	116.80	10.56
3/31/22 7:00	117.00	12.74
3/31/22 8:00	134.00	15.04
3/31/22 9:00	137.00	15.07
3/31/22 10:00	143.50	18.87
3/31/22 11:00	144.20	18.17
3/31/22 12:00	147.50	16.93
3/31/22 13:00	152.60	17.74
3/31/22 14:00	160.10	18.41
3/31/22 15:00	180.30	10.53
3/31/22 16:00	180.60	6.52
3/31/22 17:00	290.40	9.69
3/31/22 18:00	322.40	15.52
3/31/22 19:00	328.10	21.14
3/31/22 20:00	329.90	21.51
3/31/22 21:00	330.70	27.70
3/31/22 22:00	330.70	26.74
3/31/22 23:00	326.10	25.72
4/1/22 0:00	322.00	26.49
4/1/22 1:00	317.80	25.16
4/1/22 2:00	316.40	22.98
4/1/22 3:00	314.70	26.24
4/1/22 4:00	317.20	25.28
4/1/22 5:00	321.80	22.94
4/1/22 6:00	322.70	21.39
4/1/22 7:00	324.90	20.76
4/1/22 8:00	320.40	18.61
4/1/22 9:00	325.00	15.71
4/1/22 10:00	308.10	18.22
4/1/22 11:00	303.10	19.42
4/1/22 12:00	308.10	21.51
4/1/22 13:00	306.70	22.12
4/1/22 14:00	307.00	22.20
4/1/22 15:00	310.60	23.45
4/1/22 16:00	312.70	23.89
4/1/22 17:00	311.10	23.27
4/1/22 18:00	306.80	19.70
4/1/22 19:00	300.90	18.79
4/1/22 20:00	302.90	15.20
4/1/22 21:00	282.30	13.47
4/1/22 22:00	277.90	13.02
4/1/22 23:00	281.80	12.58
4/2/22 0:00	276.20	12.36
4/2/22 1:00	262.30	10.06
4/2/22 2:00	254.30	11.42
4/2/22 3:00	252.80	9.81
4/2/22 4:00	249.70	12.60
4/2/22 5:00	264.20	12.86
4/2/22 6:00	241.70	10.98
4/2/22 7:00	260.50	10.40
4/2/22 8:00	235.00	8.67
4/2/22 9:00	229.80	9.76
4/2/22 10:00	268.60	9.45
4/2/22 11:00	292.60	6.22
4/2/22 12:00	300.00	3.57
4/2/22 13:00	166.90	3.70
4/2/22 14:00	183.10	8.61
4/2/22 15:00	173.30	7.15

Date	Wind Direction (°)	Wind speed (km/h)
4/2/22 16:00	161.30	6.29
4/2/22 17:00	122.10	6.45
4/2/22 18:00	102.40	7.60
4/2/22 19:00	99.10	13.13
4/2/22 20:00	90.50	10.10
4/2/22 21:00	112.50	12.60
4/2/22 22:00	118.90	11.74
4/2/22 23:00	126.90	14.75
4/3/22 0:00	127.10	14.80
4/3/22 1:00	115.50	14.67
4/3/22 2:00	120.50	15.91
4/3/22 3:00	121.70	18.57
4/3/22 4:00	116.80	17.82
4/3/22 5:00	121.40	17.92
4/3/22 6:00	115.90	16.45
4/3/22 7:00	115.70	18.60
4/3/22 8:00	119.60	21.68
4/3/22 9:00	126.00	21.19
4/3/22 10:00	123.70	22.64
4/3/22 11:00	124.40	23.48
4/3/22 12:00	129.40	23.80
4/3/22 13:00	126.40	22.84
4/3/22 14:00	124.10	24.72
4/3/22 15:00	120.90	26.70
4/3/22 16:00	120.00	25.23
4/3/22 17:00	115.60	22.15
4/3/22 18:00	110.60	25.98
4/3/22 19:00	113.20	32.04
4/3/22 20:00	118.40	29.41
4/3/22 21:00	119.30	32.18
4/3/22 22:00	119.30	29.05
4/3/22 23:00	121.60	28.55
4/4/22 0:00	124.60	25.35
4/4/22 1:00	119.50	24.30
4/4/22 2:00	109.40	18.41
4/4/22 3:00	110.40	20.15
4/4/22 4:00	115.20	24.90
4/4/22 5:00	118.60	34.92
4/4/22 6:00	123.60	36.36
4/4/22 7:00	122.30	35.39
4/4/22 8:00	121.50	32.98
4/4/22 9:00	127.40	28.69
4/4/22 10:00	126.10	29.84
4/4/22 11:00	121.80	37.40
4/4/22 12:00	128.60	30.89
4/4/22 13:00	127.50	34.13
4/4/22 14:00	134.70	25.38
4/4/22 15:00	127.40	31.82
4/4/22 16:00	118.70	27.71
4/4/22 17:00	120.90	37.73
4/4/22 18:00	113.40	39.53
4/4/22 19:00	119.40	36.04
4/4/22 20:00	117.30	32.72
4/4/22 21:00	123.30	35.10
4/4/22 22:00	125.40	35.93
4/4/22 23:00	124.10	31.97
4/5/22 0:00	128.50	30.85
4/5/22 1:00	126.90	28.58
4/5/22 2:00	121.20	24.18
4/5/22 3:00	125.10	22.11
4/5/22 4:00	127.40	19.56
4/5/22 5:00	138.40	19.35
4/5/22 6:00	144.80	16.67
4/5/22 7:00	144.80	18.11
4/5/22 8:00	146.60	15.80
4/5/22 9:00	156.50	14.76
4/5/22 10:00	152.40	14.32
4/5/22 11:00	152.80	15.48
4/5/22 12:00	155.00	13.27
4/5/22 13:00	141.80	15.70
4/5/22 14:00	178.00	16.61

Date	Wind Direction (°)	Wind speed (km/h)
4/5/22 15:00	205.10	13.42
4/5/22 16:00	205.80	13.40
4/5/22 17:00	189.40	9.10
4/5/22 18:00	202.20	13.92
4/5/22 19:00	230.90	14.94
4/5/22 20:00	216.40	15.63
4/5/22 21:00	226.60	15.92
4/5/22 22:00	245.30	13.95
4/5/22 23:00	245.00	13.49
4/6/22 0:00	244.70	10.63
4/6/22 1:00	264.70	11.09
4/6/22 2:00	273.10	8.61
4/6/22 3:00	280.50	7.20
4/6/22 4:00	284.70	9.33
4/6/22 5:00	304.40	7.25
4/6/22 6:00	321.10	6.53
4/6/22 7:00	325.80	7.01
4/6/22 8:00	322.10	8.25
4/6/22 9:00	304.20	7.28
4/6/22 10:00	315.20	5.67
4/6/22 11:00	327.40	5.08
4/6/22 12:00	328.70	8.23
4/6/22 13:00	334.60	9.35
4/6/22 14:00	358.20	4.63
4/6/22 15:00	28.90	3.46
4/6/22 16:00	41.03	3.49
4/6/22 17:00	60.72	3.48
4/6/22 18:00	51.18	3.08
4/6/22 19:00	58.45	2.95
4/6/22 20:00	67.11	4.66
4/6/22 21:00	92.10	2.67
4/6/22 22:00	122.00	3.00
4/6/22 23:00	127.70	5.74
4/7/22 0:00	137.40	6.03
4/7/22 1:00	155.70	5.01
4/7/22 2:00	165.20	6.26
4/7/22 3:00	175.20	6.97
4/7/22 4:00	190.30	7.43
4/7/22 5:00	189.30	6.45
4/7/22 6:00	170.60	6.21
4/7/22 7:00	164.10	6.04
4/7/22 8:00	164.40	8.91
4/7/22 9:00	169.00	8.51
4/7/22 10:00	169.10	8.69
4/7/22 11:00	164.10	8.16
4/7/22 12:00	166.20	11.70
4/7/22 13:00	185.30	14.65
4/7/22 14:00	203.70	13.90
4/7/22 15:00	200.10	14.37
4/7/22 16:00	199.70	13.73
4/7/22 17:00	209.50	15.29
4/7/22 18:00	225.90	14.20
4/7/22 19:00	248.60	6.63
4/7/22 20:00	146.00	0.85
4/7/22 21:00	106.10	2.26
4/7/22 22:00	74.36	4.12
4/7/22 23:00	80.80	7.97
4/8/22 0:00	96.80	10.26
4/8/22 1:00	92.30	10.38
4/8/22 2:00	94.70	8.25
4/8/22 3:00	86.70	9.41
4/8/22 4:00	91.00	8.81
4/8/22 5:00	89.80	8.97
4/8/22 6:00	78.81	8.46
4/8/22 7:00	74.04	9.84
4/8/22 8:00	76.57	11.20
4/8/22 9:00	85.50	11.33
4/8/22 10:00	88.30	14.06
4/8/22 11:00	92.00	15.27
4/8/22 12:00	93.60	15.34
4/8/22 13:00	92.40	17.52

Date	Wind Direction (°)	Wind speed (km/h)
4/8/22 14:00	87.20	22.03
4/8/22 15:00	77.42	25.07
4/8/22 16:00	74.60	27.75
4/8/22 17:00	70.66	27.39
4/8/22 18:00	64.49	28.87
4/8/22 19:00	69.18	31.75
4/8/22 20:00	62.26	32.40
4/8/22 21:00	56.51	36.86
4/8/22 22:00	51.57	40.14
4/8/22 23:00	45.78	45.97
4/9/22 0:00	45.00	46.15
4/9/22 1:00	44.88	47.70
4/9/22 2:00	43.05	48.17
4/9/22 3:00	40.19	50.62
4/9/22 4:00	38.58	52.06
4/9/22 5:00	37.38	51.88
4/9/22 6:00	34.42	52.74
4/9/22 7:00	33.58	50.83
4/9/22 8:00	30.99	52.34
4/9/22 9:00	31.98	58.97
4/9/22 10:00	32.31	58.50
4/9/22 11:00	33.26	57.82
4/9/22 12:00	33.04	55.37
4/9/22 13:00	35.64	54.83
4/9/22 14:00	30.46	53.53
4/9/22 15:00	28.46	50.90
4/9/22 16:00	25.52	50.58
4/9/22 17:00	21.91	52.92
4/9/22 18:00	26.33	51.19
4/9/22 19:00	23.74	48.92
4/9/22 20:00	18.97	48.82
4/9/22 21:00	20.68	44.39
4/9/22 22:00	20.59	39.38
4/9/22 23:00	19.66	41.33
4/10/22 0:00	23.88	47.27
4/10/22 1:00	22.75	42.80
4/10/22 2:00	17.75	39.42
4/10/22 3:00	23.66	45.40
4/10/22 4:00	23.59	46.55
4/10/22 5:00	21.27	46.51
4/10/22 6:00	17.61	44.42
4/10/22 7:00	18.44	40.54
4/10/22 8:00	16.07	40.86
4/10/22 9:00	18.88	39.13
4/10/22 10:00	18.86	41.72
4/10/22 11:00	16.95	39.49
4/10/22 12:00	17.18	39.78
4/10/22 13:00	19.71	40.03
4/10/22 14:00	16.63	40.54
4/10/22 15:00	13.13	38.38
4/10/22 16:00	10.64	38.95
4/10/22 17:00	11.14	40.50
4/10/22 18:00	14.25	33.05
4/10/22 19:00	10.57	33.05
4/10/22 20:00	5.39	31.36
4/10/22 21:00	7.96	26.66
4/10/22 22:00	0.38	28.31
4/10/22 23:00	8.10	32.33
4/11/22 0:00	13.35	29.23
4/11/22 1:00	17.23	29.38
4/11/22 2:00	12.44	24.46
4/11/22 3:00	19.00	29.34
4/11/22 4:00	23.97	27.78
4/11/22 5:00	14.04	29.45
4/11/22 6:00	6.98	28.38
4/11/22 7:00	7.51	29.20
4/11/22 8:00	9.67	27.06
4/11/22 9:00	8.64	26.49
4/11/22 10:00	11.48	32.22
4/11/22 11:00	10.83	31.00
4/11/22 12:00	11.37	31.07

Date	Wind Direction (°)	Wind speed (km/h)
4/11/22 13:00	5.59	30.42
4/11/22 14:00	4.25	31.79
4/11/22 15:00	4.32	33.48
4/11/22 16:00	6.60	32.87
4/11/22 17:00	9.32	32.26
4/11/22 18:00	10.04	29.52
4/11/22 19:00	8.22	23.16
4/11/22 20:00	3.12	20.53
4/11/22 21:00	359.70	18.16
4/11/22 22:00	356.70	18.21
4/11/22 23:00	356.80	18.35
4/12/22 0:00	359.60	19.15
4/12/22 1:00	6.31	19.88
4/12/22 2:00	9.90	20.28
4/12/22 3:00	359.70	18.54
4/12/22 4:00	359.70	18.61
4/12/22 5:00	358.10	17.97
4/12/22 6:00	355.30	17.09
4/12/22 7:00	358.00	15.57
4/12/22 8:00	3.43	12.51
4/12/22 9:00	2.75	10.83
4/12/22 10:00	11.34	10.60
4/12/22 11:00	9.82	10.08
4/12/22 12:00	356.60	11.24
4/12/22 13:00	354.30	11.28
4/12/22 14:00	356.50	12.74
4/12/22 15:00	354.40	14.04
4/12/22 16:00	347.50	14.75
4/12/22 17:00	336.40	13.50
4/12/22 18:00	347.20	12.64
4/12/22 19:00	345.20	10.92
4/12/22 20:00	346.60	10.30
4/12/22 21:00	337.40	8.98
4/12/22 22:00	326.40	9.88
4/12/22 23:00	327.00	8.83
4/13/22 0:00	327.90	8.24
4/13/22 1:00	315.00	8.01
4/13/22 2:00	308.70	7.22
4/13/22 3:00	311.70	7.55
4/13/22 4:00	294.70	7.33
4/13/22 5:00	306.10	6.25
4/13/22 6:00	288.90	5.58
4/13/22 7:00	283.00	4.96
4/13/22 8:00	272.10	4.68
4/13/22 9:00	216.90	5.20
4/13/22 10:00	253.30	6.93
4/13/22 11:00	267.40	7.86
4/13/22 12:00	254.10	7.45
4/13/22 13:00	240.80	9.16
4/13/22 14:00	234.60	8.01
4/13/22 15:00	267.40	10.25
4/13/22 16:00	273.80	8.85
4/13/22 17:00	278.00	9.97
4/13/22 18:00	246.20	7.59
4/13/22 19:00	213.70	8.09
4/13/22 20:00	199.40	10.08
4/13/22 21:00	206.20	10.89
4/13/22 22:00	218.20	9.57
4/13/22 23:00	220.30	12.48
4/14/22 0:00	238.20	15.72
4/14/22 1:00	240.90	16.46
4/14/22 2:00	239.60	14.06
4/14/22 3:00	255.70	16.91
4/14/22 4:00	246.50	15.78
4/14/22 5:00	241.00	14.01
4/14/22 6:00	234.50	12.38
4/14/22 7:00	237.70	14.97
4/14/22 8:00	241.50	17.41
4/14/22 9:00	238.40	18.65
4/14/22 10:00	236.00	20.93
4/14/22 11:00	231.70	21.13

Date	Wind Direction (°)	Wind speed (km/h)
4/14/22 12:00	227.80	22.53
4/14/22 13:00	232.90	22.20
4/14/22 14:00	228.50	21.92
4/14/22 15:00	228.50	19.66
4/14/22 16:00	225.40	22.69
4/14/22 17:00	223.60	24.00
4/14/22 18:00	225.40	19.56
4/14/22 19:00	225.40	16.34
4/14/22 20:00	231.70	13.95
4/14/22 21:00	219.80	15.48
4/14/22 22:00	226.00	15.81
4/14/22 23:00	238.20	17.56
4/15/22 0:00	239.30	14.27
4/15/22 1:00	265.40	13.04
4/15/22 2:00	281.60	11.91
4/15/22 3:00	295.20	9.80
4/15/22 4:00	321.40	11.22
4/15/22 5:00	329.00	14.10
4/15/22 6:00	334.70	9.84
4/15/22 7:00	346.30	9.94
4/15/22 8:00	350.60	9.37
4/15/22 9:00	0.46	9.87
4/15/22 10:00	14.86	10.74
4/15/22 11:00	18.34	12.18
4/15/22 12:00	14.26	13.94
4/15/22 13:00	23.10	14.34
4/15/22 14:00	28.38	17.00
4/15/22 15:00	36.65	17.05
4/15/22 16:00	39.86	15.61
4/15/22 17:00	38.30	14.74
4/15/22 18:00	32.62	13.29
4/15/22 19:00	15.51	12.14
4/15/22 20:00	27.06	12.30
4/15/22 21:00	28.89	9.27
4/15/22 22:00	6.11	12.01
4/15/22 23:00	1.67	13.09
4/16/22 0:00	0.85	13.23
4/16/22 1:00	341.00	8.24
4/16/22 2:00	326.40	9.39
4/16/22 3:00	331.70	11.34
4/16/22 4:00	333.20	16.76
4/16/22 5:00	331.50	13.99
4/16/22 6:00	328.10	13.34
4/16/22 7:00	326.40	11.67
4/16/22 8:00	321.40	10.36
4/16/22 9:00	331.70	10.68
4/16/22 10:00	355.10	12.86
4/16/22 11:00	346.50	9.26
4/16/22 12:00	325.60	8.89
4/16/22 13:00	325.10	14.05
4/16/22 14:00	334.60	15.83
4/16/22 15:00	335.60	14.09
4/16/22 16:00	330.10	13.30
4/16/22 17:00	317.60	12.66
4/16/22 18:00	314.60	13.82
4/16/22 19:00	312.50	16.96
4/16/22 20:00	297.20	15.09
4/16/22 21:00	289.80	15.21
4/16/22 22:00	287.30	16.33
4/16/22 23:00	297.90	16.35
4/17/22 0:00	292.10	14.53
4/17/22 1:00	293.00	15.42
4/17/22 2:00	276.30	15.50
4/17/22 3:00	273.60	15.22
4/17/22 4:00	273.90	14.85
4/17/22 5:00	277.50	15.70
4/17/22 6:00	279.30	15.33
4/17/22 7:00	283.80	13.67
4/17/22 8:00	283.10	12.66
4/17/22 9:00	282.40	13.15
4/17/22 10:00	285.50	12.17

Date	Wind Direction (°)	Wind speed (km/h)
4/17/22 11:00	277.20	13.67
4/17/22 12:00	281.20	18.78
4/17/22 13:00	281.00	21.81
4/17/22 14:00	279.70	21.18
4/17/22 15:00	284.60	24.73
4/17/22 16:00	281.40	27.48
4/17/22 17:00	279.20	23.75
4/17/22 18:00	273.50	19.62
4/17/22 19:00	263.50	21.74
4/17/22 20:00	268.60	18.40
4/17/22 21:00	260.80	22.67
4/17/22 22:00	259.20	25.42
4/17/22 23:00	260.60	24.95
4/18/22 0:00	268.60	24.28
4/18/22 1:00	272.20	24.33
4/18/22 2:00	270.90	23.41
4/18/22 3:00	283.70	24.32
4/18/22 4:00	282.90	25.97
4/18/22 5:00	283.60	25.23
4/18/22 6:00	282.10	25.71
4/18/22 7:00	281.20	22.69
4/18/22 8:00	292.10	25.54
4/18/22 9:00	295.60	27.08
4/18/22 10:00	291.40	26.83
4/18/22 11:00	295.60	27.83
4/18/22 12:00	291.00	25.25
4/18/22 13:00	291.70	25.52
4/18/22 14:00	285.30	25.44
4/18/22 15:00	292.80	25.69
4/18/22 16:00	285.80	23.03
4/18/22 17:00	292.90	16.56
4/18/22 18:00	293.40	14.75
4/18/22 19:00	296.70	11.89
4/18/22 20:00	297.50	10.79
4/18/22 21:00	281.90	8.41
4/18/22 22:00	278.40	9.11
4/18/22 23:00	258.10	8.33
4/19/22 0:00	243.80	7.32
4/19/22 1:00	242.40	12.87
4/19/22 2:00	240.10	13.99
4/19/22 3:00	240.90	13.73
4/19/22 4:00	271.30	16.70
4/19/22 5:00	295.70	13.24
4/19/22 6:00	301.60	11.12
4/19/22 7:00	297.00	9.44
4/19/22 8:00	278.30	9.52
4/19/22 9:00	280.80	11.83
4/19/22 10:00	277.40	10.99
4/19/22 11:00	265.20	12.32
4/19/22 12:00	273.50	15.91
4/19/22 13:00	273.40	18.84
4/19/22 14:00	278.80	21.57
4/19/22 15:00	286.30	20.55
4/19/22 16:00	279.80	19.82
4/19/22 17:00	281.60	21.37
4/19/22 18:00	273.30	15.90
4/19/22 19:00	266.40	16.03
4/19/22 20:00	272.60	18.07
4/19/22 21:00	274.30	18.68
4/19/22 22:00	270.10	17.61
4/19/22 23:00	271.20	16.95
4/20/22 0:00	272.40	19.63
4/20/22 1:00	274.00	18.29
4/20/22 2:00	267.10	18.28
4/20/22 3:00	265.20	19.90
4/20/22 4:00	267.50	19.84
4/20/22 5:00	278.60	15.21
4/20/22 6:00	277.40	13.95
4/20/22 7:00	294.20	13.67
4/20/22 8:00	293.60	10.98
4/20/22 9:00	314.20	11.33

Date	Wind Direction (°)	Wind speed (km/h)
4/20/22 10:00	338.50	10.24
4/20/22 11:00	13.27	11.53
4/20/22 12:00	42.05	10.20
4/20/22 13:00	61.31	9.83
4/20/22 14:00	81.50	8.79
4/20/22 15:00	88.00	10.73
4/20/22 16:00	90.50	13.61
4/20/22 17:00	98.20	13.33
4/20/22 18:00	110.50	12.48
4/20/22 19:00	99.90	12.80
4/20/22 20:00	109.80	12.36
4/20/22 21:00	134.30	10.85
4/20/22 22:00	140.30	10.98
4/20/22 23:00	158.90	14.64
4/21/22 0:00	175.00	14.90
4/21/22 1:00	180.70	14.97
4/21/22 2:00	183.80	12.17
4/21/22 3:00	197.50	16.20
4/21/22 4:00	212.50	19.60
4/21/22 5:00	225.60	17.96
4/21/22 6:00	224.00	20.51
4/21/22 7:00	226.50	17.80
4/21/22 8:00	226.10	16.52
4/21/22 9:00	222.10	18.80
4/21/22 10:00	227.30	20.10
4/21/22 11:00	238.30	18.63
4/21/22 12:00	234.20	20.35
4/21/22 13:00	229.90	20.80
4/21/22 14:00	229.40	21.90
4/21/22 15:00	230.50	23.29
4/21/22 16:00	237.30	20.33
4/21/22 17:00	243.40	16.80
4/21/22 18:00	253.80	16.73
4/21/22 19:00	242.80	11.99
4/21/22 20:00	227.30	13.23
4/21/22 21:00	235.40	14.55
4/21/22 22:00	237.30	16.52
4/21/22 23:00	243.70	15.83
4/22/22 0:00	297.80	10.75
4/22/22 1:00	266.90	4.93
4/22/22 2:00	342.00	4.56
4/22/22 3:00	70.42	5.26
4/22/22 4:00	82.90	7.29
4/22/22 5:00	84.10	9.60
4/22/22 6:00	98.90	8.82
4/22/22 7:00	52.73	11.72
4/22/22 8:00	75.71	11.75
4/22/22 9:00	73.31	14.44
4/22/22 10:00	84.40	17.01
4/22/22 11:00	80.40	20.11
4/22/22 12:00	78.26	23.94
4/22/22 13:00	80.50	26.87
4/22/22 14:00	88.90	27.86
4/22/22 15:00	83.20	29.30
4/22/22 16:00	82.80	31.00
4/22/22 17:00	82.70	32.80
4/22/22 18:00	82.00	32.58
4/22/22 19:00	76.09	32.65
4/22/22 20:00	76.63	33.44
4/22/22 21:00	80.50	31.79
4/22/22 22:00	82.00	28.41
4/22/22 23:00	81.00	25.31
4/23/22 0:00	77.20	25.39
4/23/22 1:00	77.79	24.56
4/23/22 2:00	81.80	26.31
4/23/22 3:00	84.70	25.91
4/23/22 4:00	84.10	25.94
4/23/22 5:00	87.20	25.30
4/23/22 6:00	95.20	24.06
4/23/22 7:00	98.40	24.69
4/23/22 8:00	102.00	27.40

Date	Wind Direction (°)	Wind speed (km/h)
4/23/22 9:00	103.70	29.84
4/23/22 10:00	106.00	30.64
4/23/22 11:00	108.20	31.18
4/23/22 12:00	105.50	30.85
4/23/22 13:00	103.80	31.03
4/23/22 14:00	105.60	31.79
4/23/22 15:00	106.00	29.30
4/23/22 16:00	105.40	28.25
4/23/22 17:00	110.20	32.65
4/23/22 18:00	111.80	32.44
4/23/22 19:00	112.30	31.61
4/23/22 20:00	112.90	32.04
4/23/22 21:00	114.70	30.71
4/23/22 22:00	121.10	30.13
4/23/22 23:00	125.10	29.48
4/24/22 0:00	129.00	23.80
4/24/22 1:00	140.30	14.54
4/24/22 2:00	144.20	17.06
4/24/22 3:00	140.40	15.75
4/24/22 4:00	140.40	14.94
4/24/22 5:00	144.00	18.42
4/24/22 6:00	139.20	15.63
4/24/22 7:00	144.80	15.85
4/24/22 8:00	139.60	11.78
4/24/22 9:00	133.00	13.45
4/24/22 10:00	142.30	17.30
4/24/22 11:00	146.00	16.93
4/24/22 12:00	153.60	21.38
4/24/22 13:00	151.10	21.52
4/24/22 14:00	148.30	20.98
4/24/22 15:00	138.10	18.48
4/24/22 16:00	130.10	18.25
4/24/22 17:00	124.10	19.83
4/24/22 18:00	124.00	17.88
4/24/22 19:00	122.80	18.29
4/24/22 20:00	122.80	16.88
4/24/22 21:00	129.60	16.65
4/24/22 22:00	138.70	21.50
4/24/22 23:00	149.70	20.34
4/25/22 0:00	164.70	17.06
4/25/22 1:00	175.90	18.39
4/25/22 2:00	178.70	18.37
4/25/22 3:00	179.90	18.98
4/25/22 4:00	181.70	18.84
4/25/22 5:00	182.30	14.31
4/25/22 6:00	173.90	14.21
4/25/22 7:00	165.50	13.86
4/25/22 8:00	163.90	13.85
4/25/22 9:00	143.10	10.04
4/25/22 10:00	146.60	12.07
4/25/22 11:00	141.10	16.12
4/25/22 12:00	133.10	16.68
4/25/22 13:00	133.20	18.17
4/25/22 14:00	132.10	17.14
4/25/22 15:00	115.70	14.68
4/25/22 16:00	119.70	14.68
4/25/22 17:00	110.30	15.81
4/25/22 18:00	104.40	14.76
4/25/22 19:00	96.20	11.86
4/25/22 20:00	92.30	10.90
4/25/22 21:00	96.70	10.81
4/25/22 22:00	98.20	9.03
4/25/22 23:00	104.30	9.51
4/26/22 0:00	113.90	9.55
4/26/22 1:00	112.20	8.35
4/26/22 2:00	124.50	6.68
4/26/22 3:00	112.50	8.04
4/26/22 4:00	110.10	9.09
4/26/22 5:00	113.20	8.02
4/26/22 6:00	104.10	9.70
4/26/22 7:00	107.30	7.65

Date	Wind Direction (°)	Wind speed (km/h)
4/26/22 8:00	110.90	9.45
4/26/22 9:00	112.90	9.91
4/26/22 10:00	101.70	9.39
4/26/22 11:00	104.50	11.21
4/26/22 12:00	101.20	13.53
4/26/22 13:00	98.00	13.04
4/26/22 14:00	94.40	15.44
4/26/22 15:00	96.90	18.78
4/26/22 16:00	101.20	18.95
4/26/22 17:00	99.10	18.28
4/26/22 18:00	104.00	19.71
4/26/22 19:00	94.10	14.13
4/26/22 20:00	94.10	17.54
4/26/22 21:00	94.70	19.47
4/26/22 22:00	94.50	17.70
4/26/22 23:00	79.68	13.68
4/27/22 0:00	78.42	13.58
4/27/22 1:00	86.50	13.97
4/27/22 2:00	91.20	12.65
4/27/22 3:00	87.80	12.83
4/27/22 4:00	93.40	10.16
4/27/22 5:00	80.80	9.37
4/27/22 6:00	72.56	12.67
4/27/22 7:00	78.72	10.76
4/27/22 8:00	83.70	12.70
4/27/22 9:00	71.69	7.58
4/27/22 10:00	70.21	10.00
4/27/22 11:00	67.55	11.08
4/27/22 12:00	70.86	15.39
4/27/22 13:00	73.39	17.22
4/27/22 14:00	78.00	17.61
4/27/22 15:00	82.70	19.41
4/27/22 16:00	83.40	17.03
4/27/22 17:00	82.70	16.69
4/27/22 18:00	81.80	15.88
4/27/22 19:00	72.06	16.29
4/27/22 20:00	68.78	15.84
4/27/22 21:00	68.69	15.51
4/27/22 22:00	76.12	17.26
4/27/22 23:00	67.41	16.65
4/28/22 0:00	80.60	14.49
4/28/22 1:00	75.97	13.22
4/28/22 2:00	35.80	16.27
4/28/22 3:00	43.46	19.43
4/28/22 4:00	48.12	18.77
4/28/22 5:00	43.80	20.16
4/28/22 6:00	52.14	21.07
4/28/22 7:00	47.99	25.05
4/28/22 8:00	48.48	24.68
4/28/22 9:00	55.60	25.96
4/28/22 10:00	57.75	28.53
4/28/22 11:00	58.43	30.10
4/28/22 12:00	57.35	30.82
4/28/22 13:00	51.66	33.52
4/28/22 14:00	49.67	34.31
4/28/22 15:00	50.83	33.12
4/28/22 16:00	42.92	32.94
4/28/22 17:00	40.67	34.02
4/28/22 18:00	38.27	31.43
4/28/22 19:00	35.28	31.64
4/28/22 20:00	40.36	31.32
4/28/22 21:00	38.70	28.87
4/28/22 22:00	41.10	29.52
4/28/22 23:00	40.78	26.07
4/29/22 0:00	44.36	23.05
4/29/22 1:00	48.29	22.50
4/29/22 2:00	47.64	27.43
4/29/22 3:00	44.00	21.02
4/29/22 4:00	45.78	21.38
4/29/22 5:00	44.08	27.92
4/29/22 6:00	43.10	20.30

Date	Wind Direction (°)	Wind speed (km/h)
4/29/22 7:00	43.34	18.15
4/29/22 8:00	51.36	21.95
4/29/22 9:00	44.87	21.31
4/29/22 10:00	46.37	22.11
4/29/22 11:00	53.22	18.10
4/29/22 12:00	61.48	20.77
4/29/22 13:00	57.06	15.51
4/29/22 14:00	51.01	16.68
4/29/22 15:00	58.84	14.93
4/29/22 16:00	63.91	16.85
4/29/22 17:00	51.84	16.80
4/29/22 18:00	69.80	15.80
4/29/22 19:00	74.95	13.36
4/29/22 20:00	73.11	12.05
4/29/22 21:00	81.40	13.24
4/29/22 22:00	89.50	12.67
4/29/22 23:00	93.40	10.99
4/30/22 0:00	96.00	7.61
4/30/22 1:00	113.50	7.59
4/30/22 2:00	108.00	8.92
4/30/22 3:00	106.00	8.67
4/30/22 4:00	109.10	6.34
4/30/22 5:00	118.70	4.81
4/30/22 6:00	115.50	4.75
4/30/22 7:00	104.60	3.98
4/30/22 8:00	89.30	6.04
4/30/22 9:00	117.80	11.24
4/30/22 10:00	121.60	10.95
4/30/22 11:00	126.90	11.95
4/30/22 12:00	125.80	12.99
4/30/22 13:00	110.30	12.68
4/30/22 14:00	115.00	15.12
4/30/22 15:00	122.30	15.25
4/30/22 16:00	129.30	17.65
4/30/22 17:00	124.70	16.82
4/30/22 18:00	120.20	16.81
4/30/22 19:00	121.40	13.54
4/30/22 20:00	123.90	12.38
4/30/22 21:00	107.50	8.42
4/30/22 22:00	97.20	4.72
4/30/22 23:00	143.30	8.76
5/1/22 0:00	150.60	10.03
5/1/22 1:00	154.20	10.67
5/1/22 2:00	162.20	12.23
5/1/22 3:00	159.70	11.55
5/1/22 4:00	171.70	13.08
5/1/22 5:00	171.20	11.26
5/1/22 6:00	162.00	8.51
5/1/22 7:00	172.30	9.19
5/1/22 8:00	170.80	10.50
5/1/22 9:00	180.60	11.51
5/1/22 10:00	159.10	9.78
5/1/22 11:00	137.30	10.79
5/1/22 12:00	136.00	11.26
5/1/22 13:00	141.00	11.14
5/1/22 14:00	148.80	12.09
5/1/22 15:00	155.90	12.81
5/1/22 16:00	157.60	13.43
5/1/22 17:00	150.70	13.35
5/1/22 18:00	138.60	13.47
5/1/22 19:00	129.50	13.06
5/1/22 20:00	115.40	11.27
5/1/22 21:00	122.10	8.96
5/1/22 22:00	134.20	8.04
5/1/22 23:00	148.50	6.54
5/2/22 0:00	161.90	6.89
5/2/22 1:00	172.20	14.31
5/2/22 2:00	176.70	14.58
5/2/22 3:00	154.40	11.26
5/2/22 4:00	141.60	8.36
5/2/22 5:00	145.50	8.79

Date	Wind Direction (°)	Wind speed (km/h)
5/2/22 6:00	144.10	9.78
5/2/22 7:00	146.10	9.25
5/2/22 8:00	140.10	9.09
5/2/22 9:00	136.50	12.90
5/2/22 10:00	140.70	14.77
5/2/22 11:00	143.20	14.56
5/2/22 12:00	158.50	20.19
5/2/22 13:00	139.90	21.25
5/2/22 14:00	136.20	22.19
5/2/22 15:00	135.60	22.64
5/2/22 16:00	126.70	23.33
5/2/22 17:00	131.30	23.63
5/2/22 18:00	127.40	25.04
5/2/22 19:00	135.20	22.24
5/2/22 20:00	135.60	21.57
5/2/22 21:00	118.40	17.99
5/2/22 22:00	130.40	20.26
5/2/22 23:00	131.70	22.03
5/3/22 0:00	128.20	17.86
5/3/22 1:00	135.50	15.45
5/3/22 2:00	133.80	14.33
5/3/22 3:00	131.20	10.17
5/3/22 4:00	146.70	11.50
5/3/22 5:00	145.70	9.93
5/3/22 6:00	152.40	9.79
5/3/22 7:00	146.30	12.96
5/3/22 8:00	156.20	14.93
5/3/22 9:00	151.30	14.23
5/3/22 10:00	148.10	18.27
5/3/22 11:00	146.70	20.38
5/3/22 12:00	137.40	24.15
5/3/22 13:00	143.80	28.61
5/3/22 14:00	148.40	29.52
5/3/22 15:00	137.70	27.86
5/3/22 16:00	137.60	27.52
5/3/22 17:00	137.30	28.65
5/3/22 18:00	134.00	28.16
5/3/22 19:00	133.90	27.42
5/3/22 20:00	133.20	25.69
5/3/22 21:00	140.30	26.73
5/3/22 22:00	143.00	27.61
5/3/22 23:00	141.70	28.84
5/4/22 0:00	140.70	26.40
5/4/22 1:00	144.80	24.81
5/4/22 2:00	144.10	24.89
5/4/22 3:00	139.80	25.46
5/4/22 4:00	134.10	23.30
5/4/22 5:00	132.00	23.45
5/4/22 6:00	142.10	25.98
5/4/22 7:00	140.00	29.02
5/4/22 8:00	135.00	29.88
5/4/22 9:00	142.20	33.59
5/4/22 10:00	141.10	35.71
5/4/22 11:00	143.80	37.33
5/4/22 12:00	155.20	38.74
5/4/22 13:00	154.20	38.16
5/4/22 14:00	157.60	37.26
5/4/22 15:00	162.50	35.86
5/4/22 16:00	163.50	33.16
5/4/22 17:00	161.00	29.02
5/4/22 18:00	158.20	28.53
5/4/22 19:00	159.90	26.40
5/4/22 20:00	161.80	22.68
5/4/22 21:00	161.20	21.74
5/4/22 22:00	163.70	19.19
5/4/22 23:00	163.20	16.69
5/5/22 0:00	152.30	15.26
5/5/22 1:00	141.80	15.45
5/5/22 2:00	150.00	12.21
5/5/22 3:00	139.50	11.30
5/5/22 4:00	149.30	14.40

Date	Wind Direction (°)	Wind speed (km/h)
5/5/22 5:00	153.30	13.30
5/5/22 6:00	165.10	16.28
5/5/22 7:00	175.60	13.85
5/5/22 8:00	180.70	17.60
5/5/22 9:00	177.20	18.85
5/5/22 10:00	172.40	19.36
5/5/22 11:00	186.70	20.02
5/5/22 12:00	197.50	19.31
5/5/22 13:00	187.20	16.47
5/5/22 14:00	204.40	18.40
5/5/22 15:00	201.50	18.60
5/5/22 16:00	204.40	18.73
5/5/22 17:00	205.70	16.16
5/5/22 18:00	207.70	15.84
5/5/22 19:00	224.40	14.98
5/5/22 20:00	216.90	10.09
5/5/22 21:00	219.60	10.43
5/5/22 22:00	214.60	11.30
5/5/22 23:00	209.90	10.93
5/6/22 0:00	236.20	9.71
5/6/22 1:00	305.00	8.30
5/6/22 2:00	9.40	8.96
5/6/22 3:00	40.77	10.47
5/6/22 4:00	66.78	10.17
5/6/22 5:00	52.73	9.03
5/6/22 6:00	69.61	11.34
5/6/22 7:00	65.42	10.27
5/6/22 8:00	76.95	12.80
5/6/22 9:00	45.08	15.04
5/6/22 10:00	41.21	17.79
5/6/22 11:00	66.48	20.44
5/6/22 12:00	56.27	18.78
5/6/22 13:00	49.40	17.52
5/6/22 14:00	50.53	19.33
5/6/22 15:00	62.09	18.67
5/6/22 16:00	66.30	18.06
5/6/22 17:00	65.73	16.80
5/6/22 18:00	61.56	16.77
5/6/22 19:00	55.62	16.20
5/6/22 20:00	57.93	17.30
5/6/22 21:00	60.40	16.33
5/6/22 22:00	69.56	20.03
5/6/22 23:00	63.16	19.55
5/7/22 0:00	61.68	25.21
5/7/22 1:00	62.66	29.95
5/7/22 2:00	69.34	29.12
5/7/22 3:00	61.23	30.78
5/7/22 4:00	56.37	35.64
5/7/22 5:00	57.09	35.64
5/7/22 6:00	63.03	39.92
5/7/22 7:00	60.89	44.50
5/7/22 8:00	55.74	49.50
5/7/22 9:00	55.18	48.71
5/7/22 10:00	56.86	47.66
5/7/22 11:00	55.01	49.46
5/7/22 12:00	55.05	51.34
5/7/22 13:00	53.21	56.48
5/7/22 14:00	59.32	53.93
5/7/22 15:00	63.79	53.32
5/7/22 16:00	71.16	54.58
5/7/22 17:00	73.47	56.05
5/7/22 18:00	74.62	47.95
5/7/22 19:00	75.19	44.71
5/7/22 20:00	76.98	47.66
5/7/22 21:00	79.27	36.14
5/7/22 22:00	81.80	30.10
5/7/22 23:00	82.60	23.45
5/8/22 0:00	77.01	22.56
5/8/22 1:00	75.18	21.27
5/8/22 2:00	72.03	22.44
5/8/22 3:00	66.93	23.75

Date	Wind Direction (°)	Wind speed (km/h)
5/8/22 4:00	66.60	26.07
5/8/22 5:00	67.36	27.25
5/8/22 6:00	67.24	27.48
5/8/22 7:00	64.27	27.80
5/8/22 8:00	61.89	28.16
5/8/22 9:00	56.90	30.20
5/8/22 10:00	53.81	29.48
5/8/22 11:00	54.68	30.06
5/8/22 12:00	56.48	43.67
5/8/22 13:00	51.65	57.89
5/8/22 14:00	51.64	64.44
5/8/22 15:00	49.99	63.72
5/8/22 16:00	51.43	65.66
5/8/22 17:00	51.82	64.33
5/8/22 18:00	54.49	65.20
5/8/22 19:00	56.11	64.69
5/8/22 20:00	51.63	65.48
5/8/22 21:00	47.80	68.76
5/8/22 22:00	48.69	68.47
5/8/22 23:00	50.18	65.34
5/9/22 0:00	51.81	63.97
5/9/22 1:00	48.33	65.09
5/9/22 2:00	47.79	61.56
5/9/22 3:00	46.71	59.98
5/9/22 4:00	53.12	55.04
5/9/22 5:00	52.68	58.57
5/9/22 6:00	48.59	57.06
5/9/22 7:00	48.69	55.51
5/9/22 8:00	49.57	51.26
5/9/22 9:00	53.49	53.93
5/9/22 10:00	53.45	53.14
5/9/22 11:00	55.62	49.72
5/9/22 12:00	57.35	47.99
5/9/22 13:00	55.69	46.58
5/9/22 14:00	56.76	46.22
5/9/22 15:00	57.55	44.89
5/9/22 16:00	60.18	41.22
5/9/22 17:00	59.76	41.90
5/9/22 18:00	60.63	40.57
5/9/22 19:00	62.12	40.68
5/9/22 20:00	61.27	37.80
5/9/22 21:00	65.19	37.08
5/9/22 22:00	65.18	36.29
5/9/22 23:00	65.46	32.65
5/10/22 0:00	68.36	31.97
5/10/22 1:00	66.63	31.72
5/10/22 2:00	70.61	30.71
5/10/22 3:00	64.45	28.94
5/10/22 4:00	60.10	25.77
5/10/22 5:00	67.30	30.64
5/10/22 6:00	69.64	31.36
5/10/22 7:00	63.50	30.89
5/10/22 8:00	60.59	28.20
5/10/22 9:00	56.50	27.30
5/10/22 10:00	59.44	30.35
5/10/22 11:00	61.18	29.56
5/10/22 12:00	69.46	29.63
5/10/22 13:00	66.86	29.27
5/10/22 14:00	64.14	29.41
5/10/22 15:00	65.98	27.28
5/10/22 16:00	71.94	23.67
5/10/22 17:00	70.43	21.26
5/10/22 18:00	67.01	20.79
5/10/22 19:00	54.84	22.05
5/10/22 20:00	55.62	21.85
5/10/22 21:00	57.26	20.67
5/10/22 22:00	55.29	18.98
5/10/22 23:00	47.96	16.74
5/11/22 0:00	40.52	17.57
5/11/22 1:00	49.10	17.35
5/11/22 2:00	57.93	16.07

Date	Wind Direction (°)	Wind speed (km/h)
5/11/22 3:00	52.28	13.23
5/11/22 4:00	32.00	12.42
5/11/22 5:00	32.55	13.59
5/11/22 6:00	35.47	14.27
5/11/22 7:00	40.24	15.70
5/11/22 8:00	40.37	13.42
5/11/22 9:00	31.06	11.69
5/11/22 10:00	35.72	11.38
5/11/22 11:00	36.57	11.71
5/11/22 12:00	30.42	9.90
5/11/22 13:00	24.72	8.25
5/11/22 14:00	5.88	8.91
5/11/22 15:00	15.23	6.55
5/11/22 16:00	27.75	6.12
5/11/22 17:00	18.68	5.62
5/11/22 18:00	357.20	3.70
5/11/22 19:00	11.31	6.36
5/11/22 20:00	9.81	4.06
5/11/22 21:00	20.33	5.01
5/11/22 22:00	19.88	4.28
5/11/22 23:00	23.06	2.24
5/12/22 0:00	66.34	4.98
5/12/22 1:00	76.57	2.70
5/12/22 2:00	77.05	2.10
5/12/22 3:00	77.28	2.28
5/12/22 4:00	98.10	2.88
5/12/22 5:00	142.50	4.63
5/12/22 6:00	150.80	3.61
5/12/22 7:00	151.30	5.96
5/12/22 8:00	188.60	6.61
5/12/22 9:00	207.00	8.53
5/12/22 10:00	227.80	7.23
5/12/22 11:00	196.10	10.75
5/12/22 12:00	193.70	15.25
5/12/22 13:00	227.70	16.24
5/12/22 14:00	231.20	13.90
5/12/22 15:00	272.50	9.84
5/12/22 16:00	236.80	9.48
5/12/22 17:00	185.00	8.13
5/12/22 18:00	170.80	6.97
5/12/22 19:00	146.40	8.07
5/12/22 20:00	141.00	9.41
5/12/22 21:00	133.40	12.05
5/12/22 22:00	141.50	10.44
5/12/22 23:00	139.90	12.90
5/13/22 0:00	152.70	14.23
5/13/22 1:00	151.20	15.57
5/13/22 2:00	148.90	14.95
5/13/22 3:00	152.60	15.93
5/13/22 4:00	141.40	14.98
5/13/22 5:00	139.30	12.25
5/13/22 6:00	135.20	9.91
5/13/22 7:00	114.70	12.13
5/13/22 8:00	93.20	11.20
5/13/22 9:00	102.50	12.99
5/13/22 10:00	103.60	12.77
5/13/22 11:00	111.40	18.95
5/13/22 12:00	126.60	22.11
5/13/22 13:00	127.50	22.65
5/13/22 14:00	108.50	21.30
5/13/22 15:00	113.70	21.54
5/13/22 16:00	107.00	21.96
5/13/22 17:00	102.20	23.25
5/13/22 18:00	107.50	22.45
5/13/22 19:00	104.10	17.70
5/13/22 20:00	97.20	19.70
5/13/22 21:00	95.90	18.94
5/13/22 22:00	92.90	15.45
5/13/22 23:00	89.20	17.99
5/14/22 0:00	88.20	18.10
5/14/22 1:00	72.77	12.59

Date	Wind Direction (°)	Wind speed (km/h)
5/14/22 2:00	80.70	17.22
5/14/22 3:00	70.59	15.22
5/14/22 4:00	51.63	12.29
5/14/22 5:00	52.88	15.75
5/14/22 6:00	48.90	16.18
5/14/22 7:00	56.74	18.70
5/14/22 8:00	65.03	24.03
5/14/22 9:00	68.91	24.31
5/14/22 10:00	74.48	22.05
5/14/22 11:00	76.32	25.05
5/14/22 12:00	85.20	26.27
5/14/22 13:00	84.30	22.56
5/14/22 14:00	88.30	23.30
5/14/22 15:00	95.20	24.32
5/14/22 16:00	90.10	22.28
5/14/22 17:00	85.60	17.83
5/14/22 18:00	81.30	17.02
5/14/22 19:00	86.60	16.59
5/14/22 20:00	83.60	14.49
5/14/22 21:00	74.31	14.19
5/14/22 22:00	64.36	12.80
5/14/22 23:00	69.61	11.92
5/15/22 0:00	70.32	10.46
5/15/22 1:00	55.72	9.34
5/15/22 2:00	42.67	7.26
5/15/22 3:00	20.38	5.92
5/15/22 4:00	8.27	10.78
5/15/22 5:00	35.70	6.24
5/15/22 6:00	22.57	9.78
5/15/22 7:00	26.20	11.62
5/15/22 8:00	33.79	15.76
5/15/22 9:00	47.54	20.62
5/15/22 10:00	57.21	21.87
5/15/22 11:00	65.00	23.73
5/15/22 12:00	71.03	21.61
5/15/22 13:00	77.24	20.05
5/15/22 14:00	86.50	18.78
5/15/22 15:00	86.50	18.69
5/15/22 16:00	87.80	17.05
5/15/22 17:00	90.00	18.40
5/15/22 18:00	84.20	19.21
5/15/22 19:00	90.10	18.78
5/15/22 20:00	84.80	21.75
5/15/22 21:00	95.90	20.22
5/15/22 22:00	109.40	20.40
5/15/22 23:00	104.00	21.48
5/16/22 0:00	107.10	23.64
5/16/22 1:00	114.00	22.76
5/16/22 2:00	133.30	20.70
5/16/22 3:00	137.70	16.61
5/16/22 4:00	148.30	15.19
5/16/22 5:00	144.60	13.33
5/16/22 6:00	127.90	12.65
5/16/22 7:00	124.50	16.49
5/16/22 8:00	126.20	15.76
5/16/22 9:00	120.50	17.32
5/16/22 10:00	123.90	19.05
5/16/22 11:00	123.70	18.94
5/16/22 12:00	119.20	18.93
5/16/22 13:00	119.10	20.99
5/16/22 14:00	115.80	21.28
5/16/22 15:00	105.00	23.14
5/16/22 16:00	101.90	24.65
5/16/22 17:00	111.60	26.64
5/16/22 18:00	114.90	26.70
5/16/22 19:00	121.30	28.79
5/16/22 20:00	116.60	28.18
5/16/22 21:00	119.10	27.16
5/16/22 22:00	126.40	27.82
5/16/22 23:00	124.30	25.04
5/17/22 0:00	120.50	25.25

Date	Wind Direction (°)	Wind speed (km/h)
5/17/22 1:00	118.30	27.23
5/17/22 2:00	120.10	27.81
5/17/22 3:00	117.70	28.14
5/17/22 4:00	122.70	23.91
5/17/22 5:00	127.40	24.76
5/17/22 6:00	123.30	26.61
5/17/22 7:00	121.50	26.68
5/17/22 8:00	118.60	25.88
5/17/22 9:00	117.70	27.12
5/17/22 10:00	123.90	25.89
5/17/22 11:00	118.10	25.25
5/17/22 12:00	118.20	25.97
5/17/22 13:00	113.50	26.26
5/17/22 14:00	110.70	24.17
5/17/22 15:00	105.60	24.88
5/17/22 16:00	105.10	26.93
5/17/22 17:00	108.60	24.62
5/17/22 18:00	100.80	25.52
5/17/22 19:00	99.70	26.86
5/17/22 20:00	108.60	24.19
5/17/22 21:00	114.20	20.31
5/17/22 22:00	111.30	18.36
5/17/22 23:00	112.40	15.50
5/18/22 0:00	102.70	12.14
5/18/22 1:00	105.60	14.53
5/18/22 2:00	103.50	13.20
5/18/22 3:00	107.20	13.70
5/18/22 4:00	107.40	13.58
5/18/22 5:00	112.60	16.74
5/18/22 6:00	115.10	22.84
5/18/22 7:00	110.00	22.68
5/18/22 8:00	106.40	21.83
5/18/22 9:00	104.00	22.76
5/18/22 10:00	100.90	24.83
5/18/22 11:00	97.70	25.97
5/18/22 12:00	94.00	25.84
5/18/22 13:00	94.20	27.63
5/18/22 14:00	96.60	25.49
5/18/22 15:00	94.10	25.12
5/18/22 16:00	93.00	23.34
5/18/22 17:00	81.20	24.82
5/18/22 18:00	82.00	23.64
5/18/22 19:00	93.50	22.49
5/18/22 20:00	101.10	22.85
5/18/22 21:00	95.60	20.95
5/18/22 22:00	95.20	14.75
5/18/22 23:00	81.10	11.50
5/19/22 0:00	73.52	9.98
5/19/22 1:00	60.85	10.36
5/19/22 2:00	37.86	10.88
5/19/22 3:00	41.20	11.54
5/19/22 4:00	39.02	12.09
5/19/22 5:00	43.92	13.33
5/19/22 6:00	50.52	14.99
5/19/22 7:00	42.12	17.59
5/19/22 8:00	46.26	18.17
5/19/22 9:00	39.57	17.37
5/19/22 10:00	30.99	18.78
5/19/22 11:00	30.68	21.37
5/19/22 12:00	29.05	21.02
5/19/22 13:00	29.41	19.59
5/19/22 14:00	29.38	20.00
5/19/22 15:00	29.05	20.27
5/19/22 16:00	29.96	19.63
5/19/22 17:00	33.75	18.89
5/19/22 18:00	35.25	17.14
5/19/22 19:00	31.54	14.05
5/19/22 20:00	26.18	11.21
5/19/22 21:00	16.40	11.08
5/19/22 22:00	2.72	12.73
5/19/22 23:00	3.44	14.82

Date	Wind Direction (°)	Wind speed (km/h)
5/20/22 0:00	345.80	10.78
5/20/22 1:00	330.00	9.84
5/20/22 2:00	329.40	10.05
5/20/22 3:00	322.20	10.86
5/20/22 4:00	314.30	11.80
5/20/22 5:00	308.00	12.00
5/20/22 6:00	302.50	10.49
5/20/22 7:00	306.40	10.42
5/20/22 8:00	311.30	10.52
5/20/22 9:00	320.00	10.62
5/20/22 10:00	301.50	12.02
5/20/22 11:00	293.00	14.21
5/20/22 12:00	294.60	13.56
5/20/22 13:00	285.40	13.66
5/20/22 14:00	286.20	16.88
5/20/22 15:00	289.60	17.50
5/20/22 16:00	296.10	20.54
5/20/22 17:00	310.70	17.75
5/20/22 18:00	317.90	14.09
5/20/22 19:00	314.80	11.37
5/20/22 20:00	313.90	7.16
5/20/22 21:00	290.50	6.60
5/20/22 22:00	280.30	8.87
5/20/22 23:00	292.00	12.36
5/21/22 0:00	323.70	16.70
5/21/22 1:00	323.80	15.58
5/21/22 2:00	295.40	15.80
5/21/22 3:00	291.80	17.33
5/21/22 4:00	304.40	20.69
5/21/22 5:00	315.10	26.75
5/21/22 6:00	318.10	26.63
5/21/22 7:00	319.30	26.85
5/21/22 8:00	323.60	27.14
5/21/22 9:00	322.00	27.08
5/21/22 10:00	316.80	24.76
5/21/22 11:00	315.30	26.38
5/21/22 12:00	319.10	24.60
5/21/22 13:00	321.90	23.49
5/21/22 14:00	325.70	19.60
5/21/22 15:00	328.50	17.70
5/21/22 16:00	334.70	15.92
5/21/22 17:00	8.08	11.93
5/21/22 18:00	10.55	15.92
5/21/22 19:00	7.80	11.48
5/21/22 20:00	26.30	12.22
5/21/22 21:00	42.02	11.40
5/21/22 22:00	41.85	20.02
5/21/22 23:00	38.71	27.19
5/22/22 0:00	33.91	28.30
5/22/22 1:00	41.42	28.72
5/22/22 2:00	44.23	27.63
5/22/22 3:00	51.90	29.09
5/22/22 4:00	60.21	30.06
5/22/22 5:00	63.71	29.56
5/22/22 6:00	59.79	32.47
5/22/22 7:00	60.08	32.22
5/22/22 8:00	60.83	30.74
5/22/22 9:00	60.85	29.63
5/22/22 10:00	65.70	30.10
5/22/22 11:00	62.30	28.26
5/22/22 12:00	59.79	25.17
5/22/22 13:00	53.86	23.91
5/22/22 14:00	56.17	23.95
5/22/22 15:00	56.60	25.32
5/22/22 16:00	51.75	21.40
5/22/22 17:00	58.14	20.26
5/22/22 18:00	66.10	17.73
5/22/22 19:00	59.79	17.31
5/22/22 20:00	56.00	15.28
5/22/22 21:00	58.11	15.32
5/22/22 22:00	74.83	11.54

Date	Wind Direction (°)	Wind speed (km/h)
5/22/22 23:00	80.50	7.43
5/23/22 0:00	105.90	5.86
5/23/22 1:00	120.00	5.14
5/23/22 2:00	159.10	4.31
5/23/22 3:00	213.80	4.85
5/23/22 4:00	278.40	6.31
5/23/22 5:00	260.80	6.08
5/23/22 6:00	241.10	7.76
5/23/22 7:00	256.30	13.30
5/23/22 8:00	288.20	14.05
5/23/22 9:00	322.30	17.21
5/23/22 10:00	330.80	17.28
5/23/22 11:00	322.30	14.72
5/23/22 12:00	310.30	12.09
5/23/22 13:00	304.90	11.82
5/23/22 14:00	301.20	18.25
5/23/22 15:00	297.60	19.94
5/23/22 16:00	289.10	17.32
5/23/22 17:00	288.00	21.92
5/23/22 18:00	333.80	19.25
5/23/22 19:00	1.69	15.00
5/23/22 20:00	8.53	17.19
5/23/22 21:00	3.25	16.66
5/23/22 22:00	3.55	10.20
5/23/22 23:00	267.00	4.66
5/24/22 0:00	210.10	7.54
5/24/22 1:00	210.90	14.71
5/24/22 2:00	222.50	20.67
5/24/22 3:00	236.40	22.05
5/24/22 4:00	258.30	22.30
5/24/22 5:00	289.00	21.80
5/24/22 6:00	308.70	17.45
5/24/22 7:00	306.10	11.32
5/24/22 8:00	305.90	13.26
5/24/22 9:00	296.20	20.60
5/24/22 10:00	302.60	23.32
5/24/22 11:00	305.90	25.28
5/24/22 12:00	304.50	27.42
5/24/22 13:00	307.40	27.76
5/24/22 14:00	304.80	27.35
5/24/22 15:00	309.20	24.45
5/24/22 16:00	304.40	21.64
5/24/22 17:00	299.30	21.22
5/24/22 18:00	303.60	17.97
5/24/22 19:00	340.20	11.62
5/24/22 20:00	55.51	8.69
5/24/22 21:00	91.80	9.56
5/24/22 22:00	132.20	7.54
5/24/22 23:00	169.10	10.98
5/25/22 0:00	180.10	15.35
5/25/22 1:00	190.10	13.22
5/25/22 2:00	201.40	13.60
5/25/22 3:00	204.70	14.29
5/25/22 4:00	208.80	15.48
5/25/22 5:00	212.20	13.41
5/25/22 6:00	210.40	14.58
5/25/22 7:00	262.50	8.33
5/25/22 8:00	281.30	2.79
5/25/22 9:00	343.50	3.01
5/25/22 10:00	109.10	4.52
5/25/22 11:00	278.80	4.82
5/25/22 12:00	5.24	6.96
5/25/22 13:00	58.27	5.48
5/25/22 14:00	86.50	8.35
5/25/22 15:00	70.30	9.94
5/25/22 16:00	75.05	11.37
5/25/22 17:00	108.30	14.21
5/25/22 18:00	103.70	14.67
5/25/22 19:00	102.70	17.15
5/25/22 20:00	108.90	15.72
5/25/22 21:00	122.30	15.16

Date	Wind Direction (°)	Wind speed (km/h)
5/25/22 22:00	130.50	14.77
5/25/22 23:00	145.90	13.93
5/26/22 0:00	141.70	13.70
5/26/22 1:00	145.20	15.29
5/26/22 2:00	150.20	15.75
5/26/22 3:00	135.10	13.98
5/26/22 4:00	105.50	10.70
5/26/22 5:00	82.70	9.59
5/26/22 6:00	95.30	9.89
5/26/22 7:00	93.70	10.62
5/26/22 8:00	104.10	12.25
5/26/22 9:00	106.20	15.25
5/26/22 10:00	103.20	16.84
5/26/22 11:00	128.00	16.57
5/26/22 12:00	157.50	10.87
5/26/22 13:00	209.00	14.01
5/26/22 14:00	233.90	19.39
5/26/22 15:00	230.90	22.14
5/26/22 16:00	229.00	22.77
5/26/22 17:00	207.70	27.01
5/26/22 18:00	206.70	24.34
5/26/22 19:00	208.30	21.93
5/26/22 20:00	210.40	17.28
5/26/22 21:00	200.80	13.42
5/26/22 22:00	204.80	16.28
5/26/22 23:00	205.30	15.14
5/27/22 0:00	200.10	15.02
5/27/22 1:00	196.40	15.99
5/27/22 2:00	210.90	15.48
5/27/22 3:00	217.20	13.59
5/27/22 4:00	216.20	14.41
5/27/22 5:00	210.60	17.69
5/27/22 6:00	204.90	18.92
5/27/22 7:00	207.80	17.92
5/27/22 8:00	207.00	21.13
5/27/22 9:00	208.10	21.47
5/27/22 10:00	211.70	21.59
5/27/22 11:00	214.40	23.47
5/27/22 12:00	209.40	21.74
5/27/22 13:00	185.80	22.54
5/27/22 14:00	188.60	22.78
5/27/22 15:00	186.80	20.02
5/27/22 16:00	209.10	19.05
5/27/22 17:00	199.20	13.41
5/27/22 18:00	208.70	16.82
5/27/22 19:00	211.50	15.01
5/27/22 20:00	233.40	15.26
5/27/22 21:00	292.30	14.49
5/27/22 22:00	57.32	6.46
5/27/22 23:00	60.02	9.42
5/28/22 0:00	51.18	4.62
5/28/22 1:00	2.20	6.36
5/28/22 2:00	340.30	9.15
5/28/22 3:00	314.60	6.36
5/28/22 4:00	283.10	7.50
5/28/22 5:00	282.50	9.54
5/28/22 6:00	286.30	11.74
5/28/22 7:00	320.70	13.20
5/28/22 8:00	355.70	14.85
5/28/22 9:00	7.28	17.79
5/28/22 10:00	11.65	22.45
5/28/22 11:00	25.64	21.79
5/28/22 12:00	29.48	25.84
5/28/22 13:00	29.06	26.92
5/28/22 14:00	18.74	27.53
5/28/22 15:00	17.31	27.42
5/28/22 16:00	18.88	25.48
5/28/22 17:00	25.52	23.79
5/28/22 18:00	21.26	26.38
5/28/22 19:00	27.81	24.77
5/28/22 20:00	28.76	20.08

Date	Wind Direction (°)	Wind speed (km/h)
5/28/22 21:00	34.36	15.36
5/28/22 22:00	51.08	12.75
5/28/22 23:00	47.13	12.96
5/29/22 0:00	29.94	10.44
5/29/22 1:00	17.31	9.54
5/29/22 2:00	15.27	10.69
5/29/22 3:00	24.91	11.41
5/29/22 4:00	34.79	10.80
5/29/22 5:00	39.89	9.14
5/29/22 6:00	51.88	9.32
5/29/22 7:00	56.35	11.98
5/29/22 8:00	56.82	14.70
5/29/22 9:00	41.94	11.92
5/29/22 10:00	29.11	15.44
5/29/22 11:00	3.43	13.63
5/29/22 12:00	3.95	12.95
5/29/22 13:00	8.05	12.49
5/29/22 14:00	2.85	13.83
5/29/22 15:00	328.40	16.55
5/29/22 16:00	332.00	14.34
5/29/22 17:00	351.20	13.64
5/29/22 18:00	16.21	12.28
5/29/22 19:00	358.90	16.21
5/29/22 20:00	339.70	15.88
5/29/22 21:00	346.20	11.47
5/29/22 22:00	27.77	10.25
5/29/22 23:00	11.37	14.29
5/30/22 0:00	19.97	14.76
5/30/22 1:00	41.97	12.70
5/30/22 2:00	18.55	9.96
5/30/22 3:00	10.11	16.11
5/30/22 4:00	10.54	16.14
5/30/22 5:00	6.82	18.05
5/30/22 6:00	9.49	20.02
5/30/22 7:00	0.05	20.57
5/30/22 8:00	3.65	22.35
5/30/22 9:00	11.37	23.10
5/30/22 10:00	358.00	21.05
5/30/22 11:00	354.30	20.87
5/30/22 12:00	357.30	21.50
5/30/22 13:00	8.42	20.43
5/30/22 14:00	10.86	18.90
5/30/22 15:00	14.51	19.88
5/30/22 16:00	6.90	20.39
5/30/22 17:00	20.83	19.71
5/30/22 18:00	41.36	17.69
5/30/22 19:00	42.10	17.94
5/30/22 20:00	35.82	13.77
5/30/22 21:00	16.51	9.27
5/30/22 22:00	355.30	12.03
5/30/22 23:00	345.10	12.41
5/31/22 0:00	350.10	14.17
5/31/22 1:00	342.80	10.45
5/31/22 2:00	338.40	8.52
5/31/22 3:00	345.20	8.70
5/31/22 4:00	340.40	8.61
5/31/22 5:00	319.70	7.68
5/31/22 6:00	337.60	4.85
5/31/22 7:00	321.40	8.30
5/31/22 8:00	339.10	12.99
5/31/22 9:00	2.71	15.79
5/31/22 10:00	0.19	13.46
5/31/22 11:00	358.90	13.89
5/31/22 12:00	355.70	16.29
5/31/22 13:00	354.20	15.19
5/31/22 14:00	8.27	14.81
5/31/22 15:00	348.50	17.25
5/31/22 16:00	338.90	15.70
5/31/22 17:00	313.60	18.23
5/31/22 18:00	328.10	16.35
5/31/22 19:00	19.88	12.49

Date	Wind Direction (°)	Wind speed (km/h)
5/31/22 20:00	66.24	6.89
5/31/22 21:00	44.20	11.62
5/31/22 22:00	42.70	15.89
5/31/22 23:00	47.47	17.44
6/1/22 0:00	32.67	18.03
6/1/22 1:00	34.28	16.72
6/1/22 2:00	42.50	19.78
6/1/22 3:00	36.16	18.68
6/1/22 4:00	42.91	20.82
6/1/22 5:00	58.67	21.85
6/1/22 6:00	52.87	19.76
6/1/22 7:00	44.74	18.35
6/1/22 8:00	58.06	15.83
6/1/22 9:00	63.54	16.79
6/1/22 10:00	40.71	15.91
6/1/22 11:00	50.07	12.69
6/1/22 12:00	35.40	13.99
6/1/22 13:00	26.37	16.04
6/1/22 14:00	18.51	14.68
6/1/22 15:00	26.24	13.77
6/1/22 16:00	60.24	14.09
6/1/22 17:00	72.38	13.91
6/1/22 18:00	77.81	11.26
6/1/22 19:00	53.17	9.32
6/1/22 20:00	67.69	11.74
6/1/22 21:00	96.40	11.15
6/1/22 22:00	104.10	10.74
6/1/22 23:00	106.40	12.12
6/2/22 0:00	108.10	11.83
6/2/22 1:00	118.10	12.20
6/2/22 2:00	108.80	12.99
6/2/22 3:00	115.10	17.04
6/2/22 4:00	115.90	17.11
6/2/22 5:00	129.90	18.64
6/2/22 6:00	138.60	20.49
6/2/22 7:00	149.30	19.58
6/2/22 8:00	148.00	19.99
6/2/22 9:00	143.90	18.90
6/2/22 10:00	139.20	17.96
6/2/22 11:00	161.20	17.07
6/2/22 12:00	175.90	13.47
6/2/22 13:00	169.10	11.38
6/2/22 14:00	219.50	7.54
6/2/22 15:00	232.80	6.66
6/2/22 16:00	222.00	6.56
6/2/22 17:00	254.40	7.57
6/2/22 18:00	218.10	8.36
6/2/22 19:00	192.20	7.93
6/2/22 20:00	201.20	9.33
6/2/22 21:00	198.50	9.83
6/2/22 22:00	203.40	13.13
6/2/22 23:00	198.70	13.24
6/3/22 0:00	184.50	12.51
6/3/22 1:00	194.60	16.93
6/3/22 2:00	211.40	17.54
6/3/22 3:00	210.90	18.79
6/3/22 4:00	228.00	13.58
6/3/22 5:00	41.77	4.93
6/3/22 6:00	170.20	5.22
6/3/22 7:00	168.10	4.44
6/3/22 8:00	152.70	6.70
6/3/22 9:00	164.80	9.71
6/3/22 10:00	174.80	15.70
6/3/22 11:00	192.50	16.25
6/3/22 12:00	217.10	10.74
6/3/22 13:00	266.50	8.87
6/3/22 14:00	250.20	5.63
6/3/22 15:00	296.80	5.86
6/3/22 16:00	265.10	5.80
6/3/22 17:00	268.20	7.99
6/3/22 18:00	251.50	4.11

Date	Wind Direction (°)	Wind speed (km/h)
6/3/22 19:00	135.50	6.65
6/3/22 20:00	171.60	11.78
6/3/22 21:00	199.60	11.63
6/3/22 22:00	174.80	9.83
6/3/22 23:00	178.60	14.10
6/4/22 0:00	177.70	16.41
6/4/22 1:00	182.90	16.39
6/4/22 2:00	180.60	14.55
6/4/22 3:00	184.50	14.31
6/4/22 4:00	183.70	13.50
6/4/22 5:00	192.90	9.85
6/4/22 6:00	172.70	10.25
6/4/22 7:00	165.90	10.70
6/4/22 8:00	157.80	12.14
6/4/22 9:00	172.20	11.35
6/4/22 10:00	169.00	12.08
6/4/22 11:00	208.80	14.81
6/4/22 12:00	189.90	14.66
6/4/22 13:00	208.80	16.89
6/4/22 14:00	215.60	18.15
6/4/22 15:00	218.20	17.30
6/4/22 16:00	200.80	17.27
6/4/22 17:00	188.50	15.47
6/4/22 18:00	198.90	12.78
6/4/22 19:00	159.60	18.25
6/4/22 20:00	161.80	20.93
6/4/22 21:00	154.10	22.83
6/4/22 22:00	153.50	19.93
6/4/22 23:00	152.80	22.15
6/5/22 0:00	154.70	19.54
6/5/22 1:00	159.50	14.27
6/5/22 2:00	170.10	10.30
6/5/22 3:00	175.60	12.80
6/5/22 4:00	177.60	15.67
6/5/22 5:00	167.60	15.62
6/5/22 6:00	174.40	16.74
6/5/22 7:00	173.70	18.39
6/5/22 8:00	160.90	18.64
6/5/22 9:00	159.30	21.72
6/5/22 10:00	162.40	23.57
6/5/22 11:00	165.10	25.45
6/5/22 12:00	162.60	24.77
6/5/22 13:00	160.90	24.16
6/5/22 14:00	160.80	24.04
6/5/22 15:00	159.80	23.82
6/5/22 16:00	158.80	23.48
6/5/22 17:00	160.00	22.56
6/5/22 18:00	149.50	22.56
6/5/22 19:00	142.60	19.00
6/5/22 20:00	129.50	21.36
6/5/22 21:00	132.00	21.93
6/5/22 22:00	126.00	17.24
6/5/22 23:00	135.40	16.60
6/6/22 0:00	151.20	12.54
6/6/22 1:00	169.20	13.32
6/6/22 2:00	180.30	12.79
6/6/22 3:00	180.80	16.14
6/6/22 4:00	184.30	16.64
6/6/22 5:00	195.90	17.57
6/6/22 6:00	197.90	19.27
6/6/22 7:00	203.70	18.99
6/6/22 8:00	209.50	21.84
6/6/22 9:00	221.20	22.10
6/6/22 10:00	218.10	18.40
6/6/22 11:00	210.00	15.92
6/6/22 12:00	191.70	12.17
6/6/22 13:00	159.30	13.02
6/6/22 14:00	168.80	14.43
6/6/22 15:00	155.90	12.51
6/6/22 16:00	151.60	11.69
6/6/22 17:00	158.00	10.51

Date	Wind Direction (°)	Wind speed (km/h)
6/6/22 18:00	161.20	10.42
6/6/22 19:00	163.30	9.94
6/6/22 20:00	104.90	10.83
6/6/22 21:00	109.00	4.51
6/6/22 22:00	96.00	4.79
6/6/22 23:00	123.10	7.94
6/7/22 0:00	141.90	5.43
6/7/22 1:00	170.10	9.70
6/7/22 2:00	195.70	7.15
6/7/22 3:00	207.10	9.18
6/7/22 4:00	215.60	6.22
6/7/22 5:00	196.40	5.30
6/7/22 6:00	180.60	7.18
6/7/22 7:00	170.70	9.33
6/7/22 8:00	176.90	9.05
6/7/22 9:00	220.10	8.64
6/7/22 10:00	204.20	7.22
6/7/22 11:00	268.70	9.20
6/7/22 12:00	257.90	7.93
6/7/22 13:00	226.10	10.39
6/7/22 14:00	243.20	9.27
6/7/22 15:00	262.80	7.65
6/7/22 16:00	224.80	11.39
6/7/22 17:00	238.50	9.83
6/7/22 18:00	248.00	9.82
6/7/22 19:00	262.00	8.30
6/7/22 20:00	291.80	8.38
6/7/22 21:00	328.30	4.53
6/7/22 22:00	27.32	3.62
6/7/22 23:00	82.10	6.85
6/8/22 0:00	124.80	8.25
6/8/22 1:00	135.00	8.42
6/8/22 2:00	119.80	6.32
6/8/22 3:00	124.30	5.72
6/8/22 4:00	158.90	5.73
6/8/22 5:00	53.34	7.26
6/8/22 6:00	58.48	8.18
6/8/22 7:00	62.11	9.00
6/8/22 8:00	75.19	9.01
6/8/22 9:00	74.64	11.53
6/8/22 10:00	77.27	12.87
6/8/22 11:00	85.30	8.29
6/8/22 12:00	73.36	12.67
6/8/22 13:00	39.69	7.91
6/8/22 14:00	144.50	8.42
6/8/22 15:00	270.60	9.19
6/8/22 16:00	215.90	10.70
6/8/22 17:00	209.90	8.69
6/8/22 18:00	192.80	12.05
6/8/22 19:00	180.60	9.64
6/8/22 20:00	172.60	6.83
6/8/22 21:00	115.50	4.90
6/8/22 22:00	110.70	8.61
6/8/22 23:00	117.10	9.98
6/9/22 0:00	174.60	12.38
6/9/22 1:00	193.20	15.24
6/9/22 2:00	196.60	15.43
6/9/22 3:00	194.50	16.97
6/9/22 4:00	190.20	16.28
6/9/22 5:00	191.40	14.08
6/9/22 6:00	186.40	12.69
6/9/22 7:00	168.40	12.92
6/9/22 8:00	168.30	16.54
6/9/22 9:00	189.70	17.52
6/9/22 10:00	195.40	20.25
6/9/22 11:00	186.40	24.30
6/9/22 12:00	178.40	28.15
6/9/22 13:00	191.40	24.06
6/9/22 14:00	213.30	20.41
6/9/22 15:00	210.80	17.63
6/9/22 16:00	207.80	17.05

Date	Wind Direction (°)	Wind speed (km/h)
6/9/22 17:00	205.80	12.73
6/9/22 18:00	200.90	11.37
6/9/22 19:00	204.90	10.57
6/9/22 20:00	194.20	8.55
6/9/22 21:00	165.40	4.49
6/9/22 22:00	125.70	5.60
6/9/22 23:00	142.80	7.71
6/10/22 0:00	178.80	11.69
6/10/22 1:00	181.70	13.18
6/10/22 2:00	181.10	14.58
6/10/22 3:00	200.10	15.68
6/10/22 4:00	288.60	5.39
6/10/22 5:00	89.10	1.05
6/10/22 6:00	113.90	5.80
6/10/22 7:00	127.80	7.97
6/10/22 8:00	158.90	11.74
6/10/22 9:00	166.20	9.22
6/10/22 10:00	178.90	13.56
6/10/22 11:00	164.10	18.88
6/10/22 12:00	172.10	18.09
6/10/22 13:00	169.40	14.82
6/10/22 14:00	193.40	21.10
6/10/22 15:00	170.50	23.36
6/10/22 16:00	107.50	22.06
6/10/22 17:00	82.70	12.12
6/10/22 18:00	127.40	20.67
6/10/22 19:00	154.40	19.69
6/10/22 20:00	139.90	20.98
6/10/22 21:00	147.00	20.35
6/10/22 22:00	160.50	23.28
6/10/22 23:00	163.20	15.61
6/11/22 0:00	181.10	16.03
6/11/22 1:00	244.50	17.03
6/11/22 2:00	23.07	4.92
6/11/22 3:00	89.30	9.03
6/11/22 4:00	91.30	9.79
6/11/22 5:00	99.60	9.21
6/11/22 6:00	135.70	13.11
6/11/22 7:00	163.90	12.20
6/11/22 8:00	177.20	16.06
6/11/22 9:00	173.70	17.38
6/11/22 10:00	163.10	16.39
6/11/22 11:00	163.60	17.06
6/11/22 12:00	135.40	22.46
6/11/22 13:00	135.20	25.94
6/11/22 14:00	163.70	22.00
6/11/22 15:00	151.30	12.00
6/11/22 16:00	150.10	14.80
6/11/22 17:00	162.40	19.70
6/11/22 18:00	190.40	14.52
6/11/22 19:00	153.90	15.66
6/11/22 20:00	143.00	17.10
6/11/22 21:00	133.10	13.78
6/11/22 22:00	139.10	14.93
6/11/22 23:00	130.00	8.74
6/12/22 0:00	171.80	6.08
6/12/22 1:00	127.80	5.83
6/12/22 2:00	122.90	4.65
6/12/22 3:00	82.70	6.38
6/12/22 4:00	100.30	5.29
6/12/22 5:00	59.12	5.67
6/12/22 6:00	87.40	6.47
6/12/22 7:00	116.40	7.11
6/12/22 8:00	158.00	8.59
6/12/22 9:00	195.50	18.90
6/12/22 10:00	201.70	18.99
6/12/22 11:00	172.10	18.42
6/12/22 12:00	160.40	16.39
6/12/22 13:00	145.20	14.34
6/12/22 14:00	109.00	17.09
6/12/22 15:00	83.00	15.99

Date	Wind Direction (°)	Wind speed (km/h)
6/12/22 16:00	106.20	18.21
6/12/22 17:00	159.30	12.98
6/12/22 18:00	180.00	7.08
6/12/22 19:00	192.50	6.26
6/12/22 20:00	210.50	8.55
6/12/22 21:00	225.70	6.87
6/12/22 22:00	288.50	7.52
6/12/22 23:00	297.40	7.06
6/13/22 0:00	300.90	8.55
6/13/22 1:00	294.70	8.69
6/13/22 2:00	303.90	8.56
6/13/22 3:00	282.70	10.66
6/13/22 4:00	291.40	10.11
6/13/22 5:00	294.50	9.32
6/13/22 6:00	286.10	9.38
6/13/22 7:00	282.30	11.26
6/13/22 8:00	298.60	12.20
6/13/22 9:00	284.80	13.20
6/13/22 10:00	283.20	10.81
6/13/22 11:00	280.20	11.81
6/13/22 12:00	293.10	7.16
6/13/22 13:00	296.80	6.54
6/13/22 14:00	275.80	6.30
6/13/22 15:00	292.10	6.52
6/13/22 16:00	319.30	6.49
6/13/22 17:00	238.50	7.85
6/13/22 18:00	243.00	9.75
6/13/22 19:00	281.90	7.11
6/13/22 20:00	21.42	9.15
6/13/22 21:00	74.28	3.06
6/13/22 22:00	279.70	19.15
6/13/22 23:00	290.50	15.20
6/14/22 0:00	296.80	10.34
6/14/22 1:00	298.60	10.71
6/14/22 2:00	285.00	10.79
6/14/22 3:00	275.90	10.30
6/14/22 4:00	273.90	10.05
6/14/22 5:00	268.20	9.36
6/14/22 6:00	284.70	10.63
6/14/22 7:00	286.70	10.49
6/14/22 8:00	277.20	10.14
6/14/22 9:00	286.90	15.38
6/14/22 10:00	292.10	18.84
6/14/22 11:00	297.00	18.91
6/14/22 12:00	300.50	21.38
6/14/22 13:00	308.90	21.74
6/14/22 14:00	310.40	20.82
6/14/22 15:00	331.90	20.68
6/14/22 16:00	333.30	22.53
6/14/22 17:00	359.50	19.19
6/14/22 18:00	11.09	19.55
6/14/22 19:00	29.88	17.40
6/14/22 20:00	66.82	16.16
6/14/22 21:00	66.15	11.67
6/14/22 22:00	74.27	8.06
6/14/22 23:00	53.97	8.78
6/15/22 0:00	89.50	5.57
6/15/22 1:00	56.59	7.28
6/15/22 2:00	32.91	9.91
6/15/22 3:00	33.51	13.39
6/15/22 4:00	47.55	14.11
6/15/22 5:00	53.46	15.85
6/15/22 6:00	51.88	20.15
6/15/22 7:00	59.71	21.48
6/15/22 8:00	53.08	24.98
6/15/22 9:00	52.23	21.13
6/15/22 10:00	54.73	25.68
6/15/22 11:00	53.39	26.18
6/15/22 12:00	57.51	26.15
6/15/22 13:00	56.30	26.54
6/15/22 14:00	56.86	29.23

Date	Wind Direction (°)	Wind speed (km/h)
6/15/22 15:00	58.49	30.78
6/15/22 16:00	59.40	32.58
6/15/22 17:00	64.55	30.46
6/15/22 18:00	62.13	28.98
6/15/22 19:00	51.20	26.87
6/15/22 20:00	52.64	25.70
6/15/22 21:00	54.34	21.80
6/15/22 22:00	59.24	20.58
6/15/22 23:00	66.74	18.42
6/16/22 0:00	74.48	15.65
6/16/22 1:00	65.93	16.38
6/16/22 2:00	64.43	17.29
6/16/22 3:00	76.47	19.12
6/16/22 4:00	86.20	22.14
6/16/22 5:00	90.10	25.74
6/16/22 6:00	90.20	25.49
6/16/22 7:00	96.70	24.06
6/16/22 8:00	93.40	23.03
6/16/22 9:00	94.60	23.81
6/16/22 10:00	97.10	19.28
6/16/22 11:00	100.10	20.23
6/16/22 12:00	93.00	22.07
6/16/22 13:00	109.70	20.22
6/16/22 14:00	107.90	18.05
6/16/22 15:00	103.50	19.77
6/16/22 16:00	101.30	21.03
6/16/22 17:00	98.60	20.43
6/16/22 18:00	98.50	19.20
6/16/22 19:00	97.40	18.94
6/16/22 20:00	95.40	18.11
6/16/22 21:00	94.00	15.51
6/16/22 22:00	97.40	14.82
6/16/22 23:00	102.40	15.52
6/17/22 0:00	106.50	16.88
6/17/22 1:00	114.50	12.35
6/17/22 2:00	118.00	14.61
6/17/22 3:00	109.30	15.76
6/17/22 4:00	95.90	10.92
6/17/22 5:00	107.30	12.71
6/17/22 6:00	109.60	16.79
6/17/22 7:00	112.40	19.88
6/17/22 8:00	102.20	19.49
6/17/22 9:00	118.70	23.66
6/17/22 10:00	110.90	23.55
6/17/22 11:00	118.30	25.75
6/17/22 12:00	121.60	22.94
6/17/22 13:00	142.90	17.14
6/17/22 14:00	174.30	9.80
6/17/22 15:00	198.50	18.23
6/17/22 16:00	193.60	20.47
6/17/22 17:00	172.20	22.22
6/17/22 18:00	162.30	22.36
6/17/22 19:00	153.60	16.88
6/17/22 20:00	161.50	20.16
6/17/22 21:00	146.70	16.50
6/17/22 22:00	135.50	9.50
6/17/22 23:00	137.40	9.62
6/18/22 0:00	149.50	7.23
6/18/22 1:00	150.60	5.43
6/18/22 2:00	199.40	3.34
6/18/22 3:00	149.90	2.87
6/18/22 4:00	169.50	1.62
6/18/22 5:00	181.40	3.68
6/18/22 6:00	127.40	4.04
6/18/22 7:00	143.00	7.17
6/18/22 8:00	81.50	3.73
6/18/22 9:00	53.36	4.59
6/18/22 10:00	81.70	7.49
6/18/22 11:00	81.60	9.39
6/18/22 12:00	64.97	8.78
6/18/22 13:00	47.20	8.63

Date	Wind Direction (°)	Wind speed (km/h)
6/18/22 14:00	57.70	9.23
6/18/22 15:00	50.24	10.90
6/18/22 16:00	70.21	12.55
6/18/22 17:00	69.02	16.50
6/18/22 18:00	69.56	16.10
6/18/22 19:00	66.95	17.07
6/18/22 20:00	65.99	16.11
6/18/22 21:00	51.73	11.58
6/18/22 22:00	37.32	8.62
6/18/22 23:00	29.85	12.16
6/19/22 0:00	26.90	10.41
6/19/22 1:00	28.93	13.26
6/19/22 2:00	28.76	15.29
6/19/22 3:00	21.62	16.31
6/19/22 4:00	27.70	18.13
6/19/22 5:00	37.35	19.92
6/19/22 6:00	46.01	25.43
6/19/22 7:00	52.82	24.97
6/19/22 8:00	56.62	25.64
6/19/22 9:00	49.48	28.22
6/19/22 10:00	51.96	28.35
6/19/22 11:00	61.15	23.21
6/19/22 12:00	43.24	21.24
6/19/22 13:00	22.37	19.87
6/19/22 14:00	33.83	15.62
6/19/22 15:00	34.84	18.66
6/19/22 16:00	22.46	19.01
6/19/22 17:00	24.35	19.50
6/19/22 18:00	26.09	20.37
6/19/22 19:00	30.71	21.15
6/19/22 20:00	32.04	19.79
6/19/22 21:00	32.99	14.12
6/19/22 22:00	23.97	11.75
6/19/22 23:00	3.18	14.79
6/20/22 0:00	355.30	16.17
6/20/22 1:00	10.17	12.50
6/20/22 2:00	28.56	10.47
6/20/22 3:00	346.80	8.63
6/20/22 4:00	341.00	8.27
6/20/22 5:00	356.70	7.41
6/20/22 6:00	54.18	5.03
6/20/22 7:00	87.30	3.64
6/20/22 8:00	232.60	2.81
6/20/22 9:00	271.80	4.00
6/20/22 10:00	273.40	4.64
6/20/22 11:00	216.90	6.27
6/20/22 13:00	276.50	14.28
6/20/22 14:00	259.40	13.42
6/20/22 15:00	296.30	20.78
6/20/22 16:00	269.50	14.25
6/20/22 18:00	234.70	20.57
6/20/22 19:00	279.90	10.96
6/20/22 20:00	317.40	5.69
6/20/22 21:00	43.75	13.78
6/20/22 22:00	103.80	24.42
6/20/22 23:00	113.80	22.54
6/21/22 0:00	127.90	19.40
6/21/22 1:00	124.00	23.53
6/21/22 2:00	121.80	24.06
6/21/22 3:00	120.70	26.57
6/21/22 4:00	123.00	25.12
6/21/22 5:00	118.40	24.06
6/21/22 6:00	124.20	21.34
6/21/22 7:00	121.20	19.55
6/21/22 8:00	118.50	19.51
6/21/22 9:00	112.50	18.50
6/21/22 10:00	108.10	21.77
6/21/22 11:00	113.40	22.75
6/21/22 12:00	122.70	23.50
6/21/22 13:00	103.60	26.38
6/21/22 14:00	99.20	27.61

Date	Wind Direction (°)	Wind speed (km/h)
6/21/22 15:00	99.80	25.92
6/21/22 16:00	100.40	23.19
6/21/22 17:00	104.40	23.44
6/21/22 18:00	108.50	22.59
6/21/22 19:00	105.80	22.09
6/21/22 20:00	107.20	22.70
6/21/22 21:00	107.60	18.18
6/21/22 22:00	118.80	12.74
6/21/22 23:00	112.00	10.35
6/22/22 0:00	122.60	7.77
6/22/22 1:00	153.30	7.27
6/22/22 2:00	180.20	7.68
6/22/22 3:00	223.10	5.08
6/22/22 4:00	19.15	2.04
6/22/22 5:00	1.67	2.09
6/22/22 6:00	344.90	4.57
6/22/22 7:00	3.79	8.82
6/22/22 8:00	27.73	10.83
6/22/22 9:00	70.67	16.12
6/22/22 10:00	81.90	15.70
6/22/22 11:00	103.60	16.46
6/22/22 12:00	106.30	16.50
6/22/22 13:00	95.60	17.65
6/22/22 14:00	95.80	16.93
6/22/22 15:00	90.90	14.24
6/22/22 16:00	85.90	12.51
6/22/22 17:00	79.59	12.01
6/22/22 18:00	67.64	12.36
6/22/22 19:00	66.92	12.95
6/22/22 20:00	107.80	9.00
6/22/22 21:00	124.10	3.05
6/22/22 22:00	348.90	2.30
6/22/22 23:00	266.80	3.09
6/23/22 0:00	296.50	6.78
6/23/22 1:00	279.80	8.99
6/23/22 2:00	282.10	9.58
6/23/22 3:00	290.10	9.72
6/23/22 4:00	296.00	10.70
6/23/22 5:00	306.60	11.77
6/23/22 6:00	333.10	15.39
6/23/22 7:00	324.00	14.41
6/23/22 8:00	344.60	17.77
6/23/22 9:00	0.48	15.45
6/23/22 10:00	357.40	12.83
6/23/22 11:00	331.10	18.19
6/23/22 12:00	330.50	19.76
6/23/22 13:00	325.20	20.75
6/23/22 14:00	335.90	19.81
6/23/22 15:00	331.00	20.93
6/23/22 16:00	330.40	22.59
6/23/22 17:00	335.90	19.98
6/23/22 18:00	342.90	21.22
6/23/22 19:00	360.00	19.41
6/23/22 20:00	9.20	17.39
6/23/22 21:00	4.97	11.83
6/23/22 22:00	336.90	8.69
6/23/22 23:00	323.20	9.85
6/24/22 0:00	306.60	9.71
6/24/22 1:00	307.90	8.55
6/24/22 2:00	289.40	8.51
6/24/22 3:00	275.90	9.68
6/24/22 4:00	285.00	8.76
6/24/22 5:00	291.40	7.56
6/24/22 6:00	282.70	6.75
6/24/22 7:00	294.80	11.66
6/24/22 8:00	295.40	10.97
6/24/22 9:00	303.60	8.40
6/24/22 10:00	341.60	11.89
6/24/22 11:00	9.61	13.04
6/24/22 12:00	5.38	11.58
6/24/22 13:00	5.32	10.25

Date	Wind Direction (°)	Wind speed (km/h)
6/24/22 14:00	2.98	14.34
6/24/22 15:00	13.23	13.45
6/24/22 16:00	8.79	11.94
6/24/22 17:00	9.86	10.58
6/24/22 18:00	40.00	10.27
6/24/22 19:00	69.62	10.88
6/24/22 20:00	71.31	11.29
6/24/22 21:00	75.24	10.07
6/24/22 22:00	91.30	8.97
6/24/22 23:00	117.60	6.31
6/25/22 0:00	143.40	7.46
6/25/22 1:00	167.20	9.36
6/25/22 2:00	162.70	10.90
6/25/22 3:00	188.50	14.99
6/25/22 4:00	193.00	14.42
6/25/22 5:00	197.50	14.18
6/25/22 6:00	209.30	14.69
6/25/22 7:00	246.30	15.44
6/25/22 8:00	230.80	11.26
6/25/22 9:00	222.80	15.30
6/25/22 10:00	237.00	14.85
6/25/22 11:00	255.20	13.63
6/25/22 12:00	231.70	12.78
6/25/22 13:00	254.50	14.97
6/25/22 14:00	248.90	10.79
6/25/22 15:00	249.00	8.78
6/25/22 16:00	317.10	21.55
6/25/22 17:00	318.50	20.67
6/25/22 18:00	314.30	24.32
6/25/22 19:00	296.50	20.15
6/25/22 20:00	287.90	16.60
6/25/22 21:00	290.30	15.06
6/25/22 22:00	305.90	15.22
6/25/22 23:00	15.23	12.23
6/26/22 0:00	18.18	15.71
6/26/22 1:00	37.03	20.47
6/26/22 2:00	48.96	26.22
6/26/22 3:00	48.35	25.48
6/26/22 4:00	47.61	25.71
6/26/22 5:00	46.92	26.45
6/26/22 6:00	29.28	25.55
6/26/22 7:00	25.71	26.24
6/26/22 8:00	30.72	27.41
6/26/22 9:00	29.58	31.25
6/26/22 10:00	30.04	29.09
6/26/22 11:00	39.95	28.33
6/26/22 12:00	50.39	25.12
6/26/22 13:00	31.94	24.00
6/26/22 14:00	23.51	27.16
6/26/22 15:00	19.88	23.58
6/26/22 16:00	5.80	22.50
6/26/22 17:00	358.60	27.96
6/26/22 18:00	353.60	22.32
6/26/22 19:00	5.10	21.32
6/26/22 20:00	2.73	17.13
6/26/22 21:00	357.10	16.81
6/26/22 22:00	24.10	12.59
6/26/22 23:00	334.50	9.87
6/27/22 0:00	332.90	10.38
6/27/22 1:00	312.20	11.12
6/27/22 2:00	338.50	15.84
6/27/22 3:00	333.90	12.86
6/27/22 4:00	315.00	10.43
6/27/22 5:00	298.80	10.62
6/27/22 6:00	295.40	14.02
6/27/22 7:00	309.00	20.41
6/27/22 8:00	337.00	21.59
6/27/22 9:00	334.40	20.40
6/27/22 10:00	337.30	19.71
6/27/22 11:00	327.50	24.21
6/27/22 12:00	330.80	26.73

Date	Wind Direction (°)	Wind speed (km/h)
6/27/22 13:00	338.90	28.67
6/27/22 14:00	339.90	26.77
6/27/22 15:00	343.60	23.40
6/27/22 16:00	327.10	20.98
6/27/22 17:00	340.50	18.07
6/27/22 18:00	327.70	12.30
6/27/22 19:00	318.20	11.13
6/27/22 20:00	281.00	8.26
6/27/22 21:00	235.90	9.48
6/27/22 22:00	248.20	14.87
6/27/22 23:00	242.10	19.35
6/28/22 0:00	241.80	17.65
6/28/22 1:00	249.40	16.93
6/28/22 2:00	272.20	15.38
6/28/22 3:00	281.10	15.08
6/28/22 4:00	286.60	14.71
6/28/22 5:00	295.00	14.32
6/28/22 6:00	299.10	16.94
6/28/22 7:00	319.30	20.95
6/28/22 8:00	337.50	20.88
6/28/22 9:00	345.80	17.99
6/28/22 10:00	334.90	20.24
6/28/22 11:00	326.10	17.46
6/28/22 12:00	343.00	20.73
6/28/22 13:00	18.75	18.60
6/28/22 14:00	14.56	25.55
6/28/22 15:00	10.57	28.84
6/28/22 16:00	10.55	27.15
6/28/22 17:00	10.53	19.53
6/28/22 18:00	19.19	25.50
6/28/22 19:00	24.91	21.46
6/28/22 20:00	23.16	22.35
6/28/22 21:00	32.94	25.90
6/28/22 22:00	33.92	24.99
6/28/22 23:00	34.11	20.90
6/29/22 0:00	21.52	16.51
6/29/22 1:00	19.05	17.13
6/29/22 2:00	15.81	17.97
6/29/22 3:00	18.82	18.21
6/29/22 4:00	8.34	15.44
6/29/22 5:00	356.10	18.12
6/29/22 6:00	355.40	22.24
6/29/22 7:00	358.50	20.95
6/29/22 8:00	7.62	20.80
6/29/22 9:00	3.86	19.26
6/29/22 10:00	6.60	21.57
6/29/22 11:00	356.60	18.97
6/29/22 12:00	346.50	18.37
6/29/22 13:00	334.80	20.75
6/29/22 14:00	336.00	20.68
6/29/22 15:00	336.90	22.54
6/29/22 16:00	354.70	24.98
6/29/22 17:00	354.70	25.21
6/29/22 18:00	29.20	18.31
6/29/22 19:00	17.58	18.99
6/29/22 20:00	7.72	24.61
6/29/22 21:00	12.11	26.09
6/29/22 22:00	3.33	21.82
6/29/22 23:00	348.50	16.61
6/30/22 0:00	347.90	11.25
6/30/22 1:00	344.00	15.01
6/30/22 2:00	353.00	15.79
6/30/22 3:00	351.80	17.41
6/30/22 4:00	350.60	16.82
6/30/22 5:00	3.33	20.39
6/30/22 6:00	14.34	21.86
6/30/22 7:00	19.28	22.47
6/30/22 8:00	26.23	20.70
6/30/22 9:00	34.06	17.23
6/30/22 10:00	40.83	14.01
6/30/22 11:00	21.13	13.43

Date	Wind Direction (°)	Wind speed (km/h)
6/30/22 12:00	12.14	14.22
6/30/22 13:00	9.76	12.88
6/30/22 14:00	1.80	10.39
6/30/22 15:00	348.50	15.29
6/30/22 16:00	2.20	16.67
6/30/22 17:00	4.47	15.52
6/30/22 18:00	356.90	15.97
6/30/22 19:00	11.50	15.65
6/30/22 20:00	27.50	14.03
6/30/22 21:00	69.79	7.36
6/30/22 22:00	71.63	1.11
6/30/22 23:00	276.70	5.04
7/1/22 0:00	258.00	7.96
7/1/22 1:00	264.80	9.95
7/1/22 2:00	273.60	8.87
7/1/22 3:00	276.40	11.44
7/1/22 4:00	277.70	12.21
7/1/22 5:00	284.50	11.12
7/1/22 6:00	296.20	11.56
7/1/22 7:00	294.60	11.15
7/1/22 8:00	295.90	16.98
7/1/22 10:00	298.00	15.04
7/1/22 11:00	295.60	16.61
7/1/22 13:00	298.00	19.90
7/1/22 14:00	297.40	21.20
7/1/22 15:00	300.50	21.52
7/1/22 16:00	295.40	21.24
7/1/22 19:00	3.45	23.58
7/1/22 22:00	350.20	10.49
7/2/22 1:00	354.20	13.82
7/2/22 4:00	359.50	9.47
7/2/22 5:00	19.23	11.20
7/2/22 7:00	26.22	18.80
7/2/22 9:00	23.22	19.73
7/2/22 11:00	29.50	20.98
7/2/22 13:00	40.50	21.59
7/2/22 15:00	29.65	21.74
7/2/22 17:00	66.92	21.14
7/3/22 0:00	53.21	12.55
7/3/22 1:00	46.16	16.25
7/3/22 2:00	58.30	18.34
7/3/22 3:00	61.21	15.43
7/3/22 6:00	58.39	16.78
7/3/22 7:00	56.74	17.94
7/3/22 9:00	60.20	19.70
7/3/22 13:00	62.76	14.50
7/3/22 14:00	40.82	13.95
7/3/22 17:00	71.99	15.59
7/3/22 20:00	70.94	11.26
7/3/22 21:00	74.02	11.21
7/3/22 23:00	69.74	4.99
7/4/22 1:00	82.90	5.33
7/4/22 4:00	100.10	4.05
7/4/22 6:00	96.50	2.51
7/4/22 8:00	264.90	2.53
7/4/22 12:00	279.10	8.22
7/4/22 13:00	294.70	8.33
7/4/22 15:00	306.00	8.57
7/4/22 18:00	314.20	9.06
7/4/22 20:00	320.40	7.54
7/5/22 1:00	223.30	8.27
7/5/22 4:00	272.70	11.98
7/5/22 5:00	274.20	12.88
7/5/22 6:00	273.00	12.28
7/5/22 8:00	334.00	8.23
7/5/22 9:00	354.10	6.29
7/5/22 10:00	358.50	7.10
7/5/22 13:00	280.60	6.84
7/5/22 21:00	163.80	12.38
7/6/22 1:00	250.10	8.70
7/6/22 2:00	258.40	10.45

Date	Wind Direction (°)	Wind speed (km/h)
7/6/22 3:00	256.80	10.05
7/6/22 5:00	288.00	10.31
7/6/22 6:00	296.90	9.76
7/6/22 8:00	296.40	6.21
7/6/22 10:00	257.70	3.70
7/6/22 14:00	294.00	10.80
7/6/22 18:00	307.00	12.80
7/6/22 19:00	306.20	10.77
7/6/22 21:00	336.20	9.15
7/7/22 1:00	235.10	11.09
7/7/22 3:00	236.70	8.64
7/7/22 4:00	230.20	10.98
7/7/22 5:00	235.00	9.58
7/7/22 7:00	244.20	8.02
7/7/22 8:00	237.90	9.13
7/7/22 9:00	241.00	9.78
7/7/22 10:00	253.70	9.66
7/7/22 12:00	266.30	7.52
7/7/22 15:00	271.90	8.30
7/7/22 19:00	225.30	11.45
7/7/22 21:00	239.90	6.48
7/7/22 23:00	123.50	7.41
7/8/22 4:00	176.60	11.45
7/8/22 6:00	205.40	6.41
7/8/22 8:00	186.70	5.46
7/8/22 9:00	189.30	8.42
7/8/22 11:00	201.90	7.32
7/8/22 12:00	179.50	10.87
7/8/22 16:00	148.80	11.60
7/8/22 17:00	156.40	11.45
7/8/22 18:00	137.30	15.29
7/8/22 19:00	147.90	13.39
7/8/22 23:00	157.30	16.24
7/9/22 0:00	240.40	15.88
7/9/22 1:00	267.70	8.95
7/9/22 3:00	352.40	10.16
7/9/22 5:00	40.85	13.26
7/9/22 7:00	56.25	16.12
7/9/22 9:00	85.80	15.42
7/9/22 10:00	105.90	16.94
7/9/22 13:00	115.20	26.81
7/9/22 15:00	117.80	20.03
7/9/22 18:00	118.90	20.99
7/9/22 19:00	112.30	19.43
7/9/22 23:00	93.60	19.50
7/10/22 0:00	94.70	16.58
7/10/22 3:00	62.58	10.59
7/10/22 4:00	71.62	11.70
7/10/22 5:00	107.20	8.01
7/10/22 7:00	99.70	7.67
7/10/22 10:00	101.20	19.44
7/10/22 11:00	104.30	19.12
7/10/22 12:00	98.80	18.54
7/10/22 14:00	102.70	31.82
7/10/22 23:00	194.70	4.02
7/11/22 2:00	327.30	4.93
7/11/22 6:00	6.63	6.25
7/11/22 7:00	56.86	2.34
7/11/22 11:00	101.60	14.22
7/11/22 12:00	106.70	14.38
7/11/22 14:00	127.40	15.46
7/11/22 19:00	109.80	17.12
7/11/22 21:00	151.70	10.32
7/11/22 23:00	169.20	8.03
7/12/22 0:00	133.90	6.20
7/12/22 2:00	100.80	5.01
7/12/22 3:00	106.20	5.55
7/12/22 7:00	150.80	6.81
7/12/22 8:00	155.10	11.96
7/12/22 13:00	203.90	21.02
7/12/22 13:00	208.70	19.27

Date	Wind Direction (°)	Wind speed (km/h)
7/12/22 14:00	193.30	20.42
7/12/22 15:00	192.50	23.37
7/12/22 16:00	188.50	23.72
7/12/22 17:00	191.40	21.54
7/12/22 18:00	167.50	23.01
7/12/22 19:00	168.90	28.43
7/12/22 20:00	242.50	22.50
7/12/22 21:00	195.60	12.47
7/12/22 22:00	197.00	18.08
7/12/22 23:00	210.70	18.49
7/13/22 0:00	212.20	17.32
7/13/22 1:00	207.90	15.56
7/13/22 2:00	202.10	13.04
7/13/22 3:00	192.20	10.14
7/13/22 4:00	195.30	10.20
7/13/22 5:00	192.00	11.33
7/13/22 6:00	194.40	7.93
7/13/22 7:00	172.20	8.27
7/13/22 8:00	127.50	6.33
7/13/22 9:00	134.40	9.21
7/13/22 10:00	172.00	15.58
7/13/22 11:00	180.50	17.47
7/13/22 12:00	174.90	17.04
7/13/22 13:00	188.80	15.71
7/13/22 14:00	193.90	16.02
7/13/22 15:00	188.90	13.36
7/13/22 16:00	193.20	10.35
7/13/22 17:00	206.20	7.61
7/13/22 18:00	193.90	10.04
7/13/22 19:00	157.00	8.58
7/13/22 20:00	91.50	11.97
7/13/22 21:00	113.40	11.54
7/13/22 22:00	116.10	8.10
7/13/22 23:00	77.51	6.27
7/14/22 0:00	55.82	5.10
7/14/22 1:00	247.30	20.24
7/14/22 2:00	291.40	19.57
7/14/22 3:00	304.40	11.44
7/14/22 4:00	266.10	14.27
7/14/22 5:00	243.90	15.16
7/14/22 6:00	227.80	13.04
7/14/22 7:00	217.10	22.47
7/14/22 8:00	219.80	22.17
7/14/22 9:00	224.70	27.27
7/14/22 10:00	227.50	29.81
7/14/22 11:00	258.10	24.04
7/14/22 12:00	258.00	22.67
7/14/22 13:00	276.40	26.28
7/14/22 14:00	290.70	22.94
7/14/22 15:00	281.30	24.97
7/14/22 16:00	256.90	26.87
7/14/22 17:00	246.70	26.71
7/14/22 18:00	256.80	34.16
7/14/22 19:00	255.40	34.85
7/14/22 20:00	250.40	31.97
7/14/22 21:00	249.10	25.61
7/14/22 22:00	287.80	18.83
7/14/22 23:00	262.70	20.93
7/15/22 0:00	283.40	24.70
7/15/22 1:00	287.50	29.81
7/15/22 2:00	291.20	33.95
7/15/22 3:00	298.10	35.68
7/15/22 4:00	313.20	34.42
7/15/22 5:00	321.00	30.53
7/15/22 6:00	319.80	28.48
7/15/22 7:00	323.90	25.48
7/15/22 8:00	327.90	28.21
7/15/22 9:00	318.80	29.12
7/15/22 10:00	328.70	25.50
7/15/22 11:00	321.40	19.55
7/15/22 12:00	288.90	19.09

Date	Wind Direction (°)	Wind speed (km/h)
7/15/22 13:00	291.60	18.48
7/15/22 14:00	283.60	16.73
7/15/22 15:00	277.00	17.24
7/15/22 16:00	293.10	16.77
7/15/22 17:00	316.10	13.96
7/15/22 18:00	336.90	12.24
7/15/22 19:00	338.30	9.83
7/15/22 20:00	9.42	8.69
7/15/22 21:00	69.33	8.05
7/15/22 22:00	91.00	7.05
7/15/22 23:00	83.60	7.41
7/16/22 0:00	88.10	6.63
7/16/22 1:00	68.43	8.58
7/16/22 2:00	102.50	8.56
7/16/22 3:00	104.50	8.23
7/16/22 4:00	88.20	10.12
7/16/22 5:00	85.00	12.51
7/16/22 6:00	81.30	17.19
7/16/22 7:00	91.80	26.05
7/16/22 8:00	89.40	31.64
7/16/22 9:00	89.60	27.64
7/16/22 10:00	86.60	26.65
7/16/22 11:00	87.80	26.65
7/16/22 12:00	89.50	27.91
7/16/22 13:00	93.70	27.04
7/16/22 14:00	96.20	24.63
7/16/22 15:00	103.20	22.39
7/16/22 16:00	105.10	26.01
7/16/22 17:00	96.70	20.12
7/16/22 18:00	94.40	18.73
7/16/22 19:00	89.60	17.80
7/16/22 20:00	84.40	20.47
7/16/22 21:00	86.50	16.55
7/16/22 22:00	92.10	15.40
7/16/22 23:00	88.60	12.06
7/17/22 0:00	98.10	14.19
7/17/22 1:00	106.60	11.69
7/17/22 2:00	116.10	12.83
7/17/22 3:00	127.60	10.71
7/17/22 4:00	122.90	9.65
7/17/22 5:00	121.50	9.64
7/17/22 6:00	127.90	12.99
7/17/22 7:00	134.80	19.05
7/17/22 8:00	140.10	21.54
7/17/22 9:00	140.70	23.36
7/17/22 10:00	141.30	24.52
7/17/22 11:00	138.20	28.04
7/17/22 12:00	149.10	26.88
7/17/22 13:00	149.00	25.74
7/17/22 14:00	168.30	25.59
7/17/22 15:00	165.00	25.85
7/17/22 16:00	164.50	23.16
7/17/22 17:00	187.20	17.19
7/17/22 18:00	149.90	15.40
7/17/22 19:00	126.90	13.10
7/17/22 20:00	145.50	12.24
7/17/22 21:00	149.90	20.73
7/17/22 22:00	150.70	21.00
7/17/22 23:00	163.20	20.88
7/18/22 0:00	162.80	23.29
7/18/22 1:00	166.50	23.57
7/18/22 2:00	168.90	22.54
7/18/22 3:00	173.20	18.58
7/18/22 4:00	178.10	15.49
7/18/22 5:00	191.40	16.76
7/18/22 6:00	195.70	10.10
7/18/22 7:00	206.10	11.25
7/18/22 8:00	223.10	8.71
7/18/22 9:00	264.90	7.96
7/18/22 10:00	295.20	7.08
7/18/22 11:00	287.80	3.77

Date	Wind Direction (°)	Wind speed (km/h)
7/18/22 12:00	254.80	5.26
7/18/22 13:00	228.40	9.48
7/18/22 14:00	233.80	8.96
7/18/22 15:00	236.00	6.57
7/18/22 16:00	287.70	4.22
7/18/22 17:00	263.70	5.67
7/18/22 18:00	10.11	8.69
7/18/22 19:00	65.33	9.60
7/18/22 20:00	84.90	7.99
7/18/22 21:00	116.40	7.19
7/18/22 22:00	111.20	10.21
7/18/22 23:00	110.20	12.15
7/19/22 0:00	92.40	11.25
7/19/22 1:00	92.90	13.24
7/19/22 2:00	105.40	15.48
7/19/22 3:00	110.90	16.91
7/19/22 4:00	104.80	21.43
7/19/22 5:00	105.90	22.78
7/19/22 6:00	102.40	23.98
7/19/22 7:00	102.40	24.32
7/19/22 8:00	100.30	26.44
7/19/22 9:00	95.40	27.71
7/19/22 10:00	96.20	29.92
7/19/22 11:00	96.80	28.34
7/19/22 12:00	98.20	25.94
7/19/22 13:00	84.50	25.25
7/19/22 14:00	85.80	26.26
7/19/22 15:00	85.80	26.27
7/19/22 16:00	89.60	27.84
7/19/22 17:00	90.50	28.80
7/19/22 18:00	92.20	28.07
7/19/22 19:00	95.90	27.13
7/19/22 20:00	88.80	23.88
7/19/22 21:00	86.70	23.08
7/19/22 22:00	84.70	23.01
7/19/22 23:00	73.60	22.36
7/20/22 0:00	74.23	24.38
7/20/22 1:00	72.79	25.14
7/20/22 2:00	59.69	24.56
7/20/22 3:00	53.93	26.03
7/20/22 4:00	48.68	26.31
7/20/22 5:00	41.49	25.74
7/20/22 6:00	25.46	26.31
7/20/22 7:00	36.25	30.20
7/20/22 8:00	37.32	33.98
7/20/22 9:00	34.77	35.71
7/20/22 10:00	34.60	37.98
7/20/22 11:00	34.37	38.74
7/20/22 12:00	35.46	38.63
7/20/22 13:00	38.44	39.89
7/20/22 14:00	40.60	40.90
7/20/22 15:00	42.06	37.94
7/20/22 16:00	42.09	37.22
7/20/22 17:00	41.17	37.01
7/20/22 18:00	45.12	32.58
7/20/22 19:00	40.45	25.49
7/20/22 20:00	40.69	25.39
7/20/22 21:00	44.09	25.91
7/20/22 22:00	46.95	22.80
7/20/22 23:00	35.14	14.95
7/21/22 0:00	25.09	15.48
7/21/22 1:00	36.09	15.23
7/21/22 2:00	32.20	13.67
7/21/22 3:00	23.66	16.21
7/21/22 4:00	16.88	16.71
7/21/22 5:00	23.41	17.22
7/21/22 6:00	35.13	17.16
7/21/22 7:00	43.66	18.98
7/21/22 8:00	50.33	20.99
7/21/22 9:00	49.39	22.67
7/21/22 10:00	51.94	25.36

Date	Wind Direction (°)	Wind speed (km/h)
7/21/22 11:00	56.41	23.19
7/21/22 12:00	57.20	21.54
7/21/22 13:00	59.42	18.66
7/21/22 14:00	67.73	16.02
7/21/22 15:00	57.99	14.79
7/21/22 16:00	54.00	14.16
7/21/22 17:00	26.85	13.36
7/21/22 18:00	35.12	10.80
7/21/22 19:00	45.47	10.76
7/21/22 20:00	21.80	13.55
7/21/22 21:00	13.08	10.83
7/21/22 22:00	35.87	8.56
7/21/22 23:00	44.08	7.46
7/22/22 0:00	53.29	5.63
7/22/22 1:00	55.02	5.16
7/22/22 2:00	83.60	5.27
7/22/22 3:00	75.66	2.57
7/22/22 4:00	163.40	1.20
7/22/22 5:00	296.20	1.71
7/22/22 6:00	130.20	1.69
7/22/22 7:00	174.10	4.10
7/22/22 8:00	199.50	4.86
7/22/22 9:00	237.80	6.94
7/22/22 10:00	273.20	6.16
7/22/22 11:00	255.40	7.38
7/22/22 12:00	212.60	7.29
7/22/22 13:00	278.80	7.21
7/22/22 14:00	251.20	6.71
7/22/22 15:00	247.30	10.91
7/22/22 16:00	226.50	9.77
7/22/22 17:00	219.40	11.56
7/22/22 18:00	229.60	11.93
7/22/22 19:00	237.70	9.56
7/22/22 20:00	218.90	6.62
7/22/22 21:00	201.30	10.06
7/22/22 22:00	211.70	8.59
7/22/22 23:00	201.00	9.46
7/23/22 0:00	202.30	9.77
7/23/22 1:00	193.90	10.29
7/23/22 2:00	192.10	9.58
7/23/22 3:00	192.30	13.19
7/23/22 4:00	190.30	12.89
7/23/22 5:00	191.70	13.11
7/23/22 6:00	206.50	8.36
7/23/22 7:00	193.00	8.45
7/23/22 8:00	181.60	12.31
7/23/22 9:00	174.10	14.51
7/23/22 10:00	173.60	16.21
7/23/22 11:00	184.70	18.66
7/23/22 12:00	187.70	19.30
7/23/22 13:00	189.60	20.14
7/23/22 14:00	193.80	20.01
7/23/22 15:00	199.30	17.74
7/23/22 16:00	195.60	22.04
7/23/22 17:00	195.20	21.09
7/23/22 18:00	191.10	19.54
7/23/22 19:00	178.00	16.59
7/23/22 20:00	166.80	16.30
7/23/22 21:00	170.40	12.29
7/23/22 22:00	153.20	12.37
7/23/22 23:00	147.10	13.01
7/24/22 0:00	167.00	15.55
7/24/22 1:00	164.30	14.85
7/24/22 2:00	160.70	12.55
7/24/22 3:00	157.20	12.91
7/24/22 4:00	153.70	12.08
7/24/22 5:00	148.60	13.66
7/24/22 6:00	152.70	13.33
7/24/22 7:00	151.70	16.01
7/24/22 8:00	156.90	19.03
7/24/22 9:00	153.70	21.38

Date	Wind Direction (°)	Wind speed (km/h)
7/24/22 10:00	165.20	27.45
7/24/22 11:00	168.60	32.00
7/24/22 12:00	159.30	27.37
7/24/22 13:00	186.00	26.87
7/24/22 14:00	199.70	17.73
7/24/22 15:00	181.50	18.75
7/24/22 16:00	169.40	21.33
7/24/22 17:00	186.50	15.89
7/24/22 18:00	165.10	15.76
7/24/22 19:00	186.60	17.67
7/24/22 20:00	188.10	8.47
7/24/22 21:00	144.70	6.00
7/24/22 22:00	105.30	6.66
7/24/22 23:00	121.30	5.33
7/25/22 0:00	140.40	8.23
7/25/22 1:00	148.80	8.03
7/25/22 2:00	159.00	8.26
7/25/22 3:00	142.30	6.40
7/25/22 4:00	128.60	5.74
7/25/22 5:00	133.00	4.66
7/25/22 6:00	74.31	3.50
7/25/22 7:00	71.57	3.08
7/25/22 8:00	66.92	5.65
7/25/22 9:00	55.33	6.50
7/25/22 10:00	61.47	4.23
7/25/22 11:00	71.19	4.28
7/25/22 12:00	73.96	6.17
7/25/22 13:00	55.14	8.12
7/25/22 14:00	70.01	6.29
7/25/22 15:00	59.04	4.11
7/25/22 16:00	351.20	4.73
7/25/22 17:00	32.66	5.81
7/25/22 18:00	102.60	9.85
7/25/22 19:00	61.17	9.36
7/25/22 20:00	83.40	10.20
7/25/22 21:00	172.00	5.79
7/25/22 22:00	137.50	8.97
7/25/22 23:00	122.90	3.61
7/26/22 0:00	316.70	4.14
7/26/22 1:00	353.40	10.20
7/26/22 2:00	15.28	8.99
7/26/22 3:00	38.53	4.67
7/26/22 4:00	62.58	4.44
7/26/22 5:00	135.10	2.69
7/26/22 6:00	21.00	3.37
7/26/22 7:00	321.30	3.02
7/26/22 8:00	319.40	8.18
7/26/22 9:00	299.80	5.63
7/26/22 10:00	14.72	4.29
7/26/22 11:00	119.70	5.48
7/26/22 12:00	175.40	4.93
7/26/22 13:00	10.26	4.65
7/26/22 14:00	175.20	6.71
7/26/22 15:00	153.30	14.64
7/26/22 16:00	200.60	10.55
7/26/22 17:00	227.60	8.03
7/26/22 18:00	238.20	6.87
7/26/22 19:00	186.60	3.44
7/26/22 20:00	166.00	6.86
7/26/22 21:00	192.90	8.49
7/26/22 22:00	213.30	8.11
7/26/22 23:00	210.70	8.95
7/27/22 0:00	222.90	8.25
7/27/22 1:00	216.40	10.03
7/27/22 2:00	213.00	10.69
7/27/22 3:00	206.20	12.42
7/27/22 4:00	199.50	13.20
7/27/22 5:00	204.20	11.59
7/27/22 6:00	209.90	14.77
7/27/22 7:00	206.00	14.91
7/27/22 8:00	223.60	17.78

Date	Wind Direction (°)	Wind speed (km/h)
7/27/22 9:00	228.70	21.84
7/27/22 10:00	227.50	24.63
7/27/22 11:00	233.50	27.98
7/27/22 12:00	234.50	28.84
7/27/22 13:00	232.20	28.94
7/27/22 14:00	238.80	25.20
7/27/22 15:00	248.90	20.06
7/27/22 16:00	328.60	22.19
7/27/22 17:00	336.30	19.23
7/27/22 18:00	352.70	16.07
7/27/22 19:00	7.13	15.25
7/27/22 20:00	18.36	13.65
7/27/22 21:00	29.56	7.06
7/27/22 22:00	17.50	9.24
7/27/22 23:00	14.02	8.72
7/28/22 0:00	79.86	3.93
7/28/22 1:00	42.74	5.27
7/28/22 2:00	73.20	4.40
7/28/22 3:00	81.00	5.34
7/28/22 4:00	98.90	5.71
7/28/22 5:00	90.40	7.74
7/28/22 6:00	85.30	9.25
7/28/22 7:00	86.80	10.00
7/28/22 8:00	63.60	9.87
7/28/22 9:00	59.64	12.76
7/28/22 10:00	57.32	12.74
7/28/22 11:00	76.42	13.65
7/28/22 12:00	113.70	9.63
7/28/22 13:00	64.97	5.27
7/28/22 14:00	77.14	5.20
7/28/22 15:00	55.55	5.31
7/28/22 16:00	329.50	10.01
7/28/22 17:00	357.50	20.38
7/28/22 18:00	355.40	23.01
7/28/22 19:00	2.31	23.07
7/28/22 20:00	354.50	19.13
7/28/22 21:00	344.40	15.14
7/28/22 22:00	320.00	13.48
7/28/22 23:00	313.00	13.91
7/29/22 0:00	311.10	13.84
7/29/22 1:00	319.00	15.67
7/29/22 2:00	331.30	17.46
7/29/22 3:00	333.70	19.74
7/29/22 4:00	336.90	19.92
7/29/22 5:00	333.40	20.41
7/29/22 6:00	328.70	24.90
7/29/22 7:00	331.20	25.49
7/29/22 8:00	331.00	26.90
7/29/22 9:00	326.40	26.05
7/29/22 10:00	328.50	27.47
7/29/22 11:00	330.60	26.69
7/29/22 12:00	330.00	26.50
7/29/22 13:00	336.30	27.25
7/29/22 14:00	337.70	27.14
7/29/22 15:00	325.40	27.35
7/29/22 16:00	329.50	28.73
7/29/22 17:00	344.60	23.79
7/29/22 18:00	3.91	22.10
7/29/22 19:00	2.71	18.10
7/29/22 20:00	355.20	11.85
7/29/22 21:00	349.90	9.68
7/29/22 22:00	357.10	7.12
7/29/22 23:00	319.90	5.38
7/30/22 0:00	294.00	6.29
7/30/22 1:00	283.50	5.67
7/30/22 2:00	275.90	7.03
7/30/22 3:00	283.70	8.17
7/30/22 4:00	278.60	6.79
7/30/22 5:00	262.10	6.77
7/30/22 6:00	276.90	7.84
7/30/22 7:00	270.30	8.65

Date	Wind Direction (°)	Wind speed (km/h)
7/30/22 8:00	281.10	14.23
7/30/22 9:00	0.49	9.86
7/30/22 10:00	72.78	5.50
7/30/22 11:00	211.10	11.98
7/30/22 12:00	227.40	15.41
7/30/22 13:00	250.30	13.59
7/30/22 14:00	304.50	19.07
7/30/22 15:00	308.00	11.83
7/30/22 16:00	317.60	17.78
7/30/22 17:00	331.30	16.74
7/30/22 18:00	335.70	17.11
7/30/22 19:00	5.93	18.24
7/30/22 20:00	18.51	11.29
7/30/22 21:00	13.73	11.66
7/30/22 22:00	359.40	12.47
7/30/22 23:00	343.80	9.93
7/31/22 0:00	335.10	10.14
7/31/22 1:00	352.90	13.53
7/31/22 2:00	356.00	13.41
7/31/22 3:00	2.69	15.42
7/31/22 4:00	12.81	17.40
7/31/22 5:00	4.58	14.48
7/31/22 6:00	348.50	10.49
7/31/22 7:00	341.20	18.44
7/31/22 8:00	347.50	21.39
7/31/22 9:00	339.20	21.59
7/31/22 10:00	326.30	22.23
7/31/22 11:00	329.30	22.31
7/31/22 12:00	329.20	25.05
7/31/22 13:00	339.60	24.80
7/31/22 14:00	347.00	23.34
7/31/22 15:00	346.70	21.71
7/31/22 16:00	357.20	21.63
7/31/22 17:00	1.01	19.13
7/31/22 18:00	3.90	16.32
7/31/22 19:00	17.33	14.65
7/31/22 20:00	19.26	9.18
7/31/22 21:00	50.96	5.44
7/31/22 22:00	151.70	4.87
7/31/22 23:00	195.80	7.69
8/1/22 0:00	210.40	10.36
8/1/22 1:00	224.60	8.94
8/1/22 2:00	247.10	7.87
8/1/22 3:00	280.70	7.68
8/1/22 4:00	291.10	8.67
8/1/22 5:00	307.00	9.64
8/1/22 6:00	322.20	8.78
8/1/22 7:00	320.80	10.84
8/1/22 8:00	331.20	15.74
8/1/22 9:00	327.20	17.68
8/1/22 10:00	327.70	19.95
8/1/22 11:00	323.30	20.96
8/1/22 12:00	326.30	22.19
8/1/22 13:00	332.00	22.12
8/1/22 14:00	339.50	22.62
8/1/22 15:00	343.70	23.28
8/1/22 16:00	345.50	23.29
8/1/22 17:00	346.70	24.97
8/1/22 18:00	358.60	25.89
8/1/22 19:00	349.10	24.50
8/1/22 20:00	5.63	22.19
8/1/22 21:00	21.79	15.85
8/1/22 22:00	16.64	16.53
8/1/22 23:00	34.79	14.25
8/2/22 0:00	23.53	12.88
8/2/22 1:00	15.67	13.08
8/2/22 2:00	9.60	13.52
8/2/22 3:00	339.30	11.28
8/2/22 4:00	340.10	13.30
8/2/22 5:00	339.20	13.43
8/2/22 6:00	337.00	15.39

Date	Wind Direction (°)	Wind speed (km/h)
8/2/22 7:00	353.50	16.88
8/2/22 8:00	18.44	17.72
8/2/22 9:00	6.50	22.74
8/2/22 10:00	12.23	18.68
8/2/22 11:00	7.87	16.45
8/2/22 12:00	358.50	18.10
8/2/22 13:00	359.40	22.15
8/2/22 14:00	6.57	20.33
8/2/22 15:00	351.30	20.94
8/2/22 16:00	9.31	18.96
8/2/22 17:00	13.30	21.88
8/2/22 18:00	16.19	22.10
8/2/22 19:00	25.46	19.84
8/2/22 20:00	28.29	19.61
8/2/22 21:00	23.51	16.41
8/2/22 22:00	25.74	13.06
8/2/22 23:00	23.85	13.59
8/3/22 0:00	27.83	11.07
8/3/22 1:00	18.05	11.56
8/3/22 2:00	25.53	13.82
8/3/22 3:00	36.06	14.21
8/3/22 4:00	18.54	12.18
8/3/22 5:00	15.30	11.55
8/3/22 6:00	27.94	12.90
8/3/22 7:00	42.67	14.53
8/3/22 8:00	48.98	14.34
8/3/22 9:00	50.25	15.49
8/3/22 10:00	50.17	20.96
8/3/22 11:00	46.67	16.11
8/3/22 12:00	46.78	15.68
8/3/22 13:00	46.41	15.12
8/3/22 14:00	50.78	14.81
8/3/22 15:00	42.68	14.40
8/3/22 16:00	38.81	13.93
8/3/22 17:00	43.46	15.00
8/3/22 18:00	45.49	15.04
8/3/22 19:00	49.87	16.30
8/3/22 20:00	47.89	12.69
8/3/22 21:00	53.16	9.14
8/3/22 22:00	92.10	4.64
8/3/22 23:00	163.20	3.68
8/4/22 0:00	204.40	5.74
8/4/22 1:00	204.90	6.80
8/4/22 2:00	224.60	5.59
8/4/22 3:00	229.20	3.46
8/4/22 4:00	244.40	9.81
8/4/22 5:00	247.20	10.08
8/4/22 6:00	242.50	9.46
8/4/22 7:00	242.70	11.57
8/4/22 8:00	241.10	13.09
8/4/22 9:00	225.50	14.18
8/4/22 10:00	231.30	15.37
8/4/22 11:00	229.00	15.65
8/4/22 12:00	241.50	15.39
8/4/22 13:00	235.30	17.00
8/4/22 14:00	231.70	22.43
8/4/22 15:00	241.30	17.37
8/4/22 16:00	234.70	12.65
8/4/22 17:00	222.20	13.34
8/4/22 18:00	220.60	15.76
8/4/22 19:00	220.40	15.08
8/4/22 20:00	238.00	15.15
8/4/22 21:00	264.70	13.50
8/4/22 22:00	270.00	13.87
8/4/22 23:00	293.30	11.64
8/5/22 0:00	342.90	11.88
8/5/22 1:00	342.70	10.82
8/5/22 2:00	335.60	9.22
8/5/22 3:00	345.50	11.36
8/5/22 4:00	17.88	11.92
8/5/22 5:00	16.38	13.57

Date	Wind Direction (°)	Wind speed (km/h)
8/5/22 6:00	22.91	17.73
8/5/22 7:00	26.07	14.69
8/5/22 8:00	34.67	14.09
8/5/22 9:00	28.52	13.56
8/5/22 10:00	23.90	9.12
8/5/22 11:00	62.80	7.26
8/5/22 12:00	63.30	9.08
8/5/22 13:00	91.80	10.02
8/5/22 14:00	99.90	10.92
8/5/22 15:00	108.50	7.60
8/5/22 16:00	90.70	10.80
8/5/22 17:00	100.00	11.29
8/5/22 18:00	109.30	9.71
8/5/22 19:00	135.90	9.81
8/5/22 20:00	153.90	9.62
8/5/22 21:00	155.30	6.48
8/5/22 22:00	138.50	5.49
8/5/22 23:00	162.80	7.88
8/6/22 0:00	166.60	8.39
8/6/22 1:00	140.00	6.84
8/6/22 2:00	115.50	6.84
8/6/22 3:00	117.20	10.54
8/6/22 4:00	122.40	10.48
8/6/22 5:00	126.70	11.74
8/6/22 6:00	134.20	12.05
8/6/22 7:00	137.70	16.39
8/6/22 8:00	136.80	17.26
8/6/22 9:00	136.70	21.40
8/6/22 10:00	144.50	25.13
8/6/22 11:00	151.20	26.35
8/6/22 12:00	142.90	25.51
8/6/22 13:00	147.20	26.08
8/6/22 14:00	146.40	26.22
8/6/22 15:00	147.90	28.76
8/6/22 16:00	141.20	28.24
8/6/22 17:00	153.20	22.25
8/6/22 18:00	174.90	18.82
8/6/22 19:00	161.20	16.04
8/6/22 20:00	144.70	17.55
8/6/22 21:00	134.00	14.46
8/6/22 22:00	121.10	10.94
8/6/22 23:00	110.70	12.42
8/7/22 0:00	91.90	15.14
8/7/22 1:00	83.80	16.76
8/7/22 2:00	78.18	16.66
8/7/22 3:00	76.75	18.65
8/7/22 4:00	80.20	19.47
8/7/22 5:00	80.70	22.00
8/7/22 6:00	78.06	21.56
8/7/22 7:00	85.30	25.16
8/7/22 8:00	88.80	26.05
8/7/22 9:00	91.80	25.14
8/7/22 10:00	93.70	31.14
8/7/22 11:00	95.40	34.96
8/7/22 12:00	100.90	34.13
8/7/22 13:00	109.30	30.53
8/7/22 14:00	101.90	29.12
8/7/22 15:00	100.70	32.11
8/7/22 16:00	107.10	32.65
8/7/22 17:00	109.80	30.64
8/7/22 18:00	111.00	27.72
8/7/22 19:00	113.50	21.78
8/7/22 20:00	128.50	13.45
8/7/22 21:00	125.90	6.54
8/7/22 22:00	107.20	6.69
8/7/22 23:00	78.53	5.90
8/8/22 0:00	51.39	8.82
8/8/22 1:00	74.81	6.47
8/8/22 2:00	82.40	5.17
8/8/22 3:00	84.90	6.21
8/8/22 4:00	82.10	6.73

Date	Wind Direction (°)	Wind speed (km/h)
8/8/22 5:00	90.50	6.65
8/8/22 6:00	97.60	8.11
8/8/22 7:00	94.00	10.17
8/8/22 8:00	94.70	11.13
8/8/22 9:00	89.70	15.90
8/8/22 10:00	84.70	15.00
8/8/22 11:00	73.40	12.95
8/8/22 12:00	66.29	11.98
8/8/22 13:00	40.13	19.35
8/8/22 14:00	41.86	15.38
8/8/22 15:00	77.05	21.02
8/8/22 16:00	115.60	13.79
8/8/22 17:00	111.30	6.41
8/8/22 18:00	70.07	9.38
8/8/22 19:00	46.21	12.90
8/8/22 20:00	95.40	13.39
8/8/22 21:00	103.20	3.87
8/8/22 22:00	202.20	3.67
8/8/22 23:00	311.60	1.88
8/9/22 0:00	324.90	3.03
8/9/22 1:00	307.70	7.36
8/9/22 2:00	321.10	5.53
8/9/22 3:00	295.10	6.51
8/9/22 4:00	281.50	6.11
8/9/22 5:00	207.80	3.44
8/9/22 6:00	261.00	4.91
8/9/22 7:00	264.70	6.56
8/9/22 8:00	260.50	9.15
8/9/22 9:00	265.10	9.74
8/9/22 10:00	278.30	11.29
8/9/22 11:00	268.60	12.17
8/9/22 12:00	242.30	10.82
8/9/22 13:00	232.40	13.14
8/9/22 14:00	229.20	16.28
8/9/22 15:00	221.90	17.69
8/9/22 16:00	236.60	18.27
8/9/22 17:00	232.40	18.04
8/9/22 18:00	228.50	18.06
8/9/22 19:00	229.40	19.79
8/9/22 20:00	225.50	19.92
8/9/22 21:00	203.10	13.59
8/9/22 22:00	195.60	14.13
8/9/22 23:00	195.70	14.55
8/10/22 0:00	188.20	15.18
8/10/22 1:00	194.20	16.18
8/10/22 2:00	193.30	16.65
8/10/22 3:00	190.10	19.60
8/10/22 4:00	189.60	20.88
8/10/22 5:00	188.70	20.87
8/10/22 6:00	187.30	23.57
8/10/22 7:00	188.60	24.73
8/10/22 8:00	192.40	29.84
8/10/22 9:00	190.50	31.36
8/10/22 10:00	188.70	30.28
8/10/22 11:00	183.20	33.30
8/10/22 12:00	191.40	39.06
8/10/22 13:00	209.00	41.11
8/10/22 14:00	211.00	40.86
8/10/22 15:00	208.90	39.28
8/10/22 16:00	208.00	39.92
8/10/22 17:00	213.20	35.68
8/10/22 18:00	223.90	37.66
8/10/22 19:00	229.10	34.78
8/10/22 20:00	248.40	27.81
8/10/22 21:00	319.80	34.52
8/10/22 22:00	326.50	35.28
8/10/22 23:00	338.40	30.64
8/11/22 0:00	334.70	35.60
8/11/22 1:00	336.20	29.99
8/11/22 2:00	335.50	27.10
8/11/22 3:00	325.80	24.71

Date	Wind Direction (°)	Wind speed (km/h)
8/11/22 4:00	313.70	25.46
8/11/22 5:00	303.30	25.72
8/11/22 6:00	302.50	29.88
8/11/22 7:00	298.50	32.22
8/11/22 8:00	292.30	34.06
8/11/22 9:00	294.60	36.43
8/11/22 10:00	296.10	38.84
8/11/22 11:00	287.10	38.95
8/11/22 12:00	285.00	41.11
8/11/22 13:00	285.40	40.72
8/11/22 14:00	284.60	41.04
8/11/22 15:00	286.40	41.22
8/11/22 16:00	283.20	40.82
8/11/22 17:00	284.50	37.48
8/11/22 18:00	284.00	31.61
8/11/22 19:00	276.10	23.40
8/11/22 20:00	263.30	20.86
8/11/22 21:00	251.40	21.05
8/11/22 22:00	248.20	19.18
8/11/22 23:00	268.40	16.24
8/12/22 0:00	270.20	13.74
8/12/22 1:00	254.30	14.55
8/12/22 2:00	255.30	15.52
8/12/22 3:00	261.40	21.48
8/12/22 4:00	255.00	22.28
8/12/22 5:00	257.00	22.18
8/12/22 6:00	261.60	21.56
8/12/22 7:00	269.80	20.10
8/12/22 8:00	270.10	20.53
8/12/22 9:00	275.40	20.48
8/12/22 10:00	276.90	17.76
8/12/22 11:00	268.60	18.41
8/12/22 12:00	262.00	25.88
8/12/22 13:00	276.50	30.49
8/12/22 14:00	269.60	28.54
8/12/22 15:00	270.10	28.94
8/12/22 16:00	273.80	30.20
8/12/22 17:00	271.60	28.12
8/12/22 18:00	270.20	24.17
8/12/22 19:00	268.30	19.86
8/12/22 20:00	238.70	21.52
8/12/22 21:00	232.60	24.62
8/12/22 22:00	231.60	24.41
8/12/22 23:00	240.10	23.14
8/13/22 0:00	245.00	23.63
8/13/22 1:00	250.60	25.01
8/13/22 2:00	257.90	23.81
8/13/22 3:00	268.70	16.80
8/13/22 4:00	270.90	15.82
8/13/22 5:00	263.40	16.05
8/13/22 6:00	249.90	14.91
8/13/22 7:00	253.90	16.70
8/13/22 8:00	253.60	14.45
8/13/22 9:00	242.20	13.84
8/13/22 10:00	242.10	17.14
8/13/22 11:00	268.50	20.37
8/13/22 12:00	257.30	18.26
8/13/22 13:00	227.20	20.09
8/13/22 14:00	229.30	19.56
8/13/22 15:00	224.40	18.31
8/13/22 16:00	224.50	19.55
8/13/22 17:00	227.20	17.89
8/13/22 18:00	235.20	16.61
8/13/22 19:00	230.50	15.03
8/13/22 20:00	226.40	14.61
8/13/22 21:00	210.00	10.77
8/13/22 22:00	210.90	10.61
8/13/22 23:00	220.80	9.98
8/14/22 0:00	225.70	9.57
8/14/22 1:00	213.70	11.14
8/14/22 2:00	208.70	14.22

Date	Wind Direction (°)	Wind speed (km/h)
8/14/22 3:00	211.20	13.56
8/14/22 4:00	213.00	11.89
8/14/22 5:00	196.20	9.95
8/14/22 6:00	185.80	8.90
8/14/22 7:00	181.70	8.42
8/14/22 8:00	190.80	10.54
8/14/22 9:00	206.70	11.08
8/14/22 10:00	210.60	15.09
8/14/22 11:00	216.90	19.65
8/14/22 12:00	207.30	17.72
8/14/22 13:00	202.50	15.91
8/14/22 14:00	198.50	16.73
8/14/22 15:00	191.80	17.58
8/14/22 16:00	169.40	15.11
8/14/22 17:00	163.60	15.99
8/14/22 18:00	160.80	14.60
8/14/22 19:00	161.10	12.09
8/14/22 20:00	147.50	9.48
8/14/22 21:00	131.10	11.80
8/14/22 22:00	118.80	11.19
8/14/22 23:00	113.70	12.32
8/15/22 0:00	122.50	8.77
8/15/22 1:00	115.20	8.33
8/15/22 2:00	147.90	6.85
8/15/22 3:00	171.60	9.38
8/15/22 4:00	185.30	10.00
8/15/22 5:00	177.90	8.75
8/15/22 6:00	180.90	11.28
8/15/22 7:00	197.20	11.16
8/15/22 8:00	185.20	9.99
8/15/22 9:00	196.90	10.54
8/15/22 10:00	208.10	11.87
8/15/22 11:00	217.10	12.01
8/15/22 12:00	229.50	10.38
8/15/22 13:00	239.30	13.28
8/15/22 14:00	229.10	16.21
8/15/22 15:00	222.30	15.84
8/15/22 16:00	226.10	14.64
8/15/22 17:00	232.50	15.11
8/15/22 18:00	236.40	10.64
8/15/22 19:00	217.00	10.28
8/15/22 20:00	215.60	9.74
8/15/22 21:00	213.10	10.45
8/15/22 22:00	215.50	14.98
8/15/22 23:00	226.70	13.85
8/16/22 0:00	263.90	4.78
8/16/22 1:00	234.70	6.56
8/16/22 2:00	230.20	11.21
8/16/22 3:00	283.60	14.47
8/16/22 4:00	266.10	12.16
8/16/22 5:00	305.60	7.27
8/16/22 6:00	5.02	5.74
8/16/22 7:00	286.50	6.86
8/16/22 8:00	281.30	6.33
8/16/22 9:00	273.10	11.55
8/16/22 10:00	289.90	20.30
8/16/22 11:00	286.50	21.30
8/16/22 12:00	289.20	16.47
8/16/22 13:00	298.10	16.90
8/16/22 14:00	323.40	14.40
8/16/22 15:00	340.40	13.05
8/16/22 16:00	347.80	10.55
8/16/22 17:00	1.84	14.25
8/16/22 18:00	358.00	13.60
8/16/22 19:00	340.50	8.83
8/16/22 20:00	328.10	9.28
8/16/22 21:00	324.50	11.11
8/16/22 22:00	303.10	10.57
8/16/22 23:00	299.80	8.23
8/17/22 0:00	303.00	9.48
8/17/22 1:00	323.50	11.08

Date	Wind Direction (°)	Wind speed (km/h)
8/17/22 2:00	340.40	9.80
8/17/22 3:00	11.82	12.45
8/17/22 4:00	11.60	11.85
8/17/22 5:00	37.93	11.20
8/17/22 6:00	91.80	10.43
8/17/22 7:00	85.10	17.19
8/17/22 8:00	101.00	17.33
8/17/22 9:00	103.80	16.85
8/17/22 10:00	105.80	11.75
8/17/22 11:00	116.10	9.00
8/17/22 12:00	107.60	5.81
8/17/22 13:00	108.20	6.78
8/17/22 14:00	91.30	5.82
8/17/22 15:00	277.20	5.44
8/17/22 16:00	283.50	9.42
8/17/22 17:00	288.10	8.19
8/17/22 18:00	286.50	6.92
8/17/22 19:00	327.30	3.70
8/17/22 20:00	122.40	9.98
8/17/22 21:00	150.70	11.52
8/17/22 22:00	190.30	12.05
8/17/22 23:00	191.40	11.49
8/18/22 0:00	193.30	14.79
8/18/22 1:00	198.80	15.86
8/18/22 2:00	190.70	16.17
8/18/22 3:00	192.90	17.77
8/18/22 4:00	193.40	19.25
8/18/22 5:00	190.90	18.09
8/18/22 6:00	195.30	18.05
8/18/22 7:00	196.30	20.91
8/18/22 8:00	191.50	26.15
8/18/22 9:00	190.70	30.10
8/18/22 10:00	186.60	32.18
8/18/22 11:00	191.00	32.90
8/18/22 12:00	191.00	36.83
8/18/22 13:00	195.70	38.20
8/18/22 14:00	187.90	38.38
8/18/22 15:00	189.20	40.61
8/18/22 16:00	200.40	38.63
8/18/22 17:00	203.30	39.06
8/18/22 18:00	200.90	33.26
8/18/22 19:00	202.60	27.49
8/18/22 20:00	206.20	21.26
8/18/22 21:00	234.30	20.38
8/18/22 22:00	260.30	19.08
8/18/22 23:00	282.60	14.91
8/19/22 0:00	313.00	14.95
8/19/22 1:00	314.80	13.57
8/19/22 2:00	312.60	12.34
8/19/22 3:00	294.40	9.09
8/19/22 4:00	274.50	8.94
8/19/22 5:00	228.10	7.42
8/19/22 6:00	246.70	10.61
8/19/22 7:00	249.70	15.29
8/19/22 8:00	235.90	17.31
8/19/22 9:00	234.80	18.64
8/19/22 10:00	248.20	22.06
8/19/22 11:00	275.90	28.91
8/19/22 12:00	288.50	28.09
8/19/22 13:00	301.30	21.77
8/19/22 14:00	294.90	20.98
8/19/22 15:00	286.90	21.36
8/19/22 16:00	308.00	18.79
8/19/22 17:00	311.70	14.25
8/19/22 18:00	332.70	11.93
8/19/22 19:00	359.70	8.79
8/19/22 20:00	24.14	7.98
8/19/22 21:00	59.61	13.96
8/19/22 22:00	85.40	14.89
8/19/22 23:00	91.20	15.74
8/20/22 0:00	93.30	13.78

Date	Wind Direction (°)	Wind speed (km/h)
8/20/22 1:00	102.50	18.47
8/20/22 2:00	55.61	12.63
8/20/22 3:00	43.73	18.60
8/20/22 4:00	72.41	22.21
8/20/22 5:00	86.30	20.84
8/20/22 6:00	68.59	22.36
8/20/22 7:00	62.90	23.09
8/20/22 8:00	65.51	17.89
8/20/22 9:00	40.20	17.37
8/20/22 10:00	61.63	23.64
8/20/22 11:00	84.90	23.75
8/20/22 12:00	63.27	18.71
8/20/22 13:00	32.02	18.33
8/20/22 14:00	29.69	15.51
8/20/22 15:00	23.47	13.22
8/20/22 16:00	54.61	13.23
8/20/22 17:00	58.25	8.76
8/20/22 18:00	82.00	7.02
8/20/22 19:00	125.60	4.44
8/20/22 20:00	183.10	3.96
8/20/22 21:00	207.40	6.92
8/20/22 22:00	270.10	11.00
8/20/22 23:00	311.00	13.90
8/21/22 0:00	15.04	16.54
8/21/22 1:00	19.49	18.82
8/21/22 2:00	32.56	16.55
8/21/22 3:00	41.90	15.12
8/21/22 4:00	19.54	13.59
8/21/22 5:00	35.42	9.59
8/21/22 6:00	46.26	10.13
8/21/22 7:00	42.11	9.19
8/21/22 8:00	42.84	8.88
8/21/22 9:00	61.86	6.91
8/21/22 10:00	66.72	6.43
8/21/22 11:00	127.30	5.38
8/21/22 12:00	97.60	4.02
8/21/22 13:00	170.40	3.61
8/21/22 14:00	170.90	4.53
8/21/22 15:00	119.70	5.27
8/21/22 16:00	121.50	6.11
8/21/22 17:00	113.70	9.42
8/21/22 18:00	102.00	12.05
8/21/22 19:00	109.20	11.70
8/21/22 20:00	131.10	9.42
8/21/22 21:00	158.50	5.84
8/21/22 22:00	220.30	19.04
8/21/22 23:00	235.10	19.08
8/22/22 0:00	246.90	12.56
8/22/22 1:00	228.60	10.06
8/22/22 2:00	218.30	11.27
8/22/22 3:00	209.40	9.73
8/22/22 4:00	234.00	11.73
8/22/22 5:00	248.60	11.96
8/22/22 6:00	263.20	14.10
8/22/22 7:00	283.20	17.92
8/22/22 8:00	299.00	21.42
8/22/22 9:00	317.10	21.01
8/22/22 10:00	327.10	24.90
8/22/22 11:00	332.80	23.13
8/22/22 12:00	335.70	28.27
8/22/22 13:00	344.60	31.97
8/22/22 14:00	350.00	35.06
8/22/22 15:00	355.80	37.12
8/22/22 16:00	0.25	34.24
8/22/22 17:00	5.57	34.88
8/22/22 18:00	12.56	33.16
8/22/22 19:00	16.59	27.74
8/22/22 20:00	21.48	23.77
8/22/22 21:00	23.87	20.21
8/22/22 22:00	30.17	14.04
8/22/22 23:00	35.92	11.57

Date	Wind Direction (°)	Wind speed (km/h)
8/23/22 0:00	40.57	10.48
8/23/22 1:00	38.32	9.32
8/23/22 2:00	30.03	10.28
8/23/22 3:00	26.66	7.48
8/23/22 4:00	28.02	7.90
8/23/22 5:00	20.62	8.00
8/23/22 6:00	7.37	6.85
8/23/22 7:00	6.59	1.74
8/23/22 8:00	326.60	2.82
8/23/22 9:00	308.40	6.49
8/23/22 10:00	304.00	9.20
8/23/22 11:00	303.20	8.39
8/23/22 12:00	304.90	9.68
8/23/22 13:00	270.30	9.71
8/23/22 14:00	282.40	9.42
8/23/22 15:00	278.70	8.82
8/23/22 16:00	267.10	9.67
8/23/22 17:00	285.30	5.91
8/23/22 18:00	298.60	5.53
8/23/22 19:00	2.87	3.55
8/23/22 20:00	66.83	6.17
8/23/22 21:00	112.40	7.52
8/23/22 22:00	137.80	7.75
8/23/22 23:00	121.50	6.82
8/24/22 0:00	108.80	5.86
8/24/22 1:00	121.30	8.19
8/24/22 2:00	123.20	11.68
8/24/22 3:00	126.10	13.86
8/24/22 4:00	118.10	15.62
8/24/22 5:00	111.10	20.19
8/24/22 6:00	124.30	17.72
8/24/22 7:00	133.40	19.76
8/24/22 8:00	126.20	21.12
8/24/22 9:00	126.70	20.38
8/24/22 10:00	129.00	21.11
8/24/22 11:00	126.40	18.67
8/24/22 12:00	112.40	17.45
8/24/22 13:00	109.50	20.28
8/24/22 14:00	110.60	20.15
8/24/22 15:00	117.60	19.90
8/24/22 16:00	114.90	18.60
8/24/22 17:00	114.00	16.75
8/24/22 18:00	97.90	20.34
8/24/22 19:00	91.60	20.73
8/24/22 20:00	88.30	17.23
8/24/22 21:00	90.90	15.99
8/24/22 22:00	92.20	16.22
8/24/22 23:00	92.40	14.24
8/25/22 0:00	99.90	16.58
8/25/22 1:00	109.60	17.78
8/25/22 2:00	108.40	14.61
8/25/22 3:00	101.90	13.34
8/25/22 4:00	103.10	12.97
8/25/22 5:00	107.00	13.73
8/25/22 6:00	106.10	15.22
8/25/22 7:00	112.00	14.79
8/25/22 8:00	121.10	14.55
8/25/22 9:00	127.80	16.60
8/25/22 10:00	135.40	19.88
8/25/22 11:00	138.10	19.44
8/25/22 12:00	140.30	16.38
8/25/22 13:00	133.20	14.07
8/25/22 14:00	135.30	15.93
8/25/22 15:00	142.70	15.99
8/25/22 16:00	136.90	16.07
8/25/22 17:00	148.70	15.44
8/25/22 18:00	159.80	13.79
8/25/22 19:00	133.50	10.00
8/25/22 20:00	125.30	10.88
8/25/22 21:00	131.50	13.18
8/25/22 22:00	132.40	13.44

Date	Wind Direction (°)	Wind speed (km/h)
8/25/22 23:00	143.30	13.43
8/26/22 0:00	153.50	11.42
8/26/22 1:00	144.50	11.47
8/26/22 2:00	120.30	10.39
8/26/22 3:00	103.10	11.87
8/26/22 4:00	135.20	10.86
8/26/22 5:00	132.30	10.36
8/26/22 6:00	128.00	6.21
8/26/22 7:00	122.60	8.52
8/26/22 8:00	142.10	9.93
8/26/22 9:00	135.90	11.88
8/26/22 10:00	129.90	9.44
8/26/22 11:00	180.60	8.58
8/26/22 12:00	243.10	7.27
8/26/22 13:00	278.50	10.13
8/26/22 14:00	322.20	18.78
8/26/22 15:00	352.40	27.13
8/26/22 16:00	5.06	14.46
8/26/22 17:00	335.70	16.07
8/26/22 18:00	343.60	13.40
8/26/22 19:00	340.90	13.76
8/26/22 20:00	351.10	18.00
8/26/22 21:00	344.40	20.02
8/26/22 22:00	341.00	19.71
8/26/22 23:00	344.40	17.03
8/27/22 0:00	334.30	12.97
8/27/22 1:00	334.10	12.79
8/27/22 2:00	333.40	13.48
8/27/22 3:00	332.40	12.24
8/27/22 4:00	331.50	12.59
8/27/22 5:00	334.40	11.23
8/27/22 6:00	335.70	11.01
8/27/22 7:00	331.50	13.68
8/27/22 8:00	345.10	13.75
8/27/22 9:00	341.30	17.76
8/27/22 10:00	350.60	20.47
8/27/22 11:00	6.82	18.63
8/27/22 12:00	15.28	15.14
8/27/22 13:00	37.50	16.31
8/27/22 14:00	52.15	11.36
8/27/22 15:00	73.51	9.42
8/27/22 16:00	48.98	11.13
8/27/22 17:00	30.78	15.18
8/27/22 18:00	58.74	13.74
8/27/22 19:00	62.25	13.99
8/27/22 20:00	68.82	11.34
8/27/22 21:00	77.22	10.13
8/27/22 22:00	76.39	11.48
8/27/22 23:00	68.66	9.77
8/28/22 0:00	60.94	12.09
8/28/22 1:00	50.00	11.20
8/28/22 2:00	76.37	11.43
8/28/22 3:00	76.73	15.90
8/28/22 4:00	70.60	13.84
8/28/22 5:00	63.47	16.07
8/28/22 6:00	63.14	19.90
8/28/22 7:00	66.01	18.56
8/28/22 8:00	70.47	18.76
8/28/22 9:00	71.09	21.65
8/28/22 10:00	83.60	21.23
8/28/22 11:00	91.80	22.23
8/28/22 12:00	98.10	22.56
8/28/22 13:00	106.10	22.95
8/28/22 14:00	112.70	23.39
8/28/22 15:00	115.20	22.81
8/28/22 16:00	116.20	22.18
8/28/22 17:00	112.30	20.76
8/28/22 18:00	100.60	17.73
8/28/22 19:00	96.00	19.00
8/28/22 20:00	97.50	18.51
8/28/22 21:00	99.10	17.05

Date	Wind Direction (°)	Wind speed (km/h)
8/28/22 22:00	97.90	16.66
8/28/22 23:00	91.70	17.31
8/29/22 0:00	88.00	18.51
8/29/22 1:00	85.60	21.59
8/29/22 2:00	82.50	22.30
8/29/22 3:00	93.50	21.89
8/29/22 4:00	98.10	22.86
8/29/22 5:00	96.40	23.34
8/29/22 6:00	88.10	23.96
8/29/22 7:00	86.30	24.08
8/29/22 8:00	87.00	26.32
8/29/22 9:00	93.30	27.34
8/29/22 10:00	90.10	26.35
8/29/22 11:00	95.80	24.19
8/29/22 12:00	100.10	24.68
8/29/22 13:00	105.60	24.87
8/29/22 14:00	94.30	24.42
8/29/22 15:00	92.90	24.19
8/29/22 16:00	94.00	19.25
8/29/22 17:00	91.20	19.88
8/29/22 18:00	106.10	17.17
8/29/22 19:00	91.60	19.52
8/29/22 20:00	105.80	14.47
8/29/22 21:00	104.70	12.49
8/29/22 22:00	112.40	15.92
8/29/22 23:00	120.80	15.84
8/30/22 0:00	124.40	12.64
8/30/22 1:00	122.60	11.59
8/30/22 2:00	135.70	9.32
8/30/22 3:00	136.00	11.53
8/30/22 4:00	124.80	12.62
8/30/22 5:00	115.90	17.13
8/30/22 6:00	128.50	18.77
8/30/22 7:00	132.50	20.70
8/30/22 8:00	136.80	23.21
8/30/22 9:00	140.80	24.61
8/30/22 10:00	144.90	23.63
8/30/22 11:00	137.80	26.11
8/30/22 12:00	135.40	27.76
8/30/22 13:00	136.40	28.48
8/30/22 14:00	139.00	28.58
8/30/22 15:00	138.90	27.83
8/30/22 16:00	134.50	29.84
8/30/22 17:00	141.20	29.99
8/30/22 18:00	136.00	28.03
8/30/22 19:00	129.80	26.86
8/30/22 20:00	126.10	27.86
8/30/22 21:00	128.60	27.14
8/30/22 22:00	129.80	25.47
8/30/22 23:00	126.60	26.03
8/31/22 0:00	132.80	25.90
8/31/22 1:00	135.90	25.50
8/31/22 2:00	130.50	25.51
8/31/22 3:00	128.10	26.02
8/31/22 4:00	125.20	27.03
8/31/22 5:00	119.00	25.60
8/31/22 6:00	114.10	28.13
8/31/22 7:00	102.20	30.74
8/31/22 8:00	96.50	33.44
8/31/22 9:00	91.80	34.09
8/31/22 10:00	84.80	32.15
8/31/22 11:00	79.38	29.77
8/31/22 12:00	75.34	27.46
8/31/22 13:00	66.21	24.62
8/31/22 14:00	59.48	22.11
8/31/22 15:00	50.21	20.61
8/31/22 16:00	61.13	19.80
8/31/22 17:00	67.70	19.80
8/31/22 18:00	83.00	20.91
8/31/22 19:00	86.90	18.17
8/31/22 20:00	87.30	20.14

Date	Wind Direction (°)	Wind speed (km/h)
8/31/22 21:00	87.50	19.34
8/31/22 22:00	88.30	18.36
8/31/22 23:00	91.20	20.57
9/1/22 0:00	88.00	22.48
9/1/22 1:00	95.10	25.19
9/1/22 2:00	89.20	23.67
9/1/22 3:00	87.90	25.47
9/1/22 4:00	87.60	24.92
9/1/22 5:00	84.40	25.64
9/1/22 6:00	83.30	25.94
9/1/22 7:00	81.00	27.38
9/1/22 8:00	77.34	26.85
9/1/22 9:00	76.94	29.81
9/1/22 10:00	72.93	29.45
9/1/22 11:00	74.17	27.49
9/1/22 12:00	76.69	27.25
9/1/22 13:00	80.20	26.69
9/1/22 14:00	87.90	24.01
9/1/22 15:00	95.10	21.54
9/1/22 16:00	97.60	19.04
9/1/22 17:00	112.50	16.33
9/1/22 18:00	115.10	15.05
9/1/22 19:00	131.20	12.01
9/1/22 20:00	144.00	10.54
9/1/22 21:00	166.10	10.55
9/1/22 22:00	136.80	9.49
9/1/22 23:00	132.30	10.43
9/2/22 0:00	141.10	10.81
9/2/22 1:00	155.80	10.12
9/2/22 2:00	145.90	10.51
9/2/22 3:00	147.60	11.08
9/2/22 4:00	151.00	12.96
9/2/22 5:00	146.00	14.14
9/2/22 6:00	148.90	16.50
9/2/22 7:00	151.50	19.37
9/2/22 8:00	156.70	22.90
9/2/22 9:00	164.40	25.50
9/2/22 10:00	163.40	23.06
9/2/22 11:00	168.40	22.54
9/2/22 12:00	157.30	20.59
9/2/22 13:00	155.20	21.49
9/2/22 14:00	164.40	23.41
9/2/22 15:00	165.90	21.38
9/2/22 16:00	170.90	18.29
9/2/22 17:00	180.40	16.41
9/2/22 18:00	179.50	14.76
9/2/22 19:00	159.40	8.54
9/2/22 20:00	131.00	7.49
9/2/22 21:00	71.19	4.08
9/2/22 22:00	53.46	3.54
9/2/22 23:00	305.90	3.88
9/3/22 0:00	289.90	4.07
9/3/22 1:00	283.80	4.73
9/3/22 2:00	289.20	5.54
9/3/22 3:00	274.00	3.54
9/3/22 4:00	294.60	4.06
9/3/22 5:00	245.00	2.37
9/3/22 6:00	154.20	4.97
9/3/22 7:00	149.70	5.29
9/3/22 8:00	146.10	6.96
9/3/22 9:00	151.50	10.97
9/3/22 10:00	154.10	12.32
9/3/22 11:00	171.90	11.45
9/3/22 12:00	181.80	11.78
9/3/22 13:00	185.20	13.62
9/3/22 14:00	161.50	13.37
9/3/22 15:00	165.10	13.57
9/3/22 16:00	159.20	14.46
9/3/22 17:00	157.60	15.79
9/3/22 18:00	162.60	14.09
9/3/22 19:00	134.40	10.40

Date	Wind Direction (°)	Wind speed (km/h)
9/3/22 20:00	115.20	10.61
9/3/22 21:00	124.30	14.46
9/3/22 22:00	126.10	12.27
9/3/22 23:00	112.00	8.48
9/4/22 0:00	106.70	9.91
9/4/22 1:00	112.60	8.14
9/4/22 2:00	83.30	10.05
9/4/22 3:00	103.20	11.15
9/4/22 4:00	110.40	11.80
9/4/22 5:00	80.70	10.04
9/4/22 6:00	91.10	10.12
9/4/22 7:00	79.35	11.18
9/4/22 8:00	91.50	12.24
9/4/22 9:00	102.90	17.48
9/4/22 10:00	104.10	21.15
9/4/22 11:00	105.10	20.70
9/4/22 12:00	114.00	18.36
9/4/22 13:00	116.10	18.86
9/4/22 14:00	112.10	20.39
9/4/22 15:00	112.50	15.91
9/4/22 16:00	124.10	15.82
9/4/22 17:00	123.40	17.78
9/4/22 18:00	114.50	15.17
9/4/22 19:00	121.20	15.57
9/4/22 20:00	135.90	16.12
9/4/22 21:00	132.00	16.44
9/4/22 22:00	145.30	11.54
9/4/22 23:00	140.50	7.57
9/5/22 0:00	120.80	8.56
9/5/22 1:00	88.90	10.29
9/5/22 2:00	81.60	12.22
9/5/22 3:00	104.50	10.06
9/5/22 4:00	102.90	6.46
9/5/22 5:00	135.10	7.66
9/5/22 6:00	125.00	8.93
9/5/22 7:00	160.00	4.69
9/5/22 8:00	182.80	8.02
9/5/22 9:00	232.30	16.95
9/5/22 10:00	234.60	24.30
9/5/22 11:00	238.30	28.07
9/5/22 12:00	232.10	32.36
9/5/22 13:00	228.30	32.76
9/5/22 14:00	228.60	34.96
9/5/22 15:00	229.10	35.64
9/5/22 16:00	229.40	36.54
9/5/22 17:00	231.10	32.36
9/5/22 18:00	235.60	26.25
9/5/22 19:00	220.20	28.19
9/5/22 20:00	215.00	27.13
9/5/22 21:00	221.80	29.30
9/5/22 22:00	233.20	26.49
9/5/22 23:00	233.10	22.91
9/6/22 0:00	233.60	29.48
9/6/22 1:00	241.70	24.95
9/6/22 2:00	248.90	24.80
9/6/22 3:00	249.00	26.79
9/6/22 4:00	250.30	26.70
9/6/22 5:00	268.20	30.82
9/6/22 6:00	279.60	31.54
9/6/22 7:00	284.80	31.61
9/6/22 8:00	272.80	29.59
9/6/22 9:00	276.10	32.72
9/6/22 10:00	273.90	33.62
9/6/22 11:00	283.00	39.82
9/6/22 12:00	289.40	42.95
9/6/22 13:00	292.60	43.42
9/6/22 14:00	294.90	43.81
9/6/22 15:00	295.30	44.10
9/6/22 16:00	292.70	43.09
9/6/22 17:00	289.60	42.23
9/6/22 18:00	291.50	42.88

Date	Wind Direction (°)	Wind speed (km/h)
9/6/22 19:00	296.10	43.45
9/6/22 20:00	292.30	43.16
9/6/22 21:00	295.20	43.88
9/6/22 22:00	297.30	45.90
9/6/22 23:00	295.40	44.86
9/7/22 0:00	294.90	44.35
9/7/22 1:00	298.30	45.04
9/7/22 2:00	298.10	42.34
9/7/22 3:00	292.50	42.16
9/7/22 4:00	292.00	38.92
9/7/22 5:00	292.80	35.93
9/7/22 6:00	294.10	35.32
9/7/22 7:00	294.70	32.51
9/7/22 8:00	298.00	36.79
9/7/22 9:00	300.60	36.50
9/7/22 10:00	311.50	31.18
9/7/22 11:00	314.00	30.42
9/7/22 12:00	317.00	29.88
9/7/22 13:00	313.70	31.61
9/7/22 14:00	313.60	32.54
9/7/22 15:00	319.20	32.76
9/7/22 16:00	322.20	30.28
9/7/22 17:00	325.20	31.68
9/7/22 18:00	328.20	31.10
9/7/22 19:00	327.20	29.48
9/7/22 20:00	322.90	31.03
9/7/22 21:00	323.00	28.26
9/7/22 22:00	322.40	25.80
9/7/22 23:00	326.70	24.73
9/8/22 0:00	330.30	22.94
9/8/22 1:00	324.60	26.46
9/8/22 2:00	321.20	36.32
9/8/22 3:00	320.90	34.92
9/8/22 4:00	320.10	32.11
9/8/22 5:00	319.30	35.96
9/8/22 6:00	310.60	35.24
9/8/22 7:00	310.70	37.87
9/8/22 8:00	311.10	39.85
9/8/22 9:00	311.00	40.97
9/8/22 10:00	317.30	42.44
9/8/22 11:00	331.00	38.52
9/8/22 12:00	332.00	38.63
9/8/22 13:00	336.10	39.24
9/8/22 14:00	333.60	37.94
9/8/22 15:00	333.00	37.12
9/8/22 16:00	334.90	38.34
9/8/22 17:00	333.70	37.01
9/8/22 18:00	336.20	36.86
9/8/22 19:00	338.00	36.11
9/8/22 20:00	338.50	34.56
9/8/22 21:00	337.10	34.49
9/8/22 22:00	335.60	34.60
9/8/22 23:00	336.40	35.57
9/9/22 0:00	338.40	34.27
9/9/22 1:00	339.20	33.70
9/9/22 2:00	337.70	34.52
9/9/22 3:00	337.60	32.22
9/9/22 4:00	340.10	32.33
9/9/22 5:00	337.00	28.69
9/9/22 6:00	337.50	30.06
9/9/22 7:00	337.20	30.92
9/9/22 8:00	340.60	28.91
9/9/22 9:00	339.80	29.41
9/9/22 10:00	339.10	32.04
9/9/22 11:00	340.00	32.47
9/9/22 12:00	336.50	27.87
9/9/22 13:00	336.80	29.48
9/9/22 14:00	328.90	28.43
9/9/22 15:00	331.80	27.00
9/9/22 16:00	336.40	25.38
9/9/22 17:00	344.60	23.33

Date	Wind Direction (°)	Wind speed (km/h)
9/9/22 18:00	326.10	22.60
9/9/22 19:00	333.20	22.54
9/9/22 20:00	339.50	17.42
9/9/22 21:00	343.90	17.41
9/9/22 22:00	349.10	13.63
9/9/22 23:00	349.10	14.46
9/10/22 0:00	342.00	14.91
9/10/22 1:00	351.80	14.06
9/10/22 2:00	354.80	10.89
9/10/22 3:00	357.60	9.47
9/10/22 4:00	7.66	7.62
9/10/22 5:00	20.02	6.72
9/10/22 6:00	67.84	7.11
9/10/22 7:00	118.80	7.08
9/10/22 8:00	116.30	8.07
9/10/22 9:00	159.70	7.57
9/10/22 10:00	149.40	9.86
9/10/22 11:00	154.10	12.95
9/10/22 12:00	115.70	14.92
9/10/22 13:00	123.10	16.27
9/10/22 14:00	120.30	18.26
9/10/22 15:00	110.00	18.35
9/10/22 16:00	110.30	19.80
9/10/22 17:00	128.10	17.10
9/10/22 18:00	133.10	10.35
9/10/22 19:00	98.50	7.51
9/10/22 20:00	102.70	6.46
9/10/22 21:00	116.10	5.83
9/10/22 22:00	193.00	12.61
9/10/22 23:00	271.30	25.42
9/11/22 0:00	261.60	27.63
9/11/22 1:00	318.30	19.49
9/11/22 2:00	13.67	18.85
9/11/22 3:00	22.78	21.41
9/11/22 4:00	20.29	23.82
9/11/22 5:00	22.92	20.03
9/11/22 6:00	18.04	18.55
9/11/22 7:00	10.41	16.99
9/11/22 8:00	358.20	23.17
9/11/22 9:00	347.00	21.30
9/11/22 10:00	348.00	21.49
9/11/22 11:00	342.60	20.91
9/11/22 12:00	332.90	21.35
9/11/22 13:00	329.90	23.08
9/11/22 14:00	322.30	22.38
9/11/22 15:00	323.90	22.02
9/11/22 16:00	320.60	19.29
9/11/22 17:00	313.80	20.26
9/11/22 18:00	318.40	17.56
9/11/22 19:00	318.90	18.93
9/11/22 20:00	342.30	18.63
9/11/22 21:00	345.80	17.05
9/11/22 22:00	341.00	14.08
9/11/22 23:00	332.60	15.80
9/12/22 0:00	337.40	16.31
9/12/22 1:00	335.10	14.34
9/12/22 2:00	331.90	13.08
9/12/22 3:00	338.90	12.27
9/12/22 4:00	332.90	12.66
9/12/22 5:00	331.70	14.73
9/12/22 6:00	326.80	13.25
9/12/22 7:00	310.80	14.48
9/12/22 8:00	314.70	15.77
9/12/22 9:00	333.40	16.32
9/12/22 10:00	322.50	16.56
9/12/22 11:00	354.60	11.33
9/12/22 12:00	328.70	8.67
9/12/22 13:00	303.30	8.25
9/12/22 14:00	266.10	7.54
9/12/22 15:00	272.60	8.36
9/12/22 16:00	279.90	14.92

Date	Wind Direction (°)	Wind speed (km/h)
9/12/22 17:00	272.70	13.73
9/12/22 18:00	279.00	14.85
9/12/22 19:00	278.30	11.58
9/12/22 20:00	267.00	10.35
9/12/22 21:00	250.00	8.32
9/12/22 22:00	222.20	8.72
9/12/22 23:00	202.10	12.58
9/13/22 0:00	207.20	18.38
9/13/22 1:00	202.40	19.52
9/13/22 2:00	206.90	19.35
9/13/22 3:00	207.40	21.60
9/13/22 4:00	216.10	24.58
9/13/22 5:00	205.10	19.01
9/13/22 6:00	210.80	20.81
9/13/22 7:00	206.20	23.35
9/13/22 8:00	197.60	21.02
9/13/22 9:00	203.20	19.25
9/13/22 10:00	219.30	17.66
9/13/22 11:00	241.60	16.40
9/13/22 12:00	233.10	16.79
9/13/22 13:00	243.00	13.66
9/13/22 14:00	285.40	12.48
9/13/22 15:00	294.40	11.02
9/13/22 16:00	305.40	9.13
9/13/22 17:00	345.70	9.11
9/13/22 18:00	32.41	8.56
9/13/22 19:00	63.38	8.99
9/13/22 20:00	83.90	8.70
9/13/22 21:00	88.60	10.06
9/13/22 22:00	89.10	10.32
9/13/22 23:00	126.20	16.56
9/14/22 0:00	126.40	14.58
9/14/22 1:00	111.40	14.10
9/14/22 2:00	109.10	13.31
9/14/22 3:00	130.00	11.62
9/14/22 4:00	142.70	7.69
9/14/22 5:00	153.80	6.25
9/14/22 6:00	187.20	11.14
9/14/22 7:00	215.70	7.54
9/14/22 8:00	230.90	9.50
9/14/22 9:00	231.60	12.55
9/14/22 10:00	239.90	12.30
9/14/22 11:00	232.90	15.37
9/14/22 12:00	233.50	17.31
9/14/22 13:00	250.60	19.07
9/14/22 14:00	265.60	20.75
9/14/22 15:00	266.70	18.45
9/14/22 16:00	261.90	17.01
9/14/22 17:00	237.50	17.81
9/14/22 18:00	242.70	16.48
9/14/22 19:00	30.46	13.34
9/14/22 20:00	39.69	14.26
9/14/22 21:00	58.43	15.11
9/14/22 22:00	69.74	19.90
9/14/22 23:00	79.87	18.73
9/15/22 0:00	77.69	19.95
9/15/22 1:00	92.50	20.96
9/15/22 2:00	92.30	22.82
9/15/22 3:00	93.10	22.11
9/15/22 4:00	96.40	21.42
9/15/22 5:00	96.30	25.02
9/15/22 6:00	96.40	24.75
9/15/22 7:00	98.70	27.07
9/15/22 8:00	100.50	28.44
9/15/22 9:00	97.90	30.35
9/15/22 10:00	102.60	29.95
9/15/22 11:00	104.70	30.10
9/15/22 12:00	107.00	31.00
9/15/22 13:00	102.30	34.60
9/15/22 14:00	100.70	34.56
9/15/22 15:00	104.70	35.53

Date	Wind Direction (°)	Wind speed (km/h)
9/15/22 16:00	113.00	33.84
9/15/22 17:00	113.70	31.14
9/15/22 18:00	112.30	28.19
9/15/22 19:00	109.70	27.07
9/15/22 20:00	112.10	27.31
9/15/22 21:00	113.30	24.95
9/15/22 22:00	114.30	23.79
9/15/22 23:00	110.60	21.48
9/16/22 0:00	113.10	17.76
9/16/22 1:00	112.70	16.47
9/16/22 2:00	109.70	17.96
9/16/22 3:00	101.70	16.76
9/16/22 4:00	109.80	16.56
9/16/22 5:00	108.70	18.98
9/16/22 6:00	106.50	11.08
9/16/22 7:00	95.50	10.69
9/16/22 8:00	126.20	14.70
9/16/22 9:00	131.80	16.34
9/16/22 10:00	136.70	18.73
9/16/22 11:00	144.10	19.32
9/16/22 12:00	147.50	18.54
9/16/22 13:00	166.00	22.34
9/16/22 14:00	183.40	24.65
9/16/22 15:00	198.60	22.90
9/16/22 16:00	207.40	22.78
9/16/22 17:00	209.20	22.33
9/16/22 18:00	211.90	19.10
9/16/22 19:00	211.00	19.48
9/16/22 20:00	215.20	17.59
9/16/22 21:00	215.50	17.95
9/16/22 22:00	231.30	18.62
9/16/22 23:00	247.10	14.70
9/17/22 0:00	263.70	11.77
9/17/22 1:00	258.10	10.70
9/17/22 2:00	273.40	10.19
9/17/22 3:00	279.50	11.47
9/17/22 4:00	286.10	10.05
9/17/22 5:00	290.40	8.55
9/17/22 6:00	292.10	10.73
9/17/22 7:00	306.50	10.86
9/17/22 8:00	324.70	13.39
9/17/22 9:00	332.10	15.99
9/17/22 10:00	329.90	16.02
9/17/22 11:00	327.70	16.99
9/17/22 12:00	332.90	15.75
9/17/22 13:00	338.00	15.12
9/17/22 14:00	334.90	13.92
9/17/22 15:00	331.20	14.77
9/17/22 16:00	327.50	9.55
9/17/22 17:00	316.00	8.87
9/17/22 18:00	287.00	5.89
9/17/22 19:00	272.90	6.19
9/17/22 20:00	269.60	4.01
9/17/22 21:00	277.20	0.66
9/17/22 22:00	304.50	0.09
9/17/22 23:00	260.90	0.82
9/18/22 0:00	255.90	2.33
9/18/22 1:00	220.10	4.18
9/18/22 2:00	251.70	3.21
9/18/22 3:00	234.40	4.52
9/18/22 4:00	258.80	4.56
9/18/22 5:00	244.60	3.87
9/18/22 6:00	229.70	4.11
9/18/22 7:00	212.30	6.68
9/18/22 8:00	209.90	4.60
9/18/22 9:00	208.50	5.70
9/18/22 10:00	204.60	8.82
9/18/22 11:00	214.20	6.27
9/18/22 12:00	196.50	5.14
9/18/22 13:00	157.10	6.09
9/18/22 14:00	140.20	4.44

Date	Wind Direction (°)	Wind speed (km/h)
9/18/22 15:00	135.60	5.05
9/18/22 16:00	126.70	7.72
9/18/22 17:00	94.60	10.38
9/18/22 18:00	90.00	9.45
9/18/22 19:00	83.50	7.69
9/18/22 20:00	92.90	8.14
9/18/22 21:00	102.90	5.01
9/18/22 22:00	96.00	6.37
9/18/22 23:00	107.10	6.91
9/19/22 0:00	98.40	5.42
9/19/22 1:00	78.95	4.85
9/19/22 2:00	100.50	6.22
9/19/22 3:00	79.49	4.03
9/19/22 4:00	48.97	3.13
9/19/22 5:00	11.82	3.68
9/19/22 6:00	41.20	2.83
9/19/22 7:00	102.20	5.36
9/19/22 8:00	87.10	4.21
9/19/22 9:00	97.60	5.59
9/19/22 10:00	123.10	7.09
9/19/22 11:00	144.50	8.49
9/19/22 12:00	147.60	8.31
9/19/22 13:00	163.80	9.13
9/19/22 14:00	183.60	8.72
9/19/22 15:00	177.70	6.33
9/19/22 16:00	184.50	8.41
9/19/22 17:00	207.20	8.68
9/19/22 18:00	248.00	4.45
9/19/22 19:00	226.10	6.17
9/19/22 20:00	269.50	8.13
9/19/22 21:00	323.10	9.40
9/19/22 22:00	306.50	4.56
9/19/22 23:00	127.40	1.64
9/20/22 0:00	263.20	2.77
9/20/22 1:00	288.80	5.61
9/20/22 2:00	279.20	5.63
9/20/22 3:00	268.00	6.61
9/20/22 4:00	270.20	6.59
9/20/22 5:00	253.30	6.16
9/20/22 6:00	270.70	8.72
9/20/22 7:00	273.00	8.34
9/20/22 8:00	290.20	10.88
9/20/22 9:00	316.30	12.30
9/20/22 10:00	318.50	15.02
9/20/22 11:00	324.50	15.18
9/20/22 12:00	315.40	15.34
9/20/22 13:00	324.20	14.97
9/20/22 14:00	311.90	19.80
9/20/22 15:00	326.90	18.40
9/20/22 16:00	330.80	22.37
9/20/22 17:00	328.90	14.13
9/20/22 18:00	334.60	9.69
9/20/22 19:00	301.70	6.74
9/20/22 20:00	297.00	7.43
9/20/22 21:00	302.70	7.49
9/20/22 22:00	281.90	8.49
9/20/22 23:00	278.60	7.08
9/21/22 0:00	270.00	6.91
9/21/22 1:00	251.80	6.11
9/21/22 2:00	218.70	4.27
9/21/22 3:00	222.90	5.35
9/21/22 4:00	218.80	6.40
9/21/22 5:00	209.10	12.95
9/21/22 6:00	210.80	14.18
9/21/22 7:00	206.90	16.04
9/21/22 8:00	213.30	15.20
9/21/22 9:00	205.70	15.08
9/21/22 10:00	191.80	17.61
9/21/22 11:00	193.80	19.59
9/21/22 12:00	192.40	24.80
9/21/22 13:00	195.90	27.54

Date	Wind Direction (°)	Wind speed (km/h)
9/21/22 14:00	194.60	30.10
9/21/22 15:00	196.50	28.63
9/21/22 16:00	192.80	27.32
9/21/22 17:00	192.50	22.96
9/21/22 18:00	187.40	21.02
9/21/22 19:00	186.70	20.40
9/21/22 20:00	192.20	20.33
9/21/22 21:00	196.20	18.92
9/21/22 22:00	188.60	18.81
9/21/22 23:00	185.30	19.30
9/22/22 0:00	190.00	17.41
9/22/22 1:00	207.00	15.73
9/22/22 2:00	219.90	17.99
9/22/22 3:00	243.80	14.90
9/22/22 4:00	274.20	13.74
9/22/22 5:00	290.20	13.48
9/22/22 6:00	290.30	12.31
9/22/22 7:00	281.80	13.60
9/22/22 8:00	299.70	11.61
9/22/22 9:00	314.50	9.07
9/22/22 10:00	299.30	6.57
9/22/22 11:00	348.10	4.36
9/22/22 12:00	300.30	4.10
9/22/22 13:00	77.38	3.70
9/22/22 14:00	45.10	6.87
9/22/22 15:00	117.80	3.03
9/22/22 16:00	27.16	14.50
9/22/22 17:00	356.30	15.35
9/22/22 18:00	93.00	14.81
9/22/22 19:00	143.50	13.08
9/22/22 20:00	141.40	14.30
9/22/22 21:00	149.90	18.22
9/22/22 22:00	145.30	22.27
9/22/22 23:00	148.50	20.75
9/23/22 0:00	156.00	21.22
9/23/22 1:00	153.90	19.53
9/23/22 2:00	158.20	19.65
9/23/22 3:00	160.00	15.66
9/23/22 4:00	173.40	12.38
9/23/22 5:00	198.70	11.31
9/23/22 6:00	227.00	6.96
9/23/22 7:00	239.80	11.11
9/23/22 8:00	247.30	12.54
9/23/22 9:00	249.60	15.20
9/23/22 10:00	240.60	15.48
9/23/22 11:00	262.10	19.91
9/23/22 12:00	302.50	22.41
9/23/22 13:00	306.10	21.39
9/23/22 14:00	301.30	20.22
9/23/22 15:00	291.60	20.66
9/23/22 16:00	288.40	23.00
9/23/22 17:00	283.80	24.56
9/23/22 18:00	279.50	21.17
9/23/22 19:00	267.60	19.50
9/23/22 20:00	254.10	21.73
9/23/22 21:00	251.80	16.72
9/23/22 22:00	239.70	15.41
9/23/22 23:00	239.80	14.46
9/24/22 0:00	239.10	17.18
9/24/22 1:00	242.20	18.30
9/24/22 2:00	269.50	18.72
9/24/22 3:00	267.80	16.37
9/24/22 4:00	273.00	23.61
9/24/22 5:00	329.00	22.98
9/24/22 6:00	326.50	26.92
9/24/22 7:00	313.00	26.42
9/24/22 8:00	305.80	30.82
9/24/22 9:00	309.40	29.16
9/24/22 10:00	324.80	29.23
9/24/22 11:00	321.30	30.96
9/24/22 12:00	333.70	29.45

Date	Wind Direction (°)	Wind speed (km/h)
9/24/22 13:00	343.30	31.68
9/24/22 14:00	343.00	29.16
9/24/22 15:00	351.90	28.63
9/24/22 16:00	353.70	25.96
9/24/22 17:00	356.30	24.07
9/24/22 18:00	350.80	22.67
9/24/22 19:00	1.08	21.68
9/24/22 20:00	358.10	19.70
9/24/22 21:00	344.90	20.18
9/24/22 22:00	349.50	18.64
9/24/22 23:00	354.20	17.64
9/25/22 0:00	350.20	13.58
9/25/22 1:00	347.80	12.54
9/25/22 2:00	328.70	10.93
9/25/22 3:00	332.30	10.62
9/25/22 4:00	357.20	9.49
9/25/22 5:00	20.86	5.54
9/25/22 6:00	69.86	3.33
9/25/22 7:00	189.10	3.21
9/25/22 8:00	221.10	5.49
9/25/22 9:00	216.50	6.17
9/25/22 10:00	236.00	7.49
9/25/22 11:00	231.40	9.35
9/25/22 12:00	213.70	9.44
9/25/22 13:00	214.80	10.31
9/25/22 14:00	218.00	12.77
9/25/22 15:00	222.30	10.90
9/25/22 16:00	214.90	9.47
9/25/22 17:00	188.10	5.86
9/25/22 18:00	152.00	3.78
9/25/22 19:00	138.10	5.04
9/25/22 20:00	172.60	8.40
9/25/22 21:00	272.00	3.96
9/25/22 22:00	250.40	5.47
9/25/22 23:00	225.00	6.48
9/26/22 0:00	236.80	6.72
9/26/22 1:00	245.20	5.73
9/26/22 2:00	219.20	6.82
9/26/22 3:00	223.20	7.29
9/26/22 4:00	221.20	6.94
9/26/22 5:00	241.00	9.71
9/26/22 6:00	243.50	9.39
9/26/22 7:00	263.10	9.00
9/26/22 8:00	282.70	8.27
9/26/22 9:00	313.10	9.93
9/26/22 10:00	292.00	9.51
9/26/22 11:00	298.40	8.48
9/26/22 12:00	308.40	9.99
9/26/22 13:00	333.70	6.87
9/26/22 14:00	286.00	9.03
9/26/22 15:00	265.50	9.38
9/26/22 16:00	237.70	14.49
9/26/22 17:00	246.10	13.89
9/26/22 18:00	309.00	9.52
9/26/22 19:00	206.00	5.33
9/26/22 20:00	203.00	5.84
9/26/22 21:00	157.40	8.89
9/26/22 22:00	156.50	7.84
9/26/22 23:00	144.60	14.01
9/27/22 0:00	160.70	15.42
9/27/22 1:00	151.60	11.24
9/27/22 2:00	357.80	12.82
9/27/22 3:00	354.70	20.66
9/27/22 4:00	354.70	21.47
9/27/22 5:00	354.70	21.46
9/27/22 6:00	354.90	21.15
9/27/22 7:00	354.80	20.68
9/27/22 8:00	354.80	19.94
9/27/22 9:00	354.50	16.97
9/27/22 10:00	182.40	19.66
9/27/22 11:00	204.90	21.19

Date	Wind Direction (°)	Wind speed (km/h)
9/27/22 12:00	218.70	23.37
9/27/22 13:00	218.30	24.91
9/27/22 14:00	227.40	26.20
9/27/22 15:00	230.20	27.64
9/27/22 16:00	233.00	25.95
9/27/22 17:00	242.40	20.47
9/27/22 18:00	245.20	16.25
9/27/22 19:00	255.50	15.53
9/27/22 20:00	276.00	18.36
9/27/22 21:00	311.20	16.62
9/27/22 22:00	328.70	16.66
9/27/22 23:00	334.10	18.62
9/28/22 0:00	341.10	23.19
9/28/22 1:00	345.70	19.48
9/28/22 2:00	342.00	21.01
9/28/22 3:00	348.40	18.37
9/28/22 4:00	348.00	5.73
9/28/22 5:00	0.00	0.00
9/28/22 6:00	0.00	0.00
9/28/22 7:00	0.00	0.00
9/28/22 8:00	0.00	0.00
9/28/22 9:00	0.00	0.00
9/28/22 10:00	328.80	3.12
9/28/22 11:00	327.00	4.50
9/28/22 12:00	322.10	13.11
9/28/22 13:00	319.40	19.98
9/28/22 14:00	328.70	23.35
9/28/22 15:00	342.80	26.58
9/28/22 16:00	342.70	24.02
9/28/22 17:00	339.60	17.62
9/28/22 18:00	345.70	22.46
9/28/22 19:00	347.70	21.55
9/28/22 20:00	5.00	12.61
9/28/22 21:00	12.70	14.27
9/28/22 22:00	14.82	16.30
9/28/22 23:00	22.41	14.59
9/29/22 0:00	28.29	10.49
9/29/22 1:00	35.99	8.70
9/29/22 2:00	21.95	6.39
9/29/22 3:00	2.64	8.93
9/29/22 4:00	6.83	8.95
9/29/22 5:00	343.90	7.36
9/29/22 6:00	1.48	5.91
9/29/22 7:00	358.30	6.25
9/29/22 8:00	346.50	6.19
9/29/22 9:00	344.30	8.27
9/29/22 10:00	332.90	8.03
9/29/22 11:00	350.10	8.20
9/29/22 12:00	354.00	8.00
9/29/22 13:00	12.20	6.65
9/29/22 14:00	355.60	5.43
9/29/22 15:00	322.20	3.24
9/29/22 16:00	347.40	0.92
9/29/22 17:00	63.82	2.42
9/29/22 18:00	105.00	5.67
9/29/22 19:00	131.20	11.05
9/29/22 20:00	145.80	10.29
9/29/22 21:00	156.60	9.58
9/29/22 22:00	150.10	9.42
9/29/22 23:00	156.80	9.67
9/30/22 0:00	156.40	9.40
9/30/22 1:00	160.50	9.81
9/30/22 2:00	165.90	14.49
9/30/22 3:00	160.30	15.33
9/30/22 4:00	162.20	16.68
9/30/22 5:00	162.60	19.46
9/30/22 6:00	164.70	20.55
9/30/22 7:00	163.90	19.41
9/30/22 8:00	165.20	19.14
9/30/22 9:00	169.20	19.11
9/30/22 10:00	170.10	20.57

Date	Wind Direction (°)	Wind speed (km/h)
9/30/22 11:00	176.70	24.22
9/30/22 12:00	177.50	24.63
9/30/22 13:00	178.50	26.13
9/30/22 14:00	183.00	26.00
9/30/22 15:00	181.60	29.30
9/30/22 16:00	184.20	28.76
9/30/22 17:00	189.90	24.93
9/30/22 18:00	191.00	23.18
9/30/22 19:00	201.50	18.94
9/30/22 20:00	197.90	18.77
9/30/22 21:00	197.50	18.18
9/30/22 22:00	208.00	18.20
9/30/22 23:00	209.60	22.18
10/1/22 0:00	220.30	21.38
10/1/22 1:00	224.60	22.59
10/1/22 2:00	228.00	18.21
10/1/22 3:00	236.90	16.75
10/1/22 4:00	240.80	15.81
10/1/22 5:00	243.10	16.48
10/1/22 6:00	252.30	10.44
10/1/22 7:00	250.60	9.88
10/1/22 8:00	250.00	6.77
10/1/22 9:00	240.90	9.58
10/1/22 10:00	247.40	10.69
10/1/22 11:00	251.20	9.25
10/1/22 12:00	235.10	10.89
10/1/22 13:00	204.30	7.74
10/1/22 14:00	174.60	12.90
10/1/22 15:00	177.90	16.38
10/1/22 16:00	175.70	13.17
10/1/22 17:00	155.60	12.42
10/1/22 18:00	144.90	11.32
10/1/22 19:00	159.00	14.20
10/1/22 20:00	167.80	11.97
10/1/22 21:00	168.40	9.69
10/1/22 22:00	180.80	12.35
10/1/22 23:00	190.10	15.65
10/2/22 0:00	207.90	12.68
10/2/22 1:00	227.60	11.08
10/2/22 2:00	205.60	17.31
10/2/22 3:00	219.00	18.27
10/2/22 4:00	219.40	22.02
10/2/22 5:00	221.20	20.65
10/2/22 6:00	224.10	25.42
10/2/22 7:00	234.50	25.41
10/2/22 8:00	256.50	27.45
10/2/22 9:00	273.20	32.69
10/2/22 10:00	283.50	36.68
10/2/22 11:00	282.40	41.51
10/2/22 12:00	281.80	45.79
10/2/22 13:00	283.00	48.92
10/2/22 14:00	291.50	44.57
10/2/22 15:00	307.90	39.24
10/2/22 16:00	321.50	39.38
10/2/22 17:00	331.80	37.37
10/2/22 18:00	335.60	38.30
10/2/22 19:00	336.20	38.34
10/2/22 20:00	336.10	36.76
10/2/22 21:00	334.50	32.65
10/2/22 22:00	333.50	28.24
10/2/22 23:00	333.00	28.06
10/3/22 0:00	331.70	23.23
10/3/22 1:00	333.30	24.36
10/3/22 2:00	340.20	18.45
10/3/22 3:00	339.10	16.29
10/3/22 4:00	331.90	12.86
10/3/22 5:00	303.20	13.69
10/3/22 6:00	298.80	16.43
10/3/22 7:00	300.70	12.19
10/3/22 8:00	291.70	12.86
10/3/22 9:00	287.30	12.66

Date	Wind Direction (°)	Wind speed (km/h)
10/3/22 10:00	289.50	13.18
10/3/22 11:00	290.40	14.37
10/3/22 12:00	307.50	13.75
10/3/22 13:00	283.50	13.58
10/3/22 14:00	303.00	14.69
10/3/22 15:00	276.50	13.04
10/3/22 16:00	335.80	12.32
10/3/22 17:00	8.28	10.33
10/3/22 18:00	12.39	6.95
10/3/22 19:00	8.61	5.36
10/3/22 20:00	35.83	7.25
10/3/22 21:00	46.22	10.00
10/3/22 22:00	50.00	9.87
10/3/22 23:00	40.97	6.75
10/4/22 0:00	46.03	8.60
10/4/22 1:00	41.62	9.53
10/4/22 2:00	54.45	12.64
10/4/22 3:00	48.43	13.26
10/4/22 4:00	38.38	13.73
10/4/22 5:00	45.54	16.03
10/4/22 6:00	53.48	12.64
10/4/22 7:00	60.21	12.37
10/4/22 8:00	56.91	14.72
10/4/22 9:00	65.32	13.91
10/4/22 10:00	60.89	13.96
10/4/22 11:00	66.85	11.43
10/4/22 12:00	67.00	11.51
10/4/22 13:00	51.94	14.43
10/4/22 14:00	44.81	13.80
10/4/22 15:00	48.38	12.46
10/4/22 16:00	42.39	12.68
10/4/22 17:00	40.60	13.25
10/4/22 18:00	31.91	13.20
10/4/22 19:00	37.47	11.03
10/4/22 20:00	33.86	10.45
10/4/22 21:00	34.98	10.35
10/4/22 22:00	38.33	10.57
10/4/22 23:00	38.68	9.68
10/5/22 0:00	27.50	8.74
10/5/22 1:00	34.16	8.11
10/5/22 2:00	36.97	6.45
10/5/22 3:00	28.81	5.64
10/5/22 4:00	2.06	5.84
10/5/22 5:00	336.30	5.72
10/5/22 6:00	12.09	3.68
10/5/22 7:00	25.26	2.92
10/5/22 8:00	273.80	3.83
10/5/22 9:00	205.50	6.48
10/5/22 10:00	221.90	8.85
10/5/22 11:00	226.30	10.25
10/5/22 12:00	231.10	11.93
10/5/22 13:00	231.90	14.67
10/5/22 14:00	229.40	15.09
10/5/22 15:00	232.70	16.96
10/5/22 16:00	230.90	18.32
10/5/22 17:00	226.10	16.55
10/5/22 18:00	224.50	11.28
10/5/22 19:00	230.80	9.47
10/5/22 20:00	228.00	6.34
10/5/22 21:00	225.50	9.81
10/5/22 22:00	217.60	13.77
10/5/22 23:00	213.30	12.55
10/6/22 0:00	222.10	16.59
10/6/22 1:00	224.60	18.50
10/6/22 2:00	229.60	21.12
10/6/22 3:00	223.40	19.89
10/6/22 4:00	232.50	21.57
10/6/22 5:00	223.20	23.49
10/6/22 6:00	222.20	25.48
10/6/22 7:00	226.40	27.78
10/6/22 8:00	229.10	28.37

Date	Wind Direction (°)	Wind speed (km/h)
10/6/22 9:00	234.80	25.61
10/6/22 10:00	244.40	27.46
10/6/22 11:00	255.90	30.13
10/6/22 12:00	268.40	26.06
10/6/22 13:00	280.20	24.08
10/6/22 14:00	291.30	20.94
10/6/22 15:00	309.60	20.50
10/6/22 16:00	334.90	21.20
10/6/22 17:00	337.60	21.90
10/6/22 18:00	337.90	20.89
10/6/22 19:00	330.80	16.85
10/6/22 20:00	337.10	18.23
10/6/22 21:00	355.50	16.92
10/6/22 22:00	346.60	22.17
10/6/22 23:00	355.90	20.58
10/7/22 0:00	354.60	15.53
10/7/22 1:00	346.40	17.97
10/7/22 2:00	351.70	13.61
10/7/22 3:00	349.90	8.73
10/7/22 4:00	347.50	7.47
10/7/22 5:00	348.70	4.99
10/7/22 6:00	337.50	2.87
10/7/22 7:00	268.50	3.77
10/7/22 8:00	243.40	5.92
10/7/22 9:00	311.70	9.23
10/7/22 10:00	240.50	12.44
10/7/22 11:00	238.10	14.59
10/7/22 12:00	227.70	15.46
10/7/22 13:00	233.40	14.80
10/7/22 14:00	247.90	14.57
10/7/22 15:00	244.50	14.50
10/7/22 16:00	254.40	13.57
10/7/22 17:00	248.10	11.43
10/7/22 18:00	247.90	9.31
10/7/22 19:00	247.40	11.02
10/7/22 20:00	215.40	5.58
10/7/22 21:00	314.40	7.65
10/7/22 22:00	311.40	9.41
10/7/22 23:00	254.30	6.18
10/8/22 0:00	243.20	4.41
10/8/22 1:00	254.00	5.47
10/8/22 2:00	232.20	6.87
10/8/22 3:00	239.30	6.36
10/8/22 4:00	253.70	6.61
10/8/22 5:00	225.10	6.66
10/8/22 6:00	309.30	9.14
10/8/22 7:00	301.10	7.14
10/8/22 8:00	239.20	5.63
10/8/22 9:00	297.70	4.52
10/8/22 10:00	292.60	6.06
10/8/22 11:00	246.80	6.65
10/8/22 12:00	253.40	6.66
10/8/22 13:00	268.50	8.09
10/8/22 14:00	290.30	10.02
10/8/22 15:00	283.60	9.71
10/8/22 16:00	277.10	12.01
10/8/22 17:00	286.50	11.56
10/8/22 18:00	277.80	10.98
10/8/22 19:00	294.60	12.09
10/8/22 20:00	308.60	9.58
10/8/22 21:00	317.20	7.23
10/8/22 22:00	260.90	2.07
10/8/22 23:00	234.20	2.49
10/9/22 0:00	165.60	3.25
10/9/22 1:00	25.27	2.21
10/9/22 2:00	44.84	2.60
10/9/22 3:00	131.20	1.84
10/9/22 4:00	137.80	5.32
10/9/22 5:00	128.30	9.83
10/9/22 6:00	142.20	12.48
10/9/22 7:00	174.40	8.92

Date	Wind Direction (°)	Wind speed (km/h)
10/9/22 8:00	185.10	3.17
10/9/22 9:00	157.80	13.50
10/9/22 10:00	166.70	16.27
10/9/22 11:00	165.60	16.66
10/9/22 12:00	164.40	19.48
10/9/22 13:00	173.30	19.70
10/9/22 14:00	184.70	17.21
10/9/22 15:00	180.90	17.34
10/9/22 16:00	173.20	14.38
10/9/22 17:00	158.60	12.23
10/9/22 18:00	155.70	10.65
10/9/22 19:00	153.60	12.21
10/9/22 20:00	159.00	13.10
10/9/22 21:00	162.80	10.31
10/9/22 22:00	161.20	10.63
10/9/22 23:00	180.60	6.20
10/10/22 0:00	221.20	2.34
10/10/22 1:00	244.20	2.17
10/10/22 2:00	162.70	2.45
10/10/22 3:00	245.80	2.01
10/10/22 4:00	198.90	1.22
10/10/22 5:00	165.30	2.21
10/10/22 6:00	116.10	3.13
10/10/22 7:00	97.40	3.91
10/10/22 8:00	112.30	5.33
10/10/22 9:00	136.50	6.58
10/10/22 10:00	138.00	8.68
10/10/22 11:00	138.10	16.89
10/10/22 12:00	167.50	8.98
10/10/22 13:00	155.00	12.82
10/10/22 14:00	163.50	11.85
10/10/22 15:00	183.00	11.90
10/10/22 16:00	187.10	12.86
10/10/22 17:00	225.70	16.42
10/10/22 18:00	244.10	14.90
10/10/22 19:00	295.50	23.63
10/10/22 20:00	298.20	24.52
10/10/22 21:00	302.00	26.85
10/10/22 22:00	302.40	29.95
10/10/22 23:00	311.80	24.88
10/11/22 0:00	303.40	19.21
10/11/22 1:00	304.50	12.92
10/11/22 2:00	300.00	16.00
10/11/22 3:00	292.40	18.58
10/11/22 4:00	269.30	18.82
10/11/22 5:00	268.70	21.07
10/11/22 6:00	276.40	21.46
10/11/22 7:00	275.80	20.70
10/11/22 8:00	270.50	17.32
10/11/22 9:00	269.10	15.74
10/11/22 10:00	270.40	14.29
10/11/22 11:00	255.20	13.08
10/11/22 12:00	266.70	14.26
10/11/22 13:00	269.10	13.26
10/11/22 14:00	277.20	14.38
10/11/22 15:00	286.40	12.47
10/11/22 16:00	303.10	10.20
10/11/22 17:00	289.80	10.70
10/11/22 18:00	292.40	15.48
10/11/22 19:00	307.30	19.50
10/11/22 20:00	307.10	27.02
10/11/22 21:00	313.60	33.62
10/11/22 22:00	313.90	32.87
10/11/22 23:00	311.80	37.44
10/12/22 0:00	313.50	37.91
10/12/22 1:00	313.70	35.14
10/12/22 2:00	312.60	38.27
10/12/22 3:00	315.20	41.69
10/12/22 4:00	314.90	40.61
10/12/22 5:00	312.50	43.67
10/12/22 6:00	311.10	45.94

Date	Wind Direction (°)	Wind speed (km/h)
10/12/22 7:00	311.00	46.69
10/12/22 8:00	311.40	46.98
10/12/22 9:00	311.60	46.84
10/12/22 10:00	314.00	49.64
10/12/22 11:00	313.10	49.50
10/12/22 12:00	315.90	50.40
10/12/22 13:00	316.80	48.49
10/12/22 14:00	320.00	47.45
10/12/22 15:00	318.20	50.08
10/12/22 16:00	318.50	50.98
10/12/22 17:00	322.80	53.24
10/12/22 18:00	326.50	50.69
10/12/22 19:00	327.20	49.14
10/12/22 20:00	328.20	45.97
10/12/22 21:00	331.50	39.67
10/12/22 22:00	329.30	38.16
10/12/22 23:00	332.80	31.50
10/13/22 0:00	342.60	28.59
10/13/22 1:00	335.80	28.11
10/13/22 2:00	342.30	24.16
10/13/22 3:00	340.60	24.20
10/13/22 4:00	332.40	18.83
10/13/22 5:00	333.00	15.93
10/13/22 6:00	329.40	7.52
10/13/22 7:00	152.70	3.83
10/13/22 8:00	178.00	6.84
10/13/22 9:00	172.70	7.07
10/13/22 10:00	150.80	9.67
10/13/22 11:00	151.50	18.03
10/13/22 12:00	154.10	21.41
10/13/22 13:00	148.90	21.86
10/13/22 14:00	147.70	23.71
10/13/22 15:00	148.20	25.02
10/13/22 16:00	144.40	28.63
10/13/22 17:00	144.20	31.90
10/13/22 18:00	143.90	34.49
10/13/22 19:00	146.70	36.22
10/13/22 20:00	143.10	39.53
10/13/22 21:00	153.10	34.96
10/13/22 22:00	158.70	34.63
10/13/22 23:00	161.90	36.61
10/14/22 0:00	172.40	30.96
10/14/22 1:00	169.70	31.46
10/14/22 2:00	167.80	32.76
10/14/22 3:00	171.60	37.62
10/14/22 4:00	177.00	38.38
10/14/22 5:00	189.50	31.72
10/14/22 6:00	191.30	19.95
10/14/22 7:00	196.70	20.38
10/14/22 8:00	218.40	16.78
10/14/22 9:00	232.40	21.94
10/14/22 10:00	271.30	20.74
10/14/22 11:00	313.30	30.35
10/14/22 12:00	310.90	37.51
10/14/22 13:00	309.60	39.46
10/14/22 14:00	312.30	44.50
10/14/22 15:00	325.10	42.59
10/14/22 16:00	329.40	43.27
10/14/22 17:00	340.40	40.86
10/14/22 18:00	333.40	37.44
10/14/22 19:00	335.20	41.54
10/14/22 20:00	340.50	40.14
10/14/22 21:00	341.50	37.30
10/14/22 22:00	350.00	36.14
10/14/22 23:00	347.20	35.53
10/15/22 0:00	350.70	31.68
10/15/22 1:00	348.50	31.07
10/15/22 2:00	342.20	31.75
10/15/22 3:00	339.70	30.82
10/15/22 4:00	357.00	28.52
10/15/22 5:00	349.90	25.23

Date	Wind Direction (°)	Wind speed (km/h)
10/15/22 6:00	341.90	21.59
10/15/22 7:00	342.90	18.42
10/15/22 8:00	348.80	15.25
10/15/22 9:00	348.70	17.65
10/15/22 10:00	351.70	19.26
10/15/22 11:00	342.60	15.29
10/15/22 12:00	335.60	17.86
10/15/22 13:00	322.20	17.39
10/15/22 14:00	318.20	17.86
10/15/22 15:00	319.30	16.52
10/15/22 16:00	306.40	18.06
10/15/22 17:00	315.70	16.89
10/15/22 18:00	331.60	15.30
10/15/22 19:00	330.00	10.72
10/15/22 20:00	314.60	3.67
10/15/22 21:00	246.90	9.63
10/15/22 22:00	244.00	10.62
10/15/22 23:00	249.10	10.78
10/16/22 0:00	255.10	14.69
10/16/22 1:00	248.40	14.10
10/16/22 2:00	253.90	13.65
10/16/22 3:00	243.90	10.84
10/16/22 4:00	236.70	12.39
10/16/22 5:00	233.00	10.86
10/16/22 6:00	217.50	9.35
10/16/22 7:00	202.00	9.03
10/16/22 8:00	184.30	6.57
10/16/22 9:00	187.20	12.77
10/16/22 10:00	179.40	15.90
10/16/22 11:00	168.50	18.87
10/16/22 12:00	152.10	19.57
10/16/22 13:00	148.60	24.45
10/16/22 14:00	146.90	22.93
10/16/22 15:00	143.00	24.44
10/16/22 16:00	141.00	23.33
10/16/22 17:00	135.30	23.58
10/16/22 18:00	142.50	23.82
10/16/22 19:00	142.20	26.86
10/16/22 20:00	139.50	23.66
10/16/22 21:00	139.60	26.18
10/16/22 22:00	148.00	25.39
10/16/22 23:00	152.50	21.90
10/17/22 0:00	152.70	19.76
10/17/22 1:00	156.30	22.30
10/17/22 2:00	154.90	23.32
10/17/22 3:00	154.90	23.59
10/17/22 4:00	154.70	23.23
10/17/22 5:00	155.50	22.03
10/17/22 6:00	152.20	22.09
10/17/22 7:00	152.40	21.07
10/17/22 8:00	150.40	19.49
10/17/22 9:00	152.70	23.57
10/17/22 10:00	159.90	28.50
10/17/22 11:00	164.20	30.78
10/17/22 12:00	160.50	28.34
10/17/22 13:00	163.60	26.21
10/17/22 14:00	165.40	25.48
10/17/22 15:00	164.50	23.10
10/17/22 16:00	166.10	21.04
10/17/22 17:00	151.10	16.31
10/17/22 18:00	147.10	17.68
10/17/22 19:00	153.20	19.17
10/17/22 20:00	163.20	16.30
10/17/22 21:00	175.50	15.42
10/17/22 22:00	191.00	16.30
10/17/22 23:00	188.40	19.87
10/18/22 0:00	186.50	17.77
10/18/22 1:00	191.20	17.70
10/18/22 2:00	197.20	20.00
10/18/22 3:00	214.30	19.73
10/18/22 4:00	210.50	22.82

Date	Wind Direction (°)	Wind speed (km/h)
10/18/22 5:00	210.00	21.93
10/18/22 6:00	215.10	22.52
10/18/22 7:00	234.40	18.60
10/18/22 8:00	259.10	19.66
10/18/22 9:00	269.30	18.69
10/18/22 10:00	273.20	16.37
10/18/22 11:00	296.30	19.72
10/18/22 12:00	315.80	29.34
10/18/22 13:00	320.30	35.03
10/18/22 14:00	323.80	33.88
10/18/22 15:00	329.10	33.16
10/18/22 16:00	325.90	29.34
10/18/22 17:00	321.00	22.84
10/18/22 18:00	319.00	24.63
10/18/22 19:00	318.70	19.84
10/18/22 20:00	321.20	16.01
10/18/22 21:00	313.30	14.24
10/18/22 22:00	304.90	16.11
10/18/22 23:00	289.00	12.18
10/19/22 0:00	277.50	11.76
10/19/22 1:00	294.20	10.33
10/19/22 2:00	261.60	7.65
10/19/22 3:00	223.50	12.45
10/19/22 4:00	202.50	13.28
10/19/22 5:00	185.60	11.82
10/19/22 6:00	190.60	15.12
10/19/22 7:00	188.90	11.93
10/19/22 8:00	173.70	15.99
10/19/22 9:00	153.10	14.70
10/19/22 10:00	153.10	13.99
10/19/22 11:00	153.60	14.39
10/19/22 12:00	152.50	19.71
10/19/22 13:00	134.30	14.41
10/19/22 14:00	126.90	20.26
10/19/22 15:00	125.90	27.73
10/19/22 16:00	135.80	28.35
10/19/22 17:00	145.00	28.14
10/19/22 18:00	137.10	22.96
10/19/22 19:00	144.00	18.28
10/19/22 20:00	153.40	9.44
10/19/22 21:00	179.60	10.22
10/19/22 22:00	221.10	13.06
10/19/22 23:00	254.20	14.84
10/20/22 0:00	267.90	12.74
10/20/22 1:00	268.10	13.50
10/20/22 2:00	286.00	13.89
10/20/22 3:00	302.90	15.71
10/20/22 4:00	329.50	15.81
10/20/22 5:00	0.11	15.06
10/20/22 6:00	3.75	14.82
10/20/22 7:00	7.43	22.89
10/20/22 8:00	10.46	25.93
10/20/22 9:00	8.13	27.43
10/20/22 10:00	9.00	29.09
10/20/22 11:00	4.64	30.20
10/20/22 12:00	6.57	30.10
10/20/22 13:00	1.99	30.56
10/20/22 14:00	1.43	30.24
10/20/22 15:00	359.60	30.10
10/20/22 16:00	3.62	27.55
10/20/22 17:00	1.25	26.91
10/20/22 18:00	356.00	25.36
10/20/22 19:00	1.70	27.10
10/20/22 20:00	2.68	26.49
10/20/22 21:00	3.67	25.59
10/20/22 22:00	4.47	23.39
10/20/22 23:00	357.80	23.28
10/21/22 0:00	0.89	21.29
10/21/22 1:00	3.07	22.65
10/21/22 2:00	9.11	22.39
10/21/22 3:00	9.69	21.48

Date	Wind Direction (°)	Wind speed (km/h)
10/21/22 4:00	7.57	20.30
10/21/22 5:00	12.35	18.29
10/21/22 6:00	10.02	19.11
10/21/22 7:00	13.33	19.77
10/21/22 8:00	10.61	18.34
10/21/22 9:00	11.87	18.65
10/21/22 10:00	3.68	18.68
10/21/22 11:00	4.08	17.96
10/21/22 12:00	354.20	17.64
10/21/22 13:00	2.31	17.79
10/21/22 14:00	0.93	19.57
10/21/22 15:00	356.90	18.82
10/21/22 16:00	352.90	18.61
10/21/22 17:00	0.46	18.27
10/21/22 18:00	349.20	14.53
10/21/22 19:00	351.30	11.73
10/21/22 20:00	346.70	13.02
10/21/22 21:00	333.70	13.06
10/21/22 22:00	322.90	12.41
10/21/22 23:00	330.20	16.12
10/22/22 0:00	330.40	18.81
10/22/22 1:00	340.20	18.82
10/22/22 2:00	327.60	16.12
10/22/22 3:00	333.40	14.89
10/22/22 4:00	356.80	20.63
10/22/22 5:00	5.91	23.90
10/22/22 6:00	2.84	23.05
10/22/22 7:00	4.90	24.09
10/22/22 8:00	4.84	22.42
10/22/22 9:00	2.17	22.95
10/22/22 10:00	6.03	21.68
10/22/22 11:00	9.98	21.53
10/22/22 12:00	10.13	21.36
10/22/22 13:00	14.12	21.46
10/22/22 14:00	18.86	17.63
10/22/22 15:00	10.51	16.77
10/22/22 16:00	13.01	15.53
10/22/22 17:00	1.51	16.21
10/22/22 18:00	354.70	15.69
10/22/22 19:00	352.30	13.78
10/22/22 20:00	7.54	10.55
10/22/22 21:00	336.60	12.50
10/22/22 22:00	324.50	14.14
10/22/22 23:00	339.80	10.82
10/23/22 0:00	323.00	11.95
10/23/22 1:00	296.60	11.52
10/23/22 2:00	320.70	7.92
10/23/22 3:00	20.22	4.51
10/23/22 4:00	83.30	1.06
10/23/22 5:00	28.57	4.31
10/23/22 6:00	111.80	4.86
10/23/22 7:00	89.80	4.32
10/23/22 8:00	110.60	6.73
10/23/22 9:00	135.30	8.52
10/23/22 10:00	169.10	12.54
10/23/22 11:00	168.90	13.55
10/23/22 12:00	174.40	14.70
10/23/22 13:00	179.00	12.70
10/23/22 14:00	187.60	11.38
10/23/22 15:00	224.10	9.88
10/23/22 16:00	208.70	6.08
10/23/22 17:00	187.90	4.74
10/23/22 18:00	190.80	5.77
10/23/22 19:00	189.20	5.25
10/23/22 20:00	193.60	6.70
10/23/22 21:00	198.80	9.27
10/23/22 22:00	190.30	8.88
10/23/22 23:00	181.70	7.68
10/24/22 0:00	178.80	12.46
10/24/22 1:00	179.50	12.01
10/24/22 2:00	169.50	7.46

Date	Wind Direction (°)	Wind speed (km/h)
10/24/22 3:00	149.60	5.17
10/24/22 4:00	116.10	4.75
10/24/22 5:00	77.25	4.12
10/24/22 6:00	117.70	4.06
10/24/22 7:00	69.56	3.63
10/24/22 8:00	115.30	6.94
10/24/22 9:00	138.10	9.81
10/24/22 10:00	144.20	6.48
10/24/22 11:00	147.30	6.34
10/24/22 12:00	121.70	9.00
10/24/22 13:00	144.90	7.79
10/24/22 14:00	115.20	2.71
10/24/22 15:00	24.24	8.38
10/24/22 16:00	7.95	12.45
10/24/22 17:00	14.52	12.74
10/24/22 18:00	8.36	11.92
10/24/22 19:00	13.44	13.78
10/24/22 20:00	12.02	14.93
10/24/22 21:00	15.05	13.97
10/24/22 22:00	13.77	13.26
10/24/22 23:00	11.91	13.24
10/25/22 0:00	16.02	13.25
10/25/22 1:00	20.69	12.43
10/25/22 2:00	13.94	11.74
10/25/22 3:00	15.62	12.02
10/25/22 4:00	10.06	12.19
10/25/22 5:00	7.41	12.95
10/25/22 6:00	16.09	13.00
10/25/22 7:00	26.39	10.47
10/25/22 8:00	31.83	9.88
10/25/22 9:00	28.91	7.52
10/25/22 10:00	26.08	7.03
10/25/22 11:00	27.82	6.95
10/25/22 12:00	27.73	6.51
10/25/22 13:00	29.20	6.41
10/25/22 14:00	27.31	6.91
10/25/22 15:00	26.39	7.82
10/25/22 16:00	35.33	7.86
10/25/22 17:00	41.01	7.21
10/25/22 18:00	37.92	6.98
10/25/22 19:00	41.40	6.34
10/25/22 20:00	38.19	5.84
10/25/22 21:00	85.00	5.67
10/25/22 22:00	83.60	5.73
10/25/22 23:00	66.24	5.84
10/26/22 0:00	66.49	6.01
10/26/22 1:00	60.99	6.06
10/26/22 2:00	68.01	5.97
10/26/22 3:00	75.72	6.03
10/26/22 4:00	81.10	6.05
10/26/22 5:00	89.80	6.80
10/26/22 6:00	99.70	7.27
10/26/22 7:00	116.30	6.94
10/26/22 8:00	122.20	7.12
10/26/22 9:00	113.10	7.82
10/26/22 10:00	115.00	6.51
10/26/22 11:00	113.20	8.39
10/26/22 12:00	114.90	7.98
10/26/22 13:00	109.80	13.52
10/26/22 14:00	114.70	21.09
10/26/22 15:00	113.50	21.27
10/26/22 16:00	117.70	21.46
10/26/22 17:00	118.10	24.33
10/26/22 18:00	118.80	23.40
10/26/22 19:00	119.50	21.28
10/26/22 20:00	118.00	18.51
10/26/22 21:00	118.30	14.03
10/26/22 22:00	125.60	9.61
10/26/22 23:00	137.70	10.58
10/27/22 0:00	137.40	9.04
10/27/22 1:00	145.60	7.68

Date	Wind Direction (°)	Wind speed (km/h)
10/27/22 2:00	134.70	6.21
10/27/22 3:00	150.90	3.46
10/27/22 4:00	66.87	3.26
10/27/22 5:00	58.38	5.80
10/27/22 6:00	41.73	6.11
10/27/22 7:00	47.06	6.70
10/27/22 8:00	70.43	11.56
10/27/22 9:00	68.40	13.28
10/27/22 10:00	57.46	16.50
10/27/22 11:00	51.10	16.56
10/27/22 12:00	48.93	17.19
10/27/22 13:00	59.48	19.90
10/27/22 14:00	74.83	24.69
10/27/22 15:00	70.95	21.93
10/27/22 16:00	65.06	24.88
10/27/22 17:00	62.47	23.17
10/27/22 18:00	59.64	26.26
10/27/22 19:00	52.74	30.31
10/27/22 20:00	50.80	32.83
10/27/22 21:00	49.60	31.43
10/27/22 22:00	42.09	30.78
10/27/22 23:00	35.78	33.80
10/28/22 0:00	31.21	35.50
10/28/22 1:00	30.87	40.54
10/28/22 2:00	27.07	34.63
10/28/22 3:00	24.03	36.32
10/28/22 4:00	18.47	32.98
10/28/22 5:00	10.76	30.82
10/28/22 6:00	6.26	30.74
10/28/22 7:00	4.79	30.82
10/28/22 8:00	4.78	30.60
10/28/22 9:00	4.48	29.41
10/28/22 10:00	3.44	27.53
10/28/22 11:00	356.20	25.82
10/28/22 12:00	352.50	25.16
10/28/22 13:00	352.40	25.03
10/28/22 14:00	355.60	24.13
10/28/22 15:00	358.80	23.46
10/28/22 16:00	358.40	21.08
10/28/22 17:00	358.70	20.41
10/28/22 18:00	2.31	19.53
10/28/22 19:00	2.52	14.73
10/28/22 20:00	3.36	13.54
10/28/22 21:00	7.61	12.78
10/28/22 22:00	359.10	11.74
10/28/22 23:00	356.60	10.55
10/29/22 0:00	5.82	13.62
10/29/22 1:00	6.97	9.74
10/29/22 2:00	12.19	11.93
10/29/22 3:00	26.47	9.17
10/29/22 4:00	86.00	7.92
10/29/22 5:00	78.94	12.21
10/29/22 6:00	77.77	12.89
10/29/22 7:00	68.73	13.69
10/29/22 8:00	69.67	15.40
10/29/22 9:00	76.17	16.08
10/29/22 10:00	111.90	14.01
10/29/22 11:00	102.20	13.36
10/29/22 12:00	77.06	19.20
10/29/22 13:00	75.59	21.43
10/29/22 14:00	74.39	21.89
10/29/22 15:00	74.36	20.99
10/29/22 16:00	71.97	20.93
10/29/22 17:00	72.72	16.89
10/29/22 18:00	102.30	14.81
10/29/22 19:00	114.20	13.16
10/29/22 20:00	116.90	15.04
10/29/22 21:00	113.40	18.24
10/29/22 22:00	112.50	20.77
10/29/22 23:00	112.30	22.80
10/30/22 0:00	113.80	23.07

Date	Wind Direction (°)	Wind speed (km/h)
10/30/22 1:00	111.10	23.92
10/30/22 2:00	112.60	25.92
10/30/22 3:00	115.10	27.18
10/30/22 4:00	112.50	28.37
10/30/22 5:00	109.30	27.98
10/30/22 6:00	114.40	25.71
10/30/22 7:00	114.20	28.56
10/30/22 8:00	107.90	27.55
10/30/22 9:00	99.50	31.46
10/30/22 10:00	89.80	32.18
10/30/22 11:00	85.00	30.49
10/30/22 12:00	85.00	33.01
10/30/22 13:00	71.61	34.70
10/30/22 14:00	67.75	37.04
10/30/22 15:00	70.26	38.77
10/30/22 16:00	74.01	39.38
10/30/22 17:00	72.25	38.56
10/30/22 18:00	72.09	40.72
10/30/22 19:00	70.19	40.57
10/30/22 20:00	67.73	39.06
10/30/22 21:00	64.09	34.34
10/30/22 22:00	59.60	34.24
10/30/22 23:00	62.91	33.52
10/31/22 0:00	61.14	31.18
10/31/22 1:00	63.62	26.88
10/31/22 2:00	42.08	22.33
10/31/22 3:00	30.85	22.62
10/31/22 4:00	34.03	24.90
10/31/22 5:00	31.46	20.97
10/31/22 6:00	41.35	20.44
10/31/22 7:00	37.63	16.94
10/31/22 8:00	43.06	16.98
10/31/22 9:00	46.45	19.31
10/31/22 10:00	71.26	18.75
10/31/22 11:00	67.58	15.48
10/31/22 12:00	59.71	12.03
10/31/22 13:00	45.40	12.65
10/31/22 14:00	31.84	8.01
10/31/22 15:00	40.85	11.56
10/31/22 16:00	47.55	12.90
10/31/22 17:00	42.96	10.57
10/31/22 18:00	49.19	9.58
10/31/22 19:00	49.16	6.54
10/31/22 20:00	69.62	7.05
10/31/22 21:00	55.60	7.29
10/31/22 22:00	28.98	7.26
10/31/22 23:00	41.51	7.40
11/1/22 0:00	92.60	5.63
11/1/22 1:00	127.30	5.98
11/1/22 2:00	151.50	3.94
11/1/22 3:00	121.50	3.40
11/1/22 4:00	75.91	4.53
11/1/22 5:00	59.50	5.27
11/1/22 6:00	48.43	6.69
11/1/22 7:00	20.93	8.82
11/1/22 8:00	33.20	12.01
11/1/22 9:00	28.53	11.52
11/1/22 10:00	29.78	13.32
11/1/22 11:00	34.60	13.69
11/1/22 12:00	35.23	14.87
11/1/22 13:00	32.83	13.75
11/1/22 14:00	27.62	13.72
11/1/22 15:00	16.38	14.01
11/1/22 16:00	22.94	14.73
11/1/22 17:00	36.15	14.04
11/1/22 18:00	29.01	16.07
11/1/22 19:00	31.70	13.51
11/1/22 20:00	27.22	14.53
11/1/22 21:00	39.15	16.35
11/1/22 22:00	49.11	16.74
11/1/22 23:00	53.51	11.35

Date	Wind Direction (°)	Wind speed (km/h)
11/2/22 0:00	36.41	9.52
11/2/22 1:00	38.69	12.22
11/2/22 2:00	54.52	12.54
11/2/22 3:00	46.84	9.08
11/2/22 4:00	69.12	11.62
11/2/22 5:00	78.70	20.76
11/2/22 6:00	90.80	17.28
11/2/22 7:00	95.30	14.86
11/2/22 8:00	86.00	14.10
11/2/22 9:00	85.30	12.76
11/2/22 10:00	79.32	14.95
11/2/22 11:00	68.49	12.95
11/2/22 12:00	66.99	13.72
11/2/22 13:00	66.77	13.32
11/2/22 14:00	92.00	12.64
11/2/22 15:00	94.20	13.40
11/2/22 16:00	102.20	10.93
11/2/22 17:00	96.60	12.54
11/2/22 18:00	96.40	13.85
11/2/22 19:00	126.40	12.74
11/2/22 20:00	136.60	11.42
11/2/22 21:00	132.40	13.40
11/2/22 22:00	130.60	12.60
11/2/22 23:00	144.20	11.47
11/3/22 0:00	140.60	9.81
11/3/22 1:00	130.00	10.30
11/3/22 2:00	123.60	8.58
11/3/22 3:00	139.50	6.97
11/3/22 4:00	134.50	4.61
11/3/22 5:00	142.80	7.57
11/3/22 6:00	141.90	10.79
11/3/22 7:00	148.90	12.23
11/3/22 8:00	142.90	14.87
11/3/22 9:00	145.70	15.26
11/3/22 10:00	147.20	14.81
11/3/22 11:00	148.50	14.82
11/3/22 12:00	142.90	15.52
11/3/22 13:00	142.90	17.18
11/3/22 14:00	153.80	19.73
11/3/22 15:00	154.20	17.46
11/3/22 16:00	147.00	15.26
11/3/22 17:00	140.10	13.72
11/3/22 18:00	144.00	14.61
11/3/22 19:00	147.10	17.48
11/3/22 20:00	146.00	16.19
11/3/22 21:00	140.20	16.77
11/3/22 22:00	130.20	15.50
11/3/22 23:00	124.90	11.80
11/4/22 0:00	121.00	13.80
11/4/22 1:00	109.70	14.68
11/4/22 2:00	117.30	17.27
11/4/22 3:00	109.50	19.55
11/4/22 4:00	105.80	19.39
11/4/22 5:00	102.00	19.71
11/4/22 6:00	104.40	23.02
11/4/22 7:00	92.80	20.42
11/4/22 8:00	79.34	21.43
11/4/22 9:00	83.40	25.24
11/4/22 10:00	80.30	27.69
11/4/22 11:00	83.50	31.18
11/4/22 12:00	84.80	32.00
11/4/22 13:00	80.80	30.10
11/4/22 14:00	68.38	24.18
11/4/22 15:00	70.48	26.39
11/4/22 16:00	69.46	27.97
11/4/22 17:00	63.50	29.27
11/4/22 18:00	62.38	31.61
11/4/22 19:00	61.50	31.50
11/4/22 20:00	57.69	29.30
11/4/22 21:00	51.44	28.80
11/4/22 22:00	47.54	26.60

Date	Wind Direction (°)	Wind speed (km/h)
11/4/22 23:00	44.26	24.57
11/5/22 0:00	38.60	24.40
11/5/22 1:00	37.25	24.61
11/5/22 2:00	37.32	26.82
11/5/22 3:00	34.22	25.57
11/5/22 4:00	31.05	29.27
11/5/22 5:00	30.60	26.76
11/5/22 6:00	25.24	22.99
11/5/22 7:00	32.48	31.25
11/5/22 8:00	34.24	31.57
11/5/22 9:00	38.12	34.63
11/5/22 10:00	36.92	31.82
11/5/22 11:00	26.50	27.45
11/5/22 12:00	34.07	32.36
11/5/22 13:00	27.35	31.82
11/5/22 14:00	22.05	29.38
11/5/22 15:00	14.73	28.48
11/5/22 16:00	4.34	29.16
11/5/22 17:00	358.70	25.51
11/5/22 18:00	350.00	25.59
11/5/22 19:00	344.90	20.82
11/5/22 20:00	344.40	19.02
11/5/22 21:00	349.30	22.85
11/5/22 22:00	350.20	22.46
11/5/22 23:00	338.00	18.95
11/6/22 0:00	337.20	20.73
11/6/22 1:00	337.90	20.98
11/6/22 2:00	335.60	19.77
11/6/22 3:00	335.40	20.35
11/6/22 4:00	338.80	18.12
11/6/22 5:00	345.50	17.35
11/6/22 6:00	340.30	20.53
11/6/22 7:00	340.10	17.21
11/6/22 8:00	334.90	14.61
11/6/22 9:00	336.00	10.68
11/6/22 10:00	342.00	7.20
11/6/22 11:00	314.50	10.46
11/6/22 12:00	328.00	16.87
11/6/22 13:00	326.60	12.78
11/6/22 14:00	312.90	15.03
11/6/22 15:00	313.50	15.97
11/6/22 16:00	312.00	15.98
11/6/22 17:00	321.90	17.49
11/6/22 18:00	315.40	15.54
11/6/22 19:00	311.90	18.24
11/6/22 20:00	317.60	16.93
11/6/22 21:00	320.80	15.72
11/6/22 22:00	317.10	14.08
11/6/22 23:00	312.40	13.96
11/7/22 0:00	309.90	15.40
11/7/22 1:00	295.80	12.88
11/7/22 2:00	289.00	12.51
11/7/22 3:00	288.50	13.92
11/7/22 4:00	288.90	15.04
11/7/22 5:00	286.00	13.07
11/7/22 6:00	288.40	11.32
11/7/22 7:00	287.90	10.97
11/7/22 8:00	283.90	9.88
11/7/22 9:00	272.30	11.35
11/7/22 10:00	275.90	13.00
11/7/22 11:00	275.90	13.41
11/7/22 12:00	284.60	12.00
11/7/22 13:00	292.80	12.30
11/7/22 14:00	271.10	9.07
11/7/22 15:00	256.40	10.39
11/7/22 16:00	259.30	11.91
11/7/22 17:00	237.80	10.17
11/7/22 18:00	234.80	11.11
11/7/22 19:00	239.30	8.05
11/7/22 20:00	243.60	10.25
11/7/22 21:00	240.40	11.83

Date	Wind Direction (°)	Wind speed (km/h)
11/7/22 22:00	238.60	13.93
11/7/22 23:00	260.90	16.66
11/8/22 0:00	270.50	14.74
11/8/22 1:00	265.40	14.74
11/8/22 2:00	286.90	12.91
11/8/22 3:00	286.90	8.46
11/8/22 4:00	247.40	6.96
11/8/22 5:00	241.80	5.70
11/8/22 6:00	199.00	9.85
11/8/22 7:00	194.30	9.43
11/8/22 8:00	186.30	8.18
11/8/22 9:00	176.50	8.33
11/8/22 10:00	176.60	6.59
11/8/22 11:00	176.00	7.74
11/8/22 12:00	177.90	9.04
11/8/22 13:00	185.10	8.10
11/8/22 14:00	186.50	7.96
11/8/22 15:00	194.90	8.88
11/8/22 16:00	224.70	21.38
11/8/22 17:00	225.00	18.31
11/8/22 18:00	214.30	16.78
11/8/22 19:00	218.30	16.83
11/8/22 20:00	222.50	15.85
11/8/22 21:00	200.80	13.98
11/8/22 22:00	193.90	13.67
11/8/22 23:00	193.20	14.37
11/9/22 0:00	192.30	13.28
11/9/22 1:00	191.70	9.51
11/9/22 2:00	178.90	7.70
11/9/22 3:00	179.00	12.45
11/9/22 4:00	181.30	10.28
11/9/22 5:00	181.10	10.48
11/9/22 6:00	175.20	12.71
11/9/22 7:00	171.60	10.29
11/9/22 8:00	165.70	10.38
11/9/22 9:00	166.40	11.48
11/9/22 10:00	156.80	8.13
11/9/22 11:00	160.90	8.46
11/9/22 12:00	164.80	10.37
11/9/22 13:00	165.40	9.86
11/9/22 14:00	160.00	8.03
11/9/22 15:00	136.00	6.31
11/9/22 16:00	126.20	8.83
11/9/22 17:00	133.10	7.68
11/9/22 18:00	132.10	8.64
11/9/22 19:00	132.30	6.58
11/9/22 20:00	129.30	11.57
11/9/22 21:00	151.40	11.11
11/9/22 22:00	131.40	14.13
11/9/22 23:00	128.40	8.00
11/10/22 0:00	110.20	8.57
11/10/22 1:00	115.20	6.63
11/10/22 2:00	117.60	10.68
11/10/22 3:00	126.10	6.95
11/10/22 4:00	112.20	7.50
11/10/22 5:00	98.90	8.48
11/10/22 6:00	99.20	7.90
11/10/22 7:00	101.10	7.80
11/10/22 8:00	117.20	8.23
11/10/22 9:00	114.00	9.21
11/10/22 10:00	99.50	9.03
11/10/22 11:00	109.40	9.01
11/10/22 12:00	108.60	8.47
11/10/22 13:00	108.70	7.26
11/10/22 14:00	110.40	7.72
11/10/22 15:00	102.80	9.23
11/10/22 16:00	111.30	9.02
11/10/22 17:00	113.40	10.35
11/10/22 18:00	124.10	9.62
11/10/22 19:00	140.10	8.21
11/10/22 20:00	133.70	9.50

Date	Wind Direction (°)	Wind speed (km/h)
11/10/22 21:00	136.60	9.32
11/10/22 22:00	139.10	7.73
11/10/22 23:00	141.80	7.95
11/11/22 0:00	167.60	8.87
11/11/22 1:00	168.90	7.57
11/11/22 2:00	175.20	9.43
11/11/22 3:00	181.20	4.85
11/11/22 4:00	149.90	9.40
11/11/22 5:00	169.70	12.16
11/11/22 6:00	194.00	16.29
11/11/22 7:00	190.60	13.98
11/11/22 8:00	187.10	12.02
11/11/22 9:00	174.20	16.43
11/11/22 10:00	172.20	22.80
11/11/22 11:00	177.50	23.42
11/11/22 12:00	180.60	25.75
11/11/22 13:00	185.20	25.41
11/11/22 14:00	186.40	28.11
11/11/22 15:00	194.20	26.43
11/11/22 16:00	188.10	28.84
11/11/22 17:00	183.80	28.98
11/11/22 18:00	187.30	28.54
11/11/22 19:00	186.70	28.52
11/11/22 20:00	184.00	26.28
11/11/22 21:00	192.60	21.27
11/11/22 22:00	196.80	23.44
11/11/22 23:00	198.40	24.16
11/12/22 0:00	197.00	26.32
11/12/22 1:00	198.70	25.59
11/12/22 2:00	198.70	24.17
11/12/22 3:00	200.40	21.08
11/12/22 4:00	203.00	19.36
11/12/22 5:00	199.70	19.50
11/12/22 6:00	202.60	20.85
11/12/22 7:00	204.10	20.11
11/12/22 8:00	214.00	16.94
11/12/22 9:00	221.90	15.00
11/12/22 10:00	224.40	12.92
11/12/22 11:00	228.70	11.17
11/12/22 12:00	251.90	10.06
11/12/22 13:00	257.00	9.32
11/12/22 14:00	252.40	6.61
11/12/22 15:00	254.60	4.85
11/12/22 16:00	273.10	6.82
11/12/22 17:00	255.00	4.51
11/12/22 18:00	210.20	5.17
11/12/22 19:00	184.10	11.34
11/12/22 20:00	184.20	17.53
11/12/22 21:00	197.30	15.54
11/12/22 22:00	196.40	12.49
11/12/22 23:00	185.90	12.66
11/13/22 0:00	173.70	12.95
11/13/22 1:00	173.80	14.75
11/13/22 2:00	176.00	14.54
11/13/22 3:00	175.80	14.44
11/13/22 4:00	172.30	12.96
11/13/22 5:00	166.50	14.98
11/13/22 6:00	155.60	15.58
11/13/22 7:00	157.80	15.45
11/13/22 8:00	155.40	13.10
11/13/22 9:00	164.90	13.96
11/13/22 10:00	168.80	14.26
11/13/22 11:00	165.60	14.89
11/13/22 12:00	170.60	13.00
11/13/22 13:00	180.20	12.43
11/13/22 14:00	190.60	11.78
11/13/22 15:00	198.00	12.20
11/13/22 16:00	199.10	11.92
11/13/22 17:00	207.00	12.79
11/13/22 18:00	219.00	10.56
11/13/22 19:00	227.80	9.40

Date	Wind Direction (°)	Wind speed (km/h)
11/13/22 20:00	256.70	8.89
11/13/22 21:00	309.80	9.35
11/13/22 22:00	316.40	7.08
11/13/22 23:00	335.10	9.25
11/14/22 0:00	335.70	8.52
11/14/22 1:00	328.20	8.69
11/14/22 2:00	319.00	7.66
11/14/22 3:00	330.90	7.98
11/14/22 4:00	319.70	6.17
11/14/22 5:00	317.50	4.38
11/14/22 6:00	323.70	4.70
11/14/22 7:00	311.60	3.59
11/14/22 8:00	311.40	2.57
11/14/22 9:00	330.10	1.83
11/14/22 10:00	338.30	1.40
11/14/22 11:00	333.80	0.17
11/14/22 12:00	0.00	0.00
11/14/22 13:00	0.00	0.00
11/14/22 14:00	0.00	0.00
11/14/22 15:00	0.00	0.00
11/14/22 16:00	186.50	0.00
11/14/22 17:00	0.00	0.00
11/14/22 18:00	0.00	0.00
11/14/22 19:00	171.80	0.00
11/14/22 20:00	162.30	0.00
11/14/22 21:00	169.00	0.00
11/14/22 22:00	171.50	0.00
11/14/22 23:00	0.00	0.00
11/15/22 0:00	0.00	0.00
11/15/22 1:00	174.70	0.00
11/15/22 2:00	169.10	0.00
11/15/22 3:00	173.30	0.01
11/15/22 4:00	0.00	0.00
11/15/22 5:00	0.00	0.00
11/15/22 6:00	0.00	0.00
11/15/22 7:00	0.00	0.00
11/15/22 8:00	207.00	0.00
11/15/22 9:00	0.00	0.00
11/15/22 10:00	271.40	0.00
11/15/22 11:00	277.10	0.00
11/15/22 12:00	303.20	0.00
11/15/22 13:00	321.60	14.58
11/15/22 14:00	322.30	19.83
11/15/22 15:00	323.90	23.53
11/15/22 16:00	316.10	31.54
11/15/22 17:00	320.90	34.92
11/15/22 18:00	326.90	35.03
11/15/22 19:00	334.10	33.59
11/15/22 20:00	345.40	40.79
11/15/22 21:00	1.37	45.07
11/15/22 22:00	9.08	52.92
11/15/22 23:00	13.49	53.32
11/16/22 0:00	10.69	51.30
11/16/22 1:00	12.10	51.41
11/16/22 2:00	11.41	49.50
11/16/22 3:00	10.52	49.43
11/16/22 4:00	3.81	42.26
11/16/22 5:00	6.15	40.10
11/16/22 6:00	1.12	33.77
11/16/22 7:00	359.20	26.33
11/16/22 8:00	357.60	22.80
11/16/22 9:00	345.90	20.75
11/16/22 10:00	345.40	21.51
11/16/22 11:00	336.80	16.94
11/16/22 12:00	327.10	15.55
11/16/22 13:00	318.40	16.74
11/16/22 14:00	298.50	16.16
11/16/22 15:00	293.60	19.60
11/16/22 16:00	283.70	19.31
11/16/22 17:00	275.00	20.79
11/16/22 18:00	282.40	18.48

Date	Wind Direction (°)	Wind speed (km/h)
11/16/22 19:00	302.70	27.58
11/16/22 20:00	303.90	28.94
11/16/22 21:00	294.10	26.94
11/16/22 22:00	283.60	24.35
11/16/22 23:00	278.40	20.53
11/17/22 0:00	275.20	18.68
11/17/22 1:00	271.60	21.63
11/17/22 2:00	260.70	21.57
11/17/22 3:00	255.60	21.97
11/17/22 4:00	246.60	20.45
11/17/22 5:00	249.90	22.55
11/17/22 6:00	264.30	26.56
11/17/22 7:00	259.70	32.26
11/17/22 8:00	260.90	33.88
11/17/22 9:00	269.30	25.95
11/17/22 10:00	270.10	28.18
11/17/22 11:00	276.60	26.67
11/17/22 12:00	285.60	26.43
11/17/22 13:00	277.30	26.38
11/17/22 14:00	280.30	31.14
11/17/22 15:00	288.60	35.53
11/17/22 16:00	298.50	41.98
11/17/22 17:00	302.90	40.43
11/17/22 18:00	321.30	43.81
11/17/22 19:00	334.80	45.94
11/17/22 20:00	338.10	38.84
11/17/22 21:00	343.70	41.69
11/17/22 22:00	359.20	41.04
11/17/22 23:00	359.00	33.44
11/18/22 0:00	357.90	33.98
11/18/22 1:00	4.94	31.50
11/18/22 2:00	7.27	29.23
11/18/22 3:00	2.80	24.10
11/18/22 4:00	7.05	19.61
11/18/22 5:00	7.39	14.62
11/18/22 6:00	45.00	11.55
11/18/22 7:00	101.40	6.04
11/18/22 8:00	180.80	5.15
11/18/22 9:00	217.70	7.04
11/18/22 10:00	239.20	9.02
11/18/22 11:00	237.10	7.63
11/18/22 12:00	222.70	10.05
11/18/22 13:00	217.00	14.58
11/18/22 14:00	224.10	17.22
11/18/22 15:00	230.30	21.34
11/18/22 16:00	229.10	22.24
11/18/22 17:00	232.00	24.31
11/18/22 18:00	229.00	23.32
11/18/22 19:00	239.40	21.92
11/18/22 20:00	253.90	25.02
11/18/22 21:00	253.30	24.08
11/18/22 22:00	251.40	22.34
11/18/22 23:00	252.00	27.02
11/19/22 0:00	254.30	28.21
11/19/22 1:00	267.70	23.51
11/19/22 2:00	276.60	19.66
11/19/22 3:00	286.60	19.09
11/19/22 4:00	275.70	13.97
11/19/22 5:00	297.90	21.36
11/19/22 6:00	303.50	21.88
11/19/22 7:00	312.60	21.35
11/19/22 8:00	320.00	18.62
11/19/22 9:00	326.20	19.26
11/19/22 10:00	335.40	22.78
11/19/22 11:00	336.60	19.28
11/19/22 12:00	338.30	21.21
11/19/22 13:00	334.30	14.95
11/19/22 14:00	335.80	19.56
11/19/22 15:00	311.80	21.62
11/19/22 16:00	297.50	23.28
11/19/22 17:00	285.90	24.41

Date	Wind Direction (°)	Wind speed (km/h)
11/19/22 18:00	283.40	24.13
11/19/22 19:00	282.90	22.50
11/19/22 20:00	293.10	23.40
11/19/22 21:00	313.10	23.15
11/19/22 22:00	324.30	23.41
11/19/22 23:00	322.50	23.48
11/20/22 0:00	321.80	24.16
11/20/22 1:00	330.50	24.85
11/20/22 2:00	343.20	27.28
11/20/22 3:00	336.70	22.87
11/20/22 4:00	319.00	14.93
11/20/22 5:00	331.70	21.33
11/20/22 6:00	329.00	24.83
11/20/22 7:00	329.20	26.23
11/20/22 8:00	327.30	26.69
11/20/22 9:00	321.00	27.19
11/20/22 10:00	319.20	27.44
11/20/22 11:00	320.00	24.63
11/20/22 12:00	328.90	27.26
11/20/22 13:00	335.60	27.32
11/20/22 14:00	336.10	26.45
11/20/22 15:00	333.30	19.52
11/20/22 16:00	323.70	22.57
11/20/22 17:00	324.00	18.81
11/20/22 18:00	319.80	17.63
11/20/22 19:00	310.60	17.89
11/20/22 20:00	314.30	18.12
11/20/22 21:00	305.90	16.18
11/20/22 22:00	287.60	11.53
11/20/22 23:00	274.60	11.82
11/21/22 0:00	268.80	11.52
11/21/22 1:00	260.10	9.35
11/21/22 2:00	250.90	9.19
11/21/22 3:00	219.10	6.40
11/21/22 4:00	135.50	3.15
11/21/22 5:00	138.50	3.11
11/21/22 6:00	141.40	2.27
11/21/22 7:00	142.20	8.94
11/21/22 8:00	131.70	9.01
11/21/22 9:00	126.90	13.62
11/21/22 10:00	113.10	14.48
11/21/22 11:00	104.10	16.14
11/21/22 12:00	115.50	13.89
11/21/22 13:00	110.80	11.12
11/21/22 14:00	111.20	11.51
11/21/22 15:00	121.20	12.85
11/21/22 16:00	120.80	13.89
11/21/22 17:00	121.50	15.66
11/21/22 18:00	125.00	17.20
11/21/22 19:00	114.80	16.84
11/21/22 20:00	116.30	18.13
11/21/22 21:00	117.00	18.87
11/21/22 22:00	125.20	21.27
11/21/22 23:00	132.80	21.05
11/22/22 0:00	131.80	20.48
11/22/22 1:00	134.80	16.81
11/22/22 2:00	128.50	18.01
11/22/22 3:00	131.90	22.99
11/22/22 4:00	139.80	20.01
11/22/22 5:00	146.90	19.84
11/22/22 6:00	143.10	22.87
11/22/22 7:00	148.30	20.74
11/22/22 8:00	146.70	20.24
11/22/22 9:00	145.90	19.98
11/22/22 10:00	137.90	20.19
11/22/22 11:00	138.60	18.89
11/22/22 12:00	137.50	19.41
11/22/22 13:00	133.80	16.68
11/22/22 14:00	132.50	16.75
11/22/22 15:00	123.10	17.19
11/22/22 16:00	121.40	19.43

Date	Wind Direction (°)	Wind speed (km/h)
11/22/22 17:00	116.50	18.08
11/22/22 18:00	118.40	17.32
11/22/22 19:00	112.30	18.82
11/22/22 20:00	109.90	19.48
11/22/22 21:00	106.20	19.14
11/22/22 22:00	107.30	19.63
11/22/22 23:00	111.50	20.31
11/23/22 0:00	97.10	18.08
11/23/22 1:00	90.10	21.13
11/23/22 2:00	83.60	22.38
11/23/22 3:00	82.20	22.88
11/23/22 4:00	82.50	23.03
11/23/22 5:00	87.70	22.00
11/23/22 6:00	76.96	18.90
11/23/22 7:00	62.08	17.09
11/23/22 8:00	61.07	16.70
11/23/22 9:00	58.99	16.79
11/23/22 10:00	57.61	17.66
11/23/22 11:00	55.05	15.71
11/23/22 12:00	45.59	16.00
11/23/22 13:00	40.36	15.34
11/23/22 14:00	40.96	15.58
11/23/22 15:00	46.81	17.15
11/23/22 16:00	53.79	14.15
11/23/22 17:00	50.24	12.18
11/23/22 18:00	52.88	13.17
11/23/22 19:00	63.92	13.05
11/23/22 20:00	72.20	10.65
11/23/22 21:00	78.79	9.62
11/23/22 22:00	91.80	9.19
11/23/22 23:00	96.00	9.01
11/24/22 0:00	140.40	8.04
11/24/22 1:00	142.00	9.78
11/24/22 2:00	133.70	10.50
11/24/22 3:00	117.80	11.10
11/24/22 4:00	117.40	13.20
11/24/22 5:00	121.50	12.86
11/24/22 6:00	116.10	12.58
11/24/22 7:00	113.50	16.65
11/24/22 8:00	109.10	17.02
11/24/22 9:00	115.50	12.45
11/24/22 10:00	109.60	15.59
11/24/22 11:00	106.70	15.06
11/24/22 12:00	119.80	13.53
11/24/22 13:00	116.80	12.38
11/24/22 14:00	109.00	11.40
11/24/22 15:00	107.90	10.66
11/24/22 16:00	105.20	9.59
11/24/22 17:00	101.30	11.91
11/24/22 18:00	105.50	12.61
11/24/22 19:00	110.80	12.77
11/24/22 20:00	113.90	13.63
11/24/22 21:00	108.60	18.91
11/24/22 22:00	108.70	22.81
11/24/22 23:00	106.60	26.18
11/25/22 0:00	107.10	27.57
11/25/22 1:00	112.50	26.52
11/25/22 2:00	111.20	29.09
11/25/22 3:00	105.60	33.77
11/25/22 4:00	105.80	36.50
11/25/22 5:00	98.70	38.63
11/25/22 6:00	95.80	40.10
11/25/22 7:00	92.60	41.29
11/25/22 8:00	88.80	40.32
11/25/22 9:00	85.50	37.58
11/25/22 10:00	75.36	36.94
11/25/22 11:00	77.11	40.18
11/25/22 12:00	79.80	40.18
11/25/22 13:00	74.37	38.92
11/25/22 14:00	74.36	35.96
11/25/22 15:00	79.28	38.41

Date	Wind Direction (°)	Wind speed (km/h)
11/25/22 16:00	79.64	34.78
11/25/22 17:00	73.29	32.80
11/25/22 18:00	70.96	32.44
11/25/22 19:00	73.48	31.64
11/25/22 20:00	77.03	30.82
11/25/22 21:00	74.62	25.94
11/25/22 22:00	70.28	22.47
11/25/22 23:00	72.25	16.65
11/26/22 0:00	62.36	19.85
11/26/22 1:00	58.09	16.26
11/26/22 2:00	42.16	9.85
11/26/22 3:00	33.60	8.52
11/26/22 4:00	43.23	8.50
11/26/22 5:00	62.44	8.59
11/26/22 6:00	58.58	10.02
11/26/22 7:00	70.63	11.03
11/26/22 8:00	85.50	8.05
11/26/22 9:00	89.70	7.10
11/26/22 10:00	104.80	5.43
11/26/22 11:00	106.30	3.70
11/26/22 12:00	87.40	2.78
11/26/22 13:00	81.10	2.65
11/26/22 14:00	82.90	3.73
11/26/22 15:00	87.30	3.20
11/26/22 16:00	96.80	2.31
11/26/22 17:00	106.70	1.98
11/26/22 18:00	111.90	1.26
11/26/22 19:00	98.10	1.95
11/26/22 20:00	94.80	2.06
11/26/22 21:00	88.00	2.11
11/26/22 22:00	98.40	3.29
11/26/22 23:00	95.00	3.48
11/27/22 0:00	89.10	4.42
11/27/22 1:00	95.10	3.45
11/27/22 2:00	95.30	2.86
11/27/22 3:00	94.10	3.05
11/27/22 4:00	84.60	3.88
11/27/22 5:00	78.04	3.18
11/27/22 6:00	72.41	4.29
11/27/22 7:00	69.04	4.20
11/27/22 8:00	56.56	3.42
11/27/22 9:00	63.69	3.87
11/27/22 10:00	58.55	4.17
11/27/22 11:00	63.89	3.88
11/27/22 12:00	63.99	3.78
11/27/22 13:00	68.78	3.81
11/27/22 14:00	73.18	3.62
11/27/22 15:00	63.39	3.23
11/27/22 16:00	55.27	3.12
11/27/22 17:00	36.47	3.91
11/27/22 18:00	29.23	4.05
11/27/22 19:00	35.82	4.68
11/27/22 20:00	38.01	5.42
11/27/22 21:00	32.38	5.80
11/27/22 22:00	37.16	24.26
11/27/22 23:00	36.72	28.46
11/28/22 0:00	37.99	28.22
11/28/22 1:00	41.03	28.22
11/28/22 2:00	41.42	29.27
11/28/22 3:00	35.58	27.63
11/28/22 4:00	33.12	27.04
11/28/22 5:00	36.94	28.62
11/28/22 6:00	38.23	27.94
11/28/22 7:00	39.24	27.90
11/28/22 8:00	37.89	26.56
11/28/22 9:00	38.76	27.45
11/28/22 10:00	38.49	25.50
11/28/22 11:00	36.30	23.84
11/28/22 12:00	33.15	25.28
11/28/22 13:00	30.03	25.18
11/28/22 14:00	27.60	19.71

Date	Wind Direction (°)	Wind speed (km/h)
11/28/22 15:00	23.53	16.64
11/28/22 16:00	25.20	16.26
11/28/22 17:00	17.38	15.21
11/28/22 18:00	22.44	12.15
11/28/22 19:00	23.91	11.62
11/28/22 20:00	6.91	12.35
11/28/22 21:00	11.33	8.63
11/28/22 22:00	23.73	10.47
11/28/22 23:00	8.52	11.30
11/29/22 0:00	13.49	9.67
11/29/22 1:00	355.50	9.73
11/29/22 2:00	338.90	8.28
11/29/22 3:00	328.90	7.27
11/29/22 4:00	327.60	8.64
11/29/22 5:00	335.20	9.13
11/29/22 6:00	329.10	9.32
11/29/22 7:00	319.50	8.11
11/29/22 8:00	298.00	9.20
11/29/22 9:00	292.00	8.01
11/29/22 10:00	297.80	8.16
11/29/22 11:00	295.50	7.19
11/29/22 12:00	293.00	6.20
11/29/22 13:00	299.10	8.83
11/29/22 14:00	289.30	7.77
11/29/22 15:00	290.00	7.12
11/29/22 16:00	284.20	6.21
11/29/22 17:00	281.30	6.05
11/29/22 18:00	261.10	4.82
11/29/22 19:00	273.20	8.57
11/29/22 20:00	272.20	8.99
11/29/22 21:00	270.80	8.92
11/29/22 22:00	267.50	9.59
11/29/22 23:00	264.00	11.20
11/30/22 0:00	258.50	11.96
11/30/22 1:00	266.00	11.77
11/30/22 2:00	269.40	13.92
11/30/22 3:00	266.40	13.19
11/30/22 4:00	246.40	9.72
11/30/22 5:00	250.20	12.02
11/30/22 6:00	255.40	13.26
11/30/22 7:00	257.80	14.19
11/30/22 8:00	257.40	9.89
11/30/22 9:00	265.00	11.13
11/30/22 10:00	254.60	10.13
11/30/22 11:00	241.80	12.21
11/30/22 12:00	255.80	10.27
11/30/22 13:00	250.20	9.98
11/30/22 14:00	253.00	10.30
11/30/22 15:00	258.00	10.41
11/30/22 16:00	242.50	8.82
11/30/22 17:00	247.70	10.06
11/30/22 18:00	253.90	12.12
11/30/22 19:00	261.00	15.37
11/30/22 20:00	253.70	15.79
11/30/22 21:00	244.90	15.46
11/30/22 22:00	240.20	12.11
11/30/22 23:00	231.30	11.36
12/1/22 0:00	238.50	13.39
12/1/22 1:00	238.70	16.09
12/1/22 2:00	217.40	15.20
12/1/22 3:00	198.50	11.33
12/1/22 4:00	212.40	8.76
12/1/22 5:00	200.10	9.48
12/1/22 6:00	204.90	12.34
12/1/22 7:00	182.60	14.43
12/1/22 8:00	179.00	13.75
12/1/22 9:00	187.00	14.50
12/1/22 10:00	185.80	16.09
12/1/22 11:00	189.90	16.65
12/1/22 12:00	183.70	15.85
12/1/22 13:00	185.40	13.37

Date	Wind Direction (°)	Wind speed (km/h)
12/1/22 14:00	174.10	13.32
12/1/22 15:00	183.80	11.54
12/1/22 16:00	187.60	11.57
12/1/22 17:00	192.00	11.39
12/1/22 18:00	198.50	10.94
12/1/22 19:00	202.70	11.08
12/1/22 20:00	199.60	10.97
12/1/22 21:00	187.60	6.84
12/1/22 22:00	200.20	7.32
12/1/22 23:00	226.00	8.20
12/2/22 0:00	257.30	8.28
12/2/22 1:00	274.30	7.55
12/2/22 2:00	274.20	5.73
12/2/22 3:00	285.60	7.06
12/2/22 4:00	290.70	7.20
12/2/22 5:00	319.00	9.95
12/2/22 6:00	338.20	9.34
12/2/22 7:00	341.20	10.82
12/2/22 8:00	3.06	13.91
12/2/22 9:00	0.30	14.05
12/2/22 10:00	3.51	16.63
12/2/22 11:00	0.62	16.22
12/2/22 12:00	1.35	15.49
12/2/22 13:00	1.31	14.80
12/2/22 14:00	357.50	17.18
12/2/22 15:00	351.70	13.98
12/2/22 16:00	351.70	11.99
12/2/22 17:00	347.90	13.22
12/2/22 18:00	344.90	12.93
12/2/22 19:00	336.80	13.15
12/2/22 20:00	324.90	10.27
12/2/22 21:00	341.10	7.60
12/2/22 22:00	334.40	9.87
12/2/22 23:00	307.30	8.00
12/3/22 0:00	296.30	8.04
12/3/22 1:00	305.90	10.45
12/3/22 2:00	302.30	9.65
12/3/22 3:00	291.80	8.81
12/3/22 4:00	283.80	6.10
12/3/22 5:00	225.10	2.21
12/3/22 6:00	212.90	2.83
12/3/22 7:00	204.90	6.44
12/3/22 8:00	204.50	8.50
12/3/22 9:00	200.30	10.94
12/3/22 10:00	190.40	12.18
12/3/22 11:00	188.10	13.24
12/3/22 12:00	184.70	12.41
12/3/22 13:00	184.00	12.62
12/3/22 14:00	189.20	15.75
12/3/22 15:00	185.70	17.50
12/3/22 16:00	185.20	18.33
12/3/22 17:00	172.90	19.95
12/3/22 18:00	172.40	20.37
12/3/22 19:00	168.10	23.53
12/3/22 20:00	162.00	24.67
12/3/22 21:00	162.10	22.83
12/3/22 22:00	152.50	17.44
12/3/22 23:00	140.10	14.20
12/4/22 0:00	120.60	16.02
12/4/22 1:00	107.70	17.58
12/4/22 2:00	88.10	20.27
12/4/22 3:00	76.15	18.30
12/4/22 4:00	56.43	23.08
12/4/22 5:00	51.40	20.88
12/4/22 6:00	47.71	20.67
12/4/22 7:00	42.21	17.64
12/4/22 8:00	40.23	20.18
12/4/22 9:00	25.37	16.55
12/4/22 10:00	9.13	10.76
12/4/22 11:00	338.40	10.74
12/4/22 12:00	348.00	13.82

Date	Wind Direction (°)	Wind speed (km/h)
12/4/22 13:00	11.31	11.46
12/4/22 14:00	19.13	7.47
12/4/22 15:00	25.04	4.64
12/4/22 16:00	337.60	7.24
12/4/22 17:00	349.40	6.68
12/4/22 18:00	12.13	6.29
12/4/22 19:00	311.60	7.37
12/4/22 20:00	329.10	6.98
12/4/22 21:00	13.26	7.95
12/4/22 22:00	21.59	10.59
12/4/22 23:00	4.27	10.66
12/5/22 0:00	15.62	14.01
12/5/22 1:00	18.51	15.53
12/5/22 2:00	20.22	14.36
12/5/22 3:00	33.37	18.97
12/5/22 4:00	37.33	23.10
12/5/22 5:00	34.12	23.51
12/5/22 6:00	30.58	23.84
12/5/22 7:00	26.42	24.13
12/5/22 8:00	9.18	17.10
12/5/22 9:00	0.09	16.49
12/5/22 10:00	354.70	19.80
12/5/22 11:00	351.00	17.73
12/5/22 12:00	335.00	16.82
12/5/22 13:00	321.20	15.87
12/5/22 14:00	326.10	19.34
12/5/22 15:00	332.70	23.18
12/5/22 16:00	329.70	21.07
12/5/22 17:00	330.70	23.44
12/5/22 18:00	321.20	26.83
12/5/22 19:00	321.50	27.22
12/5/22 20:00	325.00	27.53
12/5/22 21:00	323.00	27.94
12/5/22 22:00	324.20	25.82
12/5/22 23:00	315.50	31.46
12/6/22 0:00	314.70	30.02
12/6/22 1:00	315.30	32.90
12/6/22 2:00	316.90	34.99
12/6/22 3:00	309.30	30.42
12/6/22 4:00	312.10	31.32
12/6/22 5:00	312.10	30.24
12/6/22 6:00	313.60	32.72
12/6/22 7:00	314.50	29.20
12/6/22 8:00	308.00	27.72
12/6/22 9:00	310.90	27.56
12/6/22 10:00	312.60	29.27
12/6/22 11:00	317.10	25.55
12/6/22 12:00	320.40	23.14
12/6/22 13:00	320.20	21.30
12/6/22 14:00	316.10	21.52
12/6/22 15:00	316.50	20.00
12/6/22 16:00	321.60	16.56
12/6/22 17:00	320.30	12.41
12/6/22 18:00	314.30	11.34
12/6/22 19:00	291.60	11.71
12/6/22 20:00	272.60	7.95
12/6/22 21:00	271.80	6.23
12/6/22 22:00	270.40	4.98
12/6/22 23:00	247.60	5.18
12/7/22 0:00	324.30	1.68
12/7/22 1:00	8.57	0.84
12/7/22 2:00	82.70	4.76
12/7/22 3:00	124.90	5.76
12/7/22 4:00	95.50	5.49
12/7/22 5:00	66.00	8.27
12/7/22 6:00	70.53	6.44
12/7/22 7:00	66.87	6.31
12/7/22 8:00	47.70	8.48
12/7/22 9:00	30.64	10.21
12/7/22 10:00	28.46	8.81
12/7/22 11:00	21.83	6.45

Date	Wind Direction (°)	Wind speed (km/h)
12/7/22 12:00	346.10	8.42
12/7/22 13:00	315.50	9.24
12/7/22 14:00	318.80	11.23
12/7/22 15:00	322.40	11.29
12/7/22 16:00	313.60	12.88
12/7/22 17:00	329.80	13.47
12/7/22 18:00	341.30	9.97
12/7/22 19:00	322.40	11.79
12/7/22 20:00	335.90	9.22
12/7/22 21:00	337.30	7.55
12/7/22 22:00	330.90	6.58
12/7/22 23:00	314.40	7.53
12/8/22 0:00	339.20	5.82
12/8/22 1:00	36.14	4.27
12/8/22 2:00	128.10	2.73
12/8/22 3:00	148.00	4.56
12/8/22 4:00	178.60	6.96
12/8/22 5:00	183.50	6.99
12/8/22 6:00	170.30	6.96
12/8/22 7:00	169.60	11.10
12/8/22 8:00	165.60	10.80
12/8/22 9:00	167.60	10.65
12/8/22 10:00	149.20	13.96
12/8/22 11:00	147.40	14.75
12/8/22 12:00	140.30	13.55
12/8/22 13:00	132.30	12.34
12/8/22 14:00	120.90	9.02
12/8/22 15:00	117.80	10.00
12/8/22 16:00	113.00	15.64
12/8/22 17:00	110.10	16.33
12/8/22 18:00	113.90	18.17
12/8/22 19:00	111.20	22.83
12/8/22 20:00	103.80	33.16
12/8/22 21:00	105.50	36.40
12/8/22 22:00	110.50	36.76
12/8/22 23:00	113.10	36.07
12/9/22 0:00	113.90	30.53
12/9/22 1:00	117.10	31.36
12/9/22 2:00	117.10	32.69
12/9/22 3:00	112.80	29.41
12/9/22 4:00	110.10	29.27
12/9/22 5:00	99.70	29.41
12/9/22 6:00	92.20	28.87
12/9/22 7:00	92.40	30.20
12/9/22 8:00	88.30	29.52
12/9/22 9:00	84.60	30.49
12/9/22 10:00	81.70	30.38
12/9/22 11:00	80.20	30.96
12/9/22 12:00	80.90	29.23
12/9/22 13:00	76.74	29.20
12/9/22 14:00	75.56	29.77
12/9/22 15:00	79.14	29.88
12/9/22 16:00	80.00	29.66
12/9/22 17:00	80.50	32.08
12/9/22 18:00	85.40	29.41
12/9/22 19:00	80.60	29.88
12/9/22 20:00	75.99	29.41
12/9/22 21:00	70.36	33.80
12/9/22 22:00	76.39	33.59
12/9/22 23:00	73.67	32.54
12/10/22 0:00	76.70	32.33
12/10/22 1:00	78.19	34.38
12/10/22 2:00	76.12	35.17
12/10/22 3:00	71.06	36.72
12/10/22 4:00	72.19	34.99
12/10/22 5:00	70.84	35.42
12/10/22 6:00	71.75	32.87
12/10/22 7:00	77.14	33.44
12/10/22 8:00	81.40	31.46
12/10/22 9:00	79.08	33.62
12/10/22 10:00	79.46	30.38

Date	Wind Direction (°)	Wind speed (km/h)
12/10/22 11:00	81.60	31.18
12/10/22 12:00	87.10	30.46
12/10/22 13:00	84.30	28.84
12/10/22 14:00	85.70	26.96
12/10/22 15:00	84.40	23.42
12/10/22 16:00	81.50	25.16
12/10/22 17:00	79.88	26.00
12/10/22 18:00	85.60	26.93
12/10/22 19:00	86.00	22.96
12/10/22 20:00	89.80	27.07
12/10/22 21:00	91.90	25.32
12/10/22 22:00	88.20	21.08
12/10/22 23:00	84.90	21.96
12/11/22 0:00	85.80	22.79
12/11/22 1:00	87.60	20.08
12/11/22 2:00	87.70	21.43
12/11/22 3:00	76.52	18.08
12/11/22 4:00	71.31	15.74
12/11/22 5:00	78.75	13.50
12/11/22 6:00	73.49	15.43
12/11/22 7:00	70.43	14.54
12/11/22 8:00	68.78	11.75
12/11/22 9:00	75.14	12.96
12/11/22 10:00	64.01	12.38
12/11/22 11:00	63.17	12.59
12/11/22 12:00	64.59	12.55
12/11/22 13:00	66.31	12.63
12/11/22 14:00	75.44	13.38
12/11/22 15:00	89.00	12.64
12/11/22 16:00	78.13	11.82
12/11/22 17:00	83.20	12.66
12/11/22 18:00	79.01	12.69
12/11/22 19:00	75.99	10.88
12/11/22 20:00	73.36	10.89
12/11/22 21:00	74.04	12.48
12/11/22 22:00	74.43	14.39
12/11/22 23:00	78.24	15.60
12/12/22 0:00	75.23	14.03
12/12/22 1:00	71.21	14.80
12/12/22 2:00	72.86	16.14
12/12/22 3:00	69.58	17.03
12/12/22 4:00	59.93	16.55
12/12/22 5:00	48.06	13.46
12/12/22 6:00	56.76	13.82
12/12/22 7:00	47.59	13.53
12/12/22 8:00	42.61	13.99
12/12/22 9:00	58.60	14.11
12/12/22 10:00	67.49	13.08
12/12/22 11:00	61.52	8.92
12/12/22 12:00	42.69	8.25
12/12/22 13:00	34.39	7.30
12/12/22 14:00	37.36	7.87
12/12/22 15:00	51.56	8.37
12/12/22 16:00	62.18	7.87
12/12/22 17:00	44.69	6.98
12/12/22 18:00	59.93	8.19
12/12/22 19:00	85.90	8.00
12/12/22 20:00	113.70	7.85
12/12/22 21:00	129.70	9.03
12/12/22 22:00	125.70	7.98
12/12/22 23:00	127.00	8.46
12/13/22 0:00	141.90	8.38
12/13/22 1:00	162.50	12.79
12/13/22 2:00	155.00	16.39
12/13/22 3:00	151.80	20.87
12/13/22 4:00	152.60	21.79
12/13/22 5:00	159.60	29.02
12/13/22 6:00	161.90	31.25
12/13/22 7:00	165.70	31.28
12/13/22 8:00	170.50	32.80
12/13/22 9:00	180.10	30.71

Date	Wind Direction (°)	Wind speed (km/h)
12/13/22 10:00	184.80	29.99
12/13/22 11:00	200.80	30.31
12/13/22 12:00	212.00	28.26
12/13/22 13:00	222.40	27.21
12/13/22 14:00	235.50	24.43
12/13/22 15:00	247.60	22.40
12/13/22 16:00	258.30	23.47
12/13/22 17:00	274.60	23.65
12/13/22 18:00	280.40	26.28
12/13/22 19:00	275.00	24.97
12/13/22 20:00	282.00	24.17
12/13/22 21:00	285.90	25.52
12/13/22 22:00	283.90	24.81
12/13/22 23:00	273.40	21.60
12/14/22 0:00	274.60	22.37
12/14/22 1:00	274.20	23.90
12/14/22 2:00	268.70	26.15
12/14/22 3:00	277.10	25.76
12/14/22 4:00	264.70	18.58
12/14/22 5:00	242.70	14.78
12/14/22 6:00	222.00	17.50
12/14/22 7:00	229.20	25.68
12/14/22 8:00	232.70	25.21
12/14/22 9:00	242.00	25.09
12/14/22 10:00	240.40	22.69
12/14/22 11:00	237.60	21.18
12/14/22 12:00	232.10	25.81
12/14/22 13:00	228.90	26.71
12/14/22 14:00	222.80	30.17
12/14/22 15:00	218.40	30.42
12/14/22 16:00	216.90	31.82
12/14/22 17:00	205.80	28.67
12/14/22 18:00	206.30	24.63
12/14/22 19:00	218.70	21.38
12/14/22 20:00	215.20	13.97
12/14/22 21:00	215.10	15.68
12/14/22 22:00	227.80	17.17
12/14/22 23:00	214.60	12.09
12/15/22 0:00	249.60	8.94
12/15/22 1:00	302.40	8.07
12/15/22 2:00	328.80	7.93
12/15/22 3:00	342.80	15.24
12/15/22 4:00	358.10	12.86
12/15/22 5:00	7.84	9.72
12/15/22 6:00	19.58	8.26
12/15/22 7:00	2.07	7.73
12/15/22 8:00	354.10	7.27
12/15/22 9:00	4.36	11.58
12/15/22 10:00	5.55	11.60
12/15/22 11:00	348.70	8.41
12/15/22 12:00	353.30	10.03
12/15/22 13:00	23.30	12.35
12/15/22 14:00	18.72	12.48
12/15/22 15:00	19.04	14.41
12/15/22 16:00	10.70	15.92
12/15/22 17:00	20.92	17.01
12/15/22 18:00	19.81	14.19
12/15/22 19:00	13.62	14.99
12/15/22 20:00	10.86	11.10
12/15/22 21:00	5.23	11.69
12/15/22 22:00	11.84	13.54
12/15/22 23:00	11.84	12.47
12/16/22 0:00	27.41	15.94
12/16/22 1:00	25.07	15.15
12/16/22 2:00	24.28	16.01
12/16/22 3:00	24.13	17.31
12/16/22 4:00	28.09	18.48
12/16/22 5:00	33.79	18.94
12/16/22 6:00	22.15	18.37
12/16/22 7:00	22.72	15.39
12/16/22 8:00	17.67	10.66

Date	Wind Direction (°)	Wind speed (km/h)
12/16/22 9:00	348.60	8.80
12/16/22 10:00	281.80	5.39
12/16/22 11:00	285.50	11.41
12/16/22 12:00	289.80	11.46
12/16/22 13:00	284.80	11.73
12/16/22 14:00	289.40	15.09
12/16/22 15:00	290.80	13.16
12/16/22 16:00	293.40	12.46
12/16/22 17:00	290.80	14.24
12/16/22 18:00	290.30	11.76
12/16/22 19:00	312.50	14.97
12/16/22 20:00	314.30	14.80
12/16/22 21:00	305.10	14.70
12/16/22 22:00	304.10	12.81
12/16/22 23:00	298.10	13.54
12/17/22 0:00	280.90	12.01
12/17/22 1:00	294.00	15.15
12/17/22 2:00	304.00	14.98
12/17/22 3:00	317.50	14.56
12/17/22 4:00	338.70	16.79
12/17/22 5:00	325.30	13.01
12/17/22 6:00	312.50	11.52
12/17/22 7:00	303.90	11.35
12/17/22 8:00	285.50	11.13
12/17/22 9:00	283.70	12.22
12/17/22 10:00	287.10	13.96
12/17/22 11:00	280.00	10.70
12/17/22 12:00	277.70	9.80
12/17/22 13:00	292.10	14.31
12/17/22 14:00	289.90	12.47
12/17/22 15:00	279.80	8.76
12/17/22 16:00	278.10	10.00
12/17/22 17:00	276.80	11.53
12/17/22 18:00	276.70	10.25
12/17/22 19:00	282.60	11.05
12/17/22 20:00	284.50	11.00
12/17/22 21:00	276.00	9.88
12/17/22 22:00	273.00	10.41
12/17/22 23:00	277.60	10.44
12/18/22 0:00	277.30	11.10
12/18/22 1:00	273.20	11.66
12/18/22 2:00	267.70	11.20
12/18/22 3:00	272.00	9.51
12/18/22 4:00	276.40	11.08
12/18/22 5:00	268.80	10.84
12/18/22 6:00	273.60	11.85
12/18/22 7:00	277.40	10.79
12/18/22 8:00	274.40	9.44
12/18/22 9:00	273.00	8.99
12/18/22 10:00	251.50	8.64
12/18/22 11:00	259.00	11.20
12/18/22 12:00	252.50	8.99
12/18/22 13:00	247.90	8.89
12/18/22 14:00	237.80	10.86
12/18/22 15:00	239.00	10.55
12/18/22 16:00	238.20	10.35
12/18/22 17:00	242.30	10.78
12/18/22 18:00	233.20	11.19
12/18/22 19:00	224.80	12.42
12/18/22 20:00	229.20	14.27
12/18/22 21:00	235.10	13.74
12/18/22 22:00	227.50	12.72
12/18/22 23:00	219.50	12.54
12/19/22 0:00	213.40	14.70
12/19/22 1:00	220.20	12.72
12/19/22 2:00	223.40	13.61
12/19/22 3:00	224.40	13.00
12/19/22 4:00	208.70	13.24
12/19/22 5:00	208.70	13.42
12/19/22 6:00	211.30	14.57
12/19/22 7:00	208.50	14.68

Date	Wind Direction (°)	Wind speed (km/h)
12/19/22 8:00	212.40	13.50
12/19/22 9:00	212.00	14.16
12/19/22 10:00	211.40	12.15
12/19/22 11:00	210.30	12.76
12/19/22 12:00	208.80	13.89
12/19/22 13:00	208.40	12.78
12/19/22 14:00	210.10	13.17
12/19/22 15:00	210.80	13.46
12/19/22 16:00	211.10	13.68
12/19/22 17:00	220.60	12.55
12/19/22 18:00	228.20	11.91
12/19/22 19:00	230.00	13.02
12/19/22 20:00	237.40	14.37
12/19/22 21:00	242.80	13.17
12/19/22 22:00	244.40	11.63
12/19/22 23:00	242.80	8.67
12/20/22 0:00	245.70	8.62
12/20/22 1:00	243.30	2.18
12/20/22 2:00	222.40	3.00
12/20/22 3:00	233.80	3.05
12/20/22 4:00	243.30	3.06
12/20/22 5:00	237.20	2.02
12/20/22 6:00	237.70	3.23
12/20/22 7:00	249.40	2.92
12/20/22 8:00	228.60	3.75
12/20/22 9:00	246.50	4.06
12/20/22 10:00	256.60	2.28
12/20/22 11:00	249.10	3.10
12/20/22 12:00	227.30	4.17
12/20/22 13:00	236.30	5.39
12/20/22 14:00	228.80	3.32
12/20/22 15:00	219.40	2.44
12/20/22 16:00	220.40	1.22
12/20/22 17:00	216.40	2.10
12/20/22 18:00	196.10	1.73
12/20/22 19:00	214.20	1.84
12/20/22 20:00	230.00	4.11
12/20/22 21:00	233.70	3.95
12/20/22 22:00	258.10	5.10
12/20/22 23:00	258.40	4.05
12/21/22 0:00	252.30	3.37
12/21/22 1:00	242.00	3.47
12/21/22 2:00	230.00	2.02
12/21/22 3:00	250.40	1.42
12/21/22 4:00	294.00	6.00
12/21/22 5:00	265.30	2.51
12/21/22 6:00	251.70	2.20
12/21/22 7:00	220.80	1.04
12/21/22 8:00	239.90	3.26
12/21/22 9:00	246.60	6.07
12/21/22 10:00	248.70	9.46
12/21/22 11:00	250.10	11.41
12/21/22 12:00	246.00	12.12
12/21/22 13:00	236.10	11.34
12/21/22 14:00	234.90	10.78
12/21/22 15:00	235.20	8.58
12/21/22 16:00	238.90	9.06
12/21/22 17:00	244.30	7.92
12/21/22 18:00	238.90	8.56
12/21/22 19:00	237.90	9.46
12/21/22 20:00	238.60	8.97
12/21/22 21:00	240.10	8.58
12/21/22 22:00	231.70	8.16
12/21/22 23:00	234.30	10.39
12/22/22 0:00	231.60	11.70
12/22/22 1:00	238.10	9.51
12/22/22 2:00	241.10	9.64
12/22/22 3:00	243.20	9.81
12/22/22 4:00	244.40	10.00
12/22/22 5:00	245.30	11.07
12/22/22 6:00	244.70	11.71

Date	Wind Direction (°)	Wind speed (km/h)
12/22/22 7:00	252.00	9.89
12/22/22 8:00	242.80	7.66
12/22/22 9:00	227.20	6.62
12/22/22 10:00	213.90	6.25
12/22/22 11:00	226.30	5.82
12/22/22 12:00	232.00	4.31
12/22/22 13:00	233.90	3.10
12/22/22 14:00	234.10	4.57
12/22/22 15:00	231.60	5.64
12/22/22 16:00	206.10	3.70
12/22/22 17:00	207.80	3.47
12/22/22 18:00	205.20	3.77
12/22/22 19:00	190.60	4.05
12/22/22 20:00	195.50	2.89
12/22/22 21:00	213.30	0.67
12/22/22 22:00	117.80	1.07
12/22/22 23:00	176.10	2.53
12/23/22 0:00	194.60	1.64
12/23/22 1:00	122.80	2.43
12/23/22 2:00	109.40	2.31
12/23/22 3:00	107.70	2.41
12/23/22 4:00	92.70	3.78
12/23/22 5:00	94.20	4.22
12/23/22 6:00	92.50	4.94
12/23/22 7:00	87.20	4.92
12/23/22 8:00	90.20	4.72
12/23/22 9:00	83.50	4.29
12/23/22 10:00	78.71	4.33
12/23/22 11:00	82.30	5.76
12/23/22 12:00	90.00	5.90
12/23/22 13:00	92.50	5.70
12/23/22 14:00	84.60	4.15
12/23/22 15:00	89.00	5.46
12/23/22 16:00	85.30	4.89
12/23/22 17:00	82.60	5.21
12/23/22 18:00	82.20	5.34
12/23/22 19:00	91.00	7.12
12/23/22 20:00	89.90	6.95
12/23/22 21:00	90.40	8.12
12/23/22 22:00	79.51	8.47
12/23/22 23:00	69.38	7.83
12/24/22 0:00	66.54	6.87
12/24/22 1:00	68.79	9.38
12/24/22 2:00	64.72	9.12
12/24/22 3:00	66.90	9.42
12/24/22 4:00	66.77	8.46
12/24/22 5:00	68.93	8.45
12/24/22 6:00	65.42	8.09
12/24/22 7:00	60.12	8.23
12/24/22 8:00	62.14	9.31
12/24/22 9:00	67.39	9.45
12/24/22 10:00	70.86	10.36
12/24/22 11:00	68.24	10.67
12/24/22 12:00	73.01	11.00
12/24/22 13:00	80.40	12.34
12/24/22 14:00	81.10	10.51
12/24/22 15:00	84.20	11.30
12/24/22 16:00	82.40	11.70
12/24/22 17:00	76.20	11.83
12/24/22 18:00	81.20	11.13
12/24/22 19:00	83.80	10.65
12/24/22 20:00	75.79	10.51
12/24/22 21:00	77.96	11.23
12/24/22 22:00	80.00	11.57
12/24/22 23:00	73.49	10.57
12/25/22 0:00	68.54	10.08
12/25/22 1:00	62.92	7.30
12/25/22 2:00	61.83	7.56
12/25/22 3:00	58.35	7.05
12/25/22 4:00	47.17	8.15
12/25/22 5:00	47.04	7.70

Date	Wind Direction (°)	Wind speed (km/h)
12/25/22 6:00	38.65	6.39
12/25/22 7:00	37.73	7.97
12/25/22 8:00	32.96	5.41
12/25/22 9:00	35.82	6.02
12/25/22 10:00	34.80	7.52
12/25/22 11:00	30.75	7.43
12/25/22 12:00	38.39	4.66
12/25/22 13:00	32.89	5.29
12/25/22 14:00	34.49	5.52
12/25/22 15:00	26.95	5.76
12/25/22 16:00	21.07	4.49
12/25/22 17:00	25.81	4.23
12/25/22 18:00	22.90	4.07
12/25/22 19:00	49.83	3.86
12/25/22 20:00	53.01	5.07
12/25/22 21:00	49.79	3.82
12/25/22 22:00	50.21	4.68
12/25/22 23:00	60.53	6.13
12/26/22 0:00	68.91	5.55
12/26/22 1:00	66.14	5.76
12/26/22 2:00	73.11	5.94
12/26/22 3:00	77.40	6.29
12/26/22 4:00	77.40	6.72
12/26/22 5:00	84.50	6.58
12/26/22 6:00	91.60	6.69
12/26/22 7:00	89.30	7.12
12/26/22 8:00	91.80	6.69
12/26/22 9:00	81.70	6.60
12/26/22 10:00	78.69	5.96
12/26/22 11:00	96.20	5.30
12/26/22 12:00	92.30	5.47
12/26/22 13:00	88.10	5.20
12/26/22 14:00	85.10	5.49
12/26/22 15:00	82.20	5.43
12/26/22 16:00	93.50	5.29
12/26/22 17:00	87.30	4.50
12/26/22 18:00	90.10	4.98
12/26/22 19:00	91.30	5.93
12/26/22 20:00	92.20	7.05
12/26/22 21:00	94.50	6.49
12/26/22 22:00	97.70	6.30
12/26/22 23:00	102.20	5.80
12/27/22 0:00	95.20	5.32
12/27/22 1:00	93.10	6.98
12/27/22 2:00	103.10	7.35
12/27/22 3:00	101.00	7.17
12/27/22 4:00	98.40	6.59
12/27/22 5:00	102.70	7.12
12/27/22 6:00	93.90	7.83
12/27/22 7:00	107.90	6.13
12/27/22 8:00	116.70	6.67
12/27/22 9:00	117.30	7.28
12/27/22 10:00	121.10	7.66
12/27/22 11:00	123.10	7.72
12/27/22 12:00	123.20	8.07
12/27/22 13:00	116.30	8.13
12/27/22 14:00	115.90	8.86
12/27/22 15:00	122.80	8.48
12/27/22 16:00	119.40	9.01
12/27/22 17:00	122.80	9.85
12/27/22 18:00	120.80	9.76
12/27/22 19:00	119.40	9.74
12/27/22 20:00	119.00	9.78
12/27/22 21:00	118.80	10.10
12/27/22 22:00	117.40	10.81
12/27/22 23:00	124.40	11.52
12/28/22 0:00	127.80	11.71
12/28/22 1:00	128.90	19.74
12/28/22 2:00	130.10	36.94
12/28/22 3:00	134.20	38.52
12/28/22 4:00	131.60	38.20

Date	Wind Direction (°)	Wind speed (km/h)
12/28/22 5:00	131.20	38.59
12/28/22 6:00	132.30	38.52
12/28/22 7:00	134.30	36.86
12/28/22 8:00	136.80	36.40
12/28/22 9:00	137.50	34.09
12/28/22 10:00	137.90	34.34
12/28/22 11:00	134.50	33.84
12/28/22 12:00	135.00	32.76
12/28/22 13:00	138.60	28.77
12/28/22 14:00	135.80	32.51
12/28/22 15:00	139.80	31.21
12/28/22 16:00	137.30	28.63
12/28/22 17:00	135.50	29.74
12/28/22 18:00	135.50	29.81
12/28/22 19:00	136.60	27.42
12/28/22 20:00	137.80	27.76
12/28/22 21:00	139.80	28.11
12/28/22 22:00	137.30	26.19
12/28/22 23:00	139.60	26.06
12/29/22 0:00	139.10	23.46
12/29/22 1:00	141.60	24.13
12/29/22 2:00	146.20	24.94
12/29/22 3:00	150.40	22.99
12/29/22 4:00	151.10	22.14
12/29/22 5:00	155.20	20.52
12/29/22 6:00	152.50	20.48
12/29/22 7:00	155.30	20.84
12/29/22 8:00	152.60	20.38
12/29/22 9:00	150.60	18.70
12/29/22 10:00	155.90	18.11
12/29/22 11:00	159.80	18.42
12/29/22 12:00	164.20	18.44
12/29/22 13:00	159.90	18.81
12/29/22 14:00	162.30	20.75
12/29/22 15:00	159.90	18.05
12/29/22 16:00	159.20	17.60
12/29/22 17:00	164.40	12.24
12/29/22 18:00	160.10	10.84
12/29/22 19:00	149.70	11.95
12/29/22 20:00	154.40	13.93
12/29/22 21:00	149.50	15.83
12/29/22 22:00	155.30	19.09
12/29/22 23:00	156.30	18.61
12/30/22 0:00	158.90	18.88
12/30/22 1:00	165.40	16.22
12/30/22 2:00	158.60	16.49
12/30/22 3:00	163.60	14.13
12/30/22 4:00	162.60	10.70
12/30/22 5:00	150.50	11.69
12/30/22 6:00	146.60	10.99
12/30/22 7:00	155.80	10.11
12/30/22 8:00	162.40	8.11
12/30/22 9:00	146.90	9.51
12/30/22 10:00	157.40	11.80
12/30/22 11:00	158.70	13.79
12/30/22 12:00	162.20	13.16
12/30/22 13:00	168.80	12.49
12/30/22 14:00	171.70	12.39
12/30/22 15:00	186.10	12.33
12/30/22 16:00	179.90	9.90
12/30/22 17:00	178.40	7.19
12/30/22 18:00	162.40	5.82
12/30/22 19:00	148.60	7.17
12/30/22 20:00	147.70	8.74
12/30/22 21:00	152.80	9.14
12/30/22 22:00	161.20	8.15
12/30/22 23:00	165.00	6.62
12/31/22 0:00	186.10	8.13
12/31/22 1:00	195.80	10.03
12/31/22 2:00	201.90	9.43
12/31/22 3:00	188.30	7.91

Date	Wind Direction (°)	Wind speed (km/h)
12/31/22 4:00	182.70	9.06
12/31/22 5:00	186.20	5.91
12/31/22 6:00	171.20	5.96
12/31/22 7:00	173.30	8.40
12/31/22 8:00	173.10	8.28
12/31/22 9:00	177.50	7.26
12/31/22 10:00	184.00	9.62
12/31/22 11:00	192.10	10.66
12/31/22 12:00	194.90	7.95
12/31/22 13:00	198.60	9.86
12/31/22 14:00	204.90	8.26
12/31/22 15:00	193.20	11.30
12/31/22 16:00	201.20	10.54
12/31/22 17:00	179.90	9.59
12/31/22 18:00	178.00	11.05
12/31/22 19:00	190.30	15.97
12/31/22 20:00	196.80	14.29
12/31/22 21:00	206.70	8.84
12/31/22 22:00	199.90	10.23
12/31/22 23:00	198.10	18.57