DE BEERS GROUP

30 August 2024

Angela Love
Regulatory Specialist
Mackenzie Valley Land and Water Board
P.O. Box 2130
Yellowknife, NT X1A 2P6

via Email: angela.love@mvlwb.com

Dear Ms. Love:

RE: Gahcho Kué Mine 2023 Water Licence Annual Report V1.1

On 17 May 2024, De Beers Group (De Beers) submitted the 2023 Annual Water Licence and Land Use Permit Report V1 to the Mackenzie Valley Land and Water Board (MVLWB or the Board), as required by Water Licence MV2005L2-0015 and Land Use Permit MV2021D0009. On 1 August 2024, the Board met and provided direction for required revisions for the Annual Report to be approved. De Beers Group is pleased to provide the 2023 Annual Water Licence and Land Use Permit Report V1.1 to satisfy the Board directives of the 8 August 2024 letter of revisions required.

A concordance table describing where these revisions have been addressed is included as Table 1. All updates with 2023 Annual Report V1.1 have been highlighted for ease of review.

De Beers trusts that this document addresses Board requirements in a clear and fulsome manner. If you have any questions or concerns regarding the content of the report, please contact the undersigned at 403-466-5967 or kurtis.trefry@debeersgroup.com.

Sincerely,

Kurtis Trefry M.SEM, P.Ag
Environment and Permitting Superintendent
De Beers Group

Table 1: 2023 Annual Report V1.1 Concordance to Revisions Required by MVLWB Decision (MVLWB direction letter from August 8, 2024)

	Board Directive for 2023 Annual Report	Comment ID	Location in 2023 Annual Report V1.1
1.	To include additional details on the comparison of Water and Wastewater quantities measured to the predicted Water balances.	GNWT-ECC-2	Section 7.6
2.	To include additional details for the analysis of incinerator testing.	GNWT-ECC-4	Section 6.2
3.	To include the additional information provided in the response, noting that dykes B, H, and I may require further construction, dependent on the Operational Water Management Plan. To also provide clarification as to which dykes would be considered either peripheral or internal to avoid any confusion.	MVLWB-1	Section 4
4.	To include additional information, noting the sampling and analysis that occurred in 2023.	MVLWB-2	Section 11.3
5.	To include additional information as to where results are submitted (either to the GNWT under the Air Quality Management and Monitoring Plan, or other).	ECCC-2	Section 6.2
6.	To ensure the references to management plans are to the correct versions.	ECCC-3	Appendix E
7.	To ensure the correct date is referenced to when the seepage survey was conducted in 2023 and to provide rationale as to why it was conducted at that time.	ECCC-6	Section 8.1
8	To include additional details on implications of the overall site water management and water quality predictions.	ECCC-9	Section 8.1

DE BEERS GROUP

Gahcho Kué Mine

2023 Water Licence and Land Use Permit Annual Report

Version 1.1

August 2024

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, 2024	Full report submission to the MVLWB
1.1	August 30, 2024	Updated to address required revisions as detailed by the MVLWB on August 8, 2024

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 from Area 8	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	
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	

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
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 i) Any Action Level exceedances and a description of actions taken in response to any Action Level exceedances; ii) Updates on the success of management measures undertaken to reduce nitrate loadings to the Water Management Pond.	Part B, item 10 1. i).	Section 10
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 84. 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

Term	Definition
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
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

Term	Definition
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.

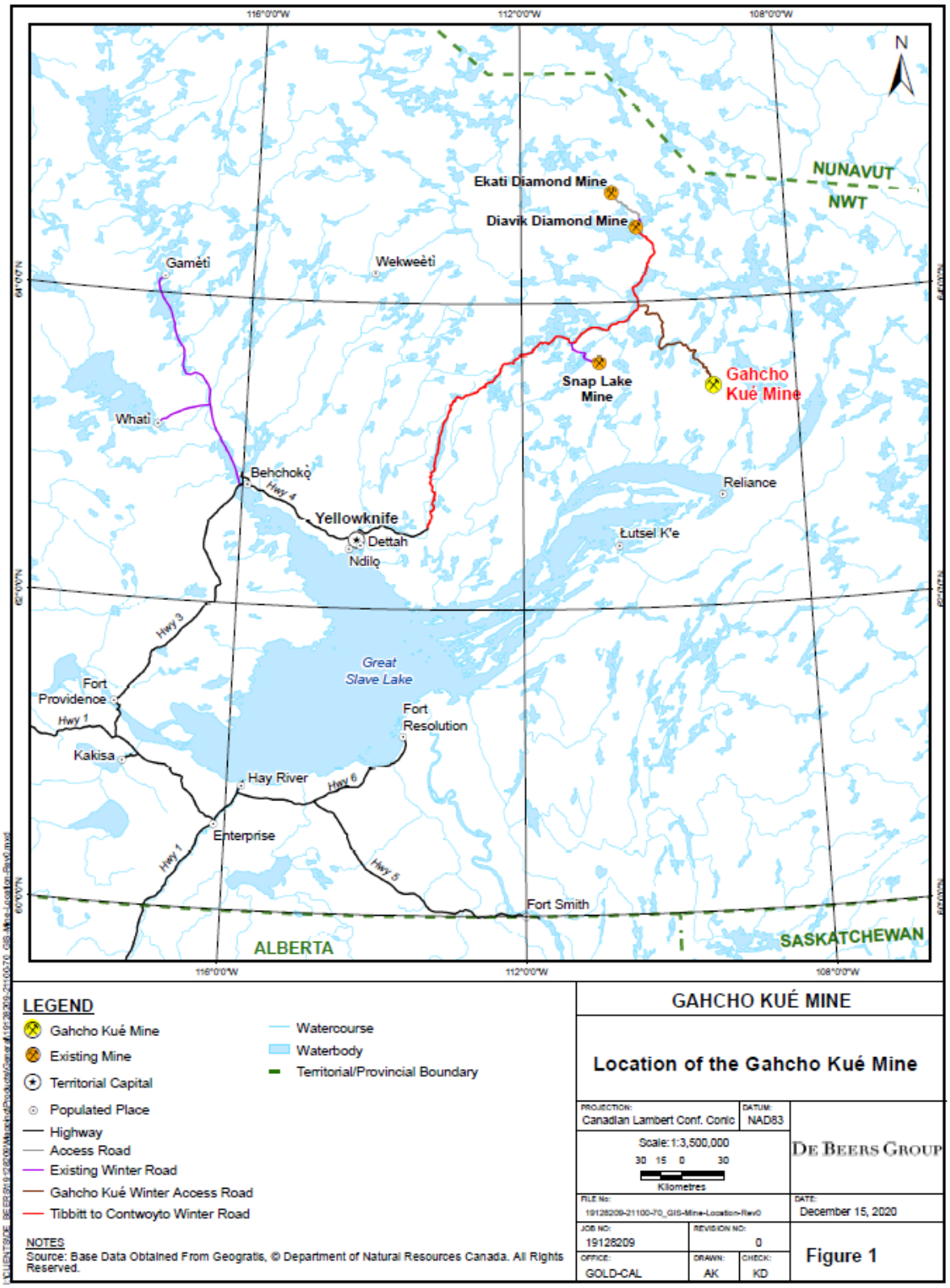
Since issuance of the previous Type A land use permit (August 11, 2014) and Type A water licence (September 24, 2016), various updates and changes to planned activities have been made. Most of these changes are accommodated through updates to the Environmental Monitoring and Management Plans. In two 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 2023 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 2023 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.

In 2023, De Beers developed a tentative schedule of engagement activities at the beginning of the year, consistent with the Approved Engagement Plan. A summary of engagement activities conducted is provided in Appendix A. Activities planned for the forthcoming year is expected to be as shown in Table 2-1.

Table 2-1 Community Engagement Plan for 2024

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 to date in 2024 involving Dyke A1, Dyke D and Dyke L. Table 3-1 summarizes the work activities undertaken for each location in 2023 and includes previous construction work for completeness.

Dyke A1 construction continued through the entire year of 2023. Liner installation was completed to 431.5 meters above sea level (masl) for the entire dyke, with a small section of till core and armouring slightly lower at 429.2 masl. This construction is continuing into 2024 to complete the raise to 431.5 masl for the entire dyke structure. Final armouring and capping will be completed by end of 2024.

Dyke D construction continued in 2023 to raise the downstream core structure to 431.5 masl. Dyke construction is continuing into 2024 to complete the raise to 431.5 masl for the entire dyke structure. Final armouring and capping will be completed by end of 2024.

Dyke L construction continued in 2023 raising the entire filter zone to 428.5 masl. Construction is continuing into 2024 to complete the raise to 430 masl for the entire dyke structure. Final armouring and capping will be completed by end of 2024.

Table 3-1 Summary of Dyke Construction and Project Activities, 2023

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	Feb 2024		Containment completed to 431.5 masl with exception of the last 20 m liner section
Dyke A1 (Stage 4)		Feb 2024	*Dec 2024*		Stage 3: Full structure to final design crest elevation 432.5 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 B (Stage 3)		TBD	TBD		The requirement of stage 3 depends on the operational water management plan

Dyke	Dyke Type	Start Date/Anticipated Start Date	Completion Date/Anticipated Completion Date	Submission of As-built Report to MVLWB	Comments
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)		Oct 2020	*Feb 2024*		Stage 3: Full structure to 431.5 masl Stage 3: Down stream core structure at 431.5 masl. HDPE and GCL liner installation ongoing.
Dyke D (Stage 4)		Feb 2024	*Dec 2024*		Stage 4: Full structure to final design crest elevation 432.5 masl
Dyke F	Water Diversion	Nov 10, 2015	July 2016	Submitted to MVLWB on April 6, 2021.	Dyke construction was complete.
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 H (Stage 2)		TBD	TBD		The requirement of stage 2 depends on the operational water management plan
Dyke I (Stage 1)	Water Retention	Aug 15, 2015	Sep 24, 2015	90 days after completion of dyke construction	Cofferdam has been completed.
Dyke I (Stage 2)		TBD	TBD		The requirement of stage 2 depends on the operational water management plan
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	Feb 2024		Stage 4: 40% of dyke constructed to Full structure of 430 masl
Dyke L (Stage 5)	Filter	Feb 2024	*Dec 2024*		Stage 5: Full structure to 430 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.

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

Highlights of the activities that were undertaken in 2023 are listed as follows:

- Shipping of 1,719 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 2023.
- 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. As detailed in Table 4-1, construction of internal and peripheral dykes is planned to be completed by the end of 2024. This will allow for the primary processed kimberlite deposition strategy to shift from the Area 2 Fine Processed Kimberlite Containment Facility towards deposition into Hearne Pit, once open pit mining is complete. The requirement for further construction to dyke B (stage 3), dyke H (stage 2), and dyke I (stage 2) are still dependent on the Operational Water Management Plan and will be evaluated throughout the remainder of the mine life based on operational requirements.

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																									

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 2023. 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 2023 are outlined below.

6.1 Waste Management

At the Waste Management Area, the oil-water separator treated and discharged 64,0000 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 2024 winter road campaign for disposal by KBL Environmental Ltd.

A total of 3815.75 m^3 of non-hazardous waste was deposited at the Gahcho Kué Landfill during 2023.

6.2 Incinerator Management

The average monthly waste incinerated comprised of the following:

- 9250 kg of camp kitchen food waste.
- 110 kg of camp kitchen grease; and
- 9207 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. There were no sample failures reported in 2023. During 2023, the daily average incinerator burn times are approximately 524 minutes and consumed approximately 19,724 L of diesel for an annual usage of 236,683 L. In June 2023 maintenance on Incinerator A in the primary chamber included a new steel plate on the wall behind the removed castable, new burner blocks and a relining of bottom row modules on the wall. Maintenance for Incinerator B in 2023 included replacing loose and falling refractory and the application of second coat of refractory. 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.

The incinerator ash sampling protocol consists of composite samples collected from all barrels. After every burn cycle the waste management area operator collects half a cup of ash sample from the burn and place into sample buckets that are then resealed. Incinerators are raked after every burn and stored in mega bag (bulk ash) and labelled to match quarters. 4-8 mega bags may be collected during a quarter. Sample buckets are properly labelled with station name and quarterly period and proper shipping procedures are followed including COC forms and shipping order forms. If samples pass incinerator Ash disposed of in landfill by the waste management area operator. If samples fail, the waste management area operator will send the Quarterly ash to KBL with appropriate documentation and ash sample analysis information provided.

De Beers utilizes ALS labs for the analysis of incinerator testing. These tests include the following:

- Physical Tests (Moisture)
- Anions & Nutrients (Nitrate + Nitrite (as N), leachable
- Toxicity Characteristic Leaching Procedure (TCLP) Extractables & Surrogates
- TCLP Metals
- TCLP VOCs & Surrogates
- Leachable Anions & Nutrients

Stack emission testing on both incinerators was completed in 2023, in keeping with the requirements of the approved Incinerator Management Plan – Version 3 (De Beers 2017d). Results for stack emissions testing are available through the 2023 Annual Air Quality Report as submitted to the GNWT on August 26, 2024. The Annual Air Quality Report was also distributed to the MVLWB, ECCC, and Ni Hadi Xa for reference by these groups.

De Beers had 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.

During 2023 The Temporary Holding Facility was sampled August 18 - 22, and August 29 through September 1 by site Environmental Staff to assess existing remediation efforts of hydrocarbon contaminated soils. The methodology involved dividing the facility into fourteen 12m x 9m cells. A composite of five locations within each cell were collected at the surface and at 30cm. Analytical parameters included hydrocarbon fractions (F1- F4), BTEX and grain size. It was determined that only F2 & F3 fractions had above detectable levels, but none exceeded the Guideline limits for Residential/Parkland Land Use, and were far below the Guidelines for Coarse Industrial Land Use. Removal of these materials that have met the appropriate remediation criteria is planned for spring 2024, pending authorization from the GNWT Land Use Inspector.

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 2023 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 2023.

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 2023

Month	Volume [m³]
January	2,636
February	2,462
March	2,712
April	2,515
May	2,675
June	2,653
July	2,736
August	2,557
September	2,838
October	3,082
November	2,818
December	2,925
Total	**32,607**

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 2023 from Lake N11 to Area 8 between May 13 and September, 2023, in accordance with the approved Operational Water Management Plan. The monthly water pumping records are presented in Table 7-2. Pumping water from Area 1 to Area 8 to maintain the Lake A1 elevation at 421.2 masl was not required in 2023.

Table 7-2 Water Volumes Moved from Lake N11 to Area 8 in 2023

Month	Volume [m³]
May	652,118
June	702,340
July	313,250
August	308,716
September	373
Total	**1,677,682**

Note:

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.

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 2023. Due to low snowpack and lower than normal precipitation which has resulted in ongoing drought conditions, 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 2023 consisted of taking 32,607 m^3 in Area 8 for use as potable water to service the camp population and about 15,737 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 32,607 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 Table 7-3 below.

The modelled prediction exists as the maximum allowable limit of 45,000 m^3 per year as permitted by the Water Licence and defined in the Mine's water balance. This maximum limit is used as an estimated outflow from the water management system during operation in the controlled water management area. As no exceedances to the allowable limit occurred, water balance modelling outputs include a conservative approach. In terms of the wastewater from the Sewage Treatment Plant, treated effluent is discharged into CP1 and pumped into the WMP. The daily flow rate is below maximum operating limits of 150 m^3 per day. Volumes of discharged wastewater are not modelled; however, inflow/outflow volumes from CP1 are modelled as well as volumes from the WMP.

Table 7-3 Volume of Potable Water Use Takings Area 8

Month	Potable Water (Area 8) [m^3]
January	2,636
February	2,462
March	2,712
April	2,515
May	2,675
June	2,653
July	2,736
August	2,557
September	2,838
October	3,082
November	2,818
December	2,925
Total	**32,607**

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 2023, a total of 31,780 m^3 of wastewater was treated by the STP at an average daily flow rate of 87 m^3/day. These values presented in Table 7-4 below, are within the prescribed operating limits of the plant to treat on maximum 150 m^3/day.

Table 7-4 Volume of Treated Effluent Discharged from the STP in 2023

Month	Volume [m³]	Average Daily Rate [m³/d]
January	2,626	85
February	2,496	89
March	2,751	89
April	2,529	84
May	2,577	83
June	2,681	89
July	2,743	88
August	2,488	80
September	2,671	89
October	2,951	95
November	2,738	91
December	2,529	82
Total	**31,780**	—
Daily Average	**—**	**87**

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 7-5. 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 7-5 Water Elevation in Water Management Pond, CP1, Lakes A1, D2/D3, and E1 in 2023

Month	Water Management Pond [masl]	CP1 [masl]	Lake A1 [masl]	Lake D2/D3 [masl]	Lake E1 [masl]
January	417.5	418.2	421.1	426.5	425.7
February	417.4	418.2	421.1	426.5	425.7
March	417.2	418.2	421.1	426.5	425.6
April	417.0	418.3	421.1	426.5	425.6
May	417.4	418.6	421.4	426.5	425.9
June	417.5	418.6	421.4	426.5	425.7
July	417.7	418.1	421.4	426.3	425.5
August	417.9	417.5	421.3	426.3	425.4
September	418.1	417.0	421.4	426.3	425.5
October	418.3	416.6	421.4	426.4	425.7
November	418.3	416.8	421.5	426.4	425.7
December	418.1	416.9	421.5	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 7-6 Water Storage Capacity for Water Management Pond, CP1 and Lake A1 in 2023

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 7-7 Stage Volume Curves Data for Lakes D2, D3 and E1 in 2023

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; m^3 = 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 2023. In 2023, 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 Tuzo Open Pit was pumped to CP1. Water from Collection Ponds CP5 and CP1 were pumped to the Water Management Pond, with volumes summarized in Table 7-8.

The monthly and annual quantities of water pumped in 2023 from the Open Pits are presented in Section 8.1.

Table 7-8 Monthly and Annual Quantities of Water Pumped from Collection Ponds (CP1 and CP5) to Water Management Pond in 2023

Month	CP1 [m³]	CP5 [m³]
May	--	24,114
June	164,586	3,138
July	358,853	2,082
August	351,369	--
September	355,089	--
October	101,955	--
Total	**1,331,852**	**29,333**

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 Table 7-9. In 2023, the total amount of recorded precipitation for 2023 was 274.0 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 7-9 Summary of Monthly and Annual Precipitation in 2023

Month	Precipitation (mm)
January	5.3
February	0.0
March	9.3

Month	Precipitation (mm)
April	5.6
May	17.4
June	95.7
July	10.0
August	23.8
September	52.4
October	30.0
November	8.3
December	16.1
Total	**274.0**

The volume of runoff water from various areas around the mine in 2023 was estimated under the using Goldsim™ Water Balance Model to be approximately 1.71 million cubic metres (Mm^3) in 2023. Monthly and annual runoff data is presented in Table 7-10.

Table 7-10 Summary of Estimated Monthly and Annual Runoff for Various Areas in 2023

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	0
February	0	0	0	0	0	0	0
March	0	0	0	0	37,290	0	37,290
April	0	0	0	0	10,143	0	10,143
May	105,625	89,767	342,203	63,016	3,368	253,027	857,006
June	55,897	35,863	167,683	27,638	1,858	146,330	435,268
July	-39,476	-40,945	-125,426	35,776	6,126	-56,009	-219,954
August	-4,866	-8,231	-15,006	43,644	2,886	7,232	25,659
September	40,304	41,086	135,802	13,813	0	97,457	328,462
October	23,022	21,317	74,193	51,251	0	53,149	222,932
November	0	0	0	14,410	0	0	14,410
December	0	0	0	0	0	0	0
Total	**180,505**	**138,857**	**579,450**	**249,548**	**61,672**	**501,185**	**1,711,217**

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 2023 is provided in Table 7-11.

Table 7-11 Summary Monthly and Annual Water used for Dust Control in 2023

Month	Volume of Water for Dust Suppression [m³]
January	0
February	0
March	0
April	0
May	609
June	725
July	547
August	178
September	42
October	0
November	0
December	0
Total	**2,101**

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 2023, 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)

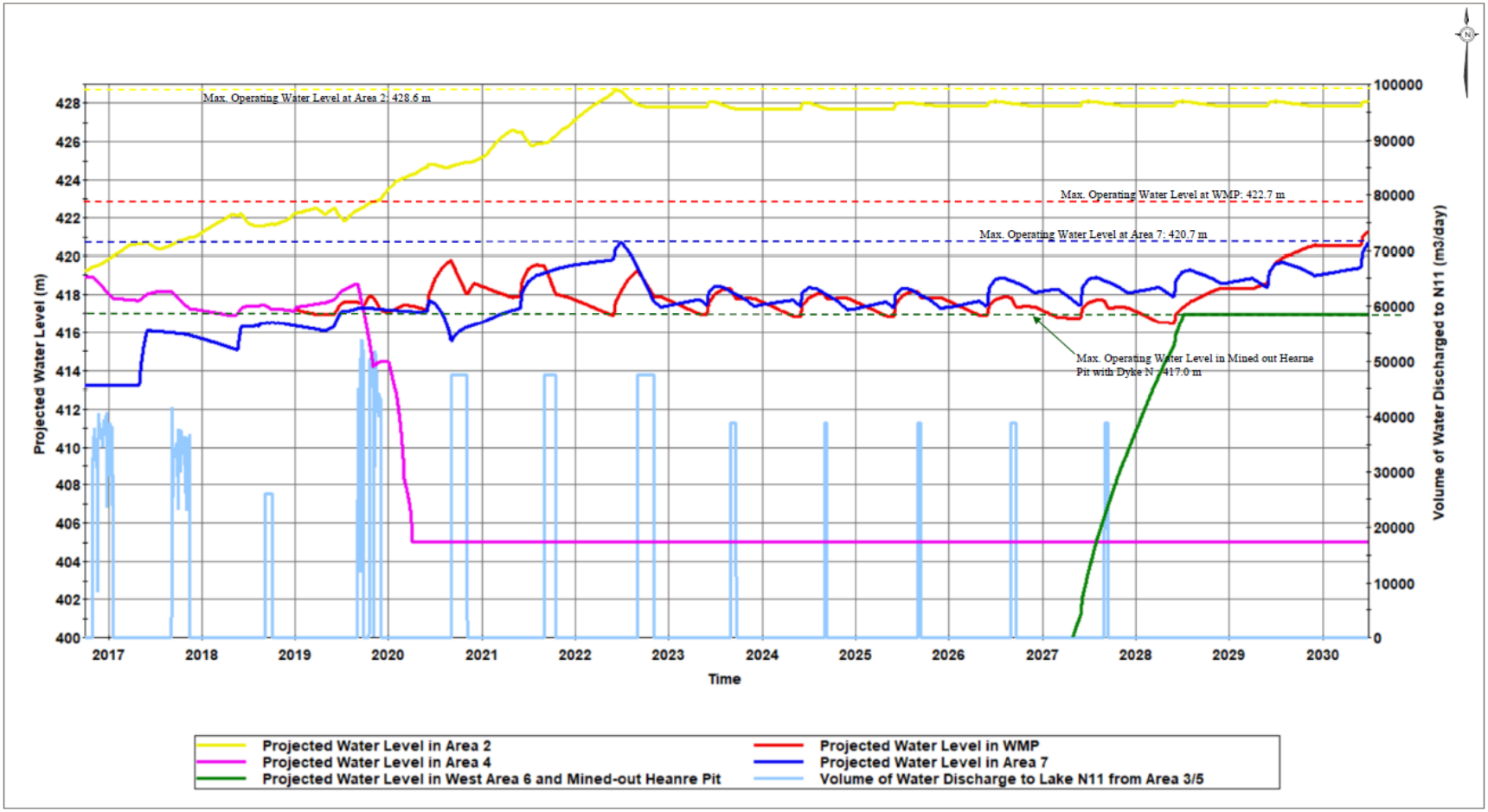
As previously mentioned in Section 7.13, there were no Action Level exceedances as defined in the Water Management Plan in 2023. As a result, no specific management response was needed or taken.

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.

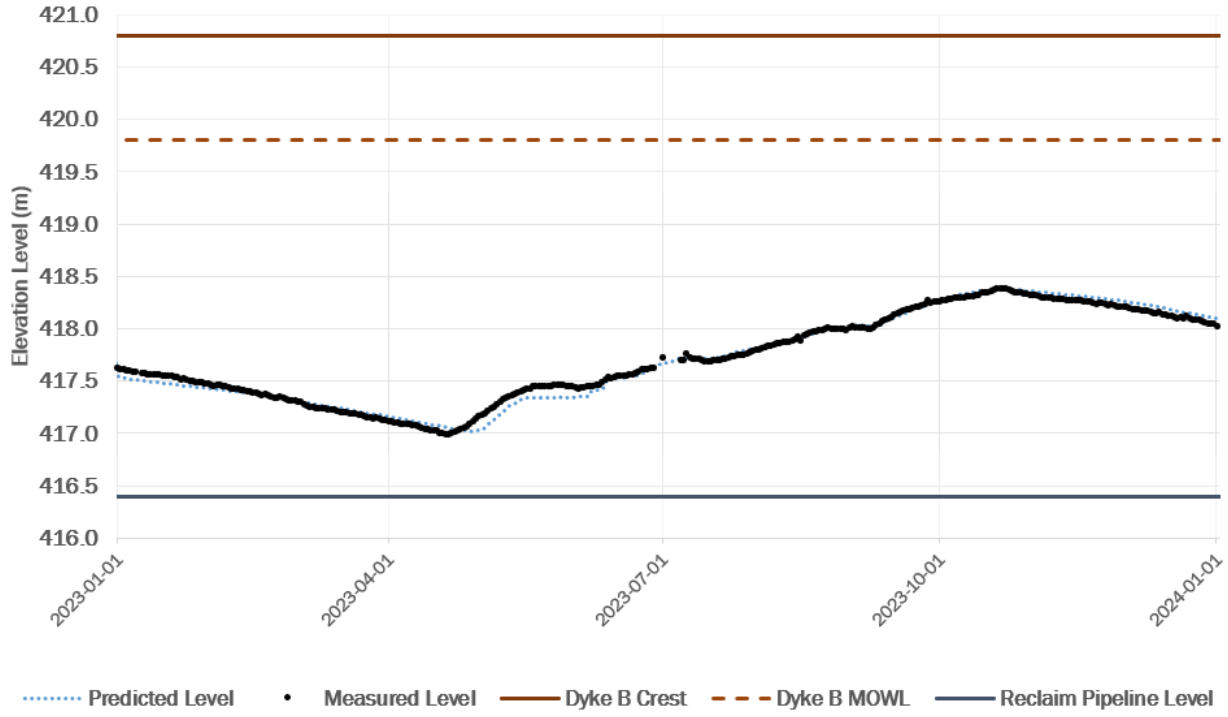
The projected elevations for various areas with time under the mean precipitation year condition is presented in Figure 7-1.

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 2023. Results from the model calibration exhibits a good agreement with the measured water levels in 2023. The calibration curve for the Water Management Pond is presented in Figure 7-2. Subsequent calibration of the model is anticipated in 2024 after completion of the water discharge and the spring freshet.

Figure 7-2 2023 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 2023.

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 2023, water from the Tuzo Open Pit was pumped directly to the CP1. 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 2023

Month	5034 Pit Volumes [m³]	Hearne Pit Volumes [m³]	Tuzo Pit Volumes [m³]
January	11,903	12,002	-
February	24,298	7,115	-
March	19,520	16,540	-
April	24,832	16,890	-
May	65,803	36,051	-
June	57,901	26,759	8,309
July	35,426	25,693	3,756
August	28,801	21,849	15,193
September	-	24,150	14,187
October	56,854	27,713	-
November	49,076	25,739	-
December	47,297	18,844	-
Total	**421,711**	**259,345**	**41,445**

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 2023 annual seepage survey was conducted in the

5034, Hearne and Tuzo pits on October 28, 2023. The 2023 Ground Water Seepage Survey was delayed until October as an operational necessity caused by impact to the workforce availability from forest fire evacuations. De Beers was forced to prioritize critical work to ensure compliance with the Water Licence and Land Use Permit requirements. The surveys of the 5034, Hearne, and Tuzo pits included a visual inspection for seepages on the pit walls.

- Observed 5034 Pit seepages in 2021 and 2022 decreased significantly in 2023, with minimal seepage observed; no flow measurement was possible in 5034 Pit in 2023.
- Visible seepages were observed in the Hearne Pit; however, no flow measurements could be obtained on the north wall of the Hearne pit but a measurement was obtained on the south side of the pit bottom.
- Minimal (unmeasurable) seepage was observed in Tuzo Pit, which is now in its third year of development; the small amount of seepage was attributed to ground water seeping through the diabase rock of the pit wall and floor.

The results are presented and discussed in 2023 Groundwater Seepage Survey Report (Appendix B).

No implications to site water management are anticipated based on the results within the 2023 Groundwater Seepage Survey Report. The variability between the predicted inflows and the observed inflows is within the range of inflows that the mine can manage.

Hearne Pit inflows may continue to exceed predicted inflows going forward, but the relative difference is not expected to increase. Overall, the groundwater component of the inflows is considered to be reasonably represented. The measured sump inflows in the winter (January to April) were 400 m^3/day, which is only 33% higher than the predicted groundwater inflows of 300 m^3/day. Winter inflows are considered to be most representative of the groundwater component, as surface water influences would be significantly less or negligible.

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 2023 was approximately 1,155 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 3,693 mg/L compared to the model projected value of 7,569 mg/L.

The average measured inflow quantity to the Hearne Pit sump from January to December 2023 was approximately 711 m^3/day compared to the sump quantity projected by the models of approximately 300 m^3/day. The average TDS quantity was approximately 2,880 mg/L compared the sump quality projected by the model of 2,841 mg/L.

The average measured inflow quantity to the Tuzo Pit sump from January to December 2023 was 114 m^3/day compared to the sump quantity projected by the models of approximately 1,583 m^3/day. The average TDS quantity was approximately 1,720 mg/L compared the sump quality projected by the model of 4,670 mg/L.

The 2020 Site Water Quality Model predicted pit sump inflows within reasonable bounds of acceptance at 5034 Pit (i.e., within 20%), as determined from sump pumping rates. However, the 2020 Site Water Quality Model underpredicted inflows to Hearne Pit and overpredicted inflows to Tuzo Pit. The Hearne Pit underprediction may reflect a difference in the mine plan from the mine plan used in the 2020 Site Water Quality Model. The Tuzo Pit overprediction may reflect model uncertainties associated with the early 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 pit depth assumed in the groundwater numerical model. 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 2023 where it only had noted flow rates for three months.

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 represented 79% of the modelled inflows, and measured TDS concentrations represented 49% of the modelled values.
- Measured inflows to the Hearne Pit sump were 136% greater than modelled inflows, and measured TDS concentrations approximately matched the modelled values.
- Measured inflows to the Tuzo Pit sump represented 7% of the modelled inflows, and measured TDS concentrations represented 37% of the modelled values.

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 2023 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 2023.

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 2023.

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 2023 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 2023 include:

- Downstream Flow Mitigation (Pumping of water from Lake N11 to Area 8 to supplement natural flow regime);
- Dyke construction;
- 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 2023 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, 2023

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
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

Area	Potential Source	Erosion Susceptibility 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 3, 2023
- July 6, 2023
- August 4, 2023
- September 03, 2023
- September 24, 2023

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 2023 Erosion and Sedimentation Report (Appendix F).

Table 9-2 Sediment and Erosion Assessment Survey Results, June to September 2023

Date	Location of Erosion/Sediment Survey	Erosion Present	Comments
3-Jun-23	N1	N	No erosion observed
3-Jun-23	N11	N	No erosion observed
3-Jun-23	Area 8	N	No erosion observed
3-Jun-23	Area 3	N	No erosion observed.
3-Jun-23	A1	N	No erosion observed
3-Jun-23	B1	N	No erosion observed
3-Jun-23	N14	N	No erosion observed
3-Jun-23	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
3-Jun-23	D2/D3	N	Minimal flow observed from D2/D3 into N14. No erosion observed
6-Jul-23	N1	N	No erosion observed
6-Jul-23	N11	N	No erosion observed
6-Jul-23	Area 8	N	No erosion observed
6-Jul-23	A1	N	No erosion observed
6-Jul-23	B1	N	No erosion observed
6-Jul-23	N14	N	No erosion observed
6-Jul-23	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
6-Jul-23	D2/D3	N	Minimal flow observed from D2/D3 into N14. No erosion observed

Date	Location of Erosion/Sediment Survey	Erosion Present	Comments
4-Aug-23	N1	N	No erosion observed
4-Aug-23	N11	N	No erosion observed
4-Aug-23	Area 8	N	No erosion observed
4-Aug-23	Area 3	N	No erosion observed
4-Aug-23	A1	N	No erosion observed
4-Aug-23	B1	N	No erosion observed
4-Aug-23	N14	N	No erosion observed
4-Aug-23	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
4-Aug-23	D2/D3	N	No flow observed from D2/D3 into N14. Water observed but it was stagnant. No erosion observed
3-Sep-23	N1	N	No erosion observed
3-Sep-23	N11	N	No erosion observed
3-Sep-23	Area 8	N	No erosion observed
3-Sep-23	Area 3	N	No erosion observed
3-Sep-23	A1	N	No erosion observed
3-Sep-23	B1	N	No erosion observed
3-Sep-23	N14	N	No erosion observed
3-Sep-23	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
3-Sep-23	D2/D3	N	No flow observed from D2/D3 into N14. Water observed but it was stagnant. No erosion observed
24-Sep-23	N1	N	No erosion observed
24-Sep-23	N11	N	No erosion observed
24-Sep-23	Area 8	N	No erosion observed
24-Sep-23	Area 3	N	No erosion observed
24-Sep-23	A1	N	No erosion observed
24-Sep-23	B1	N	No erosion observed
24-Sep-23	N14	N	No erosion observed
24-Sep-23	E1	N	Engineered spillway functioning correctly between E1 and N14. No erosion observed
24-Sep-23	D2/D3	N	No flow observed from D2/D3 into N14. Water observed by it 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 five aerial surveys conducted in 2023. 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 2023 were actively managed.

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

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 2023 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, 2023

Note: 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 2023.

10.1.1 Spill Reporting Involving Explosives

There were no spills involving explosives for 2023.

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 2023, 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 2023 program was in effect from May 5th to July 13th 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 2023. 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 1816 individual observations of birds were witnessed at the Mine during the visual surveillance component of the program. These consisted of roughly 30 different species, with the most common species observed being Common Raven, followed by Bank Swallow and then American Pipit. Bird monitors were deployed throughout the nesting period, and would periodically use bear bangers and maintain passive deterrents to deter raptors from spending continual time within the pit area.

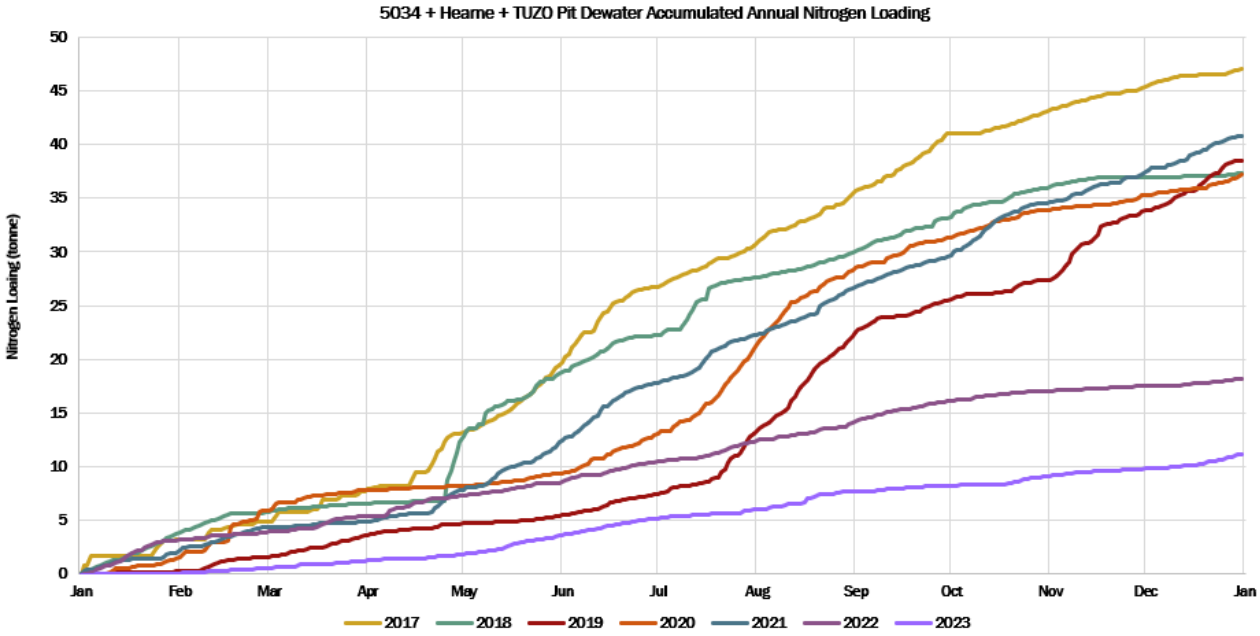
10.2 Updates on the success of management measures undertaken to reduce nitrate loadings to the Water Management Pond (Schedule 1, Part B, Item 10, 1.i) ii.)

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 2023, 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 2017 to 2023. The end-of-year cumulative nitrogen loading from pit dewatering was approximately between a maximum of 47.1 tonnes (2017) and minimum of 37.3 tonnes (2020) from 2017 through 2021. In 2022, the nitrogen loading was reduced to 18.2 tonnes and further reduced to 11.3 tonnes in 2023. The decrease of nitrogen loading in 2022 and 2023 is likely due to the application of the new emulsion product with an improved blast efficiency. Additionally, in comparison to 2020 and 2021, 2022 and 2023 were dryer precipitation years with less surface runoff flushing. The nitrogen loading into the Water Management Pond and CP will continue to be monitored in 2024.

Figure 10-2 Accumulative Nitrogen Loading from Pit Dewatering in 2018 to 2023



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)

WSP 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 2023 was prepared as a technical report and is provided as Appendix C (De Beers, 2022b).

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, 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 2023, fault areas within the Tuzo Pit that have been identified as containing PAG material are shown in Figure 11-1 to Figure 11-7, broken out by bench. Areas that have been identified in 5034 as containing PAG material are shown in Figure 11-8 to Figure 11-10 broken out by bench. Areas that have been identified in Hearne Pit as containing PAG material are shown in Figure 11-11 to Figure 11-12, broken out by bench.

Figure 11-1 Figure 2023 PAG Sample Locations in Tuzo Pit, 313 Bench

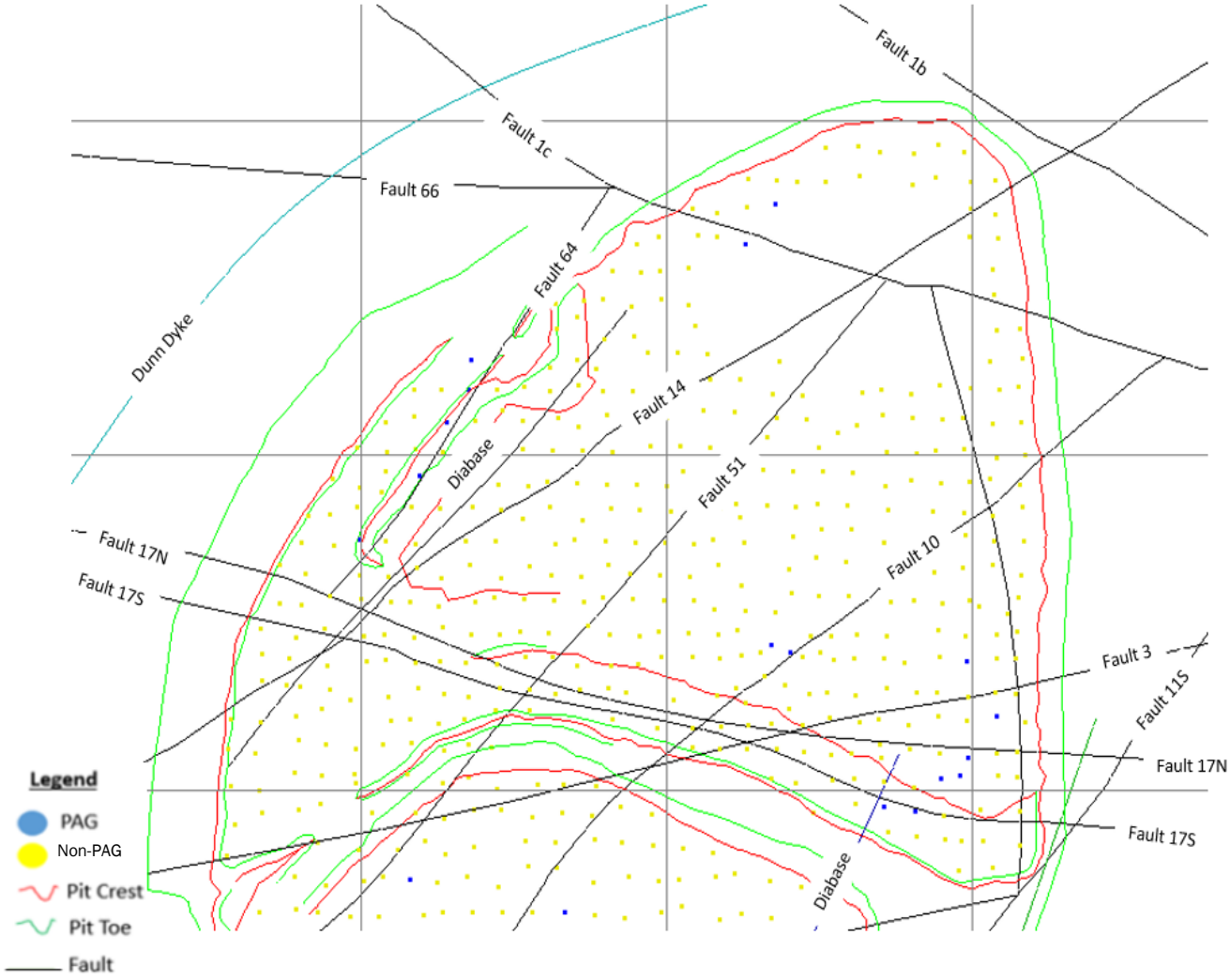


Figure 11-2 2023 PAG Sample Locations in Tuzo Pit, 327 Bench

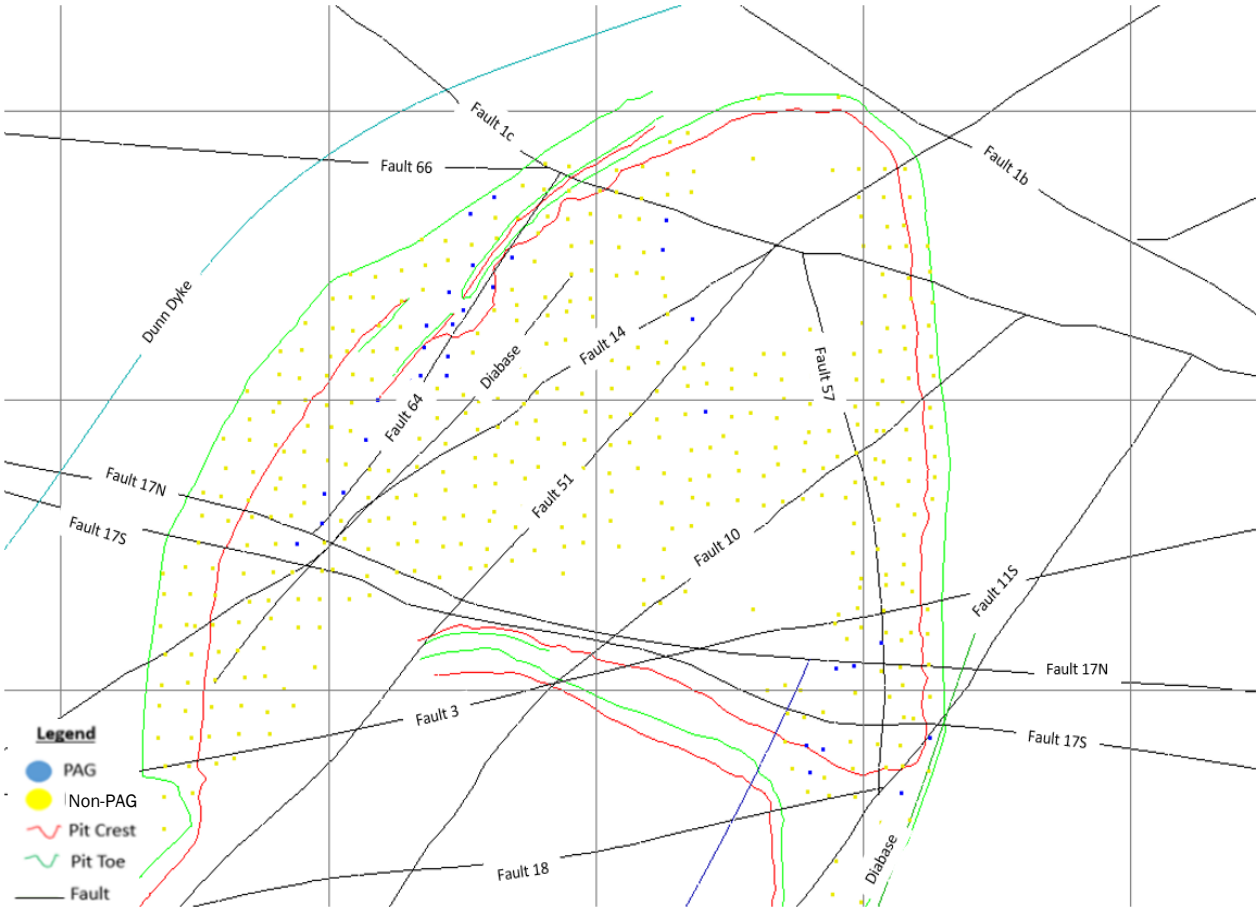


Figure 11-3 2023 PAG Sample Locations in Tuzo Pit, 341 Bench

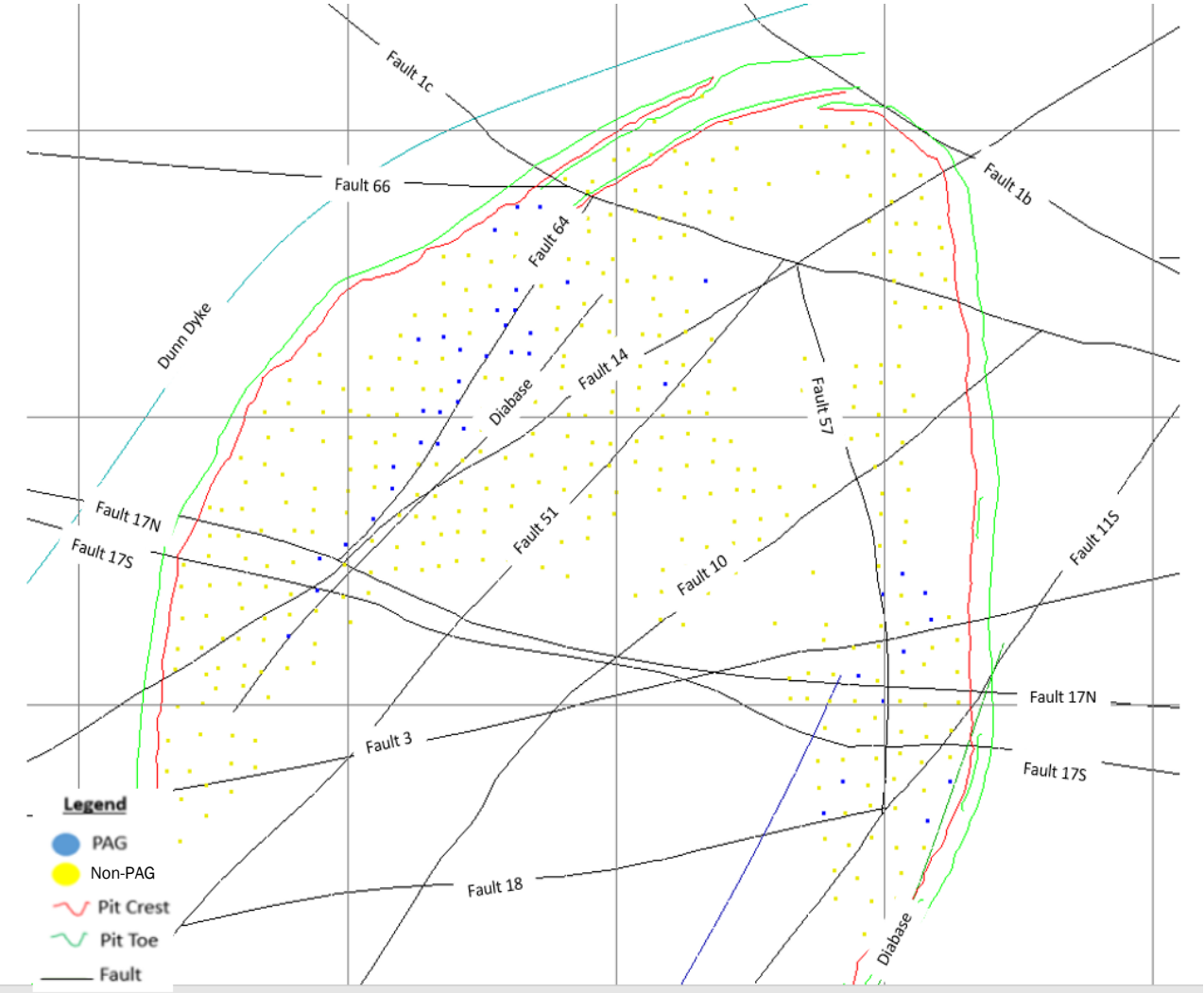


Figure 11-4 2023 PAG Sample Locations in Tuzo Pit, 355 Bench

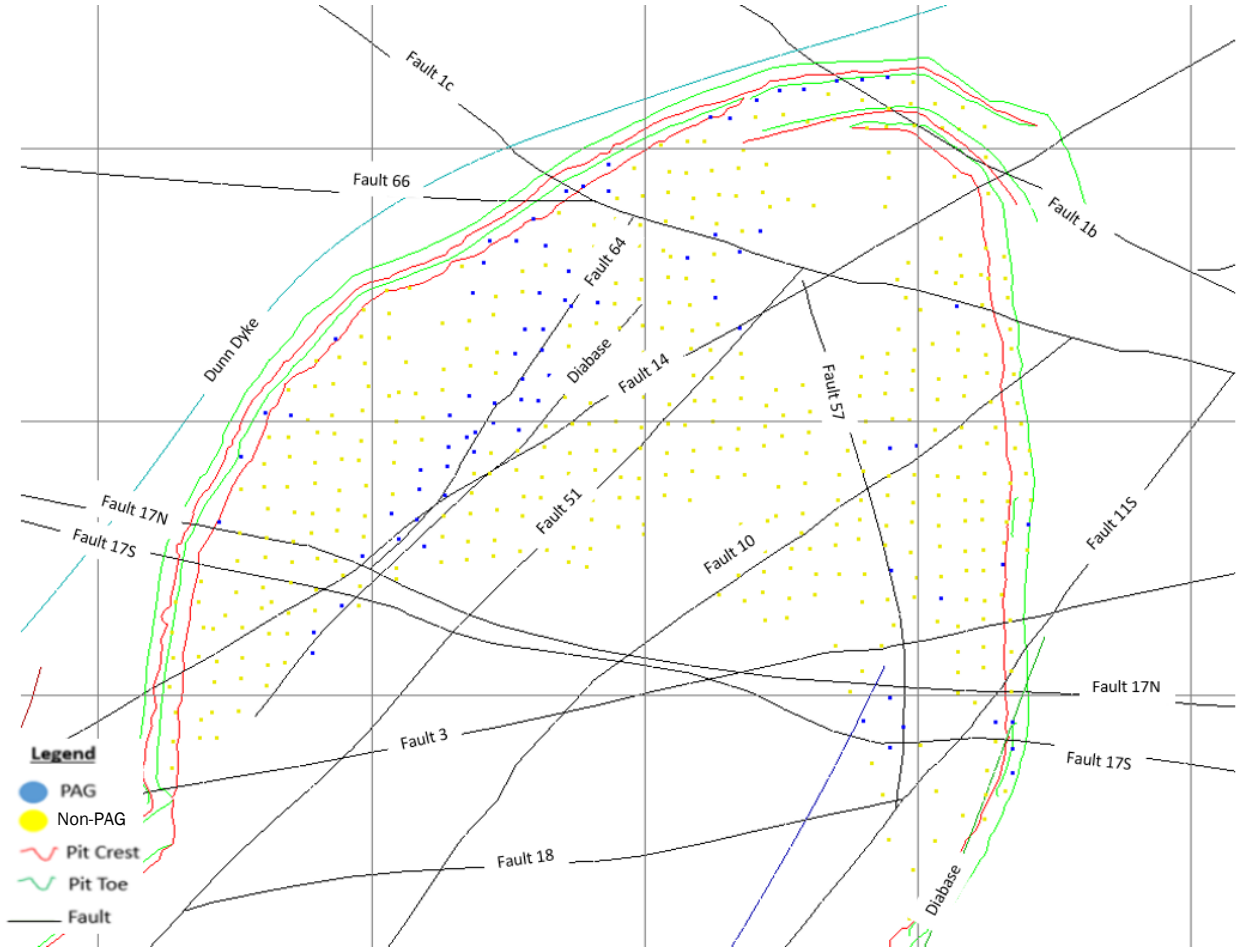


Figure 11-5 2023 PAG Sample Locations in Tuzo Pit, 369 Bench

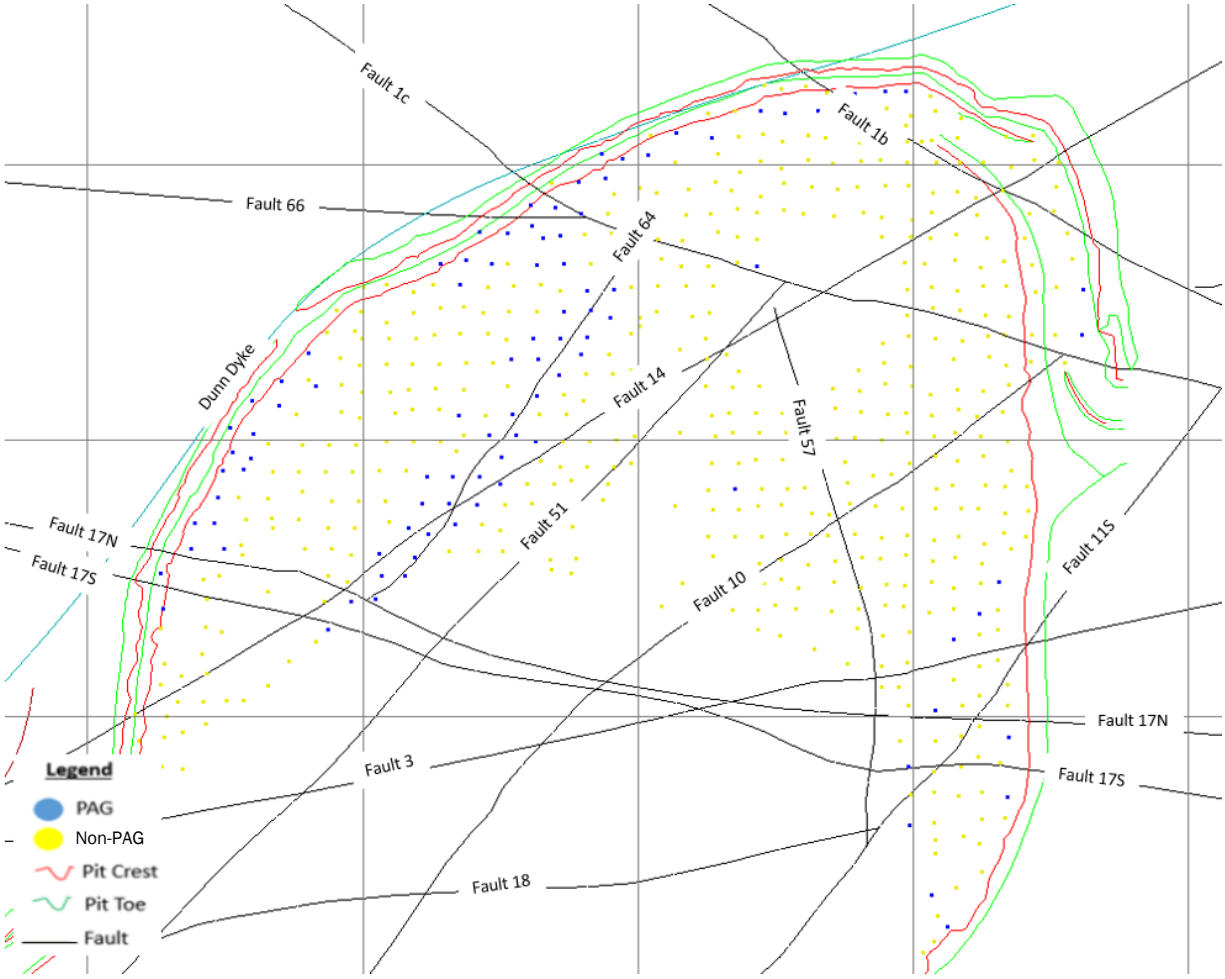


Figure 11-6 2023 PAG Sample Locations in Tuzo Pit, 383 Bench

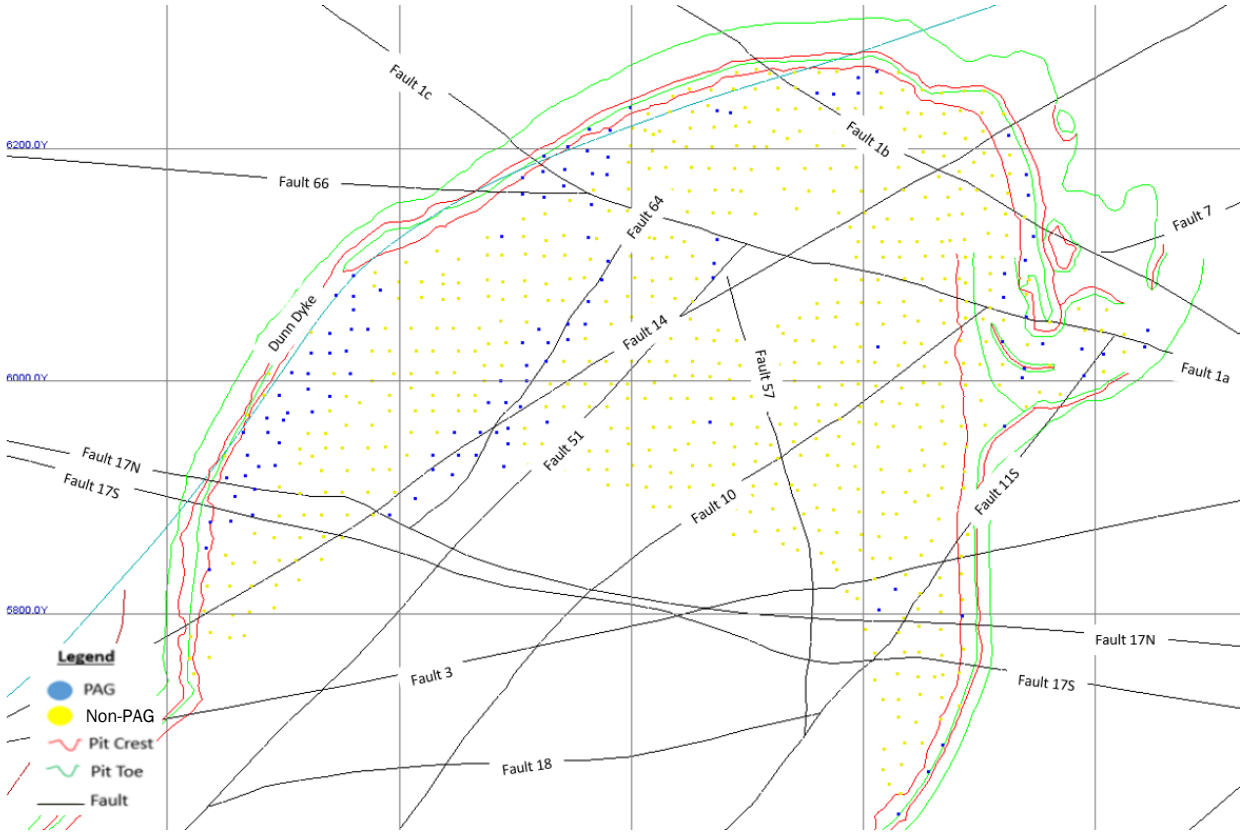


Figure 11-7 2023 PAG Sample Locations in Tuzp Pit, 397 Bench

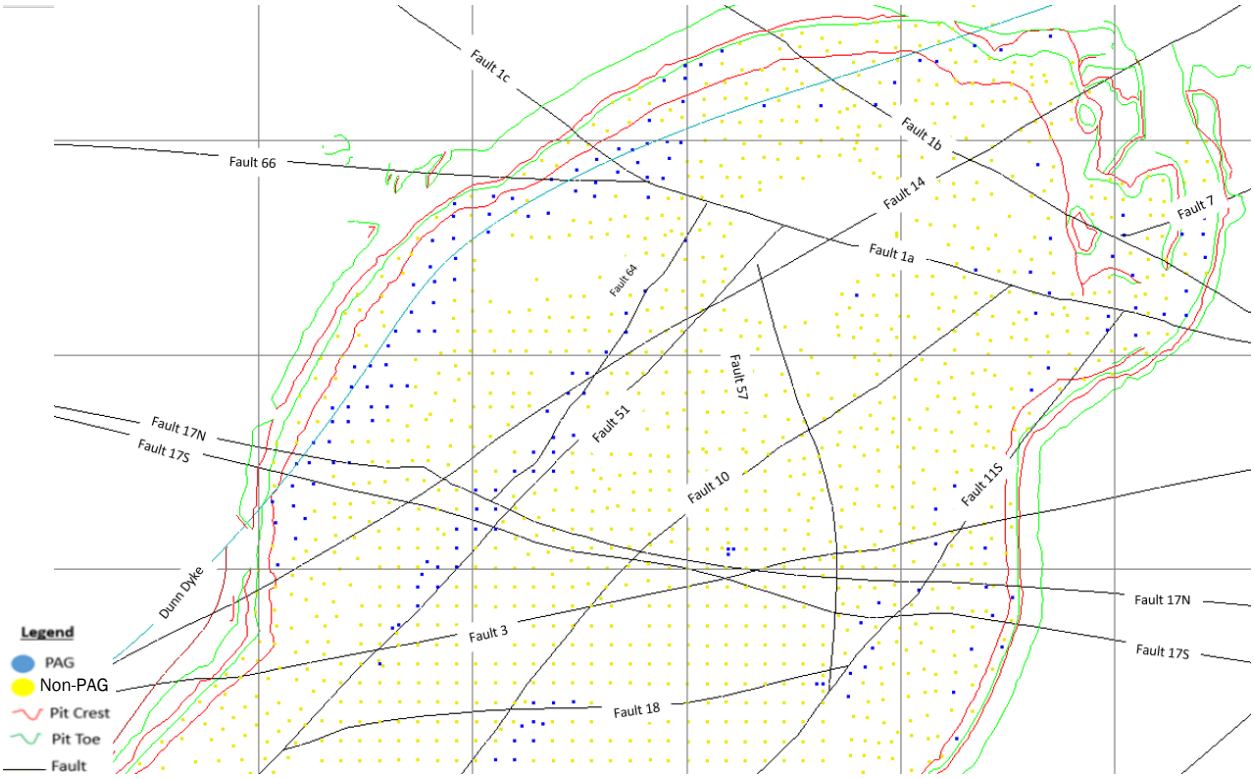


Figure 11-8 2023 PAG Sample Locations in 5034 Pit, 201 Bench

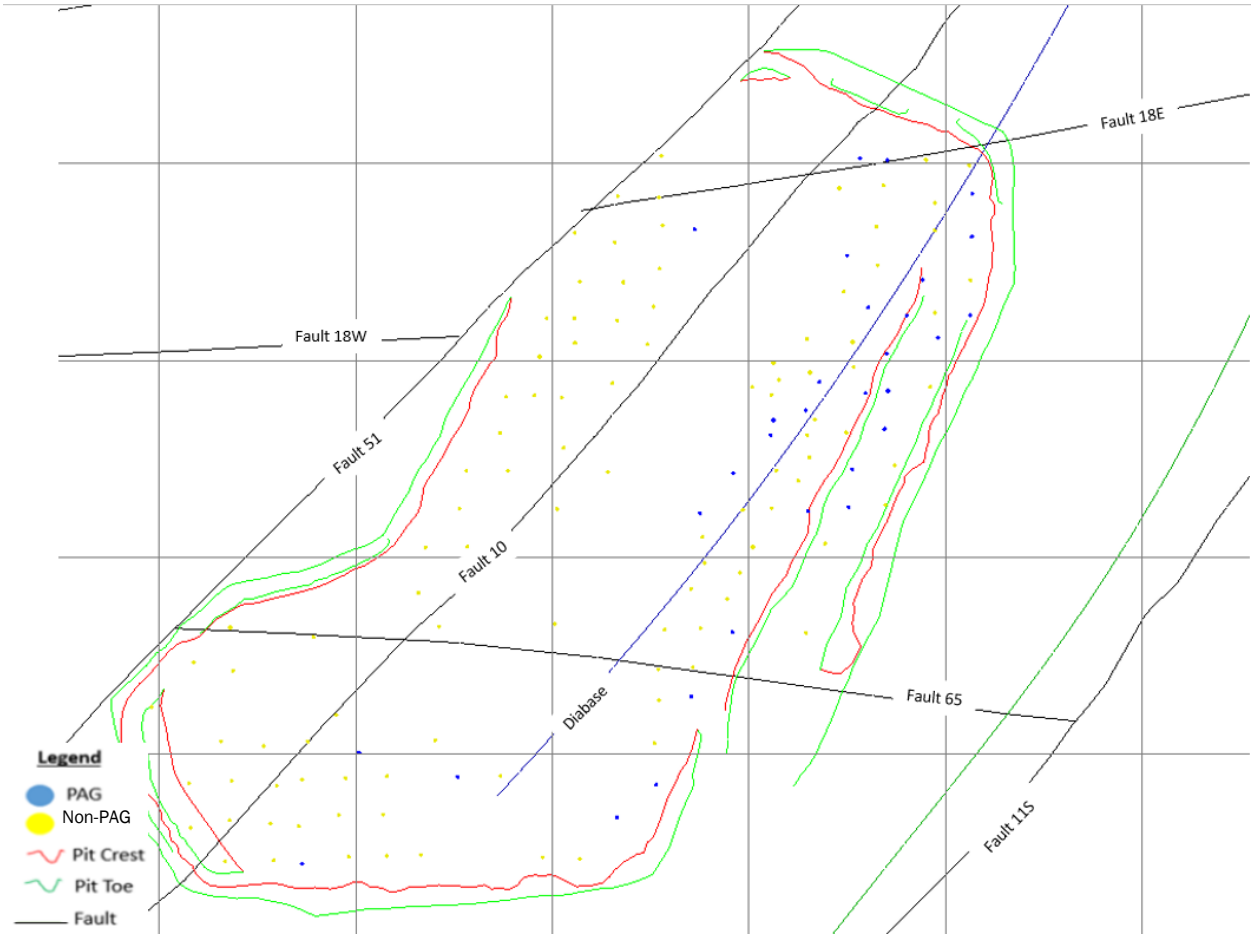


Figure 11-9 2023 PAG Sample Locations in 5034 Pit, 187 Bench

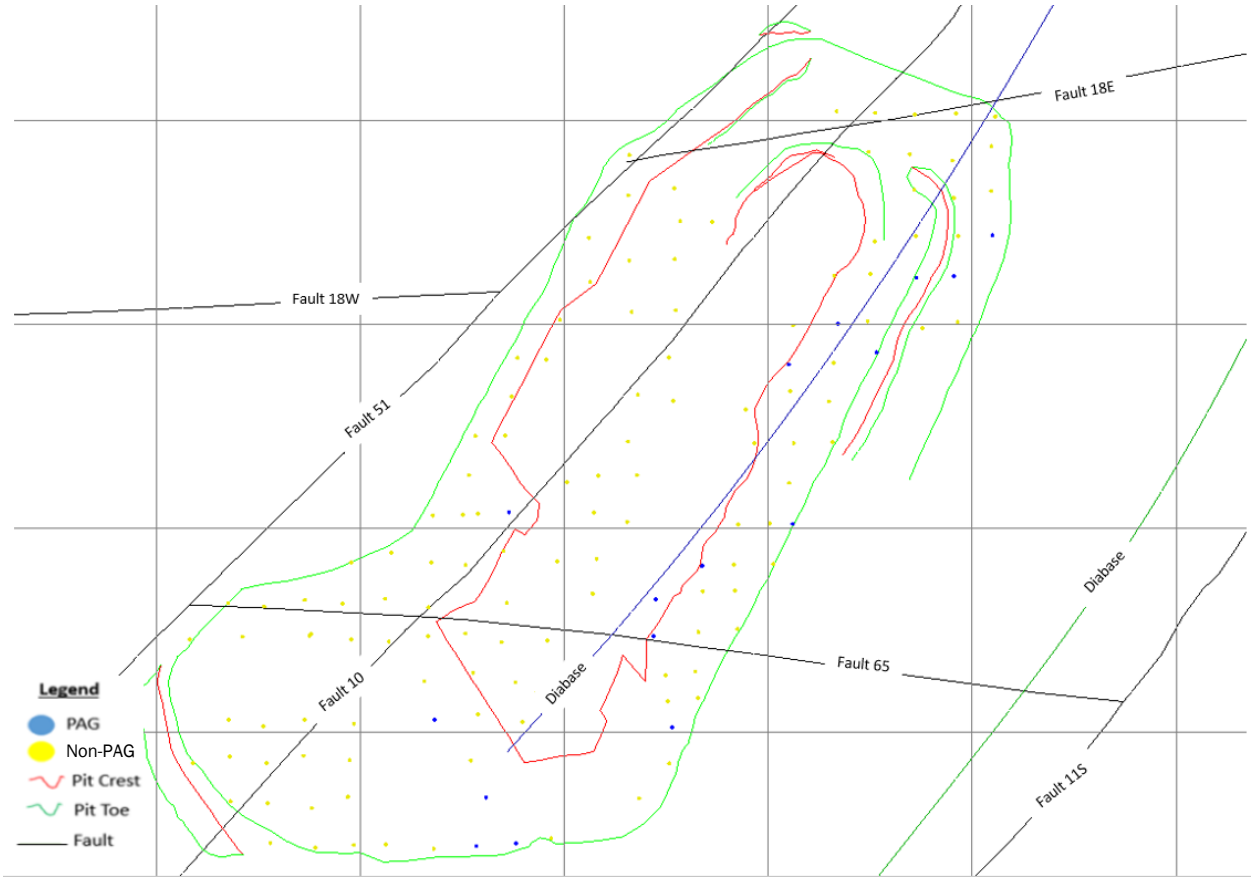


Figure 11-10 2023 PAG Sample Locations in 5034 Pit, 1737 Bench

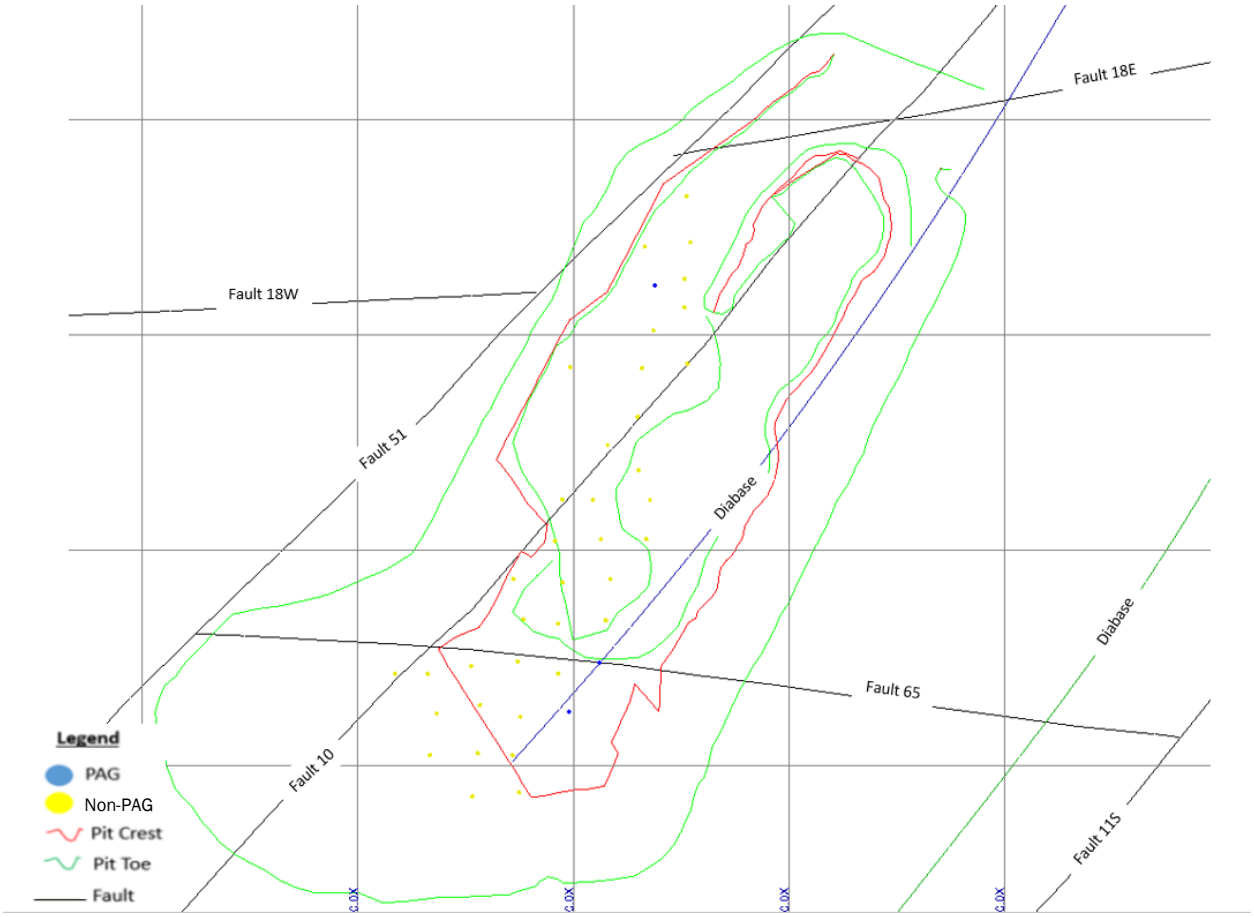


Figure 11-11 2023 PAG Sample Locations in Hearne Pit, 2573 Bench

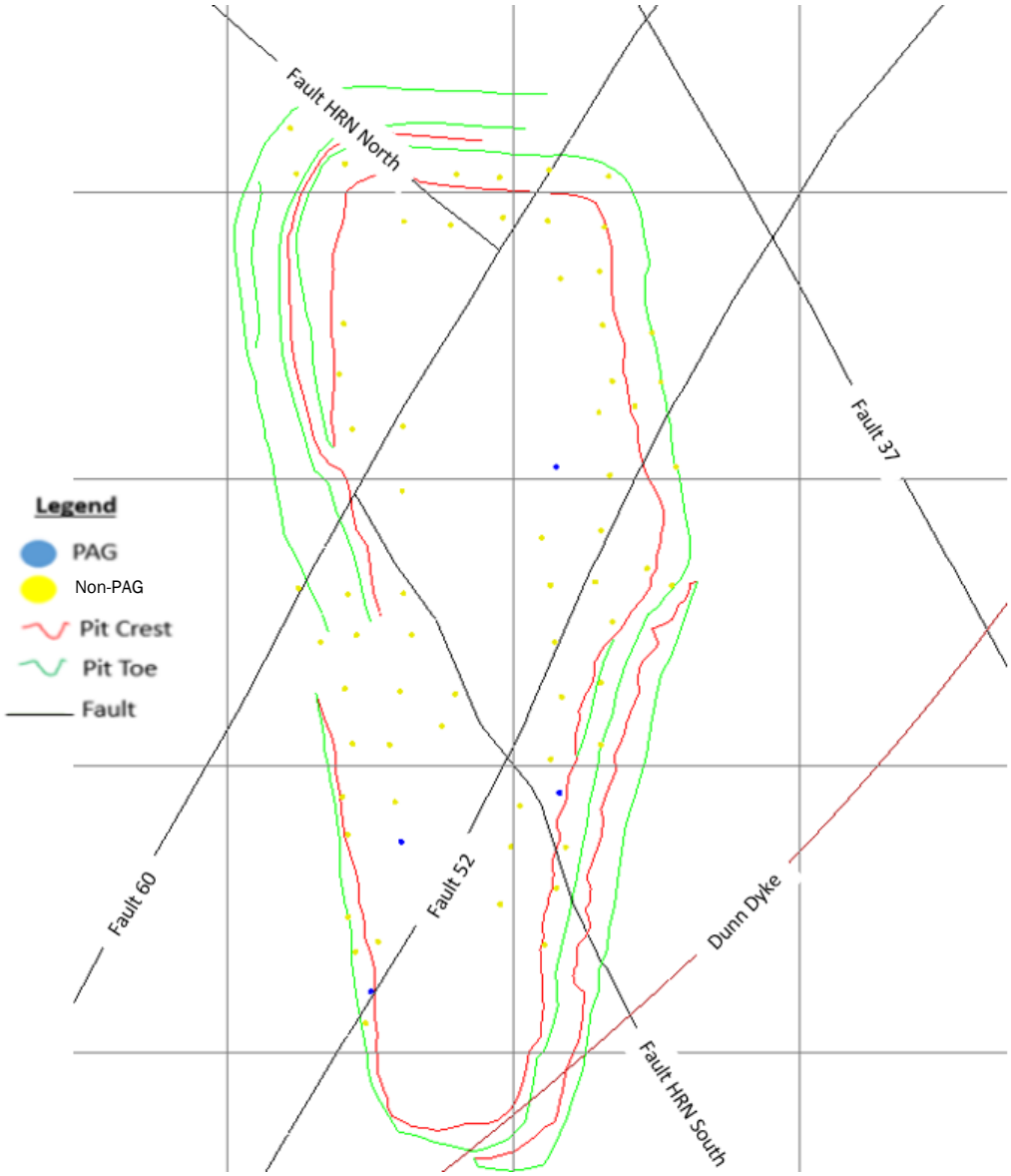
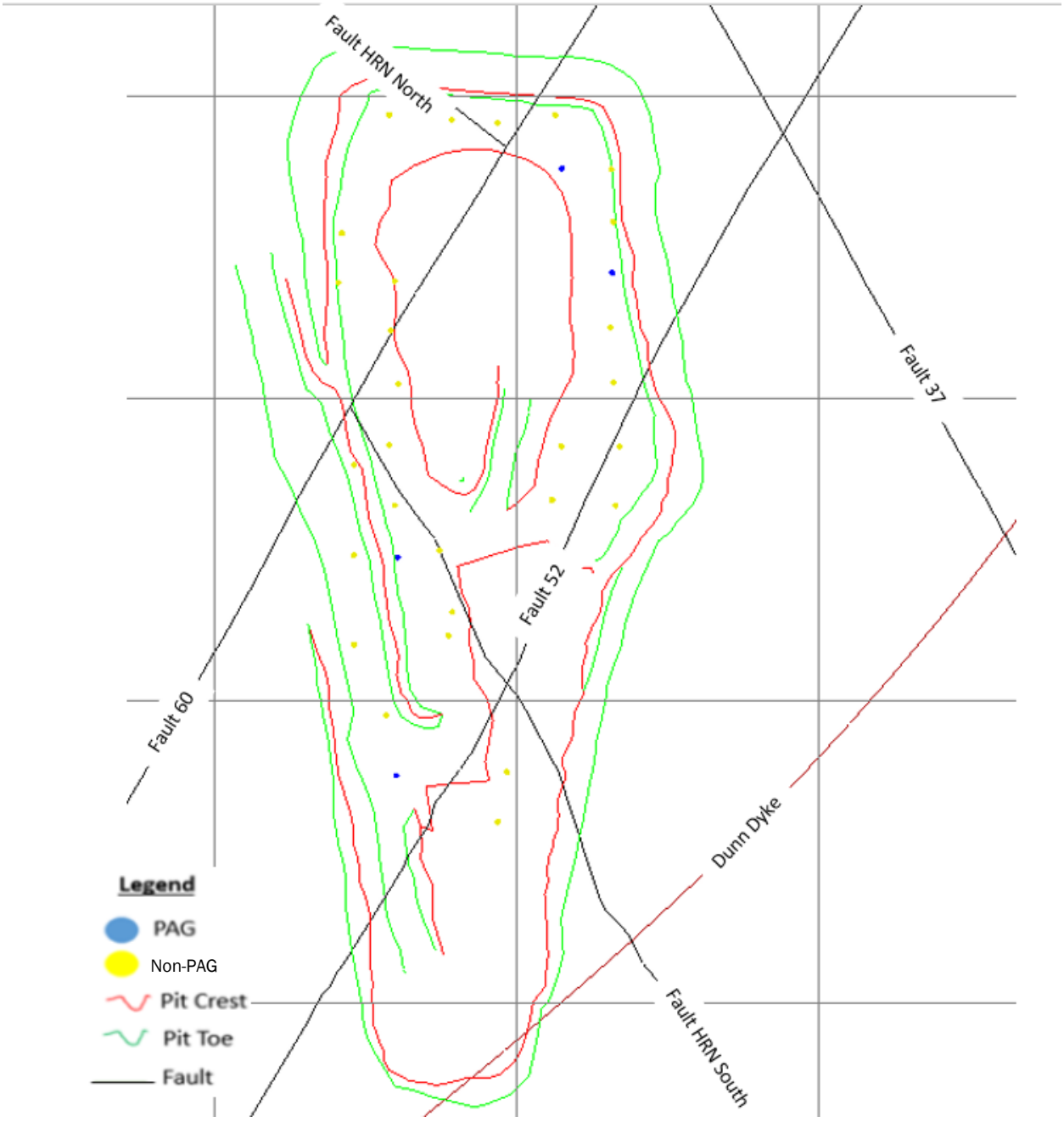


Figure 11-12 2023 PAG Sample Locations in Hearne Pit, 243 Bench



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 2023 is provided in Table 11-1 below. Table 11-1 summarizes the waste rock sample results by month. Results showed that approximately 10% of the 2023 samples had total sulphur greater than or equal to 0.1 percent by weight and were therefore classified as PAG. The first half of 2023 saw similar proportions of PAG materials as observed in 2022, due to a greater abundance of diabase and mixed granite diabase comprising the mine rock generated from mining zones. However, the later half of 2023 saw a decrease in the amount of generated diabase and mixed granite diabase mine rock from mining zones which resulted in similar proportions of PAG samples observed before 2022.

Table 11-1 Summary of PAG Sampling Conducted at Gahcho Kué in 2023 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		2,199	391	17.8
Operational Monitoring – 2023 (Total)		2,202	224	10.2
Operational Monitoring – January 2023		156	23	15
Operational Monitoring – February 2023		161	25	16
Operational Monitoring – March 2023		218	46	21
Operational Monitoring – April 2023		169	20	12
Operational Monitoring – May 2023		144	24	17
Operational Monitoring – June 2023		171	23	13
Operational Monitoring – July 2023		187	17	9.1
Operational Monitoring – August 2023		218	19	8.7
Operational Monitoring – September 2023		226	7	3.1
Operational Monitoring – October 2023		183	10	5.5
Operational Monitoring – November 2023		189	10	5.3
Operational Monitoring – December 2023		180	0	0
Total number of Operational Monitoring Samples		**20,757**	**1,790**	**8.6**

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 2023.
n = number of samples; ≥ = greater than or equal to.

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. ABA results and net acid generation test results are provided in Appendix C.

Table 11-2 Summary of ABA Results and Net Acid Generation pH for 2023 Supplemental Samples

Lithology	Statistic	Paste pH	Total S	CO_2	AP	NP	CaNP	NPR	Net Acid Generation pH
		pH Units	wt%	wt%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO^3$/t	-	pH Units
All (n=45)	Min	8.3	0.02	0.08	0.6	7.0	1.8	2.8	6.6
	Max	10	0.14	0.97	4.4	347	22	578	10.0
	Mean	9.5	0.033	0.22	0.93	61	5.0	66	7.7
	Median	9.7	0.02	0.08	0.6	14	1.8	21	7.2
	St. Dev.	0.51	0.025	0.27	0.78	106	6.2	154	1.1
CPK (n=5)	Min	8.4	0.03	0.46	0.6	80	11	62	9.0
	Max	9.1	0.05	0.57	1.3	347	13	578	10.0
	Mean	8.8	0.034	0.51	0.74	276	12	373	9.6
	Median	9.0	0.03	0.52	0.6	317	12	528	9.7
	St. Dev.	0.3	0.008	0.04	0.28	99	0.9	193	0.34
FPK (n=5)	Min	8.3	0.05	0.83	0.9	88	19	68	9.4
	Max	8.9	0.08	0.97	2.2	337	22	348	9.6
	Mean	8.5	0.056	0.88	1.3	183	20	139	9.5
	Median	8.3	0.05	0.89	1.3	89	20	99	9.6
	St. Dev.	0.26	0.012	0.052	0.47	116	1.2	105	0.095

Lithology	Statistic	Paste pH	Total S	CO_2	AP	NP	CaNP	NPR	Net Acid Generation pH
		pH Units	wt%	wt%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO^3$/t	-	pH Units
Granite (n=35)	Min	9.1	0.02	0.08	0.6	7.0	1.8	2.8	6.6
	Max	10	0.14	0.15	4.4	21	3.4	30	8.0
	Mean	9.7	0.029	0.083	0.9	13	1.9	14	7.1
	Median	9.8	0.02	0.08	0.6	12	1.8	17	7.0
	St. Dev.	0.22	0.027	0.012	0.85	3.3	0.27	6.1	0.3

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

Table 11-3 Summary of Acid Generation Potential for 2023 Supplemental Samples

Parameter	CPK	FPK	Granite	All
Count of Samples	5	5	35	45
# Samples PAG	0	0	0	0
# Samples Non-AG	5	5	35	45
% 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. According to the NPR and net acid generation pH data, mine rock samples 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 C) and fall within or near the expected range of values based on the EIS data and supplemental sampling data from previous years (Figure 11-13 and Figure 11-14).

Figure 11-13 Acid Potential vs. Neutralization Potential (including all Mine Rock samples from EIS through to 2023)

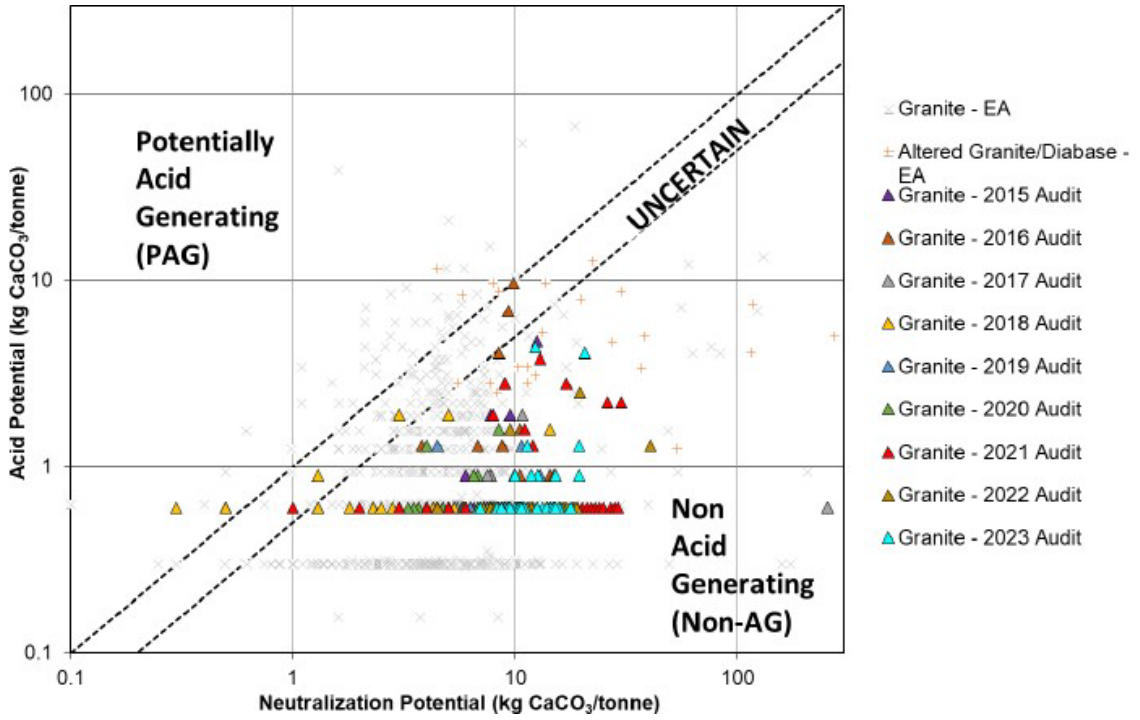
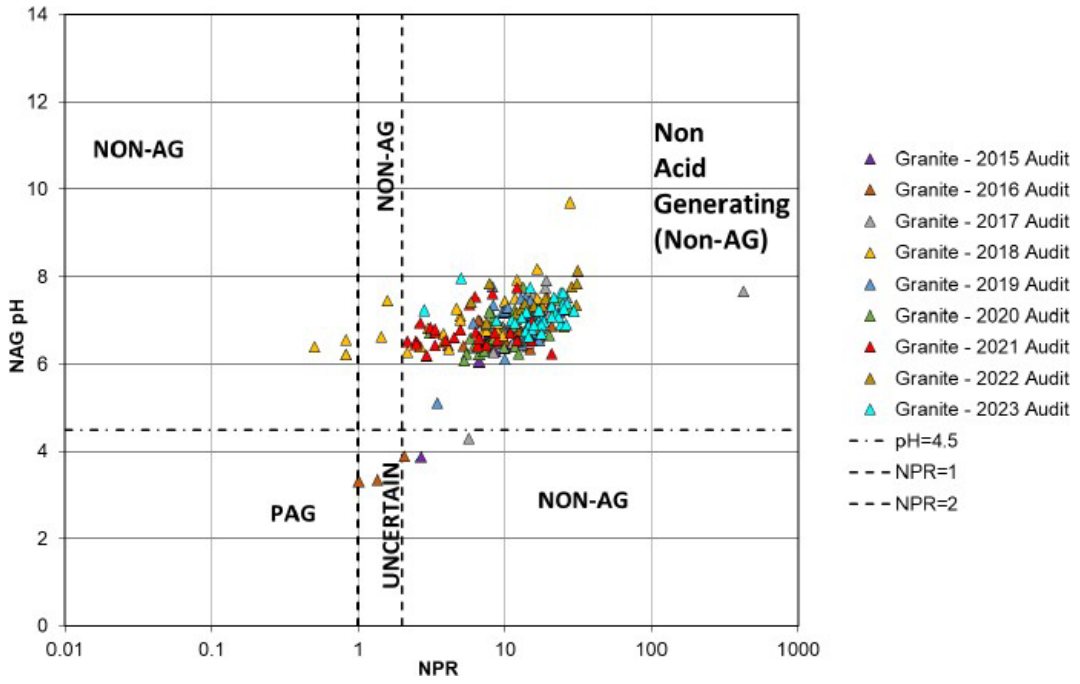


Figure 11-14 Net acid generation pH vs. Neutralization Potential Ratio (including all Mine Rock samples from 2015 through 2023)



Based on a review of the supplemental mine rock sample data, none of the kimberlite samples collected in 2023 are considered to have potential to generate acidity. According to the NPR, Carbonate NPR, and Net acid generation pH data, kimberlite samples 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 C) and fall within the range of values expected based on the EIS data and supplemental sampling data from previous years (Figure 11-15 and Figure 11-16).

Figure 11-15 Acid Potential vs. Neutralization Potential (including all Kimberlite, FPK and CPK samples from EIS through to 2023)

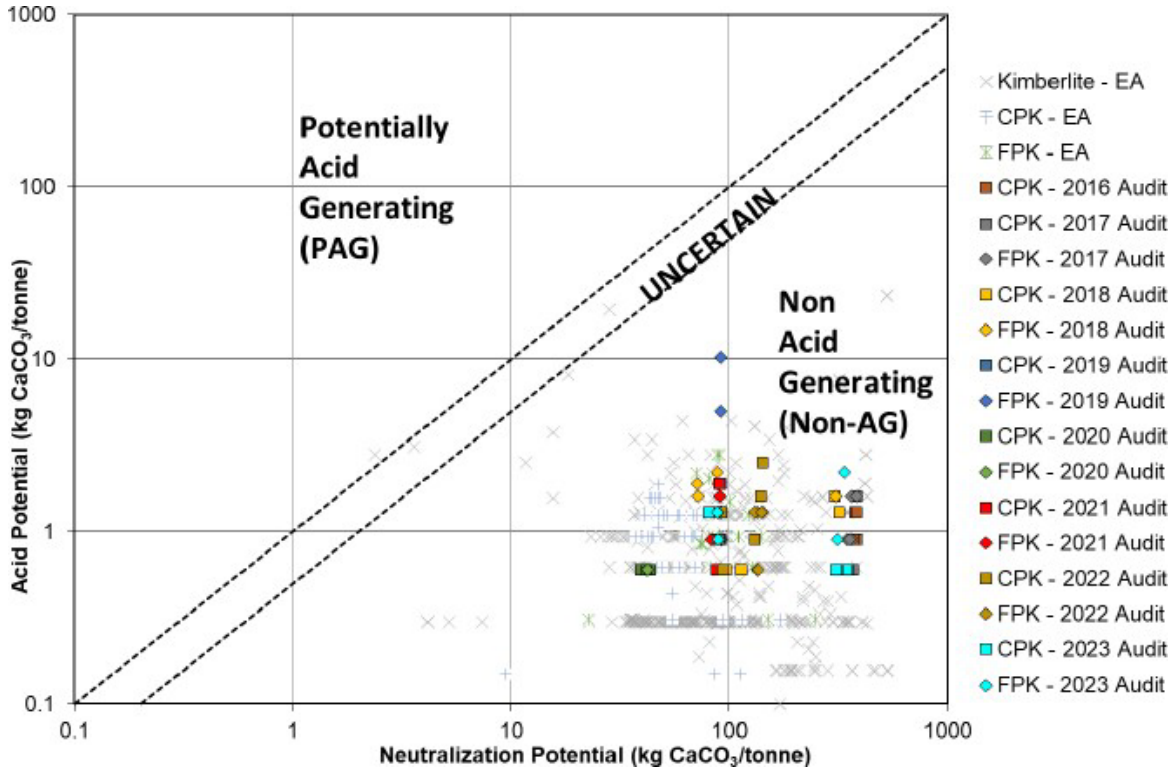
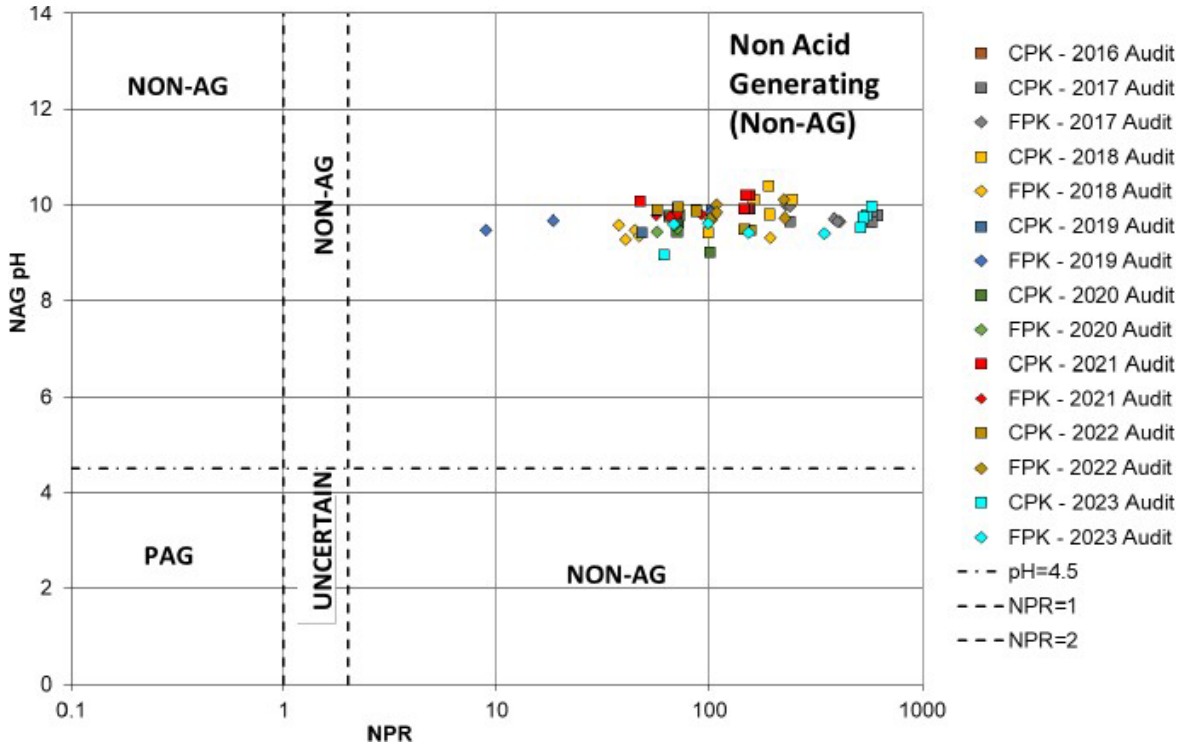


Figure 11-16 Net acid generation pH vs. Neutralization Potential Ratio (including all Kimberlite, FPK and CPK samples from 2016 through to 2023)



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 2023.

One seepage sample was collected from SNP-16 during the spring sampling event. Seepage from SNP-16 flows out of Dyke D at the Fine PKC Facility. The results show that the pH value for the spring seepage sample remains above 6, with a near-neutral laboratory pH value of 8.2, and all measured parameters are consistent with concentrations measured in past years at SNP-16.

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.

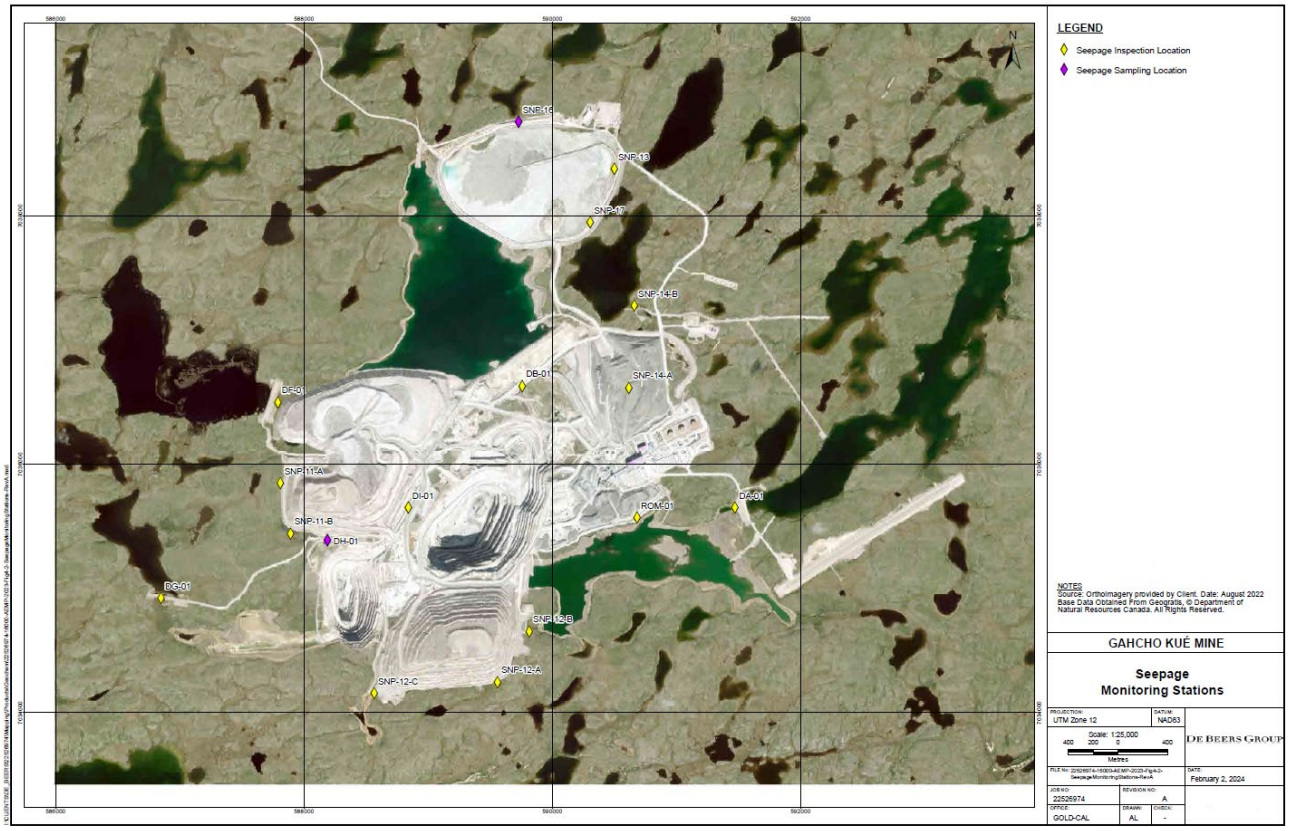
11.3 Overview analysis of major trends, site plans indicating the locations of seepage, and summary of recommendations for future seepage monitoring or management actions (Schedule 1, Part B, Item 10, 1.j.iii)

A site plan showing the locations of the seepage and runoff monitoring sampling locations visited during the 2023 geochemical audit is provided in Figure 11-17. Long-term trends remain to be developed as additional data is collected.

The seepage and runoff survey testing include samples were collected when flowing seepage water was available from up to two sampling events (spring and fall) in 2023. In 2023, One seepage sample was collected from SNP-16 during the spring sampling event. Seepage from SNP- 16 flows out of Dyke D at the Fine PKC Facility. The results show that the pH value for the spring seepage sample remains above 6, with a near-neutral laboratory pH value of 8.2, and all measured parameters are consistent with concentrations measured in past years at SNP-16.

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.

Figure 11-17 Site Seepage and Runoff Sample Locations, 2023



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 2023 survey is 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 2023 Field Cell leachate testing is presented in Appendix C.

A comprehensive analysis of 2019 through 2023 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 2023 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 in the first half of 2023 due to additional diabase rock containing slightly more sulphide and NP but return to historically observed results in the latter half of 2023, with approximately 10% of rock classified as PAG for the entire year based on a total sulphur cutoff of 0.1wt.%. Materials classified as PAG continued to be segregated during operations following the Geochemical Characterization and Management Plan.

Net-acid generation 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. A comment regarding SFE, net-acid generation leachate and mineralogy results compared to previous years will be provided when analytical results are received.

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 2023 are presented in Table 11-4 and Appendix C.

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 2023 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 2023

Objective	Action Level	Status in 2023
To prevent the formation of acid rock drainage	Bi-annual inspection notes that granite with visible staining is observed on rock used to construct site facilities.	No visible staining observed on rock used to construct site facilities. Confirmation samples collected; all samples are non-PAG.
	Bi-annual inspection notes that granite containing visible sulphide minerals is observed in rock used to construct roads, building foundations, the airstrip or filter dykes.	No visible sulphide minerals were observed in rock used to construct roads, building foundations, the airstrip or filter dykes. Confirmation samples collected; all samples are non-PAG.
	Confirmation sample contains greater than or equal to 0.1% sulphide sulphur.	Two confirmation samples from the spring sampling event contain greater than or equal to 0.1% sulphide sulphur: one collected from the Tank Farm (GK-BGAR-TF-04) and one from the designated Type 3 area of the WMRP (GK- BGAR-WMRP3-08). Both samples are non-PAG based on NPR and net acid generation pH values.
	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 January to August contain at least 0.1% total sulphur. Overall, 10% of 2023 samples have greater than or equal to 0.1% total sulphur, however the represented material also contains more diabase with greater buffering capacity.

Objective	Action Level	Status in 2023
Minimize the potential for discharge of acidic drainage or seepage that could cause a significant environmental effect	Volume and location of visible seepage is different than previously observed conditions	Seepage was minimal due to the drought-like conditions experienced in 2023.
	Seepage is turbid (i.e., not clear)	Spring sample (SNP-16) was not turbid.
	pH below 5 or greater than 9 in one seepage monitoring sample	The pH result at SNP-16 was between 5 and 9.
	Concentration measured outside normal range, or divergence in trends relative to water quality predictions in one seepage monitoring sample	The seepage sample collected at Dyke D in spring 2023 falls within the concentration ranges historically observed at this seepage monitoring station.

non-AG = non-acid generating; NPR = Neutralization Potential Ratio; WMRP = West Mine Rock Pile; PAG = potentially acid generating.

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 2023 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 2023.

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, Table 12-2, and Table 12-3.

In 2023, 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-acid generating 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.

Figure 12-1 details the GK Mine 2023 year end site map. PAG rock was only deposited in the West Mine Rock Pile in 2023. Figure 12-2, Figure 12-3, and Figure 12-4 show the perimeter of the PAG placement at various levels of the West Mine Rock Pile. Please note, non-acid generating 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 2023

	Units	23-Jan	23-Feb	23-Mar	23-Apr	23-May	23-Jun	23-Jul	23-Aug	23-Sep	23-Oct	23-Nov	23-Dec	2023 TOTAL
PAG	m3	8,392	7,147	0	19,578	7,422	7,067	0	52,747	0	0	7,660	35,672	145,684
	T	22,156	18,868	0	51,686	19,594	18,656	0	139,252	0	0	20,223	94,173	384,607
Non-PAG	m3	203,796	86,066	2,562	82,842	117,783	105,987	14,268	120,033	13,239	0	39,775	18,881	805,231
	T	538,022	227,214	6,763	218,703	310,947	279,807	37,668	316,886	34,951	0	105,006	49,845	2,125,811
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	212,188	93,213	2,562	102,420	125,205	113,054	14,268	172,779	13,239	0	47,435	54,552	950,916
	T	560,177	246,082	6,763	270,388	330,541	298,463	37,668	456,138	34,951	0	125,228	144,019	2,510,418

Table 12-2 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden Excavated from Hearne Pit at Gahcho Kué in 2023

	Units	23-Jan	23-Feb	23-Mar	23-Apr	23-May	23-Jun	23-Jul	23-Aug	23-Sep	23-Oct	23-Nov	23-Dec	2023 TOTAL
PAG	m3	0	0	0	0	0	4,970	0	0	0	4,365	5,788	3,944	19,066
	T	0	0	0	0	0	13,120	0	0	0	11,523	15,281	10,411	50,335
Non-PAG	m3	0	5,748	20,189	0	0	33,971	14,048	17,454	13,592	52,672	40,987	33,425	232,086
	T	0	15,176	53,298	0	0	89,683	37,088	46,079	35,882	139,053	108,205	88,242	612,706
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	0	5,748	20,189	0	0	38,941	14,048	17,454	13,592	57,036	46,775	37,369	251,152
	T	0	15,176	53,298	0	0	102,803	37,088	46,079	35,882	150,576	123,486	98,653	663,042

Table 12-3 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden Excavated from Tuzo Pit at Gahcho Kué in 2023

	Units	23-Jan	23-Feb	23-Mar	23-Apr	23-May	23-Jun	23-Jul	23-Aug	23-Sep	23-Oct	23-Nov	23-Dec	2023 TOTAL
PAG	m3	161,971	187,654	234,514	203,524	129,269	315,724	49,062	121,510	29,820	200,264	30,159	82,125	1,745,596
	T	427,604	495,406	619,117	537,304	341,271	833,511	129,523	320,787	78,724	528,697	79,621	216,809	4,608,372
Non-PAG	m3	837,133	666,543	800,668	695,340	764,701	784,350	848,101	840,376	993,839	986,952	867,057	594,215	9,679,276
	T	2,210,031	1,759,673	2,113,764	1,835,699	2,018,812	2,070,683	2,238,987	2,218,592	2,623,736	2,605,554	2,289,031	1,568,727	25,553,289
Overburden	m3	0	0	0	0	0	0	0	0	0	2,279	0	0	2,279
	T	0	0	0	0	0	0	0	0	0	5,128	0	0	5,128
Total	m^3	999,104	854,196	1,035,182	898,865	893,971	1,100,073	897,163	961,886	1,023,659	1,189,495	897,217	676,340	11,427,150
	T	2,637,635	2,255,078	2,732,880	2,373,003	2,360,082	2,904,194	2,368,509	2,539,379	2,702,460	3,139,378	2,368,652	1,785,536	30,166,788

Table 12-4 Summary of the Monthly and Annual Quantities of Waste Rock and Overburden deposition locations at Gahcho Kué in 2023

Waste by Destination	23-Jan	23-Feb	23-Mar	23-Apr	23-May	23-Jun	23-Jul	23-Aug	23-Sep	23-Oct	23-Nov	23-Dec	2023 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	449,760	514,273	619,117	588,990	360,864	865,287	129,523	460,038	78,724	540,219	115,125	321,394	5,043,314
Non-PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-PAG West Mine Rock Pile	1,908,978	1,889,122	2,029,432	1,963,877	2,120,939	1,907,284	2,231,733	1,971,126	2,372,093	2,568,052	2,279,192	1,488,365	24,730,193
Non-PAG CPK&Mine Rock Pile	0	0	144,292	90	5,179	90	90	332,587	36,999	0	464	0	519,791
Total Construction	857,107	137,350	24,410	129,151	244,737	550,899	107,715	312,090	310,640	213,134	243,813	232,486	3,363,533
Total South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Total West Mine Rock Pile	2,358,738	2,403,395	2,648,549	2,552,867	2,481,803	2,772,571	2,361,256	2,431,164	2,450,817	3,108,271	2,394,317	1,809,759	29,773,507
Total CPK&Mine Rock Pile	0	0	144,292	90	5,179	90	90	332,587	36,999	0	464	0	519,791
Volume (m^3)													
PAG Construction													
PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
PAG West Mine Rock Pile	170,363	194,800	234,514	223,102	136,691	327,760	49,062	174,257	29,820	204,629	43,608	121,740	1,910,346
Non-PAG Construction	324,662	52,027	9,246	48,921	92,703	208,674	40,801	118,216	117,667	80,733	92,353	88,063	1,274,066
Non-PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-PAG West Mine Rock Pile	723,098	715,577	768,724	743,893	803,386	722,456	845,353	746,639	898,520	972,747	863,330	563,775	9,367,497
Non-PAG CPK&Mine Rock Pile	0	0	54,656	34	1,962	34	34	125,980	14,015	0	176	0	196,891
Total Construction	324,662	52,027	9,246	48,921	92,703	208,674	40,801	118,216	117,667	80,733	92,353	88,063	1,274,066
Total South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0
Total West Mine Rock Pile	893,461	910,377	1,003,238	966,995	940,077	1,050,216	894,415	920,896	928,340	1,177,376	906,938	685,515	11,277,844
Total CPK&Mine Rock Pile	0	0	54,656	34	1,962	34	34	125,980	14,015	0	176	0	196,891
Non-PAG South Mine Rock Pile	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 12-1 Gahcho Kué Mine 2023 Year End Site Map

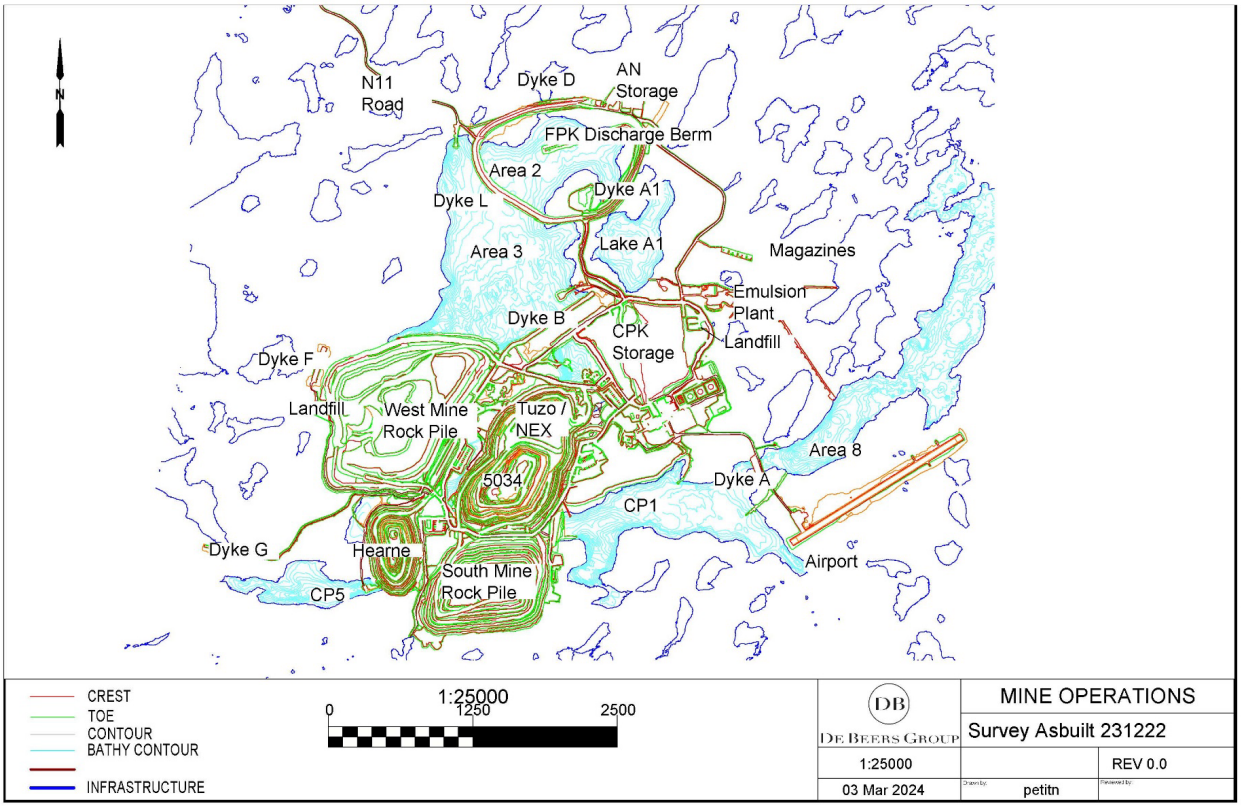


Figure 12-2 Gahcho Kué Mine PAG Placement Area 499 masl, 2023

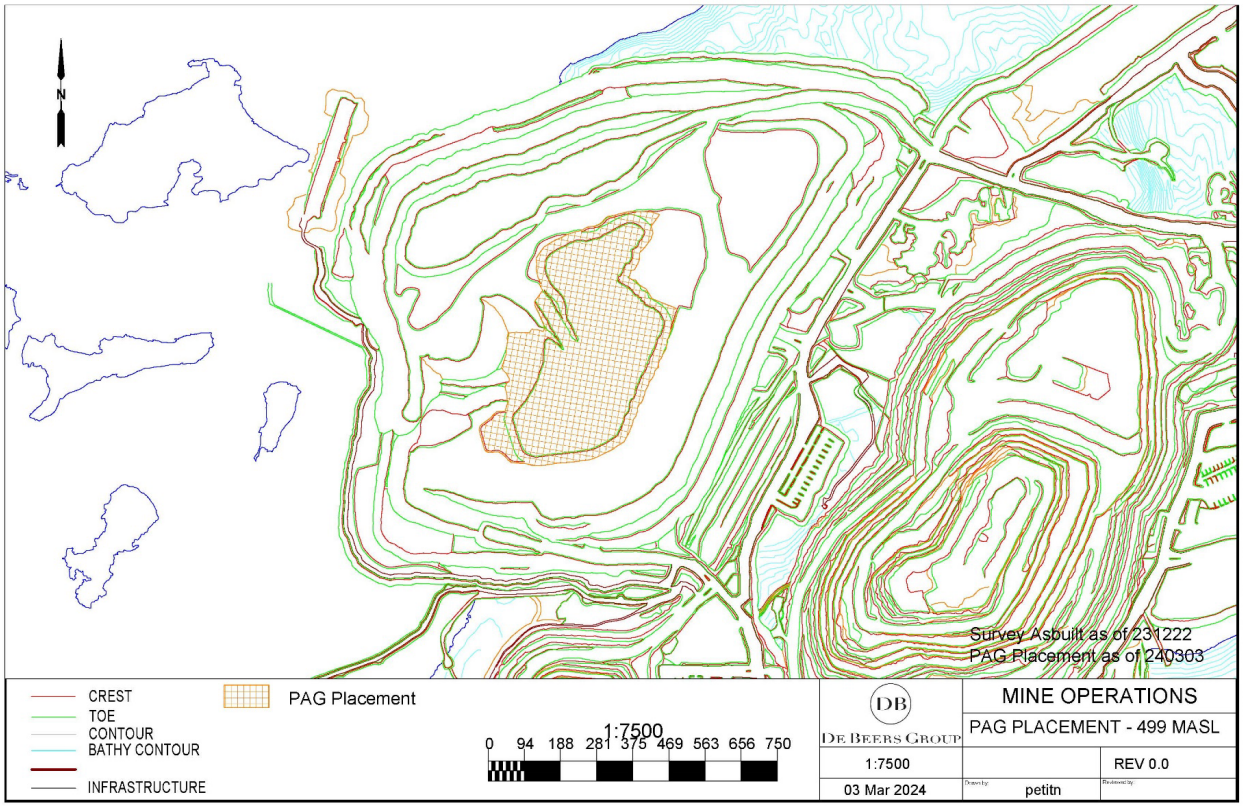


Figure 12-3 Gahcho Kué Mine PAG Placement Area, 484 masl 2023

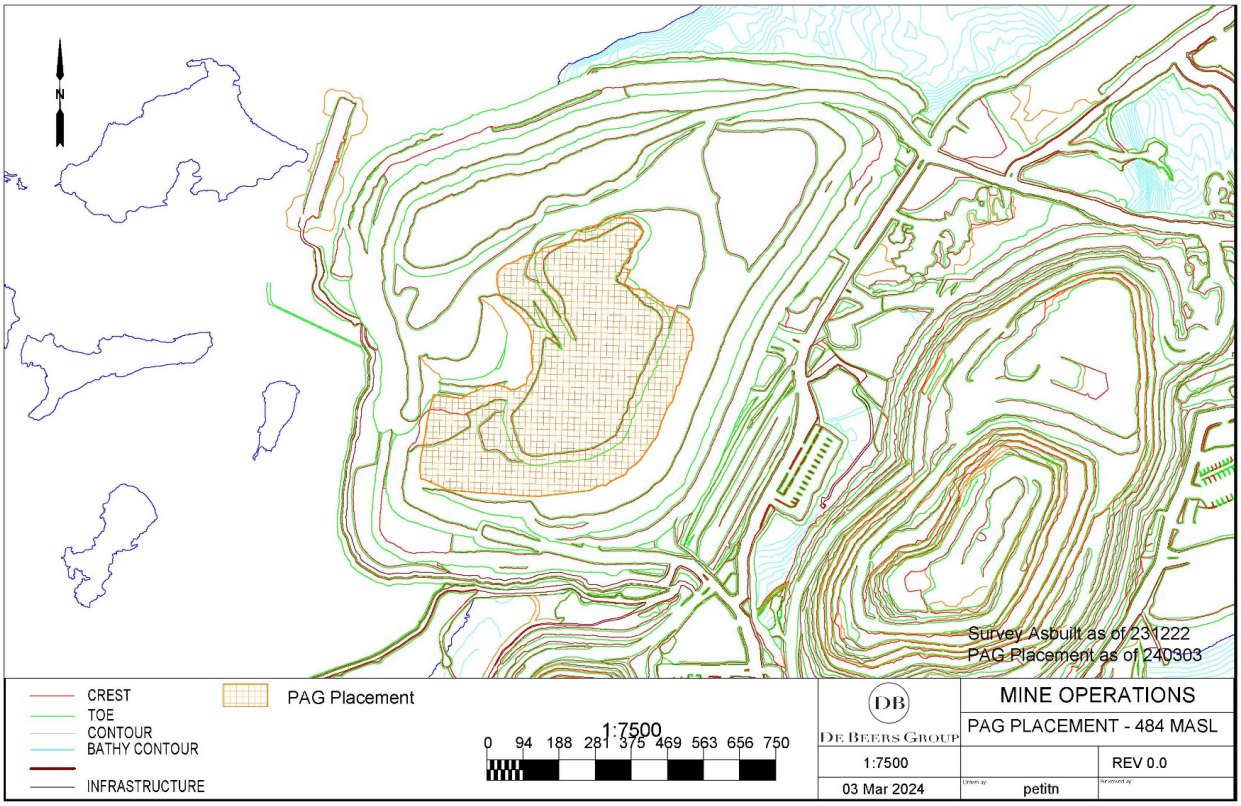
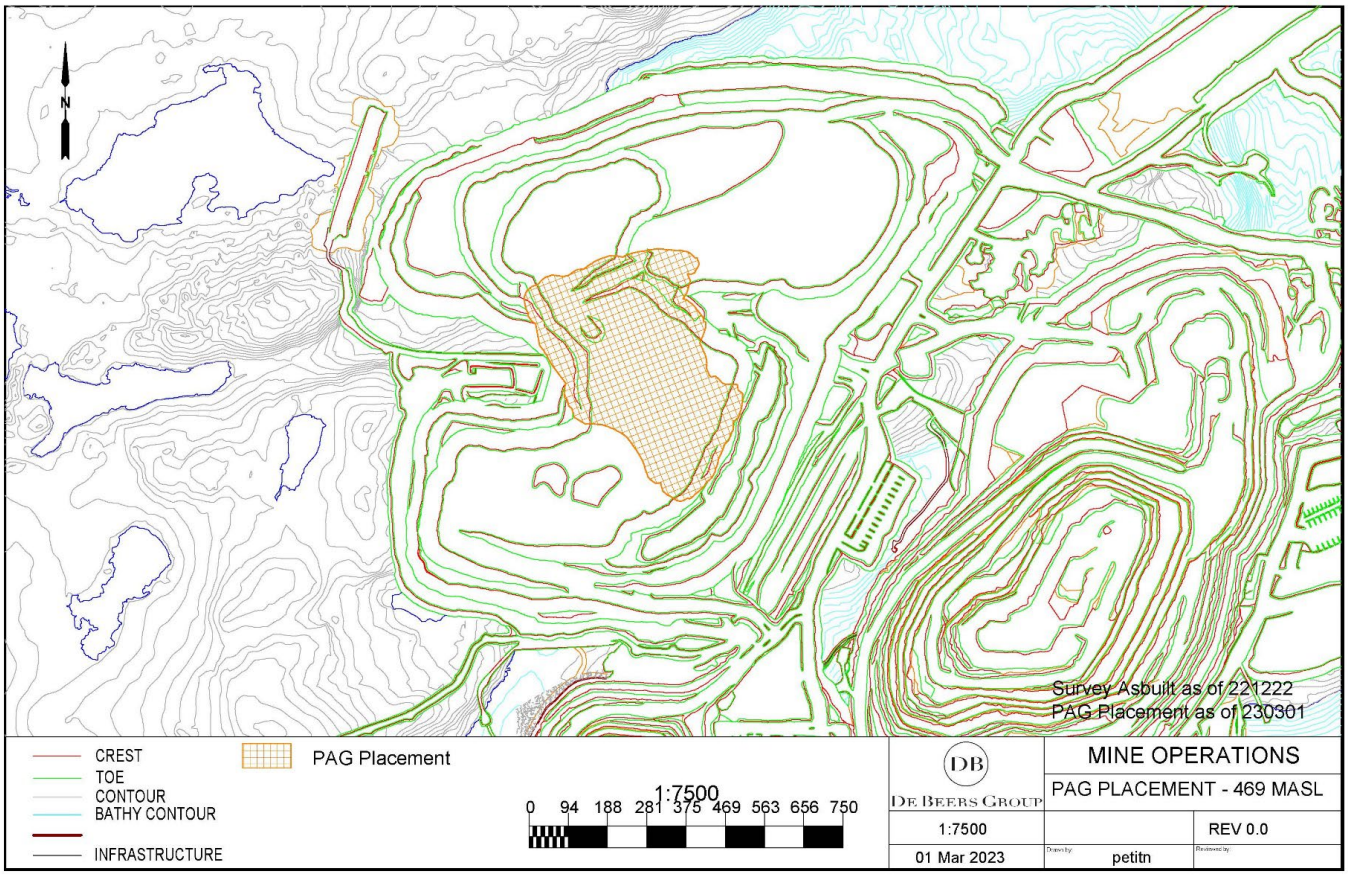


Figure 12-4 Gahcho Kué Mine PAG Placement Area, 469 masl, 2023



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 2023.

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 2023 amounts to the total value from 2022. No PK was deposited to the 5034 Pit or the Hearne Pit in 2023.

Table 12-5 Gahcho Kué Mine Rock Pile Coarse PK Summary, 2023

Date	2023				Cumulative	
	CPK Produced (wet tonnes)	Moisture Content (%)	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)
23-Jan	191,490	13%	165,768	92,093	11,726,599	7,262,093
23-Feb	177,261	13%	152,951	84,973	11,879,550	7,347,066
23-Mar	174,917	13%	151,099	83,944	12,030,649	7,431,010
23-Apr	220,452	14%	180,970	100,539	12,211,619	7,531,549
23-May	255,334	14%	198,650	110,361	12,410,269	7,641,910
23-Jun	218,274	14%	169,622	94,234	12,579,891	7,736,145
23-Jul	275,630	14%	216,550	120,306	12,796,441	7,856,450
23-Aug	248,829	14%	192,564	106,980	12,989,005	7,963,430
23-Sep	215,986	14%	166,867	92,704	13,155,872	8,056,134
23-Oct	227,928	14%	177,131	98,406	13,333,002	8,154,540
23-Nov	227,821	14%	188,224	104,569	13,521,226	8,259,108
23-Dec	290,548	13%	242,647	134,804	13,763,873	8,393,913

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 2023 amounts to the total value from 2022. No FPK was deposited to 5034 or Hearne Pits in 2023.

Table 12-6 Gahcho Kué Mine Fine PK Deposition Summary, 2023

Date	2023			Cumulative	
	FPK Slurry (m^3)	FPK Solids (m^3)	FPK Solids (tonnes)	Cumulative FPK Solids (m^3)	Cumulative FPK Solids (tonnes)
22-Jan	187,983	31,064	82,786	6,359,863	14,593,371
22-Feb	165,531	25,849	67,859	6,385,712	14,661,230
22-Mar	185,452	24,387	62,674	6,410,099	14,723,904
22-Apr	182,103	27,141	71,670	6,437,240	14,795,573
22-May	148,003	23,395	60,610	6,460,634	14,856,183
22-Jun	116,554	16,475	43,314	6,477,109	14,899,498
22-Jul	218,022	34,704	90,230	6,511,813	14,989,727
22-Aug	209,243	40,923	105,416	6,552,736	15,095,144
22-Sep	222,849	40,512	105,786	6,593,248	15,200,929
22-Oct	239,160	43,508	113,120	6,636,756	15,314,049
22-Nov	210,819	36,227	94,190	6,672,983	15,408,240
22-Dec	191,920	36,122	93,918	6,709,105	15,502,158
Total	**2,154,870**	**402,503**	**380,307**	**78,207,299**	**180,040,006**

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 2023.

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)
23/Jan	0	100,269,061	2,358,738	102,619,712	1,935	1,502,743
23/Feb	0	100,269,061	2,403,395	105,023,107	1,175	1,442,825
23/Mar	0	100,269,061	2,648,549	107,671,655	-	1,420,372
23/Apr	0	100,269,061	2,552,867	110,224,522	83	1,358,683
23/May	0	100,269,061	2,481,803	112,706,326	61	1,333,290
23/Jun	0	100,269,061	2,772,571	115,478,897	517	1,266,122
23/Jul	0	100,269,061	2,361,256	117,840,152	-	1,220,508
23/Aug	0	100,269,061	2,431,164	120,271,317	-	1,183,217
23/Sep	0	100,269,061	2,450,817	122,722,134	0	1,276,200
23/Oct	0	100,269,061	3,108,271	125,830,405	-	1,391,853
23/Nov	0	100,269,061	2,394,317	128,224,722	-	1,627,517
23/Dec	0	100,269,061	1,809,759	130,034,481	350	2,316,373
Total	**0**		**29,773,507**		**4,121**	

Note:

1. Monthly production quantity. The overburden stockpile will continue to be surveyed throughout 2024
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 2023. Approximately 3,815 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 2023 inspection reports were provided to the Board on October 12, 2023. 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 2023. 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 2023. Thirteen (15) reportable spill events were reported by De Beers to the Northwest Territories – Nunavut Spill Report Line in 2023. 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 2023

Date	Description	Contaminant	Quantity Spilled (L)	Location	NWT Spill #	Status (Open/Closed)
2/13/2023	Excavator contacted the high wall, causing damage to the hydraulic lines in Tuzo Pit	Hydraulic	200	Tuzo Pit	2023049	Closed
2/24/2023	Uncontrolled release of grey water onto the camp pad beneath the dorms	Grey Water	2300	Dorms	2023067	Closed
2/27/2023	Tractor Trailer caught on fire while operating on the winter road, resulting in a limited spill of engine fluids	Hydrocarbons	10	Munn Lake	2023069	Closed
03/12/2023	Coolant leak on tractor trailer operating on the winter road/Munn Lake	Coolant	15	Munn Lake	2023090	Closed
4/19/2023	Kidney loop filter housing leaked resulting in a hydraulic spill at the Pit Maintenance Pad	Hydraulic	300	Pit Maintenance Pad	2023154	Closed
4/24/2023	Hydraulic damaged causing a hydraulic fluid spill at the Build Pad	Hydraulic	200	Build Pad	2023162	Closed
5/8/2023	Glycol tote tipped over during thawing ground causing a glycol spill at the Emulsion Plant	Glycol	200	Emulsion Plant	2023192	Closed
5/10/2023	Hydraulic hose failure resulting in hydraulic oil leak in the 5034 Pit	Hydraulic	150	5034 Pit	2023197	Closed
5/14/2023	Rock impact to Oil cooler assembly causing spill in Tuzo Pit	Hydraulic	200	Tuzo Pit	2023198	Closed

Date	Description	Contaminant	Quantity Spilled (L)	Location	NWT Spill #	Status (Open/Closed)
05/31/2023	Historical spill discovered at the Margaret Lake work camp associated with power generation infrastructure	Diesel	400	Margaret Lake Camp	2023234	Closed
7/20/2023	Fuel tank struck rock causing a diesel spill in Tuzo Pit	Diesel	1000	Tuzo Pit	2023307	Closed
8/12/23	Overfill of waste oil tank causing waste oil to spill outside tank in tank farm	Waste Oil	100	Tank Farm	2023341	Closed
9/11/23	Machine impact to boulder causing spill at the ROM Pad	Diesel	250	ROM Pad	2023389	Closed
9/24/23	Fuel tank punctured by rock in the Tuzo Pit	Diesel	180	Tuzo Pit	2023415	Closed
10/24/23	Coolant system plug failure resulting in spill at pad by the Mobile Maintenance shop	Coolant	150	Mobile Maintenance Shop	2023450	Closed
11/23/23	Fuel truck valve failure causing diesel spill by the light vehicle fuel module	Diesel	200	LFVM	2023504	Closed
12/3/2023	Radiator plug failure causing the release of coolant at the mine muster area	Coolant	300	Mine Muster Area	2023513	Closed
12/25/2023	Pit wall material contacted boom hoses causing hydraulic spill in 5034 pit	Hydraulic	450	5034 Pit	2023532	Closed

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 to all site staff. Spill response training exercises were completed as part of routine Emergency Response Team (ERT) training. In August of 2023, a desktop exercise focusing on a geotechnical failure of Dyke D. resulting in a release to the receiving environment, was completed with the Emergence Command Center. During the September 2023, a mutual aid exercise was hosted at Gahcho Kue. A component of this exercise included spill response to a Dyke breach at Dyke L and the overtopping of containment at CP-5. These exercises captured field level response, as well as that of the site management team

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)

The Aquatic Effects Monitoring Program Response Plan for Lake D2/D3 – Version 1.2 (DeBeers, 2023a) was approved by the Mackenzie Valley Land and Water Board (MVLWB) on May 17, 2023 (MVLWB, 2023a). This report presented a summary of measured data for several aquatic components (e.g., water quality, lower trophic indicators), Action Level determination, likely causes and lines of evidence and ecological implication for both toxicological impairment and nutrient enrichment, as well as response actions including monitoring programs and Action Levels for lakes N14 and N17 downstream of Lake D2/D3. These new Action Levels were added to Version 7.1 of the Aquatic Effects Monitoring Program (AEMP) Design Plan (De Beers, 2023b), which the MVLWB approved on June 28, 2023 (MVLWB, 2023b).

The 2023 AEMP identified two Moderate Action Levels exceedances for toxicological impairment in Lake N14 and for benthic invertebrates in streams downstream of Area 8. An AEMP Response Plan will be prepared separately for each Action Level exceedance, to be submitted to the MVLWB in May 2024.

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 2023.

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 2023 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 2023 AEMP Annual Report is also currently being written and will summarize the results of the aquatics-related monitoring conducted for the Mine during 2023. The report will be submitted to the Board on or before May 1, 2024.

Surveillance Network Program

The Surveillance Network Program (SNP) is conducted to satisfy Annex A of the Water Licence. In 2023, 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 2023 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, 2023 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 2023 is provided in Table 18-1.

Table 18-1 Summary of the Quality Assurance and Quality Control Measures Implemented in 2023 as a Component of the Collection of Flow and Volume Measurements

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 4410-FIT-1101 4410-FIT-8801	Monitoring of flow and volume of both the raw water input (from Area 8) and treated water discharge	Burkert Type SO55 Magnetic-inductive flow rate sensor w/ SE56 transmitter/display unit.	Raw water Intake - Endress+Hauser flowmeter Promag 300, Model#: 5W3B40-30D4/0 Discharge - Endress+Hauser flowmeter Promag 300, Model#: 5W3B40-30D4/0	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) 4500-FIT-201	Continuous monitoring of flow and volume of treated effluent	Endress+Hauser Electro-magnetic Promag flow meter Model - 10W80-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		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-

		connected to a datalogger and satellite transmitter		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 DN300 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 (6200-PU008-FIT-001 6200-PU006-FIT-001 6200-PU007-FIT-001 6200-PU0027-FIT-001)	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	Dewatering pumps: Endress+Hauser flowmeters 6200-PU-008 Promag 500 flowmeter Model #5P5B1F-9V57/0 6200-PU-006 Promag 500 flowmeter Model #5P5B1F-9V57/0 6200-PU-007 Promag 500 flowmeter Model #5W5B1F-4R32/0 6200-PU-027 Promag 500 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 2023 is summarized in Table 19-1.

Table 19-1 Sampling Status of SNP Stations in 2023

SNP Station	Description	Status
SNP-01	Three locations along edge of mixing zone in Lake N11	Inactive
SNP-02	In-line monitoring for end-of-pipe Discharge from Kennady Lake to Lake N11	Inactive
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	Inactive
SNP-19	Outlet of Area 8	Active
SNP-20	Intake point in Water Management Pond for Discharge to Lake N11	Inactive
SNP-21	Collection Pond 1 (CP1)	Active

Thirteen (13) SNP stations were actively monitored in 2023. SNP-01 & SNP-02 were inactive as no discharge from the WMP occurred in 2023. SNP-01, 02 18 & 20 are all inactive due to no effluent discharge from the WMP to Lake N-11 occurring in 2023. 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:

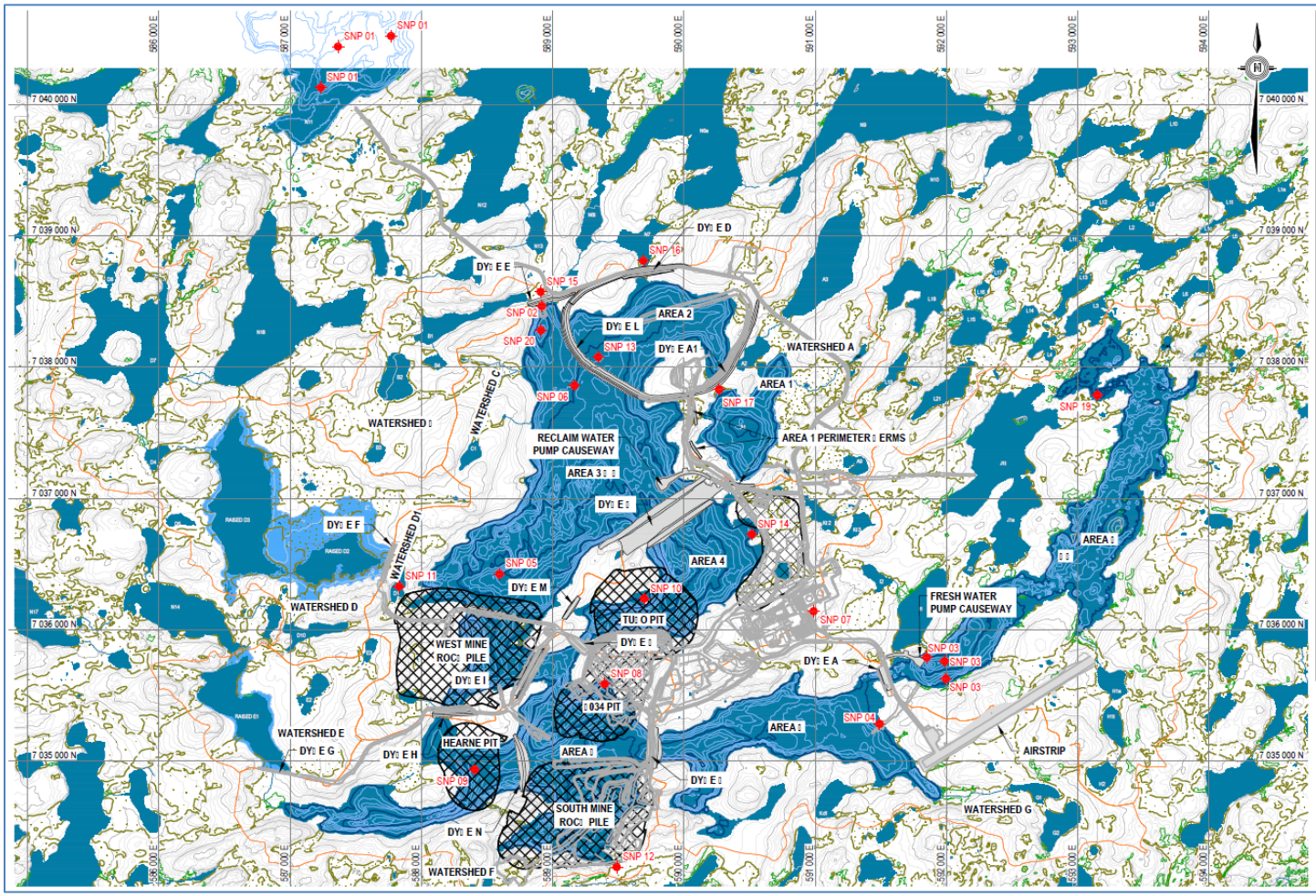
- SNP-01: Located at the edge of the mixing zone in Lake N11. Monitoring triggered by dewatering of Kennady Lake from Area 3 to Lake N11 (No samples taken as discharge did not occur in 2023).
- SNP-02: In-line monitoring for end of pipe discharge from Kennady Lake to Lake N11. Monitoring was triggered by dewatering of Kennady Lake from Area 3 to Lake N11 (No samples taken as discharge did not occur in 2023).
- SNP-05: Within the Water Management Pond, north of West Mine Rock Pile. Monitoring was triggered by the West Mine Rock Pile (monthly throughout 2023).
- 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 2023).
- SNP-07: Effluent from the sewage treatment plant. Monitoring triggered by discharge of treated effluent from the Waste Water Treatment Plant (monthly throughout 2023).
- 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 2023)
- 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 2023)
- 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 throughout 2023)
- 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 (No samples taken as discharge did not occur in 2023).
- 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 2023 is presented within this section as well.

Figure 19-1 Active SNP Sample Stations Monitored at the Gahcho Kué Mine Project. 2023



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-05

Monitoring at station SNP-05, located within the Water Management Pond (WMP), north of West Mine Rock Pile, was active throughout 2023. 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 analyzed for the parameters listed in Table 19-2. 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 19-2. A summary of the sediment quality results in 2023 at this station are presented in Appendix G05_C.

The water surface elevation in the Water Management Pond was measured regularly throughout 2023. This data is summarized in Appendix G05_D.

Table 19-2 Summary of Sampling Requirements and Sample Dates at SNP-05 in 2023

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 2023
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	August 22

19.1.2 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 2023. 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 19-3. 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 19-3. A summary of the sediment quality results in 2023 at this station are presented in Appendix G06_C.

The water surface elevation in the Water Management Pond was measured regularly throughout 2023. This data is summarized in Appendix G06_D.

Table 19-3 Summary of Sampling Requirements and Sample Dates at SNP-06 in 2023

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 2023
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	August 22

19.1.3 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 2023.

Treated effluent samples are collected monthly from a dedicated sample spigot within the WWTP, and analyzed for the parameters listed in Table 19-4. 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 2023 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 19-4. Sample results are provided in Appendix G07_A (Physical Parameters), Appendix G07_B (Effluent Quality) and Appendix G07_C (Effluent Volume).

In 2023, 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 10.0 CFU/100mL on September 14.

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 6, April 4, May 3, September 14, and October 5. These results indicate possible erroneous laboratory analysis as Phosphorus – Total (mg/L) should normally be greater than Orthophosphate dissolved (as P) (mg/L); however, these results were not considered notable. Upon a review of corresponding dissolved and total concentrations, it was found that none of the Orthophosphate dissolved (as P) (mg/L) is 30% higher than Phosphorus – Total (mg/L). As per the GK Quality Assurance and Quality Control Plan V.3, dissolved samples that are five times greater than the detection limit and greater than the corresponding total concentration by more than 30% are considered notable (De Beers, 2022c).

Table 19-4 Summary of Sampling Requirements and Sample Dates at SNP-07 in 2023

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 16, February 13, March 6, April 4, May 3, June 5, July 5, August 1, September 14, October 5, November 1, December 6

19.1.4 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.

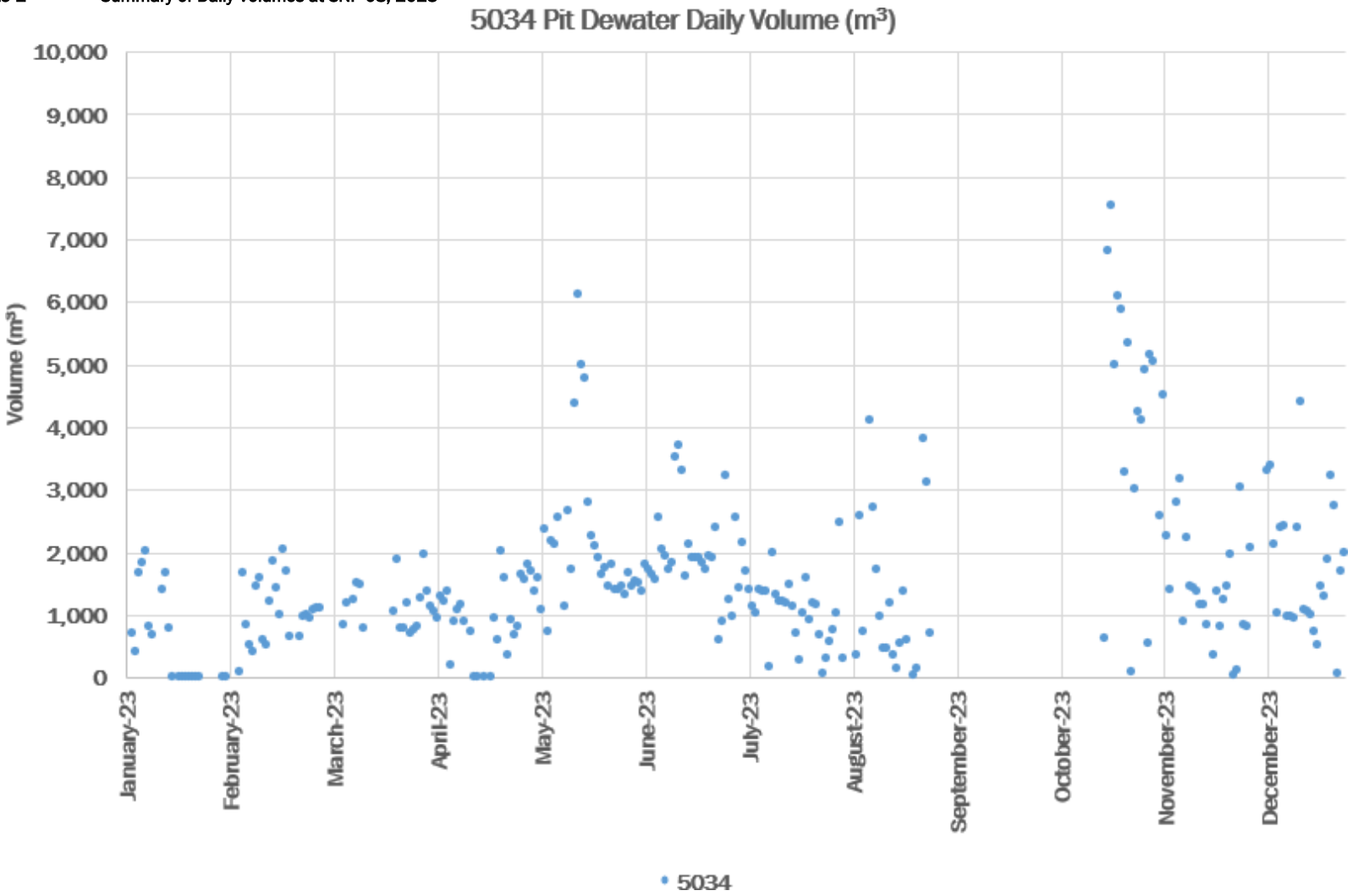
When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger. Mine Operation operators perform checks on the pumps during every shift in order to audit the daily volume and flow. Daily, weekly, 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 2023, including sample dates, is provided in Table 19-5. 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 2023 is provided in Figure 19-2, and also discussed in detail in Section 8 of this report.

Table 19-5 Summary of Sampling Requirements and Sample Dates at SNP-08 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-08	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously throughout 2023, when discharge is active
		Daily (when sump is active)	Physical parameters	Daily throughout 2023, when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly throughout 2023, 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 2023 when sump is active

Figure 19-2 Summary of Daily Volumes at SNP-08, 2023



19.1.5 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.

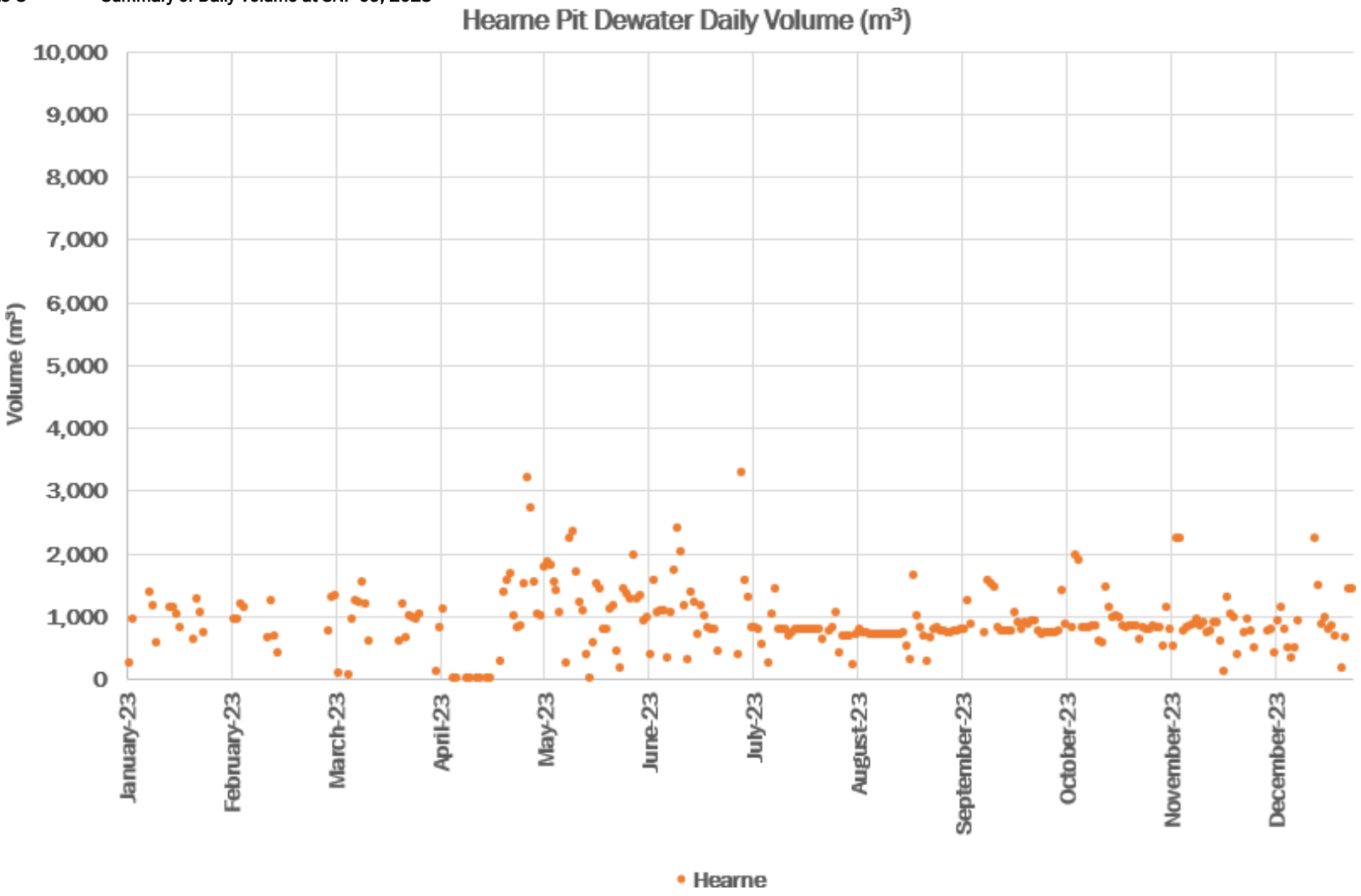
When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger Mine Operations perform checks on the pumps during every shift in order to audit the daily volume and flow. Daily, weekly, and monthly 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 2023, including sample dates, is provided in Table 19-6. 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 2023 is provided in Figure 19-3.

Table 19-6 Summary of Sampling Requirements and Sample Dates at SNP-09 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-09	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2023 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2023 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2023 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 2023 when sump is active

Figure 19-3 Summary of Daily Volume at SNP-09, 2023



19.1.6 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.

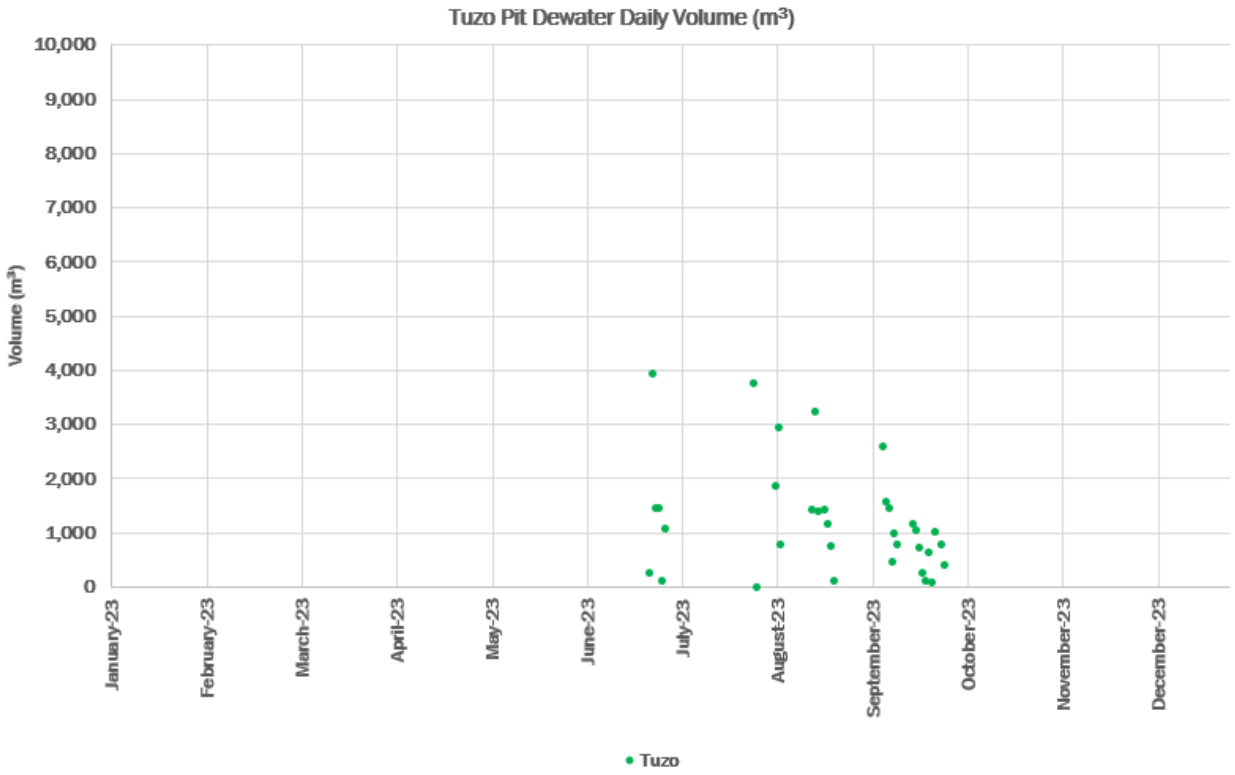
Dewatering at Tuzo Open Pit commenced on May 24th, 2021. When the sump is active, an in-line flow meter continuously measures the flow and volume of the water discharged from the pit, and this data is recorded on a datalogger Mine Operations perform checks on the pumps during every shift in order to 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 2023, including sample dates, is provided in Table 19-7. Water quality sampling results for SNP-10 are provided in Appendix G10_B in addition to physical parameters in Appendix G10_A. A graphical summary of the continuous flow and volume measurements collected at SNP-10 in 2023 is provided in Figure 19-4.

Table 19-7 Summary of Sampling Requirements and Sample Dates at SNP-10 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-10	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2023 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2023 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2023 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 2023 when sump is active

Figure 19-4 Summary of Daily Volume at SNP-10, 2023



19.1.7 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 2023, 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 19-10.

If seepage samples were retrieved, results would be compared to the granite mine rock (non-acid generating) 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 19-8 Summary of Sampling Requirements and Sample Dates at SNP-11 in 2023

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	

19.1.8 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 2023, 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 19-11.

If seepage samples were retrieved, sample results would be compared to the granite mine rock (non-acid generating) 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-12 in 2023

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	

19.1.9 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 2023, 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.

A summary of the sampling requirements applicable at SNP-14, including monitoring dates, is provided 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 19-10 Summary of Sampling Requirements and Sample Dates at SNP-14 in 2023

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	N/A
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.10 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 2023, there was one area of seepage observed during the spring sampling event.

No major storm events occurred in 2023 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 19-11 Summary of Sampling Requirements and Sample Dates at SNP 16 in 2023

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	May 23
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

19.1.11 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 2023, 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 2023 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 19-14.

Table 19-12 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	

19.1.12 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 19-6.

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 2023 are summarized in Table 19-17. In past years, water depth telemetry from SNP instrumentation, and water level surveys against SNP benchmarks by WSP Hydrology crews, were used to prepare the series of daily mean WSE presented. In 2023, the Area 8 Levelogger was deployed on April 25 and retrieved on September 22.

Table 19-13 Summary of Hydrometric Monitoring at SNP-19 in Area 8 Outlet, 2023

Date	Activities	Area 8 WSE[a] (masl)	Discharge (m^3/s)
25 April 2023	Levelogger installed, Barologger installed, and automated camera installed by De Beers crew	NM	NM
2 June 2023	WSE measurement, discharge measurement, camera download, Levelogger, and Barologger download by WSP Hydrology crew	420.828	0.354
3 June 2023	Discharge measurement by WSP Hydrology crew	NM	0.354
5 June 2023	WSE measurement and discharge measurement by WSP Hydrology crew	420.827	0.422
30 June 2023	WSE measurement, discharge measurement, camera download, Levelogger, and Barologger download by De Beers crew	420.722	0.186
5 July 2023	WSE measurement and discharge measurement by De Beers crew	420.702	0.111
22 September 2023	WSE measurement, discharge measurement, camera download, Levelogger retrieval, and Barologger retrieval by WSP Canada crew	420.622	0.030

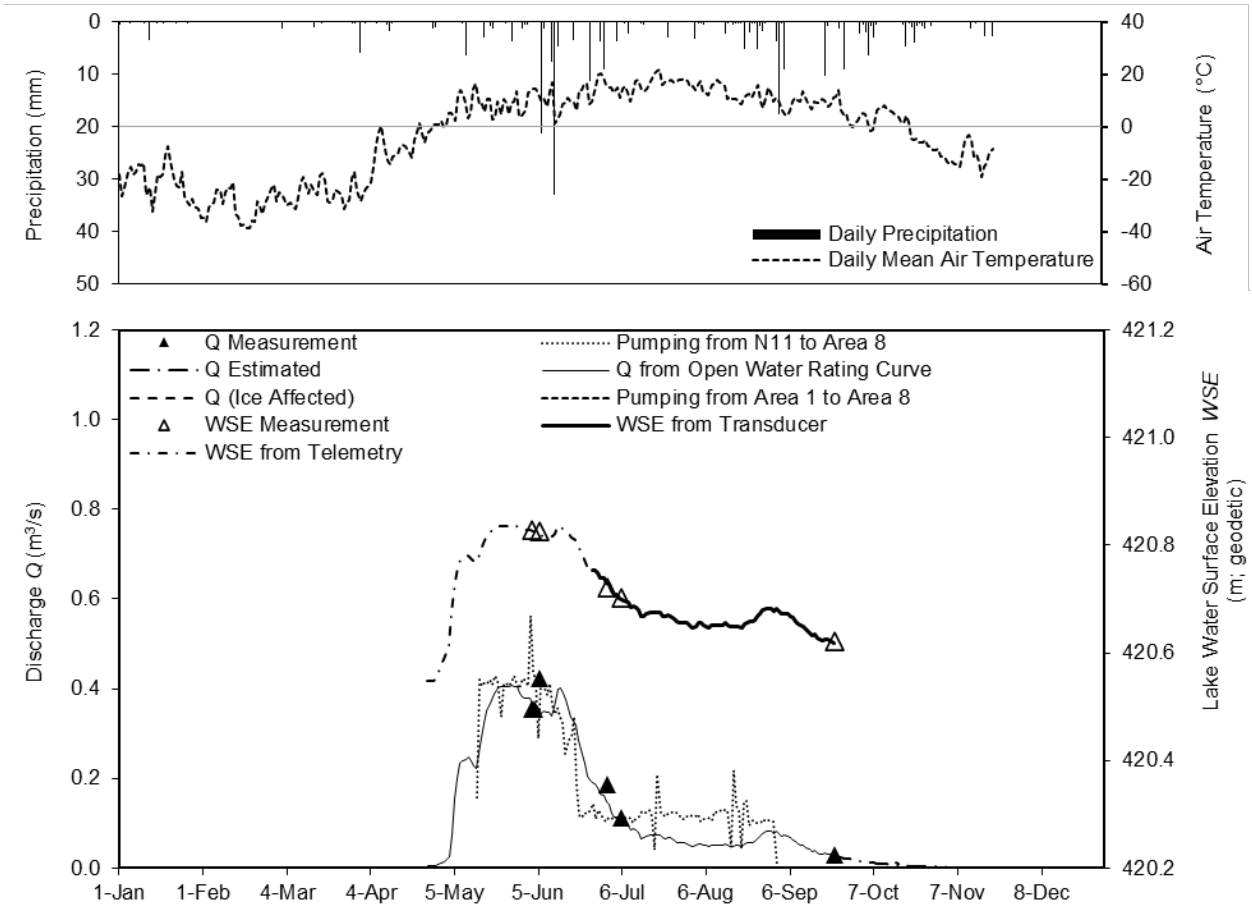
Notes:

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

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

Discharge and WSE data collected in 2023 are presented in Figure 19-5. Images from the automated camera operating at the outlet of Area 8 provide information on the progression of the 2023 spring freshet. Based on photographs at the outlet of Area 8, the outlet channel was still fully obstructed by ice on 27 April, with some minor water ponding becoming visible at the surface on 27 April at 14:00. A continuous flow path formed on 4 May 2023 at 14:00, the channel became clear on 5 May 2023 at 12:00, and the channel became ice-free by 8 May 2023 at 14:00. Ice-out in the Area 8 outflow channel (i.e., Stream K5) is defined as 5 May at 12:00, when a clear channel was established. The Area 8 outlet appeared to be completely ice-free on 13 May at 17:00. Peak water levels were observed on 26 May. The daily peak in 2023 occurred around the first AEMP years' peaks in 2015 (14 May), 2016 (18 May), 2017 (22 May), and 2022 (22 May) but was earlier than 2018 (8 June), 2019 (8 June), 2020 (12 June), and 2021 (8 June).

Figure 19-6 Area 8 Water Surface Elevation and Outlet Discharge, 2023



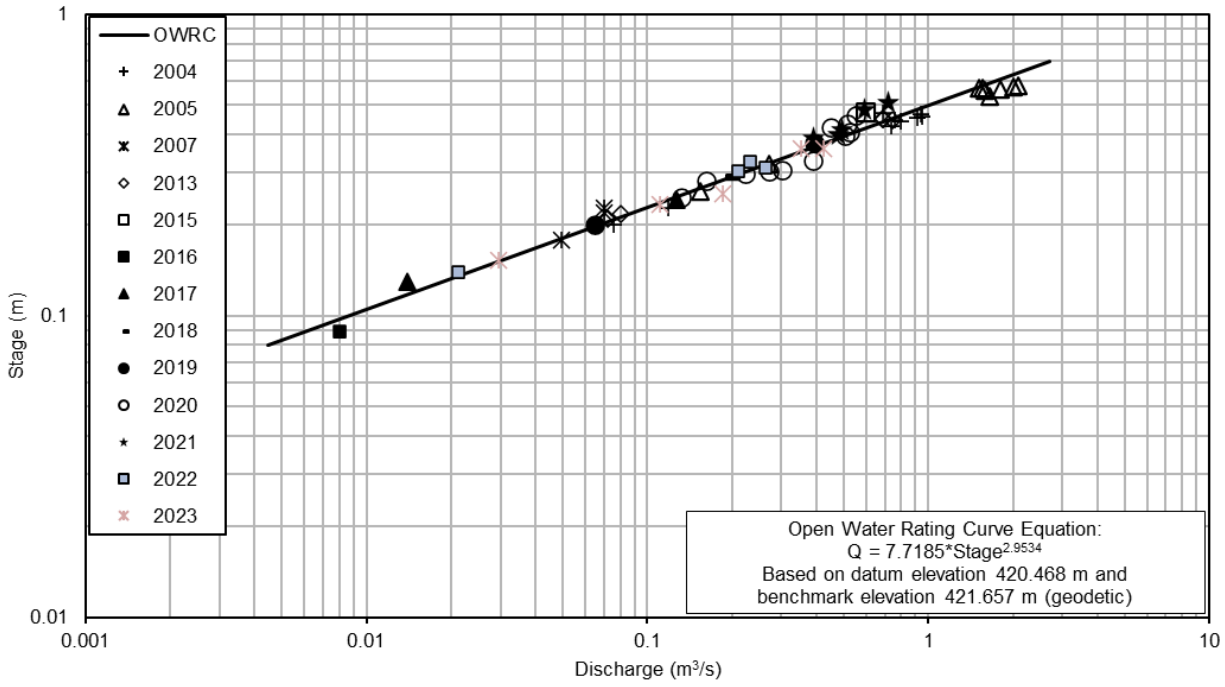
A summary of the sampling requirements applicable at SNP-19 including monitoring dates, is provided in Table 19-18. Information summarizing the data collection and calculation of daily flow rate and discharge volume from the outlet of Lake N11 is provided in

Figure 19-8, Table 19-19 and Table 19-20. 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 19-14 Summary of Sampling Requirements and Sample Dates at SNP-19 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-19	Construction (Drawdown of Kennaday Lake)	Daily (during Drawdown)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	N/A
	Operations (Discharge from Water Management Pond	Daily (during Discharge)	Flow (m^3/s) and Volume (m^3) at Area 8 outlet	DSFM: May 13 to September 1 Discharge from Lake A1: N/A

Figure 19-6 Open Water Rating Curve for SNP-19 at Outlet to Area 8, 2023



Notes: Open symbols indicate ice-affected discharge.

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

Water levels in Area 8 were supplemented in May, June, July, and August by downstream flow mitigation pumping from Lake N11. Pumping commenced on 13 May, which was ahead of schedule to augment flows during an early freshet. Pumping was generally maintained between 0.33 m3/s and 0.43 m3/s between 13 May and 14 June. On 19 June, pumping rates were reduced to 0.11 m3/s and were maintained at approximately that rate between 19 and 30 July, before being increased to roughly 0.21 m3/s from 31 July to 31 August. Pumping ceased on 1 September. A total of 1,976,796 m3 was pumped from Lake N11 to Area 8 in 2023 as part of the downstream flow mitigation program. Water transfers from Area 1 to Area 8 occurred in 2023 to draw down Lake A1 but occurred post-monitoring in 2023 and are not included in the comparison to EIS predictions. The pumping from Lake A1 to Area 8 began on 15 October, ceased on 16 October, and totalled 2,202 m3 with an average daily pumping volume of 1,101 m3/d and an average flow rate of 0.013 m3/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 late November, when the outlet likely froze to the bed.

Table 19-15 Daily Mean Water Surface Elevation Estimated for SNP-19 at Area 8 Hydrometric Station, 2023

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	ND	ND	ND	ND	ND	ND	420.727	420.646	420.682	ND	ND	ND
2	ND	ND	ND	ND	ND	ND	420.715	420.649	420.677	ND	ND	ND
3	ND	ND	ND	ND	ND	ND	420.707	420.655	420.672	ND	ND	ND
4	ND	ND	ND	ND	ND	ND	420.708	420.655	420.674	ND	ND	ND
5	ND	ND	ND	ND	ND	ND	420.702	420.652	420.673	ND	ND	ND
6	ND	ND	ND	ND	ND	ND	420.698	420.650	420.668	ND	ND	ND
7	ND	ND	ND	ND	ND	ND	420.697	420.647	420.665	ND	ND	ND
8	ND	ND	ND	ND	ND	ND	420.693	420.651	420.659	ND	ND	ND
9	ND	ND	ND	ND	ND	ND	420.685	420.652	420.653	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	420.687	420.652	420.652	ND	ND	ND
11	ND	ND	ND	ND	ND	ND	420.685	420.652	420.650	ND	ND	ND
12	ND	ND	ND	ND	ND	ND	420.680	420.651	420.643	ND	ND	ND
13	ND	ND	ND	ND	ND	ND	420.667	420.655	420.638	ND	ND	ND
14	ND	ND	ND	ND	ND	ND	420.668	420.650	420.633	ND	ND	ND
15	ND	ND	ND	ND	ND	ND	420.673	420.649	420.633	ND	ND	ND
16	ND	ND	ND	ND	ND	ND	420.674	420.648	420.626	ND	ND	ND
17	ND	ND	ND	ND	ND	ND	420.675	420.650	420.624	ND	ND	ND
18	ND	ND	ND	ND	ND	ND	420.675	420.650	420.623	ND	ND	ND
19	ND	ND	ND	ND	ND	ND	420.676	420.647	420.626	ND	ND	ND
20	ND	ND	ND	ND	ND	ND	420.675	420.653	420.624	ND	ND	ND
21	ND	ND	ND	ND	ND	ND	420.668	420.656	420.623	ND	ND	ND
22	ND	ND	ND	ND	ND	ND	420.667	420.658	420.617	ND	ND	ND
23	ND	ND	ND	ND	ND	ND	420.670	420.657	ND	ND	ND	ND
24	ND	ND	ND	ND	ND	ND	420.669	420.660	ND	ND	ND	ND
25	ND	ND	ND	ND	ND	420.754	420.663	420.667	ND	ND	ND	ND
26	ND	ND	ND	ND	ND	420.752	420.658	420.673	ND	ND	ND	ND
27	ND	ND	ND	ND	ND	420.748	420.656	420.679	ND	ND	ND	ND
28	ND	ND	ND	ND	ND	420.740	420.656	420.682	ND	ND	ND	ND
29	ND	-	ND	ND	ND	420.739	420.656	420.683	ND	ND	ND	ND
30	ND	-	ND	ND	ND	420.730	420.656	420.683	ND	ND	ND	ND
31	ND	-	ND	-	ND	-	420.651	420.678	-	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 19-16 Daily Mean Discharge Estimated for SNP-19 at Area 8 Hydrometric Station, 2023

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.000	0.000	0.000	0.000	0.015	0.379	0.142	0.047	0.081	0.016	0.003	0.000
2	0.000	0.000	0.000	0.000	0.019	0.378	0.123	0.050	0.076	0.015	0.002	0.000
3	0.000	0.000	0.000	0.000	0.025	0.369	0.113	0.055	0.070	0.014	0.002	0.000
4	0.000	0.000	0.000	0.000	0.074	0.363	0.114	0.055	0.072	0.014	0.002	0.000
5	0.000	0.000	0.000	0.000	0.153	0.357	0.105	0.052	0.072	0.013	0.002	0.000
6	0.000	0.000	0.000	0.000	0.200	0.346	0.101	0.050	0.067	0.012	0.002	0.000
7	0.000	0.000	0.000	0.000	0.233	0.350	0.099	0.048	0.063	0.011	0.002	0.000
8	0.000	0.000	0.000	0.000	0.240	0.347	0.094	0.051	0.058	0.011	0.002	0.000
9	0.000	0.000	0.000	0.000	0.243	0.348	0.085	0.052	0.053	0.010	0.002	0.000
10	0.000	0.000	0.000	0.000	0.247	0.340	0.087	0.052	0.052	0.009	0.001	0.000
11	0.000	0.000	0.000	0.000	0.239	0.360	0.085	0.052	0.050	0.009	0.001	0.000
12	0.000	0.000	0.000	0.000	0.226	0.398	0.079	0.051	0.045	0.008	0.001	0.000
13	0.000	0.000	0.000	0.000	0.222	0.402	0.065	0.054	0.041	0.008	0.001	0.000
14	0.000	0.000	0.000	0.000	0.255	0.390	0.067	0.051	0.037	0.007	0.001	0.000
15	0.000	0.000	0.000	0.000	0.291	0.376	0.071	0.049	0.038	0.007	0.001	0.000
16	0.000	0.000	0.000	0.000	0.322	0.355	0.073	0.049	0.033	0.007	0.001	0.000
17	0.000	0.000	0.000	0.000	0.350	0.336	0.074	0.050	0.032	0.006	0.001	0.000
18	0.000	0.000	0.000	0.000	0.367	0.328	0.074	0.050	0.031	0.006	0.001	0.000
19	0.000	0.000	0.000	0.000	0.381	0.318	0.074	0.048	0.033	0.005	0.001	0.000
20	0.000	0.000	0.000	0.000	0.393	0.283	0.074	0.053	0.032	0.005	0.001	0.000
21	0.000	0.000	0.000	0.000	0.403	0.254	0.067	0.055	0.031	0.005	0.001	0.000
22	0.000	0.000	0.000	0.000	0.403	0.232	0.066	0.057	0.028	0.005	0.001	0.000
23	0.000	0.000	0.000	0.000	0.405	0.206	0.068	0.057	0.026	0.004	0.001	0.000
24	0.000	0.000	0.000	0.000	0.404	0.197	0.067	0.059	0.025	0.004	0.001	0.000
25	0.000	0.000	0.000	0.005	0.404	0.191	0.062	0.066	0.023	0.004	0.001	0.000
26	0.000	0.000	0.000	0.005	0.407	0.188	0.057	0.072	0.022	0.004	0.001	0.000
27	0.000	0.000	0.000	0.005	0.405	0.179	0.055	0.078	0.021	0.003	0.001	0.000
28	0.000	0.000	0.000	0.005	0.404	0.164	0.056	0.081	0.020	0.003	0.000	0.000
29	0.000	-	0.000	0.008	0.390	0.163	0.056	0.082	0.018	0.003	0.000	0.000
30	0.000	-	0.000	0.012	0.383	0.148	0.055	0.082	0.017	0.000	0.000	0.000
31	0.000	-	0.000	-	0.378	-	0.051	0.077	-	0.000	-	0.000

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 after September 22 were estimated using a water balance model.

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

19.1.13 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 2023, is provided in Table 19-22. Water quality sampling results for SNP-21 are provided in Appendix G21_A in addition to water elevations in Appendix G21_B.

Table 19-17 Summary of Sampling Requirements and Sample Dates at SNP 21 in 2023

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 2023 when sump is active

19.1.14 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 2023 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 Mackenzie Valley Land and Water Board in 2023 (Licence #MV2021D0009 & MV2005L2-0015)

Date	Submission
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)
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)
16-Jan-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Jan 16_23.pdf (307.3 KB)
23-Jan-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Sept 29_22 Inspection Report - Jan 23_23.pdf (26.05 MB)
23-Jan-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Nov 21-22_22 Inspection Report - Jan 23_23.pdf (13.16 MB)
23-Jan-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Dec 19-20_22 Inspection Report - Jan 23_23.pdf (10.82 MB)
30-Jan-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - December 2022 - Jan 30_23.pdf (7.68 MB)
30-Jan-23	De Beers Gahcho Kue - 2021 AEMP Response Plan - Lake D2_D3 V 1.1 - Jan 30_23.pdf (2.81 MB)
7-Feb-23	De Beers Gahcho Kue – Revisions Required - AEMP Design Plan V7 and Aquatic Effects Re-eval Report V1 - Feb 7_23.pdf (240.71 KB)
9-Feb-23	MV2005L2-0015 -De Beers Gahcho Kue - AEMP Design Plan and Aquatic Effects Re-evaluation Report - Review Comments - Feb 9_23.pdf (787.42 KB)
14-Feb-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Jan 16 Spill Report - Feb 14_22.pdf (898.34 KB)
14-Feb-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Feb 14_23.pdf (307.47 KB)
27-Feb-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Hydrocarbons - Feb 27_23.pdf (308.91 KB)
27-Feb-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report of Gray Water - Feb 27_23.pdf (307.74 KB)
2-Mar-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - January 2023 - Mar 2_23.pdf (6.33 MB)
13-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Mar 13_23.pdf (306.59 KB)
13-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Feb 14 Spill Report - Mar 13_23.pdf (873.9 KB)
24-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual Report - Appendix G - Mar 24_23.xlsx (672.4 KB)
27-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Feb 27 Spill Report of Gray Water - Mar 27_23.pdf (566.44 KB)

Date	Submission
28-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Feb 27 Spill Report of Hydrocarbons - Mar 28_23.pdf (601.99 KB)
30-Mar-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - February 2023 - Mar 30_23.pdf (5.98 MB)
30-Mar-23	De Beers Gahcho Kue - 2021 AEMP Response Plan - Lake D2_D3 V 1.2 - Mar 30_23.pdf (2.77 MB)
30-Mar-23	De Beers Gahcho Kue - 2021 AEMP Response Plan - Supplemental Info - Mar 30_23.pdf (532.88 KB)
30-Mar-23	MV2005L2-0015 - De Beers Gahcho Kue - Aquatic Effects Re-evaluation Report - Version 1.1 - Mar 30_23.pdf (15.18 MB)
31-Mar-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual Report - Mar 31_23.pdf (61.6 MB)
31-Mar-23	MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual CandR Plan Progress Report - Mar 31_23.pdf (35.1 MB)
6-Apr-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Inspection Report - Unacceptable Fuel Handling - Apr 6_23.pdf (3.57 MB)
6-Apr-23	De Beers Gahcho Kue - Aquatic Effects Re-eval Report V1.1 - Board staff conformity - Apr 6_23.pdf (148.59 KB)
11-Apr-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Mar 13 Spill Report - Apr 11_23.pdf (1.85 MB)
20-Apr-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Apr 20_23.pdf (307.74 KB)
25-Apr-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Apr 25_23.pdf (307.84 KB)
25-Apr-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - May 25, 22 Inspection Report - May 31_22.pdf (19.02 MB)
1-May-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - March 2023 - May 1_23.pdf (6.78 MB)
5-May-23	De Beers Gahcho Kue - 2022 AEMP Annual Report - May 5_23.pdf (158.45 MB)
9-May-23	De Beers Gahcho Kue - Notification of Downstream Flow Mitigation Pumping - May 9_23.pdf (141.28 KB)
11-May-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 11_23.pdf (307.07 KB)
15-May-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 15_23.pdf (304.94 KB)
17-May-23	MV2005L2-0015 - De Beers Gahcho Kue - Approval - AEMP Response Plan V1.2 - May 17_23.pdf (219.86 KB)
18-May-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Mar 13-14 and Mar 31, 2023 Inspection Report - May 18_23.pdf (18.15 MB)
19-May-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 20 Spill - May 19_23.pdf (708.38 KB)
19-May-23	De Beers - Gahcho Kue - 2022 AEMP Data - May 19_23.xlsx (909.19 KB)
22-May-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to April 25 Spill Report - May 22_23.pdf (693.66 KB)
25-May-23	MV2005L2-0015 - De Beers Gahcho Kue - 2021 Annual Air Quality Report V1.1 - May 25_23.pdf (4.35 MB)
30-May-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - April 2023 - May 30_23.pdf (7.29 MB)
1-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - June 1_23.pdf (308.69 KB)
1-Jun-23	De Beers Gahcho Kue - 2022 AEMP Annual Report - Request for ORS Comment Extension - Jun1_23.pdf (120.72 KB)
5-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 8 Spill - June 5_23.pdf (3.17 MB)
5-Jun-23	MV2005L2-0015 - De Beers Gahcho Kue - AEMP Response Plan V1.1 - Review Comments and Responses - Jun5_23.pdf (1.12 MB)
5-Jun-23	MV2005L2-0015 - De Beers Gahcho Kue - AEMP Response Plan V1.2 - Review Comments and Responses.pdf (635.03 KB)

Date	Submission
12-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 11 Spill - June 12_23.pdf (1.2 MB)
12-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - May 8_23.pdf (308.11 KB)
15-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to May 15 Spill - June 15_23.pdf (1004.72 KB)
26-Jun-23	MV2005L2-0015 - De Beers Gahcho Kue - AEMP Design Plan V7.1 - June 26_23.pdf (4.42 MB)
27-Jun-23	MV2005L2-0015 MV2021D0009 – De Beers Gahcho Kué – Revisions Required - 2022 Annual Report - Jun27_23.pdf (187.73 KB)
28-Jun-23	De Beers Gahcho Kue - AEMP Design Plan V7.1 - Board Staff Conformity - June 28_23.pdf (164.09 KB)
30-Jun-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Jun 1 Spill - June 30_23.pdf (1.45 MB)
30-Jun-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - May 2023 - June 30_23.pdf (9.41 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment Application - Jun1_23.pdf (1.47 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment - Att04 - Processed Kimberlite and Mine Rock Management Plan V.7.3 - Jun30_23.pdf (21.19 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment - Att05 - Final Detailed Design Plan for Dykes A1, G, H, I, J, K, and L V.6.0 - Jun30_23.pdf (76.69 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment - Att06 - Final Detailed Design Plan Dykes B, D, E, F, A2 and Peri. Berms V.4.0 - Jun30_23.pdf (64.83 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment - Att07 - Dyke Construction Management Plan Dykes A1, F, G, H, I, J, K and L V5 - Jun30_23.pdf (36.4 MB)
30-Jun-23	De Beers Gahcho Kue - Amendment -Att08 - Dyke Construction Management Plan Dykes B, D, E, A2, and Peri. Berms V.4 - Jun30.pdf (27.43 MB)
6-Jul-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - May 29-30, 2023 Inspection Report - July 6_23.pdf (28.16 MB)
6-Jul-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Jun 19 and 30, 2023 Inspection Report - July 6_23.pdf (23.46 MB)
20-Jul-23	De Beers Gahcho Kue - Permit Amendment and Modification Request - Review Comment Table - Jul20_23.pdf (488.8 KB)
25-Jul-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Permit Amendment and Modification Request - Jul25_23.pdf (231.95 KB)
25-Jul-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue -Notification - Preliminary Screening Determination - Jul25_23.pdf (208.53 KB)
28-Jul-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual Report V1.1 - July 28_23.pdf (62.98 MB)
31-Jul-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - June 2023 - July 31_23.pdf (8.21 MB)
31-Jul-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual Report V1.1 - Board Staff Conformity - July 31_23.pdf (147.3 KB)
14-Aug-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Aug 14_23.pdf (307.96 KB)
15-Aug-23	MV2005L2-0015 - De Beers Gahcho Kue - 2022 Annual Air Quality Report - Aug 15_23.pdf (3.39 MB)
18-Aug-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to July 20 Spill - Aug 18_23.pdf (1.67 MB)
22-Aug-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - July 20_23.pdf (307.78 KB)
29-Aug-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - July 2023 - Aug 29_23.pdf (7.23 MB)
12-Sep-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Sept 12_23.pdf (307.59 KB)

Date	Submission
12-Sep-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Aug 14 Spill - Sept 12_23.pdf (864.53 KB)
19-Sep-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - August 2023 - Sept 19_23.pdf (16.15 MB)
25-Sep-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Sept 25_23.pdf (307.75 KB)
28-Sep-23	De Beers Gahcho Kué – 2022 AEMP Annual Report - Review Summery and Responses - Sept28_23.pdf (742.07 KB)
6-Oct-23	De Beers Gahcho Kué – Revisions Required - 2022 AEMP Annual Report - Oct6_23.pdf (231.02 KB)
11-Oct-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Sept 12 Spill - Oct 11_23.pdf (1.76 MB)
11-Oct-23	De Beers Gahcho Kue - Aug 1, 2023 Inspection Report - Oct 11_23.pdf (18.06 MB)
12-Oct-23	MV2005L2-0015 - De Beers Gahcho Kue - 2023 Geotech Inspection Report and Implementation Plan - Oct 12_23.pdf (80.95 MB)
23-Oct-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Sept 25 Spill - Oct 23_23.pdf (1.15 MB)
25-Oct-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Oct 25_23.pdf (307.66 KB)
31-Oct-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - September 2023 - Oct 31_23.pdf (16.97 MB)
6-Nov-23	MV2005L2-0015 - De Beers Gahcho Kue - 2022 AEMP Annual Report Version 1.1 - Nov 6_23.pdf (102.67 MB)
15-Nov-23	MV2021D0009 MV2005L2-0015 - De Beers Gahcho Kue - Nov 8-9, 2023 Inspection Report - Nov 15_23.pdf (11.44 MB)
22-Nov-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Oct 25 Spill - Nov 22_23.pdf (889.17 KB)
24-Nov-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Nov 24_23.pdf (334.69 KB)
30-Nov-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - October 2023 - Nov 30_23.pdf (15.91 MB)
4-Dec-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Dec 4_23.pdf (332.1 KB)
19-Dec-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Nov 24 Spill - Dec 19_23.pdf (530.48 KB)
20-Dec-23	De Beers Gahcho Kue - Dec 19, 2023 Inspection Report - Dec 20_23.pdf (11.12 MB)
20-Dec-23	De Beers Gahcho Kue - Actions Taken to Address Dec 19 Inspect Report - Dec 20_23.pdf (223.8 KB)
21-Dec-23	MV2005L2-0015 - De Beers Gahcho Kue - SNP Report - November 2023 - Dec 21_23.pdf (22.02 MB)
25-Dec-23	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Spill Report - Dec 25_23.pdf (307.77 KB)
2-Jan-24	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Dec 4 Spill - Jan 2_24.pdf (893.03 KB)
10-Jan-24	De Beers Gahcho Kué - 2022 AEMP Annual Report V1.1 - Board Staff Conformity - Jan 10_24.pdf (148.11 KB)
24-Jan-24	MV2021D0009 - MV2005L2-0015 - De Beers Gahcho Kue - Follow up to Dec 25 Spill - Jan 24_24.pdf (1.32 MB)
26-Jan-24	De Beers Gahcho Kue - ICRP V.5 Extension Request - Jan 26_24.pdf (158.61 KB)
30-Jan-24	De Beers Gahcho Kué - Approval of ICRP Version 5 Extension to Submission Deadline - Jan 30_24.pdf (164.09 KB)

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 2023 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. Below is a brief overview of items requiring action as noted in inspection reports in 2023:

In the March 30/31, 2023 Inspection Report, De Beers was instructed to rectify the noted non-compliances within the light vehicle refueling are or face potential enforcement actions. These actions were completed and acknowledged by the inspector during the May 29/30 inspection report.

During the May 31 inspection of Margaret Lake Camp, De Beers was instructed to address a historical spill, hydrocarbon spot staining and secondary containment placement. On August 1 Nuna Logistics was deployed to complete these actions. The Inspector confirmed that these items were adequality addressed via evidence provided by email. Due to the wildfire evacuation, a follow up inspection confirming these remediation activities was not completed until February 27, 2024.

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 2023. Actions taken by De Beers to address any non-conformances are also identified.

Table 21-1 Summary of Actions Taken in 2023 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
March 13& 14 / March 30 & 31	May 18, 2023	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.	Spill kits replaced and proper spill response materials and containment place at light vehicle module. All contaminated material, including snow and ice, removed for disposal offsite, with secondary containment being emptied to ensure adequate capacity. Fueling procedure and spill response/reporting presented during weekly site safety meetings, with tool boxes being visited by the Environment department to enforce reporting and proper refueling practices.
March 31, 2023	June 2,2023	MV2005L2-0015 Industrial Water Use MV2021D0009 Mining & Associated Activities	Fuel Storage at Margaret Lake Work Camp, associated with Power Generation	Fuel Storage Unacceptable "U" at Margaret Lake Work Camp. #49 Fuel Containment, #53 Not allow spread of petroleum products, #63 Clean Up Spills. # 64 Reporting of Spills	Working with the Prime Contractor Nuna, who is responsible for the operation of the Margaret Lake Camp, a remediation program was put into place in early August. These activities included the following: The area underneath the powerhouse was excavated to ensure all contaminated material associated with a spill. All contaminated material was placed in lined mega bags for removal during the 2024 winter road. This work was completed to the satisfaction of the inspection via evidence provided over email in August of 2023. All spill protection boards were replaced underneath vehicles and properly weighed down to avoid displacement by the wind. Older fleet vehicles that were a source of minor spills, that were no longer in use, were removed from the site during the 2024 winter road season. All evidence of hydrocarbon staining through the camp area had contaminated material removed and fresh material placed. All contaminated material was placed in lined mega bags for removal during the 2024 winter road.

22 REFERENCES

Canadian Council of Ministers of the Environment (CCME).2014. Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life. Environment Canada, Winnipeg, Manitoba.

Canadian Council of Ministers of the Environment (CCME), 2015. Soil Quality Guidelines for the Protection of Environmental and Human Health, for coarse textured soils under residential/parkland land use.

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Appendix A – ENGAGEMENT RECORDS, 2023

Record of Engagement for 2023

Summary of major engagement activities undertaken in 2023 on matters related to the environment and regulatory submissions at the Gahcho Kue Mine. The engagement record does not include personal phone calls, emails, or responses to review comments.

Date	Event	Location / Method	Stakeholders	Discussion Summary
Feb 2, 2023	NHX Governance Committee Meeting	Dettah In-person & Online	NHX	Provided environmental, operations and regulatory Updates. Provided info sharing on additional ore in Hearne pit, FPKC expansion and conceptual mine life extension plan. No major concerns received from the committee members
Apr 25-26, 2023	NHX Governance Committee Meeting	Łutselk'e In-person & Online	NHX	Provided environmental, operations and regulatory Updates. Provided Plain Language Summaries of submitted annual reports No major concerns received from the committee members.
Apr 25, 2023	LKDFN Community Open House	Łutselk'e In-person	LKDFN & NHX	Provided environmental, operations and regulatory Updates. Provided info sharing on additional ore in Hearne pit, FPKC expansion and conceptual mine life extension plan. Discussed the mine's closure and reclamation plan. No major concerns received from participants.
Sep 13, 2023	NHX Governance Committee Meeting	Online	NHX	Originally planning On-the-Land meeting was postponed to an online meeting on Sep 13 due to fire evacuations. During the meeting, provided environmental, operations and regulatory updates. Provided Plain Language Summaries of submitted annual reports. Continued to provide progressive info sharing on additional ore in Hearne pit, FPKC expansion and conceptual mine life extension plan. Also provided information on geochemistry studies on potentially acid generating rock and upcoming water licence amendment. No major concerns received from the committee members.
Nov 20, 2023	TG Environment Staff Engagement Meeting	TG Yellowknife Office In-person & Online	TG	Provided information on geochemistry studies on potentially acid generating rock, potential sustained drought conditions and water management changes. Introduced plans for upcoming water licence amendment. No major concerns received from participants.
Nov 21-22, 2023	NHX Governance Committee Meeting	Yellowknife NSMA Office In-person & Online	NHX	Provided environmental, operations and regulatory updates. Continued to provide information on geochemistry studies on potentially acid generating rock, potential sustained drought conditions and water management changes. Introduced plans for upcoming water licence amendment. No major concerns received from the committee members.
Nov 24, 2023	NWTMN Annual General Assembly	Hay River In-person	NWTMN	Provided environmental, operations and regulatory updates. Provided information on geochemistry studies on potentially acid generating rock, potential sustained

Date	Event	Location / Method	Stakeholders	Discussion Summary
				drought conditions and water management changes. Introduced plans for upcoming water licence amendment. No major concerns received from participants.
Jan 16, 2024	NHX Governance Committee Meeting	Behchokǫ̀ In-person & Online	NHX	Provided environmental, operations and regulatory updates. Provided information on geochemistry studies on potentially acid generating rock, potential sustained drought conditions and water management changes. Introduced plans for upcoming water licence amendment. Provided information on upcoming Water Licence Modification request on lateral extension of West Mine Rock Pile. No major concerns received from the committee members.
Jan 16, 2024	TG Community Open House	Behchokǫ̀ In-person	TG	Provided environmental, operations and regulatory updates. Provided information on geochemistry studies on potentially acid generating rock, potential sustained drought conditions and water management changes. Introduced plans for upcoming water licence amendment. No major concerns received from participants.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	DKFN	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	LKDFN	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	NSMA	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	NWTMN (incl. FRMG, FSMC, HRMGC)	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	TG	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Jan 29, 2024	Notification of Application & Technical Workshop Invitation Letter	Letter	YKDFN	Notification of upcoming application to amend geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. A workshop was scheduled in Yellowknife on March 7.
Mar 7, 2024	Technical Workshop	Yellowknife In-person & Online	DKFN, LKDFN NWTMN (incl. FRMG, FSMC, HRMGC), NSMA, TG, YKDFN, NHX	Presented technical studies to support updating geochem classification of PAG rock and management plan, and to update water management plan by drawing external water sources. No major concerns were received.

Note:

DKFN - Deninu Kué First Nation
NWTMN – Northwest Territory Métis Nation (incl. Fort Resolution Métis Government (FRMG), Fort Smith Métis Council (MSMC), and Hay River Métis Government Council (HRMGC))
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
TG - Tłı̨chǫ Government
YKDFN - Yellowknives Dene First Nation

Appendix B – GROUNDWATER SEEPAGE SURVEY REPORT, 2023

DE BEERS GROUP

Gahcho Kué Mine

2023 Groundwater Seepage Survey Report

March 2024

Acknowledgements

The following people contributed to this *2023 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)
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1 INTRODUCTION

The 2023 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 2023 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 2023 annual seepage survey was completed on 28 October 2023 by De Beers site staff. The surveys of the 5034, Hearne, and Tuzo pits included a visual inspection for seepages on the pit walls.

- Observed 5034 Pit seepages in 2021 and 2022 decreased significantly in 2023, with minimal seepage observed; no flow measurement was possible in 5034 Pit in 2023.
- Visible seepages were observed in the Hearne Pit; however, no flow measurements could be obtained on the north wall of the Hearne pit but a measurement was obtained on the south side of the pit bottom.
- Minimal (unmeasurable) seepage was observed in Tuzo Pit, which is now in its third year of development; the small amount of seepage was attributed to ground water seeping through the diabase rock of the pit wall and floor.

It is noted that most of the seepage areas were inaccessible in these pits during the survey due to potential safety hazards.

In total, only one sample was collected during the survey for laboratory analysis; this sample was collected from the bottom of the Hearne Pit on the south side. The sample was collected directly into laboratory supplied bottles for chemistry analysis 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, TSS, dissolved oxygen, turbidity). The bottled samples were handled and preserved according to standard procedures and transported to ALS Environmental (ALS) in Yellowknife within two days of sample collection 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 ALS 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 (six days), dissolved orthophosphate (three days), dissolved inorganic phosphorus (five days), total dissolved phosphorus (two days), nitrate (three days), nitrite (three days), and turbidity (one day). The hold time constraints should be considered if these data are to be evaluated in greater detail.

Daily water volumes pumped from the 5034 Pit sump (SNP-08), the Hearne Pit sump (SNP-09) to the WMP or CP1, and the Tuzo Pit sump (SNP-10) were recorded, and weekly water quality data samples collected from SNP-08 and SNP-09 sumps during 2023. SNP-10 was sampled less regularly throughout the 2023 monitoring period.

3 5034 PIT

3.1 Seepage Water Samples

Although seepages into the 5034 Pit were evident during the October 2023 seepage survey, primarily as ice formations on portions of the pit wall, no seepages or inflows could be measured or samples collected. Photographs showing the types and extent of the seepages in the 5034 Pit are provided in Appendix D.

The extent of seepages observed during this October survey contrast to the excessive seepages previously observed on the northeast wall of the 5034 Pit in 2021 and 2022. It is considered that this notable change in 2023 is due to the progress of the Tuzo Pit development, where seeps and inflows to the 5034 Pit are likely flowing back into the Tuzo Pit instead of flowing over/down the wall into 5034 Pit, which is resulting in negligible or small flows in the 5034 Pit. Another potential explanation is that there has been less precipitation in 2023 than in previous years and the site is drier in general.

3.2 Measured Groundwater Discharge Quantity

As of December of 2023, the bottom of the 5034 Pit was at an elevation of 159 metres above sea level (masl). Any groundwater seeping in through the pit wall and up through the pit floor in the 5034 Pit (i.e., shallow groundwater flow through the active layer and deep groundwater flow) reports to the 5034 Pit sump (SNP-08). The water collecting in the 5034 Pit sump also includes surface water inflows to the pit (e.g., direct precipitation and surface runoff to the pit).

This 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, 2023.

Most of the observed seepages in the 5034 Pit during the October 2023 seepage survey were small flows or iced formations on portions of the pit wall (Appendix D). The ice on the pit wall surface represents the discharge of water to the pit wall surface under very low horizontal gradients, which has frozen due to the ambient temperature conditions. No flow measurements were recorded at the visible seep locations due to the low volume of flow and the iced formations.

The diffuse character of most water seepages (Appendix D) 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 observed flow and frozen seepages were too small to be a characteristic of a highly transmissive feature.

3.3 Measured Groundwater Discharge Quality

As a requirement of the Groundwater Monitoring Program (De Beers 2019), water collecting in the 5034 Pit sump (SNP-08) was sampled weekly in 2023, when sump water was being pumped out of the pit to CP1. These samples were submitted to ALS in Yellowknife for detailed laboratory analyses including physical parameters, major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium).

Appendix F presents calculated TDS concentrations in sump water samples from the 5034 Pit collected from January to December 2023 (the calculated TDS excludes the contribution of nitrate to the TDS, whose source comprises primarily explosive nitrogen residue). 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 that were submitted to the Mackenzie Valley Land and Water Board (MVLWB) throughout 2023.

4 HEARNE PIT

4.1 Seepage Water Samples

Seepages were observed in the Hearne Pit during the October 2023 seepage survey, particularly along the south side of the pit. One sample was collected from the bottom of the pit on the south side in Hearne Pit. Field physico-chemical measurements and the results of the laboratory analyses are presented in Appendix A. The reported calculated TDS of the seep sample was 1,080 mg/L.

Photographs showing the types and extent of the seepages in the Hearne Pit are provided in Appendix H.

4.2 Measured Groundwater Discharge Quantity

In December 2023, the bottom of the Hearne Pit was at an approximate elevation of 229 masl. Any groundwater seeping through the pit wall and direct precipitation reports to 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 and Appendix G presents the measured daily pumping rates (or discharge) from the Hearne Pit sump to the WMP from January to December 2023.

Seepage areas were observed on the walls of the Hearne Pit in October 2023 (Appendix H). The measured flow rate of the visible seeps at the bottom of the pit on the south side (Appendix E) was 4.7 L/min, which was obtained using a 1 L bottle and recording the time to fill the bottle.

The southeast corner of the Hearne Pit is an area where seepage into bedrock is interpreted to occur near a small water collection pond (CP5) located to the immediate southwest of the pit (Appendix B). A southwest-northeast trending structure cuts through the pit shell at an oblique angle in the southwest 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 southwest corner compared to other areas of the pit.

4.2 Measured Groundwater Discharge Quality

As a requirement of the Groundwater Monitoring Program (De Beers 2019), water collecting in the Hearne Pit sump (SNP-09) was sampled weekly, when sump water was pumped out of the pit to the WMP, and submitted to ALS for detailed laboratory analyses including physical parameters, major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium).

Appendix I presents calculated TDS concentrations in sump water samples from the Hearne Pit (excluding nitrate) from January to December 2023. All other water chemistry data from the weekly SNP-09 samples collected from the Hearne 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

Very limited seepages were observed in Tuzo Pit during the October 2023 seepage survey, with most seepages comprising ice formations on the pit wall. Most of the seepage observed on the west wall near the ramp was seeping through diabase rock into the pit. Photographs showing the type and extent of the seepages in the Tuzo Pit are provided in Appendix L.

5.2 Measured Groundwater Discharge Quantity

As of December 2023, the bottom of the Tuzo Pit was at an approximate elevation of 271 masl. During 2023, any surface water or seepage inflows into the pit report to the Tuzo Pit Sump (SNP-10). The sump water is then transferred to the WMP on an as needed basis via pumping, which is monitored for pumping flow rates. 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 2023.

5.3 Measured Groundwater Discharge Quality

As a requirement of the Groundwater Monitoring Program (De Beers 2019), water collecting in the Tuzo Pit sump (SNP-10) was sampled when water was pumped, and submitted to ALS for detailed laboratory analyses including physical parameters, major ions, total and dissolved nutrients, total and dissolved metals, and radionuclides (uranium and thorium).

Appendix K presents calculated TDS concentrations in sump water samples from the Tuzo Pit (excluding nitrate) from January to December 2023. All other water chemistry data from the weekly SNP-10 samples collected from the Tuzo Pit sump have been reported in the Mine's monthly SNP reports that were submitted to the MVLWB.

6 COMPARISONS OF PREDICTED TO OBSERVED INFLOWS AND QUALITY

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 been updated to reflect current water management conditions and changes to the mine plan since the 2020 model update.

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 2020 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 from the updated groundwater model and the 2020 Site Water Quality Model (including groundwater and sump inflow volumes) and measured daily sump inflows are shown in Tables 1 to 3 (Golder 2020).

Table 1: Comparison of Annual Average 2023 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 2023	1,100	1,461[(a)]	1,155.37

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

Table 2: Comparison of Annual Average 2023 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 2023	300	300[(a)]	710.53

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

Table 3: Comparison of Annual Average 2023 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 2023	1,000	1,583[(a)]	113.55

a) Based on the 2020 Site Water Quality Model results.
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 at 5034 Pit (i.e., within 20%), as determined from sump pumping rates. However, the 2020 Site Water Quality Model underpredicted inflows to Hearne Pit and overpredicted inflows to Tuzo Pit. The Hearne Pit underprediction may reflect a difference in the mine plan from the mine plan used in the 2020 Site Water Quality Model. The Tuzo Pit overprediction may reflect model uncertainties associated with the early 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 pit depth assumed in the groundwater numerical model. 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 2023 where it only had noted flow rates for three months.

6.2 Gahcho Kué Mine Site Water Quality Model

The Site Water Quality Model developed for the EIS, with subsequent updates in 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 collected 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 water quality monitoring data (specifically TDS) from the pit sumps (pumping rates reflecting inflows and quality as TDS concentrations) collected under the SNP per the Groundwater Monitoring

Program in 2023 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 2023 (i.e., the annual average concentration).

Table 4: Comparison of Annual Average 2023 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 2023	6,940	7,569	3,693

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

Table 5: Comparison of Annual Average 2023 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 2023	4,940	2,841	2,880

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

Table 6: Comparison of Annual Average 2023 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 2023	4,680	4,670	1,720

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

Tables 4 to 6 show the Site Water Quality Model closely projected the TDS in Hearne Pit but underestimated the pit sump water TDS in the 5034 Pit and Tuzo Pit by an average of 51% and 63%, respectively.

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 2023, the following conclusions are presented:

- Seepages to Hearne, 5034, and Tuzo pits were observed during the October 2023 seepage survey as small visible seeps and ice formations on the pit wall. These seeps were consistently small in

magnitude, with only one sample being able to be collected in the Hearne Pit. For Tuzo and 5034 Pits, geological structures do intersect the pit shell in both pits, but flow rates were not measurable at any specific seeps, indicating that these structures are not currently contributing groundwater to the pits.

- The rate of measurable seepage associated with the sample collection in the Hearne Pit (i.e., inflows) was small relative to the total sump flow.
- There were insufficient data to determine the relative contribution of groundwater quantity and quality from preferential flow paths.
- 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 represented 79% of the modelled inflows, and measured TDS concentrations represented 49% of the modelled values.
  - Measured inflows to the Hearne Pit sump were 136% greater than modelled inflows, and measured TDS concentrations approximately matched the modelled values.
  - Measured inflows to the Tuzo Pit sump represented 7% of the modelled inflows, and measured TDS concentrations represented 37% of the modelled values.

8 REFERENCES

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 Mackenzie Valley Environmental Impact Review Board. Yellowknife, NT, Canada. December 2010.

De Beers. 2019. Gahcho Kué Mine Groundwater Monitoring Program, Version 4.1. Submitted to the Mackenzie Valley Land and Water Board, Yellowknife, NT, Canada. January 2019.

Golder (Golder Associates Ltd.). 2020. Gahcho Kué Mine – Water Quality Model Updates. 2020 Water Licence and Land Use Permit Amendment. Prepared for De Beers Canada Inc. as part of the 2020 Water Licence and Land Use Permit Amendment Application Package, Attachment 4. Submitted to the Mackenzie Valley Land and Water Board, Yellowknife, NT, Canada. March 2020.

APPENDIX A

Water Chemistry – Seepage Survey

Table A1: Physico-chemical Field Parameters Measured in Seep in the Hearne Pit, 2023

Parameter	Sample ID
	GW-HEARNE-02
Temperature (˚C)	2.08
Field pH	7.85
Dissolved Oxygen (%)	12.9
Dissolved Oxygen (mg/L)	101
Specific Conductivity (µS/cm)	1,386
TSS (mg/L)	759
Turbidity (NTU)	1,064
Nitrate (mg/L)	-

µS/cm = microsiemens per centimetre; NTU = nephelometric turbidity unit; TSS = total suspended solids; - = no data available.

Table A2: Laboratory Chemistry Results for Seepage Survey Sample Collected from the Hearne Pit, October 2023

Analyte	Units	Detection Limit	GW-HEARNE-02
			YL2301537-001
			2023-10-28 09:45:00 AM
Conductivity	uS/cm	2	1,370
Hardness (as $CaCO_3$)	mg/L	0.5	504
pH	pH	0.1	7.98
Total Dissolved Solids	mg/L	20	1,080
Total Suspended Solids	mg/L	1	460
Turbidity	NTU	0.1	412
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	1	114
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	1	<1.0
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	1	<1.0
Alkalinity, Phenolphthalein (as $CaCO_3$)	mg/L	1	<1.0
Alkalinity, Total (as $CaCO_3$)	mg/L	1	114
Aluminum (Al)-Dissolved	mg/L	0.001	0.0062
Aluminum (Al)-Total	mg/L	0.015	38.6
Ammonia- (as N)	mg/L	0.005	0.0262
Bromide (Br)	mg/L	0.05	1.26
Chloride (Cl)	mg/L	0.5	107
Fluoride (F)	mg/L	0.05	0.792
Nitrate (as N)	mg/L	0.015	8.36
Nitrate and Nitrite (as N)	mg/L	0.0158	8.37
Nitrite (as N)	mg/L	0.005	0.0065
Total Kjeldahl Nitrogen	mg/L	0.05	0.305
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010
Phosphorus (P)-Dissolved Inorganic	mg/L	0.001	<0.0010
Phosphorus (P)-Dissolved Organic	mg/L	0.002	0.0023
Phosphorus (P)-Total Dissolved	mg/L	0.001	0.0023
Phosphorus (P)-Total	mg/L	0.001	0.747
Phosphorus (P)-Total Inorganic	mg/L	0.001	0.766
Silicate (as SiO_2)	mg/L	0.5	6.25
Sulfate (SO_4)	mg/L	0.3	426
Total Organic Carbon	mg/L	0.5	2.6
Antimony (Sb)-Dissolved	mg/L	0.0001	0.00016
Antimony (Sb)-Total	mg/L	0.0005	<0.00050
Arsenic (As)-Dissolved	mg/L	0.00003	0.000166
Arsenic (As)-Total	mg/L	0.00015	0.000784
Barium (Ba)-Dissolved	mg/L	0.0001	0.00926
Barium (Ba)-Total	mg/L	0.0005	0.0178
Beryllium (Be)-Dissolved	mg/L	0.00002	<0.000020
Beryllium (Be)-Total	mg/L	0.0001	0.00332
Bismuth (Bi)-Dissolved	mg/L	0.00005	<0.000050

Table A2: Laboratory Chemistry Results for Seepage Survey Sample Collected from the Hearne Pit, October 2023

Analyte	Units	Detection Limit	GW-HEARNE-02
			YL2301537-001
			2023-10-28 09:45:00 AM
Bismuth (Bi)-Total	mg/L	0.00025	<0.000250
Boron (B)-Dissolved	mg/L	0.005	0.242
Boron (B)-Total	mg/L	0.05	0.297
Cadmium (Cd)-Dissolved	mg/L	0.000005	0.0000063
Cadmium (Cd)-Total	mg/L	0.000025	<0.0000250
Calcium (Ca)-Dissolved	mg/L	0.05	144
Calcium (Ca)-Total	mg/L	0.25	150
Cesium (Cs)-Dissolved	mg/L	0.00001	0.000019
Cesium (Cs)-Total	mg/L	0.00005	0.000731
Chromium (Cr)-Dissolved	mg/L	0.0001	<0.00010
Chromium (Cr)-Total	mg/L	0.0005	0.00444
Cobalt (Co)-Dissolved	mg/L	0.00005	0.00007
Cobalt (Co)-Total	mg/L	0.00025	0.00758
Copper (Cu)-Dissolved	mg/L	0.00015	0.00036
Copper (Cu)-Total	mg/L	0.00075	0.00092
Iron (Fe)-Dissolved	mg/L	0.005	<0.0050
Iron (Fe)-Total	mg/L	0.025	33.4
Lead (Pb)-Dissolved	mg/L	0.00003	0.000093
Lead (Pb)-Total	mg/L	0.00015	0.00225
Lithium (Li)-Dissolved	mg/L	0.001	0.0316
Lithium (Li)-Total	mg/L	0.005	0.169
Magnesium (Mg)-Dissolved	mg/L	0.005	35.2
Magnesium (Mg)-Total	mg/L	0.025	88.8
Manganese (Mn)-Dissolved	mg/L	0.0001	0.0133
Manganese (Mn)-Total	mg/L	0.0005	0.248
Mercury (Hg)-Dissolved	mg/L	0.000005	<0.0000050
Mercury (Hg)-Total	mg/L	0.000005	<0.0000050
Molybdenum (Mo)-Dissolved	mg/L	0.00005	0.0139
Molybdenum (Mo)-Total	mg/L	0.00025	0.0137
Nickel (Ni)-Dissolved	mg/L	0.0001	0.00024
Nickel (Ni)-Total	mg/L	0.0005	0.0144
Potassium (K)-Dissolved	mg/L	0.05	2.75
Potassium (K)-Total	mg/L	0.25	4.09
Rubidium (Rb)-Dissolved	mg/L	0.0002	0.00147
Rubidium (Rb)-Total	mg/L	0.001	0.00821
Selenium (Se)-Dissolved	mg/L	0.00005	0.000135
Selenium (Se)-Total	mg/L	0.00025	0.000255
Silicon (Si)-Dissolved	mg/L	0.05	3.21
Silicon (Si)-Total	mg/L	0.5	58.8

Table A2: Laboratory Chemistry Results for Seepage Survey Sample Collected from the Hearne Pit, October 2023

Analyte	Units	Detection Limit	GW-HEARNE-02
			YL2301537-001
			2023-10-28 09:45:00 AM
Silver (Ag)-Dissolved	mg/L	0.00001	<0.000010
Silver (Ag)-Total	mg/L	0.00005	<0.000050
Sodium (Na)-Dissolved	mg/L	0.01	93.9
Sodium (Na)-Total	mg/L	0.15	89.5
Strontium (Sr)-Dissolved	mg/L	0.0002	2.7
Strontium (Sr)-Total	mg/L	0.001	2.7
Sulfur (S)-Dissolved	mg/L	0.5	158
Sulfur (S)-Total	mg/L	2.5	152
Thallium (Tl)-Dissolved	mg/L	0.00001	<0.000010
Thallium (Tl)-Total	mg/L	0.00005	<0.000050
Thorium (Th)-Dissolved	mg/L	0.0001	<0.00010
Thorium (Th)-Total	mg/L	0.0005	0.00854
Tin (Sn)-Dissolved	mg/L	0.00005	<0.000050
Tin (Sn)-Total	mg/L	0.00025	0.000561
Titanium (Ti)-Dissolved	mg/L	0.0003	<0.00030
Titanium (Ti)-Total	mg/L	0.0015	0.0214
Tungsten (W)-Dissolved	mg/L	0.0001	0.00022
Tungsten (W)-Total	mg/L	0.0005	<0.00050
Uranium (U)-Dissolved	mg/L	0.00001	0.0441
Uranium (U)-Total	mg/L	0.00005	0.0448
Vanadium (V)-Dissolved	mg/L	0.0005	0.00099
Vanadium (V)-Total	mg/L	0.0025	0.0312
Zinc (Zn)-Dissolved	mg/L	0.001	<0.0010
Zinc (Zn)-Total	mg/L	0.0075	0.0464
Thorium-228	Bq/L	0.4	<0.4
Thorium-230	Bq/L	30	<30
Thorium-234	Bq/L	4	<4
Uranium-234	Bq/L	0.001	0.52
Uranium-235	Bq/L	0.00006	0.026
Uranium-238	Bq/L	0.001	0.52

µS/cm = microsiemens per centimetre; Bq/L = Becquerel per litre; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; < = less than; NTU = nephelometric turbidity unit.

APPENDIX B

Open Pit Development and Mine Layout Superimposed on an Aerial Photograph

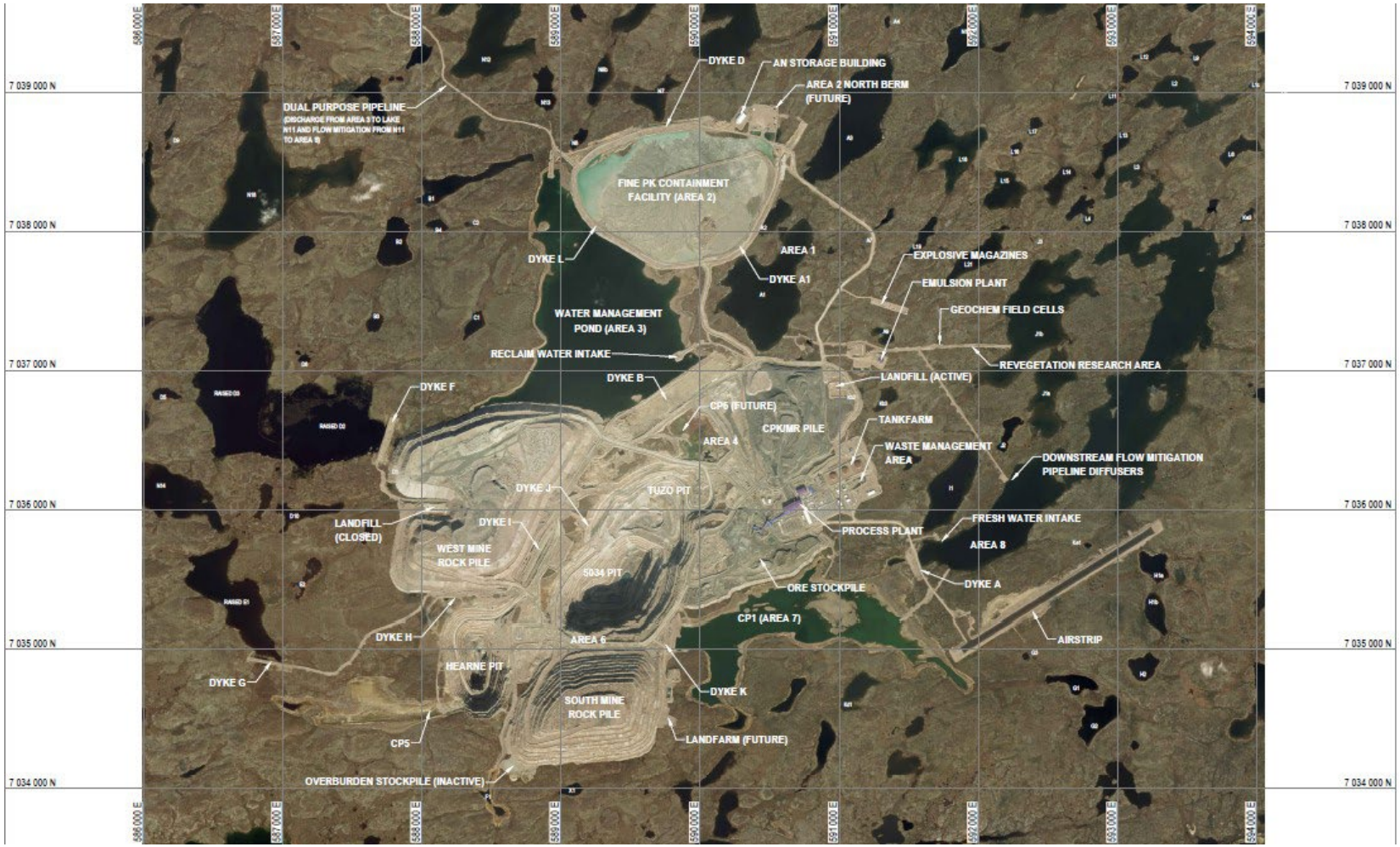

Figure B1: Site Infrastructure Layout, 2023

APPENDIX C

Daily Inflows to 5034 Pit Sump

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-01-01	0
2023-01-02	690
2023-01-03	397
2023-01-04	1,653
2023-01-05	1,817
2023-01-06	2,024
2023-01-07	813
2023-01-08	664
2023-01-09	0
2023-01-10	0
2023-01-11	1,401
2023-01-12	1,658
2023-01-13	785
2023-01-14	0
2023-01-15	0
2023-01-16	0
2023-01-17	0
2023-01-18	0
2023-01-19	0
2023-01-20	0
2023-01-21	0
2023-01-22	0
2023-01-23	0
2023-01-24	0
2023-01-25	0
2023-01-26	0
2023-01-27	0
2023-01-28	0
2023-01-29	0
2023-01-30	0
2023-01-31	0

Date	Inflow 5034 Pit Sump
	m³/day
2023-02-01	0
2023-02-02	0
2023-02-03	71
2023-02-04	1,657
2023-02-05	832
2023-02-06	527
2023-02-07	397
2023-02-08	1,453
2023-02-09	1,587
2023-02-10	606
2023-02-11	515
2023-02-12	1,201
2023-02-13	1,842
2023-02-14	1,427
2023-02-15	1,003
2023-02-16	2,028
2023-02-17	1,683
2023-02-18	650
2023-02-19	0
2023-02-20	0
2023-02-21	660
2023-02-22	958
2023-02-23	988
2023-02-24	936
2023-02-25	1,087
2023-02-26	1,090
2023-02-27	1,102
2023-02-28	0

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-03-01	0
2023-03-02	0
2023-03-03	0
2023-03-04	0
2023-03-05	0
2023-03-06	831
2023-03-07	1,176
2023-03-08	0
2023-03-09	1,238
2023-03-10	1,508
2023-03-11	1,472
2023-03-12	774
2023-03-13	0
2023-03-14	0
2023-03-15	0
2023-03-16	0
2023-03-17	0
2023-03-18	0
2023-03-19	0
2023-03-20	0
2023-03-21	1,062
2023-03-22	1,888
2023-03-23	780
2023-03-24	771
2023-03-25	1,194
2023-03-26	692
2023-03-27	766
2023-03-28	804
2023-03-29	1,254
2023-03-30	1,951
2023-03-31	1,359

Date	Inflow 5034 Pit Sump
	m³/day
2023-04-01	1,117
2023-04-02	1,039
2023-04-03	934
2023-04-04	1,296
2023-04-05	1,221
2023-04-06	1,369
2023-04-07	200
2023-04-08	886
2023-04-09	1,086
2023-04-10	1,152
2023-04-11	898
2023-04-12	0
2023-04-13	730
2023-04-14	0
2023-04-15	0
2023-04-16	0
2023-04-17	0
2023-04-18	0
2023-04-19	0
2023-04-20	934
2023-04-21	584
2023-04-22	2,025
2023-04-23	1,584
2023-04-24	360
2023-04-25	929
2023-04-26	686
2023-04-27	800
2023-04-28	1,629
2023-04-29	1,571
2023-04-30	1,805

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-05-01	1,693
2023-05-02	1,374
2023-05-03	1,598
2023-05-04	1,079
2023-05-05	2,350
2023-05-06	723
2023-05-07	2,177
2023-05-08	2,115
2023-05-09	2,559
2023-05-10	0
2023-05-11	1,134
2023-05-12	2,657
2023-05-13	1,716
2023-05-14	4,361
2023-05-15	6,124
2023-05-16	4,994
2023-05-17	4,786
2023-05-18	2,788
2023-05-19	2,254
2023-05-20	2,098
2023-05-21	1,905
2023-05-22	1,646
2023-05-23	1,742
2023-05-24	1,447
2023-05-25	1,810
2023-05-26	1,400
2023-05-27	1,391
2023-05-28	1,448
2023-05-29	1,317
2023-05-30	1,666
2023-05-31	1,451

Date	Inflow 5034 Pit Sump
	m³/day
2023-06-01	1,532
2023-06-02	1,502
2023-06-03	1,384
2023-06-04	1,811
2023-06-05	1,725
2023-06-06	1,647
2023-06-07	1,562
2023-06-08	2,558
2023-06-09	2,037
2023-06-10	1,926
2023-06-11	1,711
2023-06-12	1,838
2023-06-13	3,528
2023-06-14	3,691
2023-06-15	3,291
2023-06-16	1,616
2023-06-17	2,114
2023-06-18	1,915
2023-06-19	1,906
2023-06-20	1,896
2023-06-21	1,827
2023-06-22	1,732
2023-06-23	1,936
2023-06-24	1,911
2023-06-25	2,390
2023-06-26	595
2023-06-27	890
2023-06-28	3,222
2023-06-29	1,231
2023-06-30	977

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-07-01	2,541
2023-07-02	1,432
2023-07-03	2,157
2023-07-04	1,682
2023-07-05	1,388
2023-07-06	1,135
2023-07-07	1,021
2023-07-08	1,396
2023-07-09	1,383
2023-07-10	1,359
2023-07-11	170
2023-07-12	1,997
2023-07-13	1,309
2023-07-14	1,222
2023-07-15	1,201
2023-07-16	1,172
2023-07-17	1,467
2023-07-18	1,133
2023-07-19	709
2023-07-20	261
2023-07-21	1,031
2023-07-22	1,591
2023-07-23	907
2023-07-24	1,195
2023-07-25	1,158
2023-07-26	686
2023-07-27	62
2023-07-28	296
2023-07-29	570
2023-07-30	766
2023-07-31	1,030

Date	Inflow 5034 Pit Sump
	m³/day
2023-08-01	2,459
2023-08-02	302
2023-08-03	0
2023-08-04	0
2023-08-05	0
2023-08-06	354
2023-08-07	2,575
2023-08-08	716
2023-08-09	0
2023-08-10	4,102
2023-08-11	2,722
2023-08-12	1,730
2023-08-13	974
2023-08-14	470
2023-08-15	470
2023-08-16	1,181
2023-08-17	344
2023-08-18	136
2023-08-19	528
2023-08-20	1,361
2023-08-21	590
2023-08-22	0
2023-08-23	31
2023-08-24	140
2023-08-25	0
2023-08-26	3,800
2023-08-27	3,109
2023-08-28	706
2023-08-29	0
2023-08-30	0
2023-08-31	0

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-09-01	0
2023-09-02	0
2023-09-03	0
2023-09-04	0
2023-09-05	0
2023-09-06	0
2023-09-07	0
2023-09-08	0
2023-09-09	0
2023-09-10	0
2023-09-11	0
2023-09-12	0
2023-09-13	0
2023-09-14	0
2023-09-15	0
2023-09-16	0
2023-09-17	0
2023-09-18	0
2023-09-19	0
2023-09-20	0
2023-09-21	0
2023-09-22	0
2023-09-23	0
2023-09-24	0
2023-09-25	0
2023-09-26	0
2023-09-27	0
2023-09-28	0
2023-09-29	0
2023-09-30	0

Date	Inflow 5034 Pit Sump
	m³/day
2023-10-01	0
2023-10-02	0
2023-10-03	0
2023-10-04	0
2023-10-05	0
2023-10-06	0
2023-10-07	0
2023-10-08	0
2023-10-09	0
2023-10-10	0
2023-10-11	0
2023-10-12	0
2023-10-13	0
2023-10-14	0
2023-10-15	0
2023-10-16	0
2023-10-17	0
2023-10-18	0
2023-10-19	608
2023-10-20	6,820
2023-10-21	7,536
2023-10-22	4,986
2023-10-23	6,077
2023-10-24	5,873
2023-10-25	3,278
2023-10-26	5,332
2023-10-27	81
2023-10-28	3,015
2023-10-29	4,248
2023-10-30	4,103
2023-10-31	4,897

Table C1: Daily Inflows 5034 Pit

Date	Inflow 5034 Pit Sump
	m³/day
2023-11-01	540
2023-11-02	5,149
2023-11-03	5,048
2023-11-04	0
2023-11-05	2,567
2023-11-06	4,509
2023-11-07	2,253
2023-11-08	1,394
2023-11-09	0
2023-11-10	2,801
2023-11-11	3,160
2023-11-12	884
2023-11-13	2,225
2023-11-14	1,460
2023-11-15	1,434
2023-11-16	1,362
2023-11-17	1,150
2023-11-18	1,158
2023-11-19	831
2023-11-20	0
2023-11-21	346
2023-11-22	1,375
2023-11-23	796
2023-11-24	1,237
2023-11-25	1,438
2023-11-26	1,965
2023-11-27	35
2023-11-28	113
2023-11-29	3,021
2023-11-30	827

Average Annual 5034 Pit Inflow	
January to end of December	
1,155	m³/day

Date	Inflow 5034 Pit Sump
	m³/day
2023-12-01	821
2023-12-02	2,064
2023-12-03	0
2023-12-04	0
2023-12-05	0
2023-12-06	0
2023-12-07	3,289
2023-12-08	3,377
2023-12-09	2,118
2023-12-10	1,025
2023-12-11	2,382
2023-12-12	2,423
2023-12-13	959
2023-12-14	958
2023-12-15	945
2023-12-16	2,382
2023-12-17	4,404
2023-12-18	1,066
2023-12-19	1,062
2023-12-20	1,006
2023-12-21	718
2023-12-22	513
2023-12-23	1,453
2023-12-24	1,294
2023-12-25	1,868
2023-12-26	3,233
2023-12-27	2,750
2023-12-28	48
2023-12-29	1,705
2023-12-30	2,000
2023-12-31	1,432

APPENDIX D

5034 Pit Photographs

Photo D1: Northeast wall of 5034 Pit – 28 October 2023

Photo D2: Northeast wall of 5034 Pit – 28 October 2023

Photo D3: Northeast wall of 5034 Pit – 28 October 2023

Photo D4: Northeast wall of 5034 Pit – 28 October 2023

Photo D5: Northeast wall of 5034 Pit – 28 October 2023

Photo D6: West wall of 5034 Pit – 28 October 2023

Photo D7: North wall of 5034 Pit – 28 October 2023

Photo D8: Southwest wall of 5034 Pit – 28 October 2023

APPENDIX E

Field Flow Measurements – Seepage Survey

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

Pit	Location ID	Bench	Location	Description	Estimated Flow Rate (L/min)	Sampled
Hearne	1	-	0588382 E 7034778 N	South side of pit	4.7	Y (GW-Hearne-02)

- = 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	2023-01-03	3,460
SNP-08	2023-01-11	4,650
SNP-08	2023-01-11	4,580
SNP-08	2023-01-16	3,260
SNP-08	2023-01-16	3,570
SNP-08	2023-01-29	3,550
SNP-08	2023-02-05	3,440
SNP-08	2023-02-09	3,310
SNP-08	2023-02-13	3,690
SNP-08	2023-02-21	4,300
SNP-08	2023-03-07	4,000
SNP-08	2023-03-13	4,220
SNP-08	2023-03-21	3,400
SNP-08	2023-03-28	4,540
SNP-08	2023-04-03	4,470
SNP-08	2023-04-10	5,330
SNP-08	2023-04-18	3,800
SNP-08	2023-04-25	3,250
SNP-08	2023-05-01	2,300
SNP-08	2023-05-08	3,180
SNP-08	2023-05-11	3,480
SNP-08	2023-05-12	3,240
SNP-08	2023-05-15	3,430
SNP-08	2023-05-22	3,870
SNP-08	2023-05-29	2,980
SNP-08	2023-06-05	3,980
SNP-08	2023-06-12	3,120
SNP-08	2023-06-21	3,490
SNP-08	2023-06-28	3,770
SNP-08	2023-07-03	3,240
SNP-08	2023-07-10	3,690
SNP-08	2023-07-17	4,040
SNP-08	2023-07-24	3,350
SNP-08	2023-08-01	3,630
SNP-08	2023-08-26	2,880
SNP-08	2023-10-22	3,040
SNP-08	2023-10-26	3,380
SNP-08	2023-11-02	4,010
SNP-08	2023-11-06	4,240
SNP-08	2023-11-15	3,660
SNP-08	2023-11-20	3,900
SNP-08	2023-11-29	4,170

Sampling Point	Date	TDS (Calculated (mg/L)
SNP-08	2023-12-10	4,150
SNP-08	2023-12-14	3,610
SNP-08	2023-12-18	3,520
Average		**3,693**

APPENDIX G

Daily Inflows to Hearne Pit

Table G1: Daily Inflows to Hearne Pit

Date	Inflow Hearne Pit Sump
	m^3/day
2023-01-01	245
2023-01-02	948
2023-01-03	0
2023-01-04	0
2023-01-05	0
2023-01-06	0
2023-01-07	1,375
2023-01-08	1,156
2023-01-09	569
2023-01-10	0
2023-01-11	0
2023-01-12	0
2023-01-13	1,115
2023-01-14	1,138
2023-01-15	1,011
2023-01-16	809
2023-01-17	0
2023-01-18	0
2023-01-19	0
2023-01-20	608
2023-01-21	1,250
2023-01-22	1,046
2023-01-23	733
2023-01-24	0
2023-01-25	0
2023-01-26	0
2023-01-27	0
2023-01-28	0
2023-01-29	0
2023-01-30	0
2023-01-31	0

Date	Inflow Hearne Pit Sump
	m^3/day
2023-02-01	929
2023-02-02	929
2023-02-03	1,170
2023-02-04	1,130
2023-02-05	0
2023-02-06	0
2023-02-07	0
2023-02-08	0
2023-02-09	0
2023-02-10	0
2023-02-11	643
2023-02-12	1,235
2023-02-13	679
2023-02-14	401
2023-02-15	0
2023-02-16	0
2023-02-17	0
2023-02-18	0
2023-02-19	0
2023-02-20	0
2023-02-21	0
2023-02-22	0
2023-02-23	0
2023-02-24	0
2023-02-25	0
2023-02-26	0
2023-02-27	0
2023-02-28	0

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2023-03-01	751
2023-03-02	1,287
2023-03-03	1,315
2023-03-04	82
2023-03-05	0
2023-03-06	0
2023-03-07	43
2023-03-08	945
2023-03-09	1,247
2023-03-10	1,218
2023-03-11	1,543
2023-03-12	1,193
2023-03-13	579
2023-03-14	0
2023-03-15	0
2023-03-16	0
2023-03-17	0
2023-03-18	0
2023-03-19	0
2023-03-20	0
2023-03-21	0
2023-03-22	599
2023-03-23	1,170
2023-03-24	651
2023-03-25	993
2023-03-26	973
2023-03-27	933
2023-03-28	1,017
2023-03-29	0
2023-03-30	0
2023-03-31	0

Date	Inflow Hearne Pit Sump
	m³/day
2023-04-01	0
2023-04-02	106
2023-04-03	816
2023-04-04	1,099
2023-04-05	0
2023-04-06	0
2023-04-07	0
2023-04-08	0
2023-04-09	0
2023-04-10	0
2023-04-11	0
2023-04-12	0
2023-04-13	0
2023-04-14	0
2023-04-15	0
2023-04-16	0
2023-04-17	0
2023-04-18	0
2023-04-19	0
2023-04-20	0
2023-04-21	264
2023-04-22	1,376
2023-04-23	1,563
2023-04-24	1,653
2023-04-25	988
2023-04-26	798
2023-04-27	829
2023-04-28	1,498
2023-04-29	3,195
2023-04-30	2,706

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2023-05-01	1,542
2023-05-02	1,027
2023-05-03	993
2023-05-04	1,775
2023-05-05	1,859
2023-05-06	1,788
2023-05-07	1,535
2023-05-08	1,383
2023-05-09	1,059
2023-05-10	0
2023-05-11	252
2023-05-12	2,237
2023-05-13	2,343
2023-05-14	1,681
2023-05-15	1,220
2023-05-16	1,081
2023-05-17	370
2023-05-18	1
2023-05-19	563
2023-05-20	1,500
2023-05-21	1,418
2023-05-22	782
2023-05-23	784
2023-05-24	1,108
2023-05-25	1,143
2023-05-26	434
2023-05-27	173
2023-05-28	1,425
2023-05-29	1,350
2023-05-30	1,254
2023-05-31	1,972

Date	Inflow Hearne Pit Sump
	m³/day
2023-06-01	1,253
2023-06-02	1,325
2023-06-03	926
2023-06-04	954
2023-06-05	383
2023-06-06	1,558
2023-06-07	1,053
2023-06-08	1,084
2023-06-09	1,061
2023-06-10	334
2023-06-11	1,040
2023-06-12	1,726
2023-06-13	2,400
2023-06-14	2,003
2023-06-15	1,147
2023-06-16	305
2023-06-17	1,379
2023-06-18	1,200
2023-06-19	709
2023-06-20	1,155
2023-06-21	995
2023-06-22	794
2023-06-23	771
2023-06-24	775
2023-06-25	428
2023-06-26	0
2023-06-27	0
2023-06-28	0
2023-06-29	0
2023-06-30	0

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2023-07-01	372
2023-07-02	3,277
2023-07-03	1,551
2023-07-04	1,281
2023-07-05	794
2023-07-06	794
2023-07-07	792
2023-07-08	539
2023-07-09	0
2023-07-10	251
2023-07-11	1,014
2023-07-12	1,420
2023-07-13	784
2023-07-14	782
2023-07-15	780
2023-07-16	683
2023-07-17	724
2023-07-18	790
2023-07-19	786
2023-07-20	782
2023-07-21	782
2023-07-22	774
2023-07-23	772
2023-07-24	771
2023-07-25	771
2023-07-26	614
2023-07-27	0
2023-07-28	757
2023-07-29	814
2023-07-30	1,035
2023-07-31	409

Date	Inflow Hearne Pit Sump
	m³/day
2023-08-01	682
2023-08-02	679
2023-08-03	680
2023-08-04	205
2023-08-05	697
2023-08-06	788
2023-08-07	730
2023-08-08	713
2023-08-09	711
2023-08-10	710
2023-08-11	709
2023-08-12	705
2023-08-13	706
2023-08-14	708
2023-08-15	708
2023-08-16	710
2023-08-17	711
2023-08-18	710
2023-08-19	712
2023-08-20	506
2023-08-21	285
2023-08-22	1,630
2023-08-23	1,001
2023-08-24	800
2023-08-25	684
2023-08-26	270
2023-08-27	636
2023-08-28	776
2023-08-29	798
2023-08-30	751
2023-08-31	740

Table G1: Observed Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2023-09-01	736
2023-09-02	737
2023-09-03	740
2023-09-04	744
2023-09-05	769
2023-09-06	792
2023-09-07	1,227
2023-09-08	859
2023-09-09	0
2023-09-10	0
2023-09-11	0
2023-09-12	721
2023-09-13	1,570
2023-09-14	1,511
2023-09-15	1,459
2023-09-16	809
2023-09-17	748
2023-09-18	748
2023-09-19	752
2023-09-20	757
2023-09-21	1,055
2023-09-22	887
2023-09-23	787
2023-09-24	899
2023-09-25	855
2023-09-26	903
2023-09-27	913
2023-09-28	741
2023-09-29	710
2023-09-30	720

Date	Inflow Hearne Pit Sump
	m³/day
2023-10-01	723
2023-10-02	726
2023-10-03	732
2023-10-04	739
2023-10-05	1,408
2023-10-06	850
2023-10-07	0
2023-10-08	803
2023-10-09	1,967
2023-10-10	1,891
2023-10-11	810
2023-10-12	817
2023-10-13	819
2023-10-14	820
2023-10-15	821
2023-10-16	591
2023-10-17	573
2023-10-18	1,459
2023-10-19	1,119
2023-10-20	970
2023-10-21	981
2023-10-22	974
2023-10-23	824
2023-10-24	802
2023-10-25	843
2023-10-26	832
2023-10-27	825
2023-10-28	624
2023-10-29	816
2023-10-30	781
2023-10-31	773

Table G1: Daily Inflow to Hearne Pit

Date	Inflow Hearne Pit Sump
	m³/day
2023-11-01	838
2023-11-02	799
2023-11-03	798
2023-11-04	523
2023-11-05	1,134
2023-11-06	777
2023-11-07	513
2023-11-08	2,218
2023-11-09	2,218
2023-11-10	747
2023-11-11	798
2023-11-12	827
2023-11-13	849
2023-11-14	950
2023-11-15	840
2023-11-16	890
2023-11-17	731
2023-11-18	757
2023-11-19	885
2023-11-20	886
2023-11-21	604
2023-11-22	106
2023-11-23	1,278
2023-11-24	1,009
2023-11-25	958
2023-11-26	386
2023-11-27	0
2023-11-28	730
2023-11-29	930
2023-11-30	759

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

Date	Inflow Hearne Pit Sump
	m³/day
2023-12-01	483
2023-12-02	0
2023-12-03	0
2023-12-04	0
2023-12-05	742
2023-12-06	768
2023-12-07	394
2023-12-08	903
2023-12-09	1,140
2023-12-10	769
2023-12-11	471
2023-12-12	329
2023-12-13	471
2023-12-14	916
2023-12-15	0
2023-12-16	0
2023-12-17	0
2023-12-18	0
2023-12-19	2,237
2023-12-20	1,480
2023-12-21	857
2023-12-22	963
2023-12-23	768
2023-12-24	834
2023-12-25	660
2023-12-26	0
2023-12-27	148
2023-12-28	642
2023-12-29	1,435
2023-12-30	1,435
2023-12-31	0

APPENDIX H

Hearne Pit Photographs

Photo H1: North wall of Hearne Pit – 28 October 2023

Photo H2: South wall of Hearne Pit – 28 October 2023

Photo H3: South wall at bottom of Hearne Pit – 28 October 2023

Photo H4: South wall at bottom of Hearne Pit (sample taken GW-Hearne-02) – 28 October 2023

Photo H5: South wall of Hearne Pit – 28 October 2023

Photo H6: Southwest wall of Hearne Pit – 28 October 2023

APPENDIX I

TDS (Calculated) – Hearne Pit

Table I1: TDS (calculated) – Hearne Pit

Sampling Point	Date	TDS (Calculated) (mg/L)
SNP-09	2023-01-01	3,930
SNP-09	2023-01-13	2,940
SNP-09	2023-01-13	3,090
SNP-09	2023-01-16	2,650
SNP-09	2023-01-16	2,620
SNP-09	2023-01-23	2,750
SNP-09	2023-01-23	2,870
SNP-09	2023-02-02	2,800
SNP-09	2023-02-11	4,080
SNP-09	2023-03-01	2,030
SNP-09	2023-03-09	2,860
SNP-09	2023-03-13	3,360
SNP-09	2023-03-27	3,030
SNP-09	2023-04-03	2,390
SNP-09	2023-04-14	3,000
SNP-09	2023-04-22	3,440
SNP-09	2023-04-26	2,070
SNP-09	2023-05-01	1,140
SNP-09	2023-05-08	2,880
SNP-09	2023-05-15	2,410
SNP-09	2023-05-22	3,460
SNP-09	2023-06-01	3,820
SNP-09	2023-06-05	3,750
SNP-09	2023-06-12	2,970
SNP-09	2023-06-20	3,270
SNP-09	2023-07-03	2,210
SNP-09	2023-07-11	3,140
SNP-09	2023-07-17	3,310
SNP-09	2023-07-24	2,640
SNP-09	2023-08-02	3,630
SNP-09	2023-08-07	2,820
SNP-09	2023-08-14	3,010
SNP-09	2023-08-22	2,670
SNP-09	2023-08-30	2,590
SNP-09	2023-09-05	2,470
SNP-09	2023-09-13	3,030
SNP-09	2023-09-19	2,990
SNP-09	2023-09-25	2,460
SNP-09	2023-10-09	2,450
SNP-09	2023-10-18	2,010
SNP-09	2023-10-23	2,540
SNP-09	2023-11-01	2,760
SNP-09	2023-11-07	3,080
SNP-09	2023-11-13	2,490
SNP-09	2023-11-20	2,620
SNP-09	2023-11-28	3,070
SNP-09	2023-12-04	3,230
SNP-09	2023-12-12	3,070
SNP-09	2023-12-19	3,330
SNP-09	2023-12-28	2,780
Average		**2,880**

APPENDIX J

Daily Inflows to Tuzo Pit

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-01-01	0
2023-01-02	0
2023-01-03	0
2023-01-04	0
2023-01-05	0
2023-01-06	0
2023-01-07	0
2023-01-08	0
2023-01-09	0
2023-01-10	0
2023-01-11	0
2023-01-12	0
2023-01-13	0
2023-01-14	0
2023-01-15	0
2023-01-16	0
2023-01-17	0
2023-01-18	0
2023-01-19	0
2023-01-20	0
2023-01-21	0
2023-01-22	0
2023-01-23	0
2023-01-24	0
2023-01-25	0
2023-01-26	0
2023-01-27	0
2023-01-28	0
2023-01-29	0
2023-01-30	0
2023-01-31	0

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-02-01	0
2023-02-02	0
2023-02-03	0
2023-02-04	0
2023-02-05	0
2023-02-06	0
2023-02-07	0
2023-02-08	0
2023-02-09	0
2023-02-10	0
2023-02-11	0
2023-02-12	0
2023-02-13	0
2023-02-14	0
2023-02-15	0
2023-02-16	0
2023-02-17	0
2023-02-18	0
2023-02-19	0
2023-02-20	0
2023-02-21	0
2023-02-22	0
2023-02-23	0
2023-02-24	0
2023-02-25	0
2023-02-26	0
2023-02-27	0
2023-02-28	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-03-01	0
2023-03-02	0
2023-03-03	0
2023-03-04	0
2023-03-05	0
2023-03-06	0
2023-03-07	0
2023-03-08	0
2023-03-09	0
2023-03-10	0
2023-03-11	0
2023-03-12	0
2023-03-13	0
2023-03-14	0
2023-03-15	0
2023-03-16	0
2023-03-17	0
2023-03-18	0
2023-03-19	0
2023-03-20	0
2023-03-21	0
2023-03-22	0
2023-03-23	0
2023-03-24	0
2023-03-25	0
2023-03-26	0
2023-03-27	0
2023-03-28	0
2023-03-29	0
2023-03-30	0
2023-03-31	0

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-04-01	0
2023-04-02	0
2023-04-03	0
2023-04-04	0
2023-04-05	0
2023-04-06	0
2023-04-07	0
2023-04-08	0
2023-04-09	0
2023-04-10	0
2023-04-11	0
2023-04-12	0
2023-04-13	0
2023-04-14	0
2023-04-15	0
2023-04-16	0
2023-04-17	0
2023-04-18	0
2023-04-19	0
2023-04-20	0
2023-04-21	0
2023-04-22	0
2023-04-23	0
2023-04-24	0
2023-04-25	0
2023-04-26	0
2023-04-27	0
2023-04-28	0
2023-04-29	0
2023-04-30	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-05-01	0
2023-05-02	0
2023-05-03	0
2023-05-04	0
2023-05-05	0
2023-05-06	0
2023-05-07	0
2023-05-08	0
2023-05-09	0
2023-05-10	0
2023-05-11	0
2023-05-12	0
2023-05-13	0
2023-05-14	0
2023-05-15	0
2023-05-16	0
2023-05-17	0
2023-05-18	0
2023-05-19	0
2023-05-20	0
2023-05-21	0
2023-05-22	0
2023-05-23	0
2023-05-24	0
2023-05-25	0
2023-05-26	0
2023-05-27	0
2023-05-28	0
2023-05-29	0
2023-05-30	0
2023-05-31	0

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-06-01	0
2023-06-02	0
2023-06-03	0
2023-06-04	0
2023-06-05	0
2023-06-06	0
2023-06-07	0
2023-06-08	0
2023-06-09	0
2023-06-10	0
2023-06-11	0
2023-06-12	0
2023-06-13	0
2023-06-14	0
2023-06-15	0
2023-06-16	0
2023-06-17	0
2023-06-18	0
2023-06-19	0
2023-06-20	0
2023-06-21	0
2023-06-22	0
2023-06-23	0
2023-06-24	251
2023-06-25	3,954
2023-06-26	1,460
2023-06-27	1,451
2023-06-28	109
2023-06-29	1,085
2023-06-30	0

Table J1: Daily Inflow to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2023-07-01	0
2023-07-02	0
2023-07-03	0
2023-07-04	0
2023-07-05	0
2023-07-06	0
2023-07-07	0
2023-07-08	0
2023-07-09	0
2023-07-10	0
2023-07-11	0
2023-07-12	0
2023-07-13	0
2023-07-14	0
2023-07-15	0
2023-07-16	0
2023-07-17	0
2023-07-18	0
2023-07-19	0
2023-07-20	0
2023-07-21	0
2023-07-22	0
2023-07-23	0
2023-07-24	0
2023-07-25	0
2023-07-26	0
2023-07-27	0
2023-07-28	3,755
2023-07-29	1
2023-07-30	0
2023-07-31	0

Date	Inflow Tuzo Pit Sump
	m³/day
2023-08-01	0
2023-08-02	0
2023-08-03	0
2023-08-04	1,871
2023-08-05	2,948
2023-08-06	792
2023-08-07	0
2023-08-08	0
2023-08-09	0
2023-08-10	0
2023-08-11	0
2023-08-12	0
2023-08-13	0
2023-08-14	0
2023-08-15	0
2023-08-16	1,424
2023-08-17	3,238
2023-08-18	1,412
2023-08-19	0
2023-08-20	1,437
2023-08-21	1,182
2023-08-22	771
2023-08-23	118
2023-08-24	0
2023-08-25	0
2023-08-26	0
2023-08-27	0
2023-08-28	0
2023-08-29	0
2023-08-30	0
2023-08-31	0

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m³/day
2023-09-01	0
2023-09-02	0
2023-09-03	0
2023-09-04	0
2023-09-05	0
2023-09-06	0
2023-09-07	0
2023-09-08	2,602
2023-09-09	1,583
2023-09-10	1,453
2023-09-11	465
2023-09-12	981
2023-09-13	785
2023-09-14	0
2023-09-15	0
2023-09-16	0
2023-09-17	0
2023-09-18	1,165
2023-09-19	1,066
2023-09-20	743
2023-09-21	253
2023-09-22	121
2023-09-23	649
2023-09-24	92
2023-09-25	1,032
2023-09-26	0
2023-09-27	777
2023-09-28	420
2023-09-29	0
2023-09-30	0

Date	Inflow Tuzo Pit Sump
	m³/day
2023-10-01	0
2023-10-02	0
2023-10-03	0
2023-10-04	0
2023-10-05	0
2023-10-06	0
2023-10-07	0
2023-10-08	0
2023-10-09	0
2023-10-10	0
2023-10-11	0
2023-10-12	0
2023-10-13	0
2023-10-14	0
2023-10-15	0
2023-10-16	0
2023-10-17	0
2023-10-18	0
2023-10-19	0
2023-10-20	0
2023-10-21	0
2023-10-22	0
2023-10-23	0
2023-10-24	0
2023-10-25	0
2023-10-26	0
2023-10-27	0
2023-10-28	0
2023-10-29	0
2023-10-30	0
2023-10-31	0

Table J1: Daily Inflows to Tuzo Pit

Date	Inflow Tuzo Pit Sump
	m^3/day
2023-11-01	0
2023-11-02	0
2023-11-03	0
2023-11-04	0
2023-11-05	0
2023-11-06	0
2023-11-07	0
2023-11-08	0
2023-11-09	0
2023-11-10	0
2023-11-11	0
2023-11-12	0
2023-11-13	0
2023-11-14	0
2023-11-15	0
2023-11-16	0
2023-11-17	0
2023-11-18	0
2023-11-19	0
2023-11-20	0
2023-11-21	0
2023-11-22	0
2023-11-23	0
2023-11-24	0
2023-11-25	0
2023-11-26	0
2023-11-27	0
2023-11-28	0
2023-11-29	0
2023-11-30	0

Date	Inflow to Tuzo Pit
	m^3/day
2023-12-01	0
2023-12-02	0
2023-12-03	0
2023-12-04	0
2023-12-05	0
2023-12-06	0
2023-12-07	0
2023-12-08	0
2023-12-09	0
2023-12-10	0
2023-12-11	0
2023-12-12	0
2023-12-13	0
2023-12-14	0
2023-12-15	0
2023-12-16	0
2023-12-17	0
2023-12-18	0
2023-12-19	0
2023-12-20	0
2023-12-21	0
2023-12-22	0
2023-12-23	0
2023-12-24	0
2023-12-25	0
2023-12-26	0
2023-12-27	0
2023-12-28	0
2023-12-29	0
2023-12-30	0
2023-12-31	0

Average Annual Tuzo Pit Inflow	
January to December	
114	m^3/day

APPENDIX K

TDS (Calculated) – Tuzo Pit

Table K1: TDS (Calculated) – Tuzo Pit

Station	Date	TDS (Calculated) (mg/L)
SNP-10	2023-06-26	1,740
SNP-10	2023-08-07	1,660
SNP-10	2023-08-22	1,610
SNP-10	2023-09-13	1,660
SNP-10	2023-09-19	1,820
SNP-10	2023-09-26	1,830
Average		**1,720**

APPENDIX L

Tuzo Pit Photographs

Photo L1: East wall of Tuzo Pit – 28 October 2023

Photo L2: North wall of Tuzo Pit – 28 October 2023

Photo L3: Southeast wall of Tuzo Pit – 28 October 2023

Photo L4: West wall of Tuzo Pit – 28 October 2023

Photo L5: West wall of Tuzo Pit – 28 October 2023

Appendix C – GEOCHEMICAL AUDIT TECHNICAL REPORT, 2023

DE BEERS GROUP

Gahcho Kué Mine

2023 Bi-Annual Geochemical Audit Report

March 2024

REVISION HISTORY

Version	Date	Notes/Revisions
Version 1	March 2024	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 2023 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 2021b). 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 2023 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

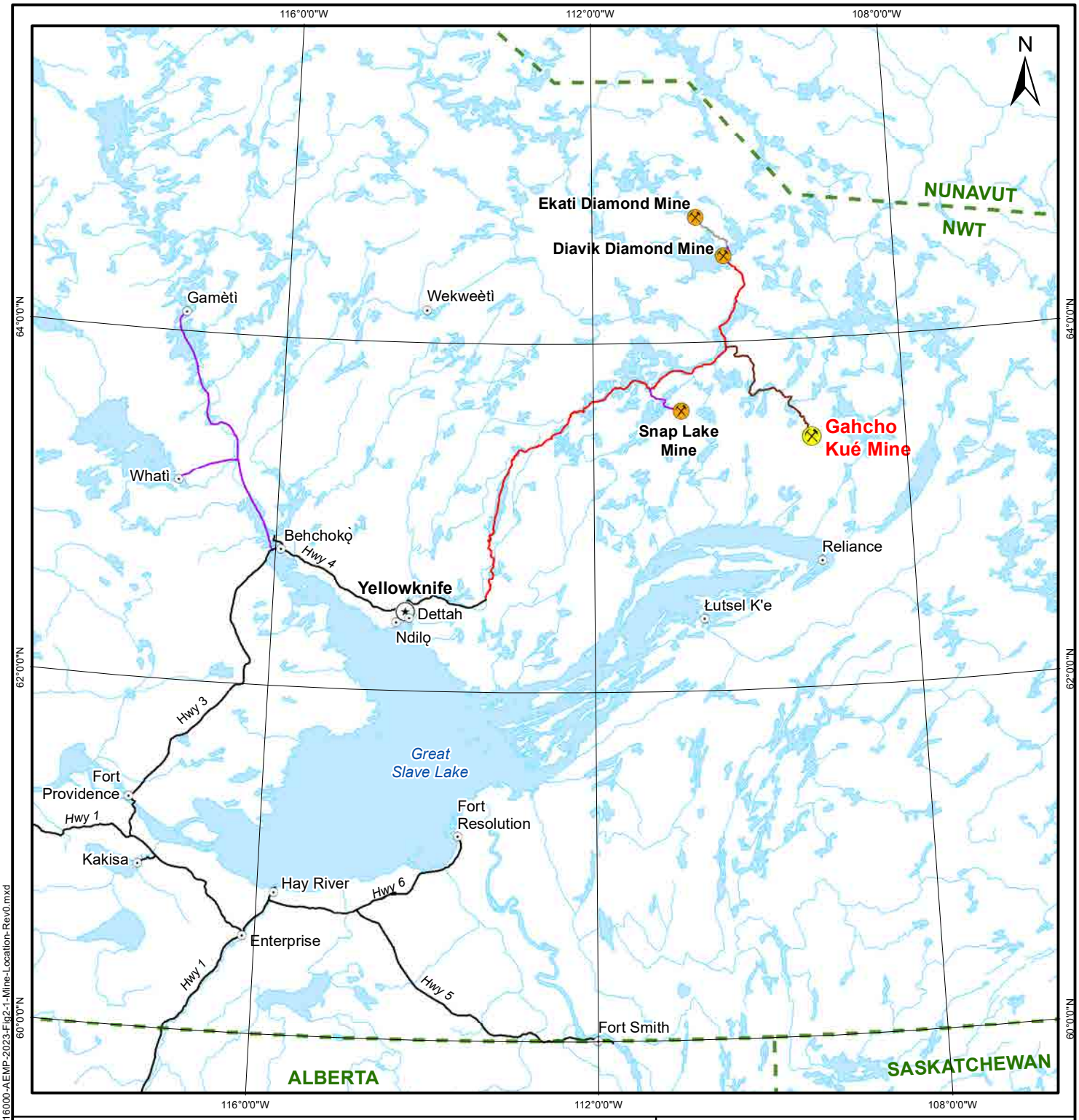
De Beers began open pit mining, milling, and associated activities at the Mine in September 2016. The Mine is located approximately 280 km northeast of Yellowknife, and approximately 80 km southeast of the Snap Lake Mine (Figure 2-1; centred at 63°25’48” N, 109°12’00” W). The three phases of the life 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 2020a).

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-AEMP-2023-Fig2-1-Mine-Location-Rev0		DATE: March 26, 2024
JOB NO: 22526974	REVISION NO: 0	Figure 2-1
OFFICE: WSP-CAL	DRAWN: AL / CHECK: CS	

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NOTES:

Satellite Image Provided by Maxar Technologies.
Photo Date: September 7, 2023

GAHCHO KUÉ MINE

SITE INFRASTRUCTURE LAYOUT (YEAR 2023)

PROJECTION: UTM Zone 12	DATUM: NAD83	DE BEERS GROUP
500 0 500 SCALE 1:30,000 METRES		
FILE No: ENG.EARC03068-Figure 2		DATE: Sept. 25,2023
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\O\WMP V6 2020\Figure 8x Infrastructure Layout 2023.dwg Sep 28, 2023 - 8:00pm

3 SCOPE OF WORK

The 2023 Bi-Annual Geochemical Audit includes 2023 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;	Sections 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;	Sections 4.1, 4.2, 5.1 and 5.2
Evaluation of the results of geochemical characterization relative to the existing geochemical characterization dataset;	Sections 5 and 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;	Sections 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;	Sections 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

ARD = acid rock drainage; SNP = Surveillance Network Program.

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 2021b). Collection of mine rock and processed kimberlite samples in accordance with 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 2020b). 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 (non-AG)	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	Coarse Processed Kimberlite	5034 Pit	6,500	Feb. 2019
Blank*	4.2 x 2.7 x 1	Empty	Empty	0	n/a

Note: * intended to be a baseline measurement for one year and then filled with Till.
Non-AG = non-acid generating; PAG = potentially acid generating; n/a = not applicable.

3.3 Seepage Survey

During the 2023 seepage survey program, water quality samples were collected where active seepage was observed discharging from site infrastructure. The 2023 seepage survey program was comprised of 17 locations, which were each visited in the spring and fall. Among the stations inspected, active seepage was observed and sampled at two locations: SNP-16 was sampled during the spring survey, while DH-01 was sampled during the fall survey. Photos captured during the 2023 survey are presented in Appendix A.

Seepage water quality was measured in the field using an ‘Aquatroll 500’ multimeter to record water temperature, pH, specific conductivity, dissolved oxygen, and turbidity. 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 2023 Water Licence Annual Report. In summary, approximately 6.7 million tonnes of potentially acid generating (PAG) materials were placed in the Type 3 zone of the West Mine Rock Pile in 2023. Not all the material placed in the Type 3 zone was PAG. Due to construction sequencing, non-acid generating (non-AG) materials were also placed in the PAG zone. No mine rock was placed in the South Mine Rock Pile in 2023.

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; and
- 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 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 2023, a total of 2,202 operational samples of mine rock were collected by De Beers and analyzed for total sulphur.

A summary and interpretation of the operational monitoring results are provided in Section 5.4 and in the 2023 Water Licence Annual Report.

4.1.2 Supplemental Samples

A visual inspection for acid generation in areas of mine rock deposition or disturbance was carried out between July 16 and 17 and August 4, 2023, under the direction of Crystal Mann, De Beers Technical Service Superintendent, 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 October 18 and 21, 2023, also under the direction of Crystal Mann. This inspection is referred to as the “Fall Audit”. A total of 45 supplemental geochemical samples were 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 spring and fall sampling are included in Appendix B.

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.

586000 588000 590000 592000 594000

7040000 7038000 7036000

N

GK-BGAR-ANP-03
GK-BGAR-DD-08
GK-BGAR-DA1X-01
GK-BGAR-DD-07
GK-BGAR-SJDC-01
GK-BGAR-FPKS-02
GK-BGAR-DL-08
GK-BGAR-DA1-10
GK-BGAR-DA1-11
GK-BGAR-CPK-RC-01
GK-BGAR-CD-01
GK-BGAR-CPK-38
GK-BGAR-CP3-02
GK-BGAR-KB2LF-01
GK-BGAR-CPK-40
GK-BGAR-KB2LF-02
GK-BGAR-CP3-01
GK-BGAR-CPK-37
GK-BGAR-DB-10
GK-BGAR-NWRL-01
GK-BGAR-CPKTP-05
GK-BGAR-WMRP1-11
GK-BGAR-NWRL-02
GK-BGAR-CPKD-01
GK-BGAR-CPK-39
GK-BGAR-TF-04
GK-BGAR-TFB-01
GK-BGAR-TF3-05
GK-BGAR-NPL-01
GK-BGAR-CPK-36
GK-BGAR-WLF-03
GK-BGAR-TP-01
GK-BGAR-D12
GK-BGAR-TMP-01
GK-BGAR-FPK-30
GK-BGAR-WLF-04
GK-BGAR-TMP-02
GK-BGAR-FPK-31
GK-BGAR-WMRP3-08
GK-BGAR-WP-02
GK-BGAR-FPK-32
GK-BGAR-WP-01
GK-BGAR-FPK-33
GK-BGAR-FPK-34
GK-BGAR-MP-05

586000 588000 590000 592000 594000

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LEGEND

Geochemistry Sample Location

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

NOTES
Source: Orthoimagery provided by Client. Date: August 2022
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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-AEMP-2023-Fig4-1-GeochemSampleLocations-Rev0		DATE: March 26, 2024
JOB NO: 22526974	REVISION NO: 0	**Figure 4-1**
OFFICE: WSP-CAL	DRAWN: AL / CHECK: CS	

Table 4-1 Supplemental Rock Samples (2023 Spring and Fall Audit)

Date Sampled	Sample ID	Infrastructure	Rock Type	Sample Location - UTM Zone 12 (m)		
				Northing	Easting	Elev.
16-Jul-23	GK-BGAR-FPK-30	FPK	FPK	Inside Plant		
16-Jul-23	GK-BGAR-FPK-31	FPK	FPK	Inside Plant		
4-Aug-23	GK-BGAR-CPK-36	CPK	CPK	7036335	590659	442
4-Aug-23	GK-BGAR-CPK-37	CPK	CPK	7036697	590698	440
4-Aug-23	GK-BGAR-CPK-38	CPK	CPK	7036783	590541	444
17-Jul-23	GK-BGAR-WMRP1-11	WMRP Type 1	GRANITE	7036610	588456	486
17-Jul-23	GK-BGAR-WMRP3-08	WMRP Type 3	DIABASE	7035899	588514	498
16-Jul-23	GK-BGAR-DD-07	Dyke D	GRANITE	7038596	589299	426
16-Jul-23	GK-BGAR-DL-08	Dyke L	GRANITE	7037998	589288	427
16-Jul-23	GK-BGAR-FPKS-02	FPK Spigot	GRANITE	7038421	589841	433
17-Jul-23	GK-BGAR-WP-01	Welding Pad	GRANITE	7036172	590436	429
17-Jul-23	GK-BGAR-TMP-01	Tuzo Maintenance Pad	GRANITE	7036138	590211	428
17-Jul-23	GK-BGAR-TF-04	Tank Farm	GRANITE	7036330	590975	437
17-Jul-23	GK-BGAR-NWRL-01	New Winter Road Laydown	GRANITE	7036693	591041	436
17-Jul-23	GK-BGAR-NPL-01	North Parking Lot	GRANITE	7036285	590308	425
17-Jul-23	GK-BGAR-CP3-01	Crusher 3 Pad	GRANITE	7036858	590093	423
17-Jul-23	GK-BGAR-MP-05	Maintenance Pad	GRANITE	7035204	588728	423
17-Jul-23	GK-BGAR-WLF-03	West Landfill	GRANITE	7036031	587943	437
16-Jul-23	GK-BGAR-DB-10	Dyke B	GRANITE	7036714	589868	420
16-Jul-23	GK-BGAR-DA1-10	Dyke A1	GRANITE	7037817	590092	430
16-Jul-23	GK-BGAR-ANP-03	AN Pad	GRANITE	7038822	590583	428
16-Jul-23	GK-BGAR-DA1X-01	Dyke A1 Extension	GRANITE	7038615	590678	431
17-Jul-23	GK-BGAR-KB2LF-01	KB2 Landfill	GRANITE	7036912	591001	434
18-Oct-23	GK-BGAR-DA1-11	Dyke A1	GRANITE	7037812	590072	457
18-Oct-23	GK-BGAR-DD-08	Dyke D	GRANITE	7038788	589875	464
18-Oct-23	GK-BGAR-KB2LF-02	New Landfill	GRANITE	7036905	591045	461
18-Oct-23	GK-BGAR-CP3-02	New Crusher 3 Pad	GRANITE	7036855	590102	437
18-Oct-23	GK-BGAR-CPK-RC-01	CPK ROM Cap	GRANITE	7036898	590419	448
18-Oct-23	GK-BGAR-CD-01	Crusher Dump	GRANITE	7036803	590285	443
18-Oct-23	GK-BGAR-TP-01	Tuzo Parking	GRANITE	7036271	590270	447
19-Oct-23	GK-BGAR-CPKD-01	CPK Dump	GRANITE	7036461	590347	437
19-Oct-23	GK-BGAR-TMP-02	Tuzo Maintenance Pad	GRANITE	7036058	590193	424

Table 4-1 Supplemental Rock Samples (2023 Spring and Fall Audit)

Date Sampled	Sample ID	Infrastructure	Rock Type	Sample Location - UTM Zone 12 (m)		
				Northing	Easting	Elev.
19-Oct-23	GK-BGAR-WP-02	Welding Pad	GRANITE	7036126	590391	431
19-Oct-23	GK-BGAR-TFB-01	Tuzo Fuel Bay	GRANITE	7036327	590213	415
20-Oct-23	GK-BGAR-CPKTP-05	CPK KB2 Pad	GRANITE	7036665	591102	440
20-Oct-23	GK-BGAR-SJDC-01	Spiggot Jetty Discharge Causeway	GRANITE	7038552	590312	439
20-Oct-23	GK-BGAR-WLF-04	West Landfill (Old Landfill)	GRANITE	7035950	587911	430
20-Oct-23	GK-BGAR-NWRL-02	New Winter Road Laydown	GRANITE	7036647	591021	446
20-Oct-23	GK-BGAR-D12	Dorm 12	GRANITE	7036136	590923	441
20-Oct-23	GK-BGAR-TF3-05	Tank Farm Phase 3	GRANITE	7036273	591200	436
20-Oct-23	GK-BGAR-CPK-39	CPK	CPK	7036438	590577	456
20-Oct-23	GK-BGAR-CPK-40	CPK	CPK	7036622	590552	454
20-Oct-23	GK-BGAR-FPK-32	FPK	FPK	Inside Plant		
20-Oct-23	GK-BGAR-FPK-33	FPK	FPK	Inside Plant		
20-Oct-23	GK-BGAR-FPK-34	FPK	FPK	Inside Plant		

FPK = fine processed kimberlite; CPK = coarse processed kimberlite; WMRP = West Mine Rock Pile; elev. = elevation; ROM = run-of-mine.

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2023 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
GK-BGAR-FPK-30	FPK	Dark blue	n/a	n/a	Very fine	n/a
GK-BGAR-FPK-31	FPK	Dark blue	n/a	n/a	Very fine	n/a
GK-BGAR-CPK-36	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-CPK-37	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-CPK-38	CPK	Dark green	n/a	Ground kimberlite and minor granite	Fine	Fresh
GK-BGAR-WMRP1-11	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-WMRP3-08	DIABASE	Dark green	n/a	Plagioclase, Pyroxene	Fine to medium	Fresh
GK-BGAR-DD-07	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-DL-08	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-FPKS-02	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-WP-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-TMP-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-TF-04	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2023 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
GK-BGAR-NWRL-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-NPL-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-CP3	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-MP-05	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-WLF-03	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-10	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-DA1-10	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-ANP-03	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-DA1X-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-KB2LF-01	GRANITE	Pink	n/a	K-feldspar, Plagioclase, Quartz, Amphibole	Medium to coarse	Fresh
GK-BGAR-DA1-11	GRANITE	Pink	n/a	K-feldspar rich, Quartz, Plagioclase Hornblende and minor micas	Medium	Fresh
GK-BGAR-DD-08	GRANITE	‘Salt and Pepper’	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar / minor micas	Medium	Fresh
GK-BGAR-KB2LF-02	GRANITE	White/Pink	n/a	Quartz and quartz veining, Hornblende, K-feldspar, Plagioclase and minor micas	Medium	Fresh
GK-BGAR-CP3-02	GRANITE	Pink	n/a	K-feldspar rich, Quartz, Plagioclase Hornblende and minor micas	Fine to medium	Fresh
GK-BGAR-CPK-RC-01	GRANITE	White/Pink	n/a	Mica rich, Quartz, Hornblende, Plagioclase and minor K-feldspar	Medium	Fresh
GK-BGAR-CD-01	GRANITE	Pink	n/a	Quartz, Hornblende, K-feldspar, Plagioclase and minor micas	Medium	Fresh
GK-BGAR-TP-01	GRANITE	White/Pink	n/a	Quartz, Hornblende, K-feldspar, Plagioclase and minor micas	Medium	Fresh
GK-BGAR-CPKD-01	GRANITE	Pink	n/a	K-feldspar rich, Quartz, Plagioclase Hornblende and minor micas	Medium	Fresh
GK-BGAR-TMP-02	GRANITE	Pink	n/a	Quartz, Hornblende, K-feldspar, Plagioclase and minor micas	Medium	Fresh
GK-BGAR-WP-02	GRANITE	‘Salt and Pepper’	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar veining/ minor micas	Fine to medium	Fresh
GK-BGAR-TFB-01	GRANITE	‘Salt and Pepper’	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar veining/ minor micas	Medium	Fresh
GK-BGAR-CPKTP-05	GRANITE	White/Pink	n/a	Quartz and quartz veining, Hornblende, K-feldspar, Plagioclase and minor micas	Medium	Fresh
GK-BGAR-SJDC-01	GRANITE	Pink	n/a	K-feldspar rich, Quartz, Plagioclase, Minor Hornblende and minor micas	Medium	Fresh

Table 4-2 Visual Descriptions of Supplemental Rock Samples (2023 Spring and Fall Audits)

Sample ID	Rock Type	Colour	Sulphides/ Carbonates	Hand Sample Mineralogy	Grain size	Weathering/ Slaking
GK-BGAR-WLF-04	GRANITE	Black/Pink	n/a	Quartz, Hornblende rich, Plagioclase, K-feldspar and minor micas	Coarse	Fresh
GK-BGAR-NWRL-02	GRANITE	'Salt and Pepper'	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar / minor micas	Medium	Fresh
GK-BGAR-D12	GRANITE	'Salt and Pepper'	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar veining/ minor micas	Fine to medium	Fresh
GK-BGAR-TF3-05	GRANITE	White/Pink	n/a	Quartz, Hornblende, Plagioclase, minor K-feldspar / minor micas	Medium to coarse	Fresh
GK-BGAR-CPK-39	CPK	Dark green, minor black flecks	n/a	Kimberlite with minor granite gangue	Fine, crushed	Fresh
GK-BGAR-CPK-40	CPK	Dark green, minor black flecks	n/a	Kimberlite with minor granite gangue	Fine, crushed	Fresh
GK-BGAR-FPK-32	FPK	Dark green, minor black flecks	n/a	Kimberlite with minor granite gangue	Very fine, crushed	Fresh
GK-BGAR-FPK-33	FPK	Dark green, minor black flecks	n/a	Kimberlite with minor granite gangue	Very fine, crushed	Fresh
GK-BGAR-FPK-34	FPK	Dark green, minor black flecks	n/a	Kimberlite with minor granite gangue	Very fine, crushed	Fresh

n/a = parameter not applicable (i.e., not observed); FPK =-fine processed kimberlite; CPK = coarse processed kimberlite.

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 ten mine rock samples and five processed kimberlite samples);
- NAG Leachate Analysis (subset of ten mine rock samples and five processed kimberlite samples); and
- Mineralogical Analysis (subset of ten mine rock samples and five 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 the 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, 2023) 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 Bi-Annual Geochemical Audit Report (De Beers 2020b). Runoff from field cells pool within the liner of each cell at a low point and was collected during 2023 on May 9, June 8, June 12, July 4, and September 21. Leachate was analyzed for field measurements and was submitted for laboratory analysis of the following:

- **General Parameters including:** pH, Total Alkalinity, Hardness, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Turbidity, and Conductivity.

- **Major Ions and Nutrients including:** Sulphate, Bromide, Chloride, Fluoride, Carbonate, Bicarbonate, Hydroxide, Calcium, Magnesium, Sodium, Potassium, Total Ammonia, Nitrate, Nitrite, Phosphorous Silicate, Total Organic Carbon.
- **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.

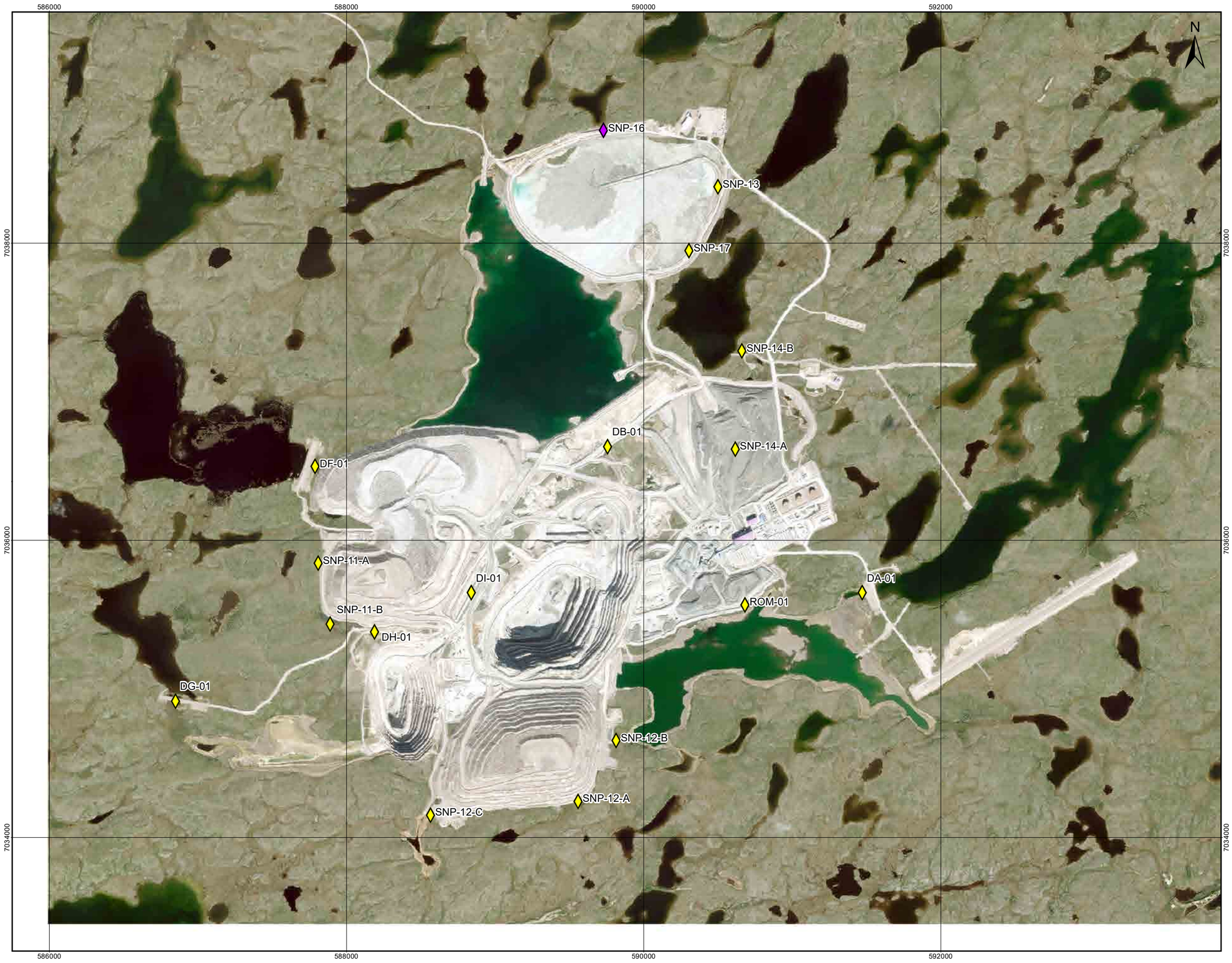
4.3 Seepage and Runoff Survey

Seepage and runoff surveys were conducted in the spring and fall of 2023, with 17 locations inspected as shown in Figure 4-2. During the spring sampling event, one (1) active seepage sample was collected. No active seepage samples were collected during the fall sampling event. Monitoring locations with standing water were only documented, and no water samples were collected.

Seepage and runoff samples were tested for field measurements and submitted for laboratory analyses, including the following parameters:

- Field measurements – pH, TSS, Turbidity, Specific Conductivity (conductivity), Dissolved Oxygen, Temperature.
- Chemistry – Total Alkalinity, Hardness, TDS, Major Anions and Cations, Nutrients (e.g., phosphorus), Total Metals and Dissolved metals (including low-level mercury).

Samples collected at each location and descriptions of observed surface water conditions are provided in Table 4-3.



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-AEMP-2023-Fig4-2-SeepageMonitoringStations-Rev0		DATE: March 26, 2024
JOB NO: 22526974	REVISION NO: 0	**Figure 4-2**
OFFICE: WSP-CAL	DRAWN: AL / CHECK: CS	

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Table 4-3 Seepage and Runoff Survey Locations and Observations

2023 Sample ID	Infrastructure Sampled	Easting	Northing	Sample Collected in 2023		Comments
				Spring	Fall	
SNP-11-A	West Rock Mine Pile	587808	7035847			**Spring:** Ponding found around the base. No visible seepage. **Fall:** Area completely dry.
SNP-11-B	West Rock Mine Pile	587889	7035439			**Spring:** Ponding found around the base. Ponding water was very shallow, and no active seepage. **Fall:** Ponding found around the base. Ponding water was very shallow, and no active seepage.
SNP-12-A	South Rock Mine Pile	589558	7034245			**Spring:** Dry around the area. Some very shallow areas of pooling water however no active flow observed. **Fall:** Dry around the area. Some very shallow areas of pooling water however no active flow observed.
SNP-12-B	South Rock Mine Pile	589813	7034652			**Spring:** Very dry around the area. Some areas have pooling of water however no active flow observed. **Fall:** Very dry around the area. Some areas have pooling of water however no active flow observed.
SNP-12-C	South Rock Mine Pile	588564	7034152			**Spring:** Some large pools of water visible at the base but water is stagnant. No active seepage seen. **Fall:** Some large pools of water visible at the base but water is stagnant. No active seepage seen.
SNP-13	East of Dyke A1	590499	7038381			**Spring:** No visible seepage. **Fall:** No visible seepage.
SNP-14-A	Coarse PK Dump	590616	7036616			**Spring:** Area extremely dry. No visible seepage. **Fall:** Area extremely dry. No visible seepage.
SNP-14-B	Coarse PK Dump	590660	7037276			**Spring:** Area extremely dry. No visible seepage. **Fall:** Some pooling in the area but no active seepage.
SNP-16	North of Dyke D	589730	7038759	X		**Spring:** Small pond at the toe of the dyke. Observed a small amount of flow moving into the waterbody. **Fall:** Dyke expansion. No active seepage.
SNP-17	East of Dyke A1	590305	7037951			**Spring:** No visible seepage. **Fall:** No visible seepage.
DA-01	Dyke A	591485	7034245			**Spring:** No visible seepage. **Fall:** No visible seepage.
DB-01	Dyke B	589756	7036633			**Spring:** Ponding at the toe of the dyke. No active seepage observed. **Fall:** Ponding at the toe of the dyke. No Active seepage observed.
DF-01	Dyke F	587788	7036499			**Spring:** Ponding on both sides of the dyke. Water stagnant. No active flow or seepage observed. **Fall:** No seepage present.
DG-01	Dyke G	586847	7034919			**Spring:** Ponding on both sides of the dyke. No visible signs of seepage **Fall:** Ponding on both sides of the dyke. No visible signs of seepage
DH-01	Dyke H	588187	7035385			**Spring:** Some ponding at the toe of the dyke, however no active seepage was observed. **Fall:** Some ponding at the toe of the dyke, however no active seepage was observed.
DI-01	Dyke I	588839	7035648			**Spring:** Ponding at the toe area of dyke. All water stagnant. No active flow or seepage observed. **Fall:** Ponding at the toe area of dyke. All water stagnant. No active flow or seepage observed.
ROM-01	ROM PAD	590681	7035568			**Spring:** No seepage seen at the toe of the ROM Pad. **Fall:** Dry area. No seepage seen at the toe of the ROM Pad.

X = Sample was collected at this station in 2023; 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 are presented in Appendix C. The overall evaluation consists of analysis and review of samples and 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, 2020b, 2021c, 2022, 2023).

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 C1 and C2.

Table 5-1 Summary of ABA Results and NAG pH for 2023 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=45)	Min	8.3	0.02	0.08	0.6	7.0	1.8	2.8	6.6
	Max	10	0.14	0.97	4.4	347	22	578	10.0
	Mean	9.5	0.033	0.22	0.93	61	5.0	66	7.1
	Median	9.7	0.02	0.08	0.6	14	1.8	21	7.2
	St. Dev.	0.51	0.025	0.27	0.78	106	6.2	154	1.1
CPK (n=5)	Min	8.4	0.03	0.46	0.6	80	11	62	9.0
	Max	9.1	0.05	0.57	1.3	347	13	578	10.0
	Mean	8.8	0.034	0.51	0.74	276	12	373	9.6
	Median	9.0	0.03	0.52	0.6	317	12	528	9.4
	St. Dev.	0.3	0.008	0.04	0.28	99	0.9	193	0.34
FPK (n=5)	Min	8.3	0.05	0.83	0.9	88	19	68	9.4
	Max	8.9	0.08	0.97	2.2	337	22	348	9.6
	Mean	8.5	0.056	0.88	1.3	183	20	139	9.5
	Median	8.3	0.05	0.89	1.3	89	20	99	9.6
	St. Dev.	0.26	0.012	0.052	0.47	116	1.2	105	0.095

Table 5-1 Summary of ABA Results and NAG pH for 2023 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
Granite (n=35)	Min	9.1	0.02	0.08	0.6	7.0	1.8	2.8	6.6
	Max	10	0.14	0.15	4.4	21	3.4	30	8.0
	Mean	9.7	0.029	0.083	0.9	13	1.9	14	7.0
	Median	9.8	0.02	0.08	0.6	12	1.8	17	7.0
	St. Dev.	0.22	0.027	0.012	0.85	3.3	0.27	6.1	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; Total S = total sulphur.

Table 5-2 Summary of Acid Generation Potential for 2023 Supplemental Samples

Parameter	CPK	FPK	Granite	All
Count of Samples	5	5	35	45
# Samples PAG	0	0	0	0
# Samples non-AG	5	5	35	45
% 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; non-AG = non-acid generating.

Mine Rock

A total of 35 mine rock samples (primarily granite) were collected and analyzed as part of the 2023 supplemental sampling program. In comparison with mine rock as presented in the EIS (Golder 2014), the 2023 data falls within the expected range of values. Of the 35 supplemental samples analyzed for the 2023 spring and fall audits, all samples were classified as non-AG based on NPR values of greater than 2. NPR values ranged from 2.8 to 30 in all samples, with a median value of 18. 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 0.14 percent by weight.

The results of the NAG tests show that all 35 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 6.6 to pH 8.0, with a median value of pH 7.0.

Based on a review of the supplemental mine rock sample data, none of the samples collected are considered to have potential to generate acidity. According to the NPR and NAG pH data, mine rock samples 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 2023)

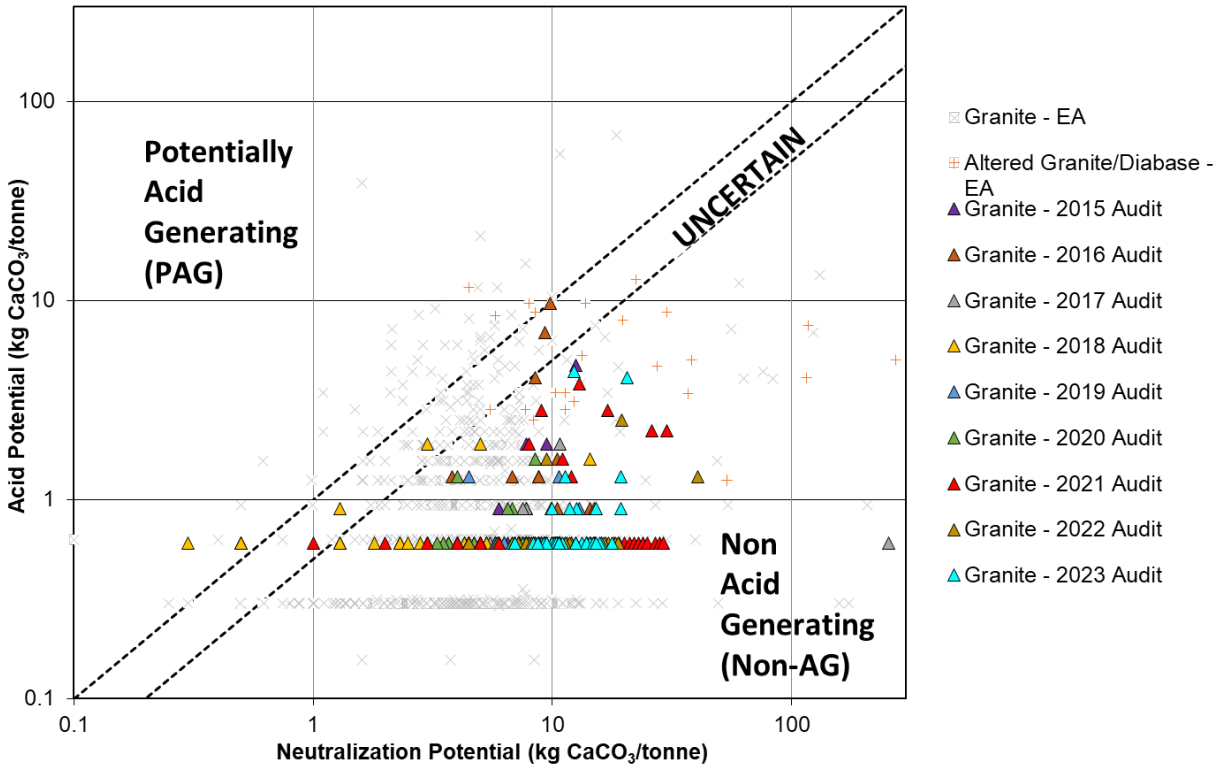
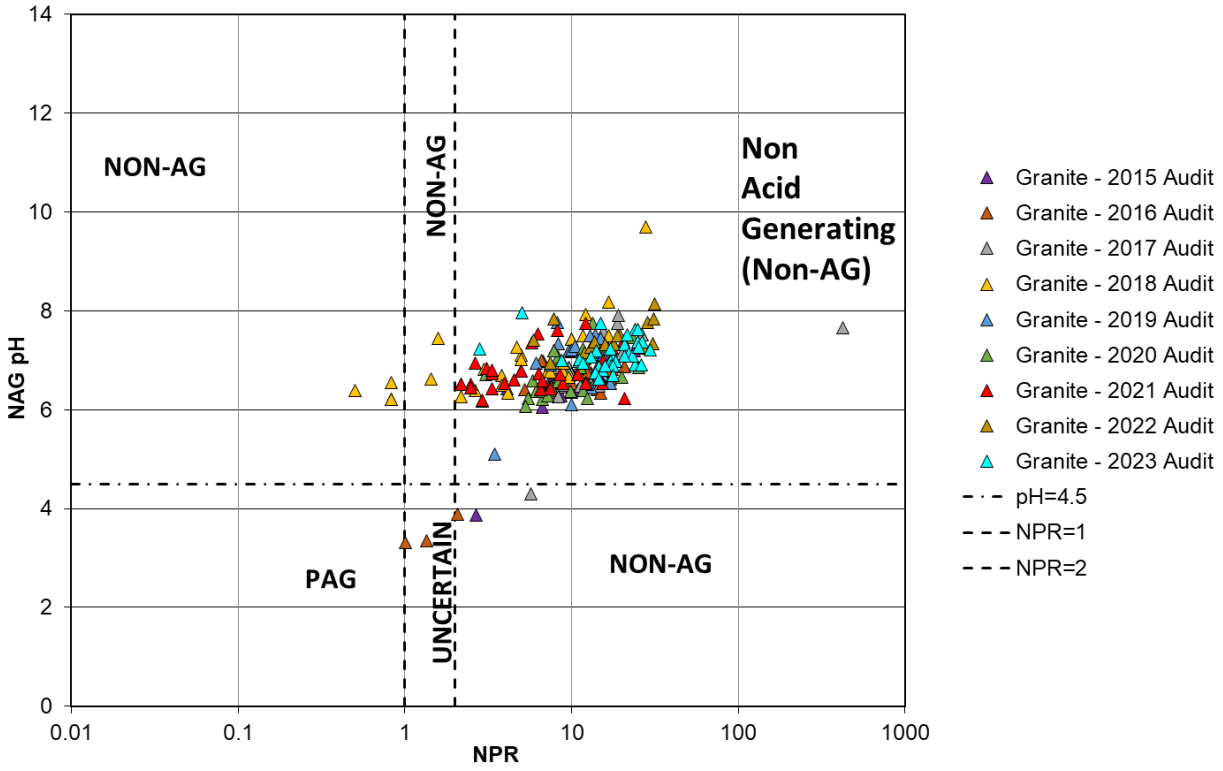


Figure 5-2 NAG pH vs. Neutralization Potential Ratio (including all Mine Rock samples from 2015 through 2023)



Kimberlite

A total of ten kimberlite samples (five CPK and five FPK) were collected and analyzed as part of the 2023 supplemental sampling program. In comparison with kimberlite as presented in the EIS (Golder 2014), the 2023 data falls within or near the expected range of values. Of the ten supplemental samples analyzed for the 2023 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 62 to 578, with a median value of 250. 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 0.03 to 0.08 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 9.0 to 10.0, with a median of 9.6.

Based on a review of the supplemental mine rock sample data, none of the kimberlite samples collected in 2023 are considered to have the potential to generate acidity. According to the NPR, Carbonate NPR, and NAG pH data, kimberlite samples are considered non-acid generating with a significant amount of excess NP even when only considering NP provided by carbonate minerals. All samples represent the materials encountered as shown in photographs (Appendix B) and fall within the expected value ranges 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 2023)

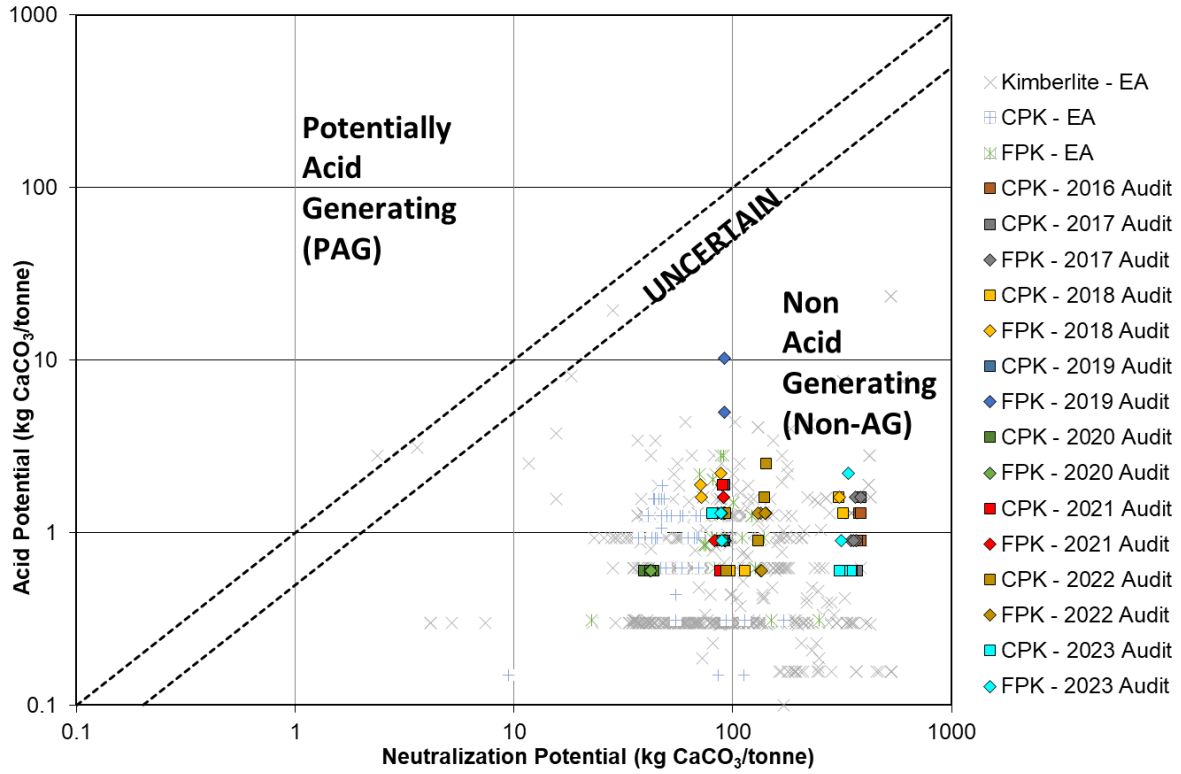
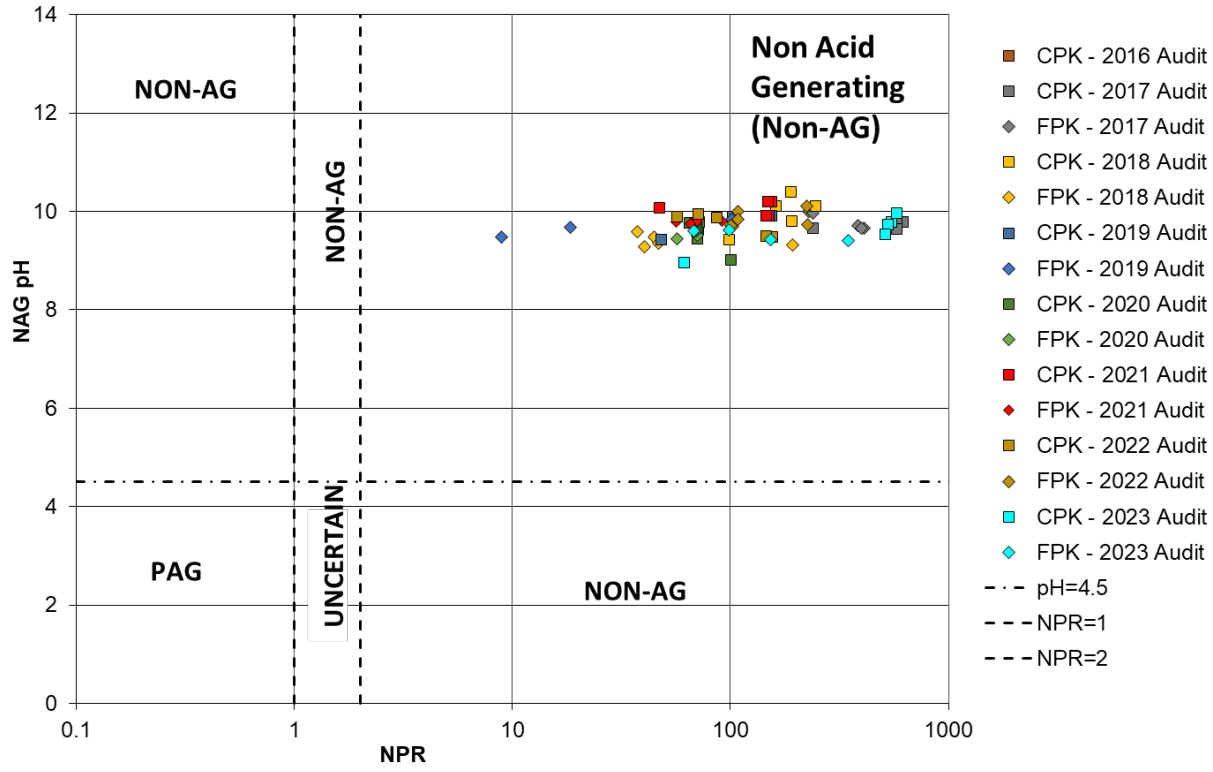


Figure 5-4 NAG pH vs. Neutralization Potential Ratio (including all Kimberlite, FPK, and CPK samples from 2016 through to 2023)



5.1.2 Shake Flask Extraction Test Results

Due to longer delays currently experienced by the retained laboratory, results for this section are not yet available. This section will be updated as part of an addendum to the present report once the analytical results are obtained.

5.1.3 Net-Acid Generation Extract Test Results

Due to longer delays currently experienced by the retained laboratory, results for this section are not yet available. This section will be updated as part of an addendum to the present report once the analytical results are obtained.

5.1.4 Mineralogical Analyses Results

Due to longer delays currently experienced by the retained laboratory, results for this section are not yet available. This section will be updated as part of an addendum to the present report once the analytical results are obtained.

5.2 Geochemical Field Cell Leachate Monitoring

Results of the 2023 Field Cell leachate testing are presented in Table 5-3 for field parameters with more detailed laboratory analytical results provided in Appendix C3. Samples were collected when water was available from five sampling events in 2023.

The results show pH values for the field cell leachate remain neutral, ranging from 6.7 to 8.9, with the control cell pH ranging from 6.7 to 8.4. Parameters, including pH, remain consistent with expected results from SFE, humidity cell tests (HCTs), and seepage monitoring. A review of the data in Appendix C3 shows results for each cell are similar across the dates sampled. Trends over time appear to be relatively stable and indicate that acid generation has not developed to date.

Table 5-3 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	2023-05-09	8.0	8.6	71	14	8.9	99	11
	2023-06-08	8.0	12	130	1.1	0.73	102	10
	2023-07-04	8.1	14	147	2.8	1.8	97	9.5
	2023-09-21	7.3	8.7	164	0	0	102	11
FC-2 - CPK	2023-05-09	8.9	4.9	359	8.2	5.3	77	9.4
	2023-06-08	8.5	13	517	4.3	2.8	91	9.1
	2023-07-04	8.1	14	449	4.6	3.0	85	8.3
	2023-09-21	8.0	8.5	490	0	0	92	9.8
FC-3 - Control	2023-05-09	8.4	9.4	42	2.5	1.6	87	9.4
	2023-06-08	6.7	12	125	13	8.6	64	6.5
	2023-07-04	7.8	14	62	13	8.3	89	8.8
	2023-09-21	7.7	7.6	76	0	0	93	10
FC-4 - Type 3	2023-06-12	7.9	6.1	147	50	32	98	12

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

5.3 Seepage and Runoff Survey

The seepage and runoff survey testing results are presented in Table 5-4 for field parameters with laboratory analytical results provided in Appendix C4. Samples were collected when flowing seepage water was available from up to two sampling events (spring and fall) in 2023. Results for all seepage samples collected in 2023 are presented in Appendix C4.

One seepage sample was collected from SNP-16 during the spring sampling event. Seepage from SNP-16 flows out of Dyke D at the Fine PKC Facility. The results show that the pH value for the spring seepage sample remains above 6, with a near-neutral laboratory pH value of 8.2, and all measured parameters are consistent with concentrations measured in past years at SNP-16.

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.

Table 5-4 Seepage and Runoff Survey Sample Location and Field Measurements

Historical Sample ID	2023 Sample ID	Location	Date	Northing	Easting	Temperature	pH	Conductivity	Dissolved Oxygen		Turbidity
						°C	pH units	µS/cm	mg/L	%	NTU
Spring Survey											
DD-01	SNP-16	North of Dyke D	2023-05-23	589730	7038759	16	8.3	998	10	110	16

µS/cm = microsiemens per centimetre; NTU = nephelometric turbidity unit.

5.4 Operational Monitoring (Mine Rock)

Operational monitoring samples were submitted for total sulphur analyses with results summarized in Table 5-5 (operational monitoring database results used in this report are available upon request). Results showed that approximately 10% of the 2023 samples had total sulphur greater than or equal to 0.1 percent by weight and were therefore classified as PAG. The first half of 2023 saw similar proportions of PAG materials as observed in 2022, due to a greater abundance of diabase and mixed granite diabase comprising the mine rock generated from mining zones. However, the latter half of 2023 saw a decrease in the amount of generated diabase and mixed granite diabase mine rock from mining zones which resulted in similar proportions of PAG samples observed before 2022. Additional information related to sample location, movement and placement is provided in the 2023 Water Licence Annual Report.

Table 5-5 Summary of Operational Monitoring of 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		2,199	391	17.8
Operational Monitoring – 2023 (Total)		2,202	224	10.2
Operational Monitoring – January 2023		156	23	15
Operational Monitoring – February 2023		161	25	16
Operational Monitoring – March 2023		218	46	21
Operational Monitoring – April 2023		169	20	12
Operational Monitoring – May 2023		144	24	17
Operational Monitoring – June 2023		171	23	13
Operational Monitoring – July 2023		187	17	9.1
Operational Monitoring – August 2023		218	19	8.7
Operational Monitoring – September 2023		226	7	3.1
Operational Monitoring – October 2023		183	10	5.5
Operational Monitoring – November 2023		189	10	5.3
Operational Monitoring – December 2023		180	0	0
Total number of Operational Monitoring Samples		**20,757**	**1,790**	**8.6**

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 2023.

n = number of samples; ≥ = greater than or equal to.

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 2023, an additional 76 samples of PK and 244 samples of mine rock were collected and analyzed for additional geochemical test work (beyond operational sulphur analyses), and over 20,500 operational samples were collected and analyzed 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 2023 data relative to previously collected data. A more detailed summary of the geochemistry by rock type is presented in 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 the 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, representing 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, except sulphide minerals which 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 most 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 2023 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 2023 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 will be compared to the EIS testing, and previous annual testing (De Beers 2016, 2017b, 2018, 2019, 2020b, 2021c, 2022, 2023) once analytical results are available.

Subject to confirmation from outstanding geochemical test work, no change is expected in the geochemical characteristics and classifications of the kimberlite and processed kimberlite based on the additional data collected in 2023.

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 of 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 minimal neutralization potential; therefore, 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 2023 are generally 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 in 2022 and the first half of 2023.

Although there is no change in the expected geochemical characteristics and classifications of mine rock based on the supplemental samples analyzed in 2023, it is noted that samples from diabase materials, which are the primary source of additional PAG mine rock generated in 2022 and the first half of 2023, 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 is underway 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

Due to longer delays currently experienced by the retained laboratory, results pertaining to this section are not yet available. This section will be updated as part of an addendum to the present report once the analytical results are obtained.

7 CONCLUSIONS

Based on the 2023 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 in the first half of 2023 due to additional diabase rock containing slightly more sulphide and NP, but return to historically observed results in the latter half of 2023, with approximately 10% of rock classified as PAG for the entire year based on a total sulphur cutoff of 0.1wt.%. Materials classified as PAG continued to be segregated during operations following the Geochemical Characterization and Management Plan.

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. A comment regarding SFE, NAG leachate and mineralogy results compared to previous years will be provided when analytical results are received.

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 2023 are presented in Table 7-1.

Table 7-1 Actions Levels and Status in 2023

Objective	Action Level	Status in 2023
To prevent the formation of acid rock drainage	Bi-annual inspection notes that granite with visible staining is observed on rock used to construct site facilities.	No visible staining observed on rock used to construct site facilities. Confirmation samples collected; all samples are non-AG.
	Bi-annual inspection notes that granite containing visible sulphide minerals is observed in rock used to construct roads, building foundations, the airstrip or filter dykes.	No visible sulphide minerals were observed in rock used to construct roads, building foundations, the airstrip or filter dykes. Confirmation samples collected; all samples are non-AG.
	Confirmation sample contains greater than or equal to 0.1% sulphide sulphur.	Two confirmation samples from the spring sampling event contain greater than or equal to 0.1% sulphide sulphur: one collected from the Tank Farm (GK-BGAR-TF-04) and one from the designated Type 3 area of the WMRP (GK-BGAR-WMRP3-08). Both samples are non-AG based on NPR and NAG pH values.

Table 7-1 Actions Levels and Status in 2023

Objective	Action Level	Status in 2023
To prevent the formation of acid rock drainage	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 from January to August contain at least 0.1% total sulphur. Overall, 10% of 2023 samples have greater than or equal to 0.1% total sulphur, however the represented material also contains more diabase with greater buffering capacity.
Minimize the potential for discharge of acidic drainage or seepage that could cause a significant environmental effect.	Volume and location of visible seepage are different than previously observed conditions.	Seepage was minimal due to the drought-like conditions experienced in 2023.
	Seepage is turbid (i.e., not clear)	Spring sample (SNP-16) was not turbid.
	pH below 5 or greater than 9 in one seepage monitoring sample	The pH result at SNP-16 was between 5 and 9.
	Concentration measured outside normal range, or divergence in trends relative to water quality predictions in one seepage monitoring sample	The seepage sample collected at Dyke D in spring 2023 falls within the concentration ranges historically observed at this seepage monitoring station.

non-AG = non-acid generating; NPR = Neutralization Potential Ratio; WMRP = West Mine Rock Pile; NAG = Net-Acid Generation; PAG = potentially acid generating.

Very limited active seepage flows were observed during the spring and fall seepage survey events due to the drought-like conditions experienced in 2023. Active seepage was only observed at SNP-16 (spring), which displayed seepage chemistry similar to what has been historically measured at this monitoring station.

Based on the geochemical monitoring results throughout 2023, geochemical monitoring and rock placement protocols appear to be appropriate for the 2023 operational period. The elevated proportions of PAG mine rock observed in 2022 and in the first half of 2023 were not detected in the later half of 2023, decreasing to proportions in accordance with what was noted during the EIS and further contained additional amounts of diabase materials, which are expected to provide some additional buffering capacity. The classification of PAG rock should be reviewed and updated based on updated information available since the EIS.

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9 ACRONYMS, ABBREVIATIONS, UNITS OF MEASURE 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
≥	greater than or equal to
µS/cm	microsiemens per centimetre
kg	kilogram
kg $CaCO_3$/t	kilograms of calcium carbonate equivalent per tonne
km	kilometre

Unit	Definition
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 of 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 of 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 1: SNP-11-A (Fall)

Photo 2: SNP-11-B (Fall)

Photo 3: SNP-12-A (Fall)

Photo 4: SNP-12-B (Fall)

Photo 5: SNP-12-C (Fall)

Photo 6: SNP-13 (Fall)

Photo 7a: SNP-14-A (Spring)

Photo 7b: SNP-14-A (Fall)

Photo 8: SNP-14-B (Fall)

Photo 9: SNP-16 (Fall)

Photo 10: SNP-17 (Fall)

Photo 11a: DA-01 (Spring)

Photo 11b: DA-01 (Fall)

Photo 12a: DB-01 (Spring)

Photo 12b: DB-01 (Fall)

Photo 13: DF-01 (Fall)

Photo 14: DG-01 (Fall)

Photo 15: DH-01 (Fall)

Photo 16: DI-01 (Fall)

Photo 17: ROM-01 (Fall)

Appendix B

Photos of Rock Sample Locations

APPENDIX B1

SPRING 2023 SAMPLE PHOTOS

Photo 1a: GK-BGAR-CPK-36 AREA

Photo 1b: GK-BGAR-CPK-36

Photo 2a: GK-BGAR-CPK-37 AREA

Photo 2b: GK-BGAR-CPK-37

Photo 3a: GK-BGAR-CPK-38 AREA

Photo 3b: GK-BGAR-CPK-38

Photo 4a: GK-BGAR-WMRP1-11 AREA

Photo 4b: GK-BGAR-WMRP1-11

Photo 5a: GK-BGAR-WMRP3-08 AREA

Photo 5b: GK-BGAR-WMRP3-08

Photo 6a: GK-BGAR-DD-07 AREA

Photo 6b: GK-BGAR-DD-07

Photo 7a: GK-BGAR-DL-08 AREA

Photo 7b: GK-BGAR-DL-08

Photo 8a: GK-BGAR-FPKS-02 AREA

Photo 8b: GK-BGAR-FPKS-02

Photo 9a: GK-BGAR-WP-01 AREA

Photo 9b: GK-BGAR-WP-01

Photo 10a: GK-BGAR-TMP-01 AREA

Photo 10b: GK-BGAR-TMP-01

Photo 11a: GK-BGAR-TF-04 AREA

Photo 11b: GK-BGAR-TF-04

Photo 12a: GK-BGAR-NWRL-01 AREA

Photo 12b: GK-BGAR-NWRL-01

Photo 13a: GK-BGAR-NPL-01 AREA

Photo 13b: GK-BGAR-NPL-01

Photo 14a: GK-BGAR-CP3-01 AREA

Photo 14b: GK-BGAR-CP3-01

Photo 15a: GK-BGAR-MP-05 AREA

Photo 15b: GK-BGAR-MP-05

Photo 16a: GK-BGAR-WLF-03 AREA

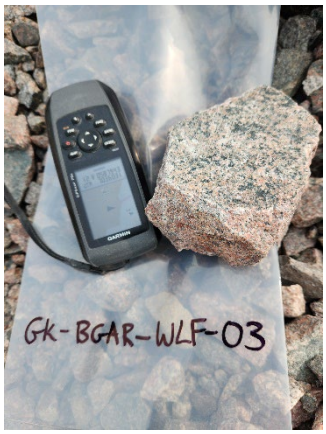


Photo 16b: GK-BGAR-WLF-03

Photo 17a: GK-BGAR-DB-10 AREA

Photo 17b: GK-BGAR-DB-10

Photo 18a: GK-BGAR-DA1-10 AREA

Photo 18b: GK-BGAR-DA1-10

Photo 19a: GK-BGAR-ANP-03 AREA

Photo 19b: GK-BGAR-ANP-03

Photo 20a: GK-BGAR-DA1X-01 AREA

Photo 20b: GK-BGAR-DA1X-01

Photo 21a: GK-BGAR-KB2LF-01 AREA

Photo 21b: GK-BGAR-KB2LF-01

APPENDIX B2

FALL 2023 SAMPLE PHOTOS

Photo 1: GK-BGAR-DA1-11

Photo 2: GK-BGAR-DD-08

Photo 3: GK-BGAR-KB2LF-02

Photo 4: GK-BGAR-CP3-02

Photo 5: GK-BGAR-CPK-RC-01

Photo 6: GK-BGAR-CD-01

Photo 7: GK-BGAR-TP-01

Photo 8: GK-BGAR-CPKD-01

Photo 9: GK-BGAR-TMP-02

Photo 10: GK-BGAR-WP-02

Photo 11: GK-BGAR-TFB-01

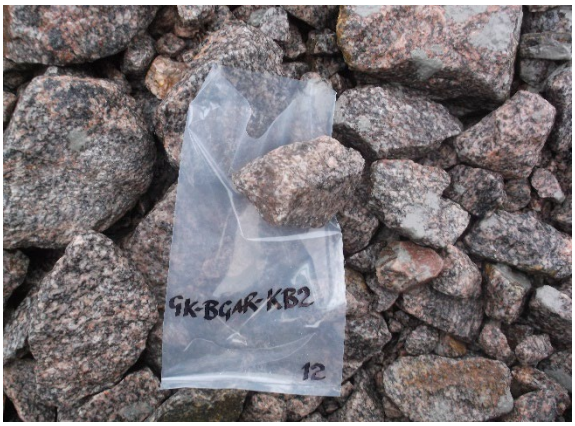


Photo 12: GK-BGAR-CPKTP-05

Photo 13: GK-BGAR-SJDC-01

Photo 14: GK-BGAR-WLF-04

Photo 15: GK-BGAR-NWRL-02

Photo 16: GK-BGAR-D12

Photo 17: GK-BGAR-TF3-05

Photo 18: GK-BGAR-CPK-39

Photo 19: GK-BGAR-CPK-40

Photo 20: GK-BGAR-FPK-32 to 34

Appendix C

Analytical Results Summary Tables

Table C1: ABA Test Results for Gahcho Kué Mine 2023 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-FPK-30	2023 Spring	FPK	8.85	0.08	0.07	0.01	0.89	20.2	337	2.2	335	18	154	9.2
GK-BGAR-FPK-31	2023 Spring	FPK	8.82	0.05	0.03	0.02	0.83	18.9	313	0.94	312	18	334	20
GK-BGAR-CPK-36	2023 Spring	CPK	9	0.03	<0.02	0.02	0.52	11.8	329	0.63	328	11	526	19
GK-BGAR-CPK-37	2023 Spring	CPK	9.14	0.03	0.02	0.01	0.46	10.5	347	0.63	346	9.9	555	17
GK-BGAR-CPK-38	2023 Spring	CPK	8.99	0.03	0.02	0.01	0.52	11.8	317	0.63	316	11	507	19
GK-BGAR-WMRP1-11	2023 Spring	Granite	9.67	<0.02	<0.02	<0.01	<0.08	<1.8	14.5	0.63	14	1.2	23	2.9
GK-BGAR-WMRP3-08	2023 Spring	Diabase	9.13	0.13	0.13	<0.01	0.08	1.8	20.6	4.1	17	-2.3	5.1	0.44
GK-BGAR-DD-07	2023 Spring	Granite	9.97	0.03	0.03	<0.01	<0.08	<1.8	12.6	0.94	12	0.86	13	1.9
GK-BGAR-DL-08	2023 Spring	Granite	10.1	<0.02	<0.02	<0.01	<0.08	<1.8	10.6	0.63	10.0	1.2	17	2.9
GK-BGAR-FPKS-02	2023 Spring	Granite	9.85	<0.02	<0.02	<0.01	<0.08	<1.8	12.5	0.63	12	1.2	20	2.9
GK-BGAR-WP-01	2023 Spring	Granite	9.68	<0.02	<0.02	<0.01	<0.08	<1.8	14.9	0.63	14	1.2	24	2.9
GK-BGAR-TMP-01	2023 Spring	Granite	9.82	<0.02	<0.02	<0.01	<0.08	<1.8	16	0.63	15	1.2	26	2.9
GK-BGAR-TF-04	2023 Spring	Granite	9.52	0.14	0.14	<0.01	<0.08	<1.8	12.3	4.4	7.9	-2.6	2.8	0.41
GK-BGAR-NWRL-01	2023 Spring	Granite	9.67	0.03	0.03	<0.01	<0.08	<1.8	15.3	0.94	14	0.86	16	1.9
GK-BGAR-NPL-01	2023 Spring	Granite	10	<0.02	<0.02	<0.01	<0.08	<1.8	13.3	0.63	13	1.2	21	2.9
GK-BGAR-CP3-01	2023 Spring	Granite	9.71	<0.02	<0.02	<0.01	<0.08	<1.8	10	0.63	9.4	1.2	16	2.9
GK-BGAR-MP-05	2023 Spring	Granite	10.1	<0.02	<0.02	<0.01	<0.08	<1.8	10.2	0.63	9.6	1.2	16	2.9
GK-BGAR-WLF-03	2023 Spring	Granite	9.69	<0.02	<0.02	<0.01	<0.08	<1.8	14.4	0.63	14	1.2	23	2.9
GK-BGAR-DB-10	2023 Spring	Granite	9.39	0.03	0.03	<0.01	<0.08	<1.8	19.4	0.94	18	0.86	21	1.9
GK-BGAR-DA1-10	2023 Spring	Granite	9.83	<0.02	<0.02	<0.01	<0.08	<1.8	13.9	0.63	13	1.2	22	2.9
GK-BGAR-ANP-03	2023 Spring	Granite	9.85	<0.02	<0.02	<0.01	<0.08	<1.8	11	0.63	10	1.2	18	2.9
GK-BGAR-DA1X-01	2023 Spring	Granite	9.84	0.04	0.04	<0.01	0.15	3.4	19.4	1.3	18	2.2	16	2.7
GK-BGAR-KB2LF-01	2023 Spring	Granite	9.6	<0.02	<0.02	<0.01	0.09	2.1	14.9	0.63	14	1.5	24	3.4
GK-BGAR-DA1-11	2023 Fall	Granite	9.69	<0.02	<0.02	<0.01	<0.08	<1.8	17.8	0.63	17	1.2	28	2.9
GK-BGAR-DD-08	2023 Fall	Granite	9.99	0.03	0.03	<0.01	<0.08	<1.8	11.8	0.94	11	0.86	13	1.9
GK-BGAR-KB2LF-02	2023 Fall	Granite	9.5	<0.02	<0.02	<0.01	<0.08	<1.8	8.8	0.63	8.2	1.2	14	2.9
GK-BGAR-CP3-02	2023 Fall	Granite	9.55	<0.02	<0.02	<0.01	<0.08	<1.8	12.5	0.63	12	1.2	20	2.9
GK-BGAR-CPK-RC-01	2023 Fall	Granite	9.86	0.03	0.03	<0.01	<0.08	<1.8	9.9	0.94	9.0	0.86	11	1.9
GK-BGAR-CD-01	2023 Fall	Granite	9.51	<0.02	<0.02	<0.01	<0.08	<1.8	9.2	0.63	8.6	1.2	15	2.9
GK-BGAR-TP-01	2023 Fall	Granite	9.86	0.04	0.04	<0.01	<0.08	<1.8	11.3	1.3	10	0.55	9.0	1.4
GK-BGAR-CPKD-01	2023 Fall	Granite	9.29	<0.02	<0.02	<0.01	<0.08	<1.8	10.4	0.63	9.8	1.2	17	2.9
GK-BGAR-TMP-02	2023 Fall	Granite	9.94	<0.02	<0.02	<0.01	<0.08	<1.8	8.3	0.63	7.7	1.2	13	2.9
GK-BGAR-WP-02	2023 Fall	Granite	9.88	<0.02	<0.02	<0.01	<0.08	<1.8	10.7	0.63	10	1.2	17	2.9
GK-BGAR-TFB-01	2023 Fall	Granite	9.84	0.03	0.03	<0.01	<0.08	<1.8	10	0.94	9.1	0.86	11	1.9
GK-BGAR-CPKTP-05	2023 Fall	Granite	9.95	<0.02	<0.02	<0.01	0.08	1.8	7	0.63	6.4	1.2	11	2.9
GK-BGAR-SJDC-01	2023 Fall	Granite	9.49	<0.02	<0.02	<0.01	<0.08	<1.8	15.7	0.63	15	1.2	25	2.9
GK-BGAR-WLF-04	2023 Fall	Granite	9.73	0.02	0.02	<0.01	0.09	2.1	15.2	0.63	15	1.5	24	3.4
GK-BGAR-NWRL-02	2023 Fall	Granite	9.97	<0.02	<0.02	<0.01	<0.08	<1.8	10.7	0.63	10	1.2	17	2.9
GK-BGAR-D12	2023 Fall	Granite	9.71	<0.02	<0.02	<0.01	0.08	1.8	9.5	0.63	8.9	1.2	15	2.9
GK-BGAR-TF3-05	2023 Fall	Granite	9.88	<0.02	<0.02	<0.01	<0.08	<1.8	8.7	0.63	8.1	1.2	14	2.9
GK-BGAR-CPK-39	2023 Fall	CPK	8.48	0.05	0.04	0.01	0.47	10.7	80.1	1.3	79	9.5	64	8.6
GK-BGAR-CPK-40	2023 Fall	CPK	8.42	0.03	0.02	0.01	0.57	13	308	0.63	307	12	493	21
GK-BGAR-FPK-32	2023 Fall	FPK	8.34	0.05	0.04	0.01	0.9	20.5	88.9	1.3	88	19	71	16
GK-BGAR-FPK-33	2023 Fall	FPK	8.34	0.05	0.04	0.01	0.97	22.1	88.2	1.3	87	21	71	18
GK-BGAR-FPK-34	2023 Fall	FPK	8.27	0.05	0.03	0.02	0.83	18.9	88.9	0.94	88	18	95	20

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-FPK-30	2023 Spring	FPK	250	9.4	0	0	0	0
GK-BGAR-FPK-31	2023 Spring	FPK	250	9.4	0	0	0	0
GK-BGAR-CPK-36	2023 Spring	CPK	250	9.8	0	0	0	0
GK-BGAR-CPK-37	2023 Spring	CPK	250	10.0	0	0	0	0
GK-BGAR-CPK-38	2023 Spring	CPK	250	9.7	0	0	0	0
GK-BGAR-WMRP1-11	2023 Spring	Granite	250	7.6	0	0	0	0
GK-BGAR-WMRP3-08	2023 Spring	Diabase	250	8.0	0	0	0	0
GK-BGAR-DD-07	2023 Spring	Granite	250	7.2	0	0	0	0
GK-BGAR-DL-08	2023 Spring	Granite	250	7.0	0	0	0	0
GK-BGAR-FPKS-02	2023 Spring	Granite	250	7.3	0	0	0	0
GK-BGAR-WP-01	2023 Spring	Granite	250	7.4	0	0	0	0
GK-BGAR-TMP-01	2023 Spring	Granite	250	7.4	0	0	0	0
GK-BGAR-TF-04	2023 Spring	Granite	250	7.2	0	0	0	0
GK-BGAR-NWRL-01	2023 Spring	Granite	250	7.2	0	0	0	0
GK-BGAR-NPL-01	2023 Spring	Granite	250	7.1	0	0	0	0
GK-BGAR-CP3-01	2023 Spring	Granite	250	6.9	0	0.3	0	0.58
GK-BGAR-MP-05	2023 Spring	Granite	250	7.0	0	0.1	0	0.2
GK-BGAR-WLF-03	2023 Spring	Granite	250	6.9	0	0.4	0	0.78
GK-BGAR-DB-10	2023 Spring	Granite	250	7.5	0	0	0	0
GK-BGAR-DA1-10	2023 Spring	Granite	250	7.1	0	0	0	0
GK-BGAR-ANP-03	2023 Spring	Granite	250	7.0	0	0.2	0	0.4
GK-BGAR-DA1X-01	2023 Spring	Granite	250	7.7	0	0	0	0
GK-BGAR-KB2LF-01	2023 Spring	Granite	250	7.6	0	0	0	0
GK-BGAR-DA1-11	2023 Fall	Granite	250	7.2	0	0	0	0
GK-BGAR-DD-08	2023 Fall	Granite	250	7.1	0	0	0	0
GK-BGAR-KB2LF-02	2023 Fall	Granite	250	6.9	0	0.3	0	0.58
GK-BGAR-CP3-02	2023 Fall	Granite	250	7.1	0	0	0	0
GK-BGAR-CPK-RC-01	2023 Fall	Granite	250	7.0	0	0.2	0	0.39
GK-BGAR-CD-01	2023 Fall	Granite	250	6.8	0	0.3	0	0.59
GK-BGAR-TP-01	2023 Fall	Granite	250	7.0	0	0	0	0
GK-BGAR-CPKD-01	2023 Fall	Granite	250	6.9	0	0.3	0	0.58
GK-BGAR-TMP-02	2023 Fall	Granite	250	6.8	0	0.8	0	1.5
GK-BGAR-WP-02	2023 Fall	Granite	250	6.9	0	0.3	0	0.58
GK-BGAR-TFB-01	2023 Fall	Granite	250	7.0	0	0	0	0
GK-BGAR-CPKTP-05	2023 Fall	Granite	250	6.9	0	0.2	0	0.4
GK-BGAR-SJDC-01	2023 Fall	Granite	250	6.9	0	0.3	0	0.6
GK-BGAR-WLF-04	2023 Fall	Granite	250	7.3	0	0	0	0
GK-BGAR-NWRL-02	2023 Fall	Granite	250	6.7	0	1.1	0	2.2
GK-BGAR-D12	2023 Fall	Granite	250	6.9	0	0.4	0	0.78
GK-BGAR-TF3-05	2023 Fall	Granite	250	6.6	0	1.3	0	2.5
GK-BGAR-CPK-39	2023 Fall	CPK	250	9.0	0	0	0	0
GK-BGAR-CPK-40	2023 Fall	CPK	250	9.5	0	0	0	0
GK-BGAR-FPK-32	2023 Fall	FPK	250	9.6	0	0	0	0
GK-BGAR-FPK-33	2023 Fall	FPK	250	9.6	0	0	0	0
GK-BGAR-FPK-34	2023 Fall	FPK	250	9.6	0	0	0	0

NAG = net acid generating; FPK = fine processed kimberlite; CPK = coarse processed kimberlite.

Table C3: Field Cell Analytical Results

Parameter	Units	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
		2023-05-09	2023-06-08	2023-07-04	2023-09-21	2023-05-09	2023-06-08	2023-07-04	2023-09-21	2023-05-09	2023-06-08	2023-07-04	2023-09-21	2023-06-12
General Parameters														
pH	pH	7.6	7.9	8.0	8.1	8.3	8.1	8.1	8.2	7.3	7.5	7.3	7.6	7.6
Conductivity	uS/cm	72	135	157	169	337	534	462	497	35	121	62	77	153
Hardness (as $CaCO_3$)	mg/L	32	64	74	76	76	136	114	134	16	50	29	35	66
Total Suspended Solids	mg/L	7.2	2.0	5.4	<1.0	9.0	23	2.6	13	2.1	14	1.9	<1.0	7.5
Total Dissolved Solids	mg/L	36	95	100	107	206	372	312	343	28	169	70	96	112
Turbidity	NTU	6.3	1.0	1.3	1.1	5.8	4.8	1.6	2.8	2.0	9.3	0.95	1.3	21
Anions and Nutrients														
Total Alkalinity	mg/L as $CaCO_3$	29	55	63	65	69	73	78	89	14	33	19	29	39
Bicarbonate	mg/L as $CaCO_3$	29	55	63	65	69	73	78	89	14	33	19	29	39
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
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
Bromide	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.09	0.057	0.072	<0.0500	0.05	<0.0500	<0.0500	<0.0500
Chloride	mg/L	0.64	1.4	1.1	1.5	4.4	10	6.2	8.0	<0.50	4.0	1.3	1.6	0.78
Fluoride	mg/L	0.35	0.61	0.76	0.78	0.53	0.7	0.69	0.65	0.056	<0.200	0.2	0.25	0.64
Total Ammonia	mg/L as N	0.012	0.01	0.0066	0.11	0.0098	<0.0050	<0.0050	0.023	0.014	0.041	0.12	0.21	0.15
Nitrate and Nitrite	mg/L as N	0.48	0.62	0.46	1.7	2.1	5.2	2.3	3.2	<0.0058	<0.0058	<0.0058	0.022	0.62
Nitrate	mg/L as N	0.48	0.62	0.46	1.6	2.1	5.2	2.3	3.2	<0.0030	<0.0030	0.0047	0.015	0.61
Nitrite	mg/L as N	0.005	<0.0050	<0.0050	0.0063	0.013	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	0.0075	0.0083
Total Kjeldahl Nitrogen	mg/L	0.14	0.32	0.28	0.46	0.22	0.57	0.27	0.33	0.26	2.4	0.76	1.0	0.59
Dissolved Orthophosphate	mg/L as P	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.002	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
Total Dissolved Phosphorous	mg/L	0.0047	0.0032	0.0023	0.0022	0.0031	0.0084	0.01	0.0049	0.0042	0.024	0.0066	0.0091	0.0055
Total Phosphorous	mg/L	0.015	0.038	0.017	0.0052	0.012	0.052	0.018	0.028	0.15	0.098	0.012	0.016	0.028
Dissolved Organic Phosphorous	mg/L	0.0047	0.0032	0.0023	0.0022	<0.0020	0.0022	0.002	0.0049	<0.0020	0.018	0.0046	0.0091	0.0023
Total Inorganic Phosphorous	mg/L	0.018	0.031	0.015	<0.0010	0.0056	0.049	0.015	0.025	0.15	0.057	0.0059	0.0029	0.022
Dissolved Inorganic Phosphorous	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0029	0.0062	0.0084	<0.0010	0.0025	0.0059	0.002	<0.0010	0.0032
Silicate	mg/L as SiO_2	1.6	2.0	3.0	4.4	12	14	15	14	2.7	1.1	2.0	2.2	4.0
Sulphate	mg/L	4.1	9.8	9.1	11	76	148	117	128	1.3	15	3.8	3.4	26
Total Organic Carbon	mg/L	3.5	4.9	4.5	7.4	1.7	3.4	2.7	2.7	7.0	50	23	30	13
Total Metals														
Aluminum	mg/L	0.2	0.077	0.042	0.044	0.14	0.18	1.4	0.033	0.079	0.19	0.048	0.049	0.83
Antimony	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00052	0.00087	0.00098	0.00068	<0.00010	0.0001	<0.00010	0.00011	0.00011
Arsenic	mg/L	0.00014	0.00022	0.00018	0.00031	0.0014	0.002	0.0019	0.0016	0.000094	0.0006	0.00025	0.00049	0.00022
Barium	mg/L	0.015	0.024	0.028	0.027	0.026	0.042	0.061	0.04	0.037	0.07	0.043	0.048	0.019
Beryllium	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000040	<0.000040	<0.000100	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020	0.000065
Bismuth	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100	<0.000100	<0.000250	<0.000250	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.057	0.13	0.17	0.2	2.6	4.8	5.1	4.3	<0.010	0.031	0.025	0.032	0.034
Cadmium	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000100	<0.0000100	<0.0000250	<0.0000250	<0.0000050	0.000014	<0.0000050	0.0000077	0.0000081
Calcium	mg/L	8.4	15	19	19	15	28	24	27	4.4	12	7.8	9.7	20
Cesium	mg/L	0.000012	<0.000010	<0.000010	<0.000010	0.000024	0.000041	0.000095	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	0.000033
Chromium	mg/L	0.00042	0.00024	0.00019	0.00015	0.00087	0.0011	0.011	<0.00050	0.00024	0.0011	0.00036	0.00053	0.00081
Cobalt	mg/L	0.00013	0.000082	<0.000050	0.000093	0.00044	0.00058	0.0039	<0.000250	0.000087	0.00075	0.0001	0.0002	0.00033
Copper	mg/L	0.0012	0.002	0.0024	0.0039	0.00037	0.00055	0.0023	<0.00075	0.00082	0.0052	0.0017	0.0023	0.0046
Iron	mg/L	0.17	0.059	0.028	0.026	0.19	0.26	2.4	0.039	0.06	0.17	0.035	0.04	0.63
Lead	mg/L	0.00024	0.000058	<0.000030	0.000049	0.000078	0.000076	0.00054	<0.000150	0.000033	0.000065	<0.000030	<0.000030	0.00089
Lithium	mg/L	0.0029	0.0046	0.0054	0.0053	<0.0020	0.002	0.0056	<0.0050	<0.0010	0.0012	<0.0010	<0.0010	0.0073
Magnesium	mg/L	2.9	5.2	6.0	6.6	9.5	17	19	15	0.92	4.8	2.3	2.6	4.6
Manganese	mg/L	0.0049	0.0025	0.0015	0.00096	0.0065	0.0077	0.052	0.0014	0.0023	0.019	0.00099	0.0019	0.014
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000098	<0.0000050	<0.0000050	0.0000072
Molybdenum	mg/L	0.0035	0.0059	0.0065	0.0077	0.031	0.061	0.049	0.058	0.00044	0.0031	0.0012	0.0014	0.0095
Nickel	mg/L	0.0018	0.0015	0.0014	0.0024	0.0066	0.0091	0.053	0.0043	0.0029	0.022	0.0081	0.011	0.0046
Phosphorus	mg/L	0.015	0.038	0.017	0.0052	0.012	0.052	0.018	0.028	0.15	0.098	0.012	0.016	0.028
Potassium	mg/L	1.6	3.1	3.6	3.8	13	22	22	23	0.41	3.5	1.8	1.7	3.8
Rubidium	mg/L	0.0015	0.0025	0.0029	0.003	0.011	0.018	0.021	0.018	0.00063	0.0026	0.0014	0.0016	0.0049
Selenium	mg/L	<0.000050	0.000058	0.00011	0.00012	0.0012	0.002	0.0019	0.0026	<0.000050	0.0003	0.00011	0.00012	0.00018
Silicon	mg/L	1.2	1.1	1.6	2.4	6.2	7.4	13	7.7	1.3	0.9	1.1	1.2	3.4
Silver	mg/L	<0.000010	0.000015	<0.000010	<0.000010	<0.000020	<0.000020	<0.000050	<0.000050	<0.000010	0.000011	<0.000010	<0.000010	0.000012
Sodium	mg/L	0.78	1.6	1.7	2.0	25	42	39	42	0.31	2.3	0.9	1.0	1.6
Strontium	mg/L	0.062	0.11	0.13	0.13	0.18	0.33	0.28	0.34	0.019	0.053	0.032	0.042	0.12
Sulfur	mg/L	1.4	3.3	3.0	4.3	24	51	42	46	<0.50	4.6	1.2	1.5	10
Tellurium	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040	<0.00040	<0.00100	<0.00100	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	0.000011
Thorium	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	0.00011	<0.00010	0.0001	0.00058
Tin	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100	<0.000100	<0.000250	<0.000250	<0.000050	<0.000050	<0.000050	<0.000050	0.00013
Titanium	mg/L	0.0052	0.0018	0.00079	0.00078	0.0027	0.0053	0.054	<0.00150	0.002	0.0054	0.00076	0.00095	0.015
Tungsten	mg/L	0.0001	0.00019	0.00023	0.00024	0.0006	0.0012	0.0012	0.0011	0.00019	0.00057	0.00031	0.00029	0.0015
Uranium	mg/L	0.0025	0.0055	0.007	0.0077	0.000056	0.000098	0.00018	0.000092	0.000078	0.0004	0.0001	0.00016	0.0027
Vanadium	mg/L	0.00096	0.00094	0.00096	0.0011	0.0032	0.0049	0.0077	0.0043	<0.00050	0.00067	<0.00050	<0.00050	0.0019
Zinc	mg/L	0.0024	0.003	0.0016	0.0022	<0.0030	0.0047	0.015	<0.0075	0.0046	0.015	0.0064	0.0093	0.0044
Zirconium	mg/L	0.00042	0.00025	<0.00020	0.00034	<0.00040	<0.00040	<0.00100	<0.00100	<0.00020	0.0014	<0.00020	0.00057	0.0035
Dissolved Metals														
Aluminum	mg/L	0.016	0.017	0.022	0.0098	0.0026	0.0058	0.0066	<0.0050	0.013	0.032	0.024	0.014	0.017
Antimony	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00053	0.00084	0.001	0.00065	<0.00010	0.0001	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00012	0.00017	0.00021	0.00031	0.0013	0.002	0.0017	0.0016	0.000077	0.00055	0.0002	0.00049	0.00015
Barium	mg/L	0.012	0.024	0.027	0.028	0.025	0.04	0.039	0.042	0.039	0.072	0.042	0.051	0.013
Beryllium	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100	<0.000100	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000250	<0.000250	<0.000250	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.055	0.14	0.15	0.2	2.6	5.0	4.6	4.4	0.009	0.035	0.026	0.033	0.032
Cadmium	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000250	<0.0000250	<0.0000250	<0.0000050	0.0000073	<0.0000050	0.0000057	<0.0000050
Calcium	mg/L	8.5	16	20	19	15	28	24	28	5.1	12	7.9	9.3	20
Cesium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000018	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	<0.00010	0.00011	0.00015	0.00024	<0.00010	<0.00050	<0.00050	<0.00050	0.00014	0.00067	0.00026	0.00048	0.0001
Cobalt	mg/L	<0.000050	<0.000050	<0.000050	0.000074	<0.000050	<0.000250	<0.000250	<0.000250	<0.000050	0.00044	0.000058	0.00017	<0.000050
Copper	mg/L	0.00086	0.0018	0.0021	0.0038	0.00018	<0.00075	<0.00075	<0.00075	0.00077	0.0048	0.0014	0.0023	0.0034
Iron	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0250	<0.0250	<0.0250	<0.0050	0.017	<0.0050	0.01	<0.0050
Lead	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000150	<0.000150	<0.000150	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
Lithium	mg/L	0.0026	0.0048	0.0059	0.0057	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0053
Magnesium	mg/L	2.6	5.6	6.2	6.8	9.3	16	13	16	0.88	4.7	2.3	2.9	4.2
Manganese	mg/L	0.00013	0.00017	0.00016	0.00017	<0.00010	<0.00050	<0.00050	<0.00050	0.00054	0.0097	0.00016	0.00076	0.0015
Mercury	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000054	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.0035	0.006	0.0067	0.0076	0.03	0.06	0.052	0.056	0.00044	0.0031	0.0012	0.0014	0.0088
Nickel	mg/L	0.00073	0.0012	0.0012	0.0024	0.0019	0.0035	0.0033	0.0034	0.0027	0.022	0.0074	0.012	0.0024
Phosphorus	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	1.6	3.4	3.7	4.0	14	23	23	23	0.38	3.6	1.9	1.8	3.7
Rubidium	mg/L	0.0012	0.0025	0.0029	0.0034	0.011	0.018	0.018	0.018	0.0006	0.0022	0.0014	0.0016	0.0043
Selenium	mg/L	0.000064	0.000058	0.00011	0.00012	0.0011	0.0021	0.0016	0.0022	<0.000050	0.00027	0.00006	0.00011	0.00011
Silicon	mg/L	0.75	0.95	1.5	2.2	5.9	6.6	7.2	7.0	1.2	0.52	0.97	1.1	2.0
Silver	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium	mg/L	0.74	1.7	1.7	2.1	26	44	38	42	0.29	2.5	0.88	1.1	1.5
Strontium	mg/L	0.06	0.12	0.13	0.13	0.18	0.34	0.27	0.32	0.021	0.055	0.035	0.042	0.12
Sulfur	mg/L	1.4	3.4	3.5	4.4	26	51	42	45	<0.50	5.0	1.5	1.6	9.9
Tellurium	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00100	<0.00100	<0.00100	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000250	<0.000250	<0.000250	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Titanium	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00150	<0.00150	<0.00150	<0.00030	0.00055	<0.00030	<0.00030	<0.00030
Tungsten	mg/L	<0.00010	0.0002	0.00024	0.00024	0.00064	0.0012	0.0013	0.0012	0.0002	0.0003	0.0003	0.00029	0.0013
Uranium	mg/L	0.0022	0.0055	0.0068	0.0082	0.000045	0.000094	0.000062	0.000094	0.000061	0.00034	0.000087	0.00014	0.0021
Vanadium	mg/L	<0.00050	0.00073	0.00089	0.0011	0.003	0.0043	0.0046	0.0042	<0.00050	<0.00050	<0.00050	<0.00050	0.00054
Zinc	mg/L	<0.0010	0.0012	<0.0010	0.0014	<0.0010	<0.0050	<0.0050	<0.0050	0.0033	0.013	0.0054	0.0085	<0.0010
Zirconium	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00100	<0.00100	<0.00100	<0.00030	0.0012	<0.00030	0.00049	<0.00030

Table C4: 2023 Seepage Analytical Results

Parameter	Units	SNP-16
		2023-05-23
Physical Parameters		
pH	pH	8.2
Conductivity	uS/cm	1,000
Hardness (as $CaCO_3$)	mg/L	354
Total Suspended Solids	mg/L	18
Total Dissolved Solids	mg/L	616
Turbidity	NTU	12
Anions and Nutrients		
Total Alkalinity	mg/L as $CaCO_3$	91
Bicarbonate	mg/L as $CaCO_3$	91
Carbonate	mg/L as $CaCO_3$	<1.0
Hydroxide	mg/L as $CaCO_3$	<1.0
Bromide	mg/L	1.7
Chloride	mg/L	138
Fluoride	mg/L	0.45
Total Ammonia	mg/L as N	0.98
Nitrate and Nitrite	mg/L as N	16
Nitrate	mg/L as N	16
Nitrite	mg/L as N	0.095
Total Kjeldahl Nitrogen	mg/L	0.81
Dissolved Orthophosphate	mg/L as P	<0.0010
Dissolved Phosphorous	mg/L	0.0046
Total Phosphorous	mg/L	0.019
Dissolved Organic Phosphorous	mg/L	0.0046
Total Inorganic Phosphorous	mg/L	0.014
Dissolved Inorganic Phosphorous	mg/L	<0.0010
Silicate	mg/L as SiO_2	6.6
Sulphate	mg/L	133
Total Organic Carbon	mg/L	3.8
Total Metals		
Aluminum	mg/L	0.5
Antimony	mg/L	<0.00010
Arsenic	mg/L	0.0004
Barium	mg/L	0.057
Beryllium	mg/L	0.000028
Bismuth	mg/L	<0.000050
Boron	mg/L	0.47
Cadmium	mg/L	<0.0000150
Calcium	mg/L	85
Cesium	mg/L	0.000067
Chromium	mg/L	0.00078
Cobalt	mg/L	0.00063
Copper	mg/L	0.0018
Iron	mg/L	0.48
Lead	mg/L	0.00024
Lithium	mg/L	0.014
Magnesium	mg/L	33
Manganese	mg/L	0.1
Mercury	mg/L	<0.0000050
Molybdenum	mg/L	0.017
Nickel	mg/L	0.0065
Potassium	mg/L	15
Rubidium	mg/L	0.011
Selenium	mg/L	0.00014
Silicon	mg/L	4.6
Silver	mg/L	<0.000010
Sodium	mg/L	54
Strontium	mg/L	0.95
Thallium	mg/L	0.000012
Tin	mg/L	<0.000050
Titanium	mg/L	0.016
Uranium	mg/L	0.017
Vanadium	mg/L	0.0017
Zinc	mg/L	<0.0015
Dissolved Metals		
Aluminum	mg/L	0.0085
Antimony	mg/L	<0.00010
Arsenic	mg/L	0.00035
Barium	mg/L	0.051
Beryllium	mg/L	<0.000020
Bismuth	mg/L	<0.000050
Boron	mg/L	0.42
Cadmium	mg/L	<0.0000100
Calcium	mg/L	86
Cesium	mg/L	0.000032
Chromium	mg/L	<0.00010
Cobalt	mg/L	0.00038
Copper	mg/L	0.0012
Iron	mg/L	<0.0050
Lead	mg/L	<0.000030
Lithium	mg/L	0.013
Magnesium	mg/L	34
Manganese	mg/L	0.088
Mercury	mg/L	<0.0000050
Molybdenum	mg/L	0.017
Nickel	mg/L	0.005
Potassium	mg/L	16
Rubidium	mg/L	0.0097
Selenium	mg/L	0.00033
Silicon	mg/L	3.4
Silver	mg/L	<0.000010
Sodium	mg/L	54
Strontium	mg/L	0.93
Thallium	mg/L	<0.000010
Tin	mg/L	<0.000050
Titanium	mg/L	<0.00030
Uranium	mg/L	0.016
Vanadium	mg/L	0.00075
Zinc	mg/L	<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, 2023

DE BEERS GROUP

March 12, 2023

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 13, 2022 (GNWT Spill #2023049)

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 #2023049, which occurred at the Gahcho Kué Mine at 11:30 on February 13, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 08:00 on February 14, 2023.

Incident Summary:

On February 13, 2023 at approximately 11:30, 1250 Excavator TV-004 was on the 397 bench of the Tuzo Open Pit scaling the crest of the lower high wall. The operator swung around to continue working on another portion of the crest and contacted the high wall, causing damage to the hydraulic lines on the boom and stick. This resulted in a hydraulic spill of approximately 200 litres.

Immediate Actions:

Affected area cleaned up and scraped down and contaminated material loaded out to the Type 3 Area of the West Mine Rock Pile.

Root Cause:

Operator was complacent to task and his surroundings causing him to lose sight of his attachment and contacted the highwall.

Follow-Up Actions:

1. Review of task, coaching and mentoring with operator. Review incident with crew on spill containment and clean up.
2. Complete Planned Task Observation (PTO) on the scaling of highwall procedure and review scaling highwall and bench clean up MO-DOP 080 and sign off with mandatory review.

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 #2023049
Figure 2. NT-NU Spill Report GNWT Spill #2023049

Figure 1. Location of GNWT Spill #2023049

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 / 14 / 23	Report Time: 8:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2023049
B	Occurrence Date: 02 / 13 / 23	Occurrence Time: 11:30 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 33 Seconds		Longitude: 109 Degrees 12 Minutes 4 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: 1250 Komatsu Excavator (TV-004)	Spill Cause: Contact with high wall	Area of Contamination in Square Metres: 100	
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 February 13, 2023 at approximately 11:30, 1250 Excavator TV-004 was on the 397 bench of the Tuzo Open Pit scaling the crest of the lower high wall. The operator swung around to continue working on another portion of the crest and made contact with the high wall, causing damage to the hydraulic lines on the boom and stick. This resulted in a hydraulic leak of approximately 200 litres. Affected area will be cleanup and scraped down and contaminated material will be loadded out to the Type 3 Area of the West Mine Rock Pile. A follow up report will be submitted within 30 days.			

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 2. NT-NU Spill Report GNWT Spill #2023049

DE BEERS GROUP

March 26, 2023

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 – Grey Water – Gahcho Kué Mine – February 24, 2022 (GNWT Spill #2023067)

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 #2023067, which occurred at the Gahcho Kué Mine at 15:20 on February 24, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 15:00 on February 25, 2023.

Incident Summary:

On February 24, 2023 at approximately 15:20, while conducting maintenance activities underneath camp dorm A-12, workers noticed that the grey water discharge from the laundry machines inside the dorm were not properly connected to the waste water system. This resulted in an uncontrolled release of grey water onto the camp pad beneath the dorm. The condition this was found in is presented in **figure 2**.

Based on one wash a week, per dorm occupant since commissioning on January 17 and the amount of water used in each wash cycle, the estimated volume of grey water released was approximately 2300 litres.

Immediate Actions:

Once discovered the dorm washing machines were taken out of service, and repairs were conducted to the discharge system. Environmental impact is considered minimal due to the inert nature of the spilled material (treated water with domestic detergent) and the nature of the area impacted (gravel camp pad). The flow of this water would make its way from the camp pad into Collection Pond 1, before being pumped into the Water Management Pond. At no point would it be released into the receiving environment before additional testing to meet effluent quality criteria.

Repairs were completed on February 25th, at which point the washing machines were returned to service.

Root Cause:

During construction of the dorm a contractor journeyman plumber was tasked with the commissioning of the grey water system, however they were unable to complete this task prior to leaving site. There was inadequate hand over of the partially completed project to the site-based site services team, and the discharge piping of the grey water system was not adequately completed.

This error was not discovered during the final inspection of the facility by senior supervisors prior to commissioning, resulting in the discharge.

Follow-Up Actions:

1. Creation of commissioning checklist to be reviewed by supervisors or senior staff prior to completion of camp projects.
2. Review proper management of change (MOC) policies with crews, emphasising the importance of handovers between staff and contractors during work tasks.

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 #2023067
Figure 2 & 3: Images of spill as it was discovered, and its condition at time of commissioning after repair. GNWT Spill #2023067
Figure 4. NT-NU Spill Report GNWT Spill #2023067

Figure 1. Location of GNWT Spill #2023067

Figure 2 & 3: Images of spill as it was discovered, and its condition at time of commissioning after repair. GNWT Spill #2023067

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 | 25 | 23	Report Time: 3:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**	
B	Occurrence Date: 02 | 24 | 23	Occurrence Time: 3:20 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 10 Minutes 35 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 Gray Water (Laundry Machine Discharge)	Quantity in Litres, Kilograms or Cubic Metres: 2300 litres	U.N. Number:		
I	Spill Source: Gray water waste pipe	Spill Cause: Disconnected pipe/improper discharge	Area of Contamination in Square Metres: 20		
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: While conducting maintenance activities underneath camp dorm A-12, workers noticed that the gray water discharge from the laundry machines inside the dorm were not properly connected to the waste water system. This resulted in an uncontrolled release of gray water onto the camp pad beneath the dorm. Once discovered the dorm washing machines were taken out of service, and repairs were conducted to the discharge system. Environmental impact is considered minimal due to the inert nature of the spilled material (treated water with domestic detergent) and the nature of the area impacted (gravel camp pad). A follow up report will be submitted within 30 days detailing the root cause and corrective/preventative action 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 #2023067

DE BEERS GROUP

May 19, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – April 19, 2023 (GNWT Spill #2023154)

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 #2023154, which occurred at the Gahcho Kué Mine at 06:00 on April 19, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 18:30 on April 19, 2023.

Incident Summary:

After conducting a 2000-hour maintenance cycle on the hydraulic kidney loop system on SH-002 (Komatsu PC-5500), shovel technicians re-started the system to inspect the unit for leaks. While performing the walk around, a technician noted that the shutoff valve for the kidney loop filter had been closed. It was placed in the open position and the technicians left the work site. The unit was left idling over the crew change to allow an appropriate warm up time before recommissioning.

On 19 April 2023 at 06:00, when the next shift arrived at the unit to begin the return to service process after maintenance, a puddle of hydraulic oil was found under SH-002. The oncoming technician inspected the shovel and found the kidney loop filter housing leaking, isolated the system, drained the filter housing and installed oil absorbent pads.

Immediate Actions:

Upon finding the released hydraulic oil, shove technicians immediately conducted an emergency shut down of the unit, installed spill/booms to contain the oil and contacted their supervisor & the Environmental department. Pictures were taken to document the spill, with the risk of environmental impact deemed low due to its location on a maintenance pad adjacent to the Tuzo Pit.

Once the system was refilled, it was discovered that the loss was approximately 300 litres of hydraulic oil. All contaminated material (crush on the maintenance pad) was removed and placed within the Type 3 Waste of the West Rock Mine Pile.

Root Cause:

Upon inspection it was determined the kidney loop hydraulic oil filter canister was found to have an O-ring missing from the cannister, as well as being misaligned during re-installation. This caused an improper seal, creating a leak. Compounding this, an inadequate post maintenance inspection did not catch the error, or the resulting leak.

During the investigation it was found that the technician was on the last night shift of their rotation, and that lapses in judgement/human factors significantly impacted their performance which resulted in poor execution of the task and the spill.

Follow-Up Actions:

The following actions were created by the Mobile Maintenance Department to ensure that a similar instance is not to occur again:

1. Elaborate on generic final return to service checks to include valve position and specific checks on oil systems that were affected by work.

2. Change 2000-hour task list to have verification of kidney loop filter checks to verify:
   - Have housing o-rings been properly installed?(base and top nut)
   - Is top nut is tightened properly?
   - Is oil drain is closed?
   - Is air vent closed?
   - Have isolation valves been returned to normal position?

3. Communicate accountability of quality shovel repairs to shovel technicians

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 #2023154
Figure 2 & 3: Images of spill as it was discovered, and its condition at time of commissioning after repair. GNWT Spill #2023154
Figure 4. The kidney loop filter housing, as found when the spill was discovered, GNWT Spill #2023154
Figure 5. NT-NU Spill Report GNWT Spill #2023154

Figure 1. Location of GNWT Spill #2023154

Figure 2 & 3: Images of spill as it was discovered, GNWT Spill #2023154

Figure 4. The kidney loop filter housing, as found when the spill was discovered, GNWT Spill #2023154

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 / 19 / 23	Report Time: 6:30 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 04 / 19 / 23	Occurrence Time: 6:00 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 23 Seconds		Longitude: 109 Degrees 13 Minutes 4 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 PC 5500 (SH-002)	Spill Cause: Filter Housing 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 19, 2023 at 6:00am, a service tech began a maintenance task on SH-002 when they found a large volume of hydraulic oil on the ground. Upon inspection it was found that a hydraulic filter housing had failed, resulting in a large leak below. The mechanic immediately applied spill pads and notified their supervisor. Upon completion of the repair and recommissioning of the unit it was estimated that 300L of hydraulic oil had leaked from the failed filter housing. All contaminated material was removed for disposal within the type 3 waste of the west rock mine pile, witch contaminated spill pads being removed to the waste management area for off site disposal. A follow up report will be submitted within 30 days detailing the root cause and actions with regards to this event			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	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 5. NT-NU Spill Report GNWT Spill #2023154

DE BEERS GROUP

May 22, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – April 24, 2023 (GNWT Spill #2023162)

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 #2023162, which occurred at the Gahcho Kué Mine at 13:30 on April 24, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 10:00 on April 25, 2023.

Incident Summary:

A Komatsu 785 HD (Equipment ID TC-707) was parked at the build pad late 2022 due to an accident that damaged the hydraulic components. While the unit was parked waiting for repairs, spill containment was placed underneath the demobilized truck to contain leaking from the failed components. The hydraulic system was bagged and plugged to prevent leakage, but overtime they leaked to the spill tray underneath. The unit has been sitting the since October, 2022 waiting for repairs.

During an environmental inspection of the area on April 24th, 2023, it was noted that there was a large volume of hydraulic oil underneath the unit, and that all secondary containment had been removed.

Immediate Actions:

When the spill was identified on April 24, 2023, spill trays were missing, components were removed from the truck without securing bagging and plugging, and the remaining bagging and plugging was leaking. The identified spill was found to be hydraulic oil on the ground in an industrial (non-sensitive area) at the build pad and was estimated at 200 litres of hydraulic oil.

Upon finding the released hydraulic oil, technicians immediately installed spill pads/booms to contain the oil and contacted their supervisor & worked with environment staff on scene. Pictures were taken to document the spill, with the risk of environmental impact deemed low due to its location on a maintenance pad near the pit muster.

All contaminated material (crush on the build pad) was removed and placed within the Type 3 Waste of the West Rock Mine Pile.

Root Cause:

The hydraulic oil spill of 200 litres occurred during an extended delay of repairs due to lack of process in ensuring the risk of spill is properly mitigated using the proper spill containment devices over the entire duration of the repair process. This also revealed that there was no robust maintenance routine to ensure that the spill controls are still in place while the machine is inoperable to longer periods of time.

Follow-Up Actions:

The following actions were created by the Mobile Maintenance Department to ensure that a similar instance does not reoccur:

1. Create maintenance plan in SAP (Our site maintenance scheduling program) to have a weekly routine to inspect downed equipment for proper spill containment.

2. Order and stock adequate metal hydraulic caps and plugs for plugging hydraulic systems. Review the best in class leak containment tools for mobile equipment that will be parked for extended periods.

3. Create expectations with the maintenance team on appropriate response and actions to long term downed equipment to prevent environmental spills. The expectations will address metal plugs and caps for containment, inspection of equipment, detailed assessment of damage, draining entire system and installation & securing of spill trays.

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 #2023162
Figure 2 & 3: Images of spill as it was discovered, GNWT Spill #2023162
Figure 4. NT-NU Spill Report GNWT Spill #2023162

Figure 1. Location of GNWT Spill #2023162

Figure 2 & 3: Images of spill as it was discovered, GNWT Spill #2023162

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 | 25 | 23	Report Time: 10:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 04 | 24 | 23	Occurrence Time: 1:30 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 14 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 Hydraulic Oil	Quantity in Litres, Kilograms or Cubic Metres: 200 Litres	U.N. Number:	
I	Spill Source: Komatsu HD785 (TC -707)	Spill Cause: Hydraulic Hose 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 24, 2023 at 13:30, a large volume of spilled hydraulic oil was observed under haul truck TC-707 at the maintenance build pad. Upon discovery spill pads were put into place, and secondary containment placed underneath the unit. This unit had been down for maintenance for an extended period, with the the source of the leak coming from they hydraulic pump and hoses running from it. Upon completion of the repair and recommissioning of the unit it was estimated that 200L of hydraulic oil had been released. All contaminated material was removed for disposal within the type 3 waste of the west rock mine pile, with contaminated spill pads being removed to the waste management area for off site disposal. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	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 #2023162

DE BEERS GROUP

June 6, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Glycol Tote – Gahcho Kué Mine – May 8, 2023 (GNWT Spill #2023192)

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 #2023192, which occurred at the Gahcho Kué Mine at 11:00 on May 8, 2023.

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 8, 2023.

Incident Summary:

On May 8, 2023 at approximately 11:00, A 1000L Glycol Tote was observed to have tipped slightly due to thawing ground conditions. The tote was positioned upright, but had leaked approximately 200L, judging by what is remaining in the tote.

Immediate Actions:

The remaining totes have been checked and any found unstable have been repositioned to more solid ground. Clean up has been initiated on the rock & gravel pad and the location of the release is greater than 100m from any water body.

Root Cause:

During offloading of the Totes during the Winter Road program, Totes were positioned on the pad where snow clearing had taken place. The snow clearing had extended slightly beyond the actual perimeter of the laydown. Once the snow began to get soft, the totes that were placed slightly off the existing pad, began to lean outwards. One tote, was found to be leaning far enough to release some of its content (~200L) before being positioned and solid ground away from the edge of the laydown.

Follow-Up Actions:

The following actions were documented and added to the WR offload procedures to ensure all materials will be stored properly and securely:

1. Ensure berms and/or delineators mark the edges of existing laydowns that will have materials stored on them during snow covered conditions.

2. Ensure snow removal does not introduce hazardous conditions that will only appear during freshet.

3. When deliveries are made of materials, ensure that persons knowledgeable about the area are present and direct proper storage of all materials.

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 #2023192
Figure 2 & 3: Images of spill as it was discovered, GNWT Spill #2023192
Figure 4 - 7: Images of spill as clean up progressed, GNWT Spill #2023192
Figure 8. NT-NU Spill Report GNWT Spill #2023192

Figure 1. Location of GNWT Spill #2023192

Figure 2 & 3: Images of totes as discovered, GNWT Spill #2023192

Figure 4-7: Images of totes as clean up progressed, GNWT Spill #2023192

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 / 08 / 23	Report Time: 4:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2023192
B	Occurrence Date: 05 / 08 / 23	Occurrence Time: 11:00 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 27 Minutes 5 Seconds		Longitude: 109 Degrees 10 Minutes 21 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: Orica		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Glycol	Quantity in Litres, Kilograms or Cubic Metres: 200L	U.N. Number:	
I	Spill Source: 1,000 Litre Tote	Spill Cause: Tipping	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 8, 2023 at approximately 11:00, A 1000L Glycol Tote was observed to have tipped slightly due to thawing ground conditions. The tote was positioned upright, but had leaked approximately 200L, judging by what is remaining in the tote. The remaining totes have been checked and any found unstable have been repositioned to more solid ground. Clean up has been initiated on the rock & gravel pad and the location of the release is greater than 100m from any water body. 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 8. NT-NU Spill Report GNWT Spill #2023192

DE BEERS GROUP

June 10, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – May 10, 2023 (GNWT Spill #2023197)

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 #2023197, which occurred at the Gahcho Kué Mine at 11:45 on May 10, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 12:13 on May 11, 2023.

Incident Summary:

On 10 May 2023, a Komatsu PC-5500 Shovel (SH-003) was working in the 5034 pit when the operator lost hydraulic function. The operator shut down the unit and notified the shovel technician. Upon diagnosis, the mechanic had found that a pilot hose had rubbed through, resulting in a hydraulic oil leak to the ground and into the pit sump. The hose was located under the #2 PTO. Technicians put spill containment down to keep the oil from spreading and leaking further into the pit sump. A new pilot hose was installed and released the machine for return to service. Upon refilling the unit, it was determined that approximately 150 litres had been released onto the floor of the 5034 pit.

Immediate Actions:

Upon finding the released hydraulic oil, technicians immediately installed spill pads/booms to contain the oil and contacted their supervisor & worked with environment staff on scene. Pictures were taken to document the spill, with the risk of environmental impact deemed low due to its location at the bottom of the 5034 pit. However, it was noted that hydraulic oil had been mobilized into the pit sump, with a visible sheen depicted in **Figures 4 & 5**. Spill booms were installed around the sump intake, as well as a HVAC truck being utilized to remove all visible hydrocarbons. Pit discharge from the affected sup was ceased until all visible evidence of hydrocarbons was removed.

All contaminated material (rock from the pit floor) was removed and placed within the Type 3 Waste of the West Rock Mine Pile. All contaminated water removed by the HVAC unit was placed within the oil water separator for treatment.

Root Cause:

The pilot hose on SH-003 failed due to excessive wear not detected prior to failure. The hose had worn due to poor routing during a previous replacement. The hose was routed in a fashion where it was allowed to rub against the PTO assembly. This was not the original location from factory for the hose routing, and resulted in its failure causing a spill.

An additional contributing factor found during he the investigation was a lack of specific instructions relating to house inspections, and their correct installed routing location.

Follow-Up Actions

The following actions were created by the Mobile Maintenance Department to ensure that a similar instance does not reoccur:

1. Develop a hose preventative maintenance schedule for shovels that proactively inspects for condition and root cause of defective hosing.

2. Develop a robust follow up notification process so that work is planned and scheduled for improved maintenance after a break down repair has been made

3. Communicate improved quality expectations for taking the time for proper hose routing

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 #2023197
Figure 2 & 3: Images of spill adjacent to SH-003, GNWT Spill #2023197
Figure 4 & 5: Images of hydraulic oil on the pit floor and sump of 5034, with spill containment in place, GNWT Spill #2023197
Figure 6. NT-NU Spill Report GNWT Spill #2023197

Figure 1. Location of GNWT Spill #2023197

Figures 2 & 3: Images of spill adjacent to SH-003, GNWT Spill #2023197

Figures 4 & 5: Images of hydraulic oil on the pit floor and sump of 5034, with spill containment in place, GNWT Spill #2023197

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 | 11 | 23	Report Time: 12:13 pm	☐ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 05 | 10 | 23	Occurrence Time: 11:45 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 18 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:	U.N. Number:	
I	Spill Source: Shovel SH-003	Spill Cause: Hydraulic Hose 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 May 10, 2023 at 23:45 a large volume of spilled hydraulic oil was discovered by the operator of SH-003 at the bottom of 5034 pit near the water sump. The operator had a pilot hose rub through under the #2 PTO. Upon discovering this leak the operator shut down the machine and called the shovel technician. Technician found the failed pilot line. 2 technicians proceeded to put spill containment down to keep the oil from spreading more and leaking into the pit sump. Dayshift tech installed the new pilot hose and released the machine for service.

When the hydraulic hose was fixed the shovel was moved. Clean up then began around the area. The contaminated material around the shovel was removed and disposed of in contaminated area. Absorbent socks were placed in the sump area to contain the contaminated water. Currently a vacuum truck is removing the contaminated water. The contaminated water will then be deposited and ran through the RTL tanks before it is discharged.

A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.

L	Reported to Spill Line by: Lee-Ann Knee	Position: Env. Technician	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (867) 679-6499
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 #2023197

DE BEERS GROUP

June 14, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – May 14, 2023 (GNWT Spill #2023198)

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 #2023198, which occurred at the Gahcho Kué Mine at 06:05 on May 14, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 10:42 on May 14, 2023.

Incident Summary:

On May 14, 2023 at 6:05, A Komatsu PC-5500 (SH-002) was loading haul trucks at the right side of the dig face on 355 bench of Tuzo Pit. The dig face was perpendicular to the highwall and established dig limits of the area, which were in place to demarcate a loaded pattern above. When reaching this point of the dig face, the operator positioned the shovel in the right corner with tracks parallel along the toe of the dig limit face. The operator failed to notice some large rocks on the crest of the dig face. When the shovel was loading a 830E haul truck, a large rock rolled down from the crest and impacted the hydraulic cooler door, resulting in significant damage to the oil cooler assembly.

Immediate Actions:

Upon impact, the operator immediately walked the shovel away to a safe distance from the dig face, and initiated a shutdown. Dismounting the unit, they installed spill pads/booms to contain the oil and contacted their supervisor, whom worked with environment staff on scene. Pictures were taken to document the spill & equipment damage, which are displayed in **Figures 2, 3 & 4.** The risk of environmental impact was deemed low due to its location within the active mining area of the Tuzo pit. Upon investigation it was determined the oil cooler assembly of SH-002 was damaged beyond repair and would need to be replaced. The estimated hydrocarbon loss was determined to be approximately 200 litres of hydraulic fluid.

All contaminated material (hydrocarbon contaminated rock from the Tuzo 355 Bench) was removed and placed within the Type 3 Waste of the West Rock Mine Pile. Photos depicting the remediation are displayed in **Figures 5 & 6.**

Root Cause:

Upon investigation it was determined the incident was a result of the operator's inability to identify rock hazards within the loading space. The individual is new to hard rock mining techniques, and was not equipped to efficiently identify hazards and mitigate them in the field through proper positioning at the dig face.

It was also determined that human factors relating to performance concerns also impacted their ability to operate within site loading procedures.

Follow-Up Actions

The following actions were created by the Mining Department to ensure that a similar instance does not reoccur:

1. Mine Training Department to perform a performance review on hydraulic shovel operation, with the operator primarily to focus on shovel set ups and digging sequence. Documentation confirming completion of training required from Training Department.

2. Review incident with all four crews during weekly safety meeting and use mandatory verification of review in sheet as supporting document. Review to focus on learnings from incident and best practice to identify load face hazards, and how to best mitigate them.

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 #2023198
Figures 2 & 3: Images of loading face and spill adjacent to SH-001, GNWT Spill #2023198
Figure 4: Damage sustained to SH-001, GNWT Spill #2023198
Figures 5 & 6: Images of remediation efforts and removal of contaminated material, GNWT Spill #2023198
Figure 7. NT-NU Spill Report GNWT Spill #2023198

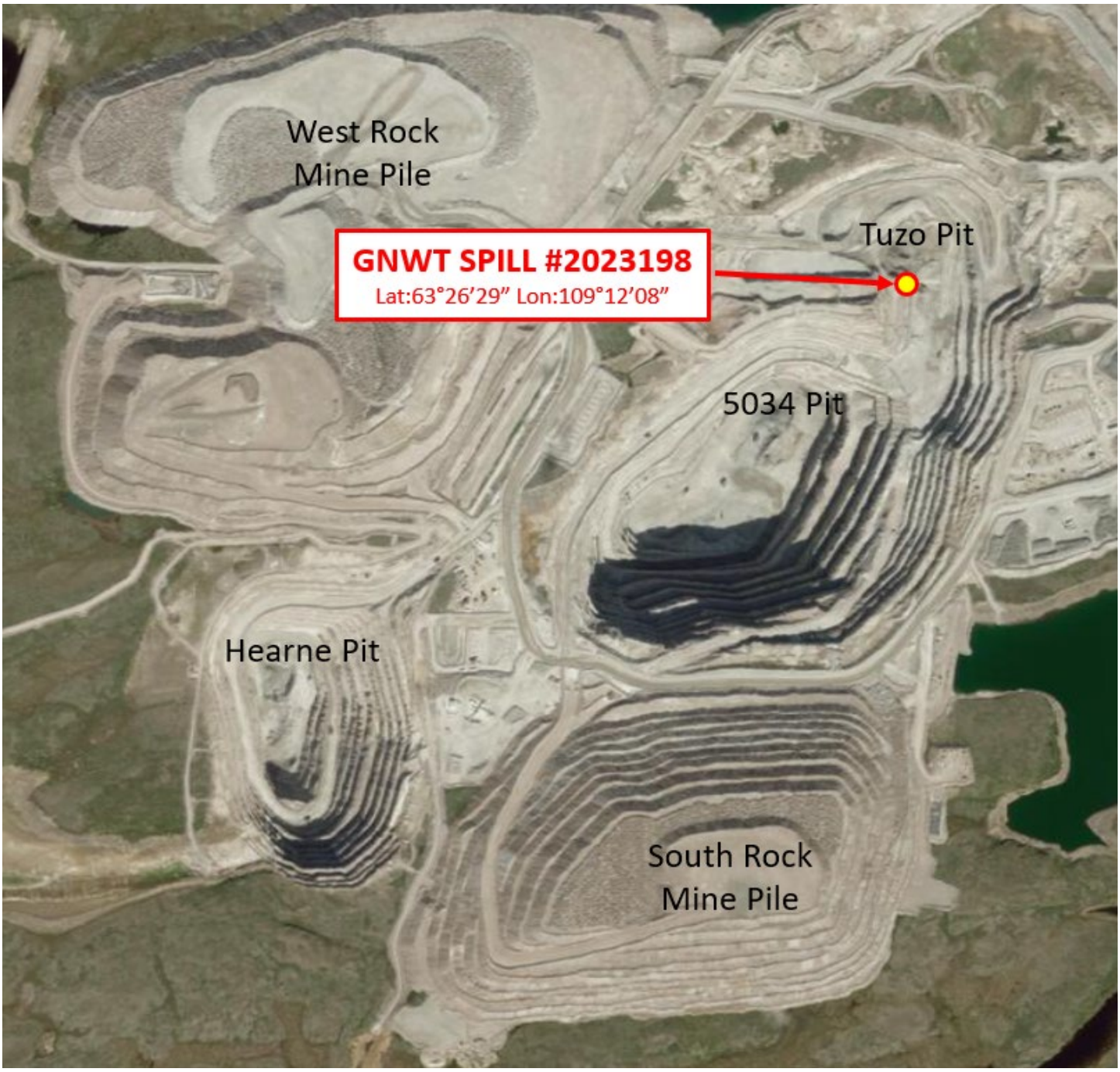
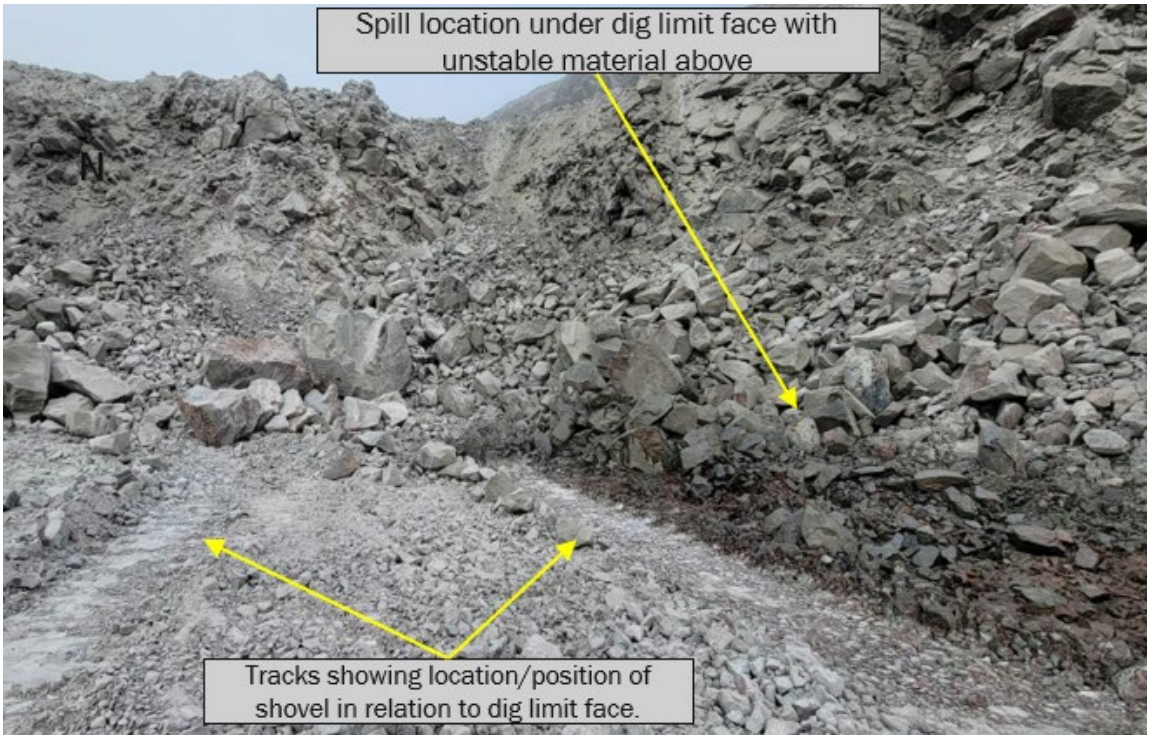


Figure 1. Location of GNWT Spill #2023198



Figures 2 & 3: Images of loading face and spill adjacent to SH-001, GNWT Spill #2023198

Figure 4: Damage sustained to SH-001, GNWT Spill #2023198

Figures 5 & 6: Images of remediation efforts and removal of contaminated material, GNWT Spill #2023198

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 | 14 | 23	Report Time: 10:42 am	☐ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 05 | 14 | 23	Occurrence Time: 6:05 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: _____ Degrees _____ Minutes _____ Seconds		Longitude: _____ Degrees _____ Minutes _____ 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	U.N. Number:	
I	Spill Source: Shovel SH-002	Spill Cause: Rock fell on hydraulic oil cooler	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 May 14, 2023 @ 06:05 a shovel operator was loading a haul truck in the Tuzo Pit . While the operator was loading the haul truck a rock rolled down the face of the dig. The falling rock hit the hydraulic oil cooler which caused the hydraulic oil to spill on the ground. The operator shut the machine down and called the supervisor to report the incident. Shovel SH-002 will have to be moved before clean up can begin. The affected area will be cleaned up and scraped down and contaminated material will be loaded out to the Type 3 Area of the West Mine Rock Pile. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Lee-Ann Knee	Position: Env. Technician	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (867) 679-6499
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 7. NT-NU Spill Report GNWT Spill #2023198

DE BEERS GROUP

August 18, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – July 20, 2023 (GNWT Spill #2023307)

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 #2023307, which occurred at the Gahcho Kué Mine at 02:20 on July 20, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 11:00 on July 20, 2023.

Incident Summary:

On July 20, 2023 at 02:20 am, TC-810 Haul Truck was pulling out after being loaded in the Tuzo Open Pit, when it struck a rock in its travel path. The supervisor was notified that the fuel tank had been damaged and was leaking diesel. Upon arrival, the supervisor observed that the rock had hit the bottom of the fuel tank, breaking it free from its mounts and causing a spill of approximately 1000 litre of diesel.

Immediate Actions:

Spill control was started immediately to limit the spread and contain as much diesel as possible. The affected area was cleaned up and scraped down and contaminated material was loaded out to the Type 3 Area of the West Mine Rock Pile once the truck was removed from the area.

Root Cause:

Upon investigation it was determined the incident was a result of the operator not mitigating identified hazards and distracted driving.

Follow-Up Actions

The following actions were created by the Mining Department to ensure that a similar instance does not reoccur:

1. Review incident with crews, calling in spill rock and emphasizing the need to stay focused while operating equipment (distracted driving not to be tolerated).

2. Include section in general orientation package on cell phone policy and distracted driving while operating equipment.

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 #2023307
Figures 2: Images of GNWT Spill #2023307
Figures 3: Images of remediation efforts and removal of contaminated material, GNWT Spill #2023307
Figure 4. NT-NU Spill Report GNWT Spill #2023307

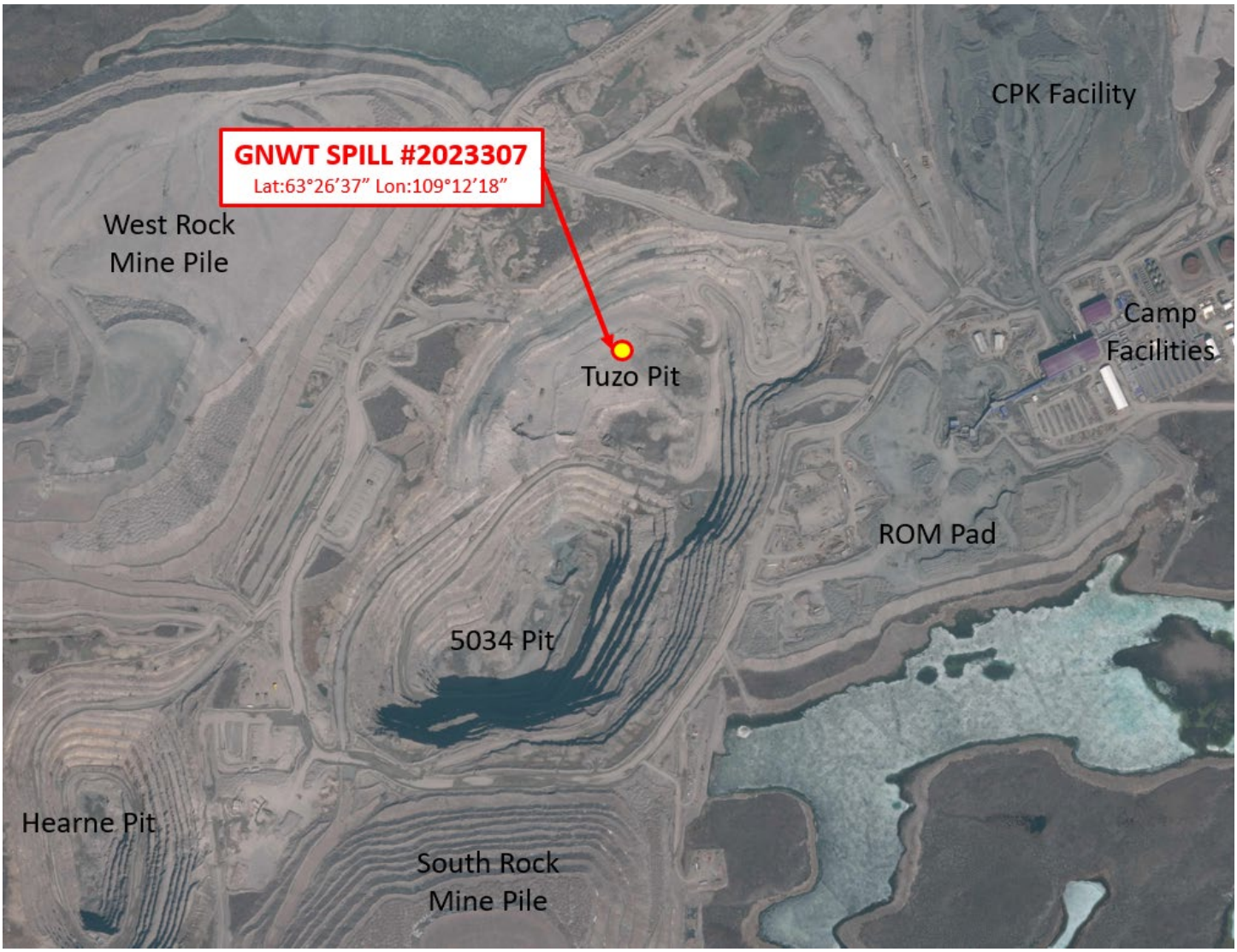


Figure 1. Location of GNWT Spill #2023307

Figure 2: Images of GNWT Spill #2023307

Figures 3: Images of remediation efforts and removal of contaminated material, GNWT Spill #2023307

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: 07 / 20 / 23	Report Time: 11:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2023307
B	Occurrence Date: 07 / 20 / 23	Occurrence Time: 2:20 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 37 Seconds		Longitude: 109 Degrees 12 Minutes 18 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: 1000 litres	U.N. Number:	
I	Spill Source: Komatsu 830E Haul Truck - TC-810	Spill Cause: Rock contacted Fuel Tank	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 July 20, 2023 at 02:20 am, TC-810 Haul Truck was pulling out after being loaded in the Tuzo Open Pit, when it struck a rock in its travel path. The supervisor was notified that the fuel tank had been damaged and was leaking diesel. Upon arrival, the supervisor observed that the rock had hit the bottom of the fuel tank, breaking it free from its mounts and causing a spill of approximately 1000 litre of diesel. Spill control was started immediately to limit the spread and contain as much diesel as possible. The affected area will be cleaned up and scraped down and contaminated material will be loaded out to the Type 3 Area of the West Mine Rock Pile once the truck is removed from the area. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (967) 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. NT-NU Spill Report GNWT Spill #2023307

DE BEERS GROUP

September 11, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Engine Oil – Gahcho Kué Mine – August 12, 2023 (GNWT Spill #2023341)

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 #2023341, which occurred at the Gahcho Kué Mine at 16:00 on August 12, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 07:30 on August 13, 2023.

Incident Summary:

On August 12 at 16:00, The LV-018 lube truck operator began to transfer waste oil into Tank System EC 00030333 via a transfer station located adjacent to the tank. Shortly after starting the offload the operator noticed engine oil running out the top of the tank. The operator immediately shut down the transfer, isolated the tank and notified their supervisor. It was noted that the lube truck operator selected the wrong tank to fill, which was already full. This resulted in a release of waste oil outside of the tank, but within the tank farm containment. This can be seen in **Figures 2 & 3**.

Immediate Actions:

Spill containment materials were deployed immediately. It was determined that 100 litres overflowed from the used engine oil tank due to overfilling from the LV-018 lube truck. The area supervisor as well as Environment were contacted to assess potential risks and further actions. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile. The environmental impact is considered low due to adequate containment within the 60,000 litre tank farm.

Root Cause:

Upon investigation it was determined that several key factors contributed to the incident, detailed below:

Operator Error: The operator was not familiar with how to read the tank gauges, as well as which tank was the appropriate one to offload into. They were also not familiar with which valves to use to correctly offload.

Workplace Factors: Limited signage on the tank to determine what its current stored volume is. The current gauge in place is not clear to read, and requires prior training that the operator did not have.

It was clear from the investigation that although the operator was familiar with most lube truck operations, they were not trained on how to offload waste oil from the unit. There was also inadequate signage or procedures on how to properly offload the truck at the tank farm facility.

Follow-Up Actions

The following actions were created by the Mining Department to ensure that a similar instance does not reoccur:

1. Install signage on off loading station to detail proper usage and valve positioning.
2. Install tank gauges that are easily understandable for operators and tank farm users.
3. Install lighting to indicate when tank is full so that it is clear it is not to be used.

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 #2023341
Figures 2 & 3: Images of overfilled waste oil tank, GNWT Spill #2023341
Figure 4. NT-NU Spill Report GNWT Spill #2023341

Figure 1. Location of GNWT Spill #2023341

Figures 2 & 3: Spill on the outside of EC 00030333, GNWT Spill #2023341

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 | 13 | 23	Report Time: 7:30 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 08 | 12 | 23	Occurrence Time: 4:00 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 33 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:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill Engine Oil	Quantity in Litres, Kilograms or Cubic Metres: Approximately 1000L	U.N. Number:	
I	Spill Source: 60,000L Tank 4200-TK-08 - ECC 00033033 / Lube Truck LV-018	Spill Cause: Tank Overflow	Area of Contamination in Square Metres: 14	
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 12 at 16:00, The LV-018 Lube Truck operator began to transfer waste oil into Tank System EC 00030333 via a transfer station located adjacent to the tank. Shortly after starting the offload the operator noticed engine oil running out the top of the tank. The operator immediately shut down the transfer, isolated the tank and notified their supervisor. Spill containment materials were deployed immediately. It was determined that approximately 100L has overflowed from the used engine oil tank, with a final volume to be determined during the follow up incident investigation and spill report. None of released materials flowed outside of the tank farm lined berm/containment. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile. The environmental impact is considered low due to adequate containment. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (967) 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 #2023341

DE BEERS GROUP

October 11, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – September 11, 2023 (GNWT Spill #2023389)

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 #2023389, which occurred at the Gahcho Kué Mine at 15:00 on September 11, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 18:00 on September 11, 2023.

Incident Summary:

On September 11 at 15:00, LO-004 was loading material into the primary crushing on the ROM pad when the operator impacted a large bolder. This bolder became lodged underneath the loader, damaging a petcock valve on the bottom fuel tank. The operator immediately shut the unit down and notified their supervisor.

Immediate Actions:

Spill containment materials were deployed immediately, and a lube truck mobilized to remove the remaining fuel in the tank. Upon removing all of the remaining fuel it was determined the released volume of diesel was 250 litres. The contaminated material was contained directly around the unit on the ROM pad, representing a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile.

Root Cause:

Upon investigation it was determined that two factors contributed to the incident, detailed below:

Operator Error: The operator is required to balance the task of maintaining the ROM floor and performing assigned task. Fatigue – Workload/cognitive overload, lack of adequate rest, sensory fatigue was the individual factor identified.

Workplace Factors: ROM Pad is dynamic and difficult to keep to high stands. Proper housekeeping – inadequate or poor was the workplace factor identified.

Follow-Up Actions

The following actions were created by the Process Department to ensure that a similar instance does not reoccur:

1. Review incident with process crews;
2. Ensure spill kits are maintained and properly stocked.
3. Investigate replacing the petcock valve with a threaded plug.

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 #2023389
Figures 2, 3 & 4: Images of Loader, GNWT Spill #2023389
Figure 5. NT-NU Spill Report GNWT Spill #2023389

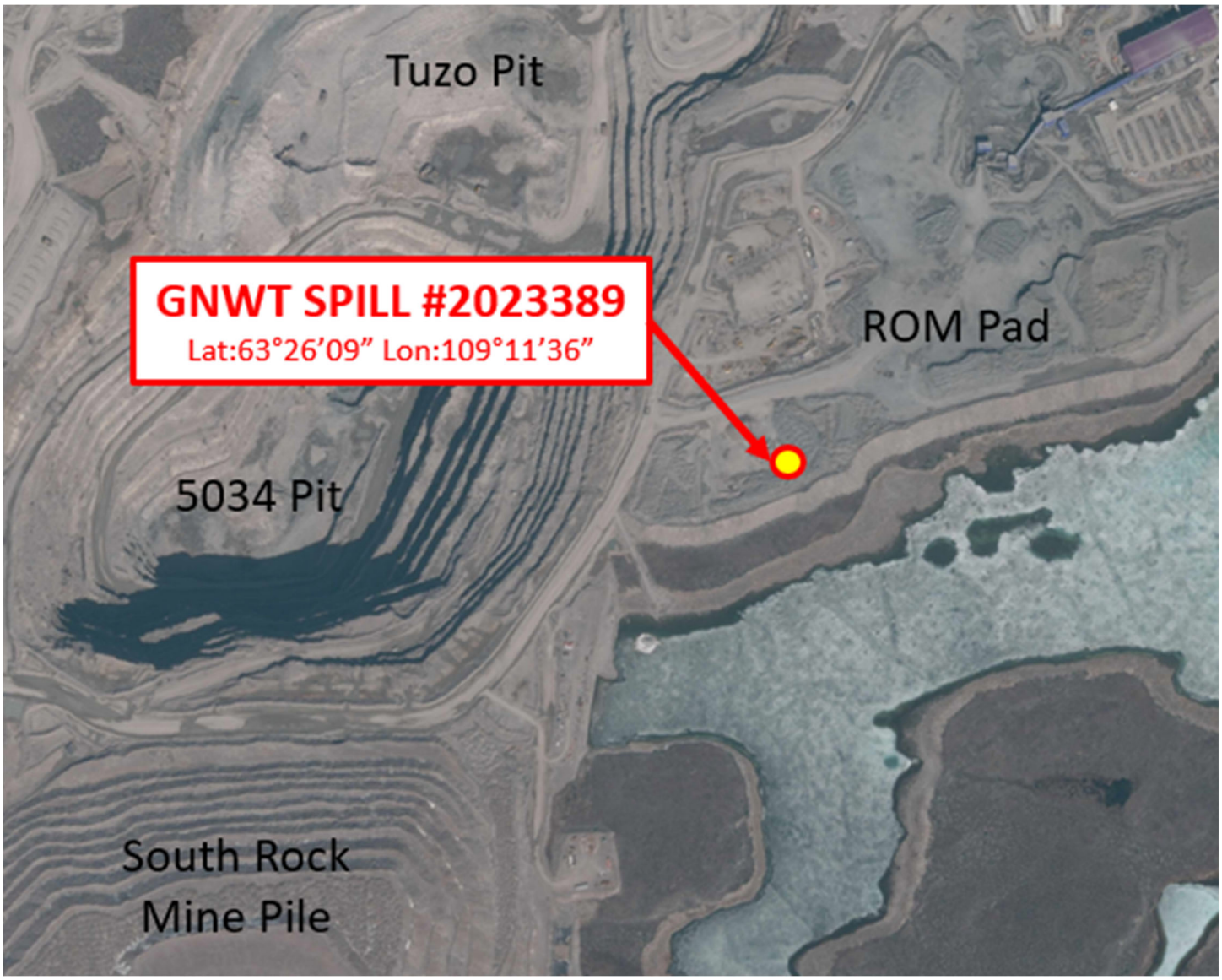


Figure 1. Location of GNWT Spill #2023389

Figures 2, 3 & 4: Loader Diesel Spill on the ROM Pad, GNWT Spill #2023389

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: 09 | 11 | 23	Report Time: 6:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** GNWT 2023389
B	Occurrence Date: 09 | 11 | 23	Occurrence Time: 3:00 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 9 Seconds		Longitude: 109 Degrees 11 Minutes 36 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: 250L	U.N. Number:	
I	Spill Source: LO-004 (Komatsu W900 Loader)	Spill Cause: Impact with rock	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 September 11 at 15:00, LO-004 was loading material into the primary crushing on the ROM pad when the operator impacted a large bolder. This bolder became lodged underneath the loader, damaging the fuel tank. The operator immediately shut the unit down and notified their supervisor. Spill containment materials were deployed immediately, and a lube truck mobilized to remove the remaining fuel in the tank. Upon removing all of the remaining fuel it was determined the released volume of diesel was 250 litres. The contaminated material was contained directly around the unit on the ROM pad, representing a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (967) 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 5. NT-NU Spill Report GNWT Spill #2023389

DE BEERS GROUP

October 24, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – September 24, 2023 (GNWT Spill #2023415)

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 #2023415, which occurred at the Gahcho Kué Mine at 23:05 on September 24, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 08:00 on September 25, 2023.

Incident Summary:

On September 24 at 11:05, TC-806 was pulling away after being loaded. The fuel tank was punctured by a rock that had fallen during loading operations and rolled under the fuel tank. The operator immediately shut the unit down and notified their supervisor.

Immediate Actions:

Spill containment materials were deployed immediately, and a lube truck mobilized to remove the remaining fuel in the tank. Upon removing all of the remaining fuel it was determined the released volume of diesel was 150-180 litres. The contaminated material was contained directly around the unit in the Tuzo Pit, representing a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile.

Root Cause:

Upon investigation it was determined that several factors contributed to the incident, detailed below:

Operator Error: The operator did not identify spill rock as rock was not visible from the cab.

Workplace Factors: Load was placed off center, which contributed to the rock rolling off the side of the truck.

External Factors: Due to location of the rock under the truck, the shovel or truck operators did not identify the hazard.

Follow-Up Actions

Review the incident with the crews with emphasis on the importance of locating the load of the trucks in the center of the bed. Also discuss the need for all workers to be vigilant in identifying hazards with an emphasis on loading/dumping in areas where visibility of operators is limited.

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 #2023415
Figures 2, 3 & 4: Images of Haul Truck, GNWT Spill #2023415
Figure 5. NT-NU Spill Report GNWT Spill #2023415

Figure 1. Location of GNWT Spill #2023415

Figures 2, 3 & 4: Haul Truck Diesel Spill in the Tuzo Pit, GNWT Spill #2023415

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: 09 | 25 | 23	Report Time: 8:00 am	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:** 2023415
B	Occurrence Date: 09 | 24 | 23	Occurrence Time: 11:05 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 34 Seconds		Longitude: 109 Degrees 12 Minutes 9 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: 180L	U.N. Number:	
I	Spill Source: TC-806 (Komatsu 830E Haul Truck)	Spill Cause: Impact with rock	Area of Contamination in Square Metres: 4	
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 September 24 at 11:05, TC-806 was pulling away after being loaded. The fuel tank was punctured by a rock that had fallen during loading operations and rolled under the fuel tank. The operator immediately shut the unit down and notified their supervisor. Spill containment materials were deployed immediately, and a lube truck mobilized to remove the remaining fuel in the tank. Upon removing all of the remaining fuel it was determined the released volume of diesel was 150-180 litres. The contaminated material was contained directly around the unit in the Tuzo Pit, representing a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Allan Knight	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	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 #2023415

DE BEERS GROUP

November 21, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – October 24, 2023 (GNWT Spill #2023450)

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 #2023450, which occurred at the Gahcho Kué Mine at 17:00:00 on October 24, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 15:30 on October 25, 2023.

Incident Summary:

On October 24 at 17:00, a Komatsu 830E haul truck, identified as TC-814, was receiving maintenance at the mobile maintenance shop. During the testing of the coolant system when recommissioning, it suffered a failure that resulting in the discharge of approximately 150 litres of coolant. The cause of this spill was identified as temporary plugs within the coolant system, from a previous repair, becoming dislodged.

Immediate Actions:

Spill containment materials were deployed immediately, with the emergency shut down procedure of the unit being activated. The contaminated material was contained underneath the unit, which was directly outside the mobile maintenance shop. Based on the location and primarily element impacted being the camp pad gravel, this represents a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile, with the area then having fresh material placed. No further staining as a result of this spill was observed after remediation.

Root Cause:

Upon investigation it was determined that several factors contributed to the incident, detailed below:

Individual Factors: Live Work Permit not issued for task along with a Safe Work Plan. Small catch drip trays that were in place would not provide adequate containment in the event of an accidental discharge.

Workplace Factors: Temporary plugs were used for an extended repair, of which they were not appropriate. There was also no planning to mitigate potential spills in the event of the temporary repair failure.

Organizational Factors: No Live Work Permit completed and no plan in place in case of a failure.

Follow-Up Actions:

Review with technicians that the use of rubber plugs to repair failed radiator cores are for temporary use only. Proper repairs should be completed before units go back into operation. As well, review with technicians that larger totes/catch carts are available inside the shop that should be moved outside if needed.

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Dave Ott
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
Dave.Ott@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2023450
Figures 2, 3 & 4: Images of Haul Truck, GNWT Spill #2023450
Figure 5. NT-NU Spill Report GNWT Spill #2023450

Figure 1. Location of GNWT Spill #2023450

Figures 2, 3: Coolant spill at the GK truck shop (mobile maintenance area), GNWT Spill #2023450

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

Northwest Territories Nunavut Canada Inuvialuit Land Administration

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 | 23	Report Time: 3:30 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 10 | 24 | 23	Occurrence Time: 5:00 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 31 Seconds		Longitude: 109 Degrees 10 Minutes 51 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 Coolant	Quantity in Litres, Kilograms or Cubic Metres: 150 Litres	U.N. Number:	
I	Spill Source: TC-814 (Komatsu 830E Haul Truck)	Spill Cause: Failed Hose	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 October 24 at 17:00, TC-814 was receiving maintenance at the mobile maintenance shop. During the testing of the coolant system, it suffered a failure that resulting in the discharge of approximately 150 litres of coolant. Spill containment materials were deployed immediately, with the emergency shut down procedure of the unit being activated. The contaminated material was contained directly underneath the unit, which was direct outside the mobile maintenance shop, representing a minimal environmental impact. All contaminated material was removed and placed within the type 3 waste dump of the West Rock Mine Pile. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Mason Elwood	Position: Env. Coordinator	Employer: De Beers	Location Calling From: GK Mine Site	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 5. NT-NU Spill Report GNWT Spill #2023450

DE BEERS GROUP

December 19, 2023

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Diesel – Gahcho Kué Mine – November 23, 2023 (GNWT Spill #2023504)

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 #2023504, which occurred at the Gahcho Kué Mine at 11:00:00 on November 23, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 16:20 on November 24, 2023.

Incident Summary:

On November 23 at 11:00, The Fuel Truck Operator was filling LV-016 fuel truck with bulk fuel at the Fueling Module. As the fuel truck was being filled to capacity the sensor on the tank indicated that the flow valve shut, however fuel continued to flow into the tank, bypassing the valve. The operator then shut off the power to the bulk re-fuel system, but the fuel had already started overtopping out of the overflow pipe resulting in a spill of approximately 200L of diesel fuel (Figures 2 and 3).

Immediate Actions:

The bulk fuel station was shut off immediately, with spill pads and containment socks deployed. The contaminated material was contained directly to the Light Vehicle Fueling Module area. All contaminated material was scraped and placed within the type 3 waste dump of the West Rock Mine Pile, with smaller sized material being removed for remediation off site. The impacted spill area was verified to be clean after remediation efforts (Figure 4**)**. Based on the location and primarily element impacted being the gravel pad, this represents a minimal environmental impact.

Root Cause:

Upon investigation it was determined that the overflow protection failed and did not prevent the flow of fuel from entering the fuel tank. LV-016 was brought to the Mobile shop where it was determined that cyclical loading on the butterfly valve caused the pin fastener on the butterfly valve shaft to break. Upon further investigation it was also determined that there is no secondary safety system or procedure in place to prevent a spill in the case of

an overfill protection system failure and no risk assessment in place to identify and treat the risk of bulk fuels in general.

Follow-Up Actions:

The following actions were created by the Mobile Maintenance Department to ensure that a similar instance does not reoccur:

1. Implement a maintenance strategy to replace the fast fill butterfly valve annually.

2. Put together a testing procedure for the fuel trucks while working on the system

3. Perform a risk assessment of the bulk fuel trucks focused on the risk of a bulk fuel spill

Should you have any questions or concerns, or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,

Dave Ott
Environmental Coordinator / Gahcho Kué Mine
867.679.5812
Dave.Ott@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2023504
Figure 2. Spill containment materials deployed at the Light Vehicle Fuel Module area (LFVM), GNWT Spill #2023504
Figure 3. Diesel spill at the Light Vehicle Fuel Module area adjacent to LV-016 (LFVM), GNWT Spill #2023504
Figure 4. Verification of spill clean up at the Light Vehicle Fuel Module area (LFVM), GNWT Spill #2023504
Figure 5. NT-NU Spill Report GNWT Spill #2023504

Figure 1. Location of GNWT Spill #2023504

Figures 2. Spill containment materials deployed at the Light Vehicle Fuel Module area (LFVM), GNWT Spill #2023504

Figures 3. Diesel spill at the Light Vehicle Fuel Module area adjacent to LV-016 (LFVM), GNWT Spill #2023504

Figures 4. Verification of spill clean up at the Light Vehicle Fuel Module area (LFVM), GNWT Spill #2023504

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS

Northwest Territories Nunavut Canada Inuvialuit Land Administration

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: 11 / 24 / 23	Report Time: 4:20 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	Report Number:
B	Occurrence Date: 11 / 23 / 23	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 26 Minutes 35 Seconds		Longitude: 109 Degrees 10 Minutes 43 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: 200 Litres	U.N. Number:	
I	Spill Source: LV-016 (Refueling Truck)	Spill Cause: Faulty Fuel Level Sensor	Area of Contamination in Square Metres: 40	
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: Light vehicle technician was testing LV-016 fuel bulk tank filling components. He contacted mine ops to bring the truck to test the fill sensor at tank farm. At 11 PM they began the refueling procedure. When bulk tank was full, fuel level sensor shut the valve off but truck continued to fill. Technician shut fuel off at fill station but truck had overflowed approximately 200 liters of fuel from the top of the tank. Potentially the sensor shut off valve is worn allowing fuel to leak by after shut off. Technician and operator used spill kit at tank farm to contain spill. Technician used spill pads to clean up the area. Site services will finish site cleanup. Pads were put into barrels. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Lee-Ann Knee	Position: Senior Enviro Tech	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (867) 679-6499
M	Any Alternate Contact: Mason Elwood	Position: Env Superintendent	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 5. NT-NU Spill Report GNWT Spill #2023504

DE BEERS GROUP

January 1, 2024

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Coolant – Gahcho Kué Mine – December 3, 2023 (GNWT Spill #2023513)

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 #2023513, which occurred at the Gahcho Kué Mine at 04:00 on December 3, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 13:00 on December 3, 2023.

Incident Summary:

On the night shift of December 2nd into the 3rd, a Komatsu 830e haul truck (TC-811) had a radiator coolant leak that was repaired by removing the panels to the radiator and install a single plug in the maintenance shop. When the truck was repaired, it was load tested and brought to the mine muster park up area for use by the Mine Operations team. At 04:00 an operator began his walk around and discovered coolant on the ground underneath the front of the unit.

The operator called the running repair technician for assistance. The technician shut the truck down and reported the spill to the truck shop supervisor. The spill resulted in a release of 300 litres of coolant at the mine muster area.

Immediate Actions:

Once the unit was shut down, spill containment as placed to reduce the area affected, as well as initial photos taken of the scene as part of the investigation. The Environment department was also notified once the spill was contained.

The Mobile Maintenance crews conducted a field repair on the unit so that it could be moved to the maintenance shop for a complete repair. Upon recommissioning, and the refilling of the coolant system, it was determined that 300 litres of coolant were released due to the plug repair failure.

All contaminated material was removed to the Type 3 waste dump within the West Mine Rock Pile, and replaced with 20mm crush. Based on the location and primarily element impacted being the gravel pad, this represents a minimal environmental impact.

Root Cause:

Upon investigation it was determined that the plug installed in the coolant system earlier in the shift had failed. When reviewing the OEM instruction on instillation it was also discovered that it was installed incorrectly, and that it was commissioned as a permanent repair, where as they are only intended as temporary with a maximum pressure of 15 P.S.I.

Follow-Up Actions:

The following actions were created by the Mobile Maintenance Department to ensure that a similar instance does not reoccur:

1. Create a single point lesson and distribute to all supervisors for communication to their team detailing the proper tooling and procedure for plug repair. This also emphasizes that the use of a plug repair is only intended as a temporary fix, prior to a more comprehensive repair prior to recommissioning.

2. Due to the similarity to a previous incident in November, a review of how these actions are rolled out to front line crews will be conducted to ensure follow up actions are completed 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 Superintendent / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2023513
Figures 2. Spill 2023513 as it was originally discovered, GNWT Spill #2023513
Figure 3. Excerpt from Komatsu 830e Service Manual, detailing proper Plug Install and Tooling
Figure 4. NT-NU Spill Report GNWT Spill #2023513

Figure 1. Location of GNWT Spill #2023513

Figures 2. Spill 2023513 as it was originally discovered, GNWT Spill #2023513

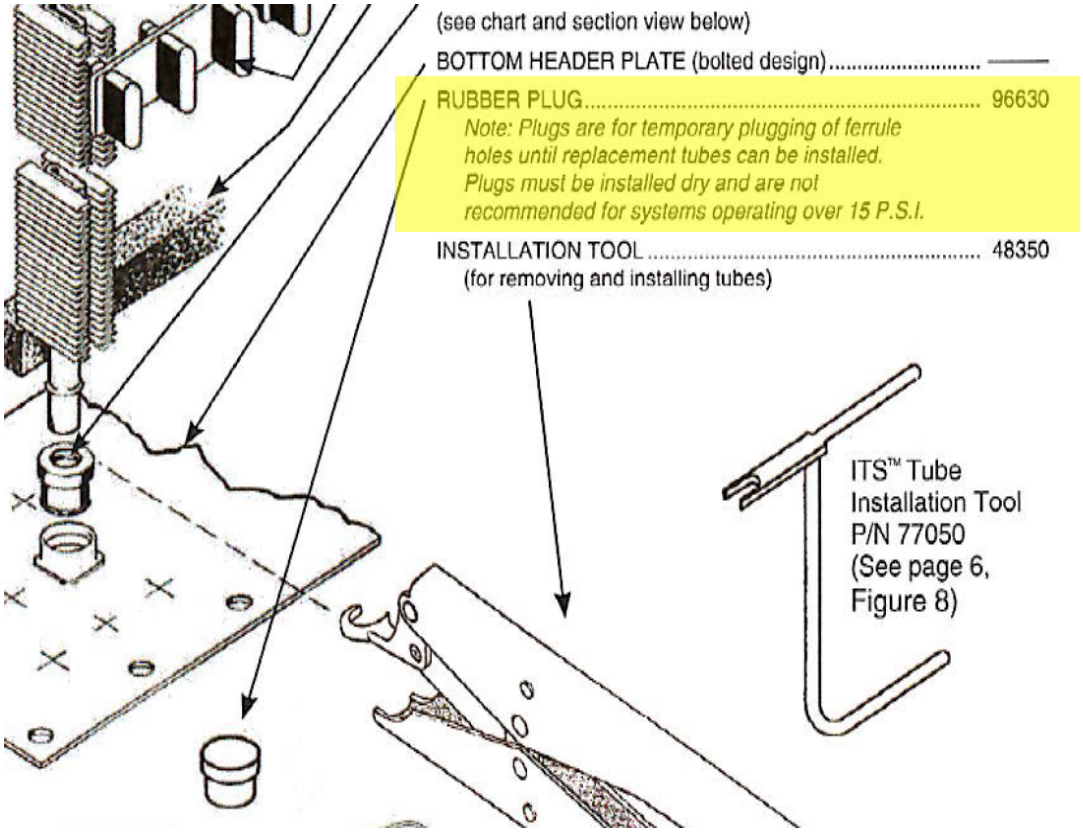


Figure 3. Excerpt from Komatsu 830e Service Manual, detailing proper Plug Install and Tooling.

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: 12 / 03 / 23	Report Time: 1:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 12 / 03 / 23	Occurrence Time: 4:00 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 17 Seconds		Longitude: 109 Degrees 11 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 Coolant	Quantity in Litres, Kilograms or Cubic Metres: 300L	U.N. Number:	
I	Spill Source: TC-811 (Equipment was idling)	Spill Cause: Unknown (Under Investigation)	Area of Contamination in Square Metres: 6	
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: TC-811 was idling in the mine muster parking area. An operator was going to use the equipment and discovered coolant on the ground underneath the front area. Operator called the running repair tech for assistance. The running repair tech shut the truck down and reported the spill to the truck shop supervisor. Pictures taken and the spill report completed. Full investigation to be completed on dayshift. Clean up started with absorbent pads and will be completed with loader and truck. A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.			

L	Reported to Spill Line by: Jarrett Vornbrock	Position: Senior Enviro Tech	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (867) 679-5850
M	Any Alternate Contact: Mason Elwood	Position: Env Superintendent	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 #2023513

DE BEERS GROUP

January 23, 2024

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
Land & Water Division - Department of Environment and Climate Change
Government of the Northwest Territories
140 Bristol Avenue, Yellowknife, NT X1A 3T2

Subject: Follow-Up Spill Report – Hydraulic Oil – Gahcho Kué Mine – December 25, 2023 (GNWT Spill #2023532)

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 #2023532, which occurred at the Gahcho Kué Mine at 10:15 on December 25, 2023.

An NT-NU Spill Report was completed and submitted via email to the NWT Spills Hotline (spills@gov.nt.ca) at 17:00 on December 25, 2023.

Incident Summary:

On 25 December 2023, a Komatsu PC 5500 Shovel (SH-003) was digging in 5034 pit near a known bench geohazard created during a previous blast. The shovel was cleaning up the lower portion of the double bench final wall when approximately 150 tons of material sloughed onto the blind side of the machine. This material contacted the boom hoses, oil cooler and right side of the machine resulting in significant damage to the unit and causing a hydraulic spill.

Immediate Actions:

The operator was unharmed by the material, and was able to pull away from the face before shutting down the unit. The scene was frozen, with technical services, mining and maintenance supervisors assessing the area for further risks to recovery operations.

It was determined that the location of the shovel was still exposed to geotechnical hazards, and that the unit needed to be moved prior to spill containment and repairs being completed. Once the unit was relocated mechanics began repairs to the unit as well as well as remediation the contaminated materials. When recommissioned the unit was determined to have lost approximately 450 litres of hydraulic oil during the event.

All contaminated material was removed to the Type 3 waste dump within the West Mine Rock Pile, and replaced with 20mm crush. Based on the location and primarily element impacted being the blasted country rock material, this represents a minimal environmental impact.

Root Cause:

Upon investigation it was determined that the several human factors played a role in the occurrence of the event:

1. **Individual Factors**: Change of operators from previous day. A new to site but experienced shovel operator was assigned to the job, however afterwards it was discovered that they had limited experience clearing highwall hazards as presented in this task. By positioning themselves too close to the face, they were exposed to sloughing material which resulted in the incident.

2. **Workplace Factors**: Slope Stability radar did not detect any movement prior to rockfall. If moving prior to rockfall, equipment in front of hazard interferes with the signal. This radar would typically indicate unstable material that presented additional risks prior to equipment working in that area.

Follow-Up Actions:

The following actions were created by the Mine Operations team to ensure that a similar instance does not reoccur:

1. Incident will be reviewed with all crews to ensure clear messaging is communicated on final wall hazards, and appropriate working techniques in these conditions. Proper positioning that is at an appropriate distance is critical in ensuring safe operations.

2. Shovel operator training will include more comprehensive reviews of all tasks required by the role.

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 Superintendent / Gahcho Kué Mine
867.679.5814
mason.elwood@debeersgroup.com

Attachments:

Figure 1. Location of GNWT Spill #2023532
Figures 2 & 3. Damage Sustained by Shovel 003, GNWT Spill #2023532
Figure 4. Material that Sloughed off the Wall, with Evidence of Hydraulic Oil Staining Prior to Remediation, GNWT Spill #2023532
Figure 5. NT-NU Spill Report GNWT Spill #2023532

Figure 1. Location of GNWT Spill #2023532

Figures 2 & 3. Damage Sustained by Shovel 003, GNWT Spill #2023532

Figure 4. Material that Sloughed off the Wall, with Evidence of Hydraulic Oil Staining Prior to Remediation, GNWT Spill #2023532

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: 12 / 25 / 23	Report Time: 5:00 pm	☑ Original Spill Report OR ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: 12 / 25 / 23	Occurrence Time: 10:15 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 12 Minutes 3 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: 450 Litres	U.N. Number:
I	Spill Source: SH-03 (Shovel 3)	Spill Cause: Rock Slide from bench fell on shovel	Area of Contamination in Square Metres: 50x50
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:

SH-03 (Shovel 3) was digging into a known geo-technical hazard area in TZ 299-021 blast. Operator was cleaning up the lower portion of the double bench final wall. Approximately, 150 tons of rock on the blind side of the machine toppled/sloughed down the bench making contact with the boom hoses, cooler and right side of the machine. As a result, significant damage was done to the unit and a hydraulic spill of approximately 450 liters occurred.

Before clean up can begin the equipment must be moved. The area will be cleaned up and scraped down 1 meter to ensure adequate recovery of soiled material and hauled to the West Mine Rock Pile (WMRP) type 3 containment area.

A follow up report will be submitted within 30 days detailing the root cause and actions relating to this event.

L	Reported to Spill Line by: Lee-Ann Knee	Position: Senior Enviro Tech	Employer: De Beers	Location Calling From: GK Mine Site	Telephone: (867) 679-6499
M	Any Alternate Contact: Mason Elwood	Position: Env Superintendent	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 5. NT-NU Spill Report GNWT Spill #2023532

Appendix E – COMMITMENTS TABLE, 2023

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,

Commitment Description	Documents/ Public Hearings	Commitment Status
		V.2 – Feb 2016; CCRP V.1 – Nov 2013. ***Approved***: Objectives - Mar 16, 2017, RRP - Sep 14, 2017 **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	2010 EIS Section 12 (December 2010	• Engagement Plan. ***Latest Version:*** V.2-Jan 2015. ***Version history:*** V.1-Nov 2013. ***Approved:*** Mar 30, 2015

Commitment Description	Documents/ Public Hearings	Commitment Status
• 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) • 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	• 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 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
		• 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 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.3.1–May 2021. ***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.3.1–May 2021. ***Version history:*** V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **Status:** Commitments implemented.

Commitment Description	Documents/ Public Hearings	Commitment Status
• 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 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.	2010 EIS Sections 7 and 11 (December 2010) 2012 EIS Supplement Section 3 (April 2012) 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	• 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 • 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.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023 • 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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023 • 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
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 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.	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 **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.

Commitment Description	Documents/ Public Hearings	Commitment Status
• 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 Technical Report Responses (November 2012) AANDC 7 LKDFN 3.2	• 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 **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

Commitment Description	Documents/ Public Hearings	Commitment Status
		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. • 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	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 **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	2011 EIS Update Section 8 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 26	• 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

Commitment Description	Documents/ Public Hearings	Commitment Status
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 allow the clean water to pass through, or 3) pumping the water with excess TSS to a temporary polishing pond.	YKDFN 2.30	• 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 • 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
• 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. • Parameters for discharge, mixing zones and monitoring points will be determined and regulated as part of the water licensing process.	2011 EIS Update Section 9 (July 2011) 1st Round Information Request Responses (April 2012) DFO&EC 66 2nd Round Information Request Responses (September 2012) AANDC 2-1	• 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. • 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

Commitment Description	Documents/ Public Hearings	Commitment Status
		Status: Commitments implemented. Work under the approved plans is ongoing.
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

Commitment Description	Documents/ Public Hearings	Commitment Status
		Status: Commitments implemented. Work under the approved plans is ongoing.
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

Commitment Description	Documents/ Public Hearings	Commitment Status
		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 • 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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023 **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

Commitment Description	Documents/ Public Hearings	Commitment Status
		• 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.
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.

Commitment Description	Documents/ Public Hearings	Commitment Status
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.
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	Technical report response to Transport Canada (PR#341 p. 3)	• The application was submitted and confirmation of the application package was completed was received.

Commitment Description	Documents/ Public Hearings	Commitment Status
that it will apply for a Proclamation of exemption, and include all of the necessary information required to support the Proclamation of exemption.		**Status:** Commitments implemented.
• Closure		
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

Commitment Description	Documents/ Public Hearings	Commitment Status
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
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.3.1–May 2021. ***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.

Commitment Description	Documents/ Public Hearings	Commitment Status
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. • 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
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.3.1–May 2021. ***Version history:*** V.3–Sep 2014, V.2–Jun 2014; V.1–Nov 2013. ***Approved:*** Oct 16, 2014 **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

Commitment Description	Documents/ Public Hearings	Commitment Status
		• 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. • 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
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		
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	October 16, 2014 Board Decision on Management Plans and Approval of Request to Modify Compliance Date	• Dyke A Construction Management Plan Section 4.4.2 **Status:** Commitments implemented.

Commitment Description	Documents/ Public Hearings	Commitment Status
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, 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.	to the Dyke A Final Detailed Construction Plan (MVLWB 2014c)	
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

Commitment Description	Documents/ Public Hearings	Commitment Status
		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 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.	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.
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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023, 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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023, 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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023, 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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023, Table 6 **Status:** Commitments implemented.
		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 ***Latest Version:*** *V.7.3 – May 2023.* ***Version history:*** *V.6*, Mar 2018, V. 5.1 – March 2017, V. 4 – June 2016; V. 3 - January 2015; V. 2 – June 2014; V. 1 – Nov 2013 ***Approved:*** July 2023, 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.

Commitment Description	Documents/ Public Hearings	Commitment Status
		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.
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, 2023

DE BEERS GROUP

TECHNICAL MEMORANDUM

DATE October 30, 2023

TO Mason Elwood; Allan Knight; William Liu; David Ott

CC Jarrett Vornbrock

FROM Lee Anne Knee; **EMAIL** LeeAnee.knee@debeersgroup.com;

RE: 2023 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 2023, 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 2023 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 (5) aerial surveys in 2023 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 03, 2023
- July 06, 2023
- August 04, 2023
- September 03, 2023
- September 24, 2023

SUMMARY

No erosion or sedimentation was observed during the three aerial surveys conducted in 2023. However, Fine Processed Kimberlite (FPK) sediment deposits from the FPK Dyke L pump to the Water Management Pond has been observed throughout the open water season. Coordinators were notified of sediment observations.

The information provided summarizes individual survey documentation and overall program observations.

Regards,

Lee Anne Knee
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 2023

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
03-Jun-23	N1	N	L.Knee	No erosion observed	1
03-Jun-23	N11	N	L.Knee	No erosion observed	16
03-Jun-23	Area 8	N	L.Knee	No erosion observed	6
03-Jun-23	Area 3	N	L.Knee	No erosion observed. FPK sediment on the west side of the Dyke L Pump	11
03-Jun-23	A1	N	L.Knee	No erosion observed	21
03-Jun-23	B1	N	L.Knee	No erosion observed	26
03-Jun-23	N14	N	L.Knee	No erosion observed	36
03-Jun-23	E1	N	L.Knee	Engineered spillway functioning correctly between E1 and N14. No erosion observed	31
03-Jun-23	D2/D3	N	L.Knee	Minimal flow observed from D2/D3 into N14. No erosion observed	41
06-Jul-23	N1	N	L.Knee	No erosion observed	2
06-Jul-23	N11	N	L.Knee	No erosion observed	17
06-Jul-23	Area 8	N	L.Knee	No erosion observed	7
06-Jul-23	Area 3	N	L.Knee	No erosion observed. FPK sediment on the west side of the Dyke L Pump	12
06-Jul-23	A1	N	L.Knee	No erosion observed	22
06-Jul-23	B1	N	L.Knee	No erosion observed	27
06-Jul-23	N14	N	L.Knee	No erosion observed	37
06-Jul-23	E1	N	L.Knee	Engineered spillway functioning correctly between E1 and N14. No erosion observed	32
06-Jul-23	D2/D3	N	L.Knee	Minimal flow observed from D2/D3 into N14. No erosion observed	42
04-Aug-23	N1	N	L.Knee	No erosion observed	3
04-Aug-23	N11	N	L.Knee	No erosion observed	18
04-Aug-23	Area 8	N	L.Knee	No erosion observed	8

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
04-Aug-23	Area 3	N	L.Knee	No erosion observed. FPK sediment on the west side of the Dyke L Pump	13
04-Aug-23	A1	N	L.Knee	No erosion observed	23
04-Aug-23	B1	N	L.Knee	No erosion observed	28
04-Aug-23	N14	N	L.Knee	No erosion observed	38
04-Aug-23	E1	N	L.Knee	Engineered spillway functioning correctly between E1 and N14. No erosion observed	33
04-Aug-23	D2/D3	N	L.Knee	No flow observed from D2/D3 into N14. Water observed but it was stagnant. No erosion observed	43
03-Sep-23	N1	N	L.Knee	No erosion observed	4
03-Sep-23	N11	N	L.Knee	No erosion observed	19
03-Sep-23	Area 8	N	L.Knee	No erosion observed	9
03-Sep-23	Area 3	N	L.Knee	No erosion observed. FPK sediment on the west side of the Dyke L Pump	14
03-Sep-23	A1	N	L.Knee	No erosion observed	24
03-Sep-23	B1	N	L.Knee	No erosion observed	29
03-Sep-23	N14	N	L.Knee	No erosion observed	39
03-Sep-23	E1	N	L.Knee	Engineered spillway functioning correctly between E1 and N14. No erosion observed	34
03-Sep-23	D2/D3	N	L.Knee	No flow observed from D2/D3 into N14. Water observed but it was stagnant. No erosion observed	44
24-Sep-23	N1	N	A.Knight/R.Kelblerova	No erosion observed	5
24-Sep-23	N11	N	A.Knight/R.Kelblerova	No erosion observed	20
24-Sep-23	Area 8	N	A.Knight/R.Kelblerova	No erosion observed	10
24-Sep-23	Area 3	N	A.Knight/R.Kelblerova	No erosion observed. FPK sediment on the	15

Date	Location of Erosion/Sediment Survey	Erosion Present	Survey completed by	Comments	Appendix B Photo #
				west side of the Dyke L Pump	
24-Sep-23	A1	N	A.Knight/R.Kelblerova	No erosion observed	25
24-Sep-23	B1	N	A.Knight/R.Kelblerova	No erosion observed	30
24-Sep-23	N14	N	A.Knight/R.Kelblerova	No erosion observed	40
24-Sep-23	E1	N	A.Knight/R.Kelblerova	Engineered spillway functioning correctly between E1 and N14. No erosion observed	35
24-Sep-23	D2/D3	N	A.Knight/R.Kelblerova	No flow observed from D2/D3 into N14. Water observed by it was stagnant No erosion observed	45

Appendix A – Figures

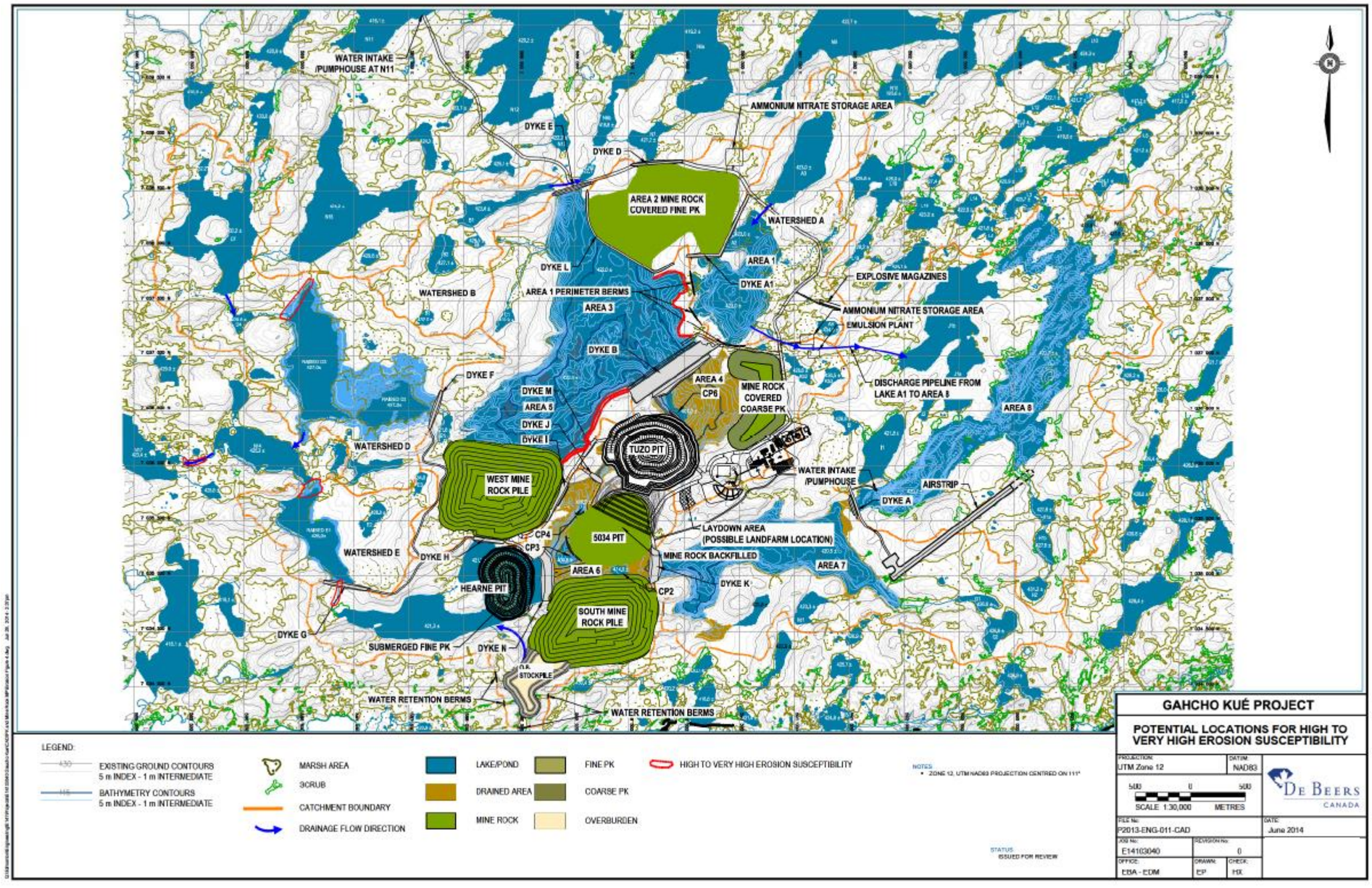


Figure 1. Location of On-Site Erosion Susceptible Areas.

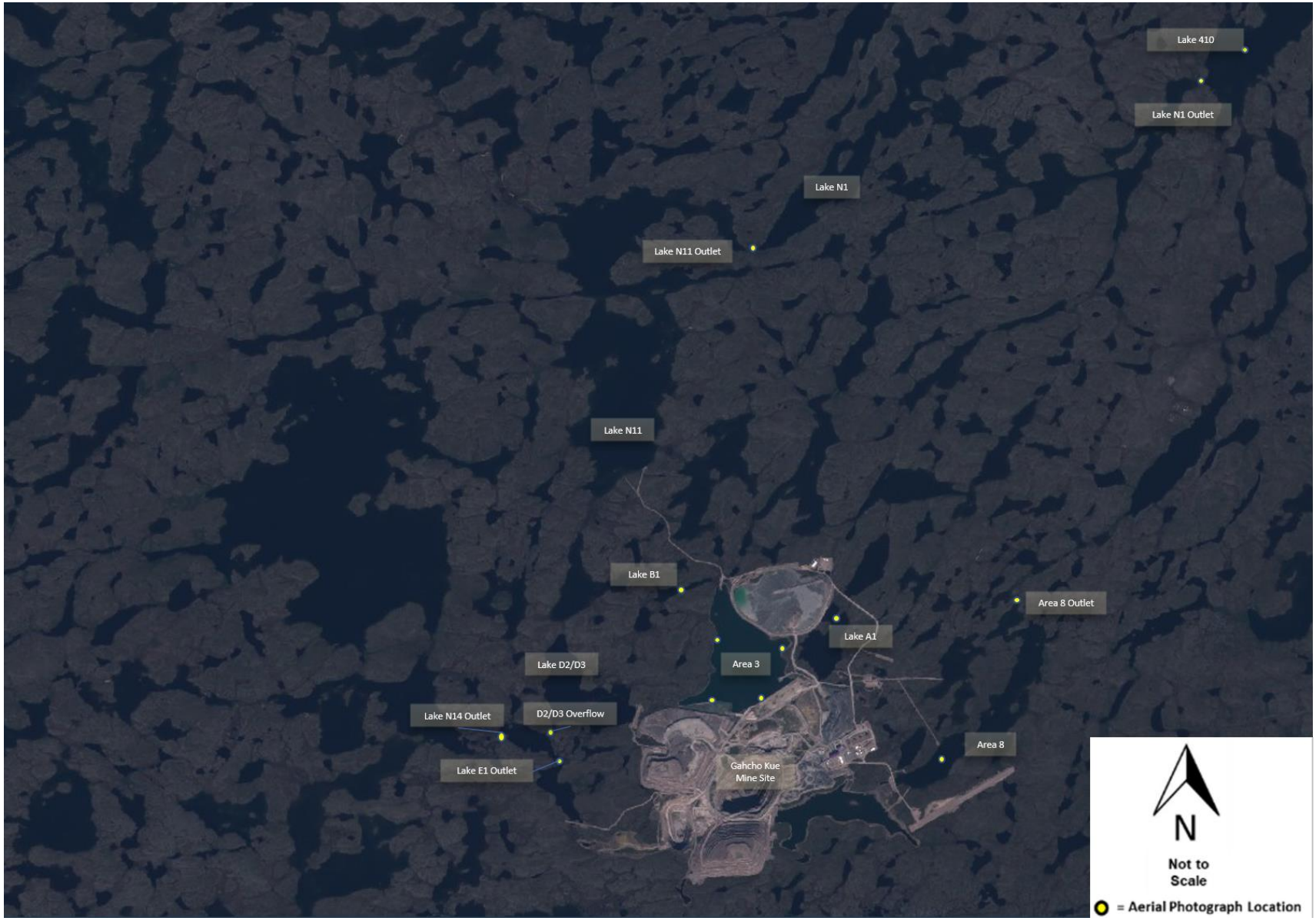


Figure 2. 202 survey location3s of on-site aerial photography of erosion susceptible areas

Appendix B – Aerial Photographs

Photo 1: Outlet of N1 June 03, 2023

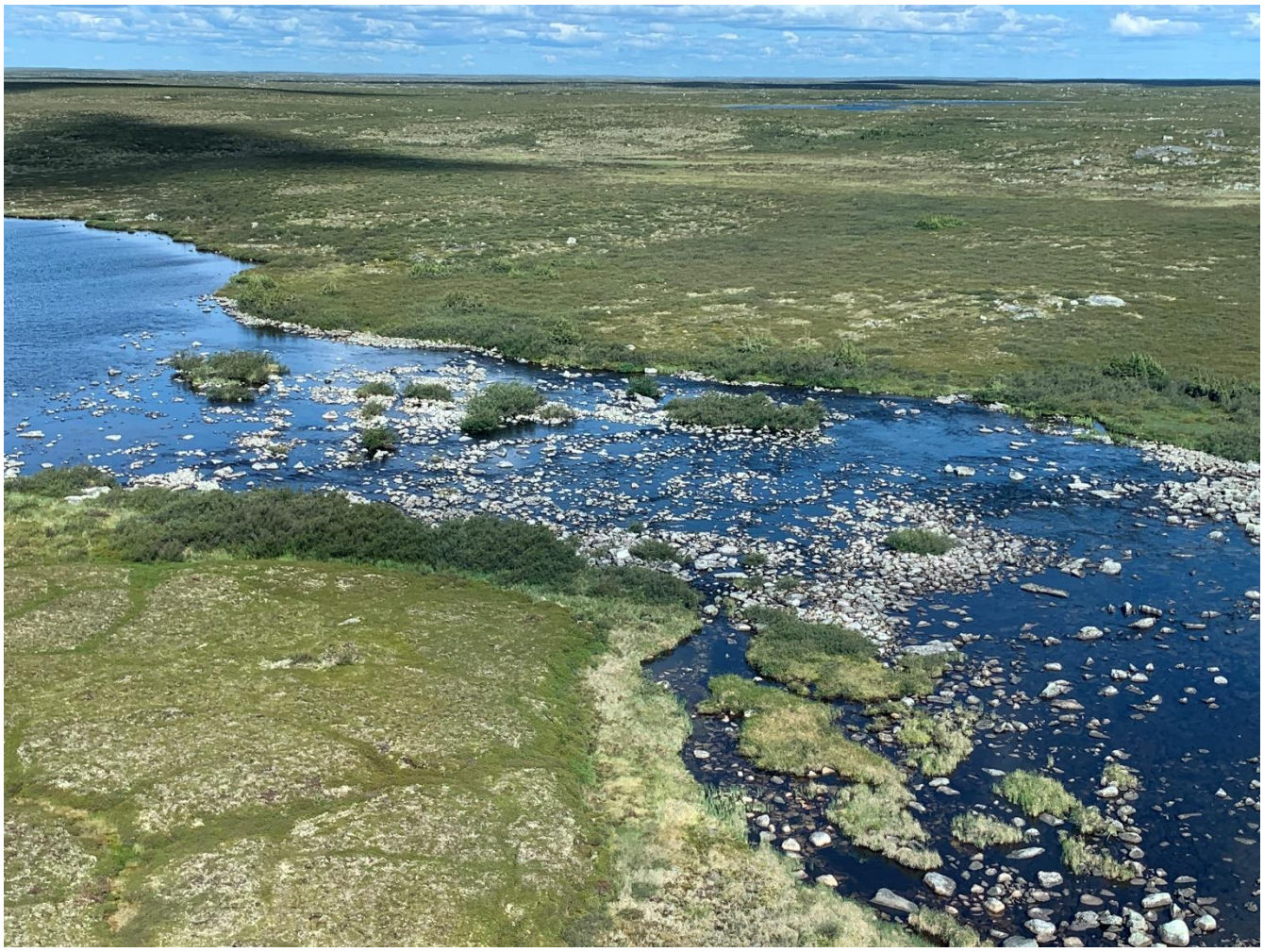


Photo 2: Outlet of N1 July 06, 2023

Photo 3: Outlet of N1 August 04 2023

Photo 4: Outlet of N1 September 03, 2023

Photo 5: Outlet of N1 September 24 2023

Photo 6: Outlet of Area 8 (K5 Stream) June 03, 2023

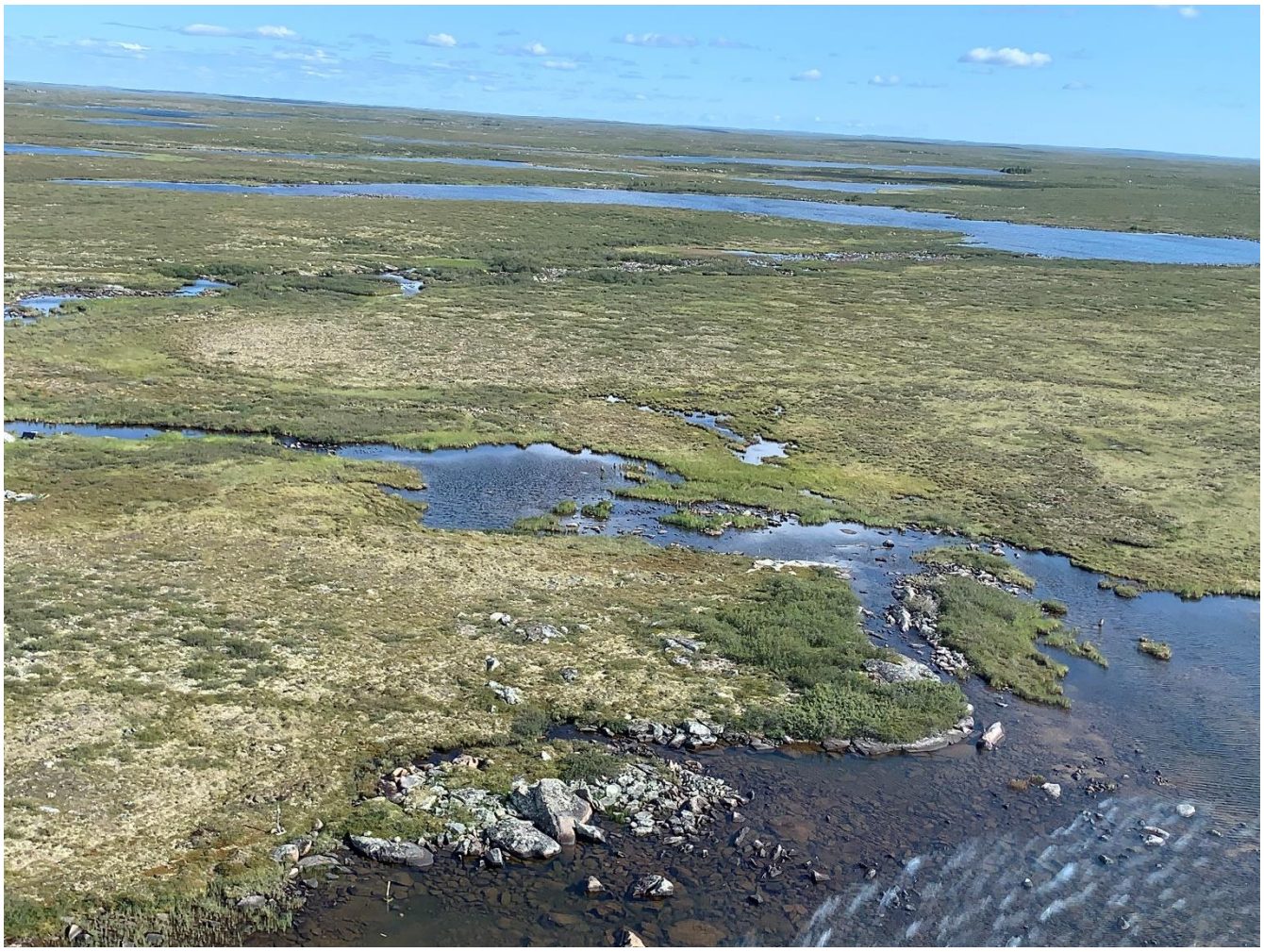


Photo 7: Outlet of Area 8 (K5 Stream) July 06, 2023

Photo 8: Outlet of Area 8 (K5 Stream) August 04, 2023

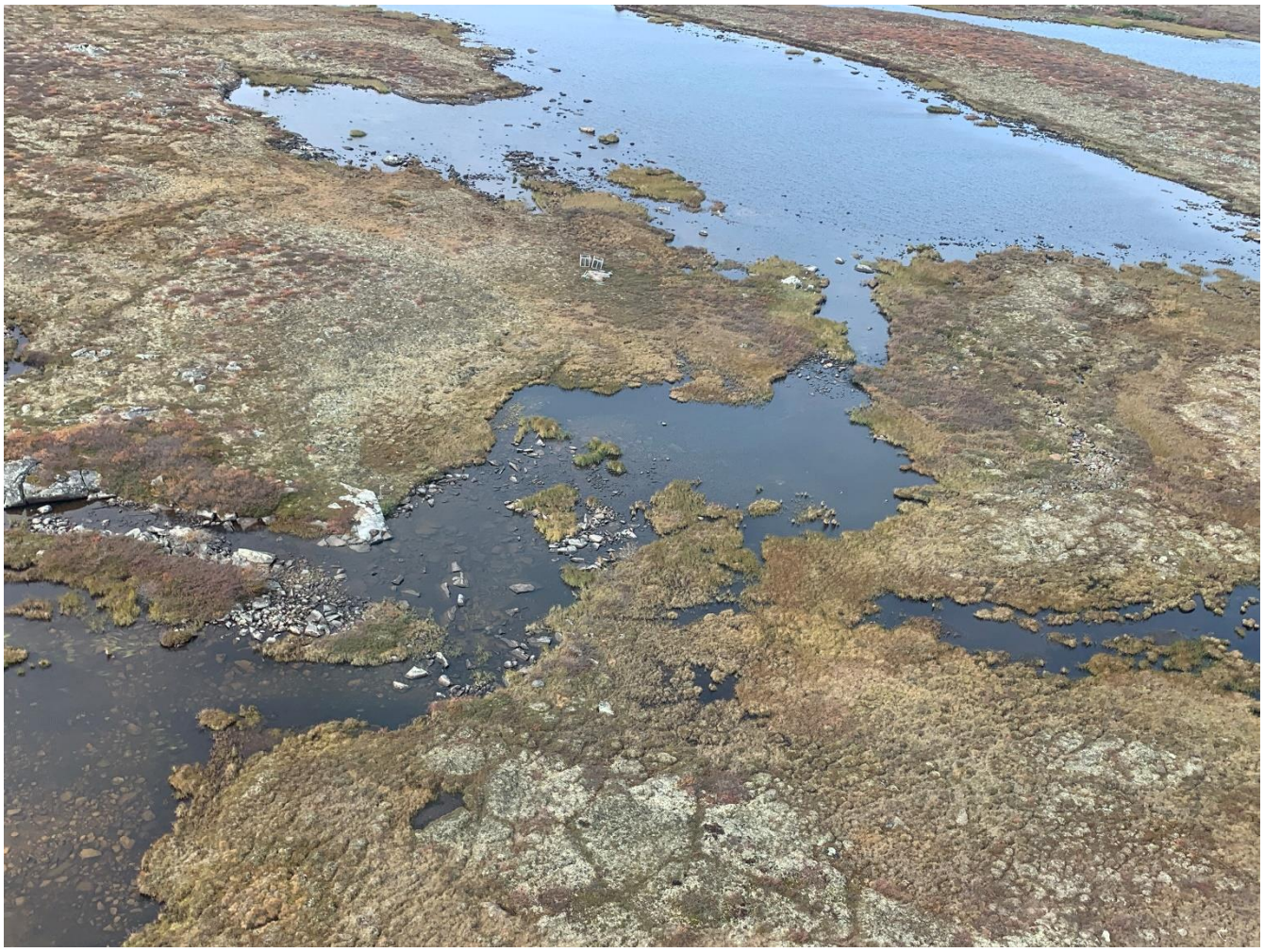


Photo 9: Outlet of Area 8 (K5 Stream) September 03, 2023

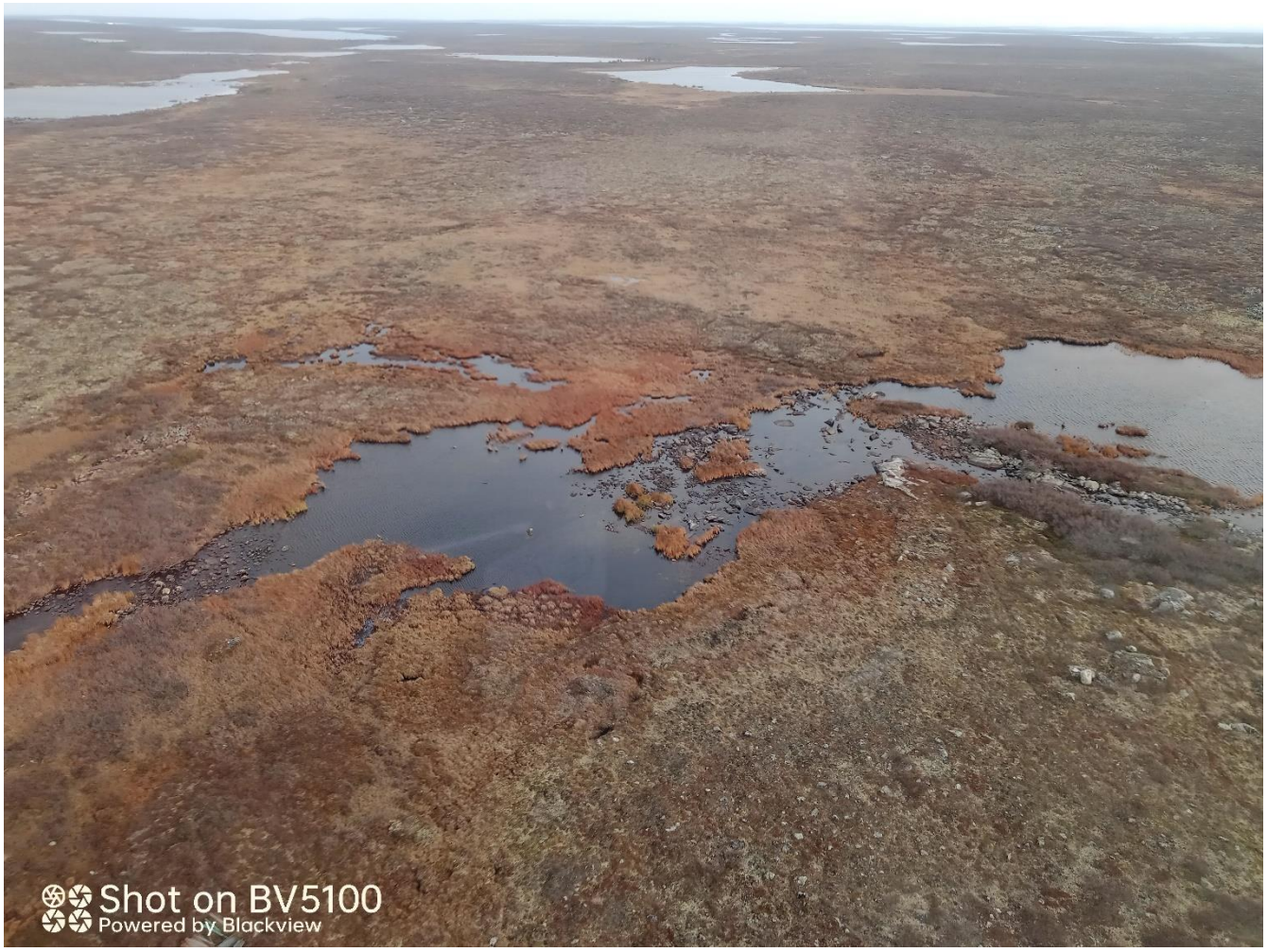


Photo 10: Outlet of Area 8 (K5 Stream) September 24, 2023

Photo 11: Water Management Pond (Area 3): Aerial by SNP-02 pumps June 03, 2023

Photo 12: Water Management Pond (Area 3): End of pipe discharge from Dyke L pump FPK area to WMP July 6, 2023

Photo 13: End of pipe discharge from Dyke L pump FPK area to WMP August 04, 2023

Photo 14: End of pipe discharge from Dyke L pump FPK area to WMP September 03, 2023

Photo 15: Intake from SNP-02 and Discharge of Dyke L Pump September 24, 2023

Photo 16: Outlet of N11 June 03, 2023

Photo 17: Outlet of N11 July 06, 2023

Photo 18: Outlet of N11 August 04, 2023

Photo 19: Outlet of N11 September 03, 2023

Photo 20: Outlet of N11 September 24, 2023

Photo 21: Shoreline of Area 1 June 03, 2023

Photo 22: Shoreline of Area 1 July 06, 2023

Photo 23: Shoreline of Area 1 August 04, 2023

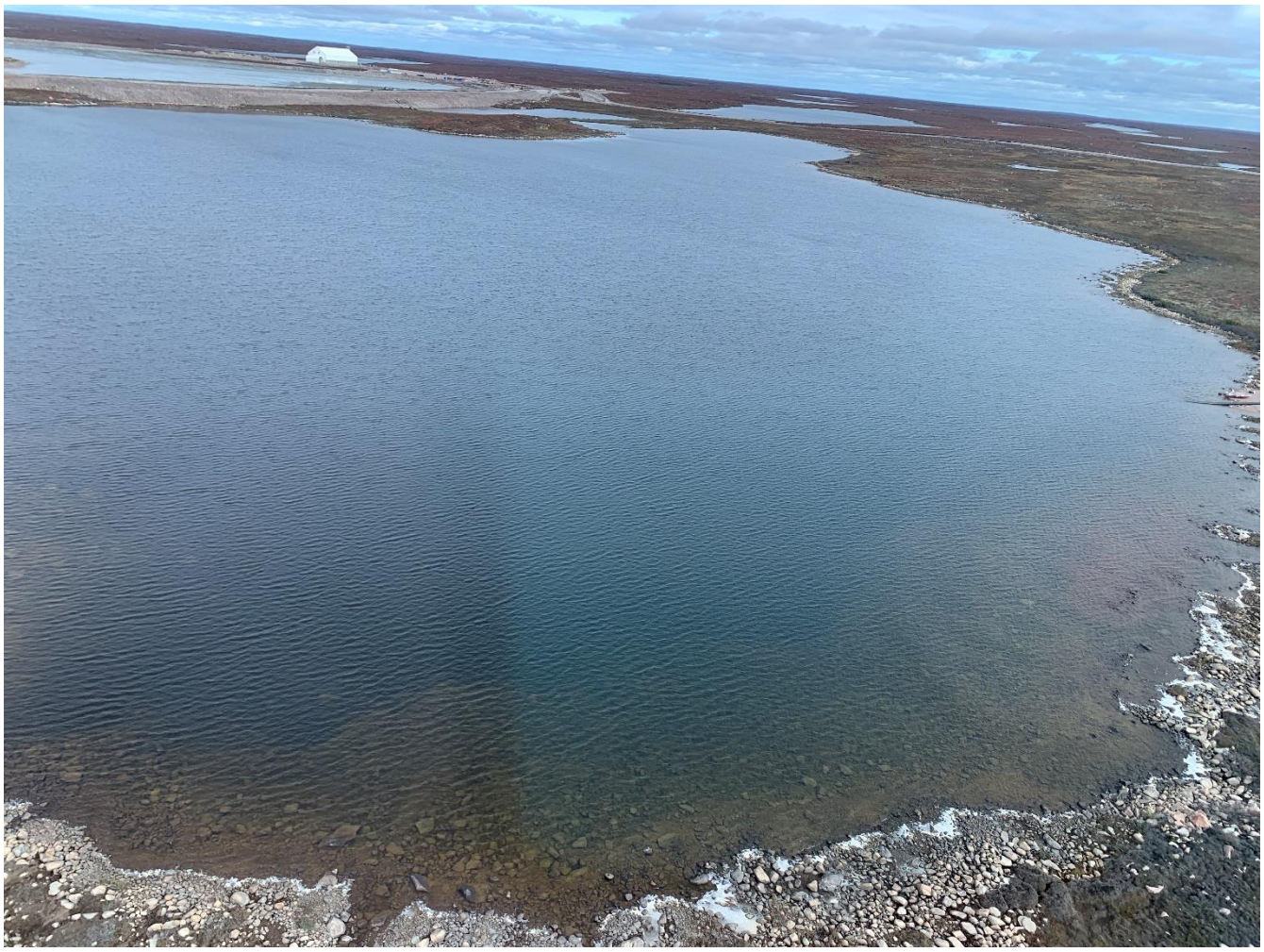


Photo 24: Shoreline of Area 1 September 03, 2023

Photo 25: Shoreline of Area 1 September 24, 2023

Photo 26: Outlet and Shoreline of B1 June 03, 2023

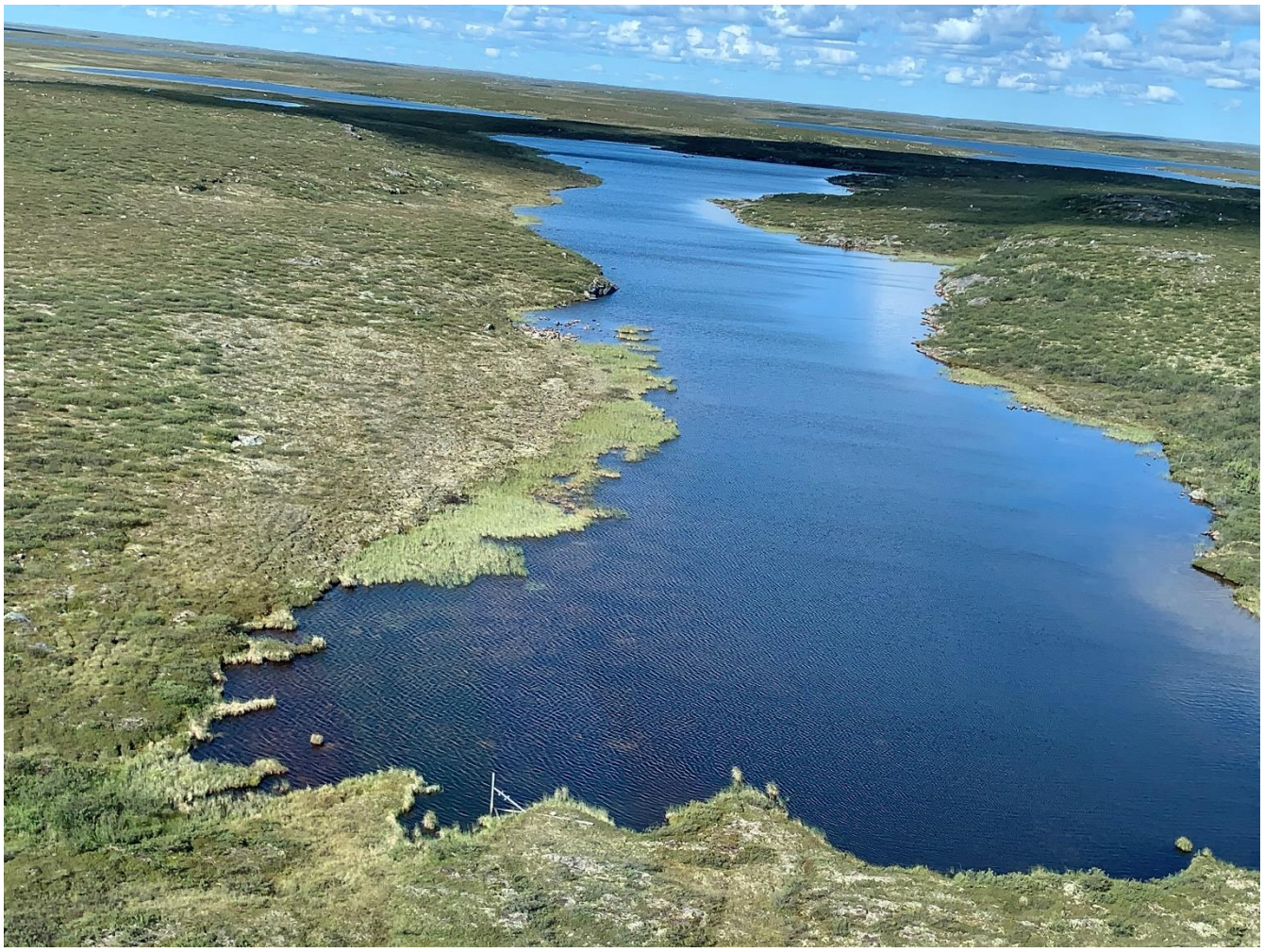


Photo 27: Shoreline of B1 July 06, 2023

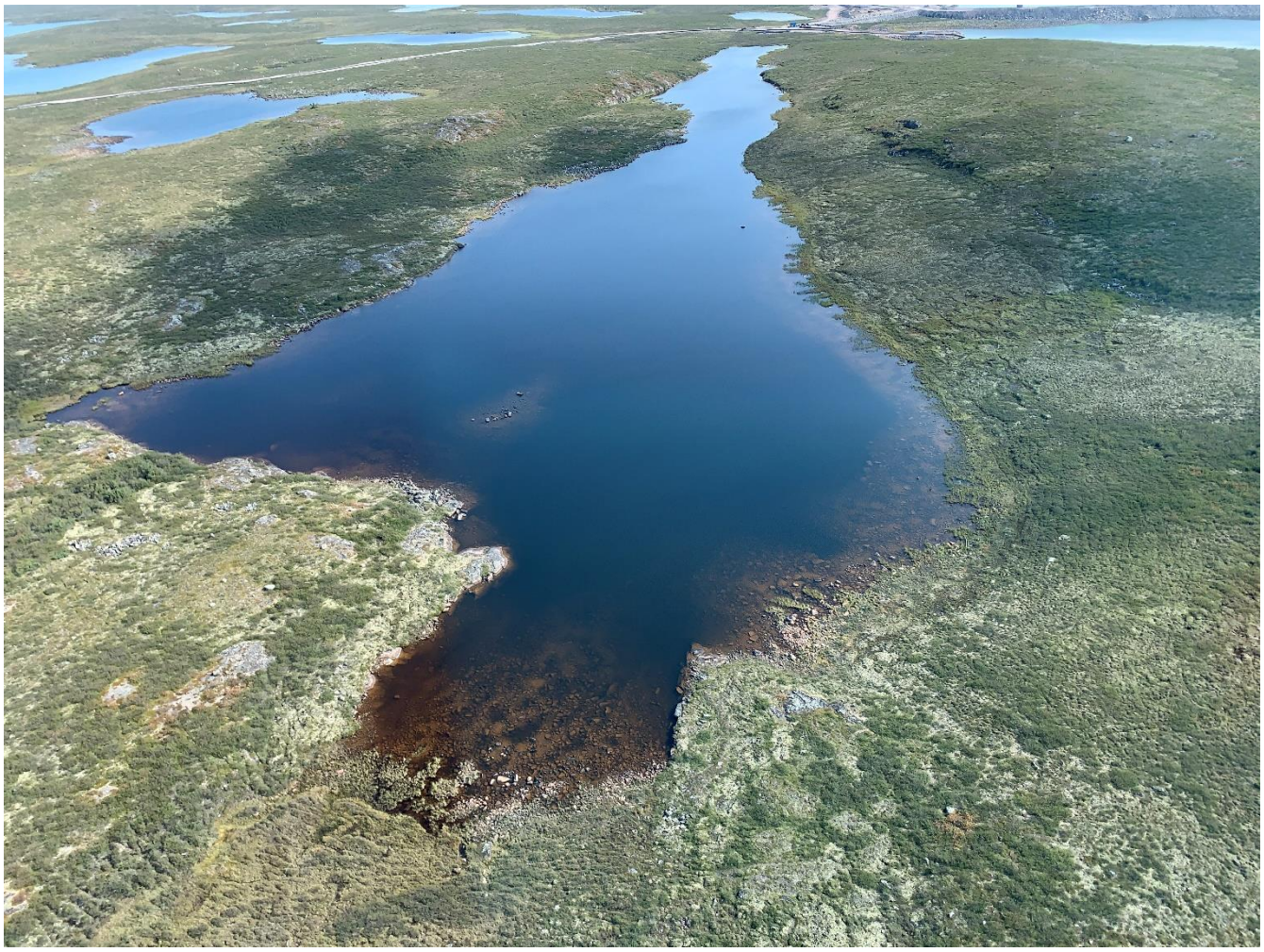


Photo 28: Shoreline of B1 August 04, 2023

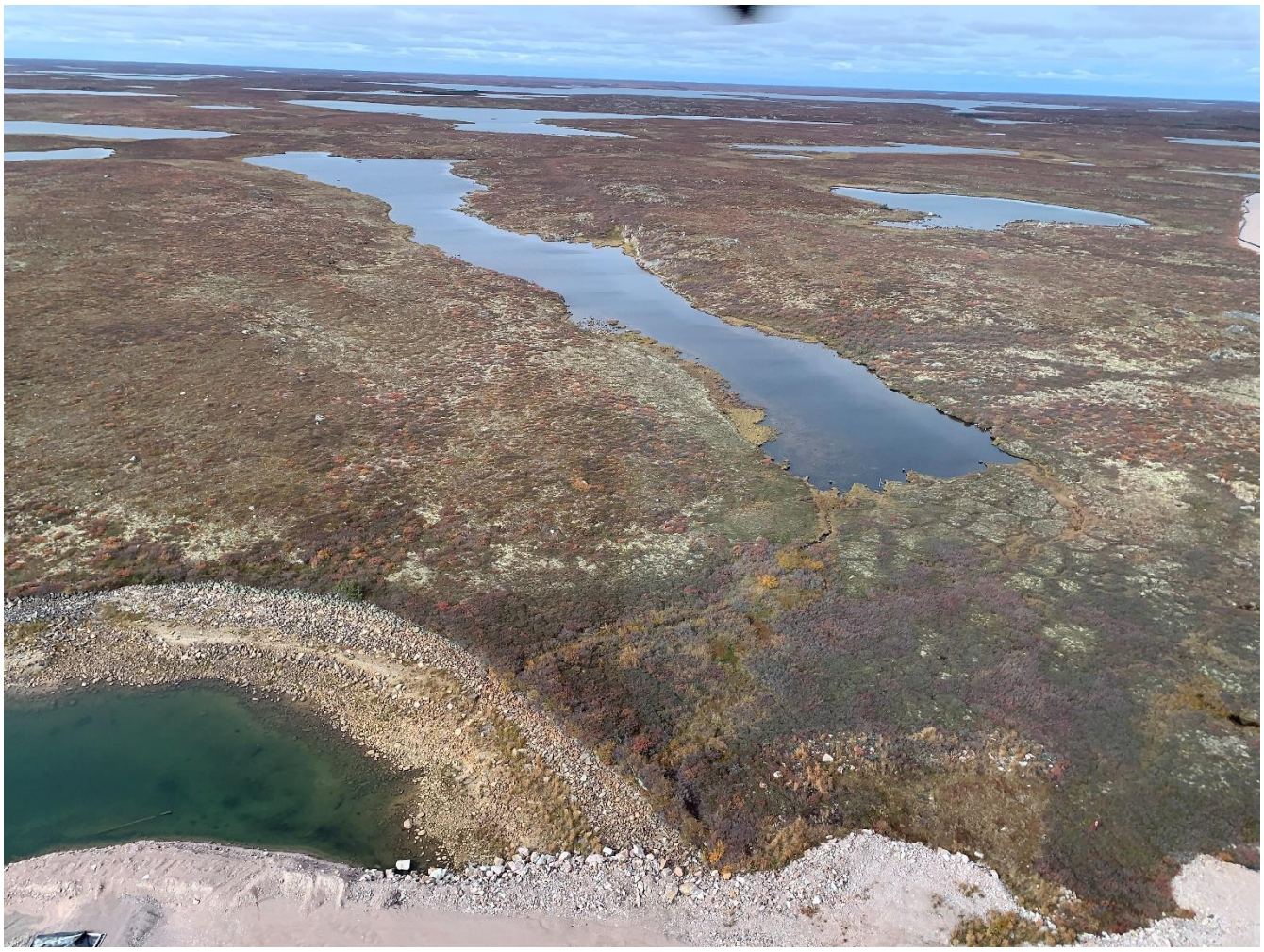


Photo 29: Outlet and Shoreline of B1 September 03, 2023

Photo 30: Outlet and Shoreline of B1 September 24, 2023

Photo 31: Outlet and Shoreline of E1 June 03, 2023

Photo 32: Outlet and Shoreline of E1 July 06, 2023

Photo 33: Outlet and Shoreline of E1 August 04, 2023

Photo 34: Outlet and Shoreline of E1 September 03, 2023

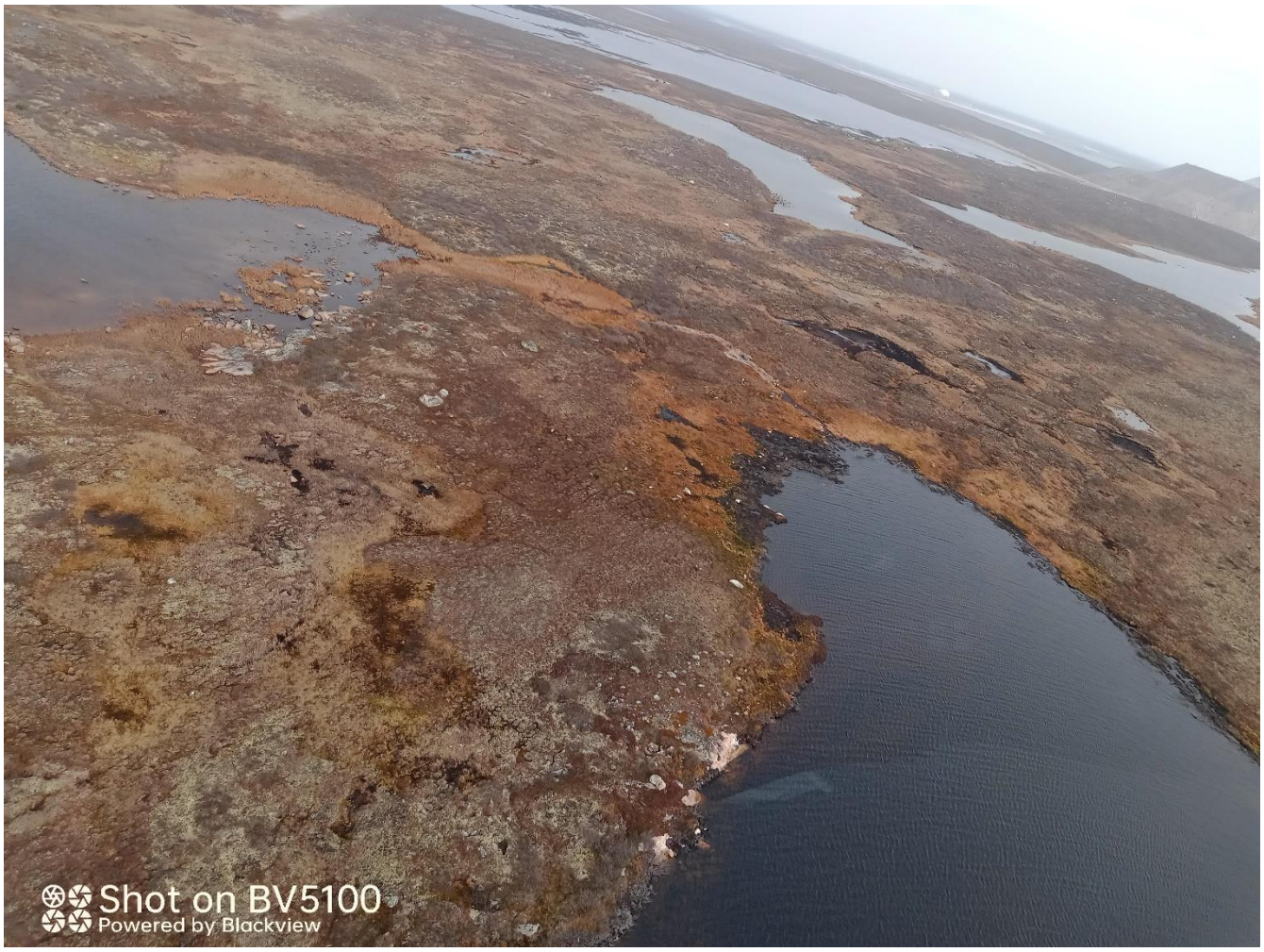


Photo 35: Outlet and Shoreline of E1 September 24, 2023

Photo 36: Outlet and Shoreline of N14 June 03, 2023

Photo 37: Outlet and Shoreline of N14 July 06, 2023

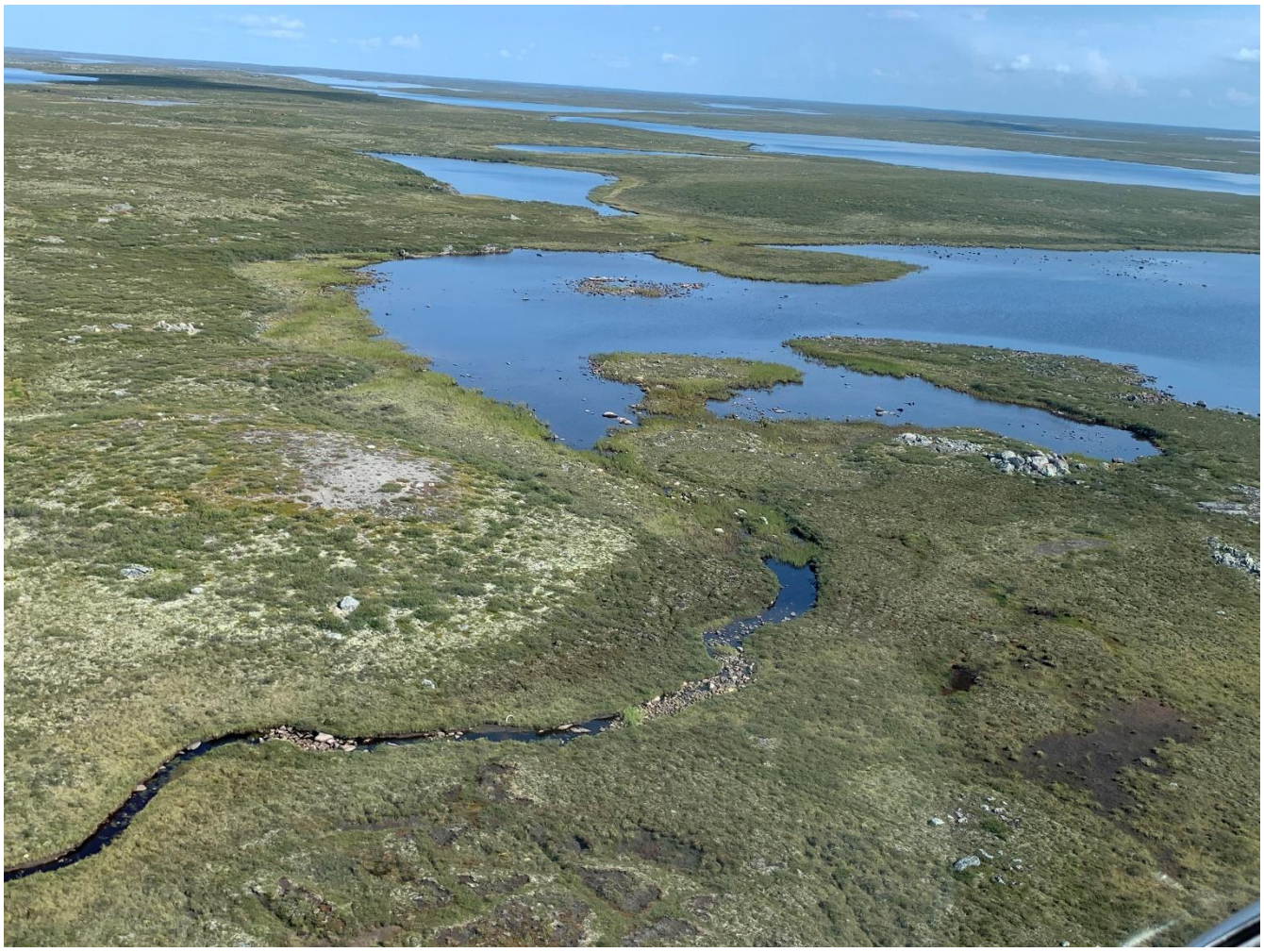


Photo 38: Outlet and Shoreline of N14 August 04, 2023

Photo 39: Outlet and Shoreline of N14 September 03, 2023

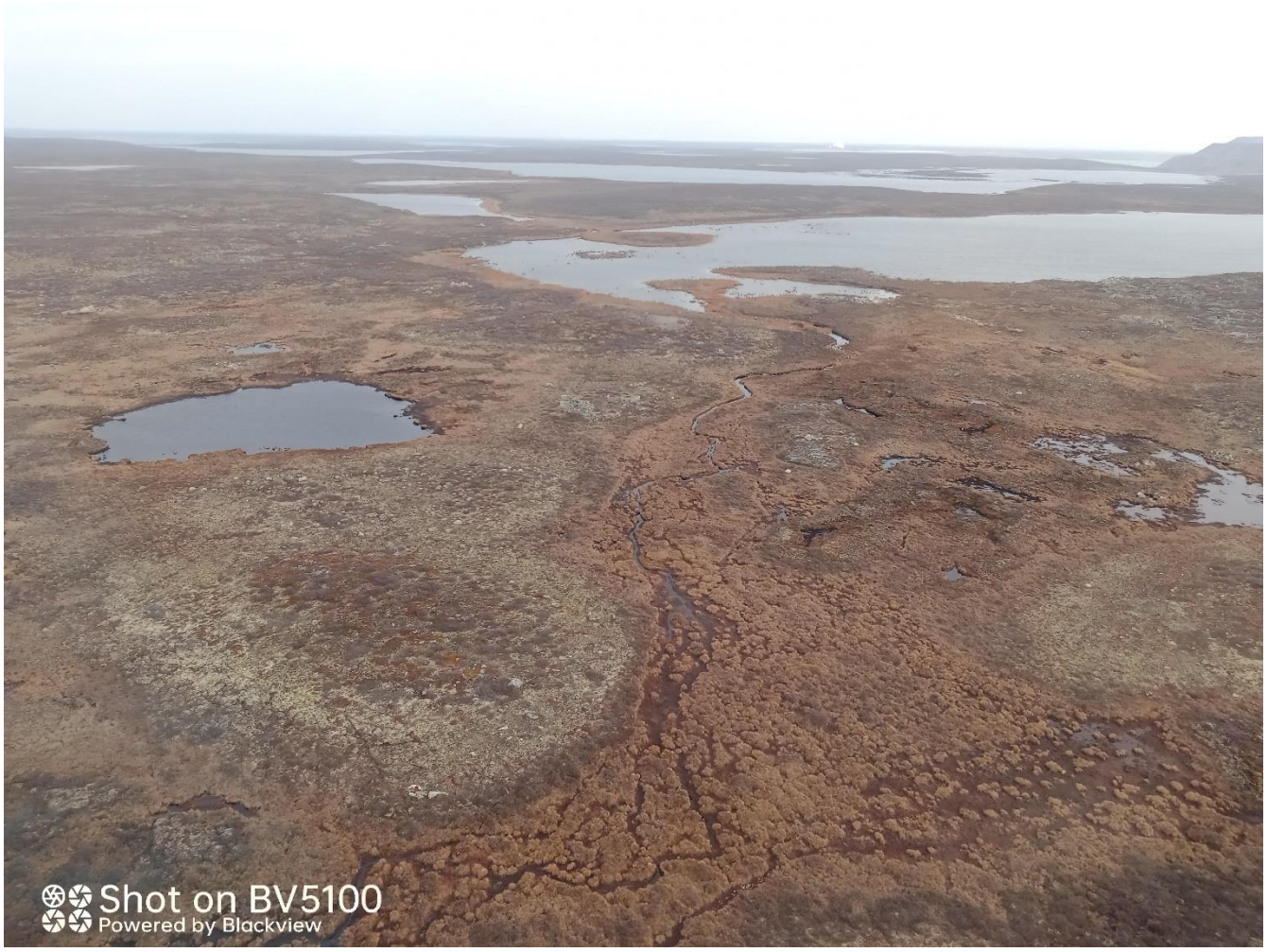


Photo 40: Outlet and Shoreline of N14 September 24, 2023

Photo 41: Outlet and Shoreline of Lake D2/D3 June 03, 2023

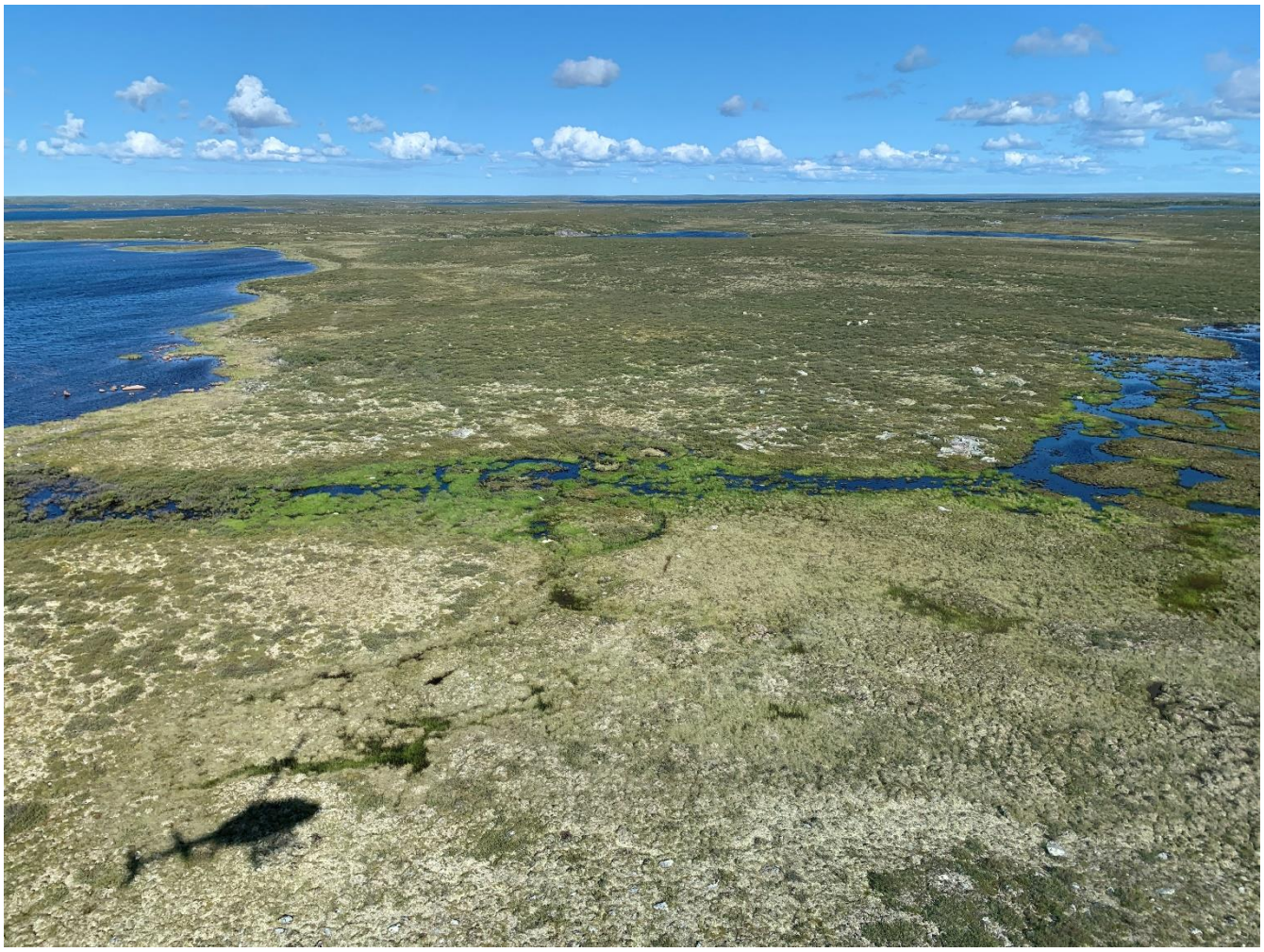


Photo 42: Outlet and Shoreline of Lake D2/D3 July 06, 2023

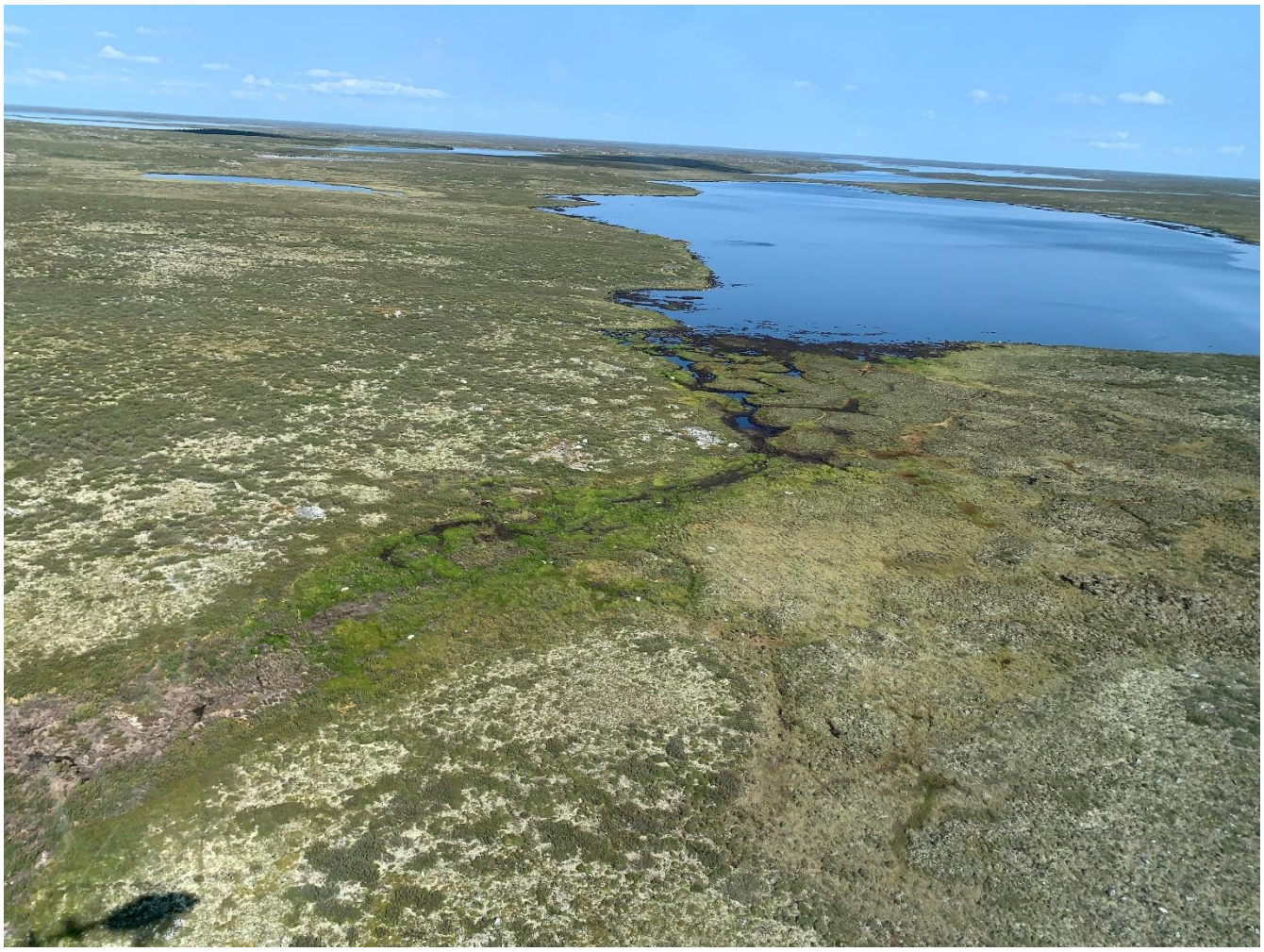


Photo 43: Outlet and Shoreline of Lake D2/D3 August 04, 2023

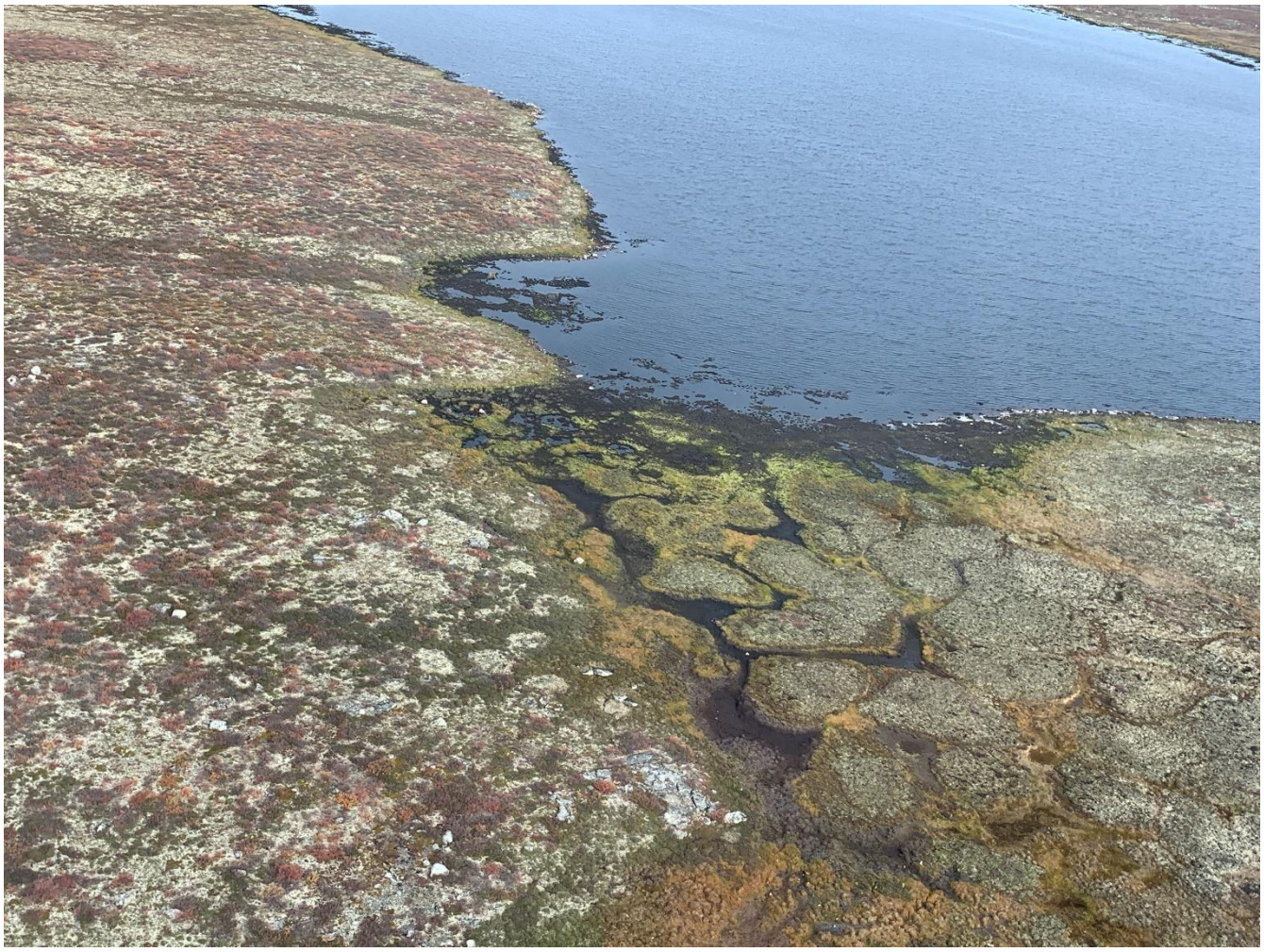


Photo 44: Outlet and Shoreline of Lake D2/D3 September 03, 2023

Photo 45: Outlet and Shoreline of Lake D2/D3 September 24, 2023

Appendix G – SNP TABLES, 2023

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G01 Summary of Sampling Requirements and Sample Dates at SNP 01 in 2023

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 during discharge)	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 during discharge)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	N/A

G02 Summary of Sampling Requirements and Sample Dates at SNP 02 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	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 2023

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 2023
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	22-Aug

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	9-Jan-2023	96.25	12.72	6.92	1,462.93	1.50	0.00	0.00	8.40
SNP-05-1m	9-Jan-2023	97.91	13.17	6.95	1,476.97	0.90	0.00	0.00	8.40
SNP-05-2m	9-Jan-2023	97.47	13.04	6.98	1,469.83	1.10	0.00	0.00	8.40
SNP-05-3m	9-Jan-2023	96.56	12.81	7.00	1,460.30	1.42	0.00	0.00	8.40
SNP-05-4m	9-Jan-2023	95.58	12.57	7.01	1,453.76	1.73	0.00	0.00	8.40
SNP-05-5m	9-Jan-2023	87.46	11.39	6.99	1,456.91	2.08	0.00	0.00	8.40
SNP-05-6m	9-Jan-2023	86.62	11.26	6.95	1,493.87	2.17	0.00	0.00	8.40
SNP-05-7m	9-Jan-2023	80.76	10.42	6.91	1,584.05	2.45	0.00	0.00	8.40
SNP-05-8m	9-Jan-2023	16.36	2.06	6.92	2,165.88	3.35	0.00	0.00	8.40
SNP-05-0.3m	9-Feb-2023	93.56	12.69	6.57	1,478.36	0.65	0.00	0.00	8.30
SNP-05-1m	9-Feb-2023	94.20	12.72	6.64	1,479.81	0.84	0.00	0.00	8.30
SNP-05-2m	9-Feb-2023	94.35	12.60	6.70	1,516.66	1.20	0.00	0.00	8.30
SNP-05-3m	9-Feb-2023	93.65	12.43	6.74	1,511.66	1.44	0.00	0.00	8.30
SNP-05-4m	9-Feb-2023	90.53	11.92	6.75	1,510.52	1.74	0.00	0.00	8.30
SNP-05-5m	9-Feb-2023	84.59	11.05	6.75	1,520.60	2.03	0.00	0.00	8.30
SNP-05-6m	9-Feb-2023	78.56	10.17	6.73	1,546.47	2.35	0.00	0.00	8.30
SNP-05-7m	9-Feb-2023	45.48	5.80	6.70	1,728.57	2.85	0.00	0.00	8.30
SNP-05-8m	9-Feb-2023	7.03	0.88	6.76	2,397.07	3.59	0.00	0.00	8.30
SNP-05-0.3m	9-Mar-2023	85.32	11.75	7.12	1,610.42	0.76	0.00	0.00	7.35
SNP-05-1m	9-Mar-2023	86.19	11.73	7.11	1,597.67	1.20	0.00	0.00	7.35
SNP-05-2m	9-Mar-2023	86.16	11.65	7.12	1,590.04	1.43	0.00	0.00	7.35
SNP-05-3m	9-Mar-2023	86.17	11.57	7.13	1,584.07	1.71	0.00	0.00	7.35
SNP-05-4m	9-Mar-2023	84.59	11.28	7.12	1,581.91	1.95	0.00	0.00	7.35
SNP-05-5m	9-Mar-2023	76.37	10.12	7.06	1,602.14	2.21	0.00	0.00	7.35
SNP-05-6m	9-Mar-2023	70.61	9.29	7.06	1,640.08	2.48	0.00	0.00	7.35
SNP-05-7m	9-Mar-2023	14.79	1.90	7.19	2,043.92	3.24	0.00	0.00	7.35
SNP-05-0.3m	9-Apr-2023	85.70	11.54	7.16	1,622.44	0.64	0.00	0.00	7.10
SNP-05-1m	9-Apr-2023	85.80	11.45	7.12	1,628.32	0.96	0.00	0.00	7.10
SNP-05-2m	9-Apr-2023	86.27	11.40	7.10	1,627.57	1.31	0.00	0.00	7.10
SNP-05-3m	9-Apr-2023	85.89	11.28	7.09	1,627.17	1.53	0.00	0.00	7.10
SNP-05-4m	9-Apr-2023	76.97	10.06	7.02	1,646.72	1.75	0.00	0.00	7.10
SNP-05-5m	9-Apr-2023	75.55	9.78	7.02	1,661.06	2.13	0.00	0.00	7.10
SNP-05-6m	9-Apr-2023	66.65	8.55	6.97	1,716.34	2.51	0.00	0.00	7.10
SNP-05-7m	9-Apr-2023	7.66	0.96	7.33	2,444.44	3.48	0.00	0.00	7.10
SNP-05-0.3m	28-May-2023	106.95	11.88	7.48	1,226.75	7.52	0.11	0.07	
SNP-05-1m	28-May-2023	107.03	11.87	7.39	1,224.69	7.56	0.02	0.01	
SNP-05-2m	28-May-2023	106.92	11.84	7.33	1,222.10	7.62	0.00	0.00	
SNP-05-3m	28-May-2023	106.95	11.85	7.28	1,221.66	7.62	0.06	0.04	
SNP-05-4m	28-May-2023	107.13	11.87	7.30	1,221.29	7.60	0.02	0.01	
SNP-05-5m	28-May-2023	106.92	11.86	7.32	1,221.03	7.58	0.27	0.16	
SNP-05-6m	28-May-2023	106.87	11.86	7.40	1,221.78	7.54	0.01	0.01	
SNP-05-7m	28-May-2023	106.82	11.87	7.43	1,221.92	7.49	0.10	0.07	
SNP-05-8m	28-May-2023	105.86	11.86	7.44	1,234.76	7.16	0.00	0.00	
SNP-05-0.3m	21-Jun-2023	110.49	10.76	7.58	1,263.39	14.08	0.00	0.00	
SNP-05-1m	21-Jun-2023	108.69	10.86	7.58	1,262.03	12.89	0.00	0.00	
SNP-05-2m	21-Jun-2023	107.57	10.91	7.55	1,259.98	12.23	0.00	0.00	
SNP-05-3m	21-Jun-2023	107.51	10.95	7.54	1,260.29	12.02	0.00	0.00	
SNP-05-4m	21-Jun-2023	107.67	11.03	7.59	1,261.03	11.77	0.00	0.00	
SNP-05-5m	21-Jun-2023	108.04	11.11	7.62	1,261.42	11.62	0.00	0.00	
SNP-05-6m	21-Jun-2023	107.90	11.11	7.63	1,260.86	11.57	0.00	0.00	
SNP-05-7m	21-Jun-2023	107.57	11.12	7.71	1,262.77	11.41	0.00	0.00	
SNP-05-8m	21-Jun-2023	106.64	11.07	7.72	1,265.61	11.26	0.00	0.00	
SNP-05-0.3m	24-Jul-2023	106.08	9.45	7.88	1,350.50	18.32	2.73	1.76	
SNP-05-1m	24-Jul-2023	106.01	9.43	7.91	1,355.11	18.36	2.74	1.77	
SNP-05-2m	24-Jul-2023	106.02	9.44	7.90	1,358.61	18.34	2.66	1.72	
SNP-05-3m	24-Jul-2023	105.95	9.44	7.89	1,357.25	18.28	2.67	1.72	
SNP-05-4m	24-Jul-2023	105.81	9.43	7.90	1,356.75	18.29	2.71	1.75	

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-05-5m	24-Jul-2023	105.97	9.45	7.87	1,357.09	18.27	2.63	1.69	
SNP-05-6m	24-Jul-2023	105.65	9.48	7.86	1,355.05	17.98	2.58	1.67	
SNP-05-7m	24-Jul-2023	96.48	9.07	7.73	1,350.29	15.76	2.50	1.61	
SNP-05-8m	24-Jul-2023	53.42	5.60	7.61	1,386.05	10.85	2.15	1.38	
SNP-05-9m	24-Jul-2023	36.05	3.94	7.46	1,406.23	9.10	1.94	1.25	
SNP-05-0.3m	7-Aug-2023	103.82	9.63	7.93	1,413.75	16.75	0.00	0.00	
SNP-05-1m	7-Aug-2023	103.86	9.64	7.87	1,412.72	16.76	0.00	0.00	
SNP-05-2m	7-Aug-2023	103.72	9.63	7.84	1,412.23	16.76	0.00	0.00	
SNP-05-3m	7-Aug-2023	103.74	9.63	7.86	1,412.65	16.74	0.00	0.00	
SNP-05-4m	7-Aug-2023	103.87	9.65	7.96	1,412.36	16.73	0.00	0.00	
SNP-05-5m	7-Aug-2023	103.93	9.66	7.97	1,412.44	16.72	0.00	0.00	
SNP-05-6m	7-Aug-2023	103.88	9.66	7.98	1,411.66	16.73	0.00	0.00	
SNP-05-7m	7-Aug-2023	103.90	9.66	7.99	1,412.19	16.72	0.00	0.00	
SNP-05-8m	7-Aug-2023	103.85	9.67	8.00	1,411.88	16.66	0.00	0.00	
SNP-05-9m	7-Aug-2023	32.91	3.69	7.94	1,398.01	8.38	0.00	0.00	
SNP-05-1m	17-Sep-2023	101.18	10.55	7.76	1,613.07	10.54	0.00	0.00	
SNP-05-0.3m	17-Sep-2023	101.10	10.54	7.77	1,612.98	10.53	0.00	0.00	
SNP-05-2m	17-Sep-2023	101.08	10.54	7.74	1,613.02	10.53	0.00	0.00	
SNP-05-3m	17-Sep-2023	101.12	10.56	7.73	1,612.25	10.51	0.00	0.00	
SNP-05-4m	17-Sep-2023	101.13	10.56	7.75	1,612.59	10.50	0.00	0.00	
SNP-05-5m	17-Sep-2023	101.03	10.55	7.83	1,612.68	10.50	0.00	0.00	
SNP-05-6m	17-Sep-2023	100.98	10.55	7.85	1,612.85	10.50	0.00	0.00	
SNP-05-7m	17-Sep-2023	100.91	10.54	7.86	1,613.12	10.49	0.00	0.00	
SNP-05-8m	17-Sep-2023	100.83	10.53	7.86	1,612.68	10.50	0.00	0.00	
SNP-05-9m	17-Sep-2023	99.70	10.42	7.84	1,614.59	10.47	0.00	0.00	
SNP-05-0.3m	11-Oct-2023	102.93	12.09	6.92	1,576.27	5.77	0.00	0.00	
SNP-05-1m	11-Oct-2023	102.73	12.10	7.06	1,577.56	5.66	0.00	0.00	
SNP-05-2m	11-Oct-2023	102.82	12.12	7.18	1,577.58	5.63	0.00	0.00	
SNP-05-3m	11-Oct-2023	102.70	12.12	7.26	1,578.82	5.61	0.00	0.00	
SNP-05-4m	11-Oct-2023	102.73	12.11	7.42	1,577.68	5.64	0.00	0.00	
SNP-05-5m	11-Oct-2023	102.51	12.11	7.51	1,577.63	5.56	0.00	0.00	
SNP-05-6m	11-Oct-2023	102.40	12.11	7.55	1,578.83	5.55	0.00	0.00	
SNP-05-7m	11-Oct-2023	102.36	12.11	7.58	1,579.40	5.55	0.00	0.00	
SNP-05-8m	11-Oct-2023	102.35	12.09	7.60	1,578.32	5.56	0.00	0.00	
SNP-05-9m	11-Oct-2023	102.25	12.10	7.61	1,579.12	5.54	0.00	0.00	
SNP-05-0.3m	16-Nov-2023	103.62	13.11	7.43	1,735.11	2.43	0.00	0.00	9.25
SNP-05-1m	16-Nov-2023	103.39	13.32	7.49	1,739.71	1.84	0.00	0.00	9.25
SNP-05-2m	16-Nov-2023	103.73	13.57	7.55	1,748.48	1.32	0.00	0.00	9.25
SNP-05-3m	16-Nov-2023	103.30	13.57	7.55	1,750.67	1.23	0.00	0.00	9.25
SNP-05-4m	16-Nov-2023	100.55	13.19	7.52	1,742.55	1.25	0.00	0.00	9.25
SNP-05-5m	16-Nov-2023	98.58	12.86	7.49	1,728.37	1.47	0.00	0.00	9.25
SNP-05-6m	16-Nov-2023	99.14	12.82	7.48	1,720.69	1.80	0.00	0.00	9.25
SNP-05-7m	16-Nov-2023	89.73	11.49	7.42	1,712.40	2.13	0.00	0.00	9.25
SNP-05-8m	16-Nov-2023	90.11	11.48	7.37	1,725.47	2.34	0.00	0.00	9.25
SNP-05-9m	16-Nov-2023	85.69	10.74	7.37	1,708.92	2.97	0.00	0.00	9.25
SNP-05-0.3m	10-Dec-2023	101.77	13.32	7.31	1,499.00	1.19	0.00	0.00	8.90
SNP-05-1m	10-Dec-2023	103.13	13.61	7.33	1,504.97	0.95	0.00	0.00	8.90
SNP-05-2m	10-Dec-2023	103.46	13.69	7.34	1,511.03	0.89	0.00	0.00	8.90
SNP-05-3m	10-Dec-2023	103.15	13.60	7.33	1,508.21	1.04	0.00	0.00	8.90
SNP-05-4m	10-Dec-2023	100.49	13.13	7.31	1,500.16	1.37	0.00	0.00	8.90
SNP-05-5m	10-Dec-2023	98.20	12.69	7.28	1,494.65	1.80	0.00	0.00	8.90
SNP-05-6m	10-Dec-2023	97.11	12.40	7.27	1,490.79	2.25	0.00	0.00	8.90
SNP-05-7m	10-Dec-2023	93.09	11.80	7.18	1,510.94	2.50	0.00	0.00	8.90
SNP-05-8m	10-Dec-2023	92.99	11.78	7.14	1,539.51	2.52	0.00	0.00	8.90

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-05-4m	SNP-05-6m	SNP-05-8m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-9m	SNP-05-7m	SNP-05-9m	SNP-05-5m	SNP-05-5m	SNP-05-4m	SNP-05-4m	SNP-05-7m
Date	9-Jan-2023	9-Feb-2023	9-Feb-2023	9-Mar-2023	9-Apr-2023	28-May-2023	21-Jun-2023	24-Jul-2023	24-Jul-2023	7-Aug-2023	7-Aug-2023	17-Sep-2023	11-Oct-2023	16-Nov-2023	10-Dec-2023	10-Dec-2023
Conductivity (µS/cm)	1460.00	1460.00	1520.00	1510.00	1550.00	1250.00	1250.00	1400.00	1420.00	1430.00	1480.00	1540.00	1590.00	1700.00	1760.00	1740.00
pH (pH units)	7.56	7.49	7.50	7.54	7.63	7.58	7.66	7.65	7.61	7.68	7.82	7.68	7.55	7.62	7.54	7.56
Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.70	1.60	1.40	<1.0	2.60	1.70	<1.0	1.20	1.00	<1.0	<1.0	<1.0
Turbidity (NTU)	0.20	0.29	0.15	0.43	0.41	0.46	0.31	0.35	0.36	0.38	0.26	0.71	0.46	0.32	0.21	0.20
Alkalinity, Bicarbonate (mg/L)	30.70	32.30	33.70	33.10	34.30	27.70	29.70	28.80	35.90	28.90	41.30	30.70	30.30	32.10	33.70	34.30
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	<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
Alkalinity, Total (mg/L)	30.70	32.30	33.70	33.10	34.30	27.70	29.70	28.80	35.90	28.90	41.30	30.70	30.30	32.10	33.70	34.30
Calcium (Ca)-Total (mg/L)	106.00	112.00	114.00	115.00	116.00	85.70	103.00	104.00	109.00	109.00	119.00	114.00	121.00	126.00	138.00	138.00
Chloride (mg/L)	312.00	338.00	350.00	371.00	364.00	289.00	298.00	328.00	321.00	344.00	335.00	341.00	395.00	416.00	428.00	419.00
Fluoride (mg/L)	0.36	0.36	0.37	0.39	0.37	0.37	0.38	0.34	0.39	0.38	0.44	0.38	0.33	0.40	0.35	0.34
Hardness (as CaCO3) (mg/L)	409.00	427.00	442.00	427.00	452.00	358.00	360.00	424.00	429.00	394.00	425.00	425.00	466.00	475.00	486.00	482.00
Magnesium (Mg)-Total (mg/L)	33.10	33.90	35.00	36.00	33.80	26.00	32.20	30.80	30.90	31.50	32.40	32.80	33.90	35.60	39.20	39.00
Potassium (K)-Total (mg/L)	21.70	22.50	22.80	23.60	23.70	18.80	21.90	20.50	20.00	22.10	20.80	20.60	21.80	23.70	24.60	24.20
Silicate (as SiO2) (mg/L)	1.35	1.40	1.75	1.58	1.79	1.59	1.14	1.07	2.66	1.26	3.77	1.57	1.52	1.74	1.94	2.07
Sodium (Na)-Total (mg/L)	88.00	92.40	94.60	106.00	95.10	73.90	86.20	89.10	89.40	98.80	96.50	100.00	112.00	117.00	125.00	123.00
Sulfate (mg/L)	76.30	80.40	83.60	87.70	87.90	68.40	64.60	74.70	80.60	70.60	82.30	76.90	89.60	94.90	98.50	98.70
TDS (mg/L)	920.00	987.00	1040.00	888.00	1040.00	928.00	1020.00	891.00	896.00	1000.00	1050.00	1300.00	1140.00	1030.00	1200.00	1190.00
Ammonia, Total (as N) (mg/L)	0.13	0.12	0.16	0.13	0.12	0.13	0.09	0.05	0.05	0.03	0.08	0.02	0.01	0.06	0.05	0.06
Nitrate and Nitrite (mg/L)	14.80	16.00	16.20	17.70	17.10	12.40	12.20	11.60	11.90	11.20	11.60	9.76	10.60	11.10	11.50	11.30
Nitrate as Nitrogen (mg/L)	14.80	15.90	16.10	17.70	17.10	12.40	12.20	11.60	11.90	11.20	11.60	9.73	10.60	11.10	11.50	11.30
Nitrite as Nitrogen (mg/L)	0.02	0.06	0.07	0.02	0.01	0.04	0.04	0.04	0.01	0.05	0.03	0.03	0.02	0.02	0.02	0.01
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	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	0.00	0.00	<0.0020	<0.0020	<0.0020	<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	0.00	0.00	0.00	0.00	<0.0010	0.00	0.00	<0.0010	0.00	<0.0010	0.00	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	0.00	<0.0010	<0.0010	0.00
Phosphorus - Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.97	0.44	0.16	0.22	0.40	0.24	0.37	0.30	0.28	0.13	<0.050	0.36	0.47	0.43	0.43	0.48
Total Organic Carbon (mg/L)	2.54	2.39	2.65	2.66	2.69	2.13	1.86	1.99	1.62	2.42	1.53	2.67	2.67	2.39	2.40	2.23
Aluminum (Al)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Antimony (Sb)-Total (mg/L)	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	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
Barium (Ba)-Total (mg/L)	0.16	0.15	0.16	0.16	0.17	0.11	0.12	0.13	0.13	0.14	0.14	0.12	0.13	0.14	0.14	0.14
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<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
Boron (B)-Total (mg/L)	0.78	0.83	0.86	0.93	0.81	0.57	0.70	0.71	0.71	0.70	0.69	0.69	0.74	0.74	0.92	0.92
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
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
Chromium (Cr)-Total (mg/L)	<0.00010	0.00	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00	<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
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
Iron (Fe)-Total (mg/L)	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.01	0.05	0.01	0.01	0.02	0.02	0.02	0.01	0.02
Lead (Pb)-Total (mg/L)	<0.000030	<0.000030	<0.000030	0.00	<0.000030	0.00	<0.000030	<0.000030	0.00	<0.000030	<0.000030	<0.000030	<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	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
Manganese (Mn)-Total (mg/L)	0.01	0.01	0.02	0.01	0.01	0.04	0.02	0.01	0.01	0.01	0.02	0.01	0.01	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
Molybdenum (Mo)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-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	0.01	0.01	0.01
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
Selenium (Se)-Total (mg/L)	<0.000050	0.00	<0.000050	0.00	0.00	0.00	<0.000050	0.00	0.00	<0.000050	0.00	0.00	0.00	0.00	0.00	0.00
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	0.00	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium (Sr)-Total (mg/L)	1.56	1.69	1.71	1.63	1.69	1.15	1.47	1.63	1.59	1.62	1.64	1.81	1.94	2.06	2.27	2.27
Sulfur (S)-Total (mg/L)	28.40	31.00	32.00	32.80	32.10	23.60	28.10	28.50	31.60	29.40	34.50	31.40	32.20	37.40	38.30	37.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00	0.00	0.00	0.00	0.00	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-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
Thorium (Th)-Total (mg/L)	0.00	<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	0.00	0.00	0.00	<0.000050	0.00	0.00
Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00	0.00	<0.00030	<0.00030	0.00	<0.00030	<0.00030	0.00	<0.00030	<0.00030	<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
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
Vanadium (V)-Total (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	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.01	0.00	<0.0015	0.00	0.00	0.00	0.00	0.00	<0.0015	<0.0015	<0.0015	<0.0015	0.00	<0.0015	0.00	0.00

Station	SNP-05-4m	SNP-05-6m	SNP-05-8m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-4m	SNP-05-9m	SNP-05-7m	SNP-05-9m	SNP-05-5m	SNP-05-5m	SNP-05-4m	SNP-05-4m	SNP-05-7m
Date	9-Jan-2023	9-Feb-2023	9-Feb-2023	9-Mar-2023	9-Apr-2023	28-May-2023	21-Jun-2023	24-Jul-2023	24-Jul-2023	7-Aug-2023	7-Aug-2023	17-Sep-2023	11-Oct-2023	16-Nov-2023	10-Dec-2023	10-Dec-2023
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
Aluminum (Al)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Antimony (Sb)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.00010	<0.00010	<0.00010	<0.00010	0.00	<0.00010	<0.00010	0.00	0.00	<0.00010	<0.00010
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
Barium (Ba)-Dissolved (mg/L)	0.14	0.16	0.17	0.16	0.16	0.12	0.13	0.13	0.13	0.14	0.13	0.13	0.13	0.13	0.14	0.14
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<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
Boron (B)-Dissolved (mg/L)	0.75	0.85	0.86	0.81	0.78	0.74	0.61	0.75	0.75	0.66	0.66	0.65	0.78	0.70	0.74	0.72
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
Calcium (Ca)-Dissolved (mg/L)	111.00	116.00	120.00	115.00	120.00	97.60	99.20	118.00	120.00	106.00	117.00	114.00	126.00	129.00	132.00	131.00
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
Chromium (Cr)-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
Cobalt (Co)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.000050	<0.000050	0.00	<0.000050	0.00	0.00	<0.000050	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
Iron (Fe)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
Lithium (Li)-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
Magnesium (Mg)-Dissolved (mg/L)	32.10	33.40	34.60	34.00	36.90	27.70	27.40	31.40	31.50	31.40	32.20	34.00	36.70	37.20	37.90	37.70
Manganese (Mn)-Dissolved (mg/L)	0.01	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000100	<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)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel (Ni)-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	0.01	0.01	0.01
Phosphorus - Dissolved (mg/L)	<0.010															
Potassium (K)-Dissolved (mg/L)	22.50	23.30	23.40	22.50	25.30	19.20	22.00	22.10	22.20	22.60	21.80	22.10	24.00	24.40	23.90	24.00
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.03	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	<0.000050	0.00	<0.000050	0.00	0.00	<0.000050	0.00	0.00	<0.000050	<0.000050	<0.000050	0.00	0.00	0.00	0.00
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
Sodium (Na)-Dissolved (mg/L)	90.90	90.60	93.70	103.00	100.00	77.10	86.50	97.10	95.00	102.00	98.30	107.00	112.00	119.00	111.00	110.00
Strontium (Sr)-Dissolved (mg/L)	1.58	1.68	1.68	1.63	1.74	1.40	1.44	1.52	1.48	1.70	1.67	1.93	1.94	2.06	2.11	2.05
Sulfur (S)-Dissolved (mg/L)	27.70	28.70	29.80	30.60	32.60	24.30	24.60	28.40	30.50	28.90	33.20	32.40	32.60	34.00	37.70	37.40
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
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
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
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.00	0.00	0.00	<0.000050	0.00	0.00	<0.000050	0.00	0.00
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<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
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
Vanadium (V)-Dissolved (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	<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	<0.0010	0.00	<0.0010	<0.0010	0.00	0.00	0.00	0.00
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

G05_C Summary of Sediment Quality Results at SNP-05

Station	SNP-05-Sed
Date	22-Aug-2023
Aluminum (Al) (mg/kg)	14600.00
Antimony (Sb) (mg/kg)	0.19
Arsenic (As) (mg/kg)	14.70
Barium (Ba) (mg/kg)	77.70
Beryllium (Be) (mg/kg)	0.65
Bismuth (Bi) (mg/kg)	0.30
Boron (B) (mg/kg)	29.40
Cadmium (Cd) (mg/kg)	0.38
Calcium (Ca) (mg/kg)	5510.00
Chromium (Cr) (mg/kg)	31.20
Cobalt (Co) (mg/kg)	15.20
Copper (Cu) (mg/kg)	59.70
Iron (Fe) (mg/kg)	69900.00
Lead (Pb) (mg/kg)	7.02
Lithium (Li) (mg/kg)	19.30
Magnesium (Mg) (mg/kg)	5380.00
Manganese (Mn) (mg/kg)	757.00
Mercury (Hg) (mg/kg)	0.05
Molybdenum (Mo) (mg/kg)	10.10
Nickel (Ni) (mg/kg)	40.40
Phosphorous (P) (mg/kg)	1340.00
Potassium (K) (mg/kg)	2230.00
Selenium (Se) (mg/kg)	1.15
Silver (Ag) (mg/kg)	0.15
Sodium (Na) (mg/kg)	1140.00
Strontium (Sr) (mg/kg)	78.30
Thallium (Tl) (mg/kg)	0.13
Titanium (Ti) (mg/kg)	258.00
Uranium (U) (mg/kg)	4.83
Vanadium (V) (mg/kg)	41.20
Zinc (Zn) (mg/kg)	123.00
% Clay (<2um) (%)	14.20
% Sand (2.0mm - 0.05mm) (%)	54.20
% Silt (0.05mm - 2um) (%)	31.50
Texture	Sandy Loam
Inorganic Carbon (%)	0.14
Total Organic Carbon (%)	11.40
Sulfur (S) (mg/kg)	2800.00
% Organic Matter	19.60
carbon, total (TC) (%)	11.50

G05_D Water Surface Elevations at SNP-05 (Water Mangement Pond)

Date	Monthly Average Water Elevation (masl)
Jan-2023	417.54
Feb-2023	417.38
Mar-2023	417.20
Apr-2023	417.05
May-2023	417.36
Jun-2023	417.51
Jul-2023	417.71
Aug-2023	417.91
Sep-2023	418.11
Oct-2023	418.32
Nov-2023	418.26
Dec-2023	418.12

G06 Summary of Sampling Requirements and Sample Dates at SNP 06 in 2023

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 2023
		Sediment (once a year, in the fall)	Total phosphorus, total/inorganic/organic carbon, total metals, extractable petroleum hydrocarbons, %sand, %silt, %clay	22-Aug

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	9-Jan-2023	100.82	13.88	7.26	1,521.16	0.09	0.00	0.00	5.75
SNP-06-1m	9-Jan-2023	101.24	13.87	7.27	1,517.22	0.25	0.00	0.00	5.75
SNP-06-2m	9-Jan-2023	101.42	13.77	7.27	1,506.08	0.58	0.00	0.00	5.75
SNP-06-3m	9-Jan-2023	99.60	13.39	7.27	1,496.91	0.93	0.00	0.00	5.75
SNP-06-4m	9-Jan-2023	97.18	12.96	7.26	1,489.23	1.22	0.00	0.00	5.75
SNP-06-5m	9-Jan-2023	69.34	9.12	7.14	1,653.13	1.69	0.00	0.00	5.75
SNP-06-2m	9-Feb-2023	97.43	13.35	7.24	1,537.45	0.30	0.00	0.00	5.50
SNP-06-3m	9-Feb-2023	96.58	12.98	7.16	1,539.06	0.98	0.00	0.00	5.50
SNP-06-4m	9-Feb-2023	92.25	12.35	7.11	1,572.41	1.13	0.00	0.00	5.50
SNP-06-5m	9-Feb-2023	43.92	5.77	6.86	1,771.03	1.83	0.00	0.00	5.50
SNP-06-0.3m	9-Feb-2023	95.63	13.08	6.97	1,559.92	0.30	0.00	0.00	5.50
SNP-06-1m	9-Feb-2023	96.91	13.26	7.03	1,558.89	0.32	0.00	0.00	5.50
SNP-06-0.3m	9-Mar-2023	86.91	11.87	7.12	1,625.17	0.78	0.00	0.00	4.55
SNP-06-1m	9-Mar-2023	87.95	11.91	7.15	1,611.61	1.05	0.00	0.00	4.55
SNP-06-2m	9-Mar-2023	89.98	12.23	7.19	1,633.88	0.96	0.00	0.00	4.55
SNP-06-3m	9-Mar-2023	87.08	11.78	7.17	1,629.57	1.19	0.00	0.00	4.55
SNP-06-4m	9-Mar-2023	83.28	11.24	7.15	1,667.63	1.27	0.00	0.00	4.55
SNP-06-0.3m	9-Apr-2023	85.51	11.57	7.13	1,655.96	0.62	0.00	0.00	3.15
SNP-06-1m	9-Apr-2023	86.14	11.60	7.12	1,663.13	0.83	0.00	0.00	3.15
SNP-06-2m	9-Apr-2023	85.16	11.40	7.10	1,673.08	1.04	0.00	0.00	3.15
SNP-06-3m	9-Apr-2023	77.84	10.36	7.03	1,674.77	1.30	0.00	0.00	3.15
SNP-06-0.3m	28-May-2023	107.36	11.82	7.61	1,222.83	7.88	0.60	0.40	
SNP-06-1m	28-May-2023	107.47	11.84	7.60	1,222.31	7.89	0.28	0.12	
SNP-06-2m	28-May-2023	107.31	11.82	7.48	1,221.16	7.90	0.43	0.28	
SNP-06-3m	28-May-2023	107.26	11.80	7.41	1,221.09	7.90	0.30	0.19	
SNP-06-4m	28-May-2023	107.15	11.80	7.37	1,220.58	7.92	0.52	0.34	
SNP-06-5m	28-May-2023	107.24	11.82	7.40	1,220.93	7.90	0.37	0.24	
SNP-06-6m	28-May-2023	107.16	11.81	7.48	1,220.59	7.92	0.66	0.43	
SNP-06-0.3m	21-Jun-2023	110.50	10.73	7.78	1,261.06	14.24	0.00	0.00	
SNP-06-1m	21-Jun-2023	109.92	10.72	7.79	1,262.48	14.00	0.00	0.00	
SNP-06-2m	21-Jun-2023	108.90	10.81	7.76	1,258.95	13.18	0.00	0.00	
SNP-06-3m	21-Jun-2023	110.12	11.05	7.67	1,258.41	12.70	0.00	0.00	
SNP-06-4m	21-Jun-2023	110.45	11.16	7.66	1,258.52	12.40	0.00	0.00	
SNP-06-5m	21-Jun-2023	111.09	11.26	7.64	1,259.50	12.26	0.00	0.00	
SNP-06-0.3m	25-Jul-2023	104.64	9.36	8.73	1,361.60	18.28	0.00	0.00	
SNP-06-1m	25-Jul-2023	104.64	9.35	8.63	1,361.47	18.32	0.00	0.00	
SNP-06-2m	25-Jul-2023	104.51	9.34	8.54	1,361.63	18.33	0.00	0.00	
SNP-06-3m	25-Jul-2023	104.62	9.35	8.48	1,361.58	18.34	0.00	0.00	
SNP-06-4m	25-Jul-2023	104.47	9.34	8.44	1,361.50	18.34	0.00	0.00	
SNP-06-5m	25-Jul-2023	104.39	9.33	8.47	1,361.57	18.35	0.00	0.00	
SNP-06-0.3m	7-Aug-2023	103.40	9.60	7.96	1,415.53	16.76	0.00	0.00	
SNP-06-1m	7-Aug-2023	103.44	9.60	7.89	1,415.67	16.76	0.00	0.00	
SNP-06-2m	7-Aug-2023	103.30	9.59	7.85	1,415.94	16.75	0.00	0.00	
SNP-06-3m	7-Aug-2023	103.21	9.58	7.85	1,415.96	16.75	0.00	0.00	
SNP-06-4m	7-Aug-2023	103.27	9.59	7.88	1,416.50	16.74	0.00	0.00	
SNP-06-5m	7-Aug-2023	103.21	9.59	7.97	1,416.29	16.75	0.00	0.00	
SNP-06-6m	7-Aug-2023	103.21	9.59	7.98	1,416.42	16.74	0.00	0.00	
SNP-06-0.3m	17-Sep-2023	101.86	10.62	7.87	1,612.79	10.54	0.00	0.00	
SNP-06-1m	17-Sep-2023	101.96	10.63	7.85	1,612.62	10.54	0.00	0.00	
SNP-06-2m	17-Sep-2023	101.86	10.63	7.77	1,612.92	10.53	0.00	0.00	

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-06-3m	17-Sep-2023	101.90	10.63	7.76	1,612.60	10.54	0.00	0.00	
SNP-06-4m	17-Sep-2023	101.79	10.61	7.76	1,612.13	10.55	0.00	0.00	
SNP-06-5m	17-Sep-2023	101.78	10.62	7.78	1,612.80	10.54	0.00	0.00	
SNP-06-0.3m	11-Oct-2023	102.72	12.11	7.51	1,578.61	5.64	0.00	0.00	
SNP-06-1m	11-Oct-2023	102.86	12.13	7.53	1,580.02	5.62	0.00	0.00	
SNP-06-2m	11-Oct-2023	102.82	12.13	7.51	1,580.44	5.60	0.00	0.00	
SNP-06-3m	11-Oct-2023	102.80	12.12	7.51	1,579.70	5.62	0.00	0.00	
SNP-06-4m	11-Oct-2023	102.70	12.12	7.52	1,579.12	5.63	0.00	0.00	
SNP-06-5m	11-Oct-2023	102.74	12.14	7.55	1,580.71	5.59	0.00	0.00	
SNP-06-6m	11-Oct-2023	102.84	12.14	7.58	1,580.28	5.61	0.00	0.00	
SNP-06-0.3m	16-Nov-2023	103.24	13.70	7.70	1,706.46	0.97	0.00	0.00	6.40
SNP-06-1m	16-Nov-2023	103.85	13.96	7.71	1,718.92	0.54	0.00	0.00	6.40
SNP-06-2m	16-Nov-2023	103.86	14.02	7.71	1,716.36	0.42	0.00	0.00	6.40
SNP-06-3m	16-Nov-2023	103.24	13.88	7.68	1,706.36	0.64	0.00	0.00	6.40
SNP-06-4m	16-Nov-2023	102.27	13.65	7.66	1,695.47	0.96	0.00	0.00	6.40
SNP-06-5m	16-Nov-2023	99.65	13.24	7.58	1,713.51	1.14	0.00	0.00	6.40
SNP-06-6m	16-Nov-2023	88.43	11.41	7.38	1,719.00	2.20	0.00	0.00	6.40
SNP-06-0.3m	10-Dec-2023	105.55	13.94	7.32	1,524.64	0.88	0.00	0.00	6.60
SNP-06-1m	10-Dec-2023	105.12	14.04	7.34	1,527.62	0.53	0.00	0.00	6.60
SNP-06-2m	10-Dec-2023	104.90	13.97	7.36	1,521.43	0.65	0.00	0.00	6.60
SNP-06-3m	10-Dec-2023	104.60	13.84	7.34	1,515.95	0.89	0.00	0.00	6.60
SNP-06-4m	10-Dec-2023	100.46	13.20	7.27	1,518.52	1.14	0.00	0.00	6.60
SNP-06-5m	10-Dec-2023	97.72	12.76	7.20	1,532.58	1.35	0.00	0.00	6.60
SNP-06-6m	10-Dec-2023	84.44	10.76	6.99	1,581.46	2.29	0.00	0.00	6.60

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-06-3m	SNP-06-2m	SNP-06-5m	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-2m	SNP-06-5m
Date	9-Jan-2023	9-Feb-2023	9-Feb-2023	9-Mar-2023	9-Apr-2023	28-May-2023	21-Jun-2023	25-Jul-2023	7-Aug-2023	17-Sep-2023	11-Oct-2023	16-Nov-2023	10-Dec-2023	10-Dec-2023
Conductivity (µS/cm)	1490.00	1460.00	1510.00	1540.00	1970.00	1250.00	1250.00	1400.00	1460.00	1550.00	1580.00	1700.00	1770.00	1770.00
pH (pH units)	7.61	7.52	7.53	7.53	7.58	7.58	7.50	7.67	7.59	7.66	7.63	7.63	7.51	7.59
Total Suspended Solids (mg/L)	<1.0	1.60	<1.0	<1.0	3.10	2.70	<1.0	<1.0	1.70	1.40	<1.0	<1.0	<1.0	<1.0
Turbidity (NTU)	0.21	0.31	0.17	0.29	0.42	0.42	0.34	0.34	0.40	0.98	0.48	0.28	0.22	0.22
Alkalinity, Bicarbonate (mg/L)	31.50	32.00	32.70	33.90	35.70	27.50	28.80	28.40	29.20	30.90	30.40	32.00	33.50	33.80
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	<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
Alkalinity, Total (mg/L)	31.50	32.00	32.70	33.90	35.70	27.50	28.80	28.40	29.20	30.90	30.40	32.00	33.50	33.80
Calcium (Ca)-Total (mg/L)	113.00	118.00	116.00	120.00	121.00	84.80	104.00	113.00	111.00	117.00	123.00	126.00	139.00	140.00
Chloride (mg/L)	324.00	328.00	354.00	386.00	369.00	296.00	300.00	334.00	356.00	376.00	404.00	420.00	432.00	431.00
Fluoride (mg/L)	0.43	0.37	0.39	0.40	0.37	0.38	0.33	0.38	0.39	0.38	0.36	0.41	0.35	0.35
Hardness (as CaCO3) (mg/L)	418.00	448.00	456.00	436.00	457.00	363.00	361.00	415.00	398.00	440.00	449.00	485.00	486.00	486.00
Magnesium (Mg)-Total (mg/L)	32.60	34.40	33.80	35.90	35.30	25.80	28.90	33.60	29.90	33.20	35.10	35.80	39.60	39.60
Potassium (K)-Total (mg/L)	22.20	22.70	22.70	23.40	24.80	18.40	20.60	22.60	20.30	21.80	21.80	22.90	25.10	24.90
Silicate (as SiO2) (mg/L)	1.35	1.30	1.37	1.61	1.83	1.57	1.14	1.11	1.26	1.57	1.50	1.69	1.93	2.08
Sodium (Na)-Total (mg/L)	89.40	91.30	92.10	107.00	98.70	72.20	80.70	104.00	93.60	107.00	116.00	116.00	126.00	125.00
Sulfate (mg/L)	79.30	78.20	84.20	88.80	89.90	68.80	64.50	70.40	78.20	80.40	89.50	95.70	99.30	99.50
TDS (mg/L)	963.00	1430.00	988.00	955.00	1080.00	929.00	1200.00	1280.00	962.00	1280.00	1340.00	1040.00	1210.00	1190.00
Ammonia, Total (as N) (mg/L)	0.13	0.13	0.12	0.12	0.13	0.12	0.09	0.05	0.03	0.03	0.02	0.06	0.06	0.05
Nitrate and Nitrite (mg/L)	15.40	15.60	16.80	18.30	17.40	12.70	12.20	11.60	11.40	10.70	10.80	11.20	11.60	11.60
Nitrate as Nitrogen (mg/L)	15.40	15.50	16.70	18.30	17.40	12.70	12.20	11.60	11.40	10.70	10.80	11.20	11.60	11.60
Nitrite as Nitrogen (mg/L)	0.02	0.07	0.07	0.02	0.02	0.03	0.04	0.05	0.05	0.03	0.02	0.02	0.02	0.02
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	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.00	<0.0020	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00	0.00	0.00	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	<0.0020	0.00	0.00	<0.0010	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	0.00	<0.0020	<0.0010	<0.0010	0.00	<0.0010	<0.0010	<0.0010
Phosphorus - 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	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.40	0.27	0.33	0.38	0.44	0.08	0.27	0.33	0.32	0.39	0.38	0.36	0.43	0.41
Total Organic Carbon (mg/L)	2.92	2.50	2.56	2.58	2.58	1.71	1.81	2.11	2.60	2.68	2.58	2.54	2.53	2.37
Aluminum (Al)-Total (mg/L)	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Antimony (Sb)-Total (mg/L)	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
Barium (Ba)-Total (mg/L)	0.15	0.16	0.15	0.17	0.17	0.11	0.11	0.13	0.12	0.13	0.13	0.14	0.14	0.14
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<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
Boron (B)-Total (mg/L)	0.79	0.88	0.90	0.98	0.84	0.57	0.75	0.78	0.70	0.67	0.71	0.75	0.88	0.90
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
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
Chromium (Cr)-Total (mg/L)	<0.00010	0.00	<0.00010	0.00	0.00	<0.00010	0.00	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00	0.00
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
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
Iron (Fe)-Total (mg/L)	0.01	0.01	0.01	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
Lead (Pb)-Total (mg/L)	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<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	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Manganese (Mn)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.02
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.00	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Station	SNP-06-3m	SNP-06-2m	SNP-06-5m	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-2m	SNP-06-5m
Date	9-Jan-2023	9-Feb-2023	9-Feb-2023	9-Mar-2023	9-Apr-2023	28-May-2023	21-Jun-2023	25-Jul-2023	7-Aug-2023	17-Sep-2023	11-Oct-2023	16-Nov-2023	10-Dec-2023	10-Dec-2023
Nickel (Ni)-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	0.01	0.01
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
Selenium (Se)-Total (mg/L)	<0.000050	0.00	0.00	0.00	0.00	0.00	<0.000050	0.00	0.00	<0.000050	0.00	0.00	0.00	0.00
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
Strontium (Sr)-Total (mg/L)	1.59	1.68	1.67	1.65	1.70	1.18	1.42	1.58	1.69	1.80	1.99	2.09	2.33	2.33
Sulfur (S)-Total (mg/L)	28.20	31.30	30.10	33.40	32.90	23.80	23.70	31.60	28.30	33.20	33.30	37.80	38.70	38.60
Tellurium (Te)-Total (mg/L)	0.00	<0.00020	<0.00020	0.00	<0.00020	<0.00020	<0.00020	0.00	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-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
Thorium (Th)-Total (mg/L)	<0.00010	0.00	<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	<0.000050	0.00	0.00	<0.000050	0.00	0.00	<0.000050	<0.000050	<0.000050
Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	0.00	0.00	0.00	<0.00030	<0.00030	<0.00030	<0.00030	0.00	<0.00030	<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
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
Vanadium (V)-Total (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	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0015	0.00	0.00	0.00	0.00	<0.0015	<0.0015	<0.0015	0.00	<0.0015	0.00	<0.0015	0.00	0.00
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
Aluminum (Al)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Antimony (Sb)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	<0.00010	<0.00010	0.00	0.00	0.00	<0.00010	0.00	0.00	<0.00010
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
Barium (Ba)-Dissolved (mg/L)	0.15	0.16	0.16	0.17	0.16	0.12	0.13	0.13	0.14	0.13	0.13	0.13	0.14	0.14
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<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
Boron (B)-Dissolved (mg/L)	0.78	0.88	0.92	0.83	0.82	0.66	0.60	0.73	0.68	0.61	0.67	0.76	0.70	0.71
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
Calcium (Ca)-Dissolved (mg/L)	114.00	122.00	126.00	116.00	123.00	99.40	98.70	116.00	108.00	121.00	123.00	131.00	132.00	133.00
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
Chromium (Cr)-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
Cobalt (Co)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.000050	<0.000050	<0.000050	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
Iron (Fe)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
Lithium (Li)-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
Magnesium (Mg)-Dissolved (mg/L)	32.40	34.70	34.30	35.50	36.40	27.80	27.80	30.50	31.30	33.50	34.40	38.30	38.00	37.40
Manganese (Mn)-Dissolved (mg/L)	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	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
Molybdenum (Mo)-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	0.01	0.01	0.01
Nickel (Ni)-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	0.01	0.00
Phosphorus - Dissolved (mg/L)	<0.010													
Potassium (K)-Dissolved (mg/L)	23.10	24.30	24.30	23.20	25.80	19.70	21.70	22.10	23.20	22.10	23.50	25.10	24.20	23.70
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.03	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	0.00	<0.000050	0.00	<0.000050	<0.000050	<0.000050	<0.000050	0.00	<0.000050	0.00	0.00
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
Sodium (Na)-Dissolved (mg/L)	90.10	95.30	96.60	106.00	101.00	76.30	86.00	96.20	101.00	104.00	110.00	122.00	113.00	110.00
Strontium (Sr)-Dissolved (mg/L)	1.69	1.72	1.66	1.59	1.71	1.32	1.39	1.56	1.71	1.84	2.01	2.10	2.13	2.07
Sulfur (S)-Dissolved (mg/L)	29.20	29.90	30.00	30.80	33.40	24.60	23.90	27.60	29.20	29.60	32.10	34.30	37.60	37.90
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
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
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
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00	0.00	<0.000050	0.00	0.00	<0.000050	<0.000050	<0.000050

Station	SNP-06-3m	SNP-06-2m	SNP-06-5m	SNP-06-2m	SNP-06-2m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-3m	SNP-06-2m	SNP-06-5m
Date	9-Jan-2023	9-Feb-2023	9-Feb-2023	9-Mar-2023	9-Apr-2023	28-May-2023	21-Jun-2023	25-Jul-2023	7-Aug-2023	17-Sep-2023	11-Oct-2023	16-Nov-2023	10-Dec-2023	10-Dec-2023
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<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
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
Vanadium (V)-Dissolved (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	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00	0.00	0.00
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<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	<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	<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	<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	<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	<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	<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	<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	<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	<0.00075	<0.00075

G06_C Summary of Sediment Quality Results at SNP-06

Station	SNP-06-Sed
Date	22-Aug-2023
Aluminum (Al) (mg/kg)	16500.00
Antimony (Sb) (mg/kg)	<0.10
Arsenic (As) (mg/kg)	9.99
Barium (Ba) (mg/kg)	87.10
Beryllium (Be) (mg/kg)	0.72
Bismuth (Bi) (mg/kg)	0.33
Boron (B) (mg/kg)	22.60
Cadmium (Cd) (mg/kg)	0.43
Calcium (Ca) (mg/kg)	4100.00
Chromium (Cr) (mg/kg)	33.80
Cobalt (Co) (mg/kg)	15.80
Copper (Cu) (mg/kg)	66.40
Iron (Fe) (mg/kg)	54100.00
Lead (Pb) (mg/kg)	4.91
Lithium (Li) (mg/kg)	19.00
Magnesium (Mg) (mg/kg)	3900.00
Manganese (Mn) (mg/kg)	463.00
Mercury (Hg) (mg/kg)	0.03
Molybdenum (Mo) (mg/kg)	6.78
Nickel (Ni) (mg/kg)	36.70
Phosphorous (P) (mg/kg)	1680.00
Potassium (K) (mg/kg)	2040.00
Selenium (Se) (mg/kg)	1.22
Silver (Ag) (mg/kg)	0.15
Sodium (Na) (mg/kg)	850.00
Strontium (Sr) (mg/kg)	55.40
Thallium (Tl) (mg/kg)	0.16
Titanium (Ti) (mg/kg)	272.00
Uranium (U) (mg/kg)	3.43
Vanadium (V) (mg/kg)	47.00
Zinc (Zn) (mg/kg)	139.00
% Clay (<2um) (%)	16.50
% Sand (2.0mm - 0.05mm) (%)	57.50
% Silt (0.05mm - 2um) (%)	26.00
Texture	Sandy Loam
Inorganic Carbon (%)	0.12
Total Organic Carbon (%)	11.90
Sulfur (S) (mg/kg)	2600.00
% 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-2023	417.54
Feb-2023	417.38
Mar-2023	417.20
Apr-2023	417.05
May-2023	417.36
Jun-2023	417.51
Jul-2023	417.71
Aug-2023	417.91
Sep-2023	418.11
Oct-2023	418.32
Nov-2023	418.26
Dec-2023	418.12

G07 Summary of Sampling Requirements and Sample Dates at SNP 07 in 2023

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 16, February 13, March 6, April 4, May 3, June 5, July 5, August 1, September 14, October 5, November 1, December 6

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	16-Jan-2023	71.89	5.55	7.46	838.73	25.54	0.00	0.00
SNP-07	13-Feb-2023	84.51	6.43	7.60	1,112.74	25.55	0.52	0.34
SNP-07	6-Mar-2023	62.03	4.96	7.35	1,115.16	24.65	0.00	0.00
SNP-07	4-Apr-2023	79.96	6.38	7.36	1,059.92	24.22	0.00	0.00
SNP-07	3-May-2023	85.54	6.73	7.20	844.80	24.58	4.84	3.12
SNP-07	5-Jun-2023	82.14	6.26	6.99	909.62	26.66	0.00	0.00
SNP-07	5-Jul-2023	73.53	5.46	7.26	1,032.78	28.61	5.73	3.70
SNP-07	1-Aug-2023	78.76	5.91	7.02	1,134.72	27.16	0.00	0.00
SNP-07	14-Sep-2023	76.25	5.83	7.80	1,188.07	25.29	0.00	0.00
SNP-07	5-Oct-2023	82.77	6.42	7.34	939.73	25.18	0.00	0.00
SNP-07	1-Nov-2023	48.87	3.71	7.45	1,012.59	26.61	0.00	0.00
SNP-07	6-Dec-2023	75.30	5.68	7.29	1,160.73	26.37	0.00	0.00

Note:
ND = No data collected due to sampler error.

G07_B Summary of Treated Effluent 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		**16-Jan-2023**	**13-Feb-2023**	**6-Mar-2023**	**4-Apr-2023**	**3-May-2023**	**5-Jun-2023**	**5-Jul-2023**	**1-Aug-2023**	**14-Sep-2023**	**5-Oct-2023**	**1-Nov-2023**	**6-Dec-2023**
Conductivity (µS/cm)		855	1100	1080	1070	862	884	1000	1160	1090	946	1030	1130
pH (pH units)		8.10	7.93	8.01	8.06	7.38	7.54	8.00	7.48	8.47	8.04	8.15	8.12
Total Suspended Solids (mg/L)		1.1	1	<1.0	<1.0	<1.0	3.8	<1.0	1.4	<1.0	1.5	<1.0	<1.0
Turbidity (NTU)		0.25	0.31	0.32	0.22	0.32	0.15	0.33	0.82	0.45	0.29	0.19	0.22
Ammonia, Total (as N) (mg/L)		1.06	0.07	2.11	0.02	0.06	0.02	0.27	0.53	0.02	0.02	7.77	0.0228
BOD (mg/L)		3	2	2	10	2	<2.0	<2.0	<2.0	3.00	<2.0	3	<2.0
Nitrate and Nitrite (mg/L)		7.22	7.93	11.50	18.20	20.40	14.90	21.50	18.80	8.61	17.80	9.65	31.4
Nitrate as Nitrogen (mg/L)		7.18	7.92	11.50	18.20	20.40	14.90	21.40	18.80	8.61	17.80	9.6	31.4
Nitrite as Nitrogen (mg/L)		0.05	0.01	0.0385	<0.0050	0.01	<0.0050	0.11	0.01	<0.0050	<0.0050	0.0494	0.0151
Orthophosphate-Dissolved (as P) (mg/L)		6.71	0.83	7.56	8.31	7.94	6.33	5.73	6.31	4.67	6.79	5.49	8.23
Phosph (P)-Dis Inorg (mg/L)		7.21	8.54	7.10	7.54	8.34	6.58	6.07	6.08	4.42	7.32	5.84	7.8
Phosph (P)-Dis Org (mg/L)		<0.711	<0.817	<0.688	<0.756	<0.804	<0.678	0.83	<0.610	<0.438	<0.676	<0.601	<0.763
Phosph (P)-Tot Dis (mg/L)		7.11	7.99	6.80	7.64	7.90	6.98	6.90	6.17	4.38	6.43	6.18	7.58
Phosph (P)-Tot Inorg (mg/L)		7.09	8.35	6.86	7.54	8.35	6.28	6.45	5.94	4.24	7.30	5.9	7.63
Phosphorus - Total (mg/L)		7.06	8.15	6.76	7.87	7.45	7.13	6.74	6.46	4.42	6.52	6.04	8.3
Total Kjeldahl Nitrogen (mg/L)		2.52	1.31	3.20	1.53	1.47	1.38	0.92	1.14	1.72	1.92	9.62	0.31
Total Organic Carbon (mg/L)		11.80	12.30	12.90	16.00	12.50	10.80	8.89	8.84	9.97	9.61	9.75	10.4
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	<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	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fecal Coliforms (CFU/100mL)	20	1	<1.0	<1.0	<1.0	1.00	<1.0	<1.0	<1.0	10	1	<1.0	<1.0
Total Coliform (MPN/100mL)		<1.0	<1.0	<1.0	<1.0	1.00	<1.0	<1.0	<1.0	1	<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-2023	72
2-Jan-2023	71
3-Jan-2023	82
4-Jan-2023	78
5-Jan-2023	71
6-Jan-2023	85
7-Jan-2023	90
8-Jan-2023	88
9-Jan-2023	84
10-Jan-2023	93
11-Jan-2023	91
12-Jan-2023	84
13-Jan-2023	84
14-Jan-2023	80
15-Jan-2023	77
16-Jan-2023	82
17-Jan-2023	92
18-Jan-2023	85
19-Jan-2023	86
20-Jan-2023	83
21-Jan-2023	82
22-Jan-2023	95
23-Jan-2023	96
24-Jan-2023	91
25-Jan-2023	81
26-Jan-2023	94
27-Jan-2023	80
28-Jan-2023	85
29-Jan-2023	87
30-Jan-2023	89
31-Jan-2023	88
1-Feb-2023	93
2-Feb-2023	84
3-Feb-2023	96
4-Feb-2023	89
5-Feb-2023	99
6-Feb-2023	99
7-Feb-2023	80
8-Feb-2023	88
9-Feb-2023	93
10-Feb-2023	91
11-Feb-2023	77
12-Feb-2023	88
13-Feb-2023	81
14-Feb-2023	81
15-Feb-2023	84
16-Feb-2023	93
17-Feb-2023	92
18-Feb-2023	85
19-Feb-2023	78
20-Feb-2023	98
21-Feb-2023	92
22-Feb-2023	78
23-Feb-2023	98
24-Feb-2023	91
25-Feb-2023	93
26-Feb-2023	95
27-Feb-2023	96
28-Feb-2023	84
1-Mar-2023	101

Date	Daily Effluent Volume (m^3)
2-Mar-2023	92
3-Mar-2023	85
4-Mar-2023	83
5-Mar-2023	101
6-Mar-2023	93
7-Mar-2023	102
8-Mar-2023	92
9-Mar-2023	92
10-Mar-2023	84
11-Mar-2023	82
12-Mar-2023	84
13-Mar-2023	85
14-Mar-2023	93
15-Mar-2023	101
16-Mar-2023	88
17-Mar-2023	84
18-Mar-2023	77
19-Mar-2023	93
20-Mar-2023	80
21-Mar-2023	91
22-Mar-2023	82
23-Mar-2023	88
24-Mar-2023	87
25-Mar-2023	86
26-Mar-2023	88
27-Mar-2023	90
28-Mar-2023	85
29-Mar-2023	83
30-Mar-2023	90
31-Mar-2023	89
1-Apr-2023	87
2-Apr-2023	86
3-Apr-2023	90
4-Apr-2023	80
5-Apr-2023	98
6-Apr-2023	78
7-Apr-2023	88
8-Apr-2023	79
9-Apr-2023	80
10-Apr-2023	80
11-Apr-2023	80
12-Apr-2023	70
13-Apr-2023	100
14-Apr-2023	78
15-Apr-2023	83
16-Apr-2023	84
17-Apr-2023	75
18-Apr-2023	97
19-Apr-2023	72
20-Apr-2023	84
21-Apr-2023	74
22-Apr-2023	78
23-Apr-2023	78
24-Apr-2023	91
25-Apr-2023	67
26-Apr-2023	97
27-Apr-2023	93
28-Apr-2023	95
29-Apr-2023	97
30-Apr-2023	90

Date	Daily Effluent Volume (m^3)
1-May-2023	93
2-May-2023	85
3-May-2023	90
4-May-2023	73
5-May-2023	79
6-May-2023	89
7-May-2023	88
8-May-2023	86
9-May-2023	71
10-May-2023	87
11-May-2023	77
12-May-2023	84
13-May-2023	79
14-May-2023	75
15-May-2023	95
16-May-2023	86
17-May-2023	68
18-May-2023	86
19-May-2023	80
20-May-2023	87
21-May-2023	75
22-May-2023	81
23-May-2023	77
24-May-2023	98
25-May-2023	98
26-May-2023	82
27-May-2023	76
28-May-2023	82
29-May-2023	78
30-May-2023	84
31-May-2023	88
1-Jun-2023	97
2-Jun-2023	68
3-Jun-2023	81
4-Jun-2023	80
5-Jun-2023	91
6-Jun-2023	82
7-Jun-2023	87
8-Jun-2023	101
9-Jun-2023	77
10-Jun-2023	99
11-Jun-2023	100
12-Jun-2023	104
13-Jun-2023	94
14-Jun-2023	92
15-Jun-2023	88
16-Jun-2023	83
17-Jun-2023	89
18-Jun-2023	91
19-Jun-2023	97
20-Jun-2023	89
21-Jun-2023	92
22-Jun-2023	84
23-Jun-2023	91
24-Jun-2023	79
25-Jun-2023	92
26-Jun-2023	84
27-Jun-2023	87
28-Jun-2023	103
29-Jun-2023	93

Date	Daily Effluent Volume (m^3)
30-Jun-2023	86
1-Jul-2023	83
2-Jul-2023	85
3-Jul-2023	74
4-Jul-2023	89
5-Jul-2023	82
6-Jul-2023	100
7-Jul-2023	86
8-Jul-2023	99
9-Jul-2023	108
10-Jul-2023	86
11-Jul-2023	91
12-Jul-2023	93
13-Jul-2023	86
14-Jul-2023	86
15-Jul-2023	80
16-Jul-2023	77
17-Jul-2023	85
18-Jul-2023	84
19-Jul-2023	85
20-Jul-2023	90
21-Jul-2023	90
22-Jul-2023	86
23-Jul-2023	80
24-Jul-2023	92
25-Jul-2023	92
26-Jul-2023	99
27-Jul-2023	89
28-Jul-2023	88
29-Jul-2023	84
30-Jul-2023	111
31-Jul-2023	83
1-Aug-2023	84
2-Aug-2023	99
3-Aug-2023	84
4-Aug-2023	89
5-Aug-2023	85
6-Aug-2023	80
7-Aug-2023	83
8-Aug-2023	86
9-Aug-2023	91
10-Aug-2023	79
11-Aug-2023	71
12-Aug-2023	75
13-Aug-2023	72
14-Aug-2023	82
15-Aug-2023	76
16-Aug-2023	80
17-Aug-2023	91
18-Aug-2023	67
19-Aug-2023	75
20-Aug-2023	73
21-Aug-2023	74
22-Aug-2023	69
23-Aug-2023	83
24-Aug-2023	80
25-Aug-2023	81
26-Aug-2023	71
27-Aug-2023	82
28-Aug-2023	70

Date	Daily Effluent Volume (m^3)
29-Aug-2023	80
30-Aug-2023	83
31-Aug-2023	93
1-Sep-2023	92
2-Sep-2023	83
3-Sep-2023	90
4-Sep-2023	77
5-Sep-2023	95
6-Sep-2023	92
7-Sep-2023	85
8-Sep-2023	79
9-Sep-2023	78
10-Sep-2023	84
11-Sep-2023	79
12-Sep-2023	92
13-Sep-2023	83
14-Sep-2023	89
15-Sep-2023	102
16-Sep-2023	98
17-Sep-2023	84
18-Sep-2023	96
19-Sep-2023	93
20-Sep-2023	88
21-Sep-2023	110
22-Sep-2023	94
23-Sep-2023	86
24-Sep-2023	83
25-Sep-2023	94
26-Sep-2023	92
27-Sep-2023	103
28-Sep-2023	77
29-Sep-2023	89
30-Sep-2023	84
1-Oct-2023	96
2-Oct-2023	90
3-Oct-2023	98
4-Oct-2023	119
5-Oct-2023	90
6-Oct-2023	90
7-Oct-2023	82
8-Oct-2023	85
9-Oct-2023	93
10-Oct-2023	83
11-Oct-2023	99
12-Oct-2023	90
13-Oct-2023	100
14-Oct-2023	89
15-Oct-2023	97
16-Oct-2023	89
17-Oct-2023	100
18-Oct-2023	109
19-Oct-2023	101
20-Oct-2023	87
21-Oct-2023	103
22-Oct-2023	89
23-Oct-2023	91
24-Oct-2023	102
25-Oct-2023	85
26-Oct-2023	107
27-Oct-2023	91

Date	Daily Effluent Volume (m^3)
28-Oct-2023	93
29-Oct-2023	101
30-Oct-2023	93
31-Oct-2023	109
1-Nov-2023	95
2-Nov-2023	103
3-Nov-2023	92
4-Nov-2023	102
5-Nov-2023	94
6-Nov-2023	98
7-Nov-2023	88
8-Nov-2023	98
9-Nov-2023	108
10-Nov-2023	97
11-Nov-2023	78
12-Nov-2023	76
13-Nov-2023	82
14-Nov-2023	82
15-Nov-2023	96
16-Nov-2023	101
17-Nov-2023	88
18-Nov-2023	85
19-Nov-2023	93
20-Nov-2023	77
21-Nov-2023	86
22-Nov-2023	100
23-Nov-2023	84
24-Nov-2023	82
25-Nov-2023	104
26-Nov-2023	87
27-Nov-2023	85
28-Nov-2023	90
29-Nov-2023	95
30-Nov-2023	92
1-Dec-2023	86
2-Dec-2023	85
3-Dec-2023	60
4-Dec-2023	73
5-Dec-2023	61
6-Dec-2023	72
7-Dec-2023	80
8-Dec-2023	89
9-Dec-2023	89
10-Dec-2023	89
11-Dec-2023	95
12-Dec-2023	81
13-Dec-2023	98
14-Dec-2023	95
15-Dec-2023	85
16-Dec-2023	83
17-Dec-2023	88
18-Dec-2023	94
19-Dec-2023	101
20-Dec-2023	87
21-Dec-2023	109
22-Dec-2023	101
23-Dec-2023	92
24-Dec-2023	81
25-Dec-2023	68
26-Dec-2023	55

Date	Daily Effluent Volume (m^3)
27-Dec-2023	78
28-Dec-2023	65
29-Dec-2023	66
30-Dec-2023	61
31-Dec-2023	62

Note:
NA = No data available due to monitoring equipment issues

G08 Summary of Sampling Requirements and Sample Dates at SNP 08 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-08	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously throughout 2023, when discharge is active
		Daily (when sump is active)	Physical parameters	Daily throughout 2023, when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly throughout 2023, 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 2023 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	4-Jan-2023	39.03	4.58	7.92	6,012.49	5.17	0.17	0.11
SNP-08 5034 Pit	5-Jan-2023	38.99	4.47	7.93	6,074.13	6.18	0.00	0.00
SNP-08 5034 Pit	6-Jan-2023	40.58	4.71	7.78	6,156.00	5.65	0.00	0.00
SNP-08 5034 Pit	7-Jan-2023	41.63	4.94	7.07	5,849.70	4.94	0.00	0.00
SNP-08 5034 Pit	11-Jan-2023	64.65	7.54	7.93	6,142.46	6.03	25.26	16.10
SNP-08 5034 Pit	12-Jan-2023	37.51	4.58	8.30	6,104.07	4.09	2.45	1.58
SNP-08 5034 Pit	14-Jan-2023	48.18	5.77	8.31	6,122.07	4.39	2.30	1.49
SNP-08 5034 Pit	16-Jan-2023	51.23	6.24	8.03	5,990.96	3.97	3.91	2.52
SNP-08 5034 Pit	17-Jan-2023	32.78	3.82	8.17	6,053.28	5.40	4.36	2.81
SNP-08 5034 Pit	18-Jan-2023	22.91	2.72	8.25	6,364.06	4.59	1.74	1.12
SNP-08 5034 Pit	19-Jan-2023	35.12	4.09	8.17	6,489.99	4.71	1.81	1.17
SNP-08 5034 Pit	20-Jan-2023	17.90	2.08	8.24	6,582.78	5.29	0.47	0.27
SNP-08 5034 Pit	21-Jan-2023	32.19	3.86	8.13	6,612.57	4.33	4.16	2.68
SNP-08 5034 Pit	29-Jan-2023	26.44	3.37	7.60	5,613.56	2.47	1.93	1.25
SNP-08 5034 Pit	30-Jan-2023	59.15	7.18	7.51	5,774.89	4.08	0.00	0.00
SNP-08 5034 Pit	4-Feb-2023	23.26	2.88	7.36	5,556.84	3.14	0.00	0.00
SNP-08 5034 Pit	5-Feb-2023	26.63	3.22	7.57	6,087.01	3.97	0.00	0.00
SNP-08 5034 Pit	9-Feb-2023	33.61	4.45	7.74	6,268.75	0.96	0.00	0.00
SNP-08 5034 Pit	10-Feb-2023	38.11	4.66	7.35	5,938.64	3.93	0.00	0.00
SNP-08 5034 Pit	12-Feb-2023	30.46	3.72	7.55	5,881.55	3.38	0.00	0.00
SNP-08 5034 Pit	13-Feb-2023	33.09	3.80	7.43	6,047.19	4.99	0.00	0.00
SNP-08 5034 Pit	15-Feb-2023	40.33	5.03	9.94	7,567.79	3.04	8.06	5.20
SNP-08 5034 Pit	15-Feb-2023	49.53	5.81	9.81	7,452.37	5.37	25.09	16.19
SNP-08 5034 Pit	16-Feb-2023	22.07	2.65	9.47	7,510.30	4.22	8.47	5.47
SNP-08 5034 Pit	17-Feb-2023	24.06	2.81	9.34	7,956.68	5.19	3.51	2.26
SNP-08 5034 Pit	21-Feb-2023	56.15	6.94	9.43	7,467.16	3.58	20.95	13.52
SNP-08 5034 Pit	22-Feb-2023	15.10	1.80	9.20	7,098.12	4.66	5.13	3.31
SNP-08 5034 Pit	23-Feb-2023	20.25	2.48	9.07	7,078.64	4.40	3.30	2.13
SNP-08 5034 Pit	24-Feb-2023	26.30	3.07	8.80	7,026.38	4.86	1.14	0.73
SNP-08 5034 Pit	25-Feb-2023	25.01	2.92	8.83	7,144.27	4.79	1.24	0.80
SNP-08 5034 Pit	26-Feb-2023	25.17	2.94	8.81	7,275.00	4.96	0.23	0.15
SNP-08 5034 Pit	6-Mar-2023	58.72	7.22	7.26	5,734.57	4.30	27.83	17.96
SNP-08 5034 Pit	7-Mar-2023	55.14	6.70	7.77	6,681.30	5.09	4.11	2.65
SNP-08 5034 Pit	9-Mar-2023	44.46	5.41	8.78	6,573.15	4.35	71.17	45.92
SNP-08 5034 Pit	10-Mar-2023	30.73	3.92	8.45	6,992.30	2.47	5.90	3.80
SNP-08 5034 Pit	11-Mar-2023	41.56	4.87	8.96	6,918.68	5.64	0.83	0.53
SNP-08 5034 Pit	12-Mar-2023	32.43	3.86	8.87	7,023.24	5.13	0.09	0.06
SNP-08 5034 Pit	13-Mar-2023	30.44	3.61	7.26	7,108.36	5.09	0.55	0.35
SNP-08 5034 Pit	21-Mar-2023	76.74	9.93	7.85	5,613.74	2.15	76.53	49.38
SNP-08 5034 Pit	22-Mar-2023	24.25	2.91	8.43	6,207.92	4.37	4.92	3.22
SNP-08 5034 Pit	23-Mar-2023	18.98	2.30	8.42	6,202.67	4.19	1.99	1.28
SNP-08 5034 Pit	24-Mar-2023	22.08	2.69	8.44	6,257.48	3.97	3.03	1.95

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	25-Mar-2023	15.08	1.87	8.85	6,544.38	3.73	2.08	1.34
SNP-08 5034 Pit	26-Mar-2023	21.09	2.63	9.15	5,986.30	3.79	0.93	0.60
SNP-08 5034 Pit	28-Mar-2023	30.60	3.71	8.51	7,189.89	4.30	13.11	8.46
SNP-08 5034 Pit	29-Mar-2023	25.20	2.95	8.13	7,034.30	5.44	1.00	0.64
SNP-08 5034 Pit	1-Apr-2023	41.80	4.95	6.83	7,791.49	4.94	16.24	10.48
SNP-08 5034 Pit	3-Apr-2023	18.53	2.28	8.60	7,266.85	3.59	19.79	12.77
SNP-08 5034 Pit	4-Apr-2023	24.67	2.86	8.59	7,032.11	5.94	1.45	0.94
SNP-08 5034 Pit	5-Apr-2023	45.56	5.39	7.92	7,147.27	5.07	1.65	1.07
SNP-08 5034 Pit	6-Apr-2023	28.29	3.21	8.36	7,098.56	6.59	2.44	1.52
SNP-08 5034 Pit	8-Apr-2023	54.35	6.29	8.03	6,175.33	5.21	11.10	7.16
SNP-08 5034 Pit	10-Apr-2023	42.31	4.97	8.40	6,796.56	4.74	5.23	3.37
SNP-08 5034 Pit	11-Apr-2023	34.70	4.03	8.13	6,751.04	5.34	3.39	2.19
SNP-08 5034 Pit	14-Apr-2023	50.54	6.28	8.31	6,704.46	3.46	31.45	20.29
SNP-08 5034 Pit	15-Apr-2023	28.52	3.48	8.86	6,867.61	4.24	175.50	113.22
SNP-08 5034 Pit	18-Apr-2023	34.73	4.16	8.68	6,503.14	4.87	9.67	6.24
SNP-08 5034 Pit	19-Apr-2023	33.30	3.94	9.28	6,395.52	5.77	4.75	3.04
SNP-08 5034 Pit	20-Apr-2023	35.39	4.25	9.57	6,549.11	5.40	6.53	4.21
SNP-08 5034 Pit	21-Apr-2023	38.64	4.46	9.26	6,158.94	6.75	1.53	0.99
SNP-08 5034 Pit	22-Apr-2023	47.69	5.24	9.29	6,028.96	8.35	75.27	48.56
SNP-08 5034 Pit	23-Apr-2023	41.90	4.77	9.05	4,881.18	7.08	53.86	34.75
SNP-08 5034 Pit	25-Apr-2023	43.37	4.99	9.05	5,630.77	6.30	1.67	1.08
SNP-08 5034 Pit	27-Apr-2023	45.87	5.37	8.70	4,597.03	5.77	15.98	10.32
SNP-08 5034 Pit	28-Apr-2023	47.47	5.52	8.20	4,080.76	6.06	0.10	0.06
SNP-08 5034 Pit	29-Apr-2023	54.45	6.50	8.82	4,165.18	5.44	6.08	3.92
SNP-08 5034 Pit	30-Apr-2023	55.41	6.32	8.26	4,485.42	6.85	15.20	9.80
SNP-08 5034 Pit	1-May-2023	57.04	6.50	9.02	5,445.80	6.37	17.14	11.06
SNP-08 5034 Pit	3-May-2023	48.32	5.38	8.39	5,279.24	6.89	4.72	3.05
SNP-08 5034 Pit	4-May-2023	60.73	6.78	8.32	4,468.85	6.67	89.27	57.59
SNP-08 5034 Pit	5-May-2023	96.64	11.41	8.59	4,744.37	5.76	627.12	404.58
SNP-08 5034 Pit	6-May-2023	74.60	8.33	7.79	4,588.60	7.98	157.35	101.52
SNP-08 5034 Pit	8-May-2023	69.07	7.50	7.81	3,924.22	9.00	80.32	51.81
SNP-08 5034 Pit	9-May-2023	73.46	7.88	7.60	3,888.08	9.21	183.16	118.17
SNP-08 5034 Pit	11-May-2023	77.49	8.86	8.27	4,103.13	7.03	146.10	94.29
SNP-08 5034 Pit	12-May-2023	69.66	7.67	7.95	4,277.17	8.57	24.72	15.95
SNP-08 5034 Pit	14-May-2023	53.46	5.93	7.30	5,110.98	8.15	152.93	98.67
SNP-08 5034 Pit	15-May-2023	57.77	6.51	7.22	4,993.06	7.75	0.00	0.00
SNP-08 5034 Pit	16-May-2023	66.90	7.47	7.07	4,978.04	7.74	1.24	0.80
SNP-08 5034 Pit	17-May-2023	80.53	8.86	7.83	3,810.82	8.57	7.07	4.56
SNP-08 5034 Pit	19-May-2023	51.31	5.79	7.91	5,189.49	7.12	788.05	508.42
SNP-08 5034 Pit	20-May-2023	54.32	6.40	7.57	4,777.32	5.85	53.45	34.48
SNP-08 5034 Pit	21-May-2023	58.82	6.46	7.38	4,760.15	8.10	9.83	6.34
SNP-08 5034 Pit	22-May-2023	56.52	6.32	7.43	4,829.82	7.87	3.26	2.10
SNP-08 5034 Pit	23-May-2023	57.81	6.31	8.15	4,936.30	8.82	1.12	0.72

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	24-May-2023	55.05	6.02	8.02	4,972.59	8.18	0.00	0.00
SNP-08 5034 Pit	25-May-2023	59.74	6.77	7.94	4,475.46	7.34	4.05	2.61
SNP-08 5034 Pit	26-May-2023	62.89	6.94	7.65	4,837.42	7.95	21.52	13.89
SNP-08 5034 Pit	27-May-2023	65.91	7.25	7.78	4,527.58	7.97	48.01	30.97
SNP-08 5034 Pit	28-May-2023	60.26	6.38	8.11	4,868.56	9.01	4.71	3.04
SNP-08 5034 Pit	29-May-2023	55.10	6.05	7.87	5,015.29	7.76	1.57	1.01
SNP-08 5034 Pit	30-May-2023	71.13	7.00	8.04	5,202.01	13.15	7.29	4.71
SNP-08 5034 Pit	31-May-2023	58.17	6.50	7.33	5,215.86	7.23	1.93	1.25
SNP-08 5034 Pit	1-Jun-2023	72.16	7.85	7.57	5,277.70	8.43	7.57	4.88
SNP-08 5034 Pit	2-Jun-2023	59.03	6.44	7.74	5,500.84	8.72	0.00	0.00
SNP-08 5034 Pit	3-Jun-2023	50.12	5.47	7.85	5,257.61	8.91	0.00	0.00
SNP-08 5034 Pit	4-Jun-2023	61.51	6.65	7.70	4,670.27	9.42	92.24	59.49
SNP-08 5034 Pit	5-Jun-2023	62.02	6.58	8.07	5,135.34	9.88	31.35	20.23
SNP-08 5034 Pit	6-Jun-2023	68.00	7.62	8.12	4,755.50	7.21	16.77	10.82
SNP-08 5034 Pit	7-Jun-2023	79.30	8.58	7.53	3,953.23	8.67	562.25	362.73
SNP-08 5034 Pit	8-Jun-2023	65.05	6.86	7.92	3,920.83	10.28	31.71	20.46
SNP-08 5034 Pit	9-Jun-2023	58.56	6.34	7.96	4,642.61	9.21	1.04	0.67
SNP-08 5034 Pit	10-Jun-2023	54.40	5.76	8.20	5,187.01	9.46	37.66	24.29
SNP-08 5034 Pit	11-Jun-2023	60.19	6.61	7.97	4,785.20	8.32	20.99	13.54
SNP-08 5034 Pit	12-Jun-2023	68.57	7.90	7.90	4,095.17	6.85	111.16	71.72
SNP-08 5034 Pit	13-Jun-2023	76.27	8.42	7.63	3,323.06	8.39	21.99	14.19
SNP-08 5034 Pit	14-Jun-2023	76.34	8.32	7.46	3,687.62	8.65	15.31	9.77
SNP-08 5034 Pit	15-Jun-2023	71.69	7.98	7.93	3,941.61	7.57	363.21	234.33
SNP-08 5034 Pit	17-Jun-2023	66.66	7.18	8.00	4,321.75	8.64	6.29	4.06
SNP-08 5034 Pit	18-Jun-2023	66.90	7.17	8.21	4,068.28	9.36	40.97	26.43
SNP-08 5034 Pit	19-Jun-2023	67.52	7.36	7.87	4,029.53	9.01	4.10	2.65
SNP-08 5034 Pit	21-Jun-2023	63.38	6.71	7.99	4,074.14	10.10	0.73	0.54
SNP-08 5034 Pit	22-Jun-2023	68.30	7.10	8.08	4,051.69	10.68	0.00	0.00
SNP-08 5034 Pit	23-Jun-2023	68.53	6.90	7.82	4,019.14	11.96	52.89	34.12
SNP-08 5034 Pit	24-Jun-2023	68.16	7.05	7.94	4,139.56	10.67	271.96	175.43
SNP-08 5034 Pit	25-Jun-2023	70.24	7.49	8.70	4,334.15	9.85	13.75	8.87
SNP-08 5034 Pit	28-Jun-2023	75.91	7.32	8.25	5,310.79	13.60	223.02	143.88
SNP-08 5034 Pit	30-Jun-2023	92.66	8.87	7.47	4,810.82	13.81	14.62	9.43
SNP-08 5034 Pit	1-Jul-2023	63.84	6.49	7.84	5,183.29	11.17	68.50	44.19
SNP-08 5034 Pit	2-Jul-2023	64.90	6.76	7.59	5,157.58	10.00	10.79	6.96
SNP-08 5034 Pit	3-Jul-2023	65.21	6.73	7.87	5,188.67	10.21	8.82	5.69
SNP-08 5034 Pit	4-Jul-2023	65.93	6.93	7.75	5,172.00	9.70	13.31	8.59
SNP-08 5034 Pit	5-Jul-2023	62.61	6.56	7.92	5,325.59	9.96	22.78	14.70
SNP-08 5034 Pit	6-Jul-2023	66.99	6.97	7.76	5,210.62	10.68	3.94	2.54
SNP-08 5034 Pit	8-Jul-2023	70.89	7.49	7.73	5,175.89	10.20	3.93	2.53
SNP-08 5034 Pit	9-Jul-2023	59.68	6.31	7.76	5,261.63	9.62	3.06	1.97
SNP-08 5034 Pit	10-Jul-2023	54.06	5.70	7.80	5,465.26	9.60	2.88	1.86
SNP-08 5034 Pit	13-Jul-2023	69.30	7.10	7.44	5,358.52	11.19	2.80	1.80

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	14-Jul-2023	102.10	10.70	7.64	5,421.54	10.01	1.64	1.06
SNP-08 5034 Pit	15-Jul-2023	68.76	7.15	7.62	5,415.74	10.58	5.10	3.29
SNP-08 5034 Pit	16-Jul-2023	67.33	7.12	7.67	5,527.31	10.18	5.77	3.72
SNP-08 5034 Pit	17-Jul-2023	70.45	7.18	7.86	5,661.98	12.11	7.65	4.94
SNP-08 5034 Pit	18-Jul-2023	62.49	6.58	7.53	5,546.97	11.24	4.23	2.73
SNP-08 5034 Pit	21-Jul-2023	55.79	5.46	7.96	4,816.34	13.18	4.63	2.99
SNP-08 5034 Pit	22-Jul-2023	71.33	7.19	7.22	5,170.68	12.16	0.00	0.00
SNP-08 5034 Pit	23-Jul-2023	56.86	5.58	7.77	5,363.17	13.31	10.20	6.58
SNP-08 5034 Pit	24-Jul-2023	72.23	6.90	8.20	5,229.04	14.45	8.60	5.55
SNP-08 5034 Pit	25-Jul-2023	70.65	7.23	7.23	5,259.66	11.44	0.35	0.23
SNP-08 5034 Pit	26-Jul-2023	36.19	3.58	7.75	5,613.87	13.03	1.77	1.14
SNP-08 5034 Pit	28-Jul-2023	42.72	4.28	7.00	5,474.35	12.42	0.00	0.00
SNP-08 5034 Pit	30-Jul-2023	43.16	4.29	7.59	5,857.68	12.37	28.51	18.39
SNP-08 5034 Pit	31-Jul-2023	67.01	6.57	6.59	5,095.58	13.12	9.37	6.05
SNP-08 5034 Pit	1-Aug-2023	66.31	6.47	7.70	5,363.21	13.35	0.00	0.00
SNP-08 5034 Pit	7-Aug-2023	51.66	5.49	7.74	5,285.27	10.00	11,700.43	7,548.66
SNP-08 5034 Pit	10-Aug-2023	52.42	5.20	7.51	5,667.76	12.20	77.76	50.19
SNP-08 5034 Pit	11-Aug-2023	64.73	6.52	7.52	5,558.44	11.54	34.28	22.11
SNP-08 5034 Pit	12-Aug-2023	55.21	5.61	7.50	5,484.28	11.29	9.23	5.96
SNP-08 5034 Pit	14-Aug-2023	58.30	5.96	7.31	5,926.28	10.79	1,013.58	653.92
SNP-08 5034 Pit	19-Aug-2023	84.42	8.16	7.29	6,080.63	12.41	11.91	7.68
SNP-08 5034 Pit	20-Aug-2023	91.85	9.11	7.61	5,541.17	11.53	10.38	6.70
SNP-08 5034 Pit	21-Aug-2023	77.36	7.66	8.11	5,595.35	11.73	7.61	4.91
SNP-08 5034 Pit	26-Aug-2023	58.86	6.05	6.94	4,820.35	10.02	0.00	0.00
SNP-08 5034 Pit	27-Aug-2023	52.74	5.50	7.22	5,314.41	10.43	0.00	0.00
SNP-08 5034 Pit	19-Oct-2023	85.76	9.78	7.00	4,211.81	6.27	0.00	0.00
SNP-08 5034 Pit	20-Oct-2023	88.52	9.99	7.28	4,216.33	7.35	0.00	0.00
SNP-08 5034 Pit	21-Oct-2023	87.34	9.81	6.95	4,317.57	6.90	0.36	0.23
SNP-08 5034 Pit	22-Oct-2023	103.64	12.18	7.50	4,761.54	4.74	5.98	3.86
SNP-08 5034 Pit	23-Oct-2023	98.00	11.53	7.33	4,869.49	5.68	16.30	10.52
SNP-08 5034 Pit	24-Oct-2023	107.72	12.59	7.32	4,857.37	5.63	2.59	1.62
SNP-08 5034 Pit	25-Oct-2023	108.08	12.55	7.48	4,972.73	4.80	9.37	6.05
SNP-08 5034 Pit	26-Oct-2023	108.14	13.14	7.78	4,963.12	3.60	6.26	4.04
SNP-08 5034 Pit	27-Oct-2023	87.63	10.62	7.83	4,898.87	3.41	2.11	1.36
SNP-08 5034 Pit	28-Oct-2023	86.83	10.35	7.76	4,829.70	4.86	1.76	1.14
SNP-08 5034 Pit	29-Oct-2023	85.56	10.18	7.74	4,746.75	4.06	0.71	0.46
SNP-08 5034 Pit	30-Oct-2023	73.93	8.72	7.74	5,037.97	4.81	0.00	0.00
SNP-08 5034 Pit	31-Oct-2023	70.16	8.13	7.64	5,369.88	5.49	0.00	0.00
SNP-08 5034 Pit	2-Nov-2023	67.59	7.80	7.64	5,712.29	5.71	0.18	0.11
SNP-08 5034 Pit	3-Nov-2023	52.86	5.92	7.61	6,710.80	6.36	30.94	19.96
SNP-08 5034 Pit	6-Nov-2023	42.99	4.88	8.43	6,131.48	5.90	10.56	6.81
SNP-08 5034 Pit	7-Nov-2023	38.25	4.27	8.93	7,730.89	6.69	11.24	7.25
SNP-08 5034 Pit	8-Nov-2023	45.40	5.03	8.64	6,945.22	6.42	2.97	1.91

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	11-Nov-2023	52.39	5.85	8.70	6,353.93	6.44	2.31	1.49
SNP-08 5034 Pit	12-Nov-2023	33.62	3.74	8.70	6,787.11	5.89	32.99	21.28
SNP-08 5034 Pit	14-Nov-2023	56.49	6.13	8.96	6,307.57	7.12	79.95	51.58
SNP-08 5034 Pit	15-Nov-2023	53.14	6.17	8.98	5,619.58	5.46	1.88	1.21
SNP-08 5034 Pit	16-Nov-2023	39.65	4.71	8.88	6,012.14	4.42	1.40	0.91
SNP-08 5034 Pit	17-Nov-2023	46.38	5.04	8.71	5,921.30	7.46	4.15	2.68
SNP-08 5034 Pit	18-Nov-2023	46.47	5.04	8.56	5,933.54	7.26	0.02	0.01
SNP-08 5034 Pit	19-Nov-2023	44.80	4.82	8.46	6,000.47	7.69	2.46	1.59
SNP-08 5034 Pit	20-Nov-2023	51.47	5.63	8.43	6,041.00	7.26	2.90	1.87
SNP-08 5034 Pit	23-Nov-2023	45.53	5.27	8.83	6,545.09	5.09	84.51	54.52
SNP-08 5034 Pit	24-Nov-2023	61.08	7.14	8.24	5,760.91	4.69	57.25	36.93
SNP-08 5034 Pit	25-Nov-2023	52.61	6.02	8.64	6,618.19	5.22	10.26	6.62
SNP-08 5034 Pit	26-Nov-2023	43.51	4.88	8.81	7,008.89	5.49	11.64	7.51
SNP-08 5034 Pit	27-Nov-2023	75.01	8.92	8.95	7,283.01	3.91	263.28	169.86
SNP-08 5034 Pit	29-Nov-2023	71.72	8.03	7.93	5,925.28	6.39	26.80	17.29
SNP-08 5034 Pit	30-Nov-2023	47.48	5.27	8.28	5,948.99	5.76	1.52	0.98
SNP-08 5034 Pit	1-Dec-2023	42.16	4.61	8.19	6,121.05	6.68	0.00	0.00
SNP-08 5034 Pit	2-Dec-2023	48.48	5.34	8.03	6,001.45	6.44	0.00	0.00
SNP-08 5034 Pit	7-Dec-2023	80.02	9.21	8.05	7,148.66	4.52	97.03	62.60
SNP-08 5034 Pit	8-Dec-2023	63.70	7.38	7.83	6,175.93	4.52	2.73	1.69
SNP-08 5034 Pit	9-Dec-2023	56.64	6.21	7.84	6,319.80	6.13	2.93	1.89
SNP-08 5034 Pit	10-Dec-2023	48.16	5.74	8.10	5,764.31	4.58	0.14	0.09
SNP-08 5034 Pit	11-Dec-2023	44.85	5.33	8.57	5,563.29	5.85	0.00	0.00
SNP-08 5034 Pit	12-Dec-2023	79.50	9.76	8.37	7,693.26	4.82	28.22	18.21
SNP-08 5034 Pit	13-Dec-2023	50.25	5.77	8.13	5,083.80	7.32	1.07	0.69
SNP-08 5034 Pit	14-Dec-2023	40.46	4.88	8.17	5,523.47	4.61	1.30	0.84
SNP-08 5034 Pit	15-Dec-2023	36.26	4.13	8.15	5,045.89	6.97	0.00	0.00
SNP-08 5034 Pit	16-Dec-2023	34.86	4.04	8.25	5,778.40	6.95	0.00	0.00
SNP-08 5034 Pit	17-Dec-2023	80.32	10.19	7.99	6,610.03	2.11	115.11	74.23
SNP-08 5034 Pit	18-Dec-2023	49.42	5.93	7.90	5,149.57	4.01	0.59	0.41
SNP-08 5034 Pit	19-Dec-2023	39.43	4.64	8.33	5,527.45	5.52	0.00	0.00
SNP-08 5034 Pit	20-Dec-2023	40.53	4.61	8.42	5,836.74	6.25	0.00	0.00
SNP-08 5034 Pit	21-Dec-2023	44.83	4.88	8.59	5,965.61	7.63	0.00	0.00
SNP-08 5034 Pit	24-Dec-2023	54.05	6.22	8.61	5,980.65	6.02	16.00	10.32
SNP-08 5034 Pit	25-Dec-2023	46.86	5.30	9.10	6,694.79	6.43	2.67	1.72
SNP-08 5034 Pit	29-Dec-2023	82.66	9.99	7.86	6,013.57	4.38	304.95	196.74
SNP-08 5034 Pit	30-Dec-2023	54.52	6.61	8.39	6,598.44	4.08	43.94	28.33
SNP-08 5034 Pit	31-Dec-2023	53.30	5.96	8.66	6,456.14	6.52	10.39	6.70

G08_B Summary of Weekly and Monthly Water Quality Results at SNP-08

Date	3-Jan-2023	11-Jan-2023	16-Jan-2023	29-Jan-2023	5-Feb-2023	9-Feb-2023	13-Feb-2023	21-Feb-2023	7-Mar-2023	13-Mar-2023	21-Mar-2023
Conductivity (µS/cm)	5780	6140	5850	5620	5690	5730	5990	7330	6430	7080	5810
pH (pH units)	7.80	7.77	7.75	7.73	7.83	7.78	7.74	7.89	7.97	7.15	7.60
Total Suspended Solids (mg/L)	14.10	10.10	2.1	<1.0	<1.0	1	1	24.90	1.9	2.2	80.2
Turbidity (NTU)	10.20	5.57	0.88	1.22	0.21	0.92	0.32	19.20	1.26	0.86	48.70
Alkalinity, Bicarbonate (mg/L)	49.60	44.90	48.90	54.60	55.60	54.30	52.70	18.10	23.60	24.90	47.50
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)	49.60	44.90	48.90	54.60	55.60	54.30	52.70	18.10	23.60	24.90	47.50
Calcium (Ca)-Total (mg/L)	513				473				606		
Chloride (mg/L)	1720	1840	1790	1500	1680	1720	1880	2390	2060	2270	1780
Fluoride (mg/L)	0.48	<0.500	<0.500	0.594	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Hardness (as CaCO3) (mg/L)	1540	1660	1610	1580	1460	1500	1610	2040	1990	1970	1550
Magnesium (Mg)-Total (mg/L)	80.40				74				65.1		
Potassium (K)-Total (mg/L)	18.30				14.3				30.5		
Silicate (as SiO2) (mg/L)	9.89	9.65	10.40	11.20	10.70	10.20	9.37	4.62	6.94	6.70	10.20
Sodium (Na)-Total (mg/L)	497				503				548		
Sulfate (mg/L)	269	266	242	241	259	226	255	212	213	248	208
TDS (mg/L)	3460	4650	3260	3550	3440	3310	3690	4300	4000	4220	3400
Ammonia, Total (as N) (mg/L)	7.39	5.39	4.58	3.11	5.45	6.18	5.73	13.80	7.17	7.92	3.46
Nitrate and Nitrite (mg/L)	1.85	1.45	1.29	3.33	5.41	6.21	6.18	11.60	3.84	6.10	1.86
Nitrate as Nitrogen (mg/L)	1.08	1.05	0.90	3.08	5.04	5.74	5.66	11.40	3.74	5.72	1.77
Nitrite as Nitrogen (mg/L)	0.77	0.40	0.38	0.25	0.37	0.47	0.52	0.21	0.10	0.39	0.09
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0018	<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	0.00	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.0039	<0.0020	<0.0020	0.002	<0.0020	0.0024	0.0022	<0.0020	0.0026	0.0023	0.0021
Phosph (P)-Tot Dis (mg/L)	0.00	<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)	0.02	0.01	0.00	<0.0010	<0.0010	<0.0010	<0.0010	0.02	0.00	0.0031	0.07
Phosphorus - Total (mg/L)	0.02	0.02	0.00	0.00	<0.0010	0.00	0.01	4.96	0.00	0.00	0.07
Total Kjeldahl Nitrogen (mg/L)	7.22	4.95	4.53	3.16	5.36	6.45	5.93	15.10	7.36	8.55	3.83
Total Organic Carbon (mg/L)	2.59	1.97	1.91	2.17	2.11	2.12	2.57	2.93	1.88	1.82	2.52
Aluminum (Al)-Total (mg/L)	0.18				<0.0150				0.0979		
Antimony (Sb)-Total (mg/L)	<0.00020				<0.00050				<0.00050		
Arsenic (As)-Total (mg/L)	0.00				0.000281				0.000379		
Barium (Ba)-Total (mg/L)	0.09				0.0448				0.126		
Beryllium (Be)-Total (mg/L)	<0.000040				<0.000100				<0.000100		
Bismuth (Bi)-Total (mg/L)	<0.000100				<0.000250				<0.000250		
Boron (B)-Total (mg/L)	0.89				0.82				0.826		
Cadmium (Cd)-Total (mg/L)	<0.0000100				<0.0000250				<0.0000250		
Cesium (Cs)-Total (mg/L)	0.00				0.000129				0.000279		
Chromium (Cr)-Total (mg/L)	0.00345				<0.00050				<0.00050		
Cobalt (Co)-Total (mg/L)	0.00				0.000314				0.000489		
Copper (Cu)-Total (mg/L)	0.00				<0.00075				0.0033		
Iron (Fe)-Total (mg/L)	0.63				0.0495				0.162		
Lead (Pb)-Total (mg/L)	0.000232				<0.000150				<0.000150		

Date	3-Jan-2023	11-Jan-2023	16-Jan-2023	29-Jan-2023	5-Feb-2023	9-Feb-2023	13-Feb-2023	21-Feb-2023	7-Mar-2023	13-Mar-2023	21-Mar-2023
Lithium (Li)-Total (mg/L)	0.10				0.0869				0.0694		
Manganese (Mn)-Total (mg/L)	0.05				0.0341				0.0173		
Mercury (Hg)-Total (mg/L)	<0.0000050				<0.0000050				<0.0000050		
Molybdenum (Mo)-Total (mg/L)	0.02				0.0179				0.0133		
Nickel (Ni)-Total (mg/L)	0.04				0.022				0.0172		
Rubidium (Rb)-Total (mg/L)	0.03				0.0259				0.045		
Selenium (Se)-Total (mg/L)	<0.000100				<0.000250				<0.000250		
Silver (Ag)-Total (mg/L)	<0.000020				<0.000050				<0.000050		
Strontium (Sr)-Total (mg/L)	11.40				10.7				17		
Sulfur (S)-Total (mg/L)	95				98.3				77.6		
Tellurium (Te)-Total (mg/L)	0.00				<0.00100				0.00122		
Thallium (Tl)-Total (mg/L)	0.000032				0.000065				<0.000050		
Thorium (Th)-Total (mg/L)	<0.00020				<0.00050				<0.00050		
Tin (Sn)-Total (mg/L)	<0.000100				<0.000250				<0.000250		
Titanium (Ti)-Total (mg/L)	0.02				<0.00150				0.00334		
Tungsten (W)-Total (mg/L)	<0.00020				<0.00050				<0.00050		
Uranium (U)-Total (mg/L)	0.00				0.00588				0.000867		
Vanadium (V)-Total (mg/L)	<0.00100				<0.00250				<0.00250		
Zinc (Zn)-Total (mg/L)	0.0042				<0.0075				<0.0075		
Zirconium (Zr)-Total (mg/L)	0.00047				<0.00100				<0.00100		
Aluminum (Al)-Dissolved (mg/L)	0.00				<0.0050	<0.0050			<0.0050		
Antimony (Sb)-Dissolved (mg/L)	<0.00020				<0.00050	<0.00050			<0.00050		
Arsenic (As)-Dissolved (mg/L)	0.00				0.000262				0.0003		
Barium (Ba)-Dissolved (mg/L)	0.05				0.0439	0.051			0.125		
Beryllium (Be)-Dissolved (mg/L)	<0.000040				<0.000100	<0.000100			<0.000100		
Bismuth (Bi)-Dissolved (mg/L)	<0.000100				<0.000250	<0.000250			<0.000250		
Boron (B)-Dissolved (mg/L)	0.90				0.822				0.842		
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100				<0.0000250	<0.0000250			<0.0000250		
Calcium (Ca)-Dissolved (mg/L)	493	530	517	502	465	484	524	712	677	628	519
Cesium (Cs)-Dissolved (mg/L)	0.00				0.000141	0.000114			0.000252		
Chromium (Cr)-Dissolved (mg/L)	<0.00020				<0.00050				<0.00050		
Cobalt (Co)-Dissolved (mg/L)	0.00				0.000321				0.000268		
Copper (Cu)-Dissolved (mg/L)	0.00				<0.00075				0.00307		
Iron (Fe)-Dissolved (mg/L)	0.01				<0.0250				<0.0250		
Lead (Pb)-Dissolved (mg/L)	<0.000060				<0.000150				<0.000150		
Lithium (Li)-Dissolved (mg/L)	0.10				0.0874	0.0888			0.0684		
Magnesium (Mg)-Dissolved (mg/L)	74.80	82.30	77	80.50	73	70.10	73.70	63.40	73.60	97.40	61.60
Manganese (Mn)-Dissolved (mg/L)	0.03				0.034	0.0339			0.0138		
Mercury (Hg)-Dissolved (mg/L)	<0.0000050				<0.0000050				<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)	0.01				0.0184	0.0144			0.0126		
Nickel (Ni)-Dissolved (mg/L)	0.02				0.0221				0.0137		
Phosphorus - Dissolved (mg/L)	<0.020										
Potassium (K)-Dissolved (mg/L)	18.30	16.90	15.80	12.00	14.40	15.70	16.40	55.00	33.40	30.50	22.20
Rubidium (Rb)-Dissolved (mg/L)	0.03				0.0275	0.0284			0.0438		
Selenium (Se)-Dissolved (mg/L)	<0.000100				<0.000250	<0.000250			<0.000250		

Date	3-Jan-2023	11-Jan-2023	16-Jan-2023	29-Jan-2023	5-Feb-2023	9-Feb-2023	13-Feb-2023	21-Feb-2023	7-Mar-2023	13-Mar-2023	21-Mar-2023
Silver (Ag)-Dissolved (mg/L)	<0.000020				<0.000050	<0.000050			<0.000050		
Sodium (Na)-Dissolved (mg/L)	499	548	524	524	499		531	658	597	594	488
Strontium (Sr)-Dissolved (mg/L)	11.20				10.8	11.2			18		
Sulfur (S)-Dissolved (mg/L)	98				105	92.6			70.9		
Tellurium (Te)-Dissolved (mg/L)	0.00				<0.00100	<0.00100			<0.00100		
Thallium (Tl)-Dissolved (mg/L)	0.00003				0.000077	<0.000050			<0.000050		
Thorium (Th)-Dissolved (mg/L)	<0.00020				<0.00050	<0.00050			<0.00050		
Tin (Sn)-Dissolved (mg/L)	<0.000100				<0.000250				<0.000250		
Titanium (Ti)-Dissolved (mg/L)	<0.00060				<0.00150	<0.00150			<0.00150		
Tungsten (W)-Dissolved (mg/L)	<0.00020				<0.00050	<0.00050			<0.00050		
Uranium (U)-Dissolved (mg/L)	0.00				0.0059	0.00666			0.000834		
Vanadium (V)-Dissolved (mg/L)	<0.00100				<0.00250	<0.00250			<0.00250		
Zinc (Zn)-Dissolved (mg/L)	<0.0020				<0.0050	<0.0050			<0.0050		
Zirconium (Zr)-Dissolved (mg/L)	<0.00040				<0.00100	<0.00100			<0.00100		
Benzene (mg/L)	0.00				0.00258				0.0119		
Ethylbenzene (mg/L)	<0.00050				<0.00050				<0.00050		
F1 (C6-C10) (mg/L)	<0.10				<0.10				<0.10		
F2 (C10-C16) (mg/L)	<0.10				<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)	0.00				0.00089				0.00344		
Total Hydrocarbons (C6-C50) (mg/L)	<0.40				<0.40				<0.40		
Xylenes (mg/L)	<0.00075				<0.00075				0.00162		
Th-228 (Bq/L)	<0.4				<0.4				<0.4		
Th-230 (Bq/L)	<20				<20				<20		
Th-232 (Bq/L)	<0.001				<0.001				<0.001		
U-234 (Bq/L)	0.03				0.072				0.011		
U-235 (Bq/L)	0.0015				0.0036				0.00054		
U-238 (Bq/L)	0.03				0.072				0.011		

G08_B

Date	28-Mar-2023	3-Apr-2023	10-Apr-2023	18-Apr-2023	25-Apr-2023	1-May-2023	8-May-2023	11-May-2023	12-May-2023	15-May-2023	22-May-2023
Conductivity (µS/cm)	7470	7260	6890	6610	5920	4990	4240	4270	4260	5050	5200
pH (pH units)	7.61	7.45	7.49	8.30	7.63	7.58	7.90	7.45	7.61	7.96	7.89
Total Suspended Solids (mg/L)	23.40	5.1	3	23.7	3.10	27.1	70.00	118.00	35.70	5.90	3.60
Turbidity (NTU)	16.30	3.04	2.64	13.20	1.76	11.50	36.80	67.70	20.80	1.43	2.99
Alkalinity, Bicarbonate (mg/L)	14.70	22.10	23.40	28.20	16.30	19.20	47.60	46.60	33.90	85.10	54.80
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	2.6	<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)	14.70	22.10	23.40	30.80	16.30	19.20	47.60	46.60	33.90	85.10	54.80
Calcium (Ca)-Total (mg/L)		760				441		365	384		
Chloride (mg/L)	2360	2200	2070	2180	1740	1580	1210	1230	1230	1450	1500
Fluoride (mg/L)	<0.500	<0.500	<0.500	<0.500	<0.500	0.232	0.36	0.38	0.39	0.46	0.43
Hardness (as CaCO3) (mg/L)	2080	2060	1980	1690	1590	1380	1190	1200	1220	1410	1470
Magnesium (Mg)-Total (mg/L)		104				65.5		80.5	71.2		
Potassium (K)-Total (mg/L)		31				22.4		24.5	22.9		
Silicate (as SiO2) (mg/L)	4.88	5.92	6.19	3.54	6.02	5.64	7.37	6.38	5.92	8.85	8.00
Sodium (Na)-Total (mg/L)		647				435		354	353		
Sulfate (mg/L)	247	232	238	174	198	186	197	233	224	253	284
TDS (mg/L)	4540	4470	5330	3800	3250	2300	3180	3480	3240	3430	3870
Ammonia, Total (as N) (mg/L)	6.95	11.30	10.40	14.70	9.08	7.09	6.65	7.89	8.40	12.60	7.33
Nitrate and Nitrite (mg/L)	3.90	9.19	8.99	13.10	7.10	6.66	8.21	12.20	11.70	15.00	12.60
Nitrate as Nitrogen (mg/L)	3.74	8.96	8.77	12.80	6.84	6.41	7.91	11.90	11.40	13.70	11.90
Nitrite as Nitrogen (mg/L)	0.16	0.23	0.22	0.27	0.26	0.25	0.30	0.27	0.32	1.29	0.72
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)	0.00	0.00	0.00	0.00	0.00	<0.0010	0.00	<0.0010	0.00	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	0.003	<0.0020	<0.0020	0.0022	0.0043	0.00	0.0096	0.0041	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.02	0.00	0.01	0.0147	0.00	0.03	0.05	0.09	0.01	0.00	0.01
Phosphorus - Total (mg/L)	0.02	0.01	0.01	0.01	0.01	0.02	0.05	0.09	0.02	0.01	0.01
Total Kjeldahl Nitrogen (mg/L)	6.77	11.70	10.10	16.70	9.65	6.96	6.87	8.97	9.46	14.70	8.00
Total Organic Carbon (mg/L)	2.09	2.20	2.41	2.32	3.11	2.91	2.81	4.49	2.58	2.67	2.04
Aluminum (Al)-Total (mg/L)		0.0712				0.497		3.19	0.529		
Antimony (Sb)-Total (mg/L)		<0.00050				0.0002		0.00026	0.00026		
Arsenic (As)-Total (mg/L)		0.000297				0.0005		0.000629	0.000406		
Barium (Ba)-Total (mg/L)		0.112				0.0992		0.125	0.073		
Beryllium (Be)-Total (mg/L)		<0.000100				<0.000040		0.0001	0.000055		
Bismuth (Bi)-Total (mg/L)		<0.000250				<0.000100		<0.000100	<0.000100		
Boron (B)-Total (mg/L)		1.05				0.767		0.744	0.714		
Cadmium (Cd)-Total (mg/L)		<0.0000250				<0.0000100		<0.0000100	<0.0000100		
Cesium (Cs)-Total (mg/L)		0.000297				0.000244		0.000252	0.000198		
Chromium (Cr)-Total (mg/L)		0.00054				0.00291		0.0204	0.00283		
Cobalt (Co)-Total (mg/L)		0.000577				0.00104		0.00476	0.000891		
Copper (Cu)-Total (mg/L)		0.0189				0.00252		0.00316	0.00194		
Iron (Fe)-Total (mg/L)		0.165				0.69		3.59	0.633		
Lead (Pb)-Total (mg/L)		<0.000150				0.000233		0.000344	0.000095		

Date	28-Mar-2023	3-Apr-2023	10-Apr-2023	18-Apr-2023	25-Apr-2023	1-May-2023	8-May-2023	11-May-2023	12-May-2023	15-May-2023	22-May-2023
Lithium (Li)-Total (mg/L)		0.0964				0.0714		0.0832	0.0753		
Manganese (Mn)-Total (mg/L)		0.0205				0.024		0.0682	0.0519		
Mercury (Hg)-Total (mg/L)		<0.0000050				<0.0000050		<0.0000050	<0.0000050		
Molybdenum (Mo)-Total (mg/L)		0.0112				0.0138		0.025	0.0212		
Nickel (Ni)-Total (mg/L)		0.0363				0.0251		0.0813	0.0176		
Rubidium (Rb)-Total (mg/L)		0.0501				0.039		0.0452	0.043		
Selenium (Se)-Total (mg/L)		<0.000250				<0.000100		<0.000100	<0.000100		
Silver (Ag)-Total (mg/L)		<0.000050				<0.000020		<0.000020	<0.000020		
Strontium (Sr)-Total (mg/L)		16.6				11.4		8.59	8.36		
Sulfur (S)-Total (mg/L)		102				71.1		87.9	84.8		
Tellurium (Te)-Total (mg/L)		0.00139				0.00061		0.00096	0.00087		
Thallium (Tl)-Total (mg/L)		<0.000050				0.000051		0.000054	0.000048		
Thorium (Th)-Total (mg/L)		<0.00050				0.00047		0.00075	<0.00020		
Tin (Sn)-Total (mg/L)		<0.000250				<0.000100		<0.000100	<0.000100		
Titanium (Ti)-Total (mg/L)		0.00189				0.0212		0.0849	0.0162		
Tungsten (W)-Total (mg/L)		<0.00050				0.0003		0.00026	0.00025		
Uranium (U)-Total (mg/L)		0.000712				0.00128		0.00504	0.00668		
Vanadium (V)-Total (mg/L)		<0.00250				<0.00100		0.00618	0.00147		
Zinc (Zn)-Total (mg/L)		<0.0075				<0.0030		0.005	0.0031		
Zirconium (Zr)-Total (mg/L)		<0.00100				0.00054		0.00195	0.00043		
Aluminum (Al)-Dissolved (mg/L)		<0.0050				0.0023		0.0031	0.0039		
Antimony (Sb)-Dissolved (mg/L)		<0.00050				<0.00020		0.00025	0.00022		
Arsenic (As)-Dissolved (mg/L)		0.000274				0.000353		0.000516	0.00036		
Barium (Ba)-Dissolved (mg/L)		0.0966				0.0779		0.0701	0.0675		
Beryllium (Be)-Dissolved (mg/L)		<0.000100				<0.000040		<0.000040	<0.000040		
Bismuth (Bi)-Dissolved (mg/L)		<0.000250				<0.000100		<0.000100	<0.000100		
Boron (B)-Dissolved (mg/L)		0.873				0.679		0.742	0.718		
Cadmium (Cd)-Dissolved (mg/L)		<0.0000250				<0.0000100		<0.0000100	<0.0000100		
Calcium (Ca)-Dissolved (mg/L)	682	662	632	564	512	446	366	368	378	424	446
Cesium (Cs)-Dissolved (mg/L)		0.000309				0.000227		0.000182	0.000188		
Chromium (Cr)-Dissolved (mg/L)		<0.00050				<0.00020		<0.00020	<0.00020		
Cobalt (Co)-Dissolved (mg/L)		0.000318				0.000158		0.000262	0.000344		
Copper (Cu)-Dissolved (mg/L)		0.0177				0.00191		0.00099	0.00172		
Iron (Fe)-Dissolved (mg/L)		<0.0250				<0.0100		0.0108	<0.0100		
Lead (Pb)-Dissolved (mg/L)		<0.000150				<0.000060		<0.000060	<0.000060		
Lithium (Li)-Dissolved (mg/L)		0.0861				0.0702		0.0802	0.083		
Magnesium (Mg)-Dissolved (mg/L)	91	98.70	97.80	69.10	74.90	65.70	66.70	67.30	68.40	86.20	86.40
Manganese (Mn)-Dissolved (mg/L)		0.0146				0.0106		0.0241	0.0385		
Mercury (Hg)-Dissolved (mg/L)		<0.0000050				<0.0000050		<0.0000050	<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)		0.00915				0.0142		0.025	0.0214		
Nickel (Ni)-Dissolved (mg/L)		0.0315				0.013		0.00798	0.00863		
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	32.80	27.80	27.40	29.00	23.80	22.40	24.90	25.50	23.80	24.80	21.40
Rubidium (Rb)-Dissolved (mg/L)		0.0474				0.0366		0.04	0.0415		
Selenium (Se)-Dissolved (mg/L)		<0.000250				0.000112		<0.000100	0.000105		

Date	28-Mar-2023	3-Apr-2023	10-Apr-2023	18-Apr-2023	25-Apr-2023	1-May-2023	8-May-2023	11-May-2023	12-May-2023	15-May-2023	22-May-2023
Silver (Ag)-Dissolved (mg/L)		<0.000050				<0.000020		<0.000020	<0.000020		
Sodium (Na)-Dissolved (mg/L)	591	634	612	594	465	435	375	360	360	429	438
Strontium (Sr)-Dissolved (mg/L)		15.9				11.1		8.26	8.12		
Sulfur (S)-Dissolved (mg/L)		91.4				68.6		90.6	86.7		
Tellurium (Te)-Dissolved (mg/L)		<0.00100				<0.00040		0.00049	<0.00040		
Thallium (Tl)-Dissolved (mg/L)		<0.000050				0.000053		0.00004	0.000045		
Thorium (Th)-Dissolved (mg/L)		<0.00050				<0.00020		<0.00020	<0.00020		
Tin (Sn)-Dissolved (mg/L)		<0.000250				<0.000100		<0.000100	<0.000100		
Titanium (Ti)-Dissolved (mg/L)		<0.00150				<0.00060		<0.00060	<0.00060		
Tungsten (W)-Dissolved (mg/L)		<0.00050				0.00028		0.00025	0.00023		
Uranium (U)-Dissolved (mg/L)		0.00065				0.00115		0.00467	0.00624		
Vanadium (V)-Dissolved (mg/L)		<0.00250				<0.00100		<0.00100	<0.00100		
Zinc (Zn)-Dissolved (mg/L)		<0.0050				<0.0020		<0.0020	<0.0020		
Zirconium (Zr)-Dissolved (mg/L)		<0.00100				<0.00040		<0.00040	<0.00040		
Benzene (mg/L)		0.0236				0.0184		0.00893	0.0102		
Ethylbenzene (mg/L)		0.00144				0.00124		0.00062	0.00069		
F1 (C6-C10) (mg/L)		<0.10				<0.10		<0.10	<0.10		
F2 (C10-C16) (mg/L)		<0.10				<0.10		<0.10	<0.10		
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)		0.00837				0.00781		0.00382	0.0043		
Total Hydrocarbons (C6-C50) (mg/L)		<0.40				<0.40		<0.40	<0.40		
Xylenes (mg/L)		0.00617				0.00419		0.00178	0.00191		
Th-228 (Bq/L)		<0.4				<0.4					
Th-230 (Bq/L)		<40				<50					
Th-232 (Bq/L)		<0.001				<0.001					
U-234 (Bq/L)		0.008				0.016					
U-235 (Bq/L)		0.00039				0.00081					
U-238 (Bq/L)		0.008				0.016					

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Date	29-May-2023	5-Jun-2023	12-Jun-2023	21-Jun-2023	28-Jun-2023	3-Jul-2023	10-Jul-2023	17-Jul-2023	24-Jul-2023	1-Aug-2023	26-Aug-2023
Conductivity (µS/cm)	5260	5110	4200	3920	5240	5200	5300	5600	5510	5830	4140
pH (pH units)	7.84	7.86	7.82	7.80	7.64	7.81	7.85	7.68	7.80	7.81	7.91
Total Suspended Solids (mg/L)	4.00	44.6	47.80	2.4	133.00	6.40	<1.0	5.1	9.2	4.1	2.10
Turbidity (NTU)	2.16	14.80	25.40	0.58	26.40	4.38	0.57	2.75	2.99	1.04	2.83
Alkalinity, Bicarbonate (mg/L)	56.00	52.00	50.50	63.50	45.40	44	46.70	44.20	50.70	48.60	81.10
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
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)	56.00	52.00	50.50	63.50	45.40	44	46.70	44.20	50.70	48.60	81.10
Calcium (Ca)-Total (mg/L)		516				471				517	
Chloride (mg/L)	1510	1500	1120	1140	1560	1510	1530	1630	1560	1620	1440
Fluoride (mg/L)	0.53	0.54	0.61	0.746	0.50	0.63	0.71	0.53	0.55	0.57	0.60
Hardness (as CaCO3) (mg/L)	1600	1540	1270	1240	1660	1560	1600	1600	1720	1660	1300
Magnesium (Mg)-Total (mg/L)		90.4				82.9				88.7	
Potassium (K)-Total (mg/L)		22				15.7				18	
Silicate (as SiO2) (mg/L)	8.59	8.47	8.22	8.90	<0.50	8.91	9.45	9.76	10.50	10.80	9.09
Sodium (Na)-Total (mg/L)		428				416				497	
Sulfate (mg/L)	299	267	327	333	292	319	324	343	335	301	273
TDS (mg/L)	2980	3980	3120	3490	3770	3240	3690	4040	3350	3630	2880
Ammonia, Total (as N) (mg/L)	6.00	5.48	4.26	4.53	3.88	3.13	2.04	1.96	2.14	4.16	14.10
Nitrate and Nitrite (mg/L)	12.80	11.90	14.40	16.00	10.90	9.22	8.06	8.08	6.20	11.30	7.12
Nitrate as Nitrogen (mg/L)	12.30	11.10	14.00	15.80	10.60	8.98	7.86	7.94	6.11	11.10	6.56
Nitrite as Nitrogen (mg/L)	0.55	0.77	0.37	0.26	0.27	0.24	0.20	0.14	0.09	0.21	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	0.0012
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.01	<0.0010	0.0014	<0.0010	0.0018	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	0.00	0.0051	0.0037	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.01	0.0037	0.00	0.01	0.00	<0.0010	<0.0010	<0.0010	0.00	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.00	0.04	0.05	0.00	0.09	0.01	0.00	0.00	0.01	0.00	0.01
Phosphorus - Total (mg/L)	0.00	0.04	0.05	0.00	0.10	0.01	0.00	0.00	0.01	0.00	0.01
Total Kjeldahl Nitrogen (mg/L)	6.90	6.24	4.98	4.84	4.92	3.22	2.25	2.49	2.84	4.82	13.60
Total Organic Carbon (mg/L)	2.19	2.52	2.79	2.23	2.34	1.95	1.69	1.86	3.20	2.01	2.50
Aluminum (Al)-Total (mg/L)		0.518				0.197				0.0782	
Antimony (Sb)-Total (mg/L)		<0.00020				0.00023				0.00028	
Arsenic (As)-Total (mg/L)		0.000444				0.000368				0.000315	
Barium (Ba)-Total (mg/L)		0.0588				0.05				0.0556	
Beryllium (Be)-Total (mg/L)		<0.000040				<0.000040				<0.000040	
Bismuth (Bi)-Total (mg/L)		<0.000100				<0.000100				<0.000100	
Boron (B)-Total (mg/L)		0.892				0.942				0.927	
Cadmium (Cd)-Total (mg/L)		<0.0000100				<0.0000100				0.0000132	
Cesium (Cs)-Total (mg/L)		0.000188				0.000161				0.000216	
Chromium (Cr)-Total (mg/L)		0.00389				0.00104				0.00037	
Cobalt (Co)-Total (mg/L)		0.00114				0.00052				0.00047	
Copper (Cu)-Total (mg/L)		0.00098				0.00052				0.0008	
Iron (Fe)-Total (mg/L)		0.783				0.306				0.137	
Lead (Pb)-Total (mg/L)		0.000156				0.000118				0.000087	

Date	29-May-2023	5-Jun-2023	12-Jun-2023	21-Jun-2023	28-Jun-2023	3-Jul-2023	10-Jul-2023	17-Jul-2023	24-Jul-2023	1-Aug-2023	26-Aug-2023
Lithium (Li)-Total (mg/L)		0.102				0.0939				0.0978	
Manganese (Mn)-Total (mg/L)		0.0712				0.0532				0.0619	
Mercury (Hg)-Total (mg/L)		<0.0000050				<0.0000050				<0.0000050	
Molybdenum (Mo)-Total (mg/L)		0.0348				0.0312				0.0375	
Nickel (Ni)-Total (mg/L)		0.0268				0.0136				0.0141	
Rubidium (Rb)-Total (mg/L)		0.0322				0.0252				0.0365	
Selenium (Se)-Total (mg/L)		<0.000100				<0.000100				<0.000100	
Silver (Ag)-Total (mg/L)		<0.000020				<0.000020				<0.000020	
Strontium (Sr)-Total (mg/L)		9.69				9.81				11.9	
Sulfur (S)-Total (mg/L)		116				127				135	
Tellurium (Te)-Total (mg/L)		0.00085				0.00061				0.00147	
Thallium (Tl)-Total (mg/L)		0.000037				0.000037				0.000062	
Thorium (Th)-Total (mg/L)		0.00021				0.00023				<0.00020	
Tin (Sn)-Total (mg/L)		<0.000100				<0.000100				<0.000100	
Titanium (Ti)-Total (mg/L)		0.0133				0.00578				0.00241	
Tungsten (W)-Total (mg/L)		0.00041				0.00041				0.00035	
Uranium (U)-Total (mg/L)		0.0126				0.0115				0.0154	
Vanadium (V)-Total (mg/L)		0.00163				0.00142				0.00142	
Zinc (Zn)-Total (mg/L)		<0.0030				<0.0030				<0.0030	
Zirconium (Zr)-Total (mg/L)		0.00043				<0.00040				<0.00040	
Aluminum (Al)-Dissolved (mg/L)		0.0024				0.0026				0.004	
Antimony (Sb)-Dissolved (mg/L)		0.00019				<0.00020				0.00023	
Arsenic (As)-Dissolved (mg/L)		0.000361				0.000276				0.000277	
Barium (Ba)-Dissolved (mg/L)		0.0553				0.0461				0.0552	
Beryllium (Be)-Dissolved (mg/L)		<0.000020				<0.000040				<0.000040	
Bismuth (Bi)-Dissolved (mg/L)		<0.000050				<0.000100				<0.000100	
Boron (B)-Dissolved (mg/L)		0.898				1.13				0.952	
Cadmium (Cd)-Dissolved (mg/L)		<0.0000150				<0.0000100				0.000012	
Calcium (Ca)-Dissolved (mg/L)	496	468	383	372	519	483	499	502	539	508	389
Cesium (Cs)-Dissolved (mg/L)		0.000191				0.000162				0.000201	
Chromium (Cr)-Dissolved (mg/L)		<0.00010				<0.00020				<0.00020	
Cobalt (Co)-Dissolved (mg/L)		0.000393				0.00028				0.000371	
Copper (Cu)-Dissolved (mg/L)		0.00073				0.00037				0.0007	
Iron (Fe)-Dissolved (mg/L)		0.0162				<0.0100				<0.0100	
Lead (Pb)-Dissolved (mg/L)		<0.000030				<0.000060				<0.000060	
Lithium (Li)-Dissolved (mg/L)		0.103				0.0995				0.0952	
Magnesium (Mg)-Dissolved (mg/L)	88.10	90.20	76.70	76.80	88.20	85.40	85.40	84.80	91.00	94.50	80.70
Manganese (Mn)-Dissolved (mg/L)		0.059				0.0501				0.0604	
Mercury (Hg)-Dissolved (mg/L)		<0.0000050				<0.0000050				<0.0000050	
Molybdenum (Mo)-Dissolved (mg/L)		0.0365				0.0299				0.0335	
Nickel (Ni)-Dissolved (mg/L)		0.0135				0.0102				0.0122	
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	21.70	22.60	21.40	21.50	21.70	16.70	13.80	15.50	15.10	18.90	25.00
Rubidium (Rb)-Dissolved (mg/L)		0.0319				0.0252				0.0363	
Selenium (Se)-Dissolved (mg/L)		0.000101				0.000122				<0.000100	

Date	29-May-2023	5-Jun-2023	12-Jun-2023	21-Jun-2023	28-Jun-2023	3-Jul-2023	10-Jul-2023	17-Jul-2023	24-Jul-2023	1-Aug-2023	26-Aug-2023
Silver (Ag)-Dissolved (mg/L)		<0.000010				<0.000020				<0.000020	
Sodium (Na)-Dissolved (mg/L)	431	450	341	321	457	469	468	483	511	509	449
Strontium (Sr)-Dissolved (mg/L)		10.5				10.5				10.8	
Sulfur (S)-Dissolved (mg/L)		118				128				138	
Tellurium (Te)-Dissolved (mg/L)		0.00086				<0.00040				0.0005	
Thallium (Tl)-Dissolved (mg/L)		0.000037				0.000033				0.000058	
Thorium (Th)-Dissolved (mg/L)		<0.00010				<0.00020				<0.00020	
Tin (Sn)-Dissolved (mg/L)		<0.000050				<0.000100				<0.000100	
Titanium (Ti)-Dissolved (mg/L)		<0.00030				<0.00060				<0.00060	
Tungsten (W)-Dissolved (mg/L)		0.00044				0.0004				0.00036	
Uranium (U)-Dissolved (mg/L)		0.0124				0.0115				0.0147	
Vanadium (V)-Dissolved (mg/L)		<0.00050				<0.00100				0.00103	
Zinc (Zn)-Dissolved (mg/L)		<0.0010				<0.0020				<0.0020	
Zirconium (Zr)-Dissolved (mg/L)		<0.00030				<0.00040				<0.00040	
Benzene (mg/L)		<0.00050				<0.00050				0.00331	
Ethylbenzene (mg/L)		<0.00050				<0.00050				<0.00050	
F1 (C6-C10) (mg/L)		<0.10				0.32				<0.10	
F2 (C10-C16) (mg/L)		<0.10				<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)		<0.00050				<0.00050				0.00146	
Total Hydrocarbons (C6-C50) (mg/L)		<0.40				<0.40				<0.40	
Xylenes (mg/L)		<0.00075				<0.00075				<0.00075	
Th-228 (Bq/L)		<0.4				<0.4				<0.4	
Th-230 (Bq/L)		<20				<30				<20	
Th-232 (Bq/L)		0.002									
U-234 (Bq/L)		0.16				0.14				0.19	
U-235 (Bq/L)		0.0081				0.007				0.0094	
U-238 (Bq/L)		0.16				0.14				0.19	

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Date	22-Oct-2023	26-Oct-2023	2-Nov-2023	6-Nov-2023	15-Nov-2023	20-Nov-2023	29-Nov-2023	10-Dec-2023	14-Dec-2023	18-Dec-2023
Conductivity (µS/cm)	4550	4970	5680	6980	6080	5980	5440	6750	5670	5220
pH (pH units)	7.73	7.83	7.94	7.86	7.41	7.25	7.82	7.75	7.68	7.84
Total Suspended Solids (mg/L)	9.80	3.4	1	15.30	2.1	2.30	17.20	<1.0	<1.0	1.2
Turbidity (NTU)	4.32	2.90	0.84	6.84	1.65	2.30	12.30	0.48	1.14	0.78
Alkalinity, Bicarbonate (mg/L)	75.60	73.80	80.20	36.40	18.30	26.90	47.10	42.30	53.20	58.80
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
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)	75.60	73.80	80.20	36.40	18.30	26.90	47.10	42.30	53.20	58.80
Calcium (Ca)-Total (mg/L)	426			682				661		
Chloride (mg/L)	1340	1390	1530	2120	1870	1920	1780	1940	1630	1500
Fluoride (mg/L)	0.51	0.49	0.51	<0.500	<0.500	<0.500	0.51	<0.500	0.55	0.45
Hardness (as CaCO3) (mg/L)	1390	1400	1670	2060	1670	1800	1560	1870	1540	1420
Magnesium (Mg)-Total (mg/L)	80.6			80.7				89.8		
Potassium (K)-Total (mg/L)	16.6			21.5				15.2		
Silicate (as SiO2) (mg/L)	10.50	10.30	10.20	8.71	9.27	12.40	8.76	8.70	10.30	11.00
Sodium (Na)-Total (mg/L)	436			611				633		
Sulfate (mg/L)	325	331	336	311	316	323	342	305	291	311
TDS (mg/L)	3040	3380	4010	4240	3660	3900	4170	4150	3610	3520
Ammonia, Total (as N) (mg/L)	3.94	3.77	2.72	4.32	2.67	1.89	3.64	2.68	3.98	2.54
Nitrate and Nitrite (mg/L)	7.46	7.82	5.88	6.72	3.39	2.55	8.97	3.82	4.86	3.63
Nitrate as Nitrogen (mg/L)	7.26	7.61	5.73	6.62	3.30	2.48	8.76	3.72	4.77	3.46
Nitrite as Nitrogen (mg/L)	0.20	0.21	0.15	0.10	0.09	0.07	0.21	0.10	0.09	0.17
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	0.01	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.00	0.01	0.00	0.00	0.0014	<0.0010	0.0016	<0.0010	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.02	0.006	0.0023	0.02	0.00	0.00	0.0247	0.00	0.0016	0.0024
Phosphorus - Total (mg/L)	0.01	0.01	0.00	0.02	0.00	0.00	0.02	<0.0010	0.00	0.0026
Total Kjeldahl Nitrogen (mg/L)	4.16	4.59	3.16	5.35	2.78	2.07	4.64	3.34	3.79	2.70
Total Organic Carbon (mg/L)	1.81	1.94	2.53	1.84	2.26	1.95	2.13	2.09	2.46	1.84
Aluminum (Al)-Total (mg/L)	0.278			0.215				0.0364		
Antimony (Sb)-Total (mg/L)	0.00021			<0.00050				<0.00050		
Arsenic (As)-Total (mg/L)	0.000388			0.000409				0.000762		
Barium (Ba)-Total (mg/L)	0.0564			0.0611				0.0426		
Beryllium (Be)-Total (mg/L)	<0.000040			<0.000100				<0.000100		
Bismuth (Bi)-Total (mg/L)	<0.000100			<0.000250				<0.000250		
Boron (B)-Total (mg/L)	0.787			0.793				1.03		
Cadmium (Cd)-Total (mg/L)	0.000017			<0.0000250				<0.0000250		
Cesium (Cs)-Total (mg/L)	0.000131			0.000172				0.000103		
Chromium (Cr)-Total (mg/L)	0.00102			0.00174				<0.00050		
Cobalt (Co)-Total (mg/L)	0.00086			0.000813				<0.000250		
Copper (Cu)-Total (mg/L)	0.00107			0.00129				<0.00075		
Iron (Fe)-Total (mg/L)	0.408			0.516				0.0613		
Lead (Pb)-Total (mg/L)	0.000138			0.000191				<0.000150		

Date	22-Oct-2023	26-Oct-2023	2-Nov-2023	6-Nov-2023	15-Nov-2023	20-Nov-2023	29-Nov-2023	10-Dec-2023	14-Dec-2023	18-Dec-2023
Lithium (Li)-Total (mg/L)	0.083			0.103				0.105		
Manganese (Mn)-Total (mg/L)	0.0678			0.0402				0.0283		
Mercury (Hg)-Total (mg/L)	<0.0000050			<0.0000050				<0.0000050		
Molybdenum (Mo)-Total (mg/L)	0.0493			0.0301				0.0185		
Nickel (Ni)-Total (mg/L)	0.0161			0.0216				0.026		
Rubidium (Rb)-Total (mg/L)	0.03			0.0416				0.028		
Selenium (Se)-Total (mg/L)	<0.000100			<0.000250				<0.000250		
Silver (Ag)-Total (mg/L)	<0.000020			<0.000050				<0.000050		
Strontium (Sr)-Total (mg/L)	9.6			15.4				14.6		
Sulfur (S)-Total (mg/L)	132			131				128		
Tellurium (Te)-Total (mg/L)	0.00056			<0.00100				<0.00100		
Thallium (Tl)-Total (mg/L)	0.000061			<0.000050				<0.000050		
Thorium (Th)-Total (mg/L)	<0.00020			<0.00050				<0.00050		
Tin (Sn)-Total (mg/L)	<0.000100			<0.000250				<0.000250		
Titanium (Ti)-Total (mg/L)	0.0159			0.0127				<0.00150		
Tungsten (W)-Total (mg/L)	0.00029			<0.00050				<0.00050		
Uranium (U)-Total (mg/L)	0.0168			0.00741				0.00398		
Vanadium (V)-Total (mg/L)	0.0017			<0.00250				<0.00250		
Zinc (Zn)-Total (mg/L)	<0.0030			<0.0075				<0.0075		
Zirconium (Zr)-Total (mg/L)	<0.00040			<0.00100				<0.00100		
Aluminum (Al)-Dissolved (mg/L)	0.0041			<0.0050				0.0034		
Antimony (Sb)-Dissolved (mg/L)	<0.00020			<0.00050				<0.00020		
Arsenic (As)-Dissolved (mg/L)	0.000298			0.000364				0.00037		
Barium (Ba)-Dissolved (mg/L)	0.0517			0.0511				0.0377		
Beryllium (Be)-Dissolved (mg/L)	<0.000040			<0.000100				<0.000040		
Bismuth (Bi)-Dissolved (mg/L)	<0.000100			<0.000250				<0.000100		
Boron (B)-Dissolved (mg/L)	0.657			0.859				0.889		
Cadmium (Cd)-Dissolved (mg/L)	<0.0000200			<0.0000250				<0.0000100		
Calcium (Ca)-Dissolved (mg/L)	428	436	519	683	541	579	489	609	490	442
Cesium (Cs)-Dissolved (mg/L)	0.000121			0.000147				0.000089		
Chromium (Cr)-Dissolved (mg/L)	<0.00020			<0.00050				<0.00020		
Cobalt (Co)-Dissolved (mg/L)	0.000549			<0.000250				0.00013		
Copper (Cu)-Dissolved (mg/L)	0.00078			0.00086				0.00034		
Iron (Fe)-Dissolved (mg/L)	<0.0100			<0.0250				<0.0100		
Lead (Pb)-Dissolved (mg/L)	<0.000060			<0.000150				<0.000060		
Lithium (Li)-Dissolved (mg/L)	0.0848			0.102				0.0947		
Magnesium (Mg)-Dissolved (mg/L)	77.60	76.90	91.60	86.00	77.50	86.10	82.60	84.00	77.00	77.70
Manganese (Mn)-Dissolved (mg/L)	0.0601			0.0322				0.0263		
Mercury (Hg)-Dissolved (mg/L)	<0.0000050			<0.0000050				<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)	0.0463			0.0307				0.0165		
Nickel (Ni)-Dissolved (mg/L)	0.012			0.0108				0.0234		
Phosphorus - Dissolved (mg/L)										
Potassium (K)-Dissolved (mg/L)	15.80	15.80	14.40	22.30	16.60	14.90	14.50	14.80	13.60	12.50
Rubidium (Rb)-Dissolved (mg/L)	0.0289			0.0422				0.0277		
Selenium (Se)-Dissolved (mg/L)	<0.000100			<0.000250				<0.000100		

Date	22-Oct-2023	26-Oct-2023	2-Nov-2023	6-Nov-2023	15-Nov-2023	20-Nov-2023	29-Nov-2023	10-Dec-2023	14-Dec-2023	18-Dec-2023
Silver (Ag)-Dissolved (mg/L)	<0.000020			<0.000050				<0.000020		
Sodium (Na)-Dissolved (mg/L)	417	435	490	631	541	565	521	535	499	473
Strontium (Sr)-Dissolved (mg/L)	9.23			15.4				13.6		
Sulfur (S)-Dissolved (mg/L)	118			128				123		
Tellurium (Te)-Dissolved (mg/L)	<0.00040			<0.00100				0.00041		
Thallium (Tl)-Dissolved (mg/L)	0.000055			<0.000050				0.000039		
Thorium (Th)-Dissolved (mg/L)	<0.00020			<0.00050				<0.00020		
Tin (Sn)-Dissolved (mg/L)	<0.000100			<0.000250				<0.000100		
Titanium (Ti)-Dissolved (mg/L)	<0.00060			<0.00150				<0.00060		
Tungsten (W)-Dissolved (mg/L)	0.00027			<0.00050				<0.00020		
Uranium (U)-Dissolved (mg/L)	0.0159			0.00748				0.00372		
Vanadium (V)-Dissolved (mg/L)	<0.00100			<0.00250				<0.00100		
Zinc (Zn)-Dissolved (mg/L)	<0.0020			<0.0050				<0.0020		
Zirconium (Zr)-Dissolved (mg/L)	<0.00040			<0.00100				<0.00040		
Benzene (mg/L)	0.00152			0.00576				0.00433		
Ethylbenzene (mg/L)	<0.00050			<0.00050				<0.00050		
F1 (C6-C10) (mg/L)	<0.10			<0.10				<0.10		
F2 (C10-C16) (mg/L)	<0.10			<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)	0.00055			0.0019				0.00166		
Total Hydrocarbons (C6-C50) (mg/L)	<0.40			<0.40				<0.40		
Xylenes (mg/L)	<0.00075			<0.00075				<0.00075		
Th-228 (Bq/L)	<0.4			<0.4				0.3		
Th-230 (Bq/L)	<30			<20				<30		
Th-232 (Bq/L)										
U-234 (Bq/L)	0.2			0.11				0.05		
U-235 (Bq/L)	0.01			0.0056				0.0025		
U-238 (Bq/L)	0.2			0.11				0.05		

G08_C Summary of Flow Data at SNP-08

Date	Daily Effluent Volume (m^3)
1-Jan-2023	
2-Jan-2023	689.87
3-Jan-2023	397.25
4-Jan-2023	1653.00
5-Jan-2023	1816.63
6-Jan-2023	2024.25
7-Jan-2023	813.42
8-Jan-2023	663.70
9-Jan-2023	
10-Jan-2023	
11-Jan-2023	1401.38
12-Jan-2023	1658.18
13-Jan-2023	785.44
14-Jan-2023	NA
15-Jan-2023	
16-Jan-2023	NA
17-Jan-2023	NA
18-Jan-2023	NA
19-Jan-2023	NA
20-Jan-2023	NA
21-Jan-2023	NA
22-Jan-2023	NA
23-Jan-2023	
24-Jan-2023	
25-Jan-2023	
26-Jan-2023	
27-Jan-2023	
28-Jan-2023	
29-Jan-2023	NA
30-Jan-2023	NA
31-Jan-2023	
1-Feb-2023	
2-Feb-2023	
3-Feb-2023	71.13
4-Feb-2023	1656.87
5-Feb-2023	831.90
6-Feb-2023	526.60
7-Feb-2023	396.50
8-Feb-2023	1453.00
9-Feb-2023	1587.00
10-Feb-2023	606.00
11-Feb-2023	515.00
12-Feb-2023	1201.00
13-Feb-2023	1842.00
14-Feb-2023	1427.00
15-Feb-2023	1003.25
16-Feb-2023	2028.00
17-Feb-2023	1683.05
18-Feb-2023	649.70
19-Feb-2023	
20-Feb-2023	
21-Feb-2023	660.13
22-Feb-2023	957.50
23-Feb-2023	987.58
24-Feb-2023	935.66
25-Feb-2023	1087.08
26-Feb-2023	1090.09
27-Feb-2023	1102.02
28-Feb-2023	
1-Mar-2023	

Date	Daily Effluent Volume (m^3)
2-Mar-2023	
3-Mar-2023	
4-Mar-2023	
5-Mar-2023	
6-Mar-2023	830.77
7-Mar-2023	1176.38
8-Mar-2023	
9-Mar-2023	1238.34
10-Mar-2023	1508.48
11-Mar-2023	1471.63
12-Mar-2023	773.70
13-Mar-2023	
14-Mar-2023	
15-Mar-2023	
16-Mar-2023	
17-Mar-2023	
18-Mar-2023	
19-Mar-2023	
20-Mar-2023	
21-Mar-2023	1062.00
22-Mar-2023	1888.00
23-Mar-2023	780.00
24-Mar-2023	771.00
25-Mar-2023	1194.00
26-Mar-2023	692.00
27-Mar-2023	766.00
28-Mar-2023	804.00
29-Mar-2023	1254.00
30-Mar-2023	1951.00
31-Mar-2023	1359.00
1-Apr-2023	1117.00
2-Apr-2023	1039.00
3-Apr-2023	934.00
4-Apr-2023	1296.00
5-Apr-2023	1221.00
6-Apr-2023	1369.00
7-Apr-2023	200.00
8-Apr-2023	886.00
9-Apr-2023	1086.00
10-Apr-2023	1152.00
11-Apr-2023	898.00
12-Apr-2023	
13-Apr-2023	730.00
14-Apr-2023	NA
15-Apr-2023	NA
16-Apr-2023	
17-Apr-2023	NA
18-Apr-2023	
19-Apr-2023	NA
20-Apr-2023	933.98
21-Apr-2023	583.50
22-Apr-2023	2024.70
23-Apr-2023	1584.39
24-Apr-2023	359.56
25-Apr-2023	928.84
26-Apr-2023	685.88
27-Apr-2023	799.64
28-Apr-2023	1628.53
29-Apr-2023	1570.59
30-Apr-2023	1804.64

Date	Daily Effluent Volume (m^3)
1-May-2023	1692.97
2-May-2023	1374.42
3-May-2023	1598.09
4-May-2023	1079.11
5-May-2023	2350.28
6-May-2023	723.06
7-May-2023	2177.33
8-May-2023	2114.64
9-May-2023	2559.22
10-May-2023	
11-May-2023	1134.11
12-May-2023	2656.58
13-May-2023	1716.06
14-May-2023	4360.63
15-May-2023	6123.53
16-May-2023	4993.94
17-May-2023	4786.22
18-May-2023	2788.25
19-May-2023	2254.19
20-May-2023	2098.13
21-May-2023	1904.63
22-May-2023	1646.09
23-May-2023	1741.66
24-May-2023	1446.66
25-May-2023	1810.44
26-May-2023	1399.72
27-May-2023	1390.75
28-May-2023	1448.19
29-May-2023	1316.81
30-May-2023	1666.41
31-May-2023	1450.63
1-Jun-2023	1531.63
2-Jun-2023	1501.69
3-Jun-2023	1383.88
4-Jun-2023	1810.69
5-Jun-2023	1724.69
6-Jun-2023	1647.16
7-Jun-2023	1562.31
8-Jun-2023	2558.25
9-Jun-2023	2037.19
10-Jun-2023	1926.13
11-Jun-2023	1710.66
12-Jun-2023	1838.22
13-Jun-2023	3527.94
14-Jun-2023	3691.06
15-Jun-2023	3290.81
16-Jun-2023	1616.25
17-Jun-2023	2114.13
18-Jun-2023	1915.44
19-Jun-2023	1906.22
20-Jun-2023	1895.59
21-Jun-2023	1826.69
22-Jun-2023	1731.97
23-Jun-2023	1935.97
24-Jun-2023	1910.50
25-Jun-2023	2389.91
26-Jun-2023	594.75
27-Jun-2023	890.41
28-Jun-2023	3221.88
29-Jun-2023	1231.28

Date	Daily Effluent Volume (m^3)
30-Jun-2023	977.41
1-Jul-2023	2540.63
2-Jul-2023	1431.59
3-Jul-2023	2156.75
4-Jul-2023	1681.84
5-Jul-2023	1388.00
6-Jul-2023	1135.09
7-Jul-2023	1021.25
8-Jul-2023	1395.84
9-Jul-2023	1383.44
10-Jul-2023	1358.69
11-Jul-2023	170.44
12-Jul-2023	1997.22
13-Jul-2023	1308.97
14-Jul-2023	1221.78
15-Jul-2023	1201.16
16-Jul-2023	1172.00
17-Jul-2023	1467.00
18-Jul-2023	1133.03
19-Jul-2023	708.84
20-Jul-2023	260.63
21-Jul-2023	1031.44
22-Jul-2023	1591.25
23-Jul-2023	906.53
24-Jul-2023	1194.91
25-Jul-2023	1157.56
26-Jul-2023	685.97
27-Jul-2023	61.66
28-Jul-2023	296.34
29-Jul-2023	570.00
30-Jul-2023	765.97
31-Jul-2023	1029.84
1-Aug-2023	2458.50
2-Aug-2023	302.16
3-Aug-2023	
4-Aug-2023	
5-Aug-2023	
6-Aug-2023	354.44
7-Aug-2023	2575.19
8-Aug-2023	715.97
9-Aug-2023	
10-Aug-2023	4102.44
11-Aug-2023	2722.41
12-Aug-2023	1729.72
13-Aug-2023	973.69
14-Aug-2023	469.84
15-Aug-2023	469.69
16-Aug-2023	1181.41
17-Aug-2023	343.81
18-Aug-2023	135.91
19-Aug-2023	528.06
20-Aug-2023	1361.03
21-Aug-2023	589.91
22-Aug-2023	
23-Aug-2023	31.41
24-Aug-2023	140.44
25-Aug-2023	
26-Aug-2023	3799.84
27-Aug-2023	3108.66
28-Aug-2023	706.16

Date	Daily Effluent Volume (m^3)
29-Aug-2023	
30-Aug-2023	
31-Aug-2023	
1-Sep-2023	
2-Sep-2023	
3-Sep-2023	
4-Sep-2023	
5-Sep-2023	
6-Sep-2023	
7-Sep-2023	
8-Sep-2023	
9-Sep-2023	
10-Sep-2023	
11-Sep-2023	
12-Sep-2023	
13-Sep-2023	
14-Sep-2023	
15-Sep-2023	
16-Sep-2023	
17-Sep-2023	
18-Sep-2023	
19-Sep-2023	
20-Sep-2023	
21-Sep-2023	
22-Sep-2023	
23-Sep-2023	
24-Sep-2023	
25-Sep-2023	
26-Sep-2023	
27-Sep-2023	
28-Sep-2023	
29-Sep-2023	
30-Sep-2023	
1-Oct-2023	
2-Oct-2023	
3-Oct-2023	
4-Oct-2023	
5-Oct-2023	
6-Oct-2023	
7-Oct-2023	
8-Oct-2023	
9-Oct-2023	
10-Oct-2023	
11-Oct-2023	
12-Oct-2023	
13-Oct-2023	
14-Oct-2023	
15-Oct-2023	
16-Oct-2023	
17-Oct-2023	
18-Oct-2023	
19-Oct-2023	608.00
20-Oct-2023	6820.00
21-Oct-2023	7536.00
22-Oct-2023	4986.00
23-Oct-2023	6077.00
24-Oct-2023	5873.00
25-Oct-2023	3278.00
26-Oct-2023	5332.00
27-Oct-2023	80.98

Date	Daily Effluent Volume (m^3)
28-Oct-2023	3015.02
29-Oct-2023	4247.97
30-Oct-2023	4103.37
31-Oct-2023	4896.66
1-Nov-2023	540.00
2-Nov-2023	5149.00
3-Nov-2023	5048.00
4-Nov-2023	
5-Nov-2023	2567.00
6-Nov-2023	4509.00
7-Nov-2023	2253.00
8-Nov-2023	1394.00
9-Nov-2023	
10-Nov-2023	2801.07
11-Nov-2023	3159.80
12-Nov-2023	883.83
13-Nov-2023	2224.55
14-Nov-2023	1460.24
15-Nov-2023	1433.52
16-Nov-2023	1361.54
17-Nov-2023	1149.71
18-Nov-2023	1157.61
19-Nov-2023	830.62
20-Nov-2023	
21-Nov-2023	346.39
22-Nov-2023	1375.14
23-Nov-2023	796.31
24-Nov-2023	1236.92
25-Nov-2023	1438.18
26-Nov-2023	1964.85
27-Nov-2023	35.19
28-Nov-2023	112.72
29-Nov-2023	3021.14
30-Nov-2023	826.94
1-Dec-2023	821.48
2-Dec-2023	2064.14
3-Dec-2023	
4-Dec-2023	
5-Dec-2023	
6-Dec-2023	
7-Dec-2023	3289.31
8-Dec-2023	3377.34
9-Dec-2023	2118.17
10-Dec-2023	1025.00
11-Dec-2023	2382.27
12-Dec-2023	2422.78
13-Dec-2023	959.13
14-Dec-2023	958.25
15-Dec-2023	944.92
16-Dec-2023	2381.75
17-Dec-2023	4404.00
18-Dec-2023	1066.00
19-Dec-2023	1062.41
20-Dec-2023	1006.05
21-Dec-2023	718.02
22-Dec-2023	512.75
23-Dec-2023	1452.94
24-Dec-2023	1293.53
25-Dec-2023	1868.22
26-Dec-2023	3233.30

Date	Daily Effluent Volume (m^3)
27-Dec-2023	2750.39
28-Dec-2023	48.17
29-Dec-2023	1705.06
30-Dec-2023	2000.44
31-Dec-2023	1431.56

Note:
NA = No data available due to monitoring equipment issues

G09 Summary of Sampling Requirements and Sample Dates at SNP 09 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-09	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2023 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2023 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2023 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 2023 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	13-Jan-2023	55.86	6.94	8.04	4,528.56	3.66	0.00	0.00
SNP-09 Hearne Pit	14-Jan-2023	40.29	5.06	7.94	4,170.79	2.89	0.00	0.00
SNP-09 Hearne Pit	15-Jan-2023	38.96	4.64	7.95	4,455.81	4.62	0.00	0.00
SNP-09 Hearne Pit	16-Jan-2023	45.76	5.59	7.83	4,173.29	4.08	4.20	2.71
SNP-09 Hearne Pit	20-Jan-2023	79.02	9.59	7.60	4,833.81	3.90	3.05	1.97
SNP-09 Hearne Pit	21-Jan-2023	53.02	6.31	7.61	4,321.58	4.72	0.00	0.00
SNP-09 Hearne Pit	22-Jan-2023	39.91	4.98	7.96	4,531.18	3.33	0.11	0.07
SNP-09 Hearne Pit	23-Jan-2023	92.25	11.78	7.92	4,337.36	2.20	116.67	75.34
SNP-09 Hearne Pit	2-Feb-2023	49.45	6.44	7.50	4,578.91	1.98	4.66	2.73
SNP-09 Hearne Pit	3-Feb-2023	45.65	5.69	7.22	5,052.09	2.79	254.99	164.51
SNP-09 Hearne Pit	4-Feb-2023	39.89	5.03	7.70	5,079.38	2.44	2.84	1.83
SNP-09 Hearne Pit	11-Feb-2023	67.24	8.41	7.56	5,851.44	2.42	18.46	11.91
SNP-09 Hearne Pit	12-Feb-2023	42.65	5.49	7.82	4,482.49	1.58	2.00	1.29
SNP-09 Hearne Pit	13-Feb-2023	54.41	6.68	7.32	4,520.36	1.98	0.92	0.59
SNP-09 Hearne Pit	1-Mar-2023	57.67	7.41	7.38	3,405.62	2.10	31.66	20.43
SNP-09 Hearne Pit	2-Mar-2023	37.35	4.66	7.25	4,231.86	2.76	0.87	0.56
SNP-09 Hearne Pit	3-Mar-2023	46.21	5.51	7.83	4,961.79	3.86	0.00	0.00
SNP-09 Hearne Pit	9-Mar-2023	52.35	6.50	8.59	4,891.74	4.02	1.01	0.65
SNP-09 Hearne Pit	10-Mar-2023	38.12	5.07	8.20	5,374.56	1.18	2.07	1.33
SNP-09 Hearne Pit	11-Mar-2023	42.36	5.15	8.72	5,620.89	4.38	0.00	0.00
SNP-09 Hearne Pit	12-Mar-2023	49.71	6.20	8.67	5,694.24	3.46	0.03	0.02
SNP-09 Hearne Pit	13-Mar-2023	42.27	5.12	8.54	5,455.65	4.49	0.00	0.00
SNP-09 Hearne Pit	22-Mar-2023	101.27	13.27	7.80	4,204.54	1.47	4.18	2.70
SNP-09 Hearne Pit	23-Mar-2023	53.65	6.91	8.16	4,005.81	2.26	0.00	0.00
SNP-09 Hearne Pit	24-Mar-2023	63.41	8.07	9.08	4,288.48	2.62	0.00	0.00
SNP-09 Hearne Pit	25-Mar-2023	47.53	6.05	8.73	4,092.50	3.05	0.00	0.00
SNP-09 Hearne Pit	26-Mar-2023	51.49	6.57	8.70	5,075.04	3.08	0.00	0.00
SNP-09 Hearne Pit	27-Mar-2023	40.44	5.05	8.54	5,295.33	3.83	0.00	0.00
SNP-09 Hearne Pit	28-Mar-2023	46.27	5.74	8.81	5,383.33	3.68	0.72	0.46
SNP-09 Hearne Pit	3-Apr-2023	61.07	7.58	7.35	4,045.57	3.70	0.00	0.00
SNP-09 Hearne Pit	4-Apr-2023	48.54	6.15	8.56	4,476.89	2.95	0.00	0.00
SNP-09 Hearne Pit	14-Apr-2023	70.61	8.94	8.31	4,869.77	2.96	0.00	0.00
SNP-09 Hearne Pit	21-Apr-2023	64.50	7.57	8.14	4,877.38	6.22	3,104.90	2,003.16
SNP-09 Hearne Pit	22-Apr-2023	53.93	6.42	8.39	5,187.72	5.28	6.54	4.22
SNP-09 Hearne Pit	23-Apr-2023	68.65	7.88	8.46	3,744.84	6.87	22.04	14.22
SNP-09 Hearne Pit	24-Apr-2023	55.72	6.69	7.86	4,236.08	5.15	21.41	13.81
SNP-09 Hearne Pit	25-Apr-2023	53.73	6.35	8.35	4,253.32	5.44	8.73	5.63
SNP-09 Hearne Pit	26-Apr-2023	65.55	7.61	7.84	3,353.82	6.21	22.72	14.66
SNP-09 Hearne Pit	27-Apr-2023	71.28	8.33	7.85	2,404.34	6.11	31.49	20.32
SNP-09 Hearne Pit	28-Apr-2023	97.69	11.98	8.30	1,555.74	4.29	1,846.13	1,191.05
SNP-09 Hearne Pit	29-Apr-2023	90.65	11.00	8.28	1,248.22	5.17	1,948.21	1,256.91
SNP-09 Hearne Pit	30-Apr-2023	85.25	10.35	8.45	1,650.60	4.72	1,225.32	790.53

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	1-May-2023	85.57	10.48	8.31	1,925.97	4.09	323.56	208.75
SNP-09 Hearne Pit	3-May-2023	74.82	8.64	8.22	2,477.42	6.63	55.53	35.83
SNP-09 Hearne Pit	4-May-2023	84.70	10.15	8.22	2,111.07	5.21	67.10	43.29
SNP-09 Hearne Pit	5-May-2023	62.28	7.48	8.21	3,046.56	5.38	14.61	9.43
SNP-09 Hearne Pit	6-May-2023	60.12	6.87	8.02	3,432.00	7.57	88.55	57.13
SNP-09 Hearne Pit	7-May-2023	54.42	6.14	7.89	3,661.13	7.54	92.32	59.56
SNP-09 Hearne Pit	8-May-2023	56.15	6.47	8.08	3,679.74	6.63	24.33	15.70
SNP-09 Hearne Pit	9-May-2023	76.88	8.79	7.84	2,662.80	6.85	178.98	115.47
SNP-09 Hearne Pit	10-May-2023	75.73	8.67	7.10	2,784.18	6.94	14.30	9.23
SNP-09 Hearne Pit	12-May-2023	74.42	8.83	8.13	2,475.89	5.71	13.35	8.61
SNP-09 Hearne Pit	13-May-2023	62.97	7.27	7.42	3,149.39	6.44	14.39	9.29
SNP-09 Hearne Pit	14-May-2023	58.07	6.54	8.07	3,523.54	7.73	80.27	51.79
SNP-09 Hearne Pit	15-May-2023	59.83	6.95	7.82	3,491.91	6.68	9.85	6.35
SNP-09 Hearne Pit	16-May-2023	57.25	6.72	7.68	3,371.62	6.03	18.53	11.95
SNP-09 Hearne Pit	20-May-2023	63.98	7.65	7.92	3,188.79	5.52	3.47	2.24
SNP-09 Hearne Pit	21-May-2023	52.15	5.70	7.81	3,843.54	8.46	7.42	4.79
SNP-09 Hearne Pit	22-May-2023	51.16	5.85	7.84	4,229.00	6.98	6.47	4.17
SNP-09 Hearne Pit	23-May-2023	50.68	5.48	7.44	3,917.83	9.39	11.03	7.12
SNP-09 Hearne Pit	24-May-2023	59.81	7.11	8.10	3,862.98	4.99	24.30	15.68
SNP-09 Hearne Pit	25-May-2023	55.96	6.30	7.68	4,509.04	7.53	7.21	4.65
SNP-09 Hearne Pit	28-May-2023	43.82	5.06	7.89	3,678.07	5.63	211.09	136.18
SNP-09 Hearne Pit	29-May-2023	40.90	4.97	8.20	4,148.89	3.87	402.52	259.69
SNP-09 Hearne Pit	30-May-2023	67.48	6.52	7.77	4,721.10	14.10	62.17	40.11
SNP-09 Hearne Pit	1-Jun-2023	52.91	5.79	7.89	6,476.85	7.81	80.19	51.74
SNP-09 Hearne Pit	3-Jun-2023	48.70	5.50	9.56	5,622.58	7.54	15.99	10.32
SNP-09 Hearne Pit	4-Jun-2023	50.87	5.38	9.28	5,096.77	10.38	0.61	0.40
SNP-09 Hearne Pit	5-Jun-2023	67.08	7.13	9.31	5,051.03	9.85	2.58	1.66
SNP-09 Hearne Pit	6-Jun-2023	53.99	5.91	8.80	5,504.83	8.00	113.02	72.92
SNP-09 Hearne Pit	7-Jun-2023	55.15	5.99	8.84	4,537.86	8.37	1.00	0.64
SNP-09 Hearne Pit	8-Jun-2023	55.86	6.36	8.74	4,187.84	7.03	0.23	0.15
SNP-09 Hearne Pit	9-Jun-2023	54.90	6.11	8.82	4,137.31	8.09	0.20	0.13
SNP-09 Hearne Pit	11-Jun-2023	74.28	8.48	8.86	4,175.28	6.77	24.33	15.70
SNP-09 Hearne Pit	12-Jun-2023	84.44	9.92	8.21	3,554.80	5.93	21.96	14.04
SNP-09 Hearne Pit	13-Jun-2023	75.07	8.73	8.24	2,614.64	6.33	0.44	0.29
SNP-09 Hearne Pit	14-Jun-2023	56.24	6.30	7.78	3,313.23	7.57	0.00	0.00
SNP-09 Hearne Pit	15-Jun-2023	65.24	7.28	8.43	3,570.54	7.53	1.19	0.77
SNP-09 Hearne Pit	17-Jun-2023	66.77	7.03	8.50	3,659.67	9.95	10.07	6.50
SNP-09 Hearne Pit	18-Jun-2023	55.70	6.03	8.53	3,789.06	8.90	0.69	0.45
SNP-09 Hearne Pit	19-Jun-2023	51.22	9.54	8.38	3,859.96	8.19	0.00	0.00
SNP-09 Hearne Pit	20-Jun-2023	54.70	6.03	9.76	3,902.53	8.42	0.00	0.00
SNP-09 Hearne Pit	21-Jun-2023	44.02	4.75	8.42	4,279.56	9.28	1.62	1.05
SNP-09 Hearne Pit	22-Jun-2023	48.00	5.11	8.45	4,266.22	9.72	0.00	0.00
SNP-09 Hearne Pit	23-Jun-2023	48.18	5.00	7.97	4,230.68	10.61	0.00	0.00

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	24-Jun-2023	45.29	4.84	8.24	4,307.18	9.33	0.00	0.00
SNP-09 Hearne Pit	25-Jun-2023	51.03	5.55	8.59	4,424.52	9.00	0.00	0.00
SNP-09 Hearne Pit	2-Jul-2023	69.45	7.76	7.98	4,342.80	7.39	13.05	8.42
SNP-09 Hearne Pit	3-Jul-2023	90.14	8.98	7.84	3,713.07	12.14	3.28	2.12
SNP-09 Hearne Pit	4-Jul-2023	77.04	8.28	7.62	3,393.63	9.08	2.49	1.61
SNP-09 Hearne Pit	5-Jul-2023	67.33	7.27	7.93	3,734.45	8.61	3.44	2.22
SNP-09 Hearne Pit	6-Jul-2023	66.56	7.11	7.86	3,987.87	9.89	2.72	1.75
SNP-09 Hearne Pit	7-Jul-2023	62.28	6.76	7.82	4,145.65	9.21	3.17	2.04
SNP-09 Hearne Pit	8-Jul-2023	50.97	5.92	8.19	4,061.56	6.23	2.88	1.86
SNP-09 Hearne Pit	11-Jul-2023	60.87	6.51	7.87	4,304.31	9.71	3.65	2.35
SNP-09 Hearne Pit	12-Jul-2023	60.39	6.80	7.92	4,310.84	7.37	2.75	1.77
SNP-09 Hearne Pit	13-Jul-2023	65.38	6.64	7.72	3,998.70	11.82	3.37	2.18
SNP-09 Hearne Pit	14-Jul-2023	89.42	9.39	7.65	4,244.46	10.08	3.79	2.44
SNP-09 Hearne Pit	15-Jul-2023	60.15	6.39	8.02	4,368.44	9.79	2.58	1.66
SNP-09 Hearne Pit	16-Jul-2023	51.32	5.40	7.76	4,377.08	10.60	2.30	1.48
SNP-09 Hearne Pit	17-Jul-2023	57.46	5.90	8.04	4,449.57	11.80	4.01	2.59
SNP-09 Hearne Pit	18-Jul-2023	53.10	5.60	7.67	4,263.95	11.23	3.63	2.34
SNP-09 Hearne Pit	19-Jul-2023	47.86	5.12	7.67	4,138.63	10.58	3.88	2.50
SNP-09 Hearne Pit	20-Jul-2023	49.07	5.25	7.33	4,076.91	10.60	2.96	1.91
SNP-09 Hearne Pit	21-Jul-2023	44.49	4.63	8.17	4,074.42	10.31	3.57	2.30
SNP-09 Hearne Pit	22-Jul-2023	53.07	5.62	8.05	4,092.28	10.28	2.22	1.45
SNP-09 Hearne Pit	23-Jul-2023	56.42	5.88	8.15	4,109.37	11.01	0.00	0.00
SNP-09 Hearne Pit	24-Jul-2023	54.04	5.30	8.82	4,122.16	13.42	0.00	0.00
SNP-09 Hearne Pit	25-Jul-2023	55.68	5.76	7.93	3,886.50	11.20	0.00	0.00
SNP-09 Hearne Pit	26-Jul-2023	54.58	5.62	7.92	4,166.73	11.42	2.29	1.48
SNP-09 Hearne Pit	28-Jul-2023	60.49	6.05	7.09	4,335.18	12.71	6.47	4.16
SNP-09 Hearne Pit	29-Jul-2023	54.69	5.52	7.32	4,256.35	11.97	0.00	0.00
SNP-09 Hearne Pit	30-Jul-2023	53.29	5.75	7.51	3,929.55	9.20	0.00	0.00
SNP-09 Hearne Pit	1-Aug-2023	57.80	5.77	7.97	4,193.34	12.42	0.00	0.00
SNP-09 Hearne Pit	2-Aug-2023	60.68	6.28	6.95	4,080.81	11.11	0.00	0.00
SNP-09 Hearne Pit	3-Aug-2023	67.09	6.83	7.20	4,053.84	11.82	0.00	0.00
SNP-09 Hearne Pit	5-Aug-2023	65.71	6.86	7.81	3,723.55	10.99	0.00	0.00
SNP-09 Hearne Pit	6-Aug-2023	62.09	6.37	7.36	3,997.60	11.75	0.00	0.00
SNP-09 Hearne Pit	7-Aug-2023	63.58	6.79	7.77	4,125.23	10.00	0.00	0.00
SNP-09 Hearne Pit	8-Aug-2023	61.70	6.38	7.62	4,099.72	11.29	0.00	0.00
SNP-09 Hearne Pit	9-Aug-2023	55.33	5.46	7.61	4,123.62	12.87	0.00	0.00
SNP-09 Hearne Pit	10-Aug-2023	53.05	5.08	7.88	4,134.90	13.99	0.00	0.00
SNP-09 Hearne Pit	11-Aug-2023	57.11	5.66	7.77	4,110.12	12.49	0.00	0.00
SNP-09 Hearne Pit	12-Aug-2023	52.58	5.35	7.99	4,160.21	11.40	0.00	0.00
SNP-09 Hearne Pit	13-Aug-2023	50.35	5.00	7.52	4,073.80	12.05	0.00	0.00
SNP-09 Hearne Pit	14-Aug-2023	57.44	5.91	7.25	4,098.09	10.80	0.00	0.00
SNP-09 Hearne Pit	15-Aug-2023	62.80	6.34	7.44	4,097.61	11.48	0.00	0.00
SNP-09 Hearne Pit	16-Aug-2023	57.65	5.82	7.84	3,178.43	11.56	0.00	0.00

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	17-Aug-2023	59.24	6.07	7.77	4,098.89	10.14	0.00	0.00
SNP-09 Hearne Pit	18-Aug-2023	62.74	6.46	7.70	4,084.44	10.23	0.00	0.00
SNP-09 Hearne Pit	19-Aug-2023	59.93	6.17	7.56	4,090.02	9.90	0.00	0.00
SNP-09 Hearne Pit	20-Aug-2023	59.86	6.19	7.91	4,048.32	9.89	0.00	0.00
SNP-09 Hearne Pit	22-Aug-2023	47.08	5.06	6.77	4,245.46	8.33	0.00	0.00
SNP-09 Hearne Pit	23-Aug-2023	53.85	5.51	7.36	4,137.00	12.42	0.00	0.00
SNP-09 Hearne Pit	24-Aug-2023	57.13	5.85	7.56	4,048.55	11.18	0.00	0.00
SNP-09 Hearne Pit	25-Aug-2023	55.59	5.65	7.44	4,095.05	12.14	0.00	0.00
SNP-09 Hearne Pit	26-Aug-2023	73.77	7.46	6.99	3,958.85	10.60	0.00	0.00
SNP-09 Hearne Pit	27-Aug-2023	67.03	7.03	7.49	3,973.65	10.58	0.00	0.00
SNP-09 Hearne Pit	28-Aug-2023	60.39	6.37	7.85	4,070.47	9.75	0.00	0.00
SNP-09 Hearne Pit	29-Aug-2023	53.07	5.54	7.88	4,055.59	10.69	0.00	0.00
SNP-09 Hearne Pit	30-Aug-2023	63.24	6.34	7.71	3,978.41	11.42	0.00	0.00
SNP-09 Hearne Pit	31-Aug-2023	55.96	5.69	7.71	4,038.70	11.17	0.00	0.00
SNP-09 Hearne Pit	1-Sep-2023	61.72	6.25	7.51	4,053.61	10.81	0.00	0.00
SNP-09 Hearne Pit	2-Sep-2023	54.65	5.58	7.70	4,061.54	10.85	0.00	0.00
SNP-09 Hearne Pit	3-Sep-2023	64.36	6.88	7.57	4,058.45	9.40	0.00	0.00
SNP-09 Hearne Pit	4-Sep-2023	56.46	5.91	7.66	4,060.42	8.87	0.00	0.00
SNP-09 Hearne Pit	5-Sep-2023	58.97	6.55	7.69	3,854.89	8.85	0.00	0.00
SNP-09 Hearne Pit	6-Sep-2023	67.91	7.10	7.34	3,625.79	9.60	0.00	0.00
SNP-09 Hearne Pit	7-Sep-2023	57.46	6.28	7.31	4,018.37	8.60	0.00	0.00
SNP-09 Hearne Pit	8-Sep-2023	45.27	4.83	7.62	3,824.01	9.00	0.00	0.00
SNP-09 Hearne Pit	13-Sep-2023	51.01	5.66	7.45	4,715.20	7.20	0.00	0.00
SNP-09 Hearne Pit	14-Sep-2023	54.67	5.94	7.55	3,990.15	7.95	0.00	0.00
SNP-09 Hearne Pit	15-Sep-2023	63.75	6.67	7.30	3,824.66	8.91	0.00	0.00
SNP-09 Hearne Pit	16-Sep-2023	50.60	5.20	7.60	3,986.93	10.31	0.00	0.00
SNP-09 Hearne Pit	17-Sep-2023	54.83	5.68	7.28	3,962.68	10.24	0.00	0.00
SNP-09 Hearne Pit	18-Sep-2023	54.49	5.71	7.04	4,059.19	8.90	0.00	0.00
SNP-09 Hearne Pit	19-Sep-2023	51.15	5.36	7.39	4,057.88	8.95	0.00	0.00
SNP-09 Hearne Pit	20-Sep-2023	58.76	6.33	7.33	4,479.19	8.48	0.00	0.00
SNP-09 Hearne Pit	21-Sep-2023	65.98	7.17	6.89	3,793.18	7.77	0.00	0.00
SNP-09 Hearne Pit	22-Sep-2023	55.17	5.81	7.30	3,530.43	10.17	0.00	0.00
SNP-09 Hearne Pit	23-Sep-2023	55.19	5.67	7.16	3,490.11	10.88	0.00	0.00
SNP-09 Hearne Pit	24-Sep-2023	49.70	5.46	7.37	3,461.79	7.70	0.00	0.00
SNP-09 Hearne Pit	25-Sep-2023	58.18	6.17	6.99	3,484.08	9.23	0.00	0.00
SNP-09 Hearne Pit	26-Sep-2023	62.32	6.79	7.40	3,527.14	7.78	0.00	0.00
SNP-09 Hearne Pit	27-Sep-2023	56.08	5.93	7.00	3,569.32	9.21	0.30	0.20
SNP-09 Hearne Pit	28-Sep-2023	55.17	5.85	7.07	3,818.76	8.64	0.00	0.00
SNP-09 Hearne Pit	29-Sep-2023	67.49	7.27	7.24	3,869.12	8.16	0.12	0.08
SNP-09 Hearne Pit	30-Sep-2023	69.84	7.54	6.77	3,824.81	9.05	0.00	0.00
SNP-09 Hearne Pit	1-Oct-2023	67.71	7.67	7.41	3,868.07	6.65	0.00	0.00
SNP-09 Hearne Pit	2-Oct-2023	69.38	7.72	7.11	3,768.81	7.13	0.00	0.00
SNP-09 Hearne Pit	3-Oct-2023	62.16	6.91	7.29	3,780.69	7.47	0.00	0.00

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	4-Oct-2023	47.29	5.01	7.50	3,755.27	8.69	0.00	0.00
SNP-09 Hearne Pit	5-Oct-2023	47.17	5.31	7.37	3,596.95	7.31	0.00	0.00
SNP-09 Hearne Pit	6-Oct-2023	44.65	4.87	6.46	3,534.90	7.25	0.00	0.00
SNP-09 Hearne Pit	9-Oct-2023	69.81	7.09	7.33	3,500.72	10.62	0.00	0.00
SNP-09 Hearne Pit	10-Oct-2023	59.18	6.59	6.57	3,487.87	7.19	0.00	0.00
SNP-09 Hearne Pit	11-Oct-2023	44.37	4.82	7.52	3,707.29	8.59	0.00	0.00
SNP-09 Hearne Pit	12-Oct-2023	45.35	4.86	6.71	3,616.41	9.78	0.00	0.00
SNP-09 Hearne Pit	13-Oct-2023	40.49	4.40	6.76	3,772.89	9.09	0.00	0.00
SNP-09 Hearne Pit	14-Oct-2023	46.73	5.10	6.58	3,682.38	9.00	0.00	0.00
SNP-09 Hearne Pit	15-Oct-2023	47.54	5.45	7.08	3,767.32	7.45	11.48	7.41
SNP-09 Hearne Pit	18-Oct-2023	65.96	7.20	7.13	3,566.73	8.31	52.20	33.68
SNP-09 Hearne Pit	19-Oct-2023	63.19	6.84	6.58	3,554.83	8.83	14.72	9.50
SNP-09 Hearne Pit	20-Oct-2023	64.23	7.21	7.24	3,559.19	7.38	0.00	0.00
SNP-09 Hearne Pit	21-Oct-2023	65.86	7.49	7.16	3,559.35	7.38	0.00	0.00
SNP-09 Hearne Pit	22-Oct-2023	70.66	8.23	7.27	3,574.67	5.03	0.11	0.01
SNP-09 Hearne Pit	23-Oct-2023	63.62	7.24	7.19	3,858.77	6.96	0.00	0.00
SNP-09 Hearne Pit	24-Oct-2023	59.39	6.89	7.37	3,706.17	7.09	0.00	0.00
SNP-09 Hearne Pit	25-Oct-2023	59.44	6.79	7.50	3,812.03	6.15	0.90	0.68
SNP-09 Hearne Pit	26-Oct-2023	60.51	6.71	7.47	3,805.46	7.05	0.00	0.00
SNP-09 Hearne Pit	28-Oct-2023	66.89	7.56	7.69	3,575.86	6.93	8.90	5.74
SNP-09 Hearne Pit	29-Oct-2023	51.94	5.96	7.68	3,614.20	6.28	0.54	0.35
SNP-09 Hearne Pit	30-Oct-2023	53.12	6.14	7.68	3,650.27	6.09	0.46	0.30
SNP-09 Hearne Pit	31-Oct-2023	51.18	5.86	7.60	3,698.38	6.23	0.00	0.00
SNP-09 Hearne Pit	1-Nov-2023	63.13	7.21	7.63	3,719.81	6.33	1.45	0.94
SNP-09 Hearne Pit	2-Nov-2023	54.94	6.24	7.69	3,364.65	6.39	0.00	0.00
SNP-09 Hearne Pit	3-Nov-2023	54.93	6.28	7.69	3,318.98	5.86	0.00	0.00
SNP-09 Hearne Pit	4-Nov-2023	52.79	6.07	7.67	3,864.77	5.88	0.95	0.62
SNP-09 Hearne Pit	5-Nov-2023	70.42	8.17	7.65	3,976.36	4.96	20.45	13.20
SNP-09 Hearne Pit	6-Nov-2023	58.42	6.87	7.77	3,778.12	5.00	1.31	0.85
SNP-09 Hearne Pit	7-Nov-2023	48.69	5.73	7.80	3,929.98	5.16	0.00	0.00
SNP-09 Hearne Pit	9-Nov-2023	71.53	7.96	7.64	3,385.08	6.31	6.58	4.25
SNP-09 Hearne Pit	11-Nov-2023	52.73	5.97	7.98	3,807.74	6.41	0.00	0.00
SNP-09 Hearne Pit	12-Nov-2023	59.18	6.73	8.01	3,818.28	5.47	0.00	0.00
SNP-09 Hearne Pit	13-Nov-2023	50.39	5.68	7.72	3,785.01	6.01	0.00	0.00
SNP-09 Hearne Pit	14-Nov-2023	56.08	6.46	8.07	3,723.29	4.68	0.00	0.00
SNP-09 Hearne Pit	15-Nov-2023	60.62	7.25	7.54	3,401.06	4.93	0.00	0.00
SNP-09 Hearne Pit	16-Nov-2023	57.21	6.96	7.78	3,527.72	4.03	9.71	6.27
SNP-09 Hearne Pit	17-Nov-2023	61.06	6.78	7.76	3,700.61	6.50	1.40	0.90
SNP-09 Hearne Pit	18-Nov-2023	61.11	6.97	7.49	3,907.50	5.56	0.00	0.00
SNP-09 Hearne Pit	19-Nov-2023	60.56	7.01	7.49	3,845.74	5.26	0.00	0.00
SNP-09 Hearne Pit	20-Nov-2023	62.00	7.08	7.49	3,770.27	5.60	0.00	0.00
SNP-09 Hearne Pit	21-Nov-2023	70.05	8.22	7.54	3,526.30	4.97	33.69	21.73
SNP-09 Hearne Pit	23-Nov-2023	86.02	10.00	7.50	4,488.19	5.02	44.39	28.64

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	24-Nov-2023	62.56	7.22	7.48	3,861.81	5.50	1.33	0.86
SNP-09 Hearne Pit	25-Nov-2023	66.97	7.84	7.55	3,777.84	4.78	2.43	1.57
SNP-09 Hearne Pit	28-Nov-2023	84.16	9.82	7.59	4,454.16	4.91	19.11	12.33
SNP-09 Hearne Pit	29-Nov-2023	56.49	6.52	7.58	3,970.43	4.69	2.79	1.82
SNP-09 Hearne Pit	30-Nov-2023	53.10	6.24	7.59	4,084.73	3.62	0.59	0.38
SNP-09 Hearne Pit	1-Dec-2023	49.39	5.82	7.59	4,058.61	4.27	3.97	2.56
SNP-09 Hearne Pit	4-Dec-2023	85.97	10.26	7.78	4,622.03	4.09	20.51	13.23
SNP-09 Hearne Pit	5-Dec-2023	59.29	6.85	7.65	4,125.85	5.19	1.88	1.22
SNP-09 Hearne Pit	6-Dec-2023	54.62	6.12	7.58	4,042.68	6.10	1.20	0.77
SNP-09 Hearne Pit	7-Dec-2023	45.90	5.29	7.60	4,153.60	4.95	4.76	3.07
SNP-09 Hearne Pit	8-Dec-2023	44.78	5.13	7.61	4,296.39	4.85	1.11	0.67
SNP-09 Hearne Pit	9-Dec-2023	47.55	5.58	7.62	4,331.12	3.95	0.00	0.00
SNP-09 Hearne Pit	10-Dec-2023	46.90	5.86	7.70	3,623.97	3.46	0.00	0.00
SNP-09 Hearne Pit	12-Dec-2023	70.17	9.14	7.68	4,760.68	2.39	7.06	4.56
SNP-09 Hearne Pit	13-Dec-2023	56.64	6.94	7.83	4,115.89	5.06	1.05	0.68
SNP-09 Hearne Pit	14-Dec-2023	50.39	6.23	7.65	3,910.72	4.12	0.00	0.00
SNP-09 Hearne Pit	19-Dec-2023	49.42	6.43	8.61	4,753.85	1.78	22.89	14.77
SNP-09 Hearne Pit	20-Dec-2023	46.33	5.53	8.50	4,404.66	4.57	22.33	14.99
SNP-09 Hearne Pit	21-Dec-2023	41.41	4.80	8.48	4,301.82	5.32	7.39	4.77
SNP-09 Hearne Pit	22-Dec-2023	37.35	4.43	8.55	4,125.24	4.53	1.75	1.13
SNP-09 Hearne Pit	23-Dec-2023	37.52	4.29	8.45	4,031.84	5.90	0.74	0.48
SNP-09 Hearne Pit	24-Dec-2023	39.75	4.67	8.46	4,066.61	5.40	0.00	0.00
SNP-09 Hearne Pit	25-Dec-2023	36.98	4.30	8.62	4,009.69	5.70	0.15	0.10
SNP-09 Hearne Pit	28-Dec-2023	71.35	8.48	7.91	4,061.59	5.10	0.59	0.38
SNP-09 Hearne Pit	29-Dec-2023	44.37	5.18	8.05	3,903.54	6.01	0.00	0.00

G09_B	Summary of Weekly and Monthly Water Quality Results at SNP-09										
Date	**1-Jan-2023**	**13-Jan-2023**	**16-Jan-2023**	**23-Jan-2023**	**2-Feb-2023**	**11-Feb-2023**	**1-Mar-2023**	**9-Mar-2023**	**13-Mar-2023**	**27-Mar-2023**	**3-Apr-2023**
Conductivity (µS/cm)	4880	4590	4370	4160	4550	5830	3290	4900	5440	5410	4080
pH (pH units)	7.90	7.93	7.97	7.95	7.86	7.65	7.94	7.88	7.77	7.84	7.81
Total Suspended Solids (mg/L)	26.90	1.90	6.40	105.00	5.30	11.70	35.50	2	3.00	<1.0	1.90
Turbidity (NTU)	15.70	0.62	3.40	58.00	2.32	10.10	15.80	2	0.44	0.23	0.88
Alkalinity, Bicarbonate (mg/L)	68.10	71.60	78.10	82	88	46.20	91.70	52	55.60	44.60	60.10
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
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)	68.10	71.60	78.10	82	88	46.20	91.70	52	55.60	44.60	60.10
Calcium (Ca)-Total (mg/L)	431				390		282				383
Chloride (mg/L)	1370	1270	1200	1130	1220	1770	831	1420	1630	1640	1040
Fluoride (mg/L)	0.68	0.622	0.67	0.56	0.65	0.61	0.874	0.585	0.71	0.58	0.60
Hardness (as CaCO3) (mg/L)	1620	1460	1470	1390	1480	1810	1060	1330	1560	1650	1280
Magnesium (Mg)-Total (mg/L)	136				103		91				82
Potassium (K)-Total (mg/L)	15.00				15.3		12.20				18.50
Silicate (as SiO2) (mg/L)	10.10	10.10	10.70	11.10	10.10	8.30	11.50	8	8.18	7.17	8.81
Sodium (Na)-Total (mg/L)	354				324		264				320
Sulfate (mg/L)	419	394	393	382	398	369	392	280	297	317	265
TDS (mg/L)	3930	2940	2650	2750	2800	4080	2030	2860	3360	3030	2390
Ammonia, Total (as N) (mg/L)	3.12	2.79	3.12	5.48	7.03	1.67	3.44	24.00	23.00	14.90	9.28
Nitrate and Nitrite (mg/L)	2.57	1.39	2.70	7.96	9.11	0.97	4	18.70	16.80	8.42	3.78
Nitrate as Nitrogen (mg/L)	2.29	1.32	2.58	7.63	7.22	0.73	3	17.90	15.20	7.45	3.37
Nitrite as Nitrogen (mg/L)	0.28	0.07	0.12	0.33	1.89	0.23	0.44	0.84	1.57	0.97	0.41
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	0.0013
Phosph (P)-Dis Inorg (mg/L)	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	0.0022	<0.0020	0.0023	0.00	0.003	<0.0020	<0.0020	0.0022	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.0054	0.0022	<0.0010	0.0023	0.0022	0.0030	0.0022	0.0013	0.0022	0.0027	0.0025
Phosph (P)-Tot Inorg (mg/L)	0.0160	0.0038	0.0054	0.0813	0.0023	0.0197	0.0396	0.0028	0.0030	0.0015	0.0021
Phosphorus - Total (mg/L)	0.0191	0.0033	0.0056	0.0845	0.0060	0.0166	0.0331	0.0034	0.0020	0.0022	0.0041
Total Kjeldahl Nitrogen (mg/L)	3.41	3.33	3.21	5.98	6.84	1.78	3.60	24	22.80	15.30	10.00
Total Organic Carbon (mg/L)	2.53	2.35	2.07	2.03	3.05	2.21	2.52	4.18	3.24	2.35	2.37
Aluminum (Al)-Total (mg/L)	0.83				0.142		1.03				0.02
Antimony (Sb)-Total (mg/L)	0.00				0.00043		0.00				0.00
Arsenic (As)-Total (mg/L)	0.00				0.00133		0.00				0.00
Barium (Ba)-Total (mg/L)	0.04				0.047		0.04				0.06
Beryllium (Be)-Total (mg/L)	<0.000040				<0.000040		<0.000040				<0.000040
Bismuth (Bi)-Total (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100
Boron (B)-Total (mg/L)	0.88				0.801		0.71				1.04
Cadmium (Cd)-Total (mg/L)	<0.0000100				<0.0000100		<0.0000100				<0.0000100
Cesium (Cs)-Total (mg/L)	0.00				0.000162		0.00				0.00
Chromium (Cr)-Total (mg/L)	0.01				0.00071		0.01				0.00
Cobalt (Co)-Total (mg/L)	0.00				0.00211		0.00				0.00
Copper (Cu)-Total (mg/L)	0.00				0.00266		0.00				0.00
Iron (Fe)-Total (mg/L)	1.02				0.23		1.14				0.09
Lead (Pb)-Total (mg/L)	<0.000060				<0.000060		0.00017				<0.000060

Date	1-Jan-2023	13-Jan-2023	16-Jan-2023	23-Jan-2023	2-Feb-2023	11-Feb-2023	1-Mar-2023	9-Mar-2023	13-Mar-2023	27-Mar-2023	3-Apr-2023
Lithium (Li)-Total (mg/L)	0.08				0.0772		0.07				0.07
Manganese (Mn)-Total (mg/L)	0.09				0.115		0.09				0.07
Mercury (Hg)-Total (mg/L)	<0.0000050				<0.0000050		<0.0000050				<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.03				0.0368		0.03				0.01
Nickel (Ni)-Total (mg/L)	0.07				0.0429		0.06				0.02
Rubidium (Rb)-Total (mg/L)	0.01				0.0182		0.01				0.03
Selenium (Se)-Total (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100
Silver (Ag)-Total (mg/L)	<0.000020				<0.000020		<0.000020				<0.000020
Strontium (Sr)-Total (mg/L)	7.99				7.57		5.22				7.40
Sulfur (S)-Total (mg/L)	164				143		136				115
Tellurium (Te)-Total (mg/L)	0.00				0.00061		0.00				0.00
Thallium (Tl)-Total (mg/L)	<0.000020				<0.000020		0.00002				<0.000020
Thorium (Th)-Total (mg/L)	0.00				<0.00020		0.00049				<0.00020
Tin (Sn)-Total (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100
Titanium (Ti)-Total (mg/L)	<0.00990				0.00182		0.02				<0.00060
Tungsten (W)-Total (mg/L)	0.00				0.0009		0.00				0.00
Uranium (U)-Total (mg/L)	0.01				0.0128		0.01				0.01
Vanadium (V)-Total (mg/L)	0.00				0.00174		0.00				0.00
Zinc (Zn)-Total (mg/L)	0.01				<0.0030		<0.0030				<0.0030
Zirconium (Zr)-Total (mg/L)	0.00				<0.00040		0.0007				<0.00040
Aluminum (Al)-Dissolved (mg/L)	<0.0020				0.003		0.003				0.0026
Antimony (Sb)-Dissolved (mg/L)	0.00				0.00042		0.00				0.00
Arsenic (As)-Dissolved (mg/L)	0.00				0.00115		0.00				0.00
Barium (Ba)-Dissolved (mg/L)	0.03				0.0448		0.03				0.05
Beryllium (Be)-Dissolved (mg/L)	<0.000040				<0.000040		<0.000040				<0.000040
Bismuth (Bi)-Dissolved (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100
Boron (B)-Dissolved (mg/L)	0.85				0.863		0.67				0.91
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100				<0.0000100		<0.0000100				<0.0000100
Calcium (Ca)-Dissolved (mg/L)	425	394	406	381	419	550	280	387	446	491	376
Cesium (Cs)-Dissolved (mg/L)	0.00				0.000159		0.00				0.00
Chromium (Cr)-Dissolved (mg/L)	<0.00020				<0.00020		<0.00020				<0.00020
Cobalt (Co)-Dissolved (mg/L)	0.00				0.00189		0.00				0.00
Copper (Cu)-Dissolved (mg/L)	<0.00030				0.00253		0.00				0.00
Iron (Fe)-Dissolved (mg/L)	0.01				0.0439		<0.0100				0.01
Lead (Pb)-Dissolved (mg/L)	<0.000060				<0.000060		<0.000060				<0.000060
Lithium (Li)-Dissolved (mg/L)	0.07				0.0724		0.06				0.07
Magnesium (Mg)-Dissolved (mg/L)	136	116	110	107	105	106	88	89	109	103	84
Manganese (Mn)-Dissolved (mg/L)	0.08				0.116		0.08				0.07
Mercury (Hg)-Dissolved (mg/L)	<0.0000050				<0.0000050		<0.0000050				<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.03				0.0353		0.03				0.01
Nickel (Ni)-Dissolved (mg/L)	0.05				0.0412		0.04				0.02
Phosphorus - Dissolved (mg/L)	<0.020										
Potassium (K)-Dissolved (mg/L)	14.60	13.00	12.40	12.30	16.60	18.30	11.80	28.60	26.70	23.80	17.80
Rubidium (Rb)-Dissolved (mg/L)	0.01				0.0188		0.01				0.03
Selenium (Se)-Dissolved (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100

Date	1-Jan-2023	13-Jan-2023	16-Jan-2023	23-Jan-2023	2-Feb-2023	11-Feb-2023	1-Mar-2023	9-Mar-2023	13-Mar-2023	27-Mar-2023	3-Apr-2023
Silver (Ag)-Dissolved (mg/L)	<0.000020				<0.000020		<0.000020				<0.000020
Sodium (Na)-Dissolved (mg/L)	357	338	324	304	348	440	263	350	376	371	314
Strontium (Sr)-Dissolved (mg/L)	8.64				7.4		5.19				7.11
Sulfur (S)-Dissolved (mg/L)	165				150		136				105
Tellurium (Te)-Dissolved (mg/L)	<0.00040				<0.00040		<0.00040				<0.00040
Thallium (Tl)-Dissolved (mg/L)	<0.000020				<0.000020		<0.000020				<0.000020
Thorium (Th)-Dissolved (mg/L)	<0.00020				<0.00020		<0.00020				<0.00020
Tin (Sn)-Dissolved (mg/L)	<0.000100				<0.000100		<0.000100				<0.000100
Titanium (Ti)-Dissolved (mg/L)	<0.00060				<0.00060		<0.00060				<0.00060
Tungsten (W)-Dissolved (mg/L)	0.00				0.00097		0.00				0.00
Uranium (U)-Dissolved (mg/L)	0.01				0.0133		0.01				0.01
Vanadium (V)-Dissolved (mg/L)	<0.00100				0.00128		0.0023				0.00158
Zinc (Zn)-Dissolved (mg/L)	0.0034				<0.0020		<0.0020				<0.0020
Zirconium (Zr)-Dissolved (mg/L)	<0.00040				<0.00040		<0.00040				<0.00040
Benzene (mg/L)	<0.00050				0.0149		0.00				0.01
Ethylbenzene (mg/L)	<0.00050				0.00165		<0.00050				0.00
F1 (C6-C10) (mg/L)	<0.10				<0.10		<0.10				<0.10
F2 (C10-C16) (mg/L)	<0.10				0.15		<0.10				0.10
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)	0.00				0.00753		<0.00050				0.00
Total Hydrocarbons (C6-C50) (mg/L)	<0.40				<0.40		<0.40				<0.40
Xylenes (mg/L)	<0.00075				0.00786		<0.00075				0.00
Ra-226 (Bq/L)											
Th-228 (Bq/L)	<0.4				0.4		<0.3				<0.3
Th-230 (Bq/L)	<30				<40		<10				<20
Th-232 (Bq/L)	<0.001				<0.001		<0.001				<0.001
U-234 (Bq/L)	0.11				0.16		0.12				0.06
U-235 (Bq/L)	0.0053				0.008		0.0062				0.0029
U-238 (Bq/L)	0.11				0.16		0.12				0.059

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Date	14-Apr-2023	22-Apr-2023	26-Apr-2023	1-May-2023	8-May-2023	15-May-2023	22-May-2023	1-Jun-2023	5-Jun-2023	12-Jun-2023	20-Jun-2023
Conductivity (µS/cm)	4990	5120	3660	1840	3750	3560	4480	6400	5040	3710	3820
pH (pH units)	7.85	7.59	7.75	7.70	7.88	7.79	7.83	7.74	8.49	7.96	7.63
Total Suspended Solids (mg/L)	3.00	2.00	6.80	263.00	27.70	21.1	8.10	6.10	4.6	19.60	<1.0
Turbidity (NTU)	1.18	0.78	9	158	6.98	5.25	3.30	4.96	1.12	28.50	0.17
Alkalinity, Bicarbonate (mg/L)	52.00	37.90	39.40	41.40	42.20	44.20	47.90	28.90	11.30	39.40	34.70
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6	<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)	52.00	37.90	39.40	41.40	42.20	44.20	47.90	28.90	17.30	39.40	34.70
Calcium (Ca)-Total (mg/L)				156					512		
Chloride (mg/L)	1400	1620	939	462	1050	947	1250	1900	1490	943	1100
Fluoride (mg/L)	0.64	0.63	0.57	0.47	0.64	0.56	0.54	<0.500	0.56	0.57	0.63
Hardness (as CaCO3) (mg/L)	1470	1580	949	551	1160	1110	1440	1810	1580	1200	1320
Magnesium (Mg)-Total (mg/L)				45.2					87.4		
Potassium (K)-Total (mg/L)				11.1					18.1		
Silicate (as SiO2) (mg/L)	7.89	7.16	5.68	5.03	6.75	6.88	7.06	2.98	3.73	6.38	7.07
Sodium (Na)-Total (mg/L)				126					385		
Sulfate (mg/L)	307	329	213	159	276	309	394	253	289	397	432
TDS (mg/L)	3000	3440	2070	1140	2880	2410	3460	3820	3750	2970	3270
Ammonia, Total (as N) (mg/L)	8.54	6.41	4.21	2.16	3.75	3.79	3.64	24.00	7.14	3.96	2.42
Nitrate and Nitrite (mg/L)	3.93	3.49	2.81	2.63	4.55	5.49	5.60	13.70	6.91	10.60	6.77
Nitrate as Nitrogen (mg/L)	3.49	3.18	2.65	2.54	4.36	5.30	5.41	13.50	6.80	10.40	6.68
Nitrite as Nitrogen (mg/L)	0.44	0.31	0.16	0.09	0.19	0.19	0.19	0.19	0.11	0.16	0.09
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	0.00	0.00	0.00	<0.0010	0.00	0.00	<0.0010	<0.0010	0.00
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	0.00	<0.0020	<0.0020	<0.0020	<0.0020	0.0038	0.0029	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.0011	<0.0010	0.0025	0.0036	0.0011	0.0016	0.0013	0.0024	0.0038	0.0029	0.0026
Phosph (P)-Tot Inorg (mg/L)	0.0035	0.0041	0.0119	0.2720	0.0119	0.0150	0.0104	0.0029	0.0029	0.0217	<0.0010
Phosphorus - Total (mg/L)	0.0033	0.0028	0.0110	0.2300	0.0213	0.0191	0.0105	0.0024	0.0052	0.0226	0.0016
Total Kjeldahl Nitrogen (mg/L)	8.48	7.16	4.41	2.23	3.84	4.52	4.12	23.20	7.84	4.99	3.24
Total Organic Carbon (mg/L)	2.04	2.32	4.84	6.65	2.18	2.01	1.92	2.55	2.17	2.80	2.06
Aluminum (Al)-Total (mg/L)				7.79					0.0151		
Antimony (Sb)-Total (mg/L)				0.00017					<0.00020		
Arsenic (As)-Total (mg/L)				0.00109					0.000292		
Barium (Ba)-Total (mg/L)				0.109					0.0829		
Beryllium (Be)-Total (mg/L)				0.000287					<0.000040		
Bismuth (Bi)-Total (mg/L)				<0.000050					<0.000100		
Boron (B)-Total (mg/L)				0.412					0.973		
Cadmium (Cd)-Total (mg/L)				0.0000117					<0.0000100		
Cesium (Cs)-Total (mg/L)				0.000333					0.000113		
Chromium (Cr)-Total (mg/L)				0.0172					0.00034		
Cobalt (Co)-Total (mg/L)				0.0061					0.000676		
Copper (Cu)-Total (mg/L)				0.00686					0.00078		
Iron (Fe)-Total (mg/L)				8.84					0.232		
Lead (Pb)-Total (mg/L)				0.00217					<0.000060		

Date	14-Apr-2023	22-Apr-2023	26-Apr-2023	1-May-2023	8-May-2023	15-May-2023	22-May-2023	1-Jun-2023	5-Jun-2023	12-Jun-2023	20-Jun-2023
Lithium (Li)-Total (mg/L)				0.0468					0.0788		
Manganese (Mn)-Total (mg/L)				0.157					0.0521		
Mercury (Hg)-Total (mg/L)				<0.0000050					<0.0000050		
Molybdenum (Mo)-Total (mg/L)				0.0127					0.0137		
Nickel (Ni)-Total (mg/L)				0.0604					0.012		
Rubidium (Rb)-Total (mg/L)				0.0229					0.0276		
Selenium (Se)-Total (mg/L)				0.000101					<0.000100		
Silver (Ag)-Total (mg/L)				0.000065					<0.000020		
Strontium (Sr)-Total (mg/L)				3.12					9.64		
Sulfur (S)-Total (mg/L)				56.7					115		
Tellurium (Te)-Total (mg/L)				0.00021					0.00084		
Thallium (Tl)-Total (mg/L)				0.000072					<0.000020		
Thorium (Th)-Total (mg/L)				0.00486					<0.00020		
Tin (Sn)-Total (mg/L)				0.000367					<0.000100		
Titanium (Ti)-Total (mg/L)				0.308					<0.00060		
Tungsten (W)-Total (mg/L)				0.00232					0.00034		
Uranium (U)-Total (mg/L)				0.00588					0.00102		
Vanadium (V)-Total (mg/L)				0.0151					<0.00100		
Zinc (Zn)-Total (mg/L)				0.023					<0.0030		
Zirconium (Zr)-Total (mg/L)				0.00245					<0.00040		
Aluminum (Al)-Dissolved (mg/L)				0.0216					<0.0020		
Antimony (Sb)-Dissolved (mg/L)				0.00014					<0.00020		
Arsenic (As)-Dissolved (mg/L)				0.000426					0.000276		
Barium (Ba)-Dissolved (mg/L)				0.0404					0.0884		
Beryllium (Be)-Dissolved (mg/L)				<0.000020					<0.000040		
Bismuth (Bi)-Dissolved (mg/L)				<0.000050					<0.000100		
Boron (B)-Dissolved (mg/L)				0.35					1.14		
Cadmium (Cd)-Dissolved (mg/L)				<0.0000050					<0.0000100		
Calcium (Ca)-Dissolved (mg/L)	437	471	281	161	333	320	419	560	485	351	385
Cesium (Cs)-Dissolved (mg/L)				0.000051					0.00012		
Chromium (Cr)-Dissolved (mg/L)				<0.00010					<0.00020		
Cobalt (Co)-Dissolved (mg/L)				0.000541					0.000552		
Copper (Cu)-Dissolved (mg/L)				0.00161					0.00074		
Iron (Fe)-Dissolved (mg/L)				0.0084					<0.0100		
Lead (Pb)-Dissolved (mg/L)				<0.000030					<0.000060		
Lithium (Li)-Dissolved (mg/L)				0.0293					0.0801		
Magnesium (Mg)-Dissolved (mg/L)	92	98.50	60.00	36.10	78.80	76.00	96.60	99.70	89.60	79	86.60
Manganese (Mn)-Dissolved (mg/L)				0.0532					0.0411		
Mercury (Hg)-Dissolved (mg/L)				<0.0000050					<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)				0.012					0.014		
Nickel (Ni)-Dissolved (mg/L)				0.0118					0.0104		
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	18.00	18.30	13.40	9.35	14.80	13.80	14.60	28.30	18.20	15.90	13.90
Rubidium (Rb)-Dissolved (mg/L)				0.0114					0.0285		
Selenium (Se)-Dissolved (mg/L)				0.000152					<0.000100		

Date	14-Apr-2023	22-Apr-2023	26-Apr-2023	1-May-2023	8-May-2023	15-May-2023	22-May-2023	1-Jun-2023	5-Jun-2023	12-Jun-2023	20-Jun-2023
Silver (Ag)-Dissolved (mg/L)				<0.000010					<0.000020		
Sodium (Na)-Dissolved (mg/L)	375	422	241	128	309	256	339	463	398	275	317
Strontium (Sr)-Dissolved (mg/L)				3.08					10.1		
Sulfur (S)-Dissolved (mg/L)				55.7					116		
Tellurium (Te)-Dissolved (mg/L)				<0.00020					0.00055		
Thallium (Tl)-Dissolved (mg/L)				0.000014					<0.000020		
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)				0.00227					0.00036		
Uranium (U)-Dissolved (mg/L)				0.00546					0.000925		
Vanadium (V)-Dissolved (mg/L)				0.00057					<0.00100		
Zinc (Zn)-Dissolved (mg/L)				<0.0010					<0.0020		
Zirconium (Zr)-Dissolved (mg/L)				<0.00030					<0.00040		
Benzene (mg/L)				<0.00050					0.0161		
Ethylbenzene (mg/L)				<0.00050					0.00096		
F1 (C6-C10) (mg/L)				<0.10					<0.10		
F2 (C10-C16) (mg/L)				<0.10					0.11		
F3 (C16-C34) (mg/L)				<0.25					<0.25		
F4 (C34-C50) (mg/L)				<0.25					<0.25		
Toluene (mg/L)				<0.00050					0.00512		
Total Hydrocarbons (C6-C50) (mg/L)				<0.40					<0.40		
Xylenes (mg/L)				<0.00075					0.00369		
Ra-226 (Bq/L)											
Th-228 (Bq/L)				<0.4					<0.3		
Th-230 (Bq/L)				<20					<30		
Th-232 (Bq/L)				0.007					<0.001		
U-234 (Bq/L)				0.077					0.014		
U-235 (Bq/L)				0.0038					0.0007		
U-238 (Bq/L)				0.077					0.014		

G09_B											
Date	**3-Jul-2023**	**11-Jul-2023**	**17-Jul-2023**	**24-Jul-2023**	**2-Aug-2023**	**7-Aug-2023**	**14-Aug-2023**	**22-Aug-2023**	**30-Aug-2023**	**5-Sep-2023**	**13-Sep-2023**
Conductivity (µS/cm)	3790	4270	4350	4330	4260	4200	4190	3990	3430	3230	4340
pH (pH units)	7.85	7.84	7.68	7.91	7.80	7.81	7.88	7.82	7.87	7.85	7.87
Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	1	<1.0	1	1.5	<1.0	2.7
Turbidity (NTU)	1.10	0.33	0.27	0.47	0.24	0.29	0.12	0.17	0.22	0.22	1.33
Alkalinity, Bicarbonate (mg/L)	46.80	44.10	41.70	39.40	41.10	46.00	52.10	40.70	43.20	57.60	57.60
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)	46.80	44.10	41.70	39.40	41.10	46.00	52.10	40.70	43.20	57.60	57.60
Calcium (Ca)-Total (mg/L)	354				390					326	404
Chloride (mg/L)	976	1120	1150	1190	1170	1180	1120	1070	1090	837	1090
Fluoride (mg/L)	0.75	0.72	0.74	0.64	0.65	0.72	0.76	0.70	0.69	0.72	0.79
Hardness (as CaCO3) (mg/L)	1290	1500	1340	1460	1540	1280	1350	1350	1160	1120	1470
Magnesium (Mg)-Total (mg/L)	78.1				89.6					74.1	101
Potassium (K)-Total (mg/L)	15.1				14.6					10.6	14.2
Silicate (as SiO2) (mg/L)	7.23	8.23	8.61	9.43	9.65	10.20	10.30	9.60	<0.50	10.90	10.10
Sodium (Na)-Total (mg/L)	258				359					333	334
Sulfate (mg/L)	404	412	374	360	366	378	384	404	397	341	515
TDS (mg/L)	2210	3140	3310	2640	3630	2820	3010	2670	2590	2470	3030
Ammonia, Total (as N) (mg/L)	3.74	2.61	2.17	1.79	1.84	1.90	1.62	1.87	1.51	1.53	2.54
Nitrate and Nitrite (mg/L)	7.99	6.41	4.05	3.10	2.95	3.30	3.30	3.54	2.53	3.59	7.99
Nitrate as Nitrogen (mg/L)	7.84	6.30	3.98	3.06	2.88	3.11	3.21	3.46	2.43	3.53	7.88
Nitrite as Nitrogen (mg/L)	0.15	0.11	0.07	0.04	0.07	0.19	0.09	0.08	0.10	0.06	0.11
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)	<0.0010	0.0013	<0.0010	0.00	<0.0010	<0.0010	<0.0010	0.0071	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0105	<0.0020	0.0121	<0.0020	<0.0020	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.0013	0.0011	<0.0010	<0.0010	0.0105	<0.0010	0.0121	0.0060	0.0013	0.0028	0.0016
Phosph (P)-Tot Inorg (mg/L)	0.0021	0.0019	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0040
Phosphorus - Total (mg/L)	0.0034	0.0014	<0.0010	0.0028	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	0.0018	0.0036
Total Kjeldahl Nitrogen (mg/L)	4.09	2.90	2.58	2.49	2.05	2.26	1.95	1.78	1.56	1.72	3.94
Total Organic Carbon (mg/L)	1.96	1.86	2.01	2.15	2.08	2.10	2.35	2.19	2.39	2.38	2.64
Aluminum (Al)-Total (mg/L)	0.0336				<0.0060					0.0091	0.0582
Antimony (Sb)-Total (mg/L)	0.0004				0.00027					0.00022	0.00026
Arsenic (As)-Total (mg/L)	0.000558				0.00064					0.00078	0.000636
Barium (Ba)-Total (mg/L)	0.0507				0.0506					0.0398	0.0476
Beryllium (Be)-Total (mg/L)	<0.000040				<0.000040					<0.000040	<0.000040
Bismuth (Bi)-Total (mg/L)	<0.000100				<0.000100					<0.000100	<0.000100
Boron (B)-Total (mg/L)	0.819				0.984					0.76	0.87
Cadmium (Cd)-Total (mg/L)	<0.0000100				<0.0000100					<0.0000100	<0.0000150
Cesium (Cs)-Total (mg/L)	0.000132				0.000101					0.000072	0.000112
Chromium (Cr)-Total (mg/L)	0.00026				<0.00020					<0.00020	0.00042
Cobalt (Co)-Total (mg/L)	0.00077				0.00059					0.000862	0.00205
Copper (Cu)-Total (mg/L)	0.00102				0.00052					0.0005	0.00255
Iron (Fe)-Total (mg/L)	0.0838				0.0352					0.0382	0.131
Lead (Pb)-Total (mg/L)	<0.000060				<0.000060					<0.000060	0.000107

Date	3-Jul-2023	11-Jul-2023	17-Jul-2023	24-Jul-2023	2-Aug-2023	7-Aug-2023	14-Aug-2023	22-Aug-2023	30-Aug-2023	5-Sep-2023	13-Sep-2023
Lithium (Li)-Total (mg/L)	0.0675				0.0735					0.0621	0.0854
Manganese (Mn)-Total (mg/L)	0.114				0.0884					0.0992	0.296
Mercury (Hg)-Total (mg/L)	<0.0000050				<0.0000050					<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.028				0.017					0.0151	0.0191
Nickel (Ni)-Total (mg/L)	0.022				0.0245					0.0319	0.0362
Rubidium (Rb)-Total (mg/L)	0.0236				0.0191					0.0134	0.0211
Selenium (Se)-Total (mg/L)	0.000151				<0.000100					<0.000100	0.000117
Silver (Ag)-Total (mg/L)	<0.000020				<0.000020					<0.000020	<0.000020
Strontium (Sr)-Total (mg/L)	6.37				7.81					5.98	7.94
Sulfur (S)-Total (mg/L)	160				154					140	206
Tellurium (Te)-Total (mg/L)	0.00045				0.0009					<0.00040	<0.00040
Thallium (Tl)-Total (mg/L)	0.000042				0.000024					<0.000020	0.000033
Thorium (Th)-Total (mg/L)	0.00029				<0.00020					<0.00020	<0.00020
Tin (Sn)-Total (mg/L)	<0.000100				<0.000100					<0.000100	<0.000100
Titanium (Ti)-Total (mg/L)	0.00114				<0.00060					<0.00060	0.0028
Tungsten (W)-Total (mg/L)	0.00129				0.00156					0.0011	0.00125
Uranium (U)-Total (mg/L)	0.00756				0.00418					0.00505	0.0147
Vanadium (V)-Total (mg/L)	<0.00100				<0.00100					<0.00100	<0.00100
Zinc (Zn)-Total (mg/L)	<0.0030				<0.0030					<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00040				<0.00040					<0.00040	<0.00040
Aluminum (Al)-Dissolved (mg/L)	<0.0020				0.001					0.0036	0.0028
Antimony (Sb)-Dissolved (mg/L)	0.00037				0.00024					0.00022	0.00026
Arsenic (As)-Dissolved (mg/L)	0.000605				0.00058					0.00062	0.0006
Barium (Ba)-Dissolved (mg/L)	0.0527				0.0503					0.0422	0.0497
Beryllium (Be)-Dissolved (mg/L)	<0.000040				<0.000020					<0.000040	<0.000040
Bismuth (Bi)-Dissolved (mg/L)	<0.000100				<0.000050					<0.000100	<0.000100
Boron (B)-Dissolved (mg/L)	0.968				0.922					0.877	0.857
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100				<0.0000050					<0.0000100	<0.0000150
Calcium (Ca)-Dissolved (mg/L)	382	441	405	439	459	371	401	404	337	329	420
Cesium (Cs)-Dissolved (mg/L)	0.00014				0.000103					0.000072	0.000106
Chromium (Cr)-Dissolved (mg/L)	<0.00020				<0.00010					<0.00020	<0.00020
Cobalt (Co)-Dissolved (mg/L)	0.000748				0.00056					0.000784	0.002
Copper (Cu)-Dissolved (mg/L)	0.00096				0.00043					0.00034	0.0022
Iron (Fe)-Dissolved (mg/L)	<0.0100				<0.0050					<0.0100	<0.0100
Lead (Pb)-Dissolved (mg/L)	<0.000060				<0.000030					<0.000060	<0.000060
Lithium (Li)-Dissolved (mg/L)	0.0746				0.0729					0.0642	0.0956
Magnesium (Mg)-Dissolved (mg/L)	82.30	95.90	81	90	96	85	85	83.00	77.50	73.50	102.00
Manganese (Mn)-Dissolved (mg/L)	0.118				0.0846					0.103	0.304
Mercury (Hg)-Dissolved (mg/L)	<0.0000050				<0.0000050					<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.0286				0.0167					0.016	0.0189
Nickel (Ni)-Dissolved (mg/L)	0.0213				0.0239					0.0303	0.0346
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	16.70	16.50	13.20	14.40	15.30	14.30	12.60	13.50	10.40	11.10	16.20
Rubidium (Rb)-Dissolved (mg/L)	0.0243				0.0193					0.0137	0.0212
Selenium (Se)-Dissolved (mg/L)	<0.000100				0.000076					<0.000100	<0.000100

Date	3-Jul-2023	11-Jul-2023	17-Jul-2023	24-Jul-2023	2-Aug-2023	7-Aug-2023	14-Aug-2023	22-Aug-2023	30-Aug-2023	5-Sep-2023	13-Sep-2023
Silver (Ag)-Dissolved (mg/L)	<0.000020				<0.000010					<0.000020	<0.000020
Sodium (Na)-Dissolved (mg/L)	302	328	335	370	384	353	338	337	315	314	349
Strontium (Sr)-Dissolved (mg/L)	7.16				8.84					6.23	8.59
Sulfur (S)-Dissolved (mg/L)	155				146					150	223
Tellurium (Te)-Dissolved (mg/L)	<0.00040				0.00048					<0.00040	<0.00040
Thallium (Tl)-Dissolved (mg/L)	0.000044				0.000027					<0.000020	0.000024
Thorium (Th)-Dissolved (mg/L)	<0.00020				<0.00010					<0.00020	<0.00020
Tin (Sn)-Dissolved (mg/L)	<0.000100				<0.000050					<0.000100	<0.000100
Titanium (Ti)-Dissolved (mg/L)	<0.00060				<0.00030					<0.00060	<0.00060
Tungsten (W)-Dissolved (mg/L)	0.00133				0.00151					0.00124	0.00127
Uranium (U)-Dissolved (mg/L)	0.00807				0.00386					0.0055	0.0142
Vanadium (V)-Dissolved (mg/L)	<0.00100				<0.00050					<0.00100	<0.00100
Zinc (Zn)-Dissolved (mg/L)	<0.0020				<0.0010					<0.0020	<0.0020
Zirconium (Zr)-Dissolved (mg/L)	<0.00040				<0.00030					<0.00060	<0.00060
Benzene (mg/L)	0.00137				<0.00050					<0.00050	0.00521
Ethylbenzene (mg/L)	<0.00050				<0.00050					<0.00050	<0.00050
F1 (C6-C10) (mg/L)	<0.10				<0.10					<0.10	<0.10
F2 (C10-C16) (mg/L)	<0.10				<0.10					<0.10	<0.10
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)	<0.00050				<0.00050					<0.00050	0.00196
Total Hydrocarbons (C6-C50) (mg/L)	<0.40				<0.40					<0.40	<0.40
Xylenes (mg/L)	<0.00075				<0.00075					<0.00075	<0.00075
Ra-226 (Bq/L)					0.03						
Th-228 (Bq/L)	<0.4				<0.4					<0.4	<0.4
Th-230 (Bq/L)	<20				<30					<20	<20
Th-232 (Bq/L)											
U-234 (Bq/L)	0.091				0.052					0.067	0.16
U-235 (Bq/L)	0.0045				0.0026					0.0034	0.0082
U-238 (Bq/L)	0.091				0.052					0.067	0.16

G09_B											
Date	**19-Sep-2023**	**25-Sep-2023**	**9-Oct-2023**	**18-Oct-2023**	**23-Oct-2023**	**1-Nov-2023**	**7-Nov-2023**	**13-Nov-2023**	**20-Nov-2023**	**28-Nov-2023**	**4-Dec-2023**
Conductivity (µS/cm)	3840	3870	3530	3210	3940	3770	3900	3820	3780	4420	4530
pH (pH units)	8.01	7.92	7.88	7.89	7.87	7.99	7.92	7.93	7.94	7.96	7.92
Total Suspended Solids (mg/L)	<1.0	2.1	<1.0	68.90	4.50	2.4	<1.0	<1.0	<1.0	17.00	11.30
Turbidity (NTU)	0.19	1.24	0.81	28.60	3.00	1.45	0.43	0.25	0.38	10.40	9.43
Alkalinity, Bicarbonate (mg/L)	61.60	64.20	72.60	95.00	81.80	79.00	75.90	80.30	78.80	73.40	76.60
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)	61.60	64.20	72.60	95.00	81.80	79.00	75.90	80.30	78.80	73.40	76.60
Calcium (Ca)-Total (mg/L)			332			348					395
Chloride (mg/L)	977	974	867	713	959	905	848	944	962	1120	1160
Fluoride (mg/L)	0.80	0.85	0.83	0.84	0.81	0.67	0.74	0.75	0.82	0.82	0.87
Hardness (as CaCO3) (mg/L)	1280	1210	1220	1110	1290	1240	1310	1200	1260	1380	1450
Magnesium (Mg)-Total (mg/L)			80.8			90.4					101
Potassium (K)-Total (mg/L)			12.5			12.5					13.7
Silicate (as SiO2) (mg/L)	11.60	11.60	11.00	11.70	10.90	10.20	10.10	9.93	10.10	10.40	10.80
Sodium (Na)-Total (mg/L)			270			280					338
Sulfate (mg/L)	457	500	481	488	491	463	394	460	441	428	478
TDS (mg/L)	2990	2460	2450	2010	2540	2760	3080	2490	2620	3070	3230
Ammonia, Total (as N) (mg/L)	2.68	1.58	1.55	1.50	1.93	2.24	2.20	3.18	5.33	4.58	4.70
Nitrate and Nitrite (mg/L)	5.65	4.54	7.14	6.54	7.14	7.35	4.96	6.33	8.34	5.91	13.40
Nitrate as Nitrogen (mg/L)	5.54	4.45	6.99	6.42	6.98	6.88	4.53	5.84	7.96	5.41	13.00
Nitrite as Nitrogen (mg/L)	0.11	0.09	0.15	0.12	0.16	0.47	0.43	0.49	0.38	0.50	0.38
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	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0029	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0029	0.0016	<0.0010	0.0013	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	<0.0010	0.0045	0.0016	0.0669	0.0056	0.0033	<0.0010	<0.0010	<0.0010	0.0176	0.0154
Phosphorus - Total (mg/L)	0.0012	0.0036	<0.0010	0.0632	0.0056	0.0037	<0.0010	0.0299	<0.0010	0.0180	0.0156
Total Kjeldahl Nitrogen (mg/L)	2.80	2.65	1.83	2.11	3.06	3.24	2.64	3.52	5.98	4.93	5.02
Total Organic Carbon (mg/L)	2.37	2.25	2.18	2.54	3	3.11	2.51	2.77	2.98	2.64	2.80
Aluminum (Al)-Total (mg/L)			0.0355			0.0846					0.686
Antimony (Sb)-Total (mg/L)			0.0002			0.0003					0.00024
Arsenic (As)-Total (mg/L)			0.000597			0.000818					0.000623
Barium (Ba)-Total (mg/L)			0.0417			0.0331					0.041
Beryllium (Be)-Total (mg/L)			<0.000040			<0.000040					<0.000040
Bismuth (Bi)-Total (mg/L)			<0.000100			<0.000100					<0.000100
Boron (B)-Total (mg/L)			0.769			0.875					0.889
Cadmium (Cd)-Total (mg/L)			<0.0000100			<0.0000200					<0.0000100
Cesium (Cs)-Total (mg/L)			0.000075			0.000094					0.000139
Chromium (Cr)-Total (mg/L)			<0.00020			0.00048					0.00388
Cobalt (Co)-Total (mg/L)			0.0013			0.0022					0.00378
Copper (Cu)-Total (mg/L)			0.00094			0.00045					0.00136
Iron (Fe)-Total (mg/L)			0.064			0.141					0.735
Lead (Pb)-Total (mg/L)			<0.000060			<0.000060					0.000074

Date	19-Sep-2023	25-Sep-2023	9-Oct-2023	18-Oct-2023	23-Oct-2023	1-Nov-2023	7-Nov-2023	13-Nov-2023	20-Nov-2023	28-Nov-2023	4-Dec-2023
Lithium (Li)-Total (mg/L)			0.0719			0.0739					0.0762
Manganese (Mn)-Total (mg/L)			0.225			0.167					0.16
Mercury (Hg)-Total (mg/L)			<0.0000050			<0.0000050					<0.0000050
Molybdenum (Mo)-Total (mg/L)			0.0165			0.0192					0.0162
Nickel (Ni)-Total (mg/L)			0.0297			0.0392					0.0584
Rubidium (Rb)-Total (mg/L)			0.0167			0.0132					0.0173
Selenium (Se)-Total (mg/L)			<0.000100			0.000103					<0.000100
Silver (Ag)-Total (mg/L)			<0.000020			<0.000020					<0.000020
Strontium (Sr)-Total (mg/L)			5.94			6.68					7.77
Sulfur (S)-Total (mg/L)			174			174					180
Tellurium (Te)-Total (mg/L)			<0.00040			0.00051					<0.00040
Thallium (Tl)-Total (mg/L)			0.000028			<0.000020					0.000024
Thorium (Th)-Total (mg/L)			<0.00020			<0.00020					0.00024
Tin (Sn)-Total (mg/L)			<0.000100			<0.000100					<0.000100
Titanium (Ti)-Total (mg/L)			0.00139			0.00112					<0.00960
Tungsten (W)-Total (mg/L)			0.00082			0.00071					0.00066
Uranium (U)-Total (mg/L)			0.00914			0.0124					0.0109
Vanadium (V)-Total (mg/L)			<0.00100			0.00192					0.00213
Zinc (Zn)-Total (mg/L)			<0.0030			<0.0030					<0.0030
Zirconium (Zr)-Total (mg/L)			<0.00040			<0.00040					0.00048
Aluminum (Al)-Dissolved (mg/L)			0.0019			<0.0020					<0.0020
Antimony (Sb)-Dissolved (mg/L)			0.0002			0.00029					0.00024
Arsenic (As)-Dissolved (mg/L)			0.000471			0.000727					0.000484
Barium (Ba)-Dissolved (mg/L)			0.0425			0.0317					0.0368
Beryllium (Be)-Dissolved (mg/L)			<0.000020			<0.000040					<0.000040
Bismuth (Bi)-Dissolved (mg/L)			<0.000050			<0.000100					<0.000100
Boron (B)-Dissolved (mg/L)			0.743			0.842					0.891
Cadmium (Cd)-Dissolved (mg/L)			0.0000098			<0.0000200					<0.0000100
Calcium (Ca)-Dissolved (mg/L)	365	352	350	300	356	342	364	336	361	397	406
Cesium (Cs)-Dissolved (mg/L)			0.000086			0.000112					0.000122
Chromium (Cr)-Dissolved (mg/L)			<0.00010			<0.00020					<0.00020
Cobalt (Co)-Dissolved (mg/L)			0.0013			0.0022					0.00237
Copper (Cu)-Dissolved (mg/L)			0.0008			0.00037					0.00105
Iron (Fe)-Dissolved (mg/L)			<0.0050			<0.0100					0.0145
Lead (Pb)-Dissolved (mg/L)			<0.000030			<0.000060					<0.000060
Lithium (Li)-Dissolved (mg/L)			0.0785			0.0741					0.0824
Magnesium (Mg)-Dissolved (mg/L)	88.90	81.40	85.30	89	97.20	92.90	97.90	88.70	86.30	94.90	106.00
Manganese (Mn)-Dissolved (mg/L)			0.229			0.166					0.159
Mercury (Hg)-Dissolved (mg/L)			<0.0000050			<0.0000050					<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)			0.018			0.0195					0.0158
Nickel (Ni)-Dissolved (mg/L)			0.0287			0.0378					0.0415
Phosphorus - Dissolved (mg/L)											
Potassium (K)-Dissolved (mg/L)	13.30	11.20	13.70	11.20	12.00	12.80	13.50	12.80	13.70	13.60	14.20
Rubidium (Rb)-Dissolved (mg/L)			0.0178			0.0143					0.0186
Selenium (Se)-Dissolved (mg/L)			0.000075			<0.000100					<0.000100

Date	19-Sep-2023	25-Sep-2023	9-Oct-2023	18-Oct-2023	23-Oct-2023	1-Nov-2023	7-Nov-2023	13-Nov-2023	20-Nov-2023	28-Nov-2023	4-Dec-2023
Silver (Ag)-Dissolved (mg/L)			<0.000010			<0.000020					<0.000020
Sodium (Na)-Dissolved (mg/L)	304	292	292	252	284	288	326	298	312	352	360
Strontium (Sr)-Dissolved (mg/L)			6.58			6.71					7.92
Sulfur (S)-Dissolved (mg/L)			179			174					163
Tellurium (Te)-Dissolved (mg/L)			0.00023			<0.00040					<0.00040
Thallium (Tl)-Dissolved (mg/L)			0.000028			<0.000020					0.000022
Thorium (Th)-Dissolved (mg/L)			<0.00010			<0.00020					<0.00020
Tin (Sn)-Dissolved (mg/L)			<0.000050			<0.000100					<0.000100
Titanium (Ti)-Dissolved (mg/L)			<0.00030			<0.00060					<0.00060
Tungsten (W)-Dissolved (mg/L)			0.0009			0.00075					0.0007
Uranium (U)-Dissolved (mg/L)			0.00946			0.0125					0.0106
Vanadium (V)-Dissolved (mg/L)			<0.00050			0.00135					0.00107
Zinc (Zn)-Dissolved (mg/L)			<0.0010			<0.0020					<0.0020
Zirconium (Zr)-Dissolved (mg/L)			<0.00030			<0.00040					<0.00040
Benzene (mg/L)			0.00115			0.00113					0.00316
Ethylbenzene (mg/L)			<0.00050			<0.00050					<0.00050
F1 (C6-C10) (mg/L)			<0.10			<0.10					<0.10
F2 (C10-C16) (mg/L)			<0.10			<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)			<0.00050			<0.00050					0.00127
Total Hydrocarbons (C6-C50) (mg/L)			<0.40			<0.40					<0.40
Xylenes (mg/L)			<0.00075			<0.00075					<0.00075
Ra-226 (Bq/L)											
Th-228 (Bq/L)			<0.3			<0.4					<0.3
Th-230 (Bq/L)			<20			<40					<30
Th-232 (Bq/L)											
U-234 (Bq/L)			0.11			0.13					0.12
U-235 (Bq/L)			0.0055			0.0066					0.006
U-238 (Bq/L)			0.11			0.13					0.12

G09_B			
Date	**12-Dec-2023**	**19-Dec-2023**	**28-Dec-2023**
Conductivity (µS/cm)	4140	4820	4080
pH (pH units)	7.94	7.97	7.80
Total Suspended Solids (mg/L)	9.50	21.70	<1.0
Turbidity (NTU)	3.56	11.10	1.30
Alkalinity, Bicarbonate (mg/L)	78.10	51.80	61.10
Alkalinity, Carbonate (mg/L)	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0	<1.0	<1.0
Alkalinity, Total (mg/L)	78.10	51.80	61.10
Calcium (Ca)-Total (mg/L)			
Chloride (mg/L)	1080	1290	1080
Fluoride (mg/L)	0.89	0.41	0.51
Hardness (as CaCO3) (mg/L)	1480	1360	1360
Magnesium (Mg)-Total (mg/L)			
Potassium (K)-Total (mg/L)			
Silicate (as SiO2) (mg/L)	10.20	8.80	8.55
Sodium (Na)-Total (mg/L)			
Sulfate (mg/L)	420	332	336
TDS (mg/L)	3070	3330	2780
Ammonia, Total (as N) (mg/L)	7.86	16.10	6.44
Nitrate and Nitrite (mg/L)	20.80	45.00	13.00
Nitrate as Nitrogen (mg/L)	20.10	44.60	12.80
Nitrite as Nitrogen (mg/L)	0.69	0.45	0.16
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	<0.0020	<0.0020
Phosph (P)-Tot Dis (mg/L)	<0.0010	<0.0010	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.0083	0.0168	0.0010
Phosphorus - Total (mg/L)	0.0076	0.0160	<0.0010
Total Kjeldahl Nitrogen (mg/L)	7.03	17.80	5.94
Total Organic Carbon (mg/L)	4.14	4.13	3.16
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)			
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)			

Date	12-Dec-2023	19-Dec-2023	28-Dec-2023
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)	434	341	374
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)			
Lead (Pb)-Dissolved (mg/L)			
Lithium (Li)-Dissolved (mg/L)			
Magnesium (Mg)-Dissolved (mg/L)	95.80	124.00	103.00
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)	16.70	31.50	22.60
Rubidium (Rb)-Dissolved (mg/L)			
Selenium (Se)-Dissolved (mg/L)			

Date	12-Dec-2023	19-Dec-2023	28-Dec-2023
Silver (Ag)-Dissolved (mg/L)			
Sodium (Na)-Dissolved (mg/L)	372	361	323
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)			
Ra-226 (Bq/L)			
Th-228 (Bq/L)			
Th-230 (Bq/L)			
Th-232 (Bq/L)			
U-234 (Bq/L)			
U-235 (Bq/L)			
U-238 (Bq/L)			

G09_C nmary of Flow Data at SNP-09

Date	Daily Effluent Volume (m^3)
1-Jan-2023	245.00
2-Jan-2023	947.88
3-Jan-2023	
4-Jan-2023	
5-Jan-2023	
6-Jan-2023	
7-Jan-2023	1375.25
8-Jan-2023	1155.50
9-Jan-2023	568.75
10-Jan-2023	
11-Jan-2023	
12-Jan-2023	
13-Jan-2023	1114.88
14-Jan-2023	1138.00
15-Jan-2023	1011.25
16-Jan-2023	809.00
17-Jan-2023	
18-Jan-2023	
19-Jan-2023	
20-Jan-2023	607.88
21-Jan-2023	1250.25
22-Jan-2023	1045.50
23-Jan-2023	732.50
24-Jan-2023	
25-Jan-2023	
26-Jan-2023	
27-Jan-2023	
28-Jan-2023	
29-Jan-2023	
30-Jan-2023	
31-Jan-2023	
1-Feb-2023	928.50
2-Feb-2023	928.50
3-Feb-2023	1170.13
4-Feb-2023	1129.63
5-Feb-2023	
6-Feb-2023	
7-Feb-2023	
8-Feb-2023	
9-Feb-2023	
10-Feb-2023	
11-Feb-2023	643.00
12-Feb-2023	1234.75
13-Feb-2023	679.38
14-Feb-2023	401.00
15-Feb-2023	
16-Feb-2023	
17-Feb-2023	
18-Feb-2023	
19-Feb-2023	
20-Feb-2023	
21-Feb-2023	
22-Feb-2023	
23-Feb-2023	
24-Feb-2023	
25-Feb-2023	
26-Feb-2023	
27-Feb-2023	
28-Feb-2023	
1-Mar-2023	750.81

Date	Daily Effluent Volume (m^3)
2-Mar-2023	1287.40
3-Mar-2023	1314.54
4-Mar-2023	82.40
5-Mar-2023	
6-Mar-2023	
7-Mar-2023	43.43
8-Mar-2023	945.04
9-Mar-2023	1247.46
10-Mar-2023	1217.93
11-Mar-2023	1543.14
12-Mar-2023	1193.07
13-Mar-2023	578.86
14-Mar-2023	
15-Mar-2023	
16-Mar-2023	
17-Mar-2023	
18-Mar-2023	
19-Mar-2023	
20-Mar-2023	
21-Mar-2023	
22-Mar-2023	598.84
23-Mar-2023	1170.37
24-Mar-2023	651.26
25-Mar-2023	992.54
26-Mar-2023	972.70
27-Mar-2023	933.49
28-Mar-2023	1016.62
29-Mar-2023	
30-Mar-2023	
31-Mar-2023	
1-Apr-2023	
2-Apr-2023	106.40
3-Apr-2023	815.90
4-Apr-2023	1099.10
5-Apr-2023	
6-Apr-2023	
7-Apr-2023	NA
8-Apr-2023	NA
9-Apr-2023	
10-Apr-2023	
11-Apr-2023	NA
12-Apr-2023	NA
13-Apr-2023	
14-Apr-2023	NA
15-Apr-2023	NA
16-Apr-2023	
17-Apr-2023	NA
18-Apr-2023	NA
19-Apr-2023	
20-Apr-2023	
21-Apr-2023	263.62
22-Apr-2023	1376.09
23-Apr-2023	1562.71
24-Apr-2023	1652.77
25-Apr-2023	987.77
26-Apr-2023	798.06
27-Apr-2023	828.84
28-Apr-2023	1498.00
29-Apr-2023	3195.01
30-Apr-2023	2705.52

Date	Daily Effluent Volume (m^3)
1-May-2023	1542.19
2-May-2023	1027.27
3-May-2023	993.09
4-May-2023	1774.97
5-May-2023	1859.36
6-May-2023	1788.05
7-May-2023	1535.15
8-May-2023	1382.99
9-May-2023	1059.47
10-May-2023	
11-May-2023	252.24
12-May-2023	2237.32
13-May-2023	2342.93
14-May-2023	1680.59
15-May-2023	1219.66
16-May-2023	1081.12
17-May-2023	370.37
18-May-2023	0.55
19-May-2023	562.75
20-May-2023	1499.79
21-May-2023	1418.36
22-May-2023	781.52
23-May-2023	783.98
24-May-2023	1107.58
25-May-2023	1142.82
26-May-2023	433.97
27-May-2023	172.82
28-May-2023	1424.69
29-May-2023	1350.13
30-May-2023	1253.56
31-May-2023	1971.98
1-Jun-2023	1253.47
2-Jun-2023	1325.34
3-Jun-2023	926.21
4-Jun-2023	953.69
5-Jun-2023	383.09
6-Jun-2023	1558.32
7-Jun-2023	1052.74
8-Jun-2023	1083.84
9-Jun-2023	1061.46
10-Jun-2023	333.78
11-Jun-2023	1040.15
12-Jun-2023	1726.23
13-Jun-2023	2399.66
14-Jun-2023	2003.36
15-Jun-2023	1146.80
16-Jun-2023	305.36
17-Jun-2023	1378.74
18-Jun-2023	1199.77
19-Jun-2023	708.92
20-Jun-2023	1155.27
21-Jun-2023	995.34
22-Jun-2023	793.51
23-Jun-2023	771.23
24-Jun-2023	775.16
25-Jun-2023	427.67
26-Jun-2023	
27-Jun-2023	
28-Jun-2023	
29-Jun-2023	

Date	Daily Effluent Volume (m^3)
30-Jun-2023	
1-Jul-2023	371.77
2-Jul-2023	3276.71
3-Jul-2023	1550.58
4-Jul-2023	1281.30
5-Jul-2023	793.91
6-Jul-2023	794.16
7-Jul-2023	791.98
8-Jul-2023	538.95
9-Jul-2023	
10-Jul-2023	251.22
11-Jul-2023	1013.75
12-Jul-2023	1420.44
13-Jul-2023	783.89
14-Jul-2023	781.90
15-Jul-2023	779.53
16-Jul-2023	683.27
17-Jul-2023	724.34
18-Jul-2023	789.74
19-Jul-2023	785.77
20-Jul-2023	781.69
21-Jul-2023	781.69
22-Jul-2023	774.33
23-Jul-2023	772.09
24-Jul-2023	771.08
25-Jul-2023	770.70
26-Jul-2023	613.73
27-Jul-2023	
28-Jul-2023	757.12
29-Jul-2023	813.77
30-Jul-2023	1034.54
31-Jul-2023	409.09
1-Aug-2023	682.08
2-Aug-2023	679.06
3-Aug-2023	680.07
4-Aug-2023	205.09
5-Aug-2023	696.84
6-Aug-2023	787.81
7-Aug-2023	730.16
8-Aug-2023	712.74
9-Aug-2023	710.86
10-Aug-2023	709.76
11-Aug-2023	709.06
12-Aug-2023	704.69
13-Aug-2023	705.63
14-Aug-2023	708.12
15-Aug-2023	707.53
16-Aug-2023	710.24
17-Aug-2023	710.59
18-Aug-2023	710.34
19-Aug-2023	712.01
20-Aug-2023	506.35
21-Aug-2023	285.07
22-Aug-2023	1629.65
23-Aug-2023	1000.84
24-Aug-2023	800.24
25-Aug-2023	684.10
26-Aug-2023	269.77
27-Aug-2023	635.70
28-Aug-2023	775.91

Date	Daily Effluent Volume (m^3)
29-Aug-2023	797.91
30-Aug-2023	750.75
31-Aug-2023	740.23
1-Sep-2023	735.99
2-Sep-2023	737.11
3-Sep-2023	740.48
4-Sep-2023	744.37
5-Sep-2023	769.38
6-Sep-2023	792.05
7-Sep-2023	1226.66
8-Sep-2023	859.41
9-Sep-2023	
10-Sep-2023	
11-Sep-2023	
12-Sep-2023	720.77
13-Sep-2023	1569.66
14-Sep-2023	1510.70
15-Sep-2023	1459.30
16-Sep-2023	808.97
17-Sep-2023	748.41
18-Sep-2023	748.45
19-Sep-2023	752.09
20-Sep-2023	757.00
21-Sep-2023	1054.89
22-Sep-2023	886.50
23-Sep-2023	786.70
24-Sep-2023	899.42
25-Sep-2023	855.47
26-Sep-2023	903.28
27-Sep-2023	912.67
28-Sep-2023	740.83
29-Sep-2023	709.69
30-Sep-2023	719.75
1-Oct-2023	722.98
2-Oct-2023	725.56
3-Oct-2023	732.34
4-Oct-2023	738.70
5-Oct-2023	1407.88
6-Oct-2023	849.73
7-Oct-2023	
8-Oct-2023	803.30
9-Oct-2023	1966.70
10-Oct-2023	1890.86
11-Oct-2023	809.91
12-Oct-2023	816.73
13-Oct-2023	818.91
14-Oct-2023	820.22
15-Oct-2023	821.05
16-Oct-2023	590.70
17-Oct-2023	573.14
18-Oct-2023	1459.27
19-Oct-2023	1119.42
20-Oct-2023	970.27
21-Oct-2023	980.92
22-Oct-2023	974.30
23-Oct-2023	823.64
24-Oct-2023	802.00
25-Oct-2023	843.41
26-Oct-2023	832.31
27-Oct-2023	824.52

Date	Daily Effluent Volume (m^3)
28-Oct-2023	624.06
29-Oct-2023	816.45
30-Oct-2023	780.56
31-Oct-2023	773.30
1-Nov-2023	837.92
2-Nov-2023	798.94
3-Nov-2023	798.48
4-Nov-2023	523.34
5-Nov-2023	1133.50
6-Nov-2023	776.78
7-Nov-2023	513.03
8-Nov-2023	2218.00
9-Nov-2023	2218.00
10-Nov-2023	747.20
11-Nov-2023	798.14
12-Nov-2023	826.92
13-Nov-2023	848.61
14-Nov-2023	950.19
15-Nov-2023	840.30
16-Nov-2023	890.19
17-Nov-2023	730.61
18-Nov-2023	757.14
19-Nov-2023	885.33
20-Nov-2023	886.36
21-Nov-2023	604.00
22-Nov-2023	105.97
23-Nov-2023	1277.94
24-Nov-2023	1009.44
25-Nov-2023	958.34
26-Nov-2023	385.55
27-Nov-2023	
28-Nov-2023	730.00
29-Nov-2023	930.00
30-Nov-2023	759.00
1-Dec-2023	483.00
2-Dec-2023	
3-Dec-2023	
4-Dec-2023	
5-Dec-2023	742.00
6-Dec-2023	768.00
7-Dec-2023	394.00
8-Dec-2023	903.00
9-Dec-2023	1140.00
10-Dec-2023	769.00
11-Dec-2023	471.00
12-Dec-2023	329.00
13-Dec-2023	471.00
14-Dec-2023	916.00
15-Dec-2023	
16-Dec-2023	
17-Dec-2023	
18-Dec-2023	
19-Dec-2023	2237.00
20-Dec-2023	1480.00
21-Dec-2023	857.00
22-Dec-2023	963.00
23-Dec-2023	767.81
24-Dec-2023	833.88
25-Dec-2023	660.16
26-Dec-2023	

Date	Daily Effluent Volume (m^3)
27-Dec-2023	147.84
28-Dec-2023	641.84
29-Dec-2023	1434.50
30-Dec-2023	1434.50
31-Dec-2023	

Note:
NA = No data available due to monitoring equipment issues

G10 Summary of Sampling Requirements and Sample Dates at SNP 10 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-10	Operations	Continuously (during Discharge, by in-line monitoring)	Flow, volume	Continuously in 2023 when discharge is active
		Daily (when sump is active)	Physical parameters	Continuously in 2023 when discharge is active
		Weekly (when sump is active)	Physical parameters, major ions, nutrients	Weekly in 2023 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 2023 when sump is active

G10_A Summary of Daily Monitoring of Physical Parameters at SNP-10

Station	Date	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Specific Conductivity (µS/cm)	Temperature (°C)	Total Suspended Solids (mg/L)	Turbidity (NTU)
SNP-10 Tuzo Pit	26-Jun-2023	64.27	6.79	7.32	2,024.21	10.26	30.03	19.37
SNP-10 Tuzo Pit	27-Jun-2023	43.49	4.72	7.30	2,077.77	9.03	10.84	7.00
SNP-10 Tuzo Pit	28-Jun-2023	44.76	4.81	7.44	2,044.23	9.43	17.23	11.52
SNP-10 Tuzo Pit	30-Jun-2023	61.10	6.31	7.42	2,020.02	10.94	9.74	6.29
SNP-10 Tuzo Pit	6-Aug-2023	48.66	5.25	7.12	2,469.12	9.84	0.00	0.00
SNP-10 Tuzo Pit	7-Aug-2023	67.84	7.91	7.38	2,579.13	6.46	0.00	0.00
SNP-10 Tuzo Pit	18-Aug-2023	47.59	5.20	7.14	2,395.56	7.68	0.00	0.00
SNP-10 Tuzo Pit	19-Aug-2023	45.26	5.05	7.42	2,467.96	6.83	0.28	0.15
SNP-10 Tuzo Pit	22-Aug-2023	46.37	4.96	6.73	2,303.41	9.04	0.00	0.00
SNP-10 Tuzo Pit	23-Aug-2023	52.77	5.59	7.29	2,639.63	10.35	0.00	0.00
SNP-10 Tuzo Pit	9-Sep-2023	54.82	5.91	7.45	2,395.27	8.72	24.82	16.01
SNP-10 Tuzo Pit	10-Sep-2023	47.43	5.28	7.34	2,767.10	7.19	178.30	115.03
SNP-10 Tuzo Pit	11-Sep-2023	52.67	5.84	7.01	2,693.98	7.74	35.21	22.72
SNP-10 Tuzo Pit	13-Sep-2023	61.88	6.84	7.24	2,573.45	7.86	0.00	0.00
SNP-10 Tuzo Pit	14-Sep-2023	53.43	6.13	7.29	2,619.22	5.77	0.35	0.23
SNP-10 Tuzo Pit	19-Sep-2023	61.03	6.72	7.23	2,392.18	7.16	0.00	0.00
SNP-10 Tuzo Pit	20-Sep-2023	55.23	6.10	7.01	2,964.24	7.70	0.00	0.00
SNP-10 Tuzo Pit	21-Sep-2023	52.24	5.86	7.07	2,322.85	6.87	0.00	0.00
SNP-10 Tuzo Pit	24-Sep-2023	59.03	6.52	6.90	2,056.07	7.62	0.00	0.00
SNP-10 Tuzo Pit	26-Sep-2023	59.69	6.60	7.14	2,133.40	7.37	0.00	0.00

G10_B Summary of Weekly and Monthly Water Quality Results at SNP-10

Date	26-Jun-2023	7-Aug-2023	22-Aug-2023	13-Sep-2023	19-Sep-2023	26-Sep-2023
Conductivity (µS/cm)	2030	2590	2530	2320	2200	2340
pH (pH units)	7.96	7.96	8.02	7.82	7.92	7.86
Total Suspended Solids (mg/L)	12.10	1.50	1.40	2.10	<1.0	3.90
Turbidity (NTU)	4.78	1.80	4.06	2.28	0.86	2.91
Alkalinity, Bicarbonate (mg/L)	150.00	270.00	235.00	145.00	132.00	162
Alkalinity, Carbonate (mg/L)	<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
Alkalinity, Total (mg/L)	150.00	270.00	235.00	145.00	132.00	162
Calcium (Ca)-Total (mg/L)	198	216		219	195	
Chloride (mg/L)	453	523	468	497	507	509
Fluoride (mg/L)	0.45	0.696	0.65	0.49	0.56	0.49
Hardness (as CaCO3) (mg/L)	768	887	847	878	840	909
Magnesium (Mg)-Total (mg/L)	75	85.7		86	77.2	
Potassium (K)-Total (mg/L)	24.10	44.4		28.30	21.7	
Silicate (as SiO2) (mg/L)	9.34	10.80	10.00	8.21	8.59	8.66
Sodium (Na)-Total (mg/L)	86	109		96	83.6	
Sulfate (mg/L)	121	165	176	201	168	189
TDS (mg/L)	1740	1660	1610	1660	1820	1830
Ammonia, Total (as N) (mg/L)	7.83	29.00	36.60	12.70	9.70	9.11
Nitrate and Nitrite (mg/L)	6.40	33.60	42.20	21.00	11.90	14.30
Nitrate as Nitrogen (mg/L)	5.68	31.50	40.40	19.80	11.00	13.20
Nitrite as Nitrogen (mg/L)	0.72	2.06	1.83	1.19	0.88	1.14
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Inorg (mg/L)	0.01	0.00	0.01	<0.0010	<0.0010	<0.0010
Phosph (P)-Dis Org (mg/L)	<0.0020	0.0131	0.0091	0.0041	0.0021	0.0022
Phosph (P)-Tot Dis (mg/L)	0.00	0.01	0.02	0.00	0.00	0.00
Phosph (P)-Tot Inorg (mg/L)	0.01	<0.0010	<0.0010	0.00	<0.0010	0.01
Phosphorus - Total (mg/L)	0.02	0.02	0.01	0.01	0.00	0.01
Total Kjeldahl Nitrogen (mg/L)	9.59	28.30	30.70	15.40	9.44	8.12
Total Organic Carbon (mg/L)	2.46	3.36	3.67	3.47	2.41	2.46
Aluminum (Al)-Total (mg/L)	0.26	0.0099		0.06	0.029	
Antimony (Sb)-Total (mg/L)	0.00	0.00019		0.00021	0.00015	
Arsenic (As)-Total (mg/L)	0.00	0.000598		0.00	0.000418	
Barium (Ba)-Total (mg/L)	0.14	0.178		0.14	0.127	
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020		<0.000020	<0.000020	
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050		<0.000050	<0.000050	
Boron (B)-Total (mg/L)	0.44	0.457		0.53	0.468	
Cadmium (Cd)-Total (mg/L)	<0.0000200	<0.0000150		<0.0000150	<0.0000200	
Cesium (Cs)-Total (mg/L)	0.00	0.000254		0.00	0.000136	
Chromium (Cr)-Total (mg/L)	0.13	<0.00010		0.00	<0.00010	
Cobalt (Co)-Total (mg/L)	0.00	0.00104		0.00	0.00063	
Copper (Cu)-Total (mg/L)	0.00	0.00673		0.00	0.00045	
Iron (Fe)-Total (mg/L)	1.84	0.36		0.20	0.0905	
Lead (Pb)-Total (mg/L)	0.00	<0.000030		0.00	<0.000030	

Date	26-Jun-2023	7-Aug-2023	22-Aug-2023	13-Sep-2023	19-Sep-2023	26-Sep-2023
Lithium (Li)-Total (mg/L)	0.07	0.134		0.10	0.0696	
Manganese (Mn)-Total (mg/L)	0.28	0.285		0.26	0.258	
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		<0.0000050	<0.0000050	
Molybdenum (Mo)-Total (mg/L)	0.04	0.0414		0.05	0.0381	
Nickel (Ni)-Total (mg/L)	0.01	0.0122		0.01	0.00451	
Rubidium (Rb)-Total (mg/L)	0.03	0.0643		0.03	0.0258	
Selenium (Se)-Total (mg/L)	<0.000050	0.000098		0.000118	<0.000050	
Silver (Ag)-Total (mg/L)	<0.000010	0.000016		<0.000010	<0.000010	
Strontium (Sr)-Total (mg/L)	2.32	2.5		2.55	2.35	
Sulfur (S)-Total (mg/L)	56	67		77	71.4	
Tellurium (Te)-Total (mg/L)	0.00	0.00032		<0.00020	<0.00020	
Thallium (Tl)-Total (mg/L)	0.000029	0.000022		0.000025	0.000024	
Thorium (Th)-Total (mg/L)	0.00	<0.00010		0.00026	<0.00010	
Tin (Sn)-Total (mg/L)	<0.000050	<0.000050		<0.000050	<0.000050	
Titanium (Ti)-Total (mg/L)	0.01	<0.00030		0.00	0.00133	
Tungsten (W)-Total (mg/L)	0.00	0.00011		0.00	0.00022	
Uranium (U)-Total (mg/L)	0.02	0.0185		0.03	0.026	
Vanadium (V)-Total (mg/L)	0.00	<0.00050		<0.00050	<0.00050	
Zinc (Zn)-Total (mg/L)	<0.0015	<0.0015		<0.0015	<0.0015	
Zirconium (Zr)-Total (mg/L)	0.00	0.00142		0.00073	0.00044	
Aluminum (Al)-Dissolved (mg/L)	0.00	0.0026		0.0031	0.0038	
Antimony (Sb)-Dissolved (mg/L)	0.00	0.00018		0.00013	0.00012	
Arsenic (As)-Dissolved (mg/L)	0.00	0.000553		0.00	0.000406	
Barium (Ba)-Dissolved (mg/L)	0.14	0.178		0.15	0.135	
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		<0.000020	<0.000020	
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		<0.000050	<0.000050	
Boron (B)-Dissolved (mg/L)	0.39	0.445		0.48	0.452	
Cadmium (Cd)-Dissolved (mg/L)	<0.0000150	<0.0000150		<0.0000150	<0.0000150	
Calcium (Ca)-Dissolved (mg/L)	191	217	196	216	204	230
Cesium (Cs)-Dissolved (mg/L)	0.00	0.000267		0.00	0.000152	
Chromium (Cr)-Dissolved (mg/L)	0.00041	<0.00010		<0.00010	<0.00010	
Cobalt (Co)-Dissolved (mg/L)	0.00	0.000964		0.00	0.000616	
Copper (Cu)-Dissolved (mg/L)	0.00	0.00648		0.00	0.00043	
Iron (Fe)-Dissolved (mg/L)	0.02	0.11		0.08	0.0238	
Lead (Pb)-Dissolved (mg/L)	<0.000030	<0.000030		<0.000030	<0.000030	
Lithium (Li)-Dissolved (mg/L)	0.07	0.132		0.09	0.0696	
Magnesium (Mg)-Dissolved (mg/L)	71	84	87	82	80	81
Manganese (Mn)-Dissolved (mg/L)	0.26	0.286		0.25	0.275	
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		<0.0000050	<0.0000050	
Molybdenum (Mo)-Dissolved (mg/L)	0.04	0.0404		0.05	0.0404	
Nickel (Ni)-Dissolved (mg/L)	0.00	0.012		0.01	0.00461	
Potassium (K)-Dissolved (mg/L)	22.6	44.9	41.7	28.3	22.9	23.4
Rubidium (Rb)-Dissolved (mg/L)	0.03	0.07		0.03	0.03	
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000126		0.00	<0.000050	
Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000013		<0.000010	<0.000010	

Date	26-Jun-2023	7-Aug-2023	22-Aug-2023	13-Sep-2023	19-Sep-2023	26-Sep-2023
Sodium (Na)-Dissolved (mg/L)	86.7	110	114	94.4	90	98
Strontium (Sr)-Dissolved (mg/L)	2	3		3	3	
Sulfur (S)-Dissolved (mg/L)	53.20	63.6		71.80	70.4	
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020		<0.00020	<0.00020	
Thallium (Tl)-Dissolved (mg/L)	0.00	0.000023		0.000025	0.000027	
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010		<0.00010	<0.00010	
Tin (Sn)-Dissolved (mg/L)	<0.000050	<0.000050		<0.000050	<0.000050	
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		<0.00030	<0.00030	
Tungsten (W)-Dissolved (mg/L)	0.00025	0.00011		0.00039	0.00021	
Uranium (U)-Dissolved (mg/L)	0.02	0.018		0.03	0.0274	
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		<0.00050	<0.00050	
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	0.00101		0.00036	0.00032	
Benzene (mg/L)	0.0112	0.0153		0.00659	<0.00050	
Ethylbenzene (mg/L)	0.00	0.00565		0.00	0.00053	
F1 (C6-C10) (mg/L)	<0.10	<0.10		<0.10	<0.10	
F2 (C10-C16) (mg/L)	<0.10	0.26		<0.10	<0.10	
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)	0.00419	0.00713		0.00324	<0.00050	
Total Hydrocarbons (C6-C50) (mg/L)	<0.40	<0.40		<0.40	<0.40	
Xylenes (mg/L)	0.00	0.011		0.00268	0.00206	
Th-228 (Bq/L)	<0.4	0.6		<0.4	<0.4	
Th-230 (Bq/L)	<20	<20		<20	<40	
U-234 (Bq/L)	0.19	0.22		0.31	0.3	
U-235 (Bq/L)	0.01	0.011		0.02	0.015	
U-238 (Bq/L)	0.19	0.22		0.31	0.3	
U-235 (Bq/L)	0.01			0.02		0.01
U-238 (Bq/L)	0.17			0.30		0.20

G10_C Summary of Flow Data at SNP-10

Date	Daily Effluent Volume (m^3)
1-Jan-2023	
2-Jan-2023	
3-Jan-2023	
4-Jan-2023	
5-Jan-2023	
6-Jan-2023	
7-Jan-2023	
8-Jan-2023	
9-Jan-2023	
10-Jan-2023	
11-Jan-2023	
12-Jan-2023	
13-Jan-2023	
14-Jan-2023	
15-Jan-2023	
16-Jan-2023	
17-Jan-2023	
18-Jan-2023	
19-Jan-2023	
20-Jan-2023	
21-Jan-2023	
22-Jan-2023	
23-Jan-2023	
24-Jan-2023	
25-Jan-2023	
26-Jan-2023	
27-Jan-2023	
28-Jan-2023	
29-Jan-2023	
30-Jan-2023	
31-Jan-2023	
1-Feb-2023	
2-Feb-2023	
3-Feb-2023	
4-Feb-2023	
5-Feb-2023	
6-Feb-2023	
7-Feb-2023	
8-Feb-2023	
9-Feb-2023	
10-Feb-2023	
11-Feb-2023	
12-Feb-2023	
13-Feb-2023	
14-Feb-2023	
15-Feb-2023	
16-Feb-2023	
17-Feb-2023	
18-Feb-2023	
19-Feb-2023	
20-Feb-2023	
21-Feb-2023	
22-Feb-2023	
23-Feb-2023	
24-Feb-2023	
25-Feb-2023	
26-Feb-2023	
27-Feb-2023	
28-Feb-2023	
1-Mar-2023	

Date	Daily Effluent Volume (m^3)
2-Mar-2023	
3-Mar-2023	
4-Mar-2023	
5-Mar-2023	
6-Mar-2023	
7-Mar-2023	
8-Mar-2023	
9-Mar-2023	
10-Mar-2023	
11-Mar-2023	
12-Mar-2023	
13-Mar-2023	
14-Mar-2023	
15-Mar-2023	
16-Mar-2023	
17-Mar-2023	
18-Mar-2023	
19-Mar-2023	
20-Mar-2023	
21-Mar-2023	
22-Mar-2023	
23-Mar-2023	
24-Mar-2023	
25-Mar-2023	
26-Mar-2023	
27-Mar-2023	
28-Mar-2023	
29-Mar-2023	
30-Mar-2023	
31-Mar-2023	
1-Apr-2023	
2-Apr-2023	
3-Apr-2023	
4-Apr-2023	
5-Apr-2023	
6-Apr-2023	
7-Apr-2023	
8-Apr-2023	
9-Apr-2023	
10-Apr-2023	
11-Apr-2023	
12-Apr-2023	
13-Apr-2023	
14-Apr-2023	
15-Apr-2023	
16-Apr-2023	
17-Apr-2023	
18-Apr-2023	
19-Apr-2023	
20-Apr-2023	
21-Apr-2023	
22-Apr-2023	
23-Apr-2023	
24-Apr-2023	
25-Apr-2023	
26-Apr-2023	
27-Apr-2023	
28-Apr-2023	
29-Apr-2023	
30-Apr-2023	

Date	Daily Effluent Volume (m^3)
1-May-2023	
2-May-2023	
3-May-2023	
4-May-2023	
5-May-2023	
6-May-2023	
7-May-2023	
8-May-2023	
9-May-2023	
10-May-2023	
11-May-2023	
12-May-2023	
13-May-2023	
14-May-2023	
15-May-2023	
16-May-2023	
17-May-2023	
18-May-2023	
19-May-2023	
20-May-2023	
21-May-2023	
22-May-2023	
23-May-2023	
24-May-2023	
25-May-2023	
26-May-2023	
27-May-2023	
28-May-2023	
29-May-2023	
30-May-2023	
31-May-2023	
1-Jun-2023	
2-Jun-2023	
3-Jun-2023	
4-Jun-2023	
5-Jun-2023	
6-Jun-2023	
7-Jun-2023	
8-Jun-2023	
9-Jun-2023	
10-Jun-2023	
11-Jun-2023	
12-Jun-2023	
13-Jun-2023	
14-Jun-2023	
15-Jun-2023	
16-Jun-2023	
17-Jun-2023	
18-Jun-2023	
19-Jun-2023	
20-Jun-2023	
21-Jun-2023	
22-Jun-2023	
23-Jun-2023	
24-Jun-2023	251.25
25-Jun-2023	3953.88
26-Jun-2023	1460.00
27-Jun-2023	1450.50
28-Jun-2023	108.75
29-Jun-2023	1084.75

Date	Daily Effluent Volume (m^3)
30-Jun-2023	
1-Jul-2023	
2-Jul-2023	
3-Jul-2023	
4-Jul-2023	
5-Jul-2023	
6-Jul-2023	
7-Jul-2023	
8-Jul-2023	
9-Jul-2023	
10-Jul-2023	
11-Jul-2023	
12-Jul-2023	
13-Jul-2023	
14-Jul-2023	
15-Jul-2023	
16-Jul-2023	
17-Jul-2023	
18-Jul-2023	
19-Jul-2023	
20-Jul-2023	
21-Jul-2023	
22-Jul-2023	
23-Jul-2023	
24-Jul-2023	
25-Jul-2023	
26-Jul-2023	
27-Jul-2023	
28-Jul-2023	3755.17
29-Jul-2023	0.55
30-Jul-2023	
31-Jul-2023	
1-Aug-2023	
2-Aug-2023	
3-Aug-2023	
4-Aug-2023	1871.35
5-Aug-2023	2947.52
6-Aug-2023	792.16
7-Aug-2023	
8-Aug-2023	
9-Aug-2023	
10-Aug-2023	
11-Aug-2023	
12-Aug-2023	
13-Aug-2023	
14-Aug-2023	
15-Aug-2023	
16-Aug-2023	1424.11
17-Aug-2023	3237.74
18-Aug-2023	1411.51
19-Aug-2023	
20-Aug-2023	1437.26
21-Aug-2023	1182.48
22-Aug-2023	771.49
23-Aug-2023	117.60
24-Aug-2023	
25-Aug-2023	
26-Aug-2023	
27-Aug-2023	
28-Aug-2023	

Date	Daily Effluent Volume (m^3)
29-Aug-2023	
30-Aug-2023	
31-Aug-2023	
1-Sep-2023	
2-Sep-2023	
3-Sep-2023	
4-Sep-2023	
5-Sep-2023	
6-Sep-2023	
7-Sep-2023	
8-Sep-2023	2602.16
9-Sep-2023	1582.67
10-Sep-2023	1453.28
11-Sep-2023	464.58
12-Sep-2023	981.05
13-Sep-2023	785.32
14-Sep-2023	
15-Sep-2023	
16-Sep-2023	
17-Sep-2023	
18-Sep-2023	1164.80
19-Sep-2023	1066.38
20-Sep-2023	742.55
21-Sep-2023	253.38
22-Sep-2023	120.64
23-Sep-2023	648.98
24-Sep-2023	91.83
25-Sep-2023	1031.96
26-Sep-2023	
27-Sep-2023	777.48
28-Sep-2023	419.95
29-Sep-2023	
30-Sep-2023	
1-Oct-2023	
2-Oct-2023	
3-Oct-2023	
4-Oct-2023	
5-Oct-2023	
6-Oct-2023	
7-Oct-2023	
8-Oct-2023	
9-Oct-2023	
10-Oct-2023	
11-Oct-2023	
12-Oct-2023	
13-Oct-2023	
14-Oct-2023	
15-Oct-2023	
16-Oct-2023	
17-Oct-2023	
18-Oct-2023	
19-Oct-2023	
20-Oct-2023	
21-Oct-2023	
22-Oct-2023	
23-Oct-2023	
24-Oct-2023	
25-Oct-2023	
26-Oct-2023	
27-Oct-2023	

Date	Daily Effluent Volume (m^3)
28-Oct-2023	
29-Oct-2023	
30-Oct-2023	
31-Oct-2023	
1-Nov-2023	
2-Nov-2023	
3-Nov-2023	
4-Nov-2023	
5-Nov-2023	
6-Nov-2023	
7-Nov-2023	
8-Nov-2023	
9-Nov-2023	
10-Nov-2023	
11-Nov-2023	
12-Nov-2023	
13-Nov-2023	
14-Nov-2023	
15-Nov-2023	
16-Nov-2023	
17-Nov-2023	
18-Nov-2023	
19-Nov-2023	
20-Nov-2023	
21-Nov-2023	
22-Nov-2023	
23-Nov-2023	
24-Nov-2023	
25-Nov-2023	
26-Nov-2023	
27-Nov-2023	
28-Nov-2023	
29-Nov-2023	
30-Nov-2023	
1-Dec-2023	
2-Dec-2023	
3-Dec-2023	
4-Dec-2023	
5-Dec-2023	
6-Dec-2023	
7-Dec-2023	
8-Dec-2023	
9-Dec-2023	
10-Dec-2023	
11-Dec-2023	
12-Dec-2023	
13-Dec-2023	
14-Dec-2023	
15-Dec-2023	
16-Dec-2023	
17-Dec-2023	
18-Dec-2023	
19-Dec-2023	
20-Dec-2023	
21-Dec-2023	
22-Dec-2023	
23-Dec-2023	
24-Dec-2023	
25-Dec-2023	
26-Dec-2023	

Date	Daily Effluent Volume (m^3)
27-Dec-2023	
28-Dec-2023	
29-Dec-2023	
30-Dec-2023	
31-Dec-2023	

G11 Summary of Sampling Requirements and Sample Dates at SNP 11 in 2023

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	No seepage observed in both May 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 2023

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	No seepage observed in both May 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 2023

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	No seepage observed in both May and September Seepage Sampling Events. No samples collected.
		Following major storm events	Physical parameters, major ions, nutrients, total and dissolved metals	

G16 Summary of Sampling Requirements and Sample Dates at SNP 16 in 2023

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	23-May
		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 2023

Station	SNP-16
Date	23-May-2023
Hardness (as CaCO3) (mg/L)	354
TDS (mg/L)	616.00
Alkalinity, Bicarbonate (mg/L)	91.1
Alkalinity, Carbonate (mg/L)	<1.0
Alkalinity, Hydroxide (mg/L)	<1.0
Alkalinity, Total (mg/L)	91.1
Chloride (mg/L)	138
Fluoride (mg/L)	0.45
Silicate (as SiO2) (mg/L)	7
Sulfate (mg/L)	133
Calcium (Ca)-Total (mg/L)	85.20
Magnesium (Mg)-Total (mg/L)	33
Potassium (K)-Total (mg/L)	15.20
Sodium (Na)-Total (mg/L)	54.40
Ammonia, Total (as N) (mg/L)	0.98
Nitrate and Nitrite (mg/L)	16.20
Total Kjeldahl Nitrogen (mg/L)	0.81
Orthophosphate-Dissolved (as P) (mg/L)	<0.0010
Phosphorus - Total (mg/L)	0.02
Phosph (P)-Dis Org (mg/L)	0.00
Phosph (P)-Tot Inorg (mg/L)	0.01
Phosph (P)-Dis Inorg (mg/L)	<0.0010
Total Organic Carbon (mg/L)	3.78
Nitrate as Nitrogen (mg/L)	16.10
Nitrite as Nitrogen (mg/L)	0.0954
Phosph (P)-Tot Dis (mg/L)	0.00
Aluminum (Al)-Total (mg/L)	0.50
Antimony (Sb)-Total (mg/L)	<0.00010
Arsenic (As)-Total (mg/L)	0.00
Barium (Ba)-Total (mg/L)	0.06
Beryllium (Be)-Total (mg/L)	0.00
Cadmium (Cd)-Total (mg/L)	<0.0000150
Chromium (Cr)-Total (mg/L)	0.00
Cobalt (Co)-Total (mg/L)	0.00
Copper (Cu)-Total (mg/L)	0.00184
Iron (Fe)-Total (mg/L)	0.476
Lead (Pb)-Total (mg/L)	0.00
Lithium (Li)-Total (mg/L)	0.01
Manganese (Mn)-Total (mg/L)	0.10
Molybdenum (Mo)-Total (mg/L)	0.0172
Nickel (Ni)-Total (mg/L)	0.01
Rubidium (Rb)-Total (mg/L)	0.01
Selenium (Se)-Total (mg/L)	0.00
Strontium (Sr)-Total (mg/L)	0.95
Thallium (Tl)-Total (mg/L)	0.00
Titanium (Ti)-Total (mg/L)	0.02
Uranium (U)-Total (mg/L)	0.0168
Vanadium (V)-Total (mg/L)	0.00

Station	SNP-16
Date	23-May-2023
Zinc (Zn)-Total (mg/L)	<0.0015
Boron (B)-Total (mg/L)	0.47
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)	47.40
Tellurium (Te)-Total (mg/L)	<0.00020
Thorium (Th)-Total (mg/L)	0.00025
Tungsten (W)-Total (mg/L)	0.00
Zirconium (Zr)-Total (mg/L)	<0.00100
Temperature (°C)	
pH (pH units)	8.17
Conductivity (µS/cm)	1,000.00
Total Suspended Solids (mg/L)	18.4
Turbidity (NTU)	11.50
Dissolved Oxygen (mg/L)	
Specific Conductivity (µS/cm)	
Aluminum (Al)-Dissolved (mg/L)	0.01
Antimony (Sb)-Dissolved (mg/L)	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.000345
Barium (Ba)-Dissolved (mg/L)	0.05
Beryllium (Be)-Dissolved (mg/L)	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050
Boron (B)-Dissolved (mg/L)	0.42
Cadmium (Cd)-Dissolved (mg/L)	<0.0000100
Calcium (Ca)-Dissolved (mg/L)	85.90
Chromium (Cr)-Dissolved (mg/L)	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00
Copper (Cu)-Dissolved (mg/L)	0.00122
Iron (Fe)-Dissolved (mg/L)	<0.0050
Lead (Pb)-Dissolved (mg/L)	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.01
Magnesium (Mg)-Dissolved (mg/L)	33.8
Manganese (Mn)-Dissolved (mg/L)	0.09
Mercury (Hg)-Dissolved (mg/L)	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.0165
Nickel (Ni)-Dissolved (mg/L)	0.01
Potassium (K)-Dissolved (mg/L)	15.50
Rubidium (Rb)-Dissolved (mg/L)	0.01
Selenium (Se)-Dissolved (mg/L)	0.00033
Silver (Ag)-Dissolved (mg/L)	<0.000010
Sodium (Na)-Dissolved (mg/L)	54.20
Strontium (Sr)-Dissolved (mg/L)	0.93
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)	0.0157

Station	SNP-16
Date	23-May-2023
Vanadium (V)-Dissolved (mg/L)	0.00075
Zinc (Zn)-Dissolved (mg/L)	<0.0010
Cesium (Cs)-Dissolved (mg/L)	0.00
Sulfur (S)-Dissolved (mg/L)	45.9
Tellurium (Te)-Dissolved (mg/L)	<0.00020
Thorium (Th)-Dissolved (mg/L)	<0.00010
Tungsten (W)-Dissolved (mg/L)	0.00024
Zirconium (Zr)-Dissolved (mg/L)	<0.00030
Benzene (mg/L)	<0.00050
Ethylbenzene (mg/L)	<0.00050
Toluene (mg/L)	<0.00050
Xylenes (mg/L)	<0.00075
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
Total Hydrocarbons (C6-C50) (mg/L)	<0.40

G17 Summary of Sampling Requirements and Sample Dates at SNP 17 in 2023

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	No seepage observed in both May 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 2023

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	May 13 to September 1

G19 Summary of Sampling Requirements and Sample Dates at SNP 19 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	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: May 13 to September 1 Discharge from Lake A1: N/A

G20 Summary of Sampling Requirements and Sample Dates at SNP 20 in 2023

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	N/A

G21 Summary of Sampling Requirements and Sample Dates at SNP 21 in 2023

SNP Station	Program	Sampling Frequency	Sampling Parameters	Sampling Dates
SNP-21	Operations (During Discharge to CP1)	Monthly	Physical parameters, major ions, nutrients, total metals, water elevation	Monthly throughout 2023

G21_A Summary of Monthly Water Quality Results at SNP-21

Station	SNP-21-3m	SNP-21-2m	SNP-21-5m	SNP-21-2m	SNP-21-3m	SNP-21-3m	SNP-21-4m	SNP-21-4m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-2m	SNP-21-2m	SNP-21-2m
Date	9-Jan-2023	12-Feb-2023	12-Feb-2023	1-Mar-2023	9-Apr-2023	28-May-2023	28-May-2023	20-Jun-2023	27-Jul-2023	10-Aug-2023	17-Sep-2023	10-Oct-2023	15-Nov-2023	5-Dec-2023
Conductivity (µS/cm)	3180	3390	3970	3360	3810	1920	2730	2190	2440	2560	2530	2500	2990	3430
pH (pH units)	6.94	6.76	6.93	7.01	7.12	6.98	7.00	6.95	6.92	6.76	7.25	7.23	7.23	7.24
Total Suspended Solids (mg/L)	3	3.50	2.60	4.40	4.00	7.20	7.90	5.20	2.50	2.20	3.40	4.80	4.00	3.60
Turbidity (NTU)	1.46	1.49	1.46	1.78	0.96	2.90	2.90	2.49	2.24	1.92	2.13	3.10	1.83	1.72
Alkalinity, Bicarbonate (mg/L)	12.20	13.00	17.00	13.20	14.50	8.00	10.30	7.60	8.40	10.60	12.00	11.60	17.20	23
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
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
Alkalinity, Total (mg/L)	12.20	13.00	17.00	13.20	14.50	8.00	10.30	7.60	8.40	10.60	12.00	11.60	17.20	23
Calcium (Ca)-Total (mg/L)	266	292	321	300	332	144	264	191	225	205	210	203	252	290
Chloride (mg/L)	806	921	1010	892	1040	507	755	645	654	707	691	681	840	938
Fluoride (mg/L)	<0.200	<0.200	0.22	<0.200	<0.200	0.12	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Hardness (as CaCO3) (mg/L)	886	932	1010	989	1080	538	952	650	682	694	681	703	863	965
Magnesium (Mg)-Total (mg/L)	52.10	54.80	56.90	59.00	66.40	27.90	48.50	37.80	42.20	40.20	43.40	41.30	49.90	54.50
Potassium (K)-Total (mg/L)	15.00	16.30	16.30	17.40	18.90	9.02	15.00	11.00	12.50	12.30	12.80	13.20	14.80	15.60
Silicate (as SiO2) (mg/L)	1.70	2.03	2.86	2.34	2.85	<0.50	1.27	<0.50	<0.50	0.63	0.64	<0.50	<0.50	1.01
Sodium (Na)-Total (mg/L)	246	263	296	296	322	139	252	187	207	201	214	205	254	263
Sulfate (mg/L)	188	204	206	200	231	109	155.00	108	141	142	136	145	193	216
TDS (mg/L)	1880	2310	2420	2040	2930	1470	1980	1880	1660	2340	2170	1940	1790	2580
Ammonia, Total (as N) (mg/L)	0.74	0.71	1.51	1.10	0.99	0.48	1.12	0.39	0.19	0.43	0.28	0.14	0.28	0.45
Nitrate and Nitrite (mg/L)	6.99	7.72	7.03	7.29	8.24	3.94	5.63	4.66	4.03	4.22	4.13	3.99	4.71	5.24
Nitrate as Nitrogen (mg/L)	6.96	7.67	6.95	7.24	8.20	3.88	5.58	4.63	4.01	4.18	4.10	3.97	4.69	5.22
Nitrite as Nitrogen (mg/L)	0.03	0.05	0.08	0.05	0.04	0.06	0.05	0.03	0.02	0.04	0.03	0.02	0.02	0.02
Orthophosphate-Dissolved (as P) (mg/L)	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	<0.0010
Phosph (P)-Dis Inorg (mg/L)	<0.0010	<0.0010	<0.0010	0.00	0.00	<0.0010	0.00	0.00	<0.0020	<0.0010	<0.0010	<0.0010	0.00	<0.0010
Phosph (P)-Dis Org (mg/L)	0.0055	0.01	0.01	0.00	0.00	0.00	0.0031	0.0023	0.0042	0.0032	0.0044	0.00	0.00	<0.0020
Phosph (P)-Tot Dis (mg/L)	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.0044	0.00	0.00	<0.0010
Phosph (P)-Tot Inorg (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.0010	<0.0010	0.01	0.00	0.00
Phosphorus - Total (mg/L)	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Kjeldahl Nitrogen (mg/L)	1.38	1.29	1.92	1.78	1.61	1.34	2.23	1.09	0.73	0.82	0.88	0.64	0.81	0.86
Total Organic Carbon (mg/L)	8.24	7.84	6.86	9.02	7.59	4.66	5.54	5.62	5.74	7.05	5.59	5.91	6.18	6.69
Aluminum (Al)-Total (mg/L)	0.05	0.06	0.19	0.06	0.10	0.12	0.10	0.09	0.03	0.03	0.03	0.06	0.05	0.04
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020
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
Barium (Ba)-Total (mg/L)	0.11	0.12	0.11	0.12	0.13	0.06	0.10	0.08	0.07	0.08	0.08	0.08	0.09	0.09
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000040	<0.000040	<0.000040	<0.000040	<0.000020	<0.000020	0.000021	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000040
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100
Boron (B)-Total (mg/L)	0.55	0.65	0.67	0.62	0.64	0.28	0.49	0.40	0.47	0.42	0.41	0.45	0.54	0.62
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
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
Chromium (Cr)-Total (mg/L)	0.00012	<0.00020	0.00	<0.00020	<0.00020	0.00052	0.00017	0.0002	0.0001	<0.00010	<0.00010	0.00011	0.00012	<0.00020
Cobalt (Co)-Total (mg/L)	0.00	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
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
Iron (Fe)-Total (mg/L)	0.13	0.13	0.36	0.14	0.17	0.28	0.27	0.26	0.14	0.17	0.15	0.15	0.10	0.10
Lead (Pb)-Total (mg/L)	0.00012	<0.000060	0.000068	<0.000060	<0.000060	0.000183	0.00	0.000041	<0.000030	<0.000030	<0.000030	0.000033	0.000047	<0.000060
Lithium (Li)-Total (mg/L)	0.04	0.05	0.05	0.05	0.05	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.05
Manganese (Mn)-Total (mg/L)	0.58	0.67	0.57	0.70	0.80	0.50	0.75	0.65	0.37	0.37	0.37	0.35	0.38	0.38
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
Molybdenum (Mo)-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	0.01
Nickel (Ni)-Total (mg/L)	0.04	0.05	0.04	0.05	0.05	0.03	0.04	0.04	0.03	0.03	0.02	0.02	0.03	0.03
Rubidium (Rb)-Total (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	0.02	0.02
Selenium (Se)-Total (mg/L)	0.00	<0.000100	<0.000100	<0.000100	0.00	0.00	0.000064	0.000057	<0.000050	<0.000050	<0.000050	<0.000050	0.000085	<0.000100
Silver (Ag)-Total (mg/L)	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000011	<0.000020
Strontium (Sr)-Total (mg/L)	5.34	5.86	6.71	6.14	7.15	2.90	5.28	4.01	4.48	4.21	4.32	4.18	5.34	5.76
Sulfur (S)-Total (mg/L)	71.90	79.80	80.20	79.00	84.50	41.20	72.10	51	55.70	57.30	60.60	61.10	78.80	77.60
Tellurium (Te)-Total (mg/L)	0.00	0.00	0.00	<0.00040	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.00040
Thallium (Tl)-Total (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.000084	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thorium (Th)-Total (mg/L)	<0.00010	0.00026	<0.00020	<0.00020	<0.00020	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020
Tin (Sn)-Total (mg/L)	<0.000050	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000050	0.00	0.00	0.00	0.000368	0.00	<0.000050	0.00
Titanium (Ti)-Total (mg/L)	0.00	<0.00060	0.00681	<0.00060	<0.00060	0.00205	<0.00090	0.00141	0.00031	0.0005	0.00	0.00212	0.00185	0.00
Tungsten (W)-Total (mg/L)	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020
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
Vanadium (V)-Total (mg/L)	<0.00050	<0.00100	<0.00100	<0.00100	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100
Zinc (Zn)-Total (mg/L)	0.03	0.04	0.03	0.04	0.05	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.02

Station	SNP-21-3m	SNP-21-2m	SNP-21-5m	SNP-21-2m	SNP-21-3m	SNP-21-3m	SNP-21-4m	SNP-21-4m	SNP-21-3m	SNP-21-3m	SNP-21-3m	SNP-21-2m	SNP-21-2m	SNP-21-2m
Date	9-Jan-2023	12-Feb-2023	12-Feb-2023	1-Mar-2023	9-Apr-2023	28-May-2023	28-May-2023	20-Jun-2023	27-Jul-2023	10-Aug-2023	17-Sep-2023	10-Oct-2023	15-Nov-2023	5-Dec-2023
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00040
Aluminum (Al)-Dissolved (mg/L)	0.03	0.04	0.03	0.04	0.04	0.02	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Antimony (Sb)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000218	0.00	0.00	0.00	0.00	0.00	0.00
Barium (Ba)-Dissolved (mg/L)	0.11	0.11	0.09	0.12	0.12	0.06	0.10	0.08	0.08	0.08	0.09	0.08	0.09	0.10
Beryllium (Be)-Dissolved (mg/L)	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000020	<0.000040	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000100	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.53	0.59	0.61	0.61	0.64	0.38	0.53	0.39	0.37	0.36	0.40	0.41	0.53	0.57
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
Calcium (Ca)-Dissolved (mg/L)	269	281	312	299	328	167	299	195	208	214	201	211	257	289
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
Chromium (Cr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	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
Iron (Fe)-Dissolved (mg/L)	0.08	0.08	0.06	0.08	0.08	0.07	0.07	0.06	0.03	0.01	0.01	0.02	0.02	0.02
Lead (Pb)-Dissolved (mg/L)	<0.000060	<0.000060	<0.000060	<0.000060	<0.000060	0.000043	<0.000060	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
Lithium (Li)-Dissolved (mg/L)	0.05	0.05	0.05	0.05	0.06	0.03	0.05	0.03	0.04	0.04	0.03	0.03	0.04	0.05
Magnesium (Mg)-Dissolved (mg/L)	52.10	55.90	56.60	58.90	62.90	29.30	49.90	39.50	39.40	38.70	43.60	42.70	53.80	59.10
Manganese (Mn)-Dissolved (mg/L)	0.57	0.66	0.54	0.70	0.77	0.52	0.73	0.63	0.27	0.27	0.38	0.32	0.38	0.39
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000500	<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	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Nickel (Ni)-Dissolved (mg/L)	0.04	0.05	0.04	0.05	0.05	0.03	0.04	0.04	0.03	0.02	0.02	0.02	0.03	0.03
Phosphorus - Dissolved (mg/L)	<0.020													
Potassium (K)-Dissolved (mg/L)	15.20	16.50	16.40	17.40	18.40	9.04	15.30	11.40	12.50	11.90	13.40	13.70	16.00	17
Rubidium (Rb)-Dissolved (mg/L)	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Selenium (Se)-Dissolved (mg/L)	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000100	<0.000050	0.000053	<0.000050	<0.000050	0.00	<0.000050	0.00
Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	254	268	296	287	318	148	252	193	201	184	215	202	267	285
Strontium (Sr)-Dissolved (mg/L)	5.46	6.11	6.86	6.16	6.94	3.27	5.69	4.12	4.58	4.30	4.56	4.27	5.32	6.01
Sulfur (S)-Dissolved (mg/L)	70.00	73.10	70.90	77.20	88	41.00	69.90	51	58.30	56.60	60.20	59.30	70.40	81.70
Tellurium (Te)-Dissolved (mg/L)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00	<0.00040	<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
Thorium (Th)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000050	<0.000100	0.000783	0.00	0.00	0.000427	0.00	<0.000050	0.00
Titanium (Ti)-Dissolved (mg/L)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00030	<0.00060	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00020	<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
Vanadium (V)-Dissolved (mg/L)	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.03	0.04	0.03	0.04	0.04	0.02	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Zirconium (Zr)-Dissolved (mg/L)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00030	<0.00060	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

G21_B Water Surface Elevations at SNP-21 (Collection Pond 1)

Date	Monthly Average Water Elevation (masl)
Jan-2023	418.24
Feb-2023	418.25
Mar-2023	418.24
Apr-2023	418.29
May-2023	418.63
Jun-2023	418.64
Jul-2023	418.06
Aug-2023	417.45
Sep-2023	417.04
Oct-2023	416.60
Nov-2023	416.81
Dec-2023	416.87

G_MET_A Mean, Minimum and Maximum Daily Temperatures at the Gahcho Kué Mine in 2023

	Temperature (°C)		
Date	Mean	Min	Max
1-Jan-2023	-18.0	-23.4	-15.8
2-Jan-2023	-26.3	-30.3	-23.4
3-Jan-2023	-23.0	-27.4	-19.4
4-Jan-2023	-17.4	-19.6	-15.1
5-Jan-2023	-15.4	-17.1	-14.6
6-Jan-2023	-18.0	-19.8	-16.1
7-Jan-2023	-17.1	-18.2	-14.8
8-Jan-2023	-14.4	-16.5	-13.1
9-Jan-2023	-14.7	-16.3	-13.2
10-Jan-2023	-13.6	-15.8	-11.7
11-Jan-2023	-26.2	-32.7	-15.8
12-Jan-2023	-22.9	-28.0	-20.8
13-Jan-2023	-32.2	-36.5	-25.9
14-Jan-2023	-25.5	-35.5	-20.3
15-Jan-2023	-17.9	-20.3	-16.3
16-Jan-2023	-18.9	-20.6	-16.9
17-Jan-2023	-18.1	-20.2	-16.1
18-Jan-2023	-10.9	-16.3	-6.9
19-Jan-2023	-7.6	-11.8	-6.4
20-Jan-2023	-13.4	-19.3	-9.4
21-Jan-2023	-20.1	-23.3	-16.2
22-Jan-2023	-22.3	-30.0	-17.2
23-Jan-2023	-22.9	-26.3	-19.5
24-Jan-2023	-17.2	-20.7	-15.4
25-Jan-2023	-26.5	-31.4	-20.6
26-Jan-2023	-28.5	-32.6	-21.5
27-Jan-2023	-29.7	-33.9	-23.6
28-Jan-2023	-27.6	-29.1	-24.9
29-Jan-2023	-30.1	-31.8	-26.9
30-Jan-2023	-31.2	-36.7	-28.3
31-Jan-2023	-35.0	-38.1	-31.6
1-Feb-2023	-34.7	-37.5	-32.7
2-Feb-2023	-36.3	-38.4	-32.7
3-Feb-2023	-30.9	-35.5	-27.8
4-Feb-2023	-29.2	-34.1	-26.5
5-Feb-2023	-28.7	-34.5	-24.8
6-Feb-2023	-23.9	-28.4	-22.2
7-Feb-2023	-24.2	-27.7	-22.2
8-Feb-2023	-29.2	-33.4	-25.4
9-Feb-2023	-24.8	-28.0	-21.4
10-Feb-2023	-23.1	-25.2	-20.6
11-Feb-2023	-23.5	-28.1	-19.1
12-Feb-2023	-21.0	-25.5	-19.1
13-Feb-2023	-33.3	-37.3	-25.4
14-Feb-2023	-34.5	-37.9	-30.8
15-Feb-2023	-37.5	-39.1	-32.6
16-Feb-2023	-37.0	-39.8	-32.6
17-Feb-2023	-38.4	-39.8	-34.3
18-Feb-2023	-38.7	-39.9	-34.8
19-Feb-2023	-36.0	-38.7	-31.2
20-Feb-2023	-36.1	-39.6	-33.6
21-Feb-2023	-28.6	-34.4	-25.5
22-Feb-2023	-30.4	-32.7	-27.9
23-Feb-2023	-33.1	-36.6	-29.8
24-Feb-2023	-29.5	-33.5	-23.1
25-Feb-2023	-25.8	-29.7	-20.8
26-Feb-2023	-23.4	-27.6	-19.3
27-Feb-2023	-22.1	-30.0	-19.1
28-Feb-2023	-28.6	-33.1	-20.6

Date	Temperature (°C)		
	Mean	Min	Max
1-Mar-2023	-24.9	-30.8	-20.0
2-Mar-2023	-25.6	-28.5	-21.7
3-Mar-2023	-27.5	-29.7	-25.8
4-Mar-2023	-29.8	-32.3	-26.8
5-Mar-2023	-28.8	-32.3	-24.6
6-Mar-2023	-30.4	-33.7	-25.4
7-Mar-2023	-31.1	-34.7	-27.1
8-Mar-2023	-26.7	-31.8	-24.0
9-Mar-2023	-21.2	-27.3	-13.8
10-Mar-2023	-19.2	-22.6	-17.0
11-Mar-2023	-21.8	-29.6	-17.6
12-Mar-2023	-25.6	-29.9	-22.2
13-Mar-2023	-22.0	-26.7	-11.7
14-Mar-2023	-24.9	-30.0	-16.5
15-Mar-2023	-26.1	-32.2	-19.9
16-Mar-2023	-18.7	-20.9	-15.7
17-Mar-2023	-17.8	-21.9	-15.6
18-Mar-2023	-20.7	-28.5	-17.1
19-Mar-2023	-28.4	-32.7	-24.1
20-Mar-2023	-29.1	-34.0	-25.2
21-Mar-2023	-27.8	-32.7	-21.1
22-Mar-2023	-23.9	-30.2	-18.4
23-Mar-2023	-24.9	-28.1	-21.0
24-Mar-2023	-26.1	-33.1	-23.2
25-Mar-2023	-31.2	-36.3	-24.9
26-Mar-2023	-28.7	-33.7	-23.5
27-Mar-2023	-27.8	-32.2	-19.5
28-Mar-2023	-19.7	-30.9	-10.0
29-Mar-2023	-17.4	-23.7	-9.5
30-Mar-2023	-24.5	-29.2	-21.3
31-Mar-2023	-28.5	-33.4	-24.2
1-Apr-2023	-25.5	-30.2	-20.6
2-Apr-2023	-23.5	-27.0	-19.9
3-Apr-2023	-22.8	-25.9	-17.2
4-Apr-2023	-21.1	-27.5	-14.4
5-Apr-2023	-15.5	-23.0	-7.8
6-Apr-2023	-6.9	-13.1	-0.7
7-Apr-2023	-2.0	-7.6	2.7
8-Apr-2023	0.4	-3.3	5.3
9-Apr-2023	-8.3	-11.5	-2.0
10-Apr-2023	-12.9	-17.7	-10.5
11-Apr-2023	-14.4	-18.7	-10.3
12-Apr-2023	-11.3	-13.0	-9.4
13-Apr-2023	-10.7	-13.2	-8.5
14-Apr-2023	-10.1	-12.0	-8.3
15-Apr-2023	-7.5	-10.6	-3.1
16-Apr-2023	-7.1	-10.7	-2.8
17-Apr-2023	-7.5	-11.4	-2.8
18-Apr-2023	-10.1	-15.4	-3.7
19-Apr-2023	-11.8	-18.3	-5.7
20-Apr-2023	-5.1	-14.4	3.3
21-Apr-2023	-2.0	-7.8	2.5
22-Apr-2023	1.1	-2.6	5.1
23-Apr-2023	-2.6	-7.3	0.8
24-Apr-2023	-5.9	-11.4	-0.3
25-Apr-2023	-2.5	-8.5	1.1
26-Apr-2023	-1.3	-3.2	0.2
27-Apr-2023	0.7	-1.2	2.7
28-Apr-2023	0.9	0.0	2.4
29-Apr-2023	1.0	-3.5	5.5
30-Apr-2023	2.2	-2.2	5.6

Date	Temperature (°C)		
	Mean	Min	Max
1-May-2023	-0.1	-3.1	2.4
2-May-2023	0.7	-1.7	3.9
3-May-2023	5.3	-1.1	13.1
4-May-2023	5.2	-0.2	13.6
5-May-2023	2.2	-1.2	6.0
6-May-2023	11.6	0.8	20.9
7-May-2023	14.2	5.2	21.0
8-May-2023	12.5	5.6	19.9
9-May-2023	9.0	1.4	15.6
10-May-2023	3.4	-2.3	8.3
11-May-2023	5.1	-3.6	14.6
12-May-2023	14.7	3.4	24.6
13-May-2023	16.2	7.8	23.7
14-May-2023	8.0	1.4	17.0
15-May-2023	8.5	1.4	14.7
16-May-2023	5.6	2.2	10.5
17-May-2023	10.8	2.2	18.4
18-May-2023	10.4	5.1	15.2
19-May-2023	2.6	-2.9	6.3
20-May-2023	3.5	-4.8	9.9
21-May-2023	9.7	2.1	17.3
22-May-2023	4.8	-0.3	9.9
23-May-2023	10.6	1.6	17.9
24-May-2023	9.2	4.2	14.1
25-May-2023	4.9	0.4	11.5
26-May-2023	9.1	3.5	17.5
27-May-2023	9.5	0.8	20.5
28-May-2023	13.4	5.1	19.3
29-May-2023	3.7	1.0	6.7
30-May-2023	4.1	1.1	9.5
31-May-2023	6.1	1.7	10.1
1-Jun-2023	13.2	9.0	19.4
2-Jun-2023	13.7	6.6	19.4
3-Jun-2023	14.4	6.3	21.5
4-Jun-2023	14.6	7.2	22.7
5-Jun-2023	12.6	8.2	17.1
6-Jun-2023	10.2	7.5	14.2
7-Jun-2023	11.0	6.9	17.4
8-Jun-2023	7.9	3.5	12.7
9-Jun-2023	13.4	6.0	19.9
10-Jun-2023	16.8	7.0	22.9
11-Jun-2023	1.6	-0.4	7.0
12-Jun-2023	2.7	-0.4	6.5
13-Jun-2023	4.9	0.9	9.9
14-Jun-2023	8.7	2.7	14.3
15-Jun-2023	9.0	6.3	12.7
16-Jun-2023	11.2	5.7	16.5
17-Jun-2023	9.2	4.5	14.2
18-Jun-2023	9.0	5.3	12.7
19-Jun-2023	6.3	3.8	9.7
20-Jun-2023	14.2	9.1	16.5
21-Jun-2023	14.0	6.2	20.1
22-Jun-2023	16.6	11.9	22.0
23-Jun-2023	16.3	12.5	20.8
24-Jun-2023	8.7	5.7	12.9
25-Jun-2023	9.7	3.3	16.2
26-Jun-2023	15.5	7.1	21.8
27-Jun-2023	19.8	12.3	25.3
28-Jun-2023	20.3	15.2	26.1
29-Jun-2023	19.0	13.2	25.5
30-Jun-2023	16.1	13.2	19.5

Date	Temperature (°C)		
	Mean	Min	Max
1-Jul-2023	15.0	11.4	18.1
2-Jul-2023	14.8	9.8	21.7
3-Jul-2023	13.2	7.3	18.4
4-Jul-2023	15.1	9.5	19.8
5-Jul-2023	11.3	9.2	14.9
6-Jul-2023	14.3	9.6	19.3
7-Jul-2023	15.5	10.3	22.0
8-Jul-2023	12.8	7.5	16.3
9-Jul-2023	9.8	4.9	14.6
10-Jul-2023	13.0	6.4	18.8
11-Jul-2023	17.4	10.2	23.9
12-Jul-2023	17.8	11.2	22.9
13-Jul-2023	14.0	10.8	17.5
14-Jul-2023	13.6	9.2	19.0
15-Jul-2023	14.5	9.4	20.7
16-Jul-2023	16.2	10.8	20.4
17-Jul-2023	18.3	11.2	23.7
18-Jul-2023	20.1	13.6	25.9
19-Jul-2023	21.3	15.1	27.1
20-Jul-2023	21.8	16.7	27.8
21-Jul-2023	16.1	13.3	18.7
22-Jul-2023	17.4	9.9	23.4
23-Jul-2023	17.5	14.9	21.2
24-Jul-2023	18.0	11.5	22.8
25-Jul-2023	16.7	11.6	21.3
26-Jul-2023	16.8	10.5	22.2
27-Jul-2023	18.1	10.6	23.7
28-Jul-2023	18.1	14.7	21.2
29-Jul-2023	18.5	13.8	23.1
30-Jul-2023	17.3	13.3	21.6
31-Jul-2023	15.2	12.1	18.0
1-Aug-2023	15.4	11.7	19.0
2-Aug-2023	14.1	11.9	16.6
3-Aug-2023	16.2	12.0	20.5
4-Aug-2023	17.2	13.7	23.4
5-Aug-2023	13.3	10.3	15.7
6-Aug-2023	12.8	8.9	17.2
7-Aug-2023	12.0	6.8	16.9
8-Aug-2023	15.7	9.2	22.0
9-Aug-2023	16.7	10.1	22.5
10-Aug-2023	18.0	10.9	23.4
11-Aug-2023	17.0	10.6	22.5
12-Aug-2023	16.7	11.8	21.2
13-Aug-2023	15.6	10.3	22.4
14-Aug-2023	10.7	9.0	12.7
15-Aug-2023	11.4	8.7	15.7
16-Aug-2023	10.5	7.0	15.3
17-Aug-2023	10.7	7.0	14.1
18-Aug-2023	9.2	6.4	12.0
19-Aug-2023	8.5	6.3	11.6
20-Aug-2023	11.2	6.8	17.8
21-Aug-2023	12.2	8.8	15.9
22-Aug-2023	12.5	7.6	17.9
23-Aug-2023	11.0	6.3	17.0
24-Aug-2023	13.1	9.3	18.6
25-Aug-2023	16.1	10.6	22.2
26-Aug-2023	9.8	4.1	18.3
27-Aug-2023	7.0	3.2	9.2
28-Aug-2023	11.0	7.3	16.1
29-Aug-2023	14.7	11.5	18.8
30-Aug-2023	13.3	10.9	16.6

Date	Temperature (°C)		
	Mean	Min	Max
31-Aug-2023	9.7	7.9	11.1
1-Sep-2023	11.1	7.7	16.9
2-Sep-2023	10.3	5.6	14.0
3-Sep-2023	6.3	3.8	9.4
4-Sep-2023	4.8	3.6	7.1
5-Sep-2023	4.5	1.1	7.6
6-Sep-2023	6.3	1.7	12.7
7-Sep-2023	9.7	3.4	15.4
8-Sep-2023	11.0	4.5	16.5
9-Sep-2023	10.1	5.3	16.2
10-Sep-2023	9.5	2.1	17.7
11-Sep-2023	13.4	7.8	18.9
12-Sep-2023	10.3	6.9	14.4
13-Sep-2023	8.2	7.0	9.5
14-Sep-2023	6.6	5.8	7.5
15-Sep-2023	9.8	6.4	15.2
16-Sep-2023	9.2	7.4	11.4
17-Sep-2023	9.3	7.5	12.7
18-Sep-2023	10.5	7.3	15.6
19-Sep-2023	9.9	8.5	11.9
20-Sep-2023	7.7	6.0	8.8
21-Sep-2023	8.8	2.4	14.4
22-Sep-2023	11.0	5.1	16.7
23-Sep-2023	11.4	8.1	14.8
24-Sep-2023	13.8	9.1	20.0
25-Sep-2023	6.1	3.7	9.3
26-Sep-2023	4.6	2.5	7.2
27-Sep-2023	5.3	1.7	7.4
28-Sep-2023	1.1	0.1	2.3
29-Sep-2023	0.0	-2.1	1.7
30-Sep-2023	1.3	-2.2	5.0
1-Oct-2023	2.5	-2.3	7.4
2-Oct-2023	4.3	1.5	6.0
3-Oct-2023	5.4	3.5	8.1
4-Oct-2023	4.9	3.5	6.3
5-Oct-2023	1.3	-1.1	4.2
6-Oct-2023	-1.4	-2.5	-0.4
7-Oct-2023	-0.9	-2.4	0.6
8-Oct-2023	6.4	0.2	12.9
9-Oct-2023	7.0	3.7	11.9
10-Oct-2023	7.3	2.9	14.2
11-Oct-2023	8.4	3.3	14.7
12-Oct-2023	6.7	0.8	13.0
13-Oct-2023	6.4	1.4	13.0
14-Oct-2023	5.5	2.9	10.9
15-Oct-2023	4.9	1.4	9.5
16-Oct-2023	3.7	1.5	5.4
17-Oct-2023	1.7	-1.3	3.4
18-Oct-2023	1.2	-1.1	2.9
19-Oct-2023	4.3	2.3	6.1
20-Oct-2023	2.0	-2.6	5.9
21-Oct-2023	-4.6	-6.8	-2.3
22-Oct-2023	-5.2	-6.1	-4.1
23-Oct-2023	-4.4	-5.9	-2.9
24-Oct-2023	-5.9	-8.1	-5.1
25-Oct-2023	-6.2	-8.5	-2.5
26-Oct-2023	-5.2	-7.4	-2.7
27-Oct-2023	-7.7	-11.8	-6.5
28-Oct-2023	-7.5	-12.2	-3.2
29-Oct-2023	-8.7	-15.0	-5.9
30-Oct-2023	-9.0	-14.9	-4.6

Date	Temperature (°C)		
	Mean	Min	Max
31-Oct-2023	-8.4	-12.0	-4.4
1-Nov-2023	-11.4	-13.5	-9.2
2-Nov-2023	-11.2	-12.3	-10.6
3-Nov-2023	-13.3	-15.3	-11.9
4-Nov-2023	-14.1	-16.3	-12.2
5-Nov-2023	-13.3	-16.5	-12.3
6-Nov-2023	-14.4	-16.7	-11.5
7-Nov-2023	-14.3	-16.5	-11.2
8-Nov-2023	-15.4	-17.0	-14.2
9-Nov-2023	-10.4	-14.6	-4.8
10-Nov-2023	-5.0	-8.7	-1.8
11-Nov-2023	-2.8	-7.5	0.3
12-Nov-2023	-4.9	-8.4	-3.1
13-Nov-2023	-11.4	-13.9	-8.4
14-Nov-2023	-10.3	-12.5	-9.3
15-Nov-2023	-13.3	-19.7	-10.9
16-Nov-2023	-18.9	-24.6	-13.1
17-Nov-2023	-15.2	-21.3	-12.6
18-Nov-2023	-13.7	-15.7	-12.2
19-Nov-2023	-10.0	-13.6	-7.9
20-Nov-2023	-10.2	-13.5	-7.2
21-Nov-2023	-18.6	-22.9	-13.4
22-Nov-2023	-21.9	-23.3	-20.2
23-Nov-2023	-15.3	-21.9	-9.5
24-Nov-2023	-9.7	-12.4	-7.7
25-Nov-2023	-18.0	-23.1	-9.7
26-Nov-2023	-21.7	-24.5	-16.3
27-Nov-2023	-15.6	-17.6	-13.8
28-Nov-2023	-17.6	-20.3	-16.0
29-Nov-2023	-21.8	-29.0	-16.9
30-Nov-2023	-24.9	-30.2	-20.5
1-Dec-2023	-29.0	-33.0	-24.0
2-Dec-2023	-30.3	-32.4	-27.5
3-Dec-2023	-26.5	-29.0	-20.2
4-Dec-2023	-19.5	-22.5	-16.8
5-Dec-2023	-18.6	-26.8	-10.9
6-Dec-2023	-11.0	-13.6	-9.5
7-Dec-2023	-16.4	-20.3	-13.5
8-Dec-2023	-15.4	-17.9	-12.8
9-Dec-2023	-21.0	-27.0	-16.1
10-Dec-2023	-16.0	-18.8	-14.2
11-Dec-2023	-21.5	-27.5	-13.5
12-Dec-2023	-22.2	-30.2	-12.7
13-Dec-2023	-7.8	-12.7	-1.9
14-Dec-2023	-15.7	-22.8	-2.7
15-Dec-2023	-18.6	-24.9	-15.6
16-Dec-2023	-23.1	-28.0	-16.9
17-Dec-2023	-26.2	-30.3	-23.0
18-Dec-2023	-24.4	-27.8	-21.8
19-Dec-2023	-27.3	-29.9	-24.6
20-Dec-2023	-22.3	-29.4	-15.7
21-Dec-2023	-14.7	-16.9	-13.0
22-Dec-2023	-18.1	-20.1	-16.7
23-Dec-2023	-18.6	-21.8	-17.3
24-Dec-2023	-25.7	-28.2	-21.4
25-Dec-2023	-15.6	-22.5	-12.0
26-Dec-2023	-8.9	-14.7	-5.9
27-Dec-2023	-6.2	-11.3	-1.9
28-Dec-2023	-15.4	-17.6	-11.2
29-Dec-2023	-11.0	-15.7	-8.1
30-Dec-2023	-13.0	-17.9	-7.2

Date	Temperature (°C)		
	Mean	Min	Max
31-Dec-2023	-6.2	-11.9	-3.9

Note: ND = No Data

G_MET_B Daily Precipitation at the Gahcho Kué Mine in 2023

Date	Precipitation (mm)
1-Jan-2023	0.62
2-Jan-2023	0.00
3-Jan-2023	0.00
4-Jan-2023	0.00
5-Jan-2023	0.68
6-Jan-2023	0.00
7-Jan-2023	0.00
8-Jan-2023	0.00
9-Jan-2023	0.00
10-Jan-2023	0.10
11-Jan-2023	0.00
12-Jan-2023	2.79
13-Jan-2023	0.00
14-Jan-2023	0.00
15-Jan-2023	0.19
16-Jan-2023	0.00
17-Jan-2023	0.15
18-Jan-2023	0.00
19-Jan-2023	0.00
20-Jan-2023	0.00
21-Jan-2023	0.00
22-Jan-2023	0.21
23-Jan-2023	0.00
24-Jan-2023	0.00
25-Jan-2023	0.00
26-Jan-2023	0.17
27-Jan-2023	0.00
28-Jan-2023	0.00
29-Jan-2023	0.00
30-Jan-2023	0.00
31-Jan-2023	0.00
1-Feb-2023	0.00
2-Feb-2023	0.00
3-Feb-2023	0.00
4-Feb-2023	0.00
5-Feb-2023	0.00
6-Feb-2023	0.00
7-Feb-2023	0.00
8-Feb-2023	0.00
9-Feb-2023	0.00
10-Feb-2023	0.00
11-Feb-2023	0.00
12-Feb-2023	0.00
13-Feb-2023	0.00
14-Feb-2023	0.00
15-Feb-2023	0.00
16-Feb-2023	0.00
17-Feb-2023	0.00
18-Feb-2023	0.00
19-Feb-2023	0.00
20-Feb-2023	0.00
21-Feb-2023	0.00
22-Feb-2023	0.00
23-Feb-2023	0.00
24-Feb-2023	0.00
25-Feb-2023	0.00
26-Feb-2023	0.00
27-Feb-2023	0.00
28-Feb-2023	0.00
1-Mar-2023	0.00
2-Mar-2023	0.61

Date	Precipitation (mm)
3-Mar-2023	0.00
4-Mar-2023	0.00
5-Mar-2023	0.00
6-Mar-2023	0.00
7-Mar-2023	0.00
8-Mar-2023	0.00
9-Mar-2023	0.00
10-Mar-2023	0.00
11-Mar-2023	0.00
12-Mar-2023	0.00
13-Mar-2023	0.00
14-Mar-2023	1.26
15-Mar-2023	0.00
16-Mar-2023	0.00
17-Mar-2023	0.14
18-Mar-2023	0.00
19-Mar-2023	0.00
20-Mar-2023	0.00
21-Mar-2023	0.00
22-Mar-2023	0.00
23-Mar-2023	0.00
24-Mar-2023	0.00
25-Mar-2023	0.00
26-Mar-2023	0.00
27-Mar-2023	0.00
28-Mar-2023	0.20
29-Mar-2023	0.34
30-Mar-2023	0.00
31-Mar-2023	7.14
1-Apr-2023	0.00
2-Apr-2023	0.25
3-Apr-2023	0.00
4-Apr-2023	0.00
5-Apr-2023	0.00
6-Apr-2023	0.24
7-Apr-2023	0.00
8-Apr-2023	0.00
9-Apr-2023	0.00
10-Apr-2023	0.33
11-Apr-2023	0.93
12-Apr-2023	0.09
13-Apr-2023	0.00
14-Apr-2023	0.00
15-Apr-2023	0.00
16-Apr-2023	0.00
17-Apr-2023	0.00
18-Apr-2023	0.00
19-Apr-2023	0.00
20-Apr-2023	0.00
21-Apr-2023	0.00
22-Apr-2023	0.00
23-Apr-2023	0.00
24-Apr-2023	0.00
25-Apr-2023	0.00
26-Apr-2023	0.00
27-Apr-2023	1.22
28-Apr-2023	1.13
29-Apr-2023	0.00
30-Apr-2023	0.00
1-May-2023	0.00
2-May-2023	0.00
3-May-2023	0.00

Date	Precipitation (mm)
4-May-2023	0.00
5-May-2023	0.00
6-May-2023	0.00
7-May-2023	0.00
8-May-2023	0.23
9-May-2023	7.50
10-May-2023	0.00
11-May-2023	0.00
12-May-2023	0.00
13-May-2023	0.00
14-May-2023	0.00
15-May-2023	0.00
16-May-2023	2.46
17-May-2023	0.00
18-May-2023	0.76
19-May-2023	1.32
20-May-2023	0.00
21-May-2023	0.00
22-May-2023	0.00
23-May-2023	0.00
24-May-2023	0.30
25-May-2023	0.00
26-May-2023	2.99
27-May-2023	0.00
28-May-2023	0.00
29-May-2023	0.00
30-May-2023	1.33
31-May-2023	0.33
1-Jun-2023	0.58
2-Jun-2023	0.00
3-Jun-2023	0.00
4-Jun-2023	0.00
5-Jun-2023	0.00
6-Jun-2023	17.08
7-Jun-2023	1.59
8-Jun-2023	0.00
9-Jun-2023	0.00
10-Jun-2023	8.24
11-Jun-2023	27.90
12-Jun-2023	5.74
13-Jun-2023	0.00
14-Jun-2023	0.00
15-Jun-2023	0.00
16-Jun-2023	0.00
17-Jun-2023	0.00
18-Jun-2023	4.11
19-Jun-2023	0.00
20-Jun-2023	0.00
21-Jun-2023	0.00
22-Jun-2023	0.00
23-Jun-2023	0.00
24-Jun-2023	10.85
25-Jun-2023	0.00
26-Jun-2023	0.00
27-Jun-2023	0.00
28-Jun-2023	4.02
29-Jun-2023	11.23
30-Jun-2023	0.00
1-Jul-2023	0.00
2-Jul-2023	0.00
3-Jul-2023	0.00
4-Jul-2023	3.12

Date	Precipitation (mm)
5-Jul-2023	0.00
6-Jul-2023	0.00
7-Jul-2023	0.48
8-Jul-2023	2.13
9-Jul-2023	0.00
10-Jul-2023	0.00
11-Jul-2023	0.00
12-Jul-2023	0.00
13-Jul-2023	0.05
14-Jul-2023	0.44
15-Jul-2023	0.00
16-Jul-2023	0.00
17-Jul-2023	0.00
18-Jul-2023	0.00
19-Jul-2023	0.00
20-Jul-2023	0.00
21-Jul-2023	0.00
22-Jul-2023	0.00
23-Jul-2023	3.09
24-Jul-2023	0.00
25-Jul-2023	0.00
26-Jul-2023	0.00
27-Jul-2023	0.00
28-Jul-2023	0.00
29-Jul-2023	0.00
30-Jul-2023	0.00
31-Jul-2023	0.00
1-Aug-2023	0.00
2-Aug-2023	4.09
3-Aug-2023	0.30
4-Aug-2023	0.42
5-Aug-2023	0.62
6-Aug-2023	0.00
7-Aug-2023	0.00
8-Aug-2023	0.00
9-Aug-2023	0.00
10-Aug-2023	0.00
11-Aug-2023	0.00
12-Aug-2023	0.00
13-Aug-2023	2.84
14-Aug-2023	0.24
15-Aug-2023	0.00
16-Aug-2023	0.48
17-Aug-2023	0.26
18-Aug-2023	0.15
19-Aug-2023	0.28
20-Aug-2023	4.06
21-Aug-2023	0.00
22-Aug-2023	1.86
23-Aug-2023	0.38
24-Aug-2023	0.08
25-Aug-2023	6.77
26-Aug-2023	0.74
27-Aug-2023	1.60
28-Aug-2023	0.36
29-Aug-2023	0.00
30-Aug-2023	0.00
31-Aug-2023	0.00
1-Sep-2023	3.14
2-Sep-2023	16.28
3-Sep-2023	0.44
4-Sep-2023	10.65

Date	Precipitation (mm)
5-Sep-2023	0.00
6-Sep-2023	0.00
7-Sep-2023	0.00
8-Sep-2023	0.00
9-Sep-2023	0.00
10-Sep-2023	0.00
11-Sep-2023	0.00
12-Sep-2023	0.00
13-Sep-2023	0.00
14-Sep-2023	0.00
15-Sep-2023	0.00
16-Sep-2023	0.00
17-Sep-2023	0.00
18-Sep-2023	0.00
19-Sep-2023	9.20
20-Sep-2023	0.91
21-Sep-2023	0.00
22-Sep-2023	0.00
23-Sep-2023	0.00
24-Sep-2023	1.05
25-Sep-2023	0.00
26-Sep-2023	5.11
27-Sep-2023	0.00
28-Sep-2023	0.00
29-Sep-2023	0.00
30-Sep-2023	0.00
1-Oct-2023	0.00
2-Oct-2023	2.28
3-Oct-2023	0.51
4-Oct-2023	2.05
5-Oct-2023	5.57
6-Oct-2023	0.67
7-Oct-2023	2.89
8-Oct-2023	0.42
9-Oct-2023	0.00
10-Oct-2023	0.00
11-Oct-2023	0.00
12-Oct-2023	0.00
13-Oct-2023	0.00
14-Oct-2023	0.00
15-Oct-2023	0.00
16-Oct-2023	0.00
17-Oct-2023	0.00
18-Oct-2023	0.71
19-Oct-2023	5.10
20-Oct-2023	0.17
21-Oct-2023	0.82
22-Oct-2023	1.96
23-Oct-2023	0.50
24-Oct-2023	0.13
25-Oct-2023	0.82
26-Oct-2023	1.19
27-Oct-2023	0.00
28-Oct-2023	0.76
29-Oct-2023	0.00
30-Oct-2023	0.00
31-Oct-2023	0.00
1-Nov-2023	0.00
2-Nov-2023	0.00
3-Nov-2023	0.00
4-Nov-2023	0.00
5-Nov-2023	0.00

Date	Precipitation (mm)
6-Nov-2023	0.00
7-Nov-2023	0.00
8-Nov-2023	0.00
9-Nov-2023	0.00
10-Nov-2023	0.00
11-Nov-2023	0.00
12-Nov-2023	1.40
13-Nov-2023	0.00
14-Nov-2023	0.49
15-Nov-2023	0.00
16-Nov-2023	0.00
17-Nov-2023	3.13
18-Nov-2023	0.00
19-Nov-2023	0.00
20-Nov-2023	3.46
21-Nov-2023	0.00
22-Nov-2023	0.00
23-Nov-2023	0.23
24-Nov-2023	0.44
25-Nov-2023	0.00
26-Nov-2023	0.00
27-Nov-2023	0.00
28-Nov-2023	0.48
29-Nov-2023	0.12
30-Nov-2023	0.00
1-Dec-2023	0.00
2-Dec-2023	0.00
3-Dec-2023	0.00
4-Dec-2023	0.00
5-Dec-2023	1.50
6-Dec-2023	0.48
7-Dec-2023	0.00
8-Dec-2023	0.00
9-Dec-2023	0.00
10-Dec-2023	0.10
11-Dec-2023	0.00
12-Dec-2023	0.00
13-Dec-2023	0.85
14-Dec-2023	1.43
15-Dec-2023	0.65
16-Dec-2023	0.00
17-Dec-2023	0.00
18-Dec-2023	0.00
19-Dec-2023	0.00
20-Dec-2023	0.55
21-Dec-2023	1.80
22-Dec-2023	0.00
23-Dec-2023	6.23
24-Dec-2023	0.00
25-Dec-2023	0.00
26-Dec-2023	0.00
27-Dec-2023	1.55
28-Dec-2023	0.00
29-Dec-2023	0.00
30-Dec-2023	0.00
31-Dec-2023	1.92

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 2023

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)]	Oct 1 to 31-Oct
Penman Combined Method	89.6	107.4	53.9	15.6	-0.7
Priestly-Taylor Method	93.9	110.1	49.3	10.2	-7.7
Estimated Baseline Average Monthly Value	38.1	106.7 [(a)]	82.7	57.5	0

Note:
[(a)]Full monthly value

G_MET_D Summary of Hourly Wind Speed and Direction in 2023

Date	Wind Direction (°)	Wind speed (km/h)
1/1/23 0:00	197.40	14.37
1/1/23 1:00	199.70	7.14
1/1/23 2:00	197.80	9.04
1/1/23 3:00	209.10	9.21
1/1/23 4:00	232.50	7.13
1/1/23 5:00	229.90	7.44
1/1/23 6:00	221.60	8.17
1/1/23 7:00	228.10	8.50
1/1/23 8:00	212.40	10.99
1/1/23 9:00	234.00	10.75
1/1/23 10:00	256.50	6.89
1/1/23 11:00	277.20	10.32
1/1/23 12:00	275.50	7.96
1/1/23 13:00	297.20	9.77
1/1/23 14:00	318.10	8.56
1/1/23 15:00	315.60	9.85
1/1/23 16:00	312.70	10.41
1/1/23 17:00	334.90	11.65
1/1/23 18:00	16.77	17.34
1/1/23 19:00	30.47	21.46
1/1/23 20:00	34.63	24.96
1/1/23 21:00	43.40	24.37
1/1/23 22:00	39.08	20.43
1/1/23 23:00	42.38	19.79
1/2/23 0:00	40.18	20.75
1/2/23 1:00	48.17	18.40
1/2/23 2:00	45.32	19.43
1/2/23 3:00	50.73	21.35
1/2/23 4:00	59.62	20.11
1/2/23 5:00	64.70	20.81
1/2/23 6:00	65.03	18.98
1/2/23 7:00	66.29	17.02
1/2/23 8:00	67.50	17.34
1/2/23 9:00	68.68	21.87
1/2/23 10:00	79.41	21.06
1/2/23 11:00	77.79	20.58
1/2/23 12:00	81.00	18.68
1/2/23 13:00	94.10	18.17
1/2/23 14:00	89.40	18.21
1/2/23 15:00	93.50	17.76
1/2/23 16:00	96.60	19.88
1/2/23 17:00	97.60	16.78
1/2/23 18:00	91.10	21.53
1/2/23 19:00	107.40	19.39
1/2/23 20:00	95.90	22.89
1/2/23 21:00	83.90	21.00
1/2/23 22:00	85.10	24.09
1/2/23 23:00	100.40	19.20
1/3/23 0:00	104.60	19.88
1/3/23 1:00	105.20	20.52
1/3/23 2:00	98.80	20.72
1/3/23 3:00	100.10	21.12
1/3/23 4:00	99.00	25.99
1/3/23 5:00	100.50	27.49
1/3/23 6:00	105.40	30.92
1/3/23 7:00	103.10	32.90
1/3/23 8:00	109.10	29.56
1/3/23 9:00	107.40	28.48
1/3/23 10:00	108.60	29.84
1/3/23 11:00	109.70	33.16
1/3/23 12:00	105.30	30.28
1/3/23 13:00	102.10	27.63
1/3/23 14:00	98.90	27.10
1/3/23 15:00	92.70	26.86
1/3/23 16:00	105.60	27.75
1/3/23 17:00	115.10	37.30
1/3/23 18:00	103.30	37.76
1/3/23 19:00	104.50	35.60
1/3/23 20:00	113.90	36.40
1/3/23 21:00	119.20	34.74
1/3/23 22:00	125.80	31.07
1/3/23 23:00	130.70	28.48
1/4/23 0:00	132.30	27.52
1/4/23 1:00	133.50	20.37
1/4/23 2:00	129.40	15.10
1/4/23 3:00	124.70	13.90
1/4/23 4:00	124.70	11.91
1/4/23 5:00	116.80	8.31
1/4/23 6:00	99.30	3.91
1/4/23 7:00	60.98	2.91

Date	Wind Direction (°)	Wind speed (km/h)
1/4/23 8:00	320.50	2.62
1/4/23 9:00	341.80	4.89
1/4/23 10:00	338.00	4.47
1/4/23 11:00	1.78	4.69
1/4/23 12:00	1.69	3.44
1/4/23 13:00	336.60	4.93
1/4/23 14:00	307.60	3.03
1/4/23 15:00	309.80	5.81
1/4/23 16:00	318.60	5.80
1/4/23 17:00	292.60	6.50
1/4/23 18:00	290.80	8.22
1/4/23 19:00	280.00	6.64
1/4/23 20:00	255.40	5.33
1/4/23 21:00	233.70	5.36
1/4/23 22:00	229.60	8.43
1/4/23 23:00	213.10	10.35
1/5/23 0:00	230.30	8.41
1/5/23 1:00	221.40	11.20
1/5/23 2:00	215.70	11.73
1/5/23 3:00	210.90	13.29
1/5/23 4:00	220.70	14.30
1/5/23 5:00	224.10	15.97
1/5/23 6:00	231.50	24.45
1/5/23 7:00	233.60	25.41
1/5/23 8:00	226.00	25.06
1/5/23 9:00	233.20	23.03
1/5/23 10:00	239.70	14.10
1/5/23 11:00	235.70	15.24
1/5/23 12:00	245.70	11.02
1/5/23 13:00	240.40	9.99
1/5/23 14:00	225.20	8.94
1/5/23 15:00	249.40	6.37
1/5/23 16:00	274.90	4.24
1/5/23 17:00	271.60	1.97
1/5/23 18:00	206.20	0.84
1/5/23 19:00	15.74	1.54
1/5/23 20:00	67.97	1.54
1/5/23 21:00	86.00	0.12
1/5/23 22:00	88.80	0.81
1/5/23 23:00	136.80	0.48
1/6/23 0:00	91.50	1.89
1/6/23 1:00	103.20	3.01
1/6/23 2:00	122.50	2.34
1/6/23 3:00	131.80	1.79
1/6/23 4:00	118.20	3.44
1/6/23 5:00	95.70	4.21
1/6/23 6:00	106.80	4.59
1/6/23 7:00	110.80	4.06
1/6/23 8:00	106.00	3.41
1/6/23 9:00	103.60	2.50
1/6/23 10:00	106.10	2.05
1/6/23 11:00	106.10	1.52
1/6/23 12:00	110.20	1.61
1/6/23 13:00	106.50	1.17
1/6/23 14:00	105.20	0.83
1/6/23 15:00	101.70	0.00
1/6/23 16:00	102.70	0.00
1/6/23 17:00	96.80	0.00
1/6/23 18:00	115.10	0.00
1/6/23 19:00	108.70	0.00
1/6/23 20:00	115.00	0.00
1/6/23 21:00	101.30	0.00
1/6/23 22:00	97.40	0.00
1/6/23 23:00	100.20	0.00
1/7/23 0:00	97.30	0.00
1/7/23 1:00	93.30	0.00
1/7/23 2:00	98.50	0.00
1/7/23 3:00	105.30	0.00
1/7/23 4:00	98.10	0.00
1/7/23 5:00	94.10	0.00
1/7/23 6:00	0.00	0.00
1/7/23 7:00	102.50	0.00
1/7/23 8:00	0.00	0.00
1/7/23 9:00	102.40	0.00
1/7/23 10:00	0.00	0.00
1/7/23 11:00	0.00	0.00
1/7/23 12:00	0.00	0.00
1/7/23 13:00	0.00	0.00
1/7/23 14:00	0.00	0.00
1/7/23 15:00	0.00	0.00
1/7/23 16:00	0.00	0.00

Date	Wind Direction (°)	Wind speed (km/h)
1/7/23 17:00	0.00	0.00
1/7/23 18:00	0.00	0.00
1/7/23 19:00	0.00	0.00
1/7/23 20:00	0.00	0.00
1/7/23 21:00	0.00	0.00
1/7/23 22:00	0.00	0.00
1/7/23 23:00	0.00	0.00
1/8/23 0:00	0.00	0.00
1/8/23 1:00	0.00	0.00
1/8/23 2:00	0.00	0.00
1/8/23 3:00	0.00	0.00
1/8/23 4:00	0.00	0.00
1/8/23 5:00	0.00	0.00
1/8/23 6:00	0.00	0.00
1/8/23 7:00	0.00	0.00
1/8/23 8:00	0.00	0.00
1/8/23 9:00	0.00	0.00
1/8/23 10:00	0.00	0.00
1/8/23 11:00	0.00	0.00
1/8/23 12:00	0.00	0.00
1/8/23 13:00	0.00	0.00
1/8/23 14:00	0.00	0.00
1/8/23 15:00	0.00	0.00
1/8/23 16:00	63.65	0.56
1/8/23 17:00	67.94	3.55
1/8/23 18:00	67.96	3.84
1/8/23 19:00	60.40	4.65
1/8/23 20:00	69.23	4.98
1/8/23 21:00	77.08	4.07
1/8/23 22:00	86.60	3.45
1/8/23 23:00	92.40	3.18
1/9/23 0:00	91.10	3.02
1/9/23 1:00	88.20	2.49
1/9/23 2:00	90.20	1.61
1/9/23 3:00	92.20	1.09
1/9/23 4:00	96.90	0.75
1/9/23 5:00	94.70	0.36
1/9/23 6:00	0.00	0.00
1/9/23 7:00	0.00	0.00
1/9/23 8:00	111.60	0.00
1/9/23 9:00	114.50	0.00
1/9/23 10:00	115.50	0.00
1/9/23 11:00	114.60	0.01
1/9/23 12:00	109.90	0.04
1/9/23 13:00	107.60	0.04
1/9/23 14:00	106.80	0.02
1/9/23 15:00	104.00	10.89
1/9/23 16:00	98.50	17.33
1/9/23 17:00	98.70	18.47
1/9/23 18:00	103.90	19.00
1/9/23 19:00	114.50	17.62
1/9/23 20:00	122.30	16.27
1/9/23 21:00	130.60	13.07
1/9/23 22:00	132.10	11.92
1/9/23 23:00	114.30	9.46
1/10/23 0:00	115.30	8.88
1/10/23 1:00	110.00	8.16
1/10/23 2:00	127.80	8.06
1/10/23 3:00	142.80	7.88
1/10/23 4:00	137.80	4.93
1/10/23 5:00	166.30	4.89
1/10/23 6:00	181.10	2.58
1/10/23 7:00	224.50	5.16
1/10/23 8:00	264.10	5.77
1/10/23 9:00	266.10	5.82
1/10/23 10:00	277.90	8.18
1/10/23 11:00	270.40	7.64
1/10/23 12:00	272.10	8.32
1/10/23 13:00	270.20	9.34
1/10/23 14:00	268.30	9.55
1/10/23 15:00	264.10	10.22
1/10/23 16:00	272.00	8.90
1/10/23 17:00	274.70	9.10
1/10/23 18:00	302.20	13.63
1/10/23 19:00	310.50	16.02
1/10/23 20:00	300.00	14.80
1/10/23 21:00	312.00	17.22
1/10/23 22:00	315.50	19.01
1/10/23 23:00	315.60	19.71
1/11/23 0:00	313.50	17.33
1/11/23 1:00	319.40	17.88

Date	Wind Direction (°)	Wind speed (km/h)
1/11/23 2:00	320.10	13.85
1/11/23 3:00	327.00	15.40
1/11/23 4:00	332.90	16.03
1/11/23 5:00	315.60	13.13
1/11/23 6:00	317.60	13.63
1/11/23 7:00	327.30	14.64
1/11/23 8:00	309.00	11.62
1/11/23 9:00	303.90	9.66
1/11/23 10:00	293.10	9.00
1/11/23 11:00	311.30	10.02
1/11/23 12:00	313.00	10.02
1/11/23 13:00	324.20	9.16
1/11/23 14:00	307.80	8.96
1/11/23 15:00	324.80	8.32
1/11/23 16:00	342.10	9.89
1/11/23 17:00	11.65	9.43
1/11/23 18:00	15.45	7.05
1/11/23 19:00	22.90	7.73
1/11/23 20:00	55.82	6.34
1/11/23 21:00	62.30	7.72
1/11/23 22:00	95.80	7.67
1/11/23 23:00	96.90	10.38
1/12/23 0:00	94.50	11.26
1/12/23 1:00	105.10	12.74
1/12/23 2:00	108.50	14.04
1/12/23 3:00	116.40	15.52
1/12/23 4:00	119.50	15.79
1/12/23 5:00	111.00	17.15
1/12/23 6:00	103.30	18.57
1/12/23 7:00	101.20	20.60
1/12/23 8:00	110.20	21.28
1/12/23 9:00	102.70	24.36
1/12/23 10:00	103.70	26.82
1/12/23 11:00	103.50	26.59
1/12/23 12:00	98.10	28.52
1/12/23 13:00	99.90	35.46
1/12/23 14:00	105.50	35.06
1/12/23 15:00	113.70	35.64
1/12/23 16:00	115.30	34.13
1/12/23 17:00	114.20	27.82
1/12/23 18:00	94.30	27.48
1/12/23 19:00	89.90	30.49
1/12/23 20:00	79.97	33.16
1/12/23 21:00	72.29	26.48
1/12/23 22:00	61.33	22.44
1/12/23 23:00	48.67	20.97
1/13/23 0:00	37.35	23.04
1/13/23 1:00	38.78	21.71
1/13/23 2:00	41.29	18.63
1/13/23 3:00	49.02	19.23
1/13/23 4:00	58.00	9.30
1/13/23 5:00	35.55	13.79
1/13/23 6:00	25.00	14.90
1/13/23 7:00	15.26	15.85
1/13/23 8:00	12.53	14.05
1/13/23 9:00	8.69	11.83
1/13/23 10:00	2.74	10.71
1/13/23 11:00	6.22	8.25
1/13/23 12:00	18.71	9.16
1/13/23 13:00	19.90	7.77
1/13/23 14:00	17.09	5.91
1/13/23 15:00	21.45	7.74
1/13/23 16:00	40.07	11.38
1/13/23 17:00	61.73	8.07
1/13/23 18:00	109.60	2.77
1/13/23 19:00	184.40	3.84
1/13/23 20:00	117.80	6.48
1/13/23 21:00	88.80	6.36
1/13/23 22:00	87.80	7.82
1/13/23 23:00	119.10	6.36
1/14/23 0:00	118.20	7.83
1/14/23 1:00	101.60	8.02
1/14/23 2:00	100.10	10.16
1/14/23 3:00	97.00	11.44
1/14/23 4:00	94.90	17.94
1/14/23 5:00	110.20	10.27
1/14/23 6:00	100.90	14.89
1/14/23 7:00	112.70	22.17
1/14/23 8:00	112.30	22.32
1/14/23 9:00	104.80	24.96
1/14/23 10:00	111.90	27.16

Date	Wind Direction (°)	Wind speed (km/h)
1/14/23 11:00	113.00	32.62
1/14/23 12:00	124.00	34.63
1/14/23 13:00	139.10	31.54
1/14/23 14:00	136.50	25.91
1/14/23 15:00	131.60	22.37
1/14/23 16:00	129.00	20.18
1/14/23 17:00	136.90	20.65
1/14/23 18:00	147.90	21.95
1/14/23 19:00	145.60	17.43
1/14/23 20:00	145.10	13.16
1/14/23 21:00	146.10	11.03
1/14/23 22:00	154.20	11.48
1/14/23 23:00	168.90	11.07
1/15/23 0:00	188.30	9.32
1/15/23 1:00	185.30	6.19
1/15/23 2:00	159.90	4.07
1/15/23 3:00	174.20	6.66
1/15/23 4:00	167.10	6.08
1/15/23 5:00	181.10	8.20
1/15/23 6:00	230.20	6.77
1/15/23 7:00	227.30	5.33
1/15/23 8:00	245.00	4.69
1/15/23 9:00	239.60	2.06
1/15/23 10:00	238.70	3.24
1/15/23 11:00	269.00	2.87
1/15/23 12:00	219.10	3.69
1/15/23 13:00	235.40	6.97
1/15/23 14:00	246.80	4.23
1/15/23 15:00	309.60	6.97
1/15/23 16:00	322.70	5.55
1/15/23 17:00	320.70	9.45
1/15/23 18:00	344.60	9.67
1/15/23 19:00	1.76	6.61
1/15/23 20:00	20.70	6.08
1/15/23 21:00	359.90	4.96
1/15/23 22:00	347.40	6.63
1/15/23 23:00	343.40	7.98
1/16/23 0:00	344.90	8.43
1/16/23 1:00	344.10	7.83
1/16/23 2:00	2.00	11.86
1/16/23 3:00	16.88	14.09
1/16/23 4:00	34.88	14.65
1/16/23 5:00	49.75	15.66
1/16/23 6:00	59.36	14.86
1/16/23 7:00	63.85	13.43
1/16/23 8:00	60.67	14.73
1/16/23 9:00	60.69	14.54
1/16/23 10:00	69.99	16.41
1/16/23 11:00	71.81	16.75
1/16/23 12:00	79.36	15.49
1/16/23 13:00	73.20	16.53
1/16/23 14:00	76.73	16.97
1/16/23 15:00	85.40	17.14
1/16/23 16:00	92.60	17.43
1/16/23 17:00	94.60	17.94
1/16/23 18:00	95.50	17.43
1/16/23 19:00	94.70	19.90
1/16/23 20:00	96.00	20.30
1/16/23 21:00	101.00	19.57
1/16/23 22:00	99.70	20.75
1/16/23 23:00	99.30	23.08
1/17/23 0:00	103.40	21.67
1/17/23 1:00	100.40	22.60
1/17/23 2:00	96.50	25.10
1/17/23 3:00	98.50	26.55
1/17/23 4:00	96.40	26.61
1/17/23 5:00	99.90	29.20
1/17/23 6:00	104.80	27.59
1/17/23 7:00	104.30	32.11
1/17/23 8:00	106.10	31.82
1/17/23 9:00	104.80	34.42
1/17/23 10:00	106.00	35.57
1/17/23 11:00	105.20	36.61
1/17/23 12:00	105.90	37.08
1/17/23 13:00	107.70	34.67
1/17/23 14:00	110.40	34.42
1/17/23 15:00	113.30	32.90
1/17/23 16:00	111.90	27.13
1/17/23 17:00	105.50	24.13
1/17/23 18:00	111.30	27.90
1/17/23 19:00	116.30	26.62

Date	Wind Direction (°)	Wind speed (km/h)
1/17/23 20:00	120.30	21.94
1/17/23 21:00	109.10	17.52
1/17/23 22:00	106.30	12.90
1/17/23 23:00	101.40	14.13
1/18/23 0:00	108.80	12.43
1/18/23 1:00	93.50	9.51
1/18/23 2:00	100.60	8.41
1/18/23 3:00	91.90	7.39
1/18/23 4:00	111.60	7.06
1/18/23 5:00	130.10	6.54
1/18/23 6:00	119.40	4.48
1/18/23 7:00	94.20	2.62
1/18/23 8:00	72.16	1.87
1/18/23 9:00	94.70	5.56
1/18/23 10:00	98.80	6.11
1/18/23 11:00	102.50	4.75
1/18/23 12:00	118.80	8.22
1/18/23 13:00	116.30	8.70
1/18/23 14:00	102.30	7.39
1/18/23 15:00	92.60	7.50
1/18/23 16:00	104.50	8.60
1/18/23 17:00	114.80	7.86
1/18/23 18:00	119.00	7.43
1/18/23 19:00	117.30	8.02
1/18/23 20:00	113.80	8.02
1/18/23 21:00	127.10	9.06
1/18/23 22:00	135.90	7.66
1/18/23 23:00	143.10	6.74
1/19/23 0:00	147.90	5.03
1/19/23 1:00	152.30	3.75
1/19/23 2:00	177.00	3.90
1/19/23 3:00	181.70	2.85
1/19/23 4:00	195.10	3.47
1/19/23 5:00	191.60	2.99
1/19/23 6:00	170.20	2.73
1/19/23 7:00	161.40	3.21
1/19/23 8:00	173.10	3.45
1/19/23 9:00	172.20	3.68
1/19/23 10:00	165.20	4.08
1/19/23 11:00	169.70	4.44
1/19/23 12:00	200.20	3.88
1/19/23 13:00	205.10	4.13
1/19/23 14:00	198.20	4.05
1/19/23 15:00	211.80	5.10
1/19/23 16:00	218.70	28.64
1/19/23 17:00	218.40	32.62
1/19/23 18:00	214.70	33.77
1/19/23 19:00	219.60	37.40
1/19/23 20:00	216.70	28.23
1/19/23 21:00	229.70	28.74
1/19/23 22:00	274.30	31.46
1/19/23 23:00	250.20	28.84
1/20/23 0:00	247.60	30.60
1/20/23 1:00	253.90	34.60
1/20/23 2:00	266.10	35.89
1/20/23 3:00	280.40	40.36
1/20/23 4:00	289.20	43.92
1/20/23 5:00	287.00	43.24
1/20/23 6:00	288.10	38.92
1/20/23 7:00	298.70	36.65
1/20/23 8:00	298.10	37.73
1/20/23 9:00	302.90	36.36
1/20/23 10:00	295.50	32.26
1/20/23 11:00	301.50	36.29
1/20/23 12:00	301.90	35.17
1/20/23 13:00	307.00	28.38
1/20/23 14:00	291.00	19.34
1/20/23 15:00	279.90	19.24
1/20/23 16:00	312.40	18.36
1/20/23 17:00	299.00	15.40
1/20/23 18:00	296.30	16.80
1/20/23 19:00	289.70	16.44
1/20/23 20:00	298.60	13.49
1/20/23 21:00	300.70	16.41
1/20/23 22:00	302.60	17.79
1/20/23 23:00	303.40	16.98
1/21/23 0:00	311.50	14.95
1/21/23 1:00	294.10	8.80
1/21/23 2:00	325.30	11.80
1/21/23 3:00	298.80	8.79
1/21/23 4:00	314.70	12.96

Date	Wind Direction (°)	Wind speed (km/h)
1/21/23 5:00	303.70	9.75
1/21/23 6:00	313.40	7.67
1/21/23 7:00	291.60	7.30
1/21/23 8:00	328.50	4.24
1/21/23 9:00	14.57	4.26
1/21/23 10:00	109.10	3.57
1/21/23 11:00	148.40	5.00
1/21/23 12:00	147.20	5.37
1/21/23 13:00	131.20	8.38
1/21/23 14:00	163.30	8.95
1/21/23 15:00	147.10	9.63
1/21/23 16:00	118.90	9.38
1/21/23 17:00	116.20	9.48
1/21/23 18:00	109.30	11.39
1/21/23 19:00	101.30	12.85
1/21/23 20:00	115.90	14.22
1/21/23 21:00	111.10	15.50
1/21/23 22:00	103.40	23.49
1/21/23 23:00	96.50	30.35
1/22/23 0:00	89.90	34.16
1/22/23 1:00	82.20	35.35
1/22/23 2:00	80.00	33.41
1/22/23 3:00	78.50	34.45
1/22/23 4:00	69.13	30.85
1/22/23 5:00	55.14	29.56
1/22/23 6:00	55.34	28.48
1/22/23 7:00	46.56	27.81
1/22/23 8:00	50.86	31.79
1/22/23 9:00	55.21	25.04
1/22/23 10:00	45.24	23.65
1/22/23 11:00	43.03	19.97
1/22/23 12:00	32.83	20.72
1/22/23 13:00	28.46	20.55
1/22/23 14:00	30.47	17.10
1/22/23 15:00	17.25	9.67
1/22/23 16:00	353.80	9.60
1/22/23 17:00	5.04	12.12
1/22/23 18:00	8.13	9.09
1/22/23 19:00	3.73	7.94
1/22/23 20:00	333.10	4.91
1/22/23 21:00	277.80	6.25
1/22/23 22:00	168.70	4.54
1/22/23 23:00	248.10	6.27
1/23/23 0:00	268.90	3.72
1/23/23 1:00	243.60	6.15
1/23/23 2:00	231.80	3.51
1/23/23 3:00	242.40	6.16
1/23/23 4:00	208.60	6.66
1/23/23 5:00	200.10	3.19
1/23/23 6:00	310.10	2.10
1/23/23 7:00	269.30	1.53
1/23/23 8:00	162.40	2.50
1/23/23 9:00	195.30	2.68
1/23/23 10:00	126.50	5.43
1/23/23 11:00	139.20	5.40
1/23/23 12:00	186.20	6.53
1/23/23 13:00	188.80	4.94
1/23/23 14:00	154.20	5.28
1/23/23 15:00	136.30	4.91
1/23/23 16:00	147.40	4.18
1/23/23 17:00	180.80	3.34
1/23/23 18:00	159.80	3.60
1/23/23 19:00	166.10	4.38
1/23/23 20:00	188.30	4.67
1/23/23 21:00	161.70	5.00
1/23/23 22:00	189.50	6.14
1/23/23 23:00	208.80	5.04
1/24/23 0:00	170.10	3.19
1/24/23 1:00	188.90	5.88
1/24/23 2:00	194.10	5.75
1/24/23 3:00	207.70	4.64
1/24/23 4:00	224.00	8.49
1/24/23 5:00	248.50	10.89
1/24/23 6:00	264.60	10.50
1/24/23 7:00	279.40	8.72
1/24/23 8:00	282.80	12.68
1/24/23 9:00	274.10	11.94
1/24/23 10:00	274.00	10.36
1/24/23 11:00	284.10	10.53
1/24/23 12:00	286.00	11.96
1/24/23 13:00	289.10	15.61

Date	Wind Direction (°)	Wind speed (km/h)
1/24/23 14:00	292.60	18.16
1/24/23 15:00	287.80	17.61
1/24/23 16:00	283.60	14.90
1/24/23 17:00	277.40	14.74
1/24/23 18:00	286.40	20.53
1/24/23 19:00	299.80	19.36
1/24/23 20:00	343.00	15.40
1/24/23 21:00	33.60	13.48
1/24/23 22:00	28.33	7.47
1/24/23 23:00	346.90	7.71
1/25/23 0:00	353.20	11.27
1/25/23 1:00	349.90	15.86
1/25/23 2:00	346.70	15.90
1/25/23 3:00	333.40	15.26
1/25/23 4:00	321.20	14.68
1/25/23 5:00	323.30	14.77
1/25/23 6:00	336.50	13.85
1/25/23 7:00	328.70	10.53
1/25/23 8:00	305.50	9.51
1/25/23 9:00	291.30	9.36
1/25/23 10:00	272.50	5.37
1/25/23 11:00	257.50	6.00
1/25/23 12:00	282.20	9.67
1/25/23 13:00	288.30	10.07
1/25/23 14:00	266.40	9.90
1/25/23 15:00	231.60	4.56
1/25/23 16:00	231.10	3.83
1/25/23 17:00	203.40	5.05
1/25/23 18:00	174.60	5.13
1/25/23 19:00	179.70	5.84
1/25/23 20:00	192.10	7.98
1/25/23 21:00	165.50	6.03
1/25/23 22:00	135.50	4.87
1/25/23 23:00	127.40	5.08
1/26/23 0:00	91.90	7.46
1/26/23 1:00	69.43	6.94
1/26/23 2:00	42.94	10.22
1/26/23 3:00	33.02	11.18
1/26/23 4:00	30.81	16.30
1/26/23 5:00	32.42	21.44
1/26/23 6:00	31.61	25.89
1/26/23 7:00	29.57	26.61
1/26/23 8:00	24.13	28.22
1/26/23 9:00	22.28	25.80
1/26/23 10:00	15.35	22.41
1/26/23 11:00	5.56	20.96
1/26/23 12:00	345.00	15.45
1/26/23 13:00	347.40	17.70
1/26/23 14:00	335.60	15.72
1/26/23 15:00	333.20	20.65
1/26/23 16:00	333.70	16.08
1/26/23 17:00	317.80	14.57
1/26/23 18:00	322.10	20.04
1/26/23 19:00	316.20	15.11
1/26/23 20:00	322.80	16.95
1/26/23 21:00	310.20	14.69
1/26/23 22:00	311.10	15.43
1/26/23 23:00	324.00	21.75
1/27/23 0:00	307.20	15.40
1/27/23 1:00	312.40	16.33
1/27/23 2:00	331.30	17.31
1/27/23 3:00	330.40	19.39
1/27/23 4:00	328.00	19.32
1/27/23 5:00	323.20	18.63
1/27/23 6:00	325.00	20.03
1/27/23 7:00	324.30	21.52
1/27/23 8:00	320.80	20.85
1/27/23 9:00	321.40	21.78
1/27/23 10:00	307.80	18.84
1/27/23 11:00	324.70	26.19
1/27/23 12:00	316.60	26.02
1/27/23 13:00	322.30	30.96
1/27/23 14:00	318.60	27.85
1/27/23 15:00	318.80	29.81
1/27/23 16:00	321.40	32.40
1/27/23 17:00	317.10	28.25
1/27/23 18:00	316.30	31.18
1/27/23 19:00	323.20	34.56
1/27/23 20:00	318.30	29.77
1/27/23 21:00	338.40	26.80
1/27/23 22:00	340.50	33.48

Date	Wind Direction (°)	Wind speed (km/h)
1/27/23 23:00	328.60	30.74
1/28/23 0:00	332.30	42.84
1/28/23 1:00	324.10	36.61
1/28/23 2:00	319.30	38.92
1/28/23 3:00	323.00	39.13
1/28/23 4:00	327.20	36.00
1/28/23 5:00	329.00	39.82
1/28/23 6:00	334.70	36.97
1/28/23 7:00	331.60	37.33
1/28/23 8:00	328.30	41.11
1/28/23 9:00	334.80	40.21
1/28/23 10:00	338.10	39.85
1/28/23 11:00	334.40	39.56
1/28/23 12:00	332.50	40.07
1/28/23 13:00	327.40	37.98
1/28/23 14:00	323.90	37.98
1/28/23 15:00	320.00	34.42
1/28/23 16:00	319.80	30.67
1/28/23 17:00	317.30	35.28
1/28/23 18:00	310.70	32.36
1/28/23 19:00	309.70	36.83
1/28/23 20:00	297.20	27.58
1/28/23 21:00	299.50	27.23
1/28/23 22:00	310.30	32.54
1/28/23 23:00	308.00	33.05
1/29/23 0:00	313.50	30.92
1/29/23 1:00	292.20	22.60
1/29/23 2:00	302.60	28.67
1/29/23 3:00	306.00	24.14
1/29/23 4:00	291.50	21.38
1/29/23 5:00	284.40	19.45
1/29/23 6:00	285.90	23.25
1/29/23 7:00	295.40	22.92
1/29/23 8:00	294.70	18.64
1/29/23 9:00	292.50	15.97
1/29/23 10:00	309.10	16.35
1/29/23 11:00	298.70	14.40
1/29/23 12:00	307.00	14.49
1/29/23 13:00	320.80	18.37
1/29/23 14:00	301.60	14.75
1/29/23 15:00	317.00	20.09
1/29/23 16:00	317.30	21.36
1/29/23 17:00	319.90	24.18
1/29/23 18:00	316.60	23.93
1/29/23 19:00	313.10	24.30
1/29/23 20:00	311.90	23.59
1/29/23 21:00	323.00	28.56
1/29/23 22:00	317.40	25.14
1/29/23 23:00	299.80	26.74
1/30/23 0:00	291.20	28.38
1/30/23 1:00	303.80	30.35
1/30/23 2:00	308.90	37.66
1/30/23 3:00	312.00	31.72
1/30/23 4:00	319.60	28.12
1/30/23 5:00	323.80	31.14
1/30/23 6:00	325.70	25.11
1/30/23 7:00	327.10	22.36
1/30/23 8:00	320.00	18.28
1/30/23 9:00	327.00	23.60
1/30/23 10:00	325.80	21.64
1/30/23 11:00	325.20	22.20
1/30/23 12:00	326.10	21.28
1/30/23 13:00	326.20	21.01
1/30/23 14:00	336.80	20.97
1/30/23 15:00	339.60	18.55
1/30/23 16:00	340.10	13.24
1/30/23 17:00	339.20	14.77
1/30/23 18:00	336.20	15.37
1/30/23 19:00	336.50	13.20
1/30/23 20:00	329.30	12.51
1/30/23 21:00	338.20	9.02
1/30/23 22:00	327.10	8.07
1/30/23 23:00	296.30	12.10
1/31/23 0:00	301.40	12.05
1/31/23 1:00	311.00	9.48
1/31/23 2:00	303.40	9.29
1/31/23 3:00	288.10	6.20
1/31/23 4:00	286.30	8.18
1/31/23 5:00	285.90	11.68
1/31/23 6:00	290.60	10.01
1/31/23 7:00	303.30	12.78

Date	Wind Direction (°)	Wind speed (km/h)
1/31/23 8:00	299.70	11.79
1/31/23 9:00	303.80	13.17
1/31/23 10:00	305.50	12.41
1/31/23 11:00	296.30	13.30
1/31/23 12:00	297.70	12.00
1/31/23 13:00	302.60	10.70
1/31/23 14:00	329.50	11.01
1/31/23 15:00	341.50	12.07
1/31/23 16:00	343.00	11.77
1/31/23 17:00	341.40	11.62
1/31/23 18:00	344.10	14.33
1/31/23 19:00	350.70	15.49
1/31/23 20:00	349.50	16.56
1/31/23 21:00	347.20	19.21
1/31/23 22:00	350.60	21.28
1/31/23 23:00	345.10	19.12
2/1/23 0:00	346.10	22.41
2/1/23 1:00	337.40	21.42
2/1/23 2:00	330.00	19.77
2/1/23 3:00	333.90	23.22
2/1/23 4:00	341.10	25.04
2/1/23 5:00	338.80	21.81
2/1/23 6:00	339.50	25.48
2/1/23 7:00	336.10	27.77
2/1/23 8:00	331.40	27.76
2/1/23 9:00	333.20	27.00
2/1/23 10:00	331.10	23.61
2/1/23 11:00	327.20	27.16
2/1/23 12:00	330.60	27.68
2/1/23 13:00	328.80	25.35
2/1/23 14:00	317.90	20.08
2/1/23 15:00	316.90	21.90
2/1/23 16:00	315.80	23.97
2/1/23 17:00	313.50	22.71
2/1/23 18:00	300.20	21.28
2/1/23 19:00	287.00	18.04
2/1/23 20:00	285.40	18.98
2/1/23 21:00	301.50	17.63
2/1/23 22:00	296.90	20.08
2/1/23 23:00	285.80	18.69
2/2/23 0:00	286.90	19.02
2/2/23 1:00	275.20	19.08
2/2/23 2:00	278.00	19.71
2/2/23 3:00	292.40	14.44
2/2/23 4:00	277.60	19.68
2/2/23 5:00	278.20	20.22
2/2/23 6:00	280.90	19.31
2/2/23 7:00	285.10	15.32
2/2/23 8:00	274.30	9.46
2/2/23 9:00	249.60	7.77
2/2/23 10:00	232.30	6.50
2/2/23 11:00	229.10	6.69
2/2/23 12:00	198.70	9.09
2/2/23 13:00	191.40	13.01
2/2/23 14:00	190.20	13.42
2/2/23 15:00	191.80	12.78
2/2/23 16:00	184.20	8.95
2/2/23 17:00	180.20	15.67
2/2/23 18:00	167.90	12.57
2/2/23 19:00	128.50	8.64
2/2/23 20:00	141.40	11.71
2/2/23 21:00	160.60	13.94
2/2/23 22:00	175.20	13.49
2/2/23 23:00	155.00	8.18
2/3/23 0:00	151.70	8.50
2/3/23 1:00	141.20	9.15
2/3/23 2:00	152.20	7.72
2/3/23 3:00	144.50	7.14
2/3/23 4:00	147.30	9.81
2/3/23 5:00	134.50	9.08
2/3/23 6:00	124.20	6.89
2/3/23 7:00	92.80	5.46
2/3/23 8:00	100.40	6.13
2/3/23 9:00	107.20	7.80
2/3/23 10:00	82.00	8.18
2/3/23 11:00	76.77	9.96
2/3/23 12:00	83.30	9.90
2/3/23 13:00	74.88	7.85
2/3/23 14:00	39.87	9.61
2/3/23 15:00	43.47	7.77
2/3/23 16:00	55.00	9.22

Date	Wind Direction (°)	Wind speed (km/h)
2/3/23 17:00	46.30	8.00
2/3/23 18:00	37.30	9.42
2/3/23 19:00	27.76	9.72
2/3/23 20:00	18.10	7.96
2/3/23 21:00	31.12	9.76
2/3/23 22:00	9.33	8.51
2/3/23 23:00	336.50	9.11
2/4/23 0:00	335.70	9.68
2/4/23 1:00	7.42	9.36
2/4/23 2:00	344.90	8.04
2/4/23 3:00	326.10	9.59
2/4/23 4:00	354.30	8.11
2/4/23 5:00	314.10	7.91
2/4/23 6:00	315.30	8.18
2/4/23 7:00	327.50	8.43
2/4/23 8:00	328.10	11.02
2/4/23 9:00	328.10	10.85
2/4/23 10:00	319.70	12.96
2/4/23 11:00	305.90	13.08
2/4/23 12:00	306.00	14.22
2/4/23 13:00	311.90	15.75
2/4/23 14:00	304.60	16.41
2/4/23 15:00	303.80	15.97
2/4/23 16:00	302.80	15.03
2/4/23 17:00	302.20	11.28
2/4/23 18:00	306.90	8.74
2/4/23 19:00	294.60	9.12
2/4/23 20:00	285.50	9.21
2/4/23 21:00	289.90	7.69
2/4/23 22:00	306.80	5.87
2/4/23 23:00	317.10	3.65
2/5/23 0:00	299.10	3.19
2/5/23 1:00	77.49	1.09
2/5/23 2:00	94.40	2.29
2/5/23 3:00	118.40	2.76
2/5/23 4:00	152.50	1.27
2/5/23 5:00	187.40	3.40
2/5/23 6:00	181.10	3.18
2/5/23 7:00	160.50	2.20
2/5/23 8:00	175.00	1.69
2/5/23 9:00	179.90	4.33
2/5/23 10:00	175.00	4.37
2/5/23 11:00	160.70	4.58
2/5/23 12:00	183.10	4.61
2/5/23 13:00	168.80	1.94
2/5/23 14:00	137.90	3.08
2/5/23 15:00	62.95	3.55
2/5/23 16:00	87.50	8.62
2/5/23 17:00	139.20	11.54
2/5/23 18:00	129.80	7.97
2/5/23 19:00	91.40	8.14
2/5/23 20:00	67.56	11.49
2/5/23 21:00	99.70	12.12
2/5/23 22:00	114.70	10.79
2/5/23 23:00	86.70	8.82
2/6/23 0:00	97.60	10.17
2/6/23 1:00	47.59	9.51
2/6/23 2:00	45.66	10.77
2/6/23 3:00	72.41	10.04
2/6/23 4:00	71.55	9.03
2/6/23 5:00	37.72	8.96
2/6/23 6:00	36.11	9.30
2/6/23 7:00	39.97	8.10
2/6/23 8:00	37.05	8.86
2/6/23 9:00	36.86	10.87
2/6/23 10:00	49.00	10.00
2/6/23 11:00	38.39	9.53
2/6/23 12:00	43.94	9.90
2/6/23 13:00	47.80	10.33
2/6/23 14:00	51.86	10.11
2/6/23 15:00	56.56	12.30
2/6/23 16:00	74.10	12.14
2/6/23 17:00	86.80	11.97
2/6/23 18:00	88.00	13.71
2/6/23 19:00	93.80	12.88
2/6/23 20:00	97.60	13.81
2/6/23 21:00	93.20	14.24
2/6/23 22:00	92.10	13.14
2/6/23 23:00	87.30	14.92
2/7/23 0:00	90.40	16.23
2/7/23 1:00	92.80	16.15

Date	Wind Direction (°)	Wind speed (km/h)
2/7/23 2:00	96.90	16.97
2/7/23 3:00	92.70	17.28
2/7/23 4:00	87.20	20.69
2/7/23 5:00	82.30	22.33
2/7/23 6:00	83.20	24.44
2/7/23 7:00	84.10	22.59
2/7/23 8:00	75.61	23.84
2/7/23 9:00	68.93	25.26
2/7/23 10:00	66.43	25.39
2/7/23 11:00	65.02	23.63
2/7/23 12:00	60.00	25.61
2/7/23 13:00	56.61	24.12
2/7/23 14:00	47.10	19.83
2/7/23 15:00	42.30	14.44
2/7/23 16:00	31.86	14.29
2/7/23 17:00	31.15	17.05
2/7/23 18:00	28.54	18.52
2/7/23 19:00	12.87	17.13
2/7/23 20:00	9.50	16.39
2/7/23 21:00	15.69	14.57
2/7/23 22:00	16.85	11.26
2/7/23 23:00	14.72	11.66
2/8/23 0:00	13.65	9.31
2/8/23 1:00	356.40	6.78
2/8/23 2:00	337.90	7.94
2/8/23 3:00	335.60	8.88
2/8/23 4:00	324.70	6.86
2/8/23 5:00	343.40	7.55
2/8/23 6:00	12.37	5.26
2/8/23 7:00	351.10	4.51
2/8/23 8:00	317.00	3.40
2/8/23 9:00	293.70	3.82
2/8/23 10:00	278.50	1.23
2/8/23 11:00	256.20	5.06
2/8/23 12:00	240.50	5.20
2/8/23 13:00	257.70	5.93
2/8/23 14:00	244.00	6.96
2/8/23 15:00	251.70	8.49
2/8/23 16:00	231.30	8.45
2/8/23 17:00	242.00	10.04
2/8/23 18:00	218.90	10.79
2/8/23 19:00	228.10	13.90
2/8/23 20:00	213.00	10.67
2/8/23 21:00	193.40	9.84
2/8/23 22:00	207.50	10.06
2/8/23 23:00	216.30	9.09
2/9/23 0:00	205.90	5.91
2/9/23 1:00	230.90	7.92
2/9/23 2:00	192.40	5.73
2/9/23 3:00	187.80	9.10
2/9/23 4:00	193.20	8.13
2/9/23 5:00	135.40	4.40
2/9/23 6:00	67.87	6.07
2/9/23 7:00	129.70	4.74
2/9/23 8:00	126.60	5.38
2/9/23 9:00	112.70	6.81
2/9/23 10:00	88.80	7.28
2/9/23 11:00	68.07	4.49
2/9/23 12:00	107.30	4.14
2/9/23 13:00	35.61	4.83
2/9/23 14:00	13.75	4.94
2/9/23 15:00	357.50	5.62
2/9/23 16:00	344.80	9.21
2/9/23 17:00	359.00	8.03
2/9/23 18:00	0.22	6.15
2/9/23 19:00	355.00	4.39
2/9/23 20:00	332.40	3.21
2/9/23 21:00	307.50	2.87
2/9/23 22:00	328.40	4.38
2/9/23 23:00	333.10	2.69
2/10/23 0:00	348.10	0.88
2/10/23 1:00	0.00	0.00
2/10/23 2:00	343.50	0.99
2/10/23 3:00	12.67	3.73
2/10/23 4:00	50.33	2.21
2/10/23 5:00	75.70	2.66
2/10/23 6:00	81.00	4.31
2/10/23 7:00	86.30	5.25
2/10/23 8:00	93.90	5.00
2/10/23 9:00	91.80	4.92
2/10/23 10:00	88.70	4.88

Date	Wind Direction (°)	Wind speed (km/h)
2/10/23 11:00	88.00	5.37
2/10/23 12:00	94.60	5.08
2/10/23 13:00	103.30	4.80
2/10/23 14:00	108.20	4.62
2/10/23 15:00	105.30	4.57
2/10/23 16:00	104.70	4.92
2/10/23 17:00	103.20	5.13
2/10/23 18:00	116.10	7.16
2/10/23 19:00	126.10	6.14
2/10/23 20:00	136.10	5.29
2/10/23 21:00	138.40	5.67
2/10/23 22:00	139.10	6.16
2/10/23 23:00	148.30	6.76
2/11/23 0:00	144.60	6.07
2/11/23 1:00	146.30	5.89
2/11/23 2:00	142.50	6.00
2/11/23 3:00	137.20	6.63
2/11/23 4:00	146.50	7.37
2/11/23 5:00	160.20	7.39
2/11/23 6:00	166.50	6.04
2/11/23 7:00	159.70	4.75
2/11/23 8:00	147.50	4.56
2/11/23 9:00	129.60	4.80
2/11/23 10:00	144.30	4.55
2/11/23 11:00	139.30	5.04
2/11/23 12:00	130.40	4.68
2/11/23 13:00	124.70	4.42
2/11/23 14:00	131.80	4.71
2/11/23 15:00	144.20	8.90
2/11/23 16:00	162.80	17.99
2/11/23 17:00	190.80	16.09
2/11/23 18:00	201.10	12.58
2/11/23 19:00	203.30	7.68
2/11/23 20:00	204.30	7.10
2/11/23 21:00	263.00	9.12
2/11/23 22:00	294.50	15.86
2/11/23 23:00	316.80	15.31
2/12/23 0:00	316.10	16.07
2/12/23 1:00	307.70	15.86
2/12/23 2:00	307.00	18.34
2/12/23 3:00	321.50	25.16
2/12/23 4:00	325.60	31.64
2/12/23 5:00	330.00	29.52
2/12/23 6:00	326.60	31.43
2/12/23 7:00	329.30	29.66
2/12/23 8:00	325.90	30.38
2/12/23 9:00	335.50	29.66
2/12/23 10:00	336.60	29.45
2/12/23 11:00	336.60	23.59
2/12/23 12:00	335.60	18.46
2/12/23 13:00	307.30	17.38
2/12/23 14:00	290.80	17.84
2/12/23 15:00	297.50	15.98
2/12/23 16:00	290.50	15.81
2/12/23 17:00	314.00	20.31
2/12/23 18:00	316.60	13.81
2/12/23 19:00	313.80	12.19
2/12/23 20:00	335.80	13.45
2/12/23 21:00	340.50	9.53
2/12/23 22:00	13.12	13.11
2/12/23 23:00	24.74	19.01
2/13/23 0:00	21.76	18.51
2/13/23 1:00	20.86	17.96
2/13/23 2:00	23.03	21.35
2/13/23 3:00	40.31	18.95
2/13/23 4:00	43.22	15.76
2/13/23 5:00	42.32	14.87
2/13/23 6:00	43.23	14.48
2/13/23 7:00	28.12	12.43
2/13/23 8:00	14.02	16.57
2/13/23 9:00	7.41	17.94
2/13/23 10:00	8.43	20.78
2/13/23 11:00	10.88	22.05
2/13/23 12:00	27.49	16.64
2/13/23 13:00	20.47	14.95
2/13/23 14:00	8.37	12.12
2/13/23 15:00	357.80	12.76
2/13/23 16:00	350.10	12.51
2/13/23 17:00	328.00	9.80
2/13/23 18:00	319.50	13.74
2/13/23 19:00	304.00	12.30

Date	Wind Direction (°)	Wind speed (km/h)
2/13/23 20:00	287.10	11.71
2/13/23 21:00	277.90	10.42
2/13/23 22:00	274.10	13.51
2/13/23 23:00	274.80	14.83
2/14/23 0:00	272.90	15.02
2/14/23 1:00	273.00	16.91
2/14/23 2:00	273.20	16.95
2/14/23 3:00	271.00	15.80
2/14/23 4:00	273.40	14.88
2/14/23 5:00	270.90	15.33
2/14/23 6:00	286.20	16.26
2/14/23 7:00	306.00	21.42
2/14/23 8:00	307.40	23.80
2/14/23 9:00	310.60	20.45
2/14/23 10:00	310.40	22.19
2/14/23 11:00	315.70	22.87
2/14/23 12:00	310.30	22.09
2/14/23 13:00	322.20	23.77
2/14/23 14:00	310.60	21.96
2/14/23 15:00	305.80	21.20
2/14/23 16:00	301.60	20.70
2/14/23 17:00	308.90	22.57
2/14/23 18:00	316.20	19.25
2/14/23 19:00	323.40	19.24
2/14/23 20:00	323.40	16.34
2/14/23 21:00	320.10	15.28
2/14/23 22:00	323.90	18.22
2/14/23 23:00	305.40	15.25
2/15/23 0:00	300.60	14.35
2/15/23 1:00	289.60	14.75
2/15/23 2:00	288.10	14.68
2/15/23 3:00	281.60	14.59
2/15/23 4:00	285.40	17.60
2/15/23 5:00	292.20	15.84
2/15/23 6:00	290.70	12.45
2/15/23 7:00	280.40	17.66
2/15/23 8:00	284.20	20.05
2/15/23 9:00	287.90	22.53
2/15/23 10:00	297.30	20.05
2/15/23 11:00	294.00	16.68
2/15/23 12:00	295.20	16.93
2/15/23 13:00	291.20	17.47
2/15/23 14:00	292.40	16.88
2/15/23 15:00	278.40	17.14
2/15/23 16:00	271.30	15.18
2/15/23 17:00	270.30	15.94
2/15/23 18:00	274.10	20.17
2/15/23 19:00	278.60	21.83
2/15/23 20:00	284.60	16.28
2/15/23 21:00	298.90	14.68
2/15/23 22:00	303.90	12.73
2/15/23 23:00	288.10	14.39
2/16/23 0:00	292.30	11.26
2/16/23 1:00	282.00	10.38
2/16/23 2:00	294.30	6.42
2/16/23 3:00	292.70	6.36
2/16/23 4:00	279.60	6.84
2/16/23 5:00	294.80	7.17
2/16/23 6:00	306.70	5.23
2/16/23 7:00	334.40	4.09
2/16/23 8:00	344.60	3.01
2/16/23 9:00	304.20	3.67
2/16/23 10:00	354.00	3.87
2/16/23 11:00	4.78	4.71
2/16/23 12:00	43.40	5.87
2/16/23 13:00	22.03	4.69
2/16/23 14:00	2.19	4.14
2/16/23 15:00	354.00	5.08
2/16/23 16:00	348.90	7.01
2/16/23 17:00	355.00	8.42
2/16/23 18:00	357.60	8.72
2/16/23 19:00	350.20	8.22
2/16/23 20:00	340.70	12.14
2/16/23 21:00	354.00	11.80
2/16/23 22:00	340.60	7.30
2/16/23 23:00	309.40	9.27
2/17/23 0:00	310.50	10.55
2/17/23 1:00	323.30	10.99
2/17/23 2:00	307.60	11.37
2/17/23 3:00	308.90	12.92
2/17/23 4:00	304.90	17.11

Date	Wind Direction (°)	Wind speed (km/h)
2/17/23 5:00	308.40	17.22
2/17/23 6:00	302.50	15.13
2/17/23 7:00	320.20	16.41
2/17/23 8:00	308.70	11.67
2/17/23 9:00	304.50	13.21
2/17/23 10:00	299.30	14.68
2/17/23 11:00	294.80	15.27
2/17/23 12:00	294.00	16.85
2/17/23 13:00	296.00	17.23
2/17/23 14:00	297.10	19.21
2/17/23 15:00	295.70	16.62
2/17/23 16:00	286.70	14.41
2/17/23 17:00	290.00	17.47
2/17/23 18:00	291.00	16.39
2/17/23 19:00	288.30	19.58
2/17/23 20:00	297.20	17.73
2/17/23 21:00	290.40	13.36
2/17/23 22:00	290.80	17.67
2/17/23 23:00	279.30	14.15
2/18/23 0:00	281.40	15.16
2/18/23 1:00	288.80	14.68
2/18/23 2:00	291.80	13.64
2/18/23 3:00	306.60	17.23
2/18/23 4:00	305.70	14.75
2/18/23 5:00	314.20	13.53
2/18/23 6:00	318.00	15.25
2/18/23 7:00	323.40	13.54
2/18/23 8:00	325.60	13.01
2/18/23 9:00	320.10	12.58
2/18/23 10:00	314.40	11.63
2/18/23 11:00	320.60	12.88
2/18/23 12:00	327.00	14.47
2/18/23 13:00	303.40	10.17
2/18/23 14:00	308.10	11.17
2/18/23 15:00	293.20	14.16
2/18/23 16:00	286.00	13.36
2/18/23 17:00	277.90	10.62
2/18/23 18:00	262.30	9.53
2/18/23 19:00	258.40	10.63
2/18/23 20:00	254.60	9.68
2/18/23 21:00	244.00	7.59
2/18/23 22:00	256.90	12.08
2/18/23 23:00	260.00	11.13
2/19/23 0:00	264.20	12.81
2/19/23 1:00	269.40	13.84
2/19/23 2:00	268.70	15.02
2/19/23 3:00	262.60	16.15
2/19/23 4:00	264.40	16.91
2/19/23 5:00	271.50	18.63
2/19/23 6:00	276.40	15.32
2/19/23 7:00	268.60	16.10
2/19/23 8:00	270.00	16.39
2/19/23 9:00	272.40	18.69
2/19/23 10:00	285.50	18.54
2/19/23 11:00	289.30	20.74
2/19/23 12:00	280.50	18.60
2/19/23 13:00	284.30	20.34
2/19/23 14:00	275.90	16.16
2/19/23 15:00	274.50	16.33
2/19/23 16:00	281.30	20.29
2/19/23 17:00	282.30	22.12
2/19/23 18:00	280.20	19.80
2/19/23 19:00	288.30	17.80
2/19/23 20:00	282.20	19.90
2/19/23 21:00	285.10	17.54
2/19/23 22:00	290.40	20.25
2/19/23 23:00	302.60	22.10
2/20/23 0:00	303.70	17.80
2/20/23 1:00	313.00	20.67
2/20/23 2:00	324.10	23.21
2/20/23 3:00	328.10	25.41
2/20/23 4:00	328.50	21.64
2/20/23 5:00	334.00	19.38
2/20/23 6:00	336.60	18.61
2/20/23 7:00	330.70	19.28
2/20/23 8:00	344.60	18.21
2/20/23 9:00	336.00	14.63
2/20/23 10:00	338.40	15.52
2/20/23 11:00	325.10	16.10
2/20/23 12:00	330.90	17.67
2/20/23 13:00	332.80	18.50

Date	Wind Direction (°)	Wind speed (km/h)
2/20/23 14:00	325.10	25.25
2/20/23 15:00	322.80	21.81
2/20/23 16:00	320.10	24.46
2/20/23 17:00	321.50	26.43
2/20/23 18:00	320.60	30.46
2/20/23 19:00	321.80	27.05
2/20/23 20:00	329.80	28.91
2/20/23 21:00	334.70	26.01
2/20/23 22:00	329.10	25.11
2/20/23 23:00	323.60	21.99
2/21/23 0:00	319.70	17.99
2/21/23 1:00	346.80	23.47
2/21/23 2:00	351.40	26.61
2/21/23 3:00	348.20	26.35
2/21/23 4:00	346.90	25.59
2/21/23 5:00	345.20	16.29
2/21/23 6:00	338.20	26.20
2/21/23 7:00	340.70	30.10
2/21/23 8:00	341.60	27.35
2/21/23 9:00	339.10	28.84
2/21/23 10:00	336.60	27.33
2/21/23 11:00	324.00	26.58
2/21/23 12:00	321.30	26.00
2/21/23 13:00	322.40	31.18
2/21/23 14:00	329.30	23.67
2/21/23 15:00	320.10	28.79
2/21/23 16:00	325.00	31.97
2/21/23 17:00	321.70	30.64
2/21/23 18:00	324.30	29.77
2/21/23 19:00	322.20	30.89
2/21/23 20:00	319.20	30.02
2/21/23 21:00	319.10	28.75
2/21/23 22:00	306.10	26.07
2/21/23 23:00	300.00	27.00
2/22/23 0:00	299.00	25.75
2/22/23 1:00	291.10	25.36
2/22/23 2:00	300.40	27.66
2/22/23 3:00	305.50	27.40
2/22/23 4:00	309.00	27.61
2/22/23 5:00	304.00	20.11
2/22/23 6:00	285.00	18.72
2/22/23 7:00	270.90	16.93
2/22/23 8:00	279.10	16.39
2/22/23 9:00	283.90	14.37
2/22/23 10:00	295.30	19.56
2/22/23 11:00	301.40	18.78
2/22/23 12:00	295.50	25.79
2/22/23 13:00	296.70	27.03
2/22/23 14:00	291.70	22.59
2/22/23 15:00	291.60	24.25
2/22/23 16:00	291.80	25.60
2/22/23 17:00	301.60	26.81
2/22/23 18:00	298.50	26.27
2/22/23 19:00	301.00	24.51
2/22/23 20:00	296.90	21.08
2/22/23 21:00	308.90	24.12
2/22/23 22:00	304.50	22.42
2/22/23 23:00	308.30	19.04
2/23/23 0:00	320.10	18.80
2/23/23 1:00	317.70	19.31
2/23/23 2:00	305.80	14.94
2/23/23 3:00	303.60	12.64
2/23/23 4:00	314.40	14.18
2/23/23 5:00	306.00	11.91
2/23/23 6:00	310.90	13.19
2/23/23 7:00	310.10	17.50
2/23/23 8:00	300.90	15.45
2/23/23 9:00	294.00	15.17
2/23/23 10:00	302.60	19.07
2/23/23 11:00	288.40	15.52
2/23/23 12:00	276.80	16.03
2/23/23 13:00	277.10	18.19
2/23/23 14:00	272.70	20.30
2/23/23 15:00	269.10	19.36
2/23/23 16:00	262.20	15.95
2/23/23 17:00	261.40	16.88
2/23/23 18:00	262.90	21.27
2/23/23 19:00	259.00	23.53
2/23/23 20:00	260.00	23.27
2/23/23 21:00	257.30	23.82
2/23/23 22:00	264.00	21.95

Date	Wind Direction (°)	Wind speed (km/h)
2/23/23 23:00	256.30	24.41
2/24/23 0:00	258.00	24.86
2/24/23 1:00	255.70	25.80
2/24/23 2:00	253.70	25.67
2/24/23 3:00	243.50	23.90
2/24/23 4:00	240.20	21.99
2/24/23 5:00	239.60	22.71
2/24/23 6:00	234.30	24.16
2/24/23 7:00	220.70	21.81
2/24/23 8:00	210.60	22.56
2/24/23 9:00	214.30	23.97
2/24/23 10:00	213.80	26.37
2/24/23 11:00	215.40	24.54
2/24/23 12:00	212.20	26.96
2/24/23 13:00	211.40	25.01
2/24/23 14:00	211.50	20.91
2/24/23 15:00	217.30	14.65
2/24/23 16:00	215.80	16.54
2/24/23 17:00	212.50	8.54
2/24/23 18:00	209.90	7.42
2/24/23 19:00	209.70	7.21
2/24/23 20:00	215.40	11.86
2/24/23 21:00	220.50	13.86
2/24/23 22:00	220.80	14.56
2/24/23 23:00	218.60	14.58
2/25/23 0:00	217.00	13.85
2/25/23 1:00	216.80	13.72
2/25/23 2:00	216.50	16.58
2/25/23 3:00	216.20	14.54
2/25/23 4:00	219.10	13.66
2/25/23 5:00	211.60	11.87
2/25/23 6:00	224.00	11.73
2/25/23 7:00	228.50	10.13
2/25/23 8:00	235.40	10.36
2/25/23 9:00	234.40	8.02
2/25/23 10:00	259.70	6.58
2/25/23 11:00	281.40	8.61
2/25/23 12:00	287.10	9.00
2/25/23 13:00	292.40	7.84
2/25/23 14:00	290.30	8.12
2/25/23 15:00	272.90	10.23
2/25/23 16:00	274.60	10.70
2/25/23 17:00	271.40	12.58
2/25/23 18:00	271.20	12.87
2/25/23 19:00	272.70	13.50
2/25/23 20:00	270.30	11.57
2/25/23 21:00	275.30	13.99
2/25/23 22:00	288.70	14.58
2/25/23 23:00	280.70	14.72
2/26/23 0:00	275.70	13.70
2/26/23 1:00	274.00	14.07
2/26/23 2:00	294.20	15.50
2/26/23 3:00	290.90	14.88
2/26/23 4:00	299.20	18.69
2/26/23 5:00	299.70	17.66
2/26/23 6:00	287.40	13.81
2/26/23 7:00	289.10	13.64
2/26/23 8:00	284.80	13.97
2/26/23 9:00	281.70	16.24
2/26/23 10:00	279.20	14.85
2/26/23 11:00	275.20	12.31
2/26/23 12:00	281.30	14.58
2/26/23 13:00	276.20	10.90
2/26/23 14:00	284.50	14.87
2/26/23 15:00	292.90	14.35
2/26/23 16:00	291.70	17.19
2/26/23 17:00	295.70	19.38
2/26/23 18:00	306.90	19.09
2/26/23 19:00	321.80	12.37
2/26/23 20:00	341.10	10.94
2/26/23 21:00	343.50	10.77
2/26/23 22:00	352.40	11.31
2/26/23 23:00	349.80	8.79
2/27/23 0:00	350.10	6.94
2/27/23 1:00	347.00	5.66
2/27/23 2:00	354.80	4.86
2/27/23 3:00	25.23	4.44
2/27/23 4:00	26.45	5.09
2/27/23 5:00	25.22	4.24
2/27/23 6:00	27.31	4.19
2/27/23 7:00	22.34	4.59

Date	Wind Direction (°)	Wind speed (km/h)
2/27/23 8:00	22.58	5.18
2/27/23 9:00	17.03	4.26
2/27/23 10:00	11.54	3.27
2/27/23 11:00	358.30	3.17
2/27/23 12:00	3.10	3.39
2/27/23 13:00	339.70	2.18
2/27/23 14:00	340.10	3.93
2/27/23 15:00	1.07	6.21
2/27/23 16:00	0.90	6.71
2/27/23 17:00	355.90	6.60
2/27/23 18:00	10.04	4.41
2/27/23 19:00	4.16	5.01
2/27/23 20:00	358.70	5.50
2/27/23 21:00	356.30	4.69
2/27/23 22:00	355.70	4.26
2/27/23 23:00	335.30	4.37
2/28/23 0:00	334.30	4.31
2/28/23 1:00	344.50	4.48
2/28/23 2:00	327.20	4.10
2/28/23 3:00	330.40	3.70
2/28/23 4:00	298.60	3.23
2/28/23 5:00	299.30	3.99
2/28/23 6:00	301.90	3.69
2/28/23 7:00	301.60	2.75
2/28/23 8:00	308.00	2.39
2/28/23 9:00	317.00	2.36
2/28/23 10:00	323.00	1.90
2/28/23 11:00	306.90	0.50
2/28/23 12:00	287.30	0.00
2/28/23 13:00	0.00	0.00
2/28/23 14:00	285.50	0.00
2/28/23 15:00	285.40	2.48
2/28/23 16:00	285.20	0.75
2/28/23 17:00	285.10	0.27
2/28/23 18:00	284.70	0.72
2/28/23 19:00	284.50	1.10
2/28/23 20:00	284.00	2.34
2/28/23 21:00	283.50	2.24
2/28/23 22:00	209.60	12.24
2/28/23 23:00	186.20	13.16
3/1/23 0:00	190.40	13.73
3/1/23 1:00	192.60	16.12
3/1/23 2:00	196.10	19.52
3/1/23 3:00	188.90	18.03
3/1/23 4:00	184.40	15.31
3/1/23 5:00	176.60	18.45
3/1/23 6:00	181.90	16.29
3/1/23 7:00	181.10	18.81
3/1/23 8:00	186.90	15.86
3/1/23 9:00	179.80	18.63
3/1/23 10:00	172.50	17.18
3/1/23 11:00	168.10	17.19
3/1/23 12:00	169.20	15.66
3/1/23 13:00	151.00	18.39
3/1/23 14:00	150.20	26.26
3/1/23 15:00	152.00	26.96
3/1/23 16:00	152.00	27.73
3/1/23 17:00	154.10	29.05
3/1/23 18:00	152.70	31.50
3/1/23 19:00	157.90	31.21
3/1/23 20:00	159.50	29.48
3/1/23 21:00	161.80	32.26
3/1/23 22:00	154.40	35.60
3/1/23 23:00	152.90	33.80
3/2/23 0:00	156.30	30.78
3/2/23 1:00	157.80	34.06
3/2/23 2:00	150.00	29.41
3/2/23 3:00	134.20	31.46
3/2/23 4:00	128.80	32.94
3/2/23 5:00	125.90	35.17
3/2/23 6:00	125.30	36.90
3/2/23 7:00	117.20	33.48
3/2/23 8:00	108.60	30.28
3/2/23 9:00	113.70	33.70
3/2/23 10:00	116.80	32.44
3/2/23 11:00	115.80	36.00
3/2/23 12:00	119.50	37.76
3/2/23 13:00	114.00	37.73
3/2/23 14:00	111.40	41.00
3/2/23 15:00	110.00	43.13
3/2/23 16:00	108.00	45.72

Date	Wind Direction (°)	Wind speed (km/h)
3/2/23 17:00	100.00	46.73
3/2/23 18:00	94.70	45.47
3/2/23 19:00	98.00	47.66
3/2/23 20:00	94.80	45.58
3/2/23 21:00	92.20	46.58
3/2/23 22:00	96.10	42.66
3/2/23 23:00	97.10	37.69
3/3/23 0:00	95.40	34.31
3/3/23 1:00	92.90	34.34
3/3/23 2:00	92.90	32.29
3/3/23 3:00	92.50	28.84
3/3/23 4:00	97.00	32.76
3/3/23 5:00	91.10	35.46
3/3/23 6:00	84.00	37.94
3/3/23 7:00	86.10	38.77
3/3/23 8:00	79.36	36.14
3/3/23 9:00	79.56	33.01
3/3/23 10:00	84.60	36.79
3/3/23 11:00	83.60	28.42
3/3/23 12:00	68.37	27.04
3/3/23 13:00	65.65	27.83
3/3/23 14:00	59.27	22.98
3/3/23 15:00	64.57	28.20
3/3/23 16:00	59.22	25.71
3/3/23 17:00	62.05	22.47
3/3/23 18:00	56.52	26.30
3/3/23 19:00	59.80	21.86
3/3/23 20:00	50.98	21.10
3/3/23 21:00	43.08	16.37
3/3/23 22:00	41.70	17.43
3/3/23 23:00	41.87	19.04
3/4/23 0:00	36.81	19.33
3/4/23 1:00	32.29	15.54
3/4/23 2:00	19.17	15.98
3/4/23 3:00	17.58	17.72
3/4/23 4:00	18.47	15.61
3/4/23 5:00	13.97	17.62
3/4/23 6:00	8.14	16.06
3/4/23 7:00	5.39	14.74
3/4/23 8:00	1.96	8.68
3/4/23 9:00	336.30	10.93
3/4/23 10:00	345.00	10.14
3/4/23 11:00	340.30	12.92
3/4/23 12:00	333.90	12.23
3/4/23 13:00	340.60	11.43
3/4/23 14:00	332.80	8.99
3/4/23 15:00	333.00	9.23
3/4/23 16:00	324.90	9.55
3/4/23 17:00	313.40	13.15
3/4/23 18:00	316.80	12.53
3/4/23 19:00	317.30	12.38
3/4/23 20:00	311.60	9.60
3/4/23 21:00	295.30	8.52
3/4/23 22:00	284.60	10.82
3/4/23 23:00	281.00	10.65
3/5/23 0:00	279.10	9.78
3/5/23 1:00	284.90	11.55
3/5/23 2:00	281.40	10.21
3/5/23 3:00	284.00	9.84
3/5/23 4:00	281.60	11.12
3/5/23 5:00	278.30	10.90
3/5/23 6:00	274.70	12.02
3/5/23 7:00	265.70	12.41
3/5/23 8:00	268.80	11.28
3/5/23 9:00	281.10	11.23
3/5/23 10:00	277.90	10.29
3/5/23 11:00	268.80	9.23
3/5/23 12:00	261.10	8.71
3/5/23 13:00	247.70	8.54
3/5/23 14:00	259.20	9.22
3/5/23 15:00	263.10	13.15
3/5/23 16:00	249.40	10.26
3/5/23 17:00	259.30	11.15
3/5/23 18:00	263.40	10.18
3/5/23 19:00	274.80	13.69
3/5/23 20:00	271.60	13.58
3/5/23 21:00	271.10	11.34
3/5/23 22:00	266.60	9.12
3/5/23 23:00	257.20	9.26
3/6/23 0:00	261.30	7.26
3/6/23 1:00	244.00	4.17

Date	Wind Direction (°)	Wind speed (km/h)
3/6/23 2:00	235.40	4.63
3/6/23 3:00	234.60	6.04
3/6/23 4:00	235.90	6.47
3/6/23 5:00	230.40	7.30
3/6/23 6:00	237.20	5.48
3/6/23 7:00	230.70	5.64
3/6/23 8:00	216.10	4.84
3/6/23 9:00	202.40	6.08
3/6/23 10:00	198.30	8.57
3/6/23 11:00	193.10	8.17
3/6/23 12:00	191.80	10.96
3/6/23 13:00	189.60	13.44
3/6/23 14:00	181.50	6.28
3/6/23 15:00	156.90	8.41
3/6/23 16:00	136.30	7.86
3/6/23 17:00	124.40	7.05
3/6/23 18:00	135.90	9.72
3/6/23 19:00	152.30	10.25
3/6/23 20:00	155.50	10.00
3/6/23 21:00	158.20	10.27
3/6/23 22:00	167.20	11.01
3/6/23 23:00	178.10	10.49
3/7/23 0:00	151.80	10.69
3/7/23 1:00	147.30	5.86
3/7/23 2:00	99.40	8.68
3/7/23 3:00	97.30	10.61
3/7/23 4:00	94.90	10.80
3/7/23 5:00	89.90	9.23
3/7/23 6:00	84.70	8.19
3/7/23 7:00	74.91	9.01
3/7/23 8:00	79.11	12.01
3/7/23 9:00	86.70	12.08
3/7/23 10:00	83.50	11.19
3/7/23 11:00	85.50	12.67
3/7/23 12:00	91.50	17.01
3/7/23 13:00	87.40	18.12
3/7/23 14:00	94.60	23.39
3/7/23 15:00	99.00	24.20
3/7/23 16:00	98.10	23.35
3/7/23 17:00	95.50	28.17
3/7/23 18:00	92.40	25.83
3/7/23 19:00	96.30	25.55
3/7/23 20:00	88.30	20.71
3/7/23 21:00	79.34	13.31
3/7/23 22:00	79.90	12.89
3/7/23 23:00	79.96	12.57
3/8/23 0:00	74.97	14.19
3/8/23 1:00	85.60	20.08
3/8/23 2:00	91.80	19.70
3/8/23 3:00	96.60	19.06
3/8/23 4:00	78.92	17.76
3/8/23 5:00	86.40	17.56
3/8/23 6:00	81.70	18.17
3/8/23 7:00	90.60	18.80
3/8/23 8:00	94.20	22.66
3/8/23 9:00	86.80	15.37
3/8/23 10:00	93.90	20.42
3/8/23 11:00	102.10	18.44
3/8/23 12:00	101.00	21.10
3/8/23 13:00	101.40	21.87
3/8/23 14:00	101.30	19.74
3/8/23 15:00	99.80	18.36
3/8/23 16:00	107.50	17.50
3/8/23 17:00	114.90	14.75
3/8/23 18:00	112.30	11.14
3/8/23 19:00	121.50	8.60
3/8/23 20:00	108.50	8.12
3/8/23 21:00	107.00	7.81
3/8/23 22:00	121.30	4.94
3/8/23 23:00	125.80	3.70
3/9/23 0:00	118.20	3.24
3/9/23 1:00	99.60	4.92
3/9/23 2:00	131.50	5.51
3/9/23 3:00	164.80	5.64
3/9/23 4:00	182.60	7.48
3/9/23 5:00	193.00	8.01
3/9/23 6:00	189.20	6.56
3/9/23 7:00	179.00	7.71
3/9/23 8:00	168.90	5.34
3/9/23 9:00	178.40	5.40
3/9/23 10:00	181.90	4.13

Date	Wind Direction (°)	Wind speed (km/h)
3/9/23 11:00	173.00	6.45
3/9/23 12:00	164.20	8.07
3/9/23 13:00	140.90	6.56
3/9/23 14:00	144.40	8.02
3/9/23 15:00	152.20	10.50
3/9/23 16:00	159.10	12.18
3/9/23 17:00	181.30	12.91
3/9/23 18:00	178.40	16.23
3/9/23 19:00	183.90	16.02
3/9/23 20:00	164.10	12.31
3/9/23 21:00	159.50	17.20
3/9/23 22:00	161.80	19.80
3/9/23 23:00	182.80	17.99
3/10/23 0:00	185.90	16.90
3/10/23 1:00	181.60	13.35
3/10/23 2:00	187.40	10.84
3/10/23 3:00	182.60	12.65
3/10/23 4:00	165.20	15.00
3/10/23 5:00	155.00	13.79
3/10/23 6:00	144.50	13.82
3/10/23 7:00	149.80	10.96
3/10/23 8:00	151.00	13.96
3/10/23 9:00	171.10	11.07
3/10/23 10:00	160.90	13.28
3/10/23 11:00	154.10	10.30
3/10/23 12:00	143.90	10.68
3/10/23 13:00	126.00	9.59
3/10/23 14:00	104.70	10.59
3/10/23 15:00	83.10	9.52
3/10/23 16:00	74.03	9.22
3/10/23 17:00	98.10	10.77
3/10/23 18:00	129.40	13.19
3/10/23 19:00	126.60	12.68
3/10/23 20:00	146.40	11.33
3/10/23 21:00	163.30	11.34
3/10/23 22:00	172.80	8.56
3/10/23 23:00	169.90	6.79
3/11/23 0:00	189.00	6.37
3/11/23 1:00	201.30	8.34
3/11/23 2:00	207.30	9.06
3/11/23 3:00	210.60	8.54
3/11/23 4:00	217.40	5.63
3/11/23 5:00	218.10	6.12
3/11/23 6:00	214.20	7.01
3/11/23 7:00	245.00	5.51
3/11/23 8:00	240.40	7.47
3/11/23 9:00	262.60	6.58
3/11/23 10:00	250.10	7.16
3/11/23 11:00	286.00	5.30
3/11/23 12:00	295.70	9.32
3/11/23 13:00	295.70	9.11
3/11/23 14:00	279.70	12.01
3/11/23 15:00	282.40	18.05
3/11/23 16:00	281.20	18.16
3/11/23 17:00	287.60	21.26
3/11/23 18:00	290.60	18.62
3/11/23 19:00	295.10	18.24
3/11/23 20:00	295.10	14.75
3/11/23 21:00	288.80	11.85
3/11/23 22:00	288.10	11.74
3/11/23 23:00	279.00	11.76
3/12/23 0:00	256.80	8.30
3/12/23 1:00	240.10	5.26
3/12/23 2:00	243.60	10.07
3/12/23 3:00	249.60	14.86
3/12/23 4:00	238.60	18.14
3/12/23 5:00	242.90	19.30
3/12/23 6:00	242.30	18.77
3/12/23 7:00	242.30	20.51
3/12/23 8:00	234.00	20.79
3/12/23 9:00	228.10	19.29
3/12/23 10:00	230.60	19.33
3/12/23 11:00	245.90	19.42
3/12/23 12:00	259.90	18.93
3/12/23 13:00	270.50	18.75
3/12/23 14:00	275.90	20.11
3/12/23 15:00	278.50	18.33
3/12/23 16:00	288.20	20.96
3/12/23 17:00	283.80	20.16
3/12/23 18:00	295.50	18.21
3/12/23 19:00	294.30	14.37

Date	Wind Direction (°)	Wind speed (km/h)
3/12/23 20:00	274.80	8.66
3/12/23 21:00	275.60	7.33
3/12/23 22:00	266.40	8.50
3/12/23 23:00	267.10	9.07
3/13/23 0:00	263.60	9.14
3/13/23 1:00	278.50	9.99
3/13/23 2:00	280.90	8.92
3/13/23 3:00	287.20	10.20
3/13/23 4:00	289.90	6.94
3/13/23 5:00	285.50	6.53
3/13/23 6:00	314.20	7.40
3/13/23 7:00	304.30	6.86
3/13/23 8:00	327.10	3.23
3/13/23 9:00	211.60	4.39
3/13/23 10:00	233.20	3.90
3/13/23 11:00	215.60	5.35
3/13/23 12:00	214.30	5.54
3/13/23 13:00	205.70	3.47
3/13/23 14:00	237.20	11.58
3/13/23 15:00	232.80	10.43
3/13/23 16:00	237.60	4.01
3/13/23 17:00	261.70	4.83
3/13/23 18:00	273.80	8.26
3/13/23 19:00	285.30	7.99
3/13/23 20:00	285.30	3.17
3/13/23 21:00	238.50	2.31
3/13/23 22:00	223.40	0.52
3/13/23 23:00	221.80	2.66
3/14/23 0:00	226.40	5.19
3/14/23 1:00	215.60	5.01
3/14/23 2:00	219.00	2.45
3/14/23 3:00	234.80	2.90
3/14/23 4:00	248.50	0.41
3/14/23 5:00	106.90	2.19
3/14/23 6:00	99.70	3.47
3/14/23 7:00	114.80	2.91
3/14/23 8:00	139.20	2.67
3/14/23 9:00	117.30	3.56
3/14/23 10:00	138.70	3.07
3/14/23 11:00	134.70	3.24
3/14/23 12:00	165.60	3.23
3/14/23 13:00	126.50	2.65
3/14/23 14:00	87.20	3.93
3/14/23 15:00	64.10	5.17
3/14/23 16:00	48.30	6.15
3/14/23 17:00	58.13	6.29
3/14/23 18:00	93.10	6.35
3/14/23 19:00	82.40	7.94
3/14/23 20:00	70.40	7.46
3/14/23 21:00	94.10	6.93
3/14/23 22:00	121.00	9.58
3/14/23 23:00	104.90	12.87
3/15/23 0:00	126.70	10.23
3/15/23 1:00	133.60	8.48
3/15/23 2:00	98.10	7.35
3/15/23 3:00	94.80	8.11
3/15/23 4:00	99.60	7.69
3/15/23 5:00	100.50	9.05
3/15/23 6:00	98.10	7.86
3/15/23 7:00	82.50	5.84
3/15/23 8:00	89.80	7.46
3/15/23 9:00	104.40	6.44
3/15/23 10:00	106.80	6.74
3/15/23 11:00	110.80	5.93
3/15/23 12:00	117.70	8.71
3/15/23 13:00	106.40	8.72
3/15/23 14:00	119.80	13.51
3/15/23 15:00	106.80	13.23
3/15/23 16:00	112.80	10.40
3/15/23 17:00	115.00	13.15
3/15/23 18:00	111.50	13.07
3/15/23 19:00	115.60	6.77
3/15/23 20:00	142.20	15.69
3/15/23 21:00	160.70	14.88
3/15/23 22:00	172.80	13.64
3/15/23 23:00	171.50	13.49
3/16/23 0:00	174.10	9.03
3/16/23 1:00	172.60	10.78
3/16/23 2:00	171.60	12.24
3/16/23 3:00	172.60	14.23
3/16/23 4:00	174.00	12.78

Date	Wind Direction (°)	Wind speed (km/h)
3/16/23 5:00	173.90	11.40
3/16/23 6:00	180.90	13.46
3/16/23 7:00	185.40	13.85
3/16/23 8:00	190.00	13.27
3/16/23 9:00	201.80	11.43
3/16/23 10:00	206.60	10.03
3/16/23 11:00	191.70	11.21
3/16/23 12:00	187.30	13.21
3/16/23 13:00	173.90	10.28
3/16/23 14:00	146.50	7.80
3/16/23 15:00	148.40	11.10
3/16/23 16:00	165.50	13.15
3/16/23 17:00	165.10	8.40
3/16/23 18:00	179.80	12.85
3/16/23 19:00	175.30	12.67
3/16/23 20:00	155.50	9.33
3/16/23 21:00	186.70	11.68
3/16/23 22:00	205.30	13.60
3/16/23 23:00	209.60	11.05
3/17/23 0:00	211.00	9.56
3/17/23 1:00	202.90	8.93
3/17/23 2:00	165.20	8.58
3/17/23 3:00	149.40	5.66
3/17/23 4:00	128.80	5.97
3/17/23 5:00	95.80	6.36
3/17/23 6:00	87.40	7.73
3/17/23 7:00	82.10	8.29
3/17/23 8:00	84.70	8.95
3/17/23 9:00	86.40	8.55
3/17/23 10:00	88.20	9.09
3/17/23 11:00	64.03	10.40
3/17/23 12:00	48.87	9.50
3/17/23 13:00	70.45	7.96
3/17/23 14:00	65.03	9.51
3/17/23 15:00	41.74	12.48
3/17/23 16:00	55.25	13.94
3/17/23 17:00	51.85	14.95
3/17/23 18:00	65.78	14.61
3/17/23 19:00	75.63	15.53
3/17/23 20:00	72.09	14.47
3/17/23 21:00	76.52	12.18
3/17/23 22:00	98.30	8.96
3/17/23 23:00	83.50	9.84
3/18/23 0:00	66.69	11.51
3/18/23 1:00	65.31	11.58
3/18/23 2:00	67.67	8.96
3/18/23 3:00	60.58	11.82
3/18/23 4:00	75.70	11.92
3/18/23 5:00	86.20	10.02
3/18/23 6:00	83.70	10.20
3/18/23 7:00	87.50	9.73
3/18/23 8:00	77.57	9.97
3/18/23 9:00	79.59	9.13
3/18/23 10:00	68.28	7.85
3/18/23 11:00	79.67	10.84
3/18/23 12:00	90.90	12.24
3/18/23 13:00	96.80	11.41
3/18/23 14:00	89.90	12.33
3/18/23 15:00	85.90	14.60
3/18/23 16:00	87.10	16.75
3/18/23 17:00	80.90	14.86
3/18/23 18:00	88.80	15.40
3/18/23 19:00	80.90	12.01
3/18/23 20:00	76.64	10.49
3/18/23 21:00	88.60	12.35
3/18/23 22:00	99.10	9.73
3/18/23 23:00	96.60	8.73
3/19/23 0:00	93.30	7.89
3/19/23 1:00	120.60	6.34
3/19/23 2:00	127.10	6.34
3/19/23 3:00	90.30	7.55
3/19/23 4:00	96.00	9.77
3/19/23 5:00	123.20	7.91
3/19/23 6:00	132.60	7.08
3/19/23 7:00	137.80	7.33
3/19/23 8:00	117.50	6.81
3/19/23 9:00	104.80	8.11
3/19/23 10:00	127.00	8.34
3/19/23 11:00	125.90	6.99
3/19/23 12:00	105.90	10.21
3/19/23 13:00	100.10	8.25

Date	Wind Direction (°)	Wind speed (km/h)
3/19/23 14:00	95.90	9.58
3/19/23 15:00	104.10	10.43
3/19/23 16:00	101.60	9.46
3/19/23 17:00	91.60	8.00
3/19/23 18:00	91.00	10.59
3/19/23 19:00	98.30	10.45
3/19/23 20:00	88.60	10.39
3/19/23 21:00	93.70	11.67
3/19/23 22:00	100.00	10.84
3/19/23 23:00	96.40	9.44
3/20/23 0:00	85.80	6.70
3/20/23 1:00	69.56	8.32
3/20/23 2:00	85.80	9.03
3/20/23 3:00	78.93	8.91
3/20/23 4:00	68.88	9.18
3/20/23 5:00	58.50	10.67
3/20/23 6:00	46.51	13.73
3/20/23 7:00	77.74	12.62
3/20/23 8:00	76.47	12.25
3/20/23 9:00	70.50	14.16
3/20/23 10:00	71.83	12.79
3/20/23 11:00	76.23	12.05
3/20/23 12:00	74.71	15.01
3/20/23 13:00	83.90	15.95
3/20/23 14:00	89.20	17.13
3/20/23 15:00	91.20	15.19
3/20/23 16:00	90.80	17.92
3/20/23 17:00	91.90	17.99
3/20/23 18:00	91.80	16.92
3/20/23 19:00	91.70	14.80
3/20/23 20:00	90.60	17.11
3/20/23 21:00	92.50	13.47
3/20/23 22:00	95.20	13.22
3/20/23 23:00	105.50	13.30
3/21/23 0:00	108.90	12.39
3/21/23 1:00	96.40	11.45
3/21/23 2:00	98.80	14.52
3/21/23 3:00	99.70	13.42
3/21/23 4:00	107.50	10.07
3/21/23 5:00	112.50	12.49
3/21/23 6:00	114.50	8.79
3/21/23 7:00	96.00	10.49
3/21/23 8:00	101.60	9.45
3/21/23 9:00	106.20	8.02
3/21/23 10:00	114.90	8.85
3/21/23 11:00	116.10	9.13
3/21/23 12:00	119.60	10.97
3/21/23 13:00	120.30	10.43
3/21/23 14:00	124.30	12.65
3/21/23 15:00	108.60	13.77
3/21/23 16:00	84.90	7.95
3/21/23 17:00	88.70	7.47
3/21/23 18:00	96.10	8.75
3/21/23 19:00	102.20	11.65
3/21/23 20:00	106.60	11.59
3/21/23 21:00	117.60	10.72
3/21/23 22:00	117.30	9.48
3/21/23 23:00	105.70	9.26
3/22/23 0:00	115.80	9.38
3/22/23 1:00	96.70	10.61
3/22/23 2:00	106.60	9.45
3/22/23 3:00	93.50	8.28
3/22/23 4:00	92.00	7.67
3/22/23 5:00	98.20	8.55
3/22/23 6:00	95.80	8.28
3/22/23 7:00	90.50	8.47
3/22/23 8:00	79.57	10.49
3/22/23 9:00	83.00	14.58
3/22/23 10:00	82.10	11.40
3/22/23 11:00	81.50	12.56
3/22/23 12:00	73.94	13.97
3/22/23 13:00	78.33	17.78
3/22/23 14:00	79.97	21.12
3/22/23 15:00	71.39	17.64
3/22/23 16:00	71.92	19.08
3/22/23 17:00	80.30	20.55
3/22/23 18:00	69.56	20.49
3/22/23 19:00	65.62	18.70
3/22/23 20:00	55.43	21.62
3/22/23 21:00	61.02	17.99
3/22/23 22:00	61.93	18.17

Date	Wind Direction (°)	Wind speed (km/h)
3/22/23 23:00	55.96	20.78
3/23/23 0:00	56.87	21.40
3/23/23 1:00	45.25	21.14
3/23/23 2:00	45.71	19.97
3/23/23 3:00	39.82	19.99
3/23/23 4:00	42.99	20.32
3/23/23 5:00	33.37	17.33
3/23/23 6:00	32.50	25.02
3/23/23 7:00	44.16	19.22
3/23/23 8:00	34.60	14.06
3/23/23 9:00	34.88	19.83
3/23/23 10:00	32.82	15.33
3/23/23 11:00	22.26	17.68
3/23/23 12:00	20.92	15.72
3/23/23 13:00	9.70	16.32
3/23/23 14:00	357.10	14.37
3/23/23 15:00	346.90	14.05
3/23/23 16:00	340.10	14.15
3/23/23 17:00	338.80	15.14
3/23/23 18:00	314.40	10.59
3/23/23 19:00	320.90	13.30
3/23/23 20:00	310.90	13.29
3/23/23 21:00	296.80	12.92
3/23/23 22:00	309.70	13.92
3/23/23 23:00	314.70	11.46
3/24/23 0:00	310.00	15.10
3/24/23 1:00	307.80	12.91
3/24/23 2:00	301.90	10.53
3/24/23 3:00	302.30	14.16
3/24/23 4:00	306.80	13.77
3/24/23 5:00	309.10	10.98
3/24/23 6:00	311.90	12.31
3/24/23 7:00	323.50	12.03
3/24/23 8:00	332.80	16.42
3/24/23 9:00	344.20	14.94
3/24/23 10:00	0.11	13.85
3/24/23 11:00	21.98	13.89
3/24/23 12:00	24.22	11.77
3/24/23 13:00	19.11	9.48
3/24/23 14:00	6.27	12.79
3/24/23 15:00	7.66	13.26
3/24/23 16:00	13.40	16.20
3/24/23 17:00	15.52	16.31
3/24/23 18:00	12.19	14.52
3/24/23 19:00	10.35	14.29
3/24/23 20:00	18.40	15.16
3/24/23 21:00	24.67	13.62
3/24/23 22:00	33.57	11.83
3/24/23 23:00	35.54	13.29
3/25/23 0:00	45.35	16.14
3/25/23 1:00	41.36	14.75
3/25/23 2:00	44.02	14.71
3/25/23 3:00	37.49	13.32
3/25/23 4:00	36.14	10.90
3/25/23 5:00	38.83	12.28
3/25/23 6:00	35.76	8.57
3/25/23 7:00	20.64	7.88
3/25/23 8:00	10.34	8.42
3/25/23 9:00	10.96	9.25
3/25/23 10:00	29.20	9.31
3/25/23 11:00	29.54	8.81
3/25/23 12:00	46.68	12.23
3/25/23 13:00	40.71	11.52
3/25/23 14:00	36.55	10.33
3/25/23 15:00	44.92	9.77
3/25/23 16:00	48.14	9.26
3/25/23 17:00	35.35	9.53
3/25/23 18:00	31.11	10.15
3/25/23 19:00	28.87	11.54
3/25/23 20:00	38.46	9.89
3/25/23 21:00	33.34	8.36
3/25/23 22:00	49.08	8.86
3/25/23 23:00	43.26	10.01
3/26/23 0:00	40.29	9.36
3/26/23 1:00	29.52	8.59
3/26/23 2:00	20.99	7.03
3/26/23 3:00	22.43	6.43
3/26/23 4:00	358.00	7.17
3/26/23 5:00	357.60	7.66
3/26/23 6:00	353.60	6.18
3/26/23 7:00	356.00	9.00

Date	Wind Direction (°)	Wind speed (km/h)
3/26/23 8:00	353.20	8.33
3/26/23 9:00	0.10	7.25
3/26/23 10:00	332.60	6.85
3/26/23 11:00	332.10	7.67
3/26/23 12:00	329.00	7.80
3/26/23 13:00	318.40	11.19
3/26/23 14:00	319.40	14.10
3/26/23 15:00	310.90	14.06
3/26/23 16:00	306.10	13.50
3/26/23 17:00	303.50	14.46
3/26/23 18:00	293.60	10.14
3/26/23 19:00	291.70	12.56
3/26/23 20:00	288.50	10.28
3/26/23 21:00	297.20	11.03
3/26/23 22:00	287.40	10.70
3/26/23 23:00	283.90	10.62
3/27/23 0:00	280.20	11.68
3/27/23 1:00	280.30	12.56
3/27/23 2:00	290.50	11.97
3/27/23 3:00	304.10	10.31
3/27/23 4:00	314.10	9.14
3/27/23 5:00	311.90	9.13
3/27/23 6:00	311.20	9.35
3/27/23 7:00	331.40	7.35
3/27/23 8:00	328.30	6.10
3/27/23 9:00	339.90	6.24
3/27/23 10:00	343.70	6.06
3/27/23 11:00	11.52	4.05
3/27/23 12:00	18.80	3.20
3/27/23 13:00	20.25	4.25
3/27/23 14:00	38.97	2.85
3/27/23 15:00	19.07	2.68
3/27/23 16:00	37.11	3.21
3/27/23 17:00	28.86	3.16
3/27/23 18:00	30.37	4.12
3/27/23 19:00	73.90	3.46
3/27/23 20:00	88.30	0.22
3/27/23 21:00	88.30	1.06
3/27/23 22:00	88.50	1.80
3/27/23 23:00	89.40	2.67
3/28/23 0:00	90.40	4.11
3/28/23 1:00	92.80	4.86
3/28/23 2:00	214.10	11.60
3/28/23 3:00	224.30	7.97
3/28/23 4:00	222.80	9.23
3/28/23 5:00	227.30	10.10
3/28/23 6:00	232.80	13.96
3/28/23 7:00	233.20	18.09
3/28/23 8:00	231.60	17.53
3/28/23 9:00	233.70	23.19
3/28/23 10:00	226.20	19.08
3/28/23 11:00	223.80	18.66
3/28/23 12:00	212.50	22.04
3/28/23 13:00	221.00	26.60
3/28/23 14:00	226.80	34.92
3/28/23 15:00	225.80	38.52
3/28/23 16:00	228.80	39.85
3/28/23 17:00	229.80	36.79
3/28/23 18:00	239.80	31.93
3/28/23 19:00	248.20	28.25
3/28/23 20:00	268.60	26.89
3/28/23 21:00	293.90	25.37
3/28/23 22:00	287.90	25.50
3/28/23 23:00	299.50	28.77
3/29/23 0:00	325.40	32.18
3/29/23 1:00	347.10	36.25
3/29/23 2:00	346.70	34.42
3/29/23 3:00	341.40	30.17
3/29/23 4:00	337.60	27.54
3/29/23 5:00	337.40	25.42
3/29/23 6:00	330.60	27.12
3/29/23 7:00	318.80	27.74
3/29/23 8:00	327.20	32.90
3/29/23 9:00	330.80	30.96
3/29/23 10:00	331.10	29.45
3/29/23 11:00	323.00	27.01
3/29/23 12:00	321.30	28.07
3/29/23 13:00	321.10	31.14
3/29/23 14:00	323.20	34.09
3/29/23 15:00	327.60	33.12
3/29/23 16:00	324.00	30.24

Date	Wind Direction (°)	Wind speed (km/h)
3/29/23 17:00	319.40	29.34
3/29/23 18:00	316.40	29.52
3/29/23 19:00	317.00	26.14
3/29/23 20:00	320.90	24.31
3/29/23 21:00	325.80	26.97
3/29/23 22:00	324.60	24.85
3/29/23 23:00	311.10	18.23
3/30/23 0:00	308.20	19.36
3/30/23 1:00	315.10	21.02
3/30/23 2:00	308.20	19.93
3/30/23 3:00	302.20	19.59
3/30/23 4:00	311.70	19.20
3/30/23 5:00	317.50	20.91
3/30/23 6:00	322.80	20.61
3/30/23 7:00	327.00	20.75
3/30/23 8:00	322.10	19.05
3/30/23 9:00	325.60	18.88
3/30/23 10:00	331.50	18.15
3/30/23 11:00	337.50	17.02
3/30/23 12:00	329.60	17.05
3/30/23 13:00	331.70	18.20
3/30/23 14:00	336.70	17.26
3/30/23 15:00	339.90	16.49
3/30/23 16:00	347.50	17.17
3/30/23 17:00	349.30	13.86
3/30/23 18:00	356.80	11.84
3/30/23 19:00	11.53	12.19
3/30/23 20:00	33.31	10.58
3/30/23 21:00	49.42	9.86
3/30/23 22:00	47.91	8.60
3/30/23 23:00	45.13	10.55
3/31/23 0:00	57.37	11.38
3/31/23 1:00	75.04	7.68
3/31/23 2:00	78.89	8.81
3/31/23 3:00	71.18	8.97
3/31/23 4:00	73.58	8.87
3/31/23 5:00	77.50	8.27
3/31/23 6:00	68.95	8.63
3/31/23 7:00	58.79	8.84
3/31/23 8:00	65.43	8.82
3/31/23 9:00	75.81	10.99
3/31/23 10:00	88.90	12.20
3/31/23 11:00	98.50	19.00
3/31/23 12:00	99.90	19.01
3/31/23 13:00	96.80	22.62
3/31/23 14:00	97.30	24.40
3/31/23 15:00	100.80	22.92
3/31/23 16:00	96.70	21.83
3/31/23 17:00	97.40	19.99
3/31/23 18:00	96.20	24.13
3/31/23 19:00	98.10	21.33
3/31/23 20:00	96.50	16.88
3/31/23 21:00	88.50	15.92
3/31/23 22:00	86.30	18.77
3/31/23 23:00	93.20	12.04
4/1/23 0:00	107.30	13.01
4/1/23 1:00	108.50	13.35
4/1/23 2:00	99.00	13.55
4/1/23 3:00	103.50	13.09
4/1/23 4:00	99.90	15.24
4/1/23 5:00	92.90	17.56
4/1/23 6:00	90.10	15.01
4/1/23 7:00	91.00	17.38
4/1/23 8:00	95.90	19.07
4/1/23 9:00	101.30	20.35
4/1/23 10:00	94.20	27.98
4/1/23 11:00	94.90	32.08
4/1/23 12:00	99.50	32.29
4/1/23 13:00	102.70	29.99
4/1/23 14:00	103.80	28.11
4/1/23 15:00	100.00	29.23
4/1/23 16:00	99.40	30.42
4/1/23 17:00	96.00	29.38
4/1/23 18:00	96.30	29.70
4/1/23 19:00	95.30	28.73
4/1/23 20:00	97.20	32.26
4/1/23 21:00	98.20	30.20
4/1/23 22:00	97.60	25.03
4/1/23 23:00	101.80	29.05
4/2/23 0:00	103.50	28.08
4/2/23 1:00	104.10	26.65

Date	Wind Direction (°)	Wind speed (km/h)
4/2/23 2:00	108.40	27.53
4/2/23 3:00	103.10	30.92
4/2/23 4:00	105.80	33.12
4/2/23 5:00	107.30	35.75
4/2/23 6:00	112.50	36.04
4/2/23 7:00	114.40	33.77
4/2/23 8:00	115.80	29.81
4/2/23 9:00	113.30	32.65
4/2/23 10:00	115.60	34.31
4/2/23 11:00	116.50	34.24
4/2/23 12:00	114.10	35.68
4/2/23 13:00	110.10	37.51
4/2/23 14:00	111.60	37.66
4/2/23 15:00	113.90	36.68
4/2/23 16:00	115.70	37.22
4/2/23 17:00	123.50	33.12
4/2/23 18:00	125.90	31.57
4/2/23 19:00	120.20	28.04
4/2/23 20:00	122.70	26.64
4/2/23 21:00	122.40	23.91
4/2/23 22:00	116.30	18.54
4/2/23 23:00	111.70	13.34
4/3/23 0:00	111.70	18.05
4/3/23 1:00	107.30	14.07
4/3/23 2:00	105.90	14.49
4/3/23 3:00	96.80	12.83
4/3/23 4:00	96.40	11.25
4/3/23 5:00	97.60	9.40
4/3/23 6:00	90.80	10.30
4/3/23 7:00	86.90	10.37
4/3/23 8:00	93.40	13.26
4/3/23 9:00	89.10	11.82
4/3/23 10:00	85.00	12.32
4/3/23 11:00	81.60	13.91
4/3/23 12:00	81.90	13.62
4/3/23 13:00	87.50	14.70
4/3/23 14:00	89.10	13.73
4/3/23 15:00	91.60	12.19
4/3/23 16:00	83.50	9.90
4/3/23 17:00	77.64	8.57
4/3/23 18:00	65.50	10.28
4/3/23 19:00	73.91	10.56
4/3/23 20:00	58.48	7.26
4/3/23 21:00	43.93	7.70
4/3/23 22:00	60.37	8.94
4/3/23 23:00	31.85	5.53
4/4/23 0:00	12.55	5.06
4/4/23 1:00	332.60	7.91
4/4/23 2:00	348.40	8.55
4/4/23 3:00	340.60	8.73
4/4/23 4:00	341.00	7.72
4/4/23 5:00	339.60	7.94
4/4/23 6:00	338.10	6.10
4/4/23 7:00	313.90	6.66
4/4/23 8:00	308.60	7.03
4/4/23 9:00	313.90	5.05
4/4/23 10:00	307.60	4.00
4/4/23 11:00	265.10	4.77
4/4/23 12:00	227.80	2.53
4/4/23 13:00	238.90	4.01
4/4/23 14:00	253.10	4.89
4/4/23 15:00	210.20	8.97
4/4/23 16:00	198.20	9.12
4/4/23 17:00	225.50	9.34
4/4/23 18:00	225.40	13.47
4/4/23 19:00	205.70	13.42
4/4/23 20:00	202.10	13.25
4/4/23 21:00	206.10	12.64
4/4/23 22:00	211.70	13.72
4/4/23 23:00	202.20	10.53
4/5/23 0:00	206.00	16.08
4/5/23 1:00	216.90	9.36
4/5/23 2:00	200.90	11.18
4/5/23 3:00	188.80	14.18
4/5/23 4:00	182.10	13.91
4/5/23 5:00	181.00	14.30
4/5/23 6:00	171.90	12.44
4/5/23 7:00	163.30	11.16
4/5/23 8:00	154.60	15.18
4/5/23 9:00	151.70	12.04
4/5/23 10:00	134.90	12.72

Date	Wind Direction (°)	Wind speed (km/h)
4/5/23 11:00	155.50	5.22
4/5/23 12:00	154.60	11.16
4/5/23 13:00	145.90	17.58
4/5/23 14:00	150.80	15.16
4/5/23 15:00	160.30	13.64
4/5/23 16:00	151.40	15.90
4/5/23 17:00	142.90	16.82
4/5/23 18:00	139.30	17.61
4/5/23 19:00	142.30	18.31
4/5/23 20:00	142.20	16.95
4/5/23 21:00	152.00	18.76
4/5/23 22:00	158.20	15.87
4/5/23 23:00	185.10	9.04
4/6/23 0:00	164.20	11.37
4/6/23 1:00	152.60	14.48
4/6/23 2:00	164.20	11.21
4/6/23 3:00	168.30	10.50
4/6/23 4:00	173.40	7.46
4/6/23 5:00	173.20	8.29
4/6/23 6:00	192.60	9.85
4/6/23 7:00	181.50	16.48
4/6/23 8:00	180.10	18.27
4/6/23 9:00	185.60	17.91
4/6/23 10:00	181.50	15.39
4/6/23 11:00	174.70	14.31
4/6/23 12:00	168.70	13.69
4/6/23 13:00	163.30	16.70
4/6/23 14:00	156.00	18.53
4/6/23 15:00	149.70	18.66
4/6/23 16:00	152.60	20.61
4/6/23 17:00	155.20	22.59
4/6/23 18:00	153.00	24.49
4/6/23 19:00	154.00	22.63
4/6/23 20:00	153.80	20.22
4/6/23 21:00	157.70	19.66
4/6/23 22:00	166.90	15.88
4/6/23 23:00	187.40	12.82
4/7/23 0:00	163.90	19.99
4/7/23 1:00	153.90	19.18
4/7/23 2:00	158.10	20.40
4/7/23 3:00	160.30	18.23
4/7/23 4:00	166.80	21.91
4/7/23 5:00	167.00	21.19
4/7/23 6:00	176.40	20.61
4/7/23 7:00	181.40	20.74
4/7/23 8:00	183.30	16.24
4/7/23 9:00	165.20	13.22
4/7/23 10:00	145.00	16.52
4/7/23 11:00	159.80	22.71
4/7/23 12:00	166.70	23.17
4/7/23 13:00	156.10	22.04
4/7/23 14:00	150.30	18.84
4/7/23 15:00	152.80	18.55
4/7/23 16:00	154.50	21.21
4/7/23 17:00	156.80	22.15
4/7/23 18:00	162.40	22.81
4/7/23 19:00	159.60	20.16
4/7/23 20:00	164.20	23.75
4/7/23 21:00	185.30	20.83
4/7/23 22:00	196.60	13.85
4/7/23 23:00	197.00	17.18
4/8/23 0:00	194.80	13.17
4/8/23 1:00	193.70	12.59
4/8/23 2:00	194.80	16.08
4/8/23 3:00	197.30	20.14
4/8/23 4:00	194.20	20.73
4/8/23 5:00	194.30	23.48
4/8/23 6:00	198.10	24.60
4/8/23 7:00	194.90	26.02
4/8/23 8:00	202.70	23.32
4/8/23 9:00	199.00	21.96
4/8/23 10:00	201.40	15.03
4/8/23 11:00	205.10	14.23
4/8/23 12:00	189.40	21.57
4/8/23 13:00	197.80	27.45
4/8/23 14:00	211.00	26.60
4/8/23 15:00	229.40	27.09
4/8/23 16:00	238.30	27.93
4/8/23 17:00	234.10	30.46
4/8/23 18:00	235.30	27.87
4/8/23 19:00	242.50	23.43

Date	Wind Direction (°)	Wind speed (km/h)
4/8/23 20:00	272.00	18.93
4/8/23 21:00	307.80	18.95
4/8/23 22:00	304.60	18.27
4/8/23 23:00	326.20	18.18
4/9/23 0:00	350.40	20.17
4/9/23 1:00	351.50	21.09
4/9/23 2:00	351.40	21.22
4/9/23 3:00	345.90	19.48
4/9/23 4:00	349.30	18.93
4/9/23 5:00	338.90	19.54
4/9/23 6:00	338.50	19.64
4/9/23 7:00	332.10	18.56
4/9/23 8:00	326.70	17.99
4/9/23 9:00	333.50	17.68
4/9/23 10:00	307.30	16.20
4/9/23 11:00	326.80	18.72
4/9/23 12:00	335.80	18.01
4/9/23 13:00	336.00	17.33
4/9/23 14:00	335.80	16.50
4/9/23 15:00	329.40	13.98
4/9/23 16:00	339.30	13.14
4/9/23 17:00	355.20	10.03
4/9/23 18:00	32.70	13.58
4/9/23 19:00	7.50	7.69
4/9/23 20:00	22.19	8.86
4/9/23 21:00	67.78	17.03
4/9/23 22:00	95.40	16.97
4/9/23 23:00	104.50	22.71
4/10/23 0:00	110.80	24.87
4/10/23 1:00	107.50	25.60
4/10/23 2:00	112.10	27.46
4/10/23 3:00	109.40	31.10
4/10/23 4:00	110.30	33.19
4/10/23 5:00	102.70	32.40
4/10/23 6:00	104.20	31.32
4/10/23 7:00	103.00	33.12
4/10/23 8:00	103.50	37.62
4/10/23 9:00	100.50	40.68
4/10/23 10:00	99.20	47.23
4/10/23 11:00	96.60	46.94
4/10/23 12:00	96.40	42.95
4/10/23 13:00	94.80	40.54
4/10/23 14:00	95.20	36.54
4/10/23 15:00	92.60	36.18
4/10/23 16:00	90.00	36.65
4/10/23 17:00	89.50	35.57
4/10/23 18:00	82.30	34.60
4/10/23 19:00	83.60	32.76
4/10/23 20:00	86.20	28.98
4/10/23 21:00	86.00	26.55
4/10/23 22:00	79.37	18.86
4/10/23 23:00	91.10	20.94
4/11/23 0:00	89.50	24.67
4/11/23 1:00	89.50	36.40
4/11/23 2:00	79.84	30.74
4/11/23 3:00	80.60	30.60
4/11/23 4:00	73.31	28.36
4/11/23 5:00	76.23	28.13
4/11/23 6:00	84.80	35.68
4/11/23 7:00	84.10	40.10
4/11/23 8:00	81.70	41.11
4/11/23 9:00	88.90	42.19
4/11/23 10:00	95.40	43.60
4/11/23 11:00	90.60	43.92
4/11/23 12:00	95.10	46.40
4/11/23 13:00	96.20	45.68
4/11/23 14:00	94.20	43.42
4/11/23 15:00	93.20	41.76
4/11/23 16:00	97.00	43.70
4/11/23 17:00	93.70	41.22
4/11/23 18:00	86.80	31.25
4/11/23 19:00	90.60	37.55
4/11/23 20:00	83.80	33.55
4/11/23 21:00	77.49	29.63
4/11/23 22:00	76.12	29.63
4/11/23 23:00	73.23	30.78
4/12/23 0:00	74.69	30.56
4/12/23 1:00	76.15	32.65
4/12/23 2:00	74.79	31.28
4/12/23 3:00	78.24	32.11
4/12/23 4:00	83.90	33.16

Date	Wind Direction (°)	Wind speed (km/h)
4/12/23 5:00	82.70	28.94
4/12/23 6:00	81.20	24.05
4/12/23 7:00	77.46	25.91
4/12/23 8:00	70.08	23.84
4/12/23 9:00	66.64	24.90
4/12/23 10:00	75.29	27.61
4/12/23 11:00	75.36	23.81
4/12/23 12:00	80.00	22.39
4/12/23 13:00	79.87	20.38
4/12/23 14:00	67.59	19.69
4/12/23 15:00	74.94	20.29
4/12/23 16:00	74.58	16.97
4/12/23 17:00	67.86	16.51
4/12/23 18:00	64.19	15.62
4/12/23 19:00	70.46	17.66
4/12/23 20:00	81.80	16.80
4/12/23 21:00	78.94	16.53
4/12/23 22:00	69.27	16.19
4/12/23 23:00	64.60	13.25
4/13/23 0:00	66.53	12.12
4/13/23 1:00	65.58	11.45
4/13/23 2:00	69.73	9.01
4/13/23 3:00	67.61	9.25
4/13/23 4:00	74.66	10.04
4/13/23 5:00	69.97	6.37
4/13/23 6:00	69.63	5.72
4/13/23 7:00	74.81	4.69
4/13/23 8:00	65.88	2.98
4/13/23 9:00	63.19	7.26
4/13/23 10:00	72.88	14.56
4/13/23 11:00	79.03	13.27
4/13/23 12:00	78.03	14.14
4/13/23 13:00	88.40	15.16
4/13/23 14:00	91.90	14.14
4/13/23 15:00	93.40	13.70
4/13/23 16:00	91.40	14.73
4/13/23 17:00	93.70	16.38
4/13/23 18:00	99.90	17.26
4/13/23 19:00	103.50	19.17
4/13/23 20:00	104.60	17.22
4/13/23 21:00	102.90	15.90
4/13/23 22:00	107.10	17.16
4/13/23 23:00	118.20	18.87
4/14/23 0:00	114.00	19.34
4/14/23 1:00	115.70	20.12
4/14/23 2:00	108.10	18.73
4/14/23 3:00	108.00	20.87
4/14/23 4:00	106.00	20.78
4/14/23 5:00	106.30	21.78
4/14/23 6:00	108.20	21.42
4/14/23 7:00	104.20	22.46
4/14/23 8:00	104.10	23.06
4/14/23 9:00	104.40	23.34
4/14/23 10:00	105.70	22.35
4/14/23 11:00	101.20	24.81
4/14/23 12:00	103.00	26.42
4/14/23 13:00	103.10	28.03
4/14/23 14:00	105.30	29.63
4/14/23 15:00	108.40	28.30
4/14/23 16:00	104.60	28.21
4/14/23 17:00	107.20	27.75
4/14/23 18:00	111.20	28.52
4/14/23 19:00	113.10	27.50
4/14/23 20:00	114.30	26.02
4/14/23 21:00	108.20	23.81
4/14/23 22:00	105.00	24.02
4/14/23 23:00	103.70	27.02
4/15/23 0:00	97.90	28.59
4/15/23 1:00	98.80	27.31
4/15/23 2:00	107.00	25.79
4/15/23 3:00	108.10	25.11
4/15/23 4:00	106.30	25.47
4/15/23 5:00	108.20	25.28
4/15/23 6:00	113.70	23.46
4/15/23 7:00	116.00	18.78
4/15/23 8:00	117.40	23.78
4/15/23 9:00	120.40	20.46
4/15/23 10:00	122.50	21.48
4/15/23 11:00	125.70	23.02
4/15/23 12:00	129.70	23.64
4/15/23 13:00	133.20	19.92

Date	Wind Direction (°)	Wind speed (km/h)
4/15/23 14:00	134.10	22.93
4/15/23 15:00	125.00	20.61
4/15/23 16:00	123.40	21.36
4/15/23 17:00	123.20	22.53
4/15/23 18:00	132.30	22.94
4/15/23 19:00	135.40	21.53
4/15/23 20:00	136.90	18.87
4/15/23 21:00	129.60	18.83
4/15/23 22:00	131.30	20.49
4/15/23 23:00	129.30	19.76
4/16/23 0:00	124.60	19.45
4/16/23 1:00	120.90	19.83
4/16/23 2:00	125.60	19.45
4/16/23 3:00	133.40	22.36
4/16/23 4:00	129.70	18.93
4/16/23 5:00	128.10	14.68
4/16/23 6:00	121.80	18.41
4/16/23 7:00	121.10	17.82
4/16/23 8:00	120.20	15.86
4/16/23 9:00	115.10	18.18
4/16/23 10:00	125.20	18.01
4/16/23 11:00	132.10	18.59
4/16/23 12:00	129.90	22.95
4/16/23 13:00	126.90	26.19
4/16/23 14:00	128.00	24.36
4/16/23 15:00	125.40	24.94
4/16/23 16:00	125.70	25.63
4/16/23 17:00	127.20	25.02
4/16/23 18:00	120.90	29.05
4/16/23 19:00	117.60	26.64
4/16/23 20:00	121.70	24.66
4/16/23 21:00	126.50	26.80
4/16/23 22:00	127.00	27.04
4/16/23 23:00	127.50	30.31
4/17/23 0:00	126.50	28.18
4/17/23 1:00	118.70	25.01
4/17/23 2:00	125.50	24.31
4/17/23 3:00	121.20	20.55
4/17/23 4:00	114.50	16.86
4/17/23 5:00	107.70	13.11
4/17/23 6:00	86.50	8.48
4/17/23 7:00	94.50	12.56
4/17/23 8:00	101.90	12.23
4/17/23 9:00	108.70	17.40
4/17/23 10:00	114.20	18.41
4/17/23 11:00	108.60	18.48
4/17/23 12:00	110.00	16.75
4/17/23 13:00	109.70	20.90
4/17/23 14:00	104.70	21.71
4/17/23 15:00	101.30	25.52
4/17/23 16:00	100.60	26.47
4/17/23 17:00	99.60	26.61
4/17/23 18:00	99.00	23.61
4/17/23 19:00	110.80	22.27
4/17/23 20:00	102.50	18.22
4/17/23 21:00	92.90	19.84
4/17/23 22:00	98.50	25.30
4/17/23 23:00	99.10	22.96
4/18/23 0:00	99.40	20.30
4/18/23 1:00	91.30	20.72
4/18/23 2:00	90.70	23.04
4/18/23 3:00	96.00	22.78
4/18/23 4:00	98.30	24.17
4/18/23 5:00	96.10	25.16
4/18/23 6:00	99.10	20.22
4/18/23 7:00	100.10	13.09
4/18/23 8:00	105.50	15.49
4/18/23 9:00	106.50	17.56
4/18/23 10:00	105.80	17.42
4/18/23 11:00	98.80	17.72
4/18/23 12:00	96.50	12.56
4/18/23 13:00	90.90	15.44
4/18/23 14:00	102.70	23.30
4/18/23 15:00	102.30	22.67
4/18/23 16:00	100.40	24.15
4/18/23 17:00	96.30	24.32
4/18/23 18:00	99.40	21.58
4/18/23 19:00	99.30	21.35
4/18/23 20:00	104.50	24.09
4/18/23 21:00	103.50	22.08
4/18/23 22:00	109.30	25.74

Date	Wind Direction (°)	Wind speed (km/h)
4/18/23 23:00	98.90	21.80
4/19/23 0:00	95.20	17.74
4/19/23 1:00	96.80	12.94
4/19/23 2:00	99.20	11.24
4/19/23 3:00	117.60	14.73
4/19/23 4:00	87.90	14.18
4/19/23 5:00	78.72	11.13
4/19/23 6:00	92.30	10.86
4/19/23 7:00	81.70	13.00
4/19/23 8:00	99.60	13.62
4/19/23 9:00	92.70	16.17
4/19/23 10:00	76.96	13.63
4/19/23 11:00	100.00	17.68
4/19/23 12:00	107.00	13.36
4/19/23 13:00	96.90	10.96
4/19/23 14:00	94.50	17.19
4/19/23 15:00	96.60	14.04
4/19/23 16:00	104.30	15.34
4/19/23 17:00	99.80	14.16
4/19/23 18:00	87.60	14.36
4/19/23 19:00	96.60	11.77
4/19/23 20:00	90.80	13.73
4/19/23 21:00	102.80	12.91
4/19/23 22:00	112.40	8.70
4/19/23 23:00	128.50	9.44
4/20/23 0:00	144.40	7.41
4/20/23 1:00	149.80	5.38
4/20/23 2:00	136.70	5.15
4/20/23 3:00	184.10	8.60
4/20/23 4:00	186.70	9.06
4/20/23 5:00	192.00	10.11
4/20/23 6:00	199.40	8.10
4/20/23 7:00	210.90	7.22
4/20/23 8:00	202.80	6.72
4/20/23 9:00	196.20	6.59
4/20/23 10:00	207.90	2.96
4/20/23 11:00	162.70	1.02
4/20/23 12:00	52.05	1.57
4/20/23 13:00	58.15	2.68
4/20/23 14:00	44.50	0.72
4/20/23 15:00	54.48	2.60
4/20/23 16:00	80.10	3.90
4/20/23 17:00	110.60	4.02
4/20/23 18:00	158.30	4.19
4/20/23 19:00	171.00	3.99
4/20/23 20:00	167.90	3.69
4/20/23 21:00	182.20	4.42
4/20/23 22:00	184.60	5.51
4/20/23 23:00	188.50	6.35
4/21/23 0:00	194.00	7.11
4/21/23 1:00	189.30	5.80
4/21/23 2:00	190.50	7.20
4/21/23 3:00	200.50	5.15
4/21/23 4:00	323.20	0.43
4/21/23 5:00	94.40	0.53
4/21/23 6:00	153.20	2.29
4/21/23 7:00	158.40	2.08
4/21/23 8:00	140.10	3.81
4/21/23 9:00	162.90	5.36
4/21/23 10:00	148.50	4.16
4/21/23 11:00	159.50	4.96
4/21/23 12:00	167.10	6.49
4/21/23 13:00	175.00	7.10
4/21/23 14:00	170.10	6.49
4/21/23 15:00	156.00	6.42
4/21/23 16:00	136.00	5.98
4/21/23 17:00	109.20	5.97
4/21/23 18:00	122.20	5.68
4/21/23 19:00	131.30	6.98
4/21/23 20:00	130.20	9.15
4/21/23 21:00	134.80	8.59
4/21/23 22:00	167.00	8.42
4/21/23 23:00	187.40	15.16
4/22/23 0:00	215.90	11.84
4/22/23 1:00	227.70	5.50
4/22/23 2:00	148.00	4.45
4/22/23 3:00	169.60	6.88
4/22/23 4:00	142.80	5.16
4/22/23 5:00	143.80	9.55
4/22/23 6:00	176.90	11.93
4/22/23 7:00	185.20	15.43

Date	Wind Direction (°)	Wind speed (km/h)
4/22/23 8:00	202.80	19.12
4/22/23 9:00	202.90	17.71
4/22/23 10:00	193.60	11.94
4/22/23 11:00	194.10	11.34
4/22/23 12:00	168.70	9.23
4/22/23 13:00	163.90	12.42
4/22/23 14:00	180.00	13.43
4/22/23 15:00	176.50	9.94
4/22/23 16:00	176.30	7.91
4/22/23 17:00	170.50	10.85
4/22/23 18:00	185.60	12.86
4/22/23 19:00	190.50	15.47
4/22/23 20:00	198.50	14.99
4/22/23 21:00	193.80	17.12
4/22/23 22:00	195.70	15.94
4/22/23 23:00	192.10	17.04
4/23/23 0:00	182.20	14.09
4/23/23 1:00	184.70	13.94
4/23/23 2:00	187.00	11.74
4/23/23 3:00	165.40	7.77
4/23/23 4:00	138.60	7.59
4/23/23 5:00	147.90	4.60
4/23/23 6:00	112.10	5.79
4/23/23 7:00	82.70	7.83
4/23/23 8:00	70.23	7.50
4/23/23 9:00	86.30	6.92
4/23/23 10:00	95.00	8.00
4/23/23 11:00	87.30	9.18
4/23/23 12:00	88.40	8.80
4/23/23 13:00	67.74	11.95
4/23/23 14:00	70.00	13.94
4/23/23 15:00	66.99	17.21
4/23/23 16:00	58.73	18.84
4/23/23 17:00	68.85	23.90
4/23/23 18:00	63.08	19.44
4/23/23 19:00	59.99	21.93
4/23/23 20:00	62.40	20.85
4/23/23 21:00	59.31	17.24
4/23/23 22:00	57.99	17.74
4/23/23 23:00	75.62	23.80
4/24/23 0:00	77.45	22.49
4/24/23 1:00	79.00	21.05
4/24/23 2:00	89.60	21.27
4/24/23 3:00	83.30	16.37
4/24/23 4:00	86.20	15.72
4/24/23 5:00	83.30	16.88
4/24/23 6:00	84.70	18.84
4/24/23 7:00	89.20	19.13
4/24/23 8:00	89.50	23.98
4/24/23 9:00	91.90	20.57
4/24/23 10:00	91.60	24.30
4/24/23 11:00	85.80	21.83
4/24/23 12:00	98.60	26.09
4/24/23 13:00	93.70	24.77
4/24/23 14:00	98.60	28.42
4/24/23 15:00	104.20	25.56
4/24/23 16:00	112.50	27.79
4/24/23 17:00	120.00	24.07
4/24/23 18:00	121.40	21.02
4/24/23 19:00	119.10	18.71
4/24/23 20:00	125.10	22.14
4/24/23 21:00	123.00	19.79
4/24/23 22:00	129.60	18.07
4/24/23 23:00	136.60	18.57
4/25/23 0:00	132.60	18.24
4/25/23 1:00	117.80	15.75
4/25/23 2:00	102.20	10.91
4/25/23 3:00	96.50	8.79
4/25/23 4:00	107.10	11.55
4/25/23 5:00	114.20	13.10
4/25/23 6:00	106.20	9.80
4/25/23 7:00	97.40	8.84
4/25/23 8:00	104.90	16.98
4/25/23 9:00	100.20	17.91
4/25/23 10:00	106.90	27.53
4/25/23 11:00	117.10	31.03
4/25/23 12:00	116.50	33.30
4/25/23 13:00	119.50	31.32
4/25/23 14:00	118.20	30.49
4/25/23 15:00	112.60	31.90
4/25/23 16:00	123.60	30.92

Date	Wind Direction (°)	Wind speed (km/h)
4/25/23 17:00	133.00	27.66
4/25/23 18:00	135.80	27.55
4/25/23 19:00	139.30	27.83
4/25/23 20:00	138.90	21.67
4/25/23 21:00	131.80	18.16
4/25/23 22:00	132.40	18.51
4/25/23 23:00	126.40	19.67
4/26/23 0:00	117.50	18.65
4/26/23 1:00	121.20	17.40
4/26/23 2:00	124.90	18.59
4/26/23 3:00	119.90	17.24
4/26/23 4:00	121.60	19.42
4/26/23 5:00	119.60	20.50
4/26/23 6:00	101.00	16.11
4/26/23 7:00	111.00	19.55
4/26/23 8:00	110.90	16.81
4/26/23 9:00	110.10	18.98
4/26/23 10:00	109.90	24.75
4/26/23 11:00	104.60	27.91
4/26/23 12:00	107.80	31.28
4/26/23 13:00	116.10	32.36
4/26/23 14:00	115.80	32.47
4/26/23 15:00	123.20	27.69
4/26/23 16:00	125.10	25.76
4/26/23 17:00	121.80	25.27
4/26/23 18:00	120.60	23.66
4/26/23 19:00	117.90	22.75
4/26/23 20:00	105.80	16.86
4/26/23 21:00	113.40	18.84
4/26/23 22:00	121.40	19.57
4/26/23 23:00	130.00	18.50
4/27/23 0:00	139.30	20.46
4/27/23 1:00	143.70	20.27
4/27/23 2:00	141.60	17.33
4/27/23 3:00	139.50	14.81
4/27/23 4:00	149.10	16.40
4/27/23 5:00	156.90	16.70
4/27/23 6:00	160.40	17.61
4/27/23 7:00	153.90	20.56
4/27/23 8:00	155.10	20.91
4/27/23 9:00	157.40	20.37
4/27/23 10:00	152.30	21.20
4/27/23 11:00	153.70	23.21
4/27/23 12:00	155.00	22.51
4/27/23 13:00	148.60	22.59
4/27/23 14:00	144.30	21.80
4/27/23 15:00	143.40	21.32
4/27/23 16:00	165.00	20.24
4/27/23 17:00	165.20	15.07
4/27/23 18:00	167.90	15.39
4/27/23 19:00	167.40	14.27
4/27/23 20:00	165.80	13.80
4/27/23 21:00	155.50	12.42
4/27/23 22:00	161.60	12.45
4/27/23 23:00	179.50	14.09
4/28/23 0:00	191.30	8.94
4/28/23 1:00	191.40	8.07
4/28/23 2:00	164.70	5.52
4/28/23 3:00	139.70	4.63
4/28/23 4:00	147.80	6.47
4/28/23 5:00	160.20	2.42
4/28/23 6:00	150.70	0.03
4/28/23 7:00	267.50	4.87
4/28/23 8:00	305.90	10.52
4/28/23 9:00	339.10	10.14
4/28/23 10:00	329.40	11.85
4/28/23 11:00	323.00	13.38
4/28/23 12:00	315.20	14.25
4/28/23 13:00	315.50	18.15
4/28/23 14:00	318.20	17.74
4/28/23 15:00	310.90	18.62
4/28/23 16:00	307.30	19.65
4/28/23 17:00	314.30	22.47
4/28/23 18:00	318.80	22.89
4/28/23 19:00	316.30	21.76
4/28/23 20:00	316.80	23.10
4/28/23 21:00	312.90	22.45
4/28/23 22:00	310.80	19.13
4/28/23 23:00	307.90	20.36
4/29/23 0:00	306.70	19.63
4/29/23 1:00	314.90	19.80

Date	Wind Direction (°)	Wind speed (km/h)
4/29/23 2:00	312.80	17.36
4/29/23 3:00	302.80	18.17
4/29/23 4:00	309.70	19.04
4/29/23 5:00	311.00	16.93
4/29/23 6:00	312.40	16.68
4/29/23 7:00	319.30	16.55
4/29/23 8:00	315.90	15.15
4/29/23 9:00	318.70	9.42
4/29/23 10:00	309.00	14.51
4/29/23 11:00	317.20	15.10
4/29/23 12:00	312.30	12.58
4/29/23 13:00	340.70	7.84
4/29/23 14:00	77.75	4.47
4/29/23 15:00	212.10	12.28
4/29/23 16:00	208.70	15.52
4/29/23 17:00	218.60	19.39
4/29/23 18:00	222.50	18.20
4/29/23 19:00	232.10	18.96
4/29/23 20:00	221.90	15.96
4/29/23 21:00	221.00	14.83
4/29/23 22:00	207.20	9.32
4/29/23 23:00	194.80	14.07
4/30/23 0:00	195.10	14.36
4/30/23 1:00	194.10	16.16
4/30/23 2:00	191.10	15.76
4/30/23 3:00	188.30	16.28
4/30/23 4:00	199.00	19.79
4/30/23 5:00	200.80	16.60
4/30/23 6:00	183.10	8.60
4/30/23 7:00	170.00	15.31
4/30/23 8:00	178.30	15.84
4/30/23 9:00	171.30	18.57
4/30/23 10:00	166.30	17.84
4/30/23 11:00	152.50	20.34
4/30/23 12:00	131.30	18.07
4/30/23 13:00	140.00	14.29
4/30/23 14:00	129.90	13.28
4/30/23 15:00	123.60	11.62
4/30/23 16:00	99.20	10.95
4/30/23 17:00	99.40	9.03
4/30/23 18:00	80.50	7.66
4/30/23 19:00	60.09	7.74
4/30/23 20:00	25.81	12.07
4/30/23 21:00	35.80	14.61
4/30/23 22:00	37.15	13.07
4/30/23 23:00	31.60	13.51
5/1/23 0:00	28.85	13.26
5/1/23 1:00	36.29	14.64
5/1/23 2:00	46.47	15.69
5/1/23 3:00	48.96	16.57
5/1/23 4:00	62.89	18.78
5/1/23 5:00	80.70	19.68
5/1/23 6:00	85.90	20.84
5/1/23 7:00	77.78	25.07
5/1/23 8:00	76.68	29.27
5/1/23 9:00	96.80	26.59
5/1/23 10:00	99.10	26.93
5/1/23 11:00	89.40	26.87
5/1/23 12:00	90.50	26.89
5/1/23 13:00	89.80	35.46
5/1/23 14:00	99.70	34.88
5/1/23 15:00	107.20	28.91
5/1/23 16:00	120.50	26.64
5/1/23 17:00	119.50	28.47
5/1/23 18:00	114.40	23.57
5/1/23 19:00	97.50	11.05
5/1/23 20:00	101.10	9.30
5/1/23 21:00	212.60	2.06
5/1/23 22:00	264.90	8.55
5/1/23 23:00	284.50	17.68
5/2/23 0:00	290.40	18.39
5/2/23 1:00	310.40	22.47
5/2/23 2:00	325.60	24.15
5/2/23 3:00	326.30	24.29
5/2/23 4:00	324.60	25.99
5/2/23 5:00	336.90	22.47
5/2/23 6:00	334.30	26.05
5/2/23 7:00	340.70	27.79
5/2/23 8:00	349.40	21.84
5/2/23 9:00	345.40	19.22
5/2/23 10:00	343.60	17.75

Date	Wind Direction (°)	Wind speed (km/h)
5/2/23 11:00	328.30	14.88
5/2/23 12:00	322.40	11.75
5/2/23 13:00	306.40	11.96
5/2/23 14:00	292.80	13.40
5/2/23 15:00	293.10	8.13
5/2/23 16:00	272.80	8.11
5/2/23 17:00	234.80	6.94
5/2/23 18:00	242.60	8.47
5/2/23 19:00	239.80	7.30
5/2/23 20:00	164.50	7.54
5/2/23 21:00	138.20	11.48
5/2/23 22:00	120.50	10.55
5/2/23 23:00	129.70	10.57
5/3/23 0:00	130.70	15.11
5/3/23 1:00	125.80	15.88
5/3/23 2:00	125.50	19.02
5/3/23 3:00	121.20	21.19
5/3/23 4:00	126.80	20.24
5/3/23 5:00	124.90	19.10
5/3/23 6:00	123.00	25.02
5/3/23 7:00	128.60	21.91
5/3/23 8:00	141.10	24.18
5/3/23 9:00	139.70	25.25
5/3/23 10:00	138.60	24.73
5/3/23 11:00	136.10	24.69
5/3/23 12:00	136.80	24.46
5/3/23 13:00	139.00	22.36
5/3/23 14:00	136.60	19.82
5/3/23 15:00	142.10	18.69
5/3/23 16:00	141.80	15.80
5/3/23 17:00	141.30	15.90
5/3/23 18:00	144.60	16.34
5/3/23 19:00	148.50	18.75
5/3/23 20:00	147.20	21.45
5/3/23 21:00	150.60	25.55
5/3/23 22:00	159.70	23.30
5/3/23 23:00	177.10	17.78
5/4/23 0:00	185.80	21.38
5/4/23 1:00	190.50	24.00
5/4/23 2:00	217.50	22.81
5/4/23 3:00	258.70	15.84
5/4/23 4:00	278.10	16.15
5/4/23 5:00	300.50	19.88
5/4/23 6:00	324.70	26.81
5/4/23 7:00	333.50	27.22
5/4/23 8:00	348.50	26.58
5/4/23 9:00	353.30	30.02
5/4/23 10:00	356.80	30.85
5/4/23 11:00	356.50	28.12
5/4/23 12:00	11.06	24.67
5/4/23 13:00	15.81	21.81
5/4/23 14:00	26.83	24.05
5/4/23 15:00	30.93	26.53
5/4/23 16:00	37.07	26.19
5/4/23 17:00	41.72	24.87
5/4/23 18:00	52.81	21.25
5/4/23 19:00	56.85	19.85
5/4/23 20:00	57.22	17.55
5/4/23 21:00	55.92	16.89
5/4/23 22:00	51.45	18.18
5/4/23 23:00	61.82	18.26
5/5/23 0:00	64.50	20.30
5/5/23 1:00	65.74	21.04
5/5/23 2:00	79.98	21.62
5/5/23 3:00	81.00	20.05
5/5/23 4:00	70.96	18.69
5/5/23 5:00	63.10	21.22
5/5/23 6:00	75.92	24.36
5/5/23 7:00	85.60	29.52
5/5/23 8:00	82.10	28.87
5/5/23 9:00	91.20	30.17
5/5/23 10:00	87.90	32.47
5/5/23 11:00	83.90	33.62
5/5/23 12:00	90.30	36.22
5/5/23 13:00	97.40	40.97
5/5/23 14:00	102.40	39.85
5/5/23 15:00	103.70	42.80
5/5/23 16:00	102.30	38.84
5/5/23 17:00	101.10	38.70
5/5/23 18:00	102.30	35.21
5/5/23 19:00	100.50	31.43

Date	Wind Direction (°)	Wind speed (km/h)
5/5/23 20:00	103.20	28.31
5/5/23 21:00	102.00	27.14
5/5/23 22:00	97.70	25.73
5/5/23 23:00	109.80	22.24
5/6/23 0:00	120.10	23.03
5/6/23 1:00	133.60	20.73
5/6/23 2:00	120.00	14.40
5/6/23 3:00	136.70	11.67
5/6/23 4:00	134.10	8.69
5/6/23 5:00	154.00	8.92
5/6/23 6:00	196.50	18.47
5/6/23 7:00	204.70	17.33
5/6/23 8:00	208.40	13.07
5/6/23 9:00	194.90	13.09
5/6/23 10:00	186.50	14.97
5/6/23 11:00	196.50	17.78
5/6/23 12:00	205.40	21.75
5/6/23 13:00	206.80	21.54
5/6/23 14:00	207.20	20.33
5/6/23 15:00	192.90	23.92
5/6/23 16:00	193.50	24.42
5/6/23 17:00	191.80	22.81
5/6/23 18:00	199.80	16.87
5/6/23 19:00	192.00	13.98
5/6/23 20:00	194.20	13.54
5/6/23 21:00	206.00	13.66
5/6/23 22:00	201.00	14.20
5/6/23 23:00	187.70	13.85
5/7/23 0:00	197.40	15.77
5/7/23 1:00	196.30	16.18
5/7/23 2:00	193.40	17.01
5/7/23 3:00	192.20	18.32
5/7/23 4:00	194.50	12.14
5/7/23 5:00	217.60	7.70
5/7/23 6:00	222.70	6.95
5/7/23 7:00	214.20	9.12
5/7/23 8:00	222.80	10.61
5/7/23 9:00	205.70	16.03
5/7/23 10:00	205.20	17.35
5/7/23 11:00	209.80	17.98
5/7/23 12:00	206.50	22.16
5/7/23 13:00	212.60	21.13
5/7/23 14:00	215.20	18.68
5/7/23 15:00	213.20	16.51
5/7/23 16:00	203.40	19.31
5/7/23 17:00	207.20	17.01
5/7/23 18:00	211.00	13.06
5/7/23 19:00	216.20	10.98
5/7/23 20:00	237.60	13.14
5/7/23 21:00	241.70	16.18
5/7/23 22:00	233.70	12.36
5/7/23 23:00	225.60	16.51
5/8/23 0:00	232.60	10.81
5/8/23 1:00	209.50	10.90
5/8/23 2:00	219.90	7.93
5/8/23 3:00	219.00	6.39
5/8/23 4:00	213.80	7.33
5/8/23 5:00	206.20	12.56
5/8/23 6:00	199.20	14.58
5/8/23 7:00	195.30	13.51
5/8/23 8:00	205.10	14.14
5/8/23 9:00	200.20	13.22
5/8/23 10:00	192.70	11.62
5/8/23 11:00	194.20	15.92
5/8/23 12:00	179.60	18.83
5/8/23 13:00	199.00	21.63
5/8/23 14:00	187.40	22.44
5/8/23 15:00	174.10	18.64
5/8/23 16:00	162.60	19.88
5/8/23 17:00	163.20	21.54
5/8/23 18:00	169.90	15.46
5/8/23 19:00	267.90	15.90
5/8/23 20:00	306.90	9.17
5/8/23 21:00	297.40	5.12
5/8/23 22:00	226.30	16.90
5/8/23 23:00	215.20	13.91
5/9/23 0:00	193.30	11.38
5/9/23 1:00	193.20	13.49
5/9/23 2:00	194.50	12.71
5/9/23 3:00	180.20	10.92
5/9/23 4:00	190.10	14.59

Date	Wind Direction (°)	Wind speed (km/h)
5/9/23 5:00	193.90	9.98
5/9/23 6:00	214.70	11.86
5/9/23 7:00	237.70	14.89
5/9/23 8:00	256.60	12.90
5/9/23 9:00	259.90	17.56
5/9/23 10:00	274.40	15.83
5/9/23 11:00	275.40	17.85
5/9/23 12:00	265.70	20.39
5/9/23 13:00	260.00	18.82
5/9/23 14:00	237.00	19.96
5/9/23 15:00	231.90	24.42
5/9/23 16:00	234.30	25.96
5/9/23 17:00	265.10	20.03
5/9/23 18:00	287.60	15.84
5/9/23 19:00	294.20	17.20
5/9/23 20:00	291.00	17.21
5/9/23 21:00	296.80	15.89
5/9/23 22:00	324.40	19.75
5/9/23 23:00	318.90	14.81
5/10/23 0:00	305.30	12.94
5/10/23 1:00	273.50	9.94
5/10/23 2:00	228.20	10.46
5/10/23 3:00	237.30	13.29
5/10/23 4:00	270.10	15.92
5/10/23 5:00	276.30	15.15
5/10/23 6:00	292.00	17.23
5/10/23 7:00	316.70	18.29
5/10/23 8:00	316.10	22.58
5/10/23 9:00	315.10	22.74
5/10/23 10:00	307.20	25.29
5/10/23 11:00	306.20	26.26
5/10/23 12:00	310.20	26.88
5/10/23 13:00	307.50	25.19
5/10/23 14:00	307.40	24.54
5/10/23 15:00	311.20	26.47
5/10/23 16:00	327.50	24.91
5/10/23 17:00	329.40	26.59
5/10/23 18:00	334.20	25.35
5/10/23 19:00	350.00	20.73
5/10/23 20:00	11.07	14.76
5/10/23 21:00	6.74	10.99
5/10/23 22:00	356.50	15.02
5/10/23 23:00	7.10	12.16
5/11/23 0:00	336.50	7.27
5/11/23 1:00	347.50	8.25
5/11/23 2:00	333.00	7.88
5/11/23 3:00	292.10	6.35
5/11/23 4:00	292.10	8.00
5/11/23 5:00	317.00	7.42
5/11/23 6:00	353.40	7.24
5/11/23 7:00	24.41	6.87
5/11/23 8:00	37.99	6.72
5/11/23 9:00	86.70	8.67
5/11/23 10:00	95.80	5.57
5/11/23 11:00	111.80	5.71
5/11/23 12:00	93.10	5.46
5/11/23 13:00	109.20	5.88
5/11/23 14:00	152.30	6.39
5/11/23 15:00	139.30	7.04
5/11/23 16:00	157.50	7.81
5/11/23 17:00	153.40	10.98
5/11/23 18:00	142.20	13.49
5/11/23 19:00	109.40	13.88
5/11/23 20:00	108.30	11.92
5/11/23 21:00	124.70	11.27
5/11/23 22:00	145.90	13.32
5/11/23 23:00	172.40	10.55
5/12/23 0:00	178.90	17.36
5/12/23 1:00	188.80	16.76
5/12/23 2:00	184.90	17.45
5/12/23 3:00	186.20	19.32
5/12/23 4:00	184.50	17.74
5/12/23 5:00	187.10	17.12
5/12/23 6:00	200.80	13.12
5/12/23 7:00	197.50	13.52
5/12/23 8:00	221.30	10.37
5/12/23 9:00	225.60	9.25
5/12/23 10:00	210.60	12.26
5/12/23 11:00	219.90	17.48
5/12/23 12:00	215.50	18.16
5/12/23 13:00	209.00	20.70

Date	Wind Direction (°)	Wind speed (km/h)
5/12/23 14:00	209.00	23.62
5/12/23 15:00	217.20	27.44
5/12/23 16:00	221.50	23.23
5/12/23 17:00	221.00	25.52
5/12/23 18:00	229.70	28.03
5/12/23 19:00	226.90	21.38
5/12/23 20:00	217.80	14.62
5/12/23 21:00	201.90	16.46
5/12/23 22:00	197.00	18.60
5/12/23 23:00	192.50	19.18
5/13/23 0:00	198.60	21.13
5/13/23 1:00	209.00	20.80
5/13/23 2:00	216.90	16.66
5/13/23 3:00	213.20	18.81
5/13/23 4:00	208.70	22.24
5/13/23 5:00	209.80	20.75
5/13/23 6:00	214.40	18.94
5/13/23 7:00	207.70	20.36
5/13/23 8:00	211.70	20.92
5/13/23 9:00	211.10	24.01
5/13/23 10:00	223.30	23.59
5/13/23 11:00	213.70	24.59
5/13/23 12:00	215.30	26.29
5/13/23 13:00	214.60	26.05
5/13/23 14:00	231.60	27.03
5/13/23 15:00	230.40	25.21
5/13/23 16:00	232.80	20.54
5/13/23 17:00	273.60	15.67
5/13/23 18:00	245.80	14.82
5/13/23 19:00	231.70	18.67
5/13/23 20:00	227.30	22.09
5/13/23 21:00	245.70	18.05
5/13/23 22:00	241.90	12.03
5/13/23 23:00	307.20	11.54
5/14/23 0:00	5.93	12.37
5/14/23 1:00	42.55	10.26
5/14/23 2:00	41.82	11.86
5/14/23 3:00	56.73	13.54
5/14/23 4:00	78.85	13.28
5/14/23 5:00	84.10	15.62
5/14/23 6:00	76.65	15.97
5/14/23 7:00	86.10	17.16
5/14/23 8:00	87.30	15.42
5/14/23 9:00	72.44	13.71
5/14/23 10:00	79.61	12.69
5/14/23 11:00	90.60	10.98
5/14/23 12:00	106.20	9.41
5/14/23 13:00	106.50	8.09
5/14/23 14:00	316.20	18.13
5/14/23 15:00	317.20	10.63
5/14/23 16:00	316.00	15.56
5/14/23 17:00	319.20	21.42
5/14/23 18:00	326.20	21.13
5/14/23 19:00	344.90	18.59
5/14/23 20:00	340.30	9.81
5/14/23 21:00	352.80	16.17
5/14/23 22:00	324.60	10.53
5/14/23 23:00	301.70	11.18
5/15/23 0:00	313.10	12.37
5/15/23 1:00	311.20	11.72
5/15/23 2:00	296.80	11.78
5/15/23 3:00	311.90	11.73
5/15/23 4:00	317.50	12.28
5/15/23 5:00	315.30	10.75
5/15/23 6:00	325.10	7.23
5/15/23 7:00	11.97	6.27
5/15/23 8:00	46.01	3.02
5/15/23 9:00	224.50	4.83
5/15/23 10:00	253.90	6.98
5/15/23 11:00	269.70	5.59
5/15/23 12:00	87.40	6.20
5/15/23 13:00	88.40	9.49
5/15/23 14:00	93.30	13.05
5/15/23 15:00	102.60	14.06
5/15/23 16:00	102.60	19.26
5/15/23 17:00	94.80	19.44
5/15/23 18:00	102.80	19.54
5/15/23 19:00	116.30	17.05
5/15/23 20:00	109.90	13.35
5/15/23 21:00	101.80	12.69
5/15/23 22:00	102.20	13.55

Date	Wind Direction (°)	Wind speed (km/h)
5/15/23 23:00	98.40	13.54
5/16/23 0:00	83.50	11.76
5/16/23 1:00	91.60	16.69
5/16/23 2:00	95.40	19.07
5/16/23 3:00	92.20	21.02
5/16/23 4:00	75.71	20.35
5/16/23 5:00	71.92	20.96
5/16/23 6:00	74.93	19.26
5/16/23 7:00	64.23	20.56
5/16/23 8:00	60.26	23.53
5/16/23 9:00	46.59	26.41
5/16/23 10:00	45.65	27.02
5/16/23 11:00	45.83	29.59
5/16/23 12:00	43.23	30.89
5/16/23 13:00	42.13	30.49
5/16/23 14:00	45.42	29.34
5/16/23 15:00	51.43	26.82
5/16/23 16:00	61.87	23.48
5/16/23 17:00	62.86	19.74
5/16/23 18:00	54.54	16.71
5/16/23 19:00	59.01	11.54
5/16/23 20:00	83.40	6.59
5/16/23 21:00	153.90	4.68
5/16/23 22:00	207.40	9.08
5/16/23 23:00	209.00	14.28
5/17/23 0:00	218.50	15.73
5/17/23 1:00	228.60	15.11
5/17/23 2:00	236.20	18.85
5/17/23 3:00	239.80	21.80
5/17/23 4:00	239.60	25.68
5/17/23 5:00	239.90	24.88
5/17/23 6:00	240.60	19.23
5/17/23 7:00	246.60	17.15
5/17/23 8:00	259.00	20.20
5/17/23 9:00	256.80	17.49
5/17/23 10:00	238.70	17.85
5/17/23 11:00	233.90	22.20
5/17/23 12:00	225.60	25.80
5/17/23 13:00	226.30	25.70
5/17/23 14:00	229.60	28.39
5/17/23 15:00	224.20	30.78
5/17/23 16:00	229.70	29.84
5/17/23 17:00	229.90	31.54
5/17/23 18:00	234.00	29.63
5/17/23 19:00	235.60	27.24
5/17/23 20:00	237.20	26.68
5/17/23 21:00	230.70	28.02
5/17/23 22:00	232.60	27.50
5/17/23 23:00	231.70	29.27
5/18/23 0:00	232.30	30.10
5/18/23 1:00	232.80	28.26
5/18/23 2:00	230.20	30.24
5/18/23 3:00	232.20	29.45
5/18/23 4:00	230.20	30.78
5/18/23 5:00	270.70	19.00
5/18/23 6:00	269.50	12.91
5/18/23 7:00	280.50	17.84
5/18/23 8:00	306.60	21.88
5/18/23 9:00	343.90	17.57
5/18/23 10:00	21.49	15.99
5/18/23 11:00	44.32	15.82
5/18/23 12:00	50.52	16.51
5/18/23 13:00	76.30	15.90
5/18/23 14:00	82.00	14.39
5/18/23 15:00	102.10	10.34
5/18/23 16:00	86.00	8.92
5/18/23 17:00	97.20	11.45
5/18/23 18:00	124.60	15.39
5/18/23 19:00	117.20	10.53
5/18/23 20:00	104.70	9.76
5/18/23 21:00	111.20	11.37
5/18/23 22:00	92.20	14.40
5/18/23 23:00	96.70	13.80
5/19/23 0:00	84.20	15.49
5/19/23 1:00	99.70	11.35
5/19/23 2:00	132.50	9.84
5/19/23 3:00	53.54	11.40
5/19/23 4:00	12.70	10.99
5/19/23 5:00	356.40	10.76
5/19/23 6:00	354.10	16.43
5/19/23 7:00	10.52	29.27

Date	Wind Direction (°)	Wind speed (km/h)
5/19/23 8:00	17.54	30.42
5/19/23 9:00	12.30	32.87
5/19/23 10:00	8.41	31.64
5/19/23 11:00	7.04	30.82
5/19/23 12:00	353.80	30.82
5/19/23 13:00	3.06	32.87
5/19/23 14:00	359.60	30.78
5/19/23 15:00	352.30	30.46
5/19/23 16:00	355.50	28.45
5/19/23 17:00	357.00	26.68
5/19/23 18:00	10.15	21.72
5/19/23 19:00	358.80	17.59
5/19/23 20:00	348.50	18.43
5/19/23 21:00	346.90	11.29
5/19/23 22:00	299.10	8.12
5/19/23 23:00	294.70	8.91
5/20/23 0:00	326.60	12.11
5/20/23 1:00	352.40	11.28
5/20/23 2:00	29.18	5.26
5/20/23 3:00	171.40	2.99
5/20/23 4:00	182.80	5.84
5/20/23 5:00	205.00	10.29
5/20/23 6:00	221.90	14.64
5/20/23 7:00	227.20	14.54
5/20/23 8:00	245.10	13.97
5/20/23 9:00	242.90	12.05
5/20/23 10:00	223.00	16.35
5/20/23 11:00	229.80	14.48
5/20/23 12:00	231.40	16.33
5/20/23 13:00	237.70	17.71
5/20/23 14:00	242.50	16.98
5/20/23 15:00	241.80	17.29
5/20/23 16:00	232.60	17.18
5/20/23 17:00	220.10	17.24
5/20/23 18:00	208.20	20.24
5/20/23 19:00	216.80	18.54
5/20/23 20:00	219.40	14.57
5/20/23 21:00	201.10	11.21
5/20/23 22:00	198.60	11.40
5/20/23 23:00	189.90	11.19
5/21/23 0:00	175.20	10.61
5/21/23 1:00	185.30	13.53
5/21/23 2:00	194.00	13.02
5/21/23 3:00	202.90	16.26
5/21/23 4:00	208.80	18.87
5/21/23 5:00	211.40	18.50
5/21/23 6:00	209.50	19.44
5/21/23 7:00	210.40	21.81
5/21/23 8:00	222.80	22.85
5/21/23 9:00	231.10	22.66
5/21/23 10:00	232.70	20.78
5/21/23 11:00	262.30	17.69
5/21/23 12:00	265.10	20.09
5/21/23 13:00	296.20	20.86
5/21/23 14:00	309.60	24.13
5/21/23 15:00	324.50	24.31
5/21/23 16:00	347.60	25.91
5/21/23 17:00	0.87	27.10
5/21/23 18:00	357.80	24.43
5/21/23 19:00	8.91	23.94
5/21/23 20:00	6.01	16.40
5/21/23 21:00	9.70	13.65
5/21/23 22:00	49.16	10.73
5/21/23 23:00	54.27	12.54
5/22/23 0:00	42.29	13.26
5/22/23 1:00	45.75	11.25
5/22/23 2:00	36.45	13.26
5/22/23 3:00	41.47	13.97
5/22/23 4:00	34.87	12.50
5/22/23 5:00	29.53	14.72
5/22/23 6:00	33.35	18.07
5/22/23 7:00	33.49	23.94
5/22/23 8:00	37.82	19.91
5/22/23 9:00	28.89	17.49
5/22/23 10:00	16.41	16.27
5/22/23 11:00	11.53	15.87
5/22/23 12:00	18.31	16.24
5/22/23 13:00	25.37	13.44
5/22/23 14:00	35.10	11.69
5/22/23 15:00	30.24	10.21
5/22/23 16:00	61.55	9.42

Date	Wind Direction (°)	Wind speed (km/h)
5/22/23 17:00	75.21	8.55
5/22/23 18:00	86.60	6.40
5/22/23 19:00	72.07	6.27
5/22/23 20:00	92.10	6.50
5/22/23 21:00	113.30	7.30
5/22/23 22:00	144.20	7.95
5/22/23 23:00	166.50	8.87
5/23/23 0:00	180.30	11.55
5/23/23 1:00	188.10	13.37
5/23/23 2:00	189.20	13.29
5/23/23 3:00	195.80	16.29
5/23/23 4:00	198.70	14.36
5/23/23 5:00	192.00	13.23
5/23/23 6:00	208.60	10.29
5/23/23 7:00	205.60	15.52
5/23/23 8:00	220.20	18.61
5/23/23 9:00	232.90	21.70
5/23/23 10:00	227.70	19.97
5/23/23 11:00	234.70	21.98
5/23/23 12:00	230.50	20.34
5/23/23 13:00	209.90	22.02
5/23/23 14:00	208.70	23.08
5/23/23 15:00	218.80	22.26
5/23/23 16:00	219.10	22.53
5/23/23 17:00	213.10	22.34
5/23/23 18:00	206.00	17.51
5/23/23 19:00	203.40	11.48
5/23/23 20:00	181.00	5.91
5/23/23 21:00	146.50	5.98
5/23/23 22:00	153.00	7.51
5/23/23 23:00	177.10	9.80
5/24/23 0:00	185.00	12.16
5/24/23 1:00	176.40	11.26
5/24/23 2:00	166.30	11.49
5/24/23 3:00	179.70	12.88
5/24/23 4:00	187.50	12.91
5/24/23 5:00	202.10	18.59
5/24/23 6:00	233.40	13.62
5/24/23 7:00	225.80	9.09
5/24/23 8:00	196.90	6.38
5/24/23 9:00	185.50	10.32
5/24/23 10:00	201.80	18.35
5/24/23 11:00	229.50	18.14
5/24/23 12:00	235.00	16.42
5/24/23 13:00	260.90	18.87
5/24/23 14:00	308.70	18.15
5/24/23 15:00	310.20	13.81
5/24/23 16:00	289.50	12.13
5/24/23 17:00	279.80	12.12
5/24/23 18:00	295.70	15.59
5/24/23 19:00	295.10	18.00
5/24/23 20:00	305.90	14.63
5/24/23 21:00	297.00	13.99
5/24/23 22:00	305.00	17.18
5/24/23 23:00	11.12	25.75
5/25/23 0:00	22.03	26.85
5/25/23 1:00	25.22	28.34
5/25/23 2:00	27.20	28.75
5/25/23 3:00	32.22	27.44
5/25/23 4:00	30.60	29.38
5/25/23 5:00	37.03	25.75
5/25/23 6:00	44.18	22.95
5/25/23 7:00	49.87	23.33
5/25/23 8:00	56.41	23.00
5/25/23 9:00	61.82	21.19
5/25/23 10:00	69.14	20.62
5/25/23 11:00	72.02	18.23
5/25/23 12:00	78.57	14.56
5/25/23 13:00	108.10	13.26
5/25/23 14:00	106.00	13.67
5/25/23 15:00	109.10	12.56
5/25/23 16:00	145.40	13.40
5/25/23 17:00	157.30	14.70
5/25/23 18:00	164.90	16.59
5/25/23 19:00	179.20	15.17
5/25/23 20:00	165.60	14.93
5/25/23 21:00	156.80	12.24
5/25/23 22:00	148.30	12.76
5/25/23 23:00	168.40	9.28
5/26/23 0:00	178.70	12.32
5/26/23 1:00	186.60	16.01

Date	Wind Direction (°)	Wind speed (km/h)
5/26/23 2:00	186.00	18.39
5/26/23 3:00	186.10	17.84
5/26/23 4:00	191.60	14.42
5/26/23 5:00	195.20	19.56
5/26/23 6:00	201.50	21.50
5/26/23 7:00	215.50	21.97
5/26/23 8:00	225.60	20.94
5/26/23 9:00	205.80	19.88
5/26/23 10:00	209.90	21.97
5/26/23 11:00	219.30	19.63
5/26/23 12:00	240.20	21.01
5/26/23 13:00	285.00	16.48
5/26/23 14:00	313.60	14.95
5/26/23 15:00	16.41	18.62
5/26/23 16:00	22.74	24.35
5/26/23 17:00	26.76	27.89
5/26/23 18:00	42.00	25.40
5/26/23 19:00	58.68	26.55
5/26/23 20:00	60.28	23.38
5/26/23 21:00	66.79	21.90
5/26/23 22:00	66.52	18.46
5/26/23 23:00	85.30	21.63
5/27/23 0:00	91.80	24.00
5/27/23 1:00	100.90	26.51
5/27/23 2:00	101.70	27.55
5/27/23 3:00	102.00	30.10
5/27/23 4:00	96.40	31.39
5/27/23 5:00	101.20	35.46
5/27/23 6:00	115.00	38.20
5/27/23 7:00	124.30	36.90
5/27/23 8:00	129.20	36.25
5/27/23 9:00	132.30	36.79
5/27/23 10:00	133.60	33.88
5/27/23 11:00	138.20	31.93
5/27/23 12:00	140.50	33.23
5/27/23 13:00	142.10	27.08
5/27/23 14:00	142.30	19.62
5/27/23 15:00	169.40	20.38
5/27/23 16:00	212.60	22.03
5/27/23 17:00	228.50	25.43
5/27/23 18:00	233.80	23.63
5/27/23 19:00	226.70	18.99
5/27/23 20:00	205.80	18.51
5/27/23 21:00	207.10	18.07
5/27/23 22:00	198.60	17.40
5/27/23 23:00	197.00	17.94
5/28/23 0:00	203.50	18.61
5/28/23 1:00	203.50	18.94
5/28/23 2:00	205.20	21.11
5/28/23 3:00	213.30	18.30
5/28/23 4:00	219.00	18.69
5/28/23 5:00	215.30	19.00
5/28/23 6:00	210.60	20.32
5/28/23 7:00	222.80	21.18
5/28/23 8:00	234.40	16.64
5/28/23 9:00	242.70	18.55
5/28/23 10:00	238.70	18.64
5/28/23 11:00	258.70	19.01
5/28/23 12:00	264.70	15.59
5/28/23 13:00	256.20	17.77
5/28/23 14:00	226.00	23.86
5/28/23 15:00	274.70	21.21
5/28/23 16:00	316.50	23.52
5/28/23 17:00	319.80	18.75
5/28/23 18:00	339.00	19.62
5/28/23 19:00	348.60	20.07
5/28/23 20:00	327.80	19.40
5/28/23 21:00	347.70	21.67
5/28/23 22:00	356.90	16.95
5/28/23 23:00	20.86	17.01
5/29/23 0:00	15.09	14.49
5/29/23 1:00	4.12	18.30
5/29/23 2:00	17.83	20.33
5/29/23 3:00	45.94	24.13
5/29/23 4:00	53.34	24.48
5/29/23 5:00	55.38	24.70
5/29/23 6:00	60.70	25.56
5/29/23 7:00	59.42	26.80
5/29/23 8:00	54.95	25.45
5/29/23 9:00	60.33	26.00
5/29/23 10:00	66.48	27.57

Date	Wind Direction (°)	Wind speed (km/h)
5/29/23 11:00	67.27	27.32
5/29/23 12:00	64.22	28.23
5/29/23 13:00	74.20	27.52
5/29/23 14:00	87.20	30.89
5/29/23 15:00	87.70	31.43
5/29/23 16:00	89.20	30.56
5/29/23 17:00	96.00	29.02
5/29/23 18:00	91.90	28.39
5/29/23 19:00	81.60	28.91
5/29/23 20:00	82.70	28.14
5/29/23 21:00	85.20	26.46
5/29/23 22:00	86.40	26.79
5/29/23 23:00	88.30	31.18
5/30/23 0:00	90.40	31.03
5/30/23 1:00	104.10	30.71
5/30/23 2:00	105.40	27.18
5/30/23 3:00	98.40	23.09
5/30/23 4:00	91.80	27.31
5/30/23 5:00	98.40	25.25
5/30/23 6:00	94.80	25.11
5/30/23 7:00	95.20	24.58
5/30/23 8:00	101.30	27.67
5/30/23 9:00	101.70	28.75
5/30/23 10:00	107.90	25.07
5/30/23 11:00	110.30	23.84
5/30/23 12:00	107.90	25.49
5/30/23 13:00	112.40	25.80
5/30/23 14:00	115.30	25.14
5/30/23 15:00	112.60	24.49
5/30/23 16:00	120.60	23.61
5/30/23 17:00	120.20	23.76
5/30/23 18:00	123.00	25.16
5/30/23 19:00	119.80	26.87
5/30/23 20:00	119.50	24.61
5/30/23 21:00	114.00	22.71
5/30/23 22:00	114.90	21.47
5/30/23 23:00	116.60	23.03
5/31/23 0:00	109.30	20.80
5/31/23 1:00	110.40	19.93
5/31/23 2:00	120.30	23.13
5/31/23 3:00	116.90	19.76
5/31/23 4:00	125.10	20.66
5/31/23 5:00	118.00	18.70
5/31/23 6:00	131.60	15.80
5/31/23 7:00	146.80	13.59
5/31/23 8:00	138.90	14.73
5/31/23 9:00	113.60	18.96
5/31/23 10:00	115.10	23.15
5/31/23 11:00	110.20	18.14
5/31/23 12:00	114.20	22.17
5/31/23 13:00	116.30	21.12
5/31/23 14:00	121.20	27.31
5/31/23 15:00	113.10	28.47
5/31/23 16:00	113.20	27.61
5/31/23 17:00	104.30	25.23
5/31/23 18:00	92.20	18.23
5/31/23 19:00	87.40	14.17
5/31/23 20:00	81.90	11.75
5/31/23 21:00	85.10	9.75
5/31/23 22:00	104.30	10.72
5/31/23 23:00	135.50	11.28
6/1/23 0:00	160.30	18.44
6/1/23 1:00	181.20	13.63
6/1/23 2:00	180.40	17.04
6/1/23 3:00	192.70	14.40
6/1/23 4:00	198.60	14.72
6/1/23 5:00	205.80	11.78
6/1/23 6:00	221.40	9.79
6/1/23 7:00	195.10	9.77
6/1/23 8:00	163.90	10.32
6/1/23 9:00	192.00	12.62
6/1/23 10:00	202.00	10.40
6/1/23 11:00	174.90	7.45
6/1/23 12:00	130.20	9.64
6/1/23 13:00	163.60	15.36
6/1/23 14:00	166.90	17.43
6/1/23 15:00	176.10	22.63
6/1/23 16:00	192.30	26.36
6/1/23 17:00	210.60	30.13
6/1/23 18:00	226.20	31.86
6/1/23 19:00	225.10	35.24

Date	Wind Direction (°)	Wind speed (km/h)
6/1/23 20:00	231.80	28.91
6/1/23 21:00	228.40	23.51
6/1/23 22:00	213.60	21.11
6/1/23 23:00	220.40	19.61
6/2/23 0:00	227.40	19.39
6/2/23 1:00	232.30	18.94
6/2/23 2:00	226.00	16.41
6/2/23 3:00	208.50	14.99
6/2/23 4:00	224.30	12.81
6/2/23 5:00	261.40	13.36
6/2/23 6:00	243.90	5.73
6/2/23 7:00	218.90	4.01
6/2/23 8:00	266.00	2.48
6/2/23 9:00	173.00	3.81
6/2/23 10:00	154.60	7.49
6/2/23 11:00	139.60	11.03
6/2/23 12:00	147.30	14.49
6/2/23 13:00	150.40	11.33
6/2/23 14:00	147.20	9.74
6/2/23 15:00	136.20	9.81
6/2/23 16:00	147.10	9.95
6/2/23 17:00	160.20	9.83
6/2/23 18:00	144.50	12.68
6/2/23 19:00	129.60	12.64
6/2/23 20:00	118.20	12.13
6/2/23 21:00	121.10	11.23
6/2/23 22:00	128.20	12.01
6/2/23 23:00	138.00	8.77
6/3/23 0:00	144.70	7.81
6/3/23 1:00	135.70	8.95
6/3/23 2:00	141.10	7.11
6/3/23 3:00	110.80	8.83
6/3/23 4:00	108.20	7.88
6/3/23 5:00	95.20	5.48
6/3/23 6:00	97.50	7.89
6/3/23 7:00	129.30	11.02
6/3/23 8:00	141.80	11.06
6/3/23 9:00	153.10	12.89
6/3/23 10:00	165.10	21.33
6/3/23 11:00	168.70	24.15
6/3/23 12:00	166.70	25.50
6/3/23 13:00	169.20	23.64
6/3/23 14:00	175.00	23.48
6/3/23 15:00	195.50	23.37
6/3/23 16:00	186.70	19.14
6/3/23 17:00	168.50	19.60
6/3/23 18:00	159.10	20.04
6/3/23 19:00	147.10	17.46
6/3/23 20:00	139.20	16.57
6/3/23 21:00	131.50	14.77
6/3/23 22:00	136.20	18.78
6/3/23 23:00	148.60	20.27
6/4/23 0:00	139.50	16.15
6/4/23 1:00	131.60	12.87
6/4/23 2:00	135.00	9.60
6/4/23 3:00	136.10	8.77
6/4/23 4:00	129.20	8.35
6/4/23 5:00	110.20	7.84
6/4/23 6:00	115.10	9.48
6/4/23 7:00	111.90	10.12
6/4/23 8:00	109.70	13.33
6/4/23 9:00	108.70	14.63
6/4/23 10:00	107.70	17.12
6/4/23 11:00	97.80	19.06
6/4/23 12:00	124.00	22.20
6/4/23 13:00	131.70	21.26
6/4/23 14:00	139.60	21.51
6/4/23 15:00	150.30	20.57
6/4/23 16:00	169.40	19.29
6/4/23 17:00	169.10	15.86
6/4/23 18:00	143.30	13.77
6/4/23 19:00	123.10	18.44
6/4/23 20:00	118.10	13.94
6/4/23 21:00	118.20	16.37
6/4/23 22:00	98.10	13.82
6/4/23 23:00	92.20	12.53
6/5/23 0:00	98.00	10.17
6/5/23 1:00	87.50	9.04
6/5/23 2:00	73.65	9.05
6/5/23 3:00	84.30	8.61
6/5/23 4:00	107.70	8.22

Date	Wind Direction (°)	Wind speed (km/h)
6/5/23 5:00	98.90	9.29
6/5/23 6:00	88.50	11.78
6/5/23 7:00	76.40	12.45
6/5/23 8:00	92.70	15.88
6/5/23 9:00	99.00	19.85
6/5/23 10:00	82.10	22.21
6/5/23 11:00	95.30	25.22
6/5/23 12:00	100.80	22.86
6/5/23 13:00	92.90	24.31
6/5/23 14:00	103.80	23.87
6/5/23 15:00	88.50	20.10
6/5/23 16:00	100.80	21.29
6/5/23 17:00	110.80	25.47
6/5/23 18:00	107.30	26.33
6/5/23 19:00	106.60	26.13
6/5/23 20:00	117.10	22.71
6/5/23 21:00	109.80	21.34
6/5/23 22:00	119.60	18.73
6/5/23 23:00	92.80	16.34
6/6/23 0:00	84.70	17.56
6/6/23 1:00	97.50	20.49
6/6/23 2:00	93.20	21.14
6/6/23 3:00	96.90	26.68
6/6/23 4:00	95.60	26.68
6/6/23 5:00	93.30	25.06
6/6/23 6:00	98.50	27.54
6/6/23 7:00	102.60	31.10
6/6/23 8:00	99.90	32.76
6/6/23 9:00	104.70	32.29
6/6/23 10:00	104.20	31.46
6/6/23 11:00	107.60	30.96
6/6/23 12:00	115.00	26.58
6/6/23 13:00	132.60	25.03
6/6/23 14:00	166.90	22.48
6/6/23 15:00	228.40	34.45
6/6/23 16:00	229.30	35.93
6/6/23 17:00	233.70	31.07
6/6/23 18:00	231.00	26.79
6/6/23 19:00	233.60	19.46
6/6/23 20:00	213.80	11.63
6/6/23 21:00	178.90	6.23
6/6/23 22:00	149.70	9.81
6/6/23 23:00	161.00	9.26
6/7/23 0:00	153.10	7.74
6/7/23 1:00	131.70	12.95
6/7/23 2:00	120.20	9.30
6/7/23 3:00	125.00	6.70
6/7/23 4:00	142.30	8.96
6/7/23 5:00	146.30	7.03
6/7/23 6:00	167.20	8.25
6/7/23 7:00	165.10	9.35
6/7/23 8:00	157.00	12.82
6/7/23 9:00	156.20	7.46
6/7/23 10:00	110.90	12.27
6/7/23 11:00	118.20	18.84
6/7/23 12:00	98.70	23.44
6/7/23 13:00	114.90	22.99
6/7/23 14:00	160.00	21.18
6/7/23 15:00	168.20	17.64
6/7/23 16:00	208.80	29.09
6/7/23 17:00	199.90	12.54
6/7/23 18:00	327.20	11.85
6/7/23 19:00	233.50	12.20
6/7/23 20:00	209.10	8.25
6/7/23 21:00	9.98	4.44
6/7/23 22:00	9.35	12.67
6/7/23 23:00	30.41	14.11
6/8/23 0:00	7.64	23.97
6/8/23 1:00	11.23	32.18
6/8/23 2:00	10.44	29.48
6/8/23 3:00	11.51	26.76
6/8/23 4:00	5.85	21.66
6/8/23 5:00	0.51	24.90
6/8/23 6:00	10.59	25.84
6/8/23 7:00	19.03	22.90
6/8/23 8:00	13.94	24.56
6/8/23 9:00	8.92	22.01
6/8/23 10:00	16.16	22.57
6/8/23 11:00	19.36	23.82
6/8/23 12:00	18.28	18.38
6/8/23 13:00	14.00	13.59

Date	Wind Direction (°)	Wind speed (km/h)
6/8/23 14:00	13.29	10.08
6/8/23 15:00	357.40	10.17
6/8/23 16:00	355.50	7.21
6/8/23 17:00	332.90	4.96
6/8/23 18:00	301.00	8.78
6/8/23 19:00	306.90	8.72
6/8/23 20:00	283.30	7.58
6/8/23 21:00	281.40	7.60
6/8/23 22:00	259.40	6.61
6/8/23 23:00	230.40	14.76
6/9/23 0:00	231.60	15.97
6/9/23 1:00	238.40	16.92
6/9/23 2:00	240.90	17.19
6/9/23 3:00	237.60	14.96
6/9/23 4:00	231.50	14.66
6/9/23 5:00	224.60	18.42
6/9/23 6:00	223.20	16.50
6/9/23 7:00	222.40	17.34
6/9/23 8:00	230.00	21.42
6/9/23 9:00	231.80	23.98
6/9/23 10:00	235.20	23.28
6/9/23 11:00	211.30	24.60
6/9/23 12:00	213.90	25.87
6/9/23 13:00	216.10	27.73
6/9/23 14:00	224.10	28.18
6/9/23 15:00	232.40	27.50
6/9/23 16:00	230.90	27.81
6/9/23 17:00	232.70	28.29
6/9/23 18:00	232.90	27.74
6/9/23 19:00	228.50	26.70
6/9/23 20:00	218.30	22.07
6/9/23 21:00	216.70	22.74
6/9/23 22:00	212.60	17.48
6/9/23 23:00	213.00	18.82
6/10/23 0:00	213.70	18.01
6/10/23 1:00	204.20	19.41
6/10/23 2:00	201.30	21.02
6/10/23 3:00	206.20	18.45
6/10/23 4:00	209.30	19.15
6/10/23 5:00	206.30	22.21
6/10/23 6:00	206.40	24.56
6/10/23 7:00	205.40	28.52
6/10/23 8:00	213.80	27.40
6/10/23 9:00	221.30	28.60
6/10/23 10:00	218.30	27.87
6/10/23 11:00	210.60	35.75
6/10/23 12:00	213.60	37.55
6/10/23 13:00	216.00	30.20
6/10/23 14:00	220.40	27.90
6/10/23 15:00	235.10	25.77
6/10/23 16:00	251.50	20.19
6/10/23 17:00	264.10	14.46
6/10/23 18:00	279.90	10.91
6/10/23 19:00	9.16	10.65
6/10/23 20:00	46.96	13.18
6/10/23 21:00	40.39	27.21
6/10/23 22:00	41.93	32.22
6/10/23 23:00	50.97	37.37
6/11/23 0:00	57.74	40.25
6/11/23 1:00	61.58	38.20
6/11/23 2:00	64.09	42.05
6/11/23 3:00	62.45	43.24
6/11/23 4:00	62.65	42.62
6/11/23 5:00	62.55	42.48
6/11/23 6:00	66.91	45.79
6/11/23 7:00	70.17	42.77
6/11/23 8:00	73.23	42.88
6/11/23 9:00	69.45	42.05
6/11/23 10:00	70.95	44.68
6/11/23 11:00	76.79	42.19
6/11/23 12:00	74.25	42.52
6/11/23 13:00	73.91	42.80
6/11/23 14:00	68.55	36.47
6/11/23 15:00	67.99	39.42
6/11/23 16:00	78.03	40.86
6/11/23 17:00	88.60	42.16
6/11/23 18:00	90.00	40.46
6/11/23 19:00	90.60	41.51
6/11/23 20:00	96.20	36.36
6/11/23 21:00	86.20	36.00
6/11/23 22:00	85.70	34.38

Date	Wind Direction (°)	Wind speed (km/h)
6/11/23 23:00	76.95	30.10
6/12/23 0:00	70.59	31.10
6/12/23 1:00	75.23	34.42
6/12/23 2:00	77.44	35.68
6/12/23 3:00	87.50	35.46
6/12/23 4:00	87.70	32.87
6/12/23 5:00	76.16	29.02
6/12/23 6:00	86.00	32.65
6/12/23 7:00	83.00	31.50
6/12/23 8:00	89.90	28.69
6/12/23 9:00	93.20	26.20
6/12/23 10:00	98.00	24.32
6/12/23 11:00	103.80	24.96
6/12/23 12:00	102.70	26.87
6/12/23 13:00	101.60	26.87
6/12/23 14:00	105.40	24.95
6/12/23 15:00	109.60	26.55
6/12/23 16:00	113.30	28.06
6/12/23 17:00	125.50	26.09
6/12/23 18:00	127.90	25.68
6/12/23 19:00	125.20	25.55
6/12/23 20:00	123.80	24.16
6/12/23 21:00	137.80	22.46
6/12/23 22:00	143.00	16.35
6/12/23 23:00	140.00	16.56
6/13/23 0:00	138.70	14.95
6/13/23 1:00	140.10	18.62
6/13/23 2:00	143.20	23.35
6/13/23 3:00	129.00	24.30
6/13/23 4:00	137.20	24.85
6/13/23 5:00	133.60	26.75
6/13/23 6:00	133.50	29.20
6/13/23 7:00	133.60	29.09
6/13/23 8:00	126.50	27.28
6/13/23 9:00	125.80	28.94
6/13/23 10:00	131.50	25.83
6/13/23 11:00	134.60	26.17
6/13/23 12:00	138.90	26.74
6/13/23 13:00	141.30	23.39
6/13/23 14:00	134.60	21.88
6/13/23 15:00	121.00	20.94
6/13/23 16:00	127.70	21.73
6/13/23 17:00	121.20	22.33
6/13/23 18:00	136.00	23.27
6/13/23 19:00	152.20	20.15
6/13/23 20:00	141.80	19.09
6/13/23 21:00	134.60	13.28
6/13/23 22:00	128.90	12.45
6/13/23 23:00	124.30	12.47
6/14/23 0:00	108.80	11.07
6/14/23 1:00	113.40	12.07
6/14/23 2:00	96.00	6.44
6/14/23 3:00	105.60	10.81
6/14/23 4:00	103.10	7.25
6/14/23 5:00	95.70	9.83
6/14/23 6:00	108.30	11.62
6/14/23 7:00	103.90	13.48
6/14/23 8:00	113.60	13.87
6/14/23 9:00	113.40	17.74
6/14/23 10:00	102.40	18.78
6/14/23 11:00	106.00	20.18
6/14/23 12:00	115.90	21.47
6/14/23 13:00	123.00	20.34
6/14/23 14:00	117.80	19.12
6/14/23 15:00	112.10	20.63
6/14/23 16:00	105.10	20.78
6/14/23 17:00	109.90	22.08
6/14/23 18:00	105.30	17.85
6/14/23 19:00	95.90	17.32
6/14/23 20:00	107.50	16.42
6/14/23 21:00	99.60	15.20
6/14/23 22:00	119.50	13.08
6/14/23 23:00	130.60	12.34
6/15/23 0:00	115.80	12.84
6/15/23 1:00	115.50	12.97
6/15/23 2:00	115.30	10.88
6/15/23 3:00	96.50	10.31
6/15/23 4:00	81.80	9.61
6/15/23 5:00	84.50	10.61
6/15/23 6:00	81.30	10.23
6/15/23 7:00	67.53	11.35

Date	Wind Direction (°)	Wind speed (km/h)
6/15/23 8:00	37.93	10.38
6/15/23 9:00	33.40	11.16
6/15/23 10:00	30.87	10.50
6/15/23 11:00	40.84	7.92
6/15/23 12:00	31.44	8.55
6/15/23 13:00	48.34	8.19
6/15/23 14:00	39.55	6.55
6/15/23 15:00	17.25	3.28
6/15/23 16:00	319.20	4.06
6/15/23 17:00	341.80	6.99
6/15/23 18:00	325.70	15.18
6/15/23 19:00	325.60	14.65
6/15/23 20:00	313.70	14.81
6/15/23 21:00	315.30	11.92
6/15/23 22:00	314.70	9.09
6/15/23 23:00	304.20	9.48
6/16/23 0:00	306.90	13.57
6/16/23 1:00	312.00	12.67
6/16/23 2:00	309.10	13.73
6/16/23 3:00	305.30	13.92
6/16/23 4:00	306.40	16.36
6/16/23 5:00	319.60	15.64
6/16/23 6:00	332.20	20.27
6/16/23 7:00	328.60	19.83
6/16/23 8:00	324.50	19.33
6/16/23 9:00	322.10	21.38
6/16/23 10:00	323.50	20.80
6/16/23 11:00	317.10	19.40
6/16/23 12:00	301.30	22.71
6/16/23 13:00	322.40	21.29
6/16/23 14:00	319.40	20.19
6/16/23 15:00	303.30	19.45
6/16/23 16:00	296.30	16.50
6/16/23 17:00	312.40	17.07
6/16/23 18:00	332.10	17.10
6/16/23 19:00	333.10	16.60
6/16/23 20:00	333.30	14.73
6/16/23 21:00	340.00	12.77
6/16/23 22:00	4.63	12.07
6/16/23 23:00	5.43	13.59
6/17/23 0:00	8.69	13.45
6/17/23 1:00	10.62	13.67
6/17/23 2:00	15.38	13.40
6/17/23 3:00	27.03	12.68
6/17/23 4:00	42.19	16.75
6/17/23 5:00	42.68	21.46
6/17/23 6:00	42.35	22.41
6/17/23 7:00	46.94	22.44
6/17/23 8:00	43.86	23.19
6/17/23 9:00	50.01	23.38
6/17/23 10:00	49.71	24.75
6/17/23 11:00	46.28	24.66
6/17/23 12:00	50.87	22.64
6/17/23 13:00	48.87	20.76
6/17/23 14:00	33.16	19.57
6/17/23 15:00	36.18	19.03
6/17/23 16:00	50.72	16.88
6/17/23 17:00	51.49	15.51
6/17/23 18:00	51.96	13.19
6/17/23 19:00	41.43	13.98
6/17/23 20:00	48.20	12.77
6/17/23 21:00	44.37	5.36
6/17/23 22:00	67.97	3.09
6/17/23 23:00	21.37	3.14
6/18/23 0:00	317.60	3.24
6/18/23 1:00	309.80	5.57
6/18/23 2:00	311.80	6.89
6/18/23 3:00	337.80	10.83
6/18/23 4:00	340.00	9.95
6/18/23 5:00	337.40	9.07
6/18/23 6:00	336.40	12.15
6/18/23 7:00	350.20	15.53
6/18/23 8:00	353.30	17.40
6/18/23 9:00	350.80	12.25
6/18/23 10:00	328.10	9.09
6/18/23 11:00	349.80	16.07
6/18/23 12:00	357.20	21.06
6/18/23 13:00	348.60	21.25
6/18/23 14:00	354.80	20.88
6/18/23 15:00	9.75	22.32
6/18/23 16:00	7.32	22.61

Date	Wind Direction (°)	Wind speed (km/h)
6/18/23 17:00	358.10	19.20
6/18/23 18:00	359.60	19.93
6/18/23 19:00	1.35	19.27
6/18/23 20:00	1.52	18.39
6/18/23 21:00	5.30	16.04
6/18/23 22:00	4.66	10.99
6/18/23 23:00	22.02	8.18
6/19/23 0:00	7.23	7.12
6/19/23 1:00	356.70	4.06
6/19/23 2:00	3.76	4.87
6/19/23 3:00	355.30	4.67
6/19/23 4:00	27.61	2.37
6/19/23 5:00	39.57	7.01
6/19/23 6:00	80.50	7.26
6/19/23 7:00	87.50	4.63
6/19/23 8:00	56.01	7.19
6/19/23 9:00	34.38	9.43
6/19/23 10:00	57.56	7.91
6/20/23 15:00	105.00	7.32
6/20/23 16:00	138.70	6.09
6/20/23 17:00	106.40	6.17
6/20/23 18:00	161.70	5.34
6/20/23 19:00	112.80	5.85
6/20/23 20:00	161.80	10.30
6/20/23 21:00	159.70	8.95
6/20/23 22:00	190.20	9.48
6/20/23 23:00	201.00	10.81
6/21/23 0:00	210.00	13.26
6/21/23 1:00	218.30	10.55
6/21/23 2:00	218.00	10.18
6/21/23 3:00	217.50	11.37
6/21/23 4:00	220.40	13.68
6/21/23 5:00	217.90	15.64
6/21/23 6:00	217.80	14.75
6/21/23 7:00	219.50	17.11
6/21/23 8:00	220.50	15.10
6/21/23 9:00	219.40	13.91
6/21/23 10:00	244.40	9.70
6/21/23 11:00	244.80	8.46
6/21/23 12:00	258.20	7.85
6/21/23 13:00	262.30	7.50
6/21/23 14:00	309.20	7.18
6/21/23 15:00	333.50	6.43
6/21/23 16:00	174.50	7.65
6/21/23 17:00	220.30	10.14
6/21/23 18:00	242.10	11.60
6/21/23 19:00	260.40	13.37
6/21/23 20:00	270.20	11.57
6/21/23 21:00	246.90	13.44
6/21/23 22:00	245.20	15.03
6/21/23 23:00	240.20	14.69
6/22/23 0:00	223.80	14.68
6/22/23 1:00	221.30	17.18
6/22/23 2:00	228.60	18.08
6/22/23 3:00	240.90	24.12
6/22/23 4:00	239.70	22.11
6/22/23 5:00	238.30	23.26
6/22/23 6:00	233.20	23.13
6/22/23 7:00	235.40	22.32
6/22/23 8:00	236.40	21.90
6/22/23 9:00	241.80	21.19
6/22/23 10:00	236.30	24.70
6/22/23 11:00	236.10	25.58
6/22/23 12:00	235.40	26.05
6/22/23 13:00	235.60	25.45
6/22/23 14:00	234.70	24.16
6/22/23 15:00	235.10	23.88
6/22/23 16:00	241.00	22.63
6/22/23 17:00	248.80	22.03
6/22/23 18:00	246.50	19.40
6/22/23 19:00	247.90	15.73
6/22/23 20:00	261.90	9.56
6/22/23 21:00	247.80	13.47
6/22/23 22:00	241.40	14.37
6/22/23 23:00	224.10	12.16
6/23/23 0:00	209.70	13.98
6/23/23 1:00	211.20	16.44
6/23/23 2:00	228.60	17.40
6/23/23 3:00	237.50	17.00
6/23/23 4:00	234.50	17.97
6/23/23 5:00	229.70	21.63

Date	Wind Direction (°)	Wind speed (km/h)
6/23/23 6:00	242.00	22.11
6/23/23 7:00	259.50	17.74
6/23/23 8:00	268.70	19.97
6/23/23 9:00	280.00	19.22
6/23/23 10:00	289.00	14.81
6/23/23 11:00	306.40	17.35
6/23/23 12:00	255.60	20.41
6/23/23 13:00	256.50	17.21
6/23/23 14:00	237.40	20.20
6/23/23 15:00	243.60	19.47
6/23/23 16:00	261.20	18.30
6/23/23 17:00	272.50	20.45
6/23/23 18:00	271.50	18.46
6/23/23 19:00	308.80	11.24
6/23/23 20:00	277.40	8.73
6/23/23 21:00	304.30	11.64
6/23/23 22:00	302.20	8.82
6/23/23 23:00	3.81	9.77
6/24/23 0:00	358.70	9.23
6/24/23 1:00	4.63	29.59
6/24/23 2:00	10.58	32.11
6/24/23 3:00	9.34	20.70
6/24/23 4:00	356.80	12.95
6/24/23 5:00	332.80	12.85
6/24/23 6:00	319.50	20.81
6/24/23 7:00	339.70	20.53
6/24/23 8:00	327.60	22.28
6/24/23 9:00	324.00	27.71
6/24/23 10:00	326.20	30.85
6/24/23 11:00	323.40	33.98
6/24/23 12:00	327.10	37.08
6/24/23 13:00	333.70	40.93
6/24/23 14:00	337.20	41.33
6/24/23 15:00	332.20	38.34
6/24/23 16:00	338.10	39.46
6/24/23 17:00	333.30	39.02
6/24/23 18:00	338.00	34.70
6/24/23 19:00	340.10	33.62
6/24/23 20:00	349.50	31.36
6/24/23 21:00	348.30	29.16
6/24/23 22:00	343.50	20.89
6/24/23 23:00	329.30	19.22
6/25/23 0:00	325.10	18.43
6/25/23 1:00	329.50	17.05
6/25/23 2:00	340.50	14.01
6/25/23 3:00	343.90	14.60
6/25/23 4:00	345.60	15.11
6/25/23 5:00	340.60	15.74
6/25/23 6:00	347.60	15.47
6/25/23 7:00	330.90	14.71
6/25/23 8:00	317.10	15.66
6/25/23 10:00	300.80	12.49
6/25/23 11:00	310.40	15.75
6/25/23 12:00	322.50	14.34
6/25/23 13:00	311.60	14.69
6/25/23 14:00	310.70	15.76
6/25/23 15:00	299.60	12.35
6/25/23 16:00	312.10	10.06
6/25/23 17:00	299.00	9.24
6/25/23 18:00	289.10	6.58
6/25/23 19:00	243.40	10.01
6/25/23 20:00	235.80	16.15
6/25/23 21:00	219.20	17.84
6/25/23 22:00	213.00	14.69
6/25/23 23:00	207.20	13.69
6/26/23 0:00	202.90	15.32
6/26/23 1:00	206.80	15.32
6/26/23 2:00	210.40	15.02
6/26/23 3:00	209.30	14.48
6/26/23 4:00	208.10	15.12
6/26/23 5:00	204.40	14.26
6/26/23 6:00	201.80	12.21
6/26/23 7:00	206.40	14.02
6/26/23 8:00	213.70	13.73
6/26/23 9:00	218.70	14.59
6/26/23 10:00	237.10	10.45
6/26/23 11:00	219.10	8.43
6/26/23 12:00	220.80	9.40
6/26/23 13:00	223.90	9.12
6/26/23 14:00	234.20	10.04
6/26/23 15:00	221.30	9.10

Date	Wind Direction (°)	Wind speed (km/h)
6/26/23 16:00	230.80	9.66
6/26/23 17:00	224.20	11.44
6/26/23 18:00	244.00	12.03
6/26/23 19:00	226.40	10.53
6/26/23 20:00	211.40	6.97
6/26/23 21:00	203.60	8.93
6/26/23 22:00	201.80	8.98
6/26/23 23:00	218.40	9.57
6/27/23 0:00	215.90	8.45
6/27/23 1:00	225.90	7.79
6/27/23 2:00	242.90	8.61
6/27/23 3:00	250.00	8.87
6/27/23 4:00	244.80	11.97
6/27/23 5:00	246.30	13.78
6/27/23 6:00	253.60	8.70
6/27/23 7:00	237.00	12.21
6/27/23 8:00	245.80	12.79
6/27/23 9:00	267.70	12.72
6/27/23 10:00	284.40	11.55
6/27/23 11:00	288.80	13.24
6/27/23 12:00	278.20	14.74
6/27/23 13:00	277.60	16.28
6/27/23 14:00	280.60	15.07
6/27/23 15:00	290.80	17.92
6/27/23 16:00	312.60	19.40
6/27/23 17:00	289.90	11.74
6/27/23 18:00	288.70	8.55
6/27/23 19:00	290.30	12.03
6/27/23 20:00	251.00	15.95
6/27/23 21:00	242.90	17.30
6/27/23 22:00	240.30	17.59
6/27/23 23:00	241.40	16.55
6/28/23 0:00	239.30	16.62
6/28/23 1:00	239.20	16.05
6/28/23 2:00	256.70	13.88
6/28/23 3:00	266.40	12.20
6/28/23 4:00	270.90	6.06
6/28/23 5:00	240.10	6.63
6/28/23 6:00	228.40	7.74
6/28/23 7:00	217.70	14.13
6/28/23 8:00	203.90	5.34
6/28/23 9:00	226.80	4.14
6/28/23 10:00	90.00	8.41
6/28/23 11:00	139.60	7.94
6/28/23 12:00	145.10	8.40
6/28/23 13:00	136.80	9.66
6/28/23 14:00	234.10	12.85
6/28/23 15:00	226.90	20.93
6/28/23 16:00	229.10	13.50
6/28/23 17:00	218.70	15.47
6/28/23 18:00	236.30	12.70
6/28/23 19:00	171.30	7.01
6/28/23 20:00	208.60	20.82
6/28/23 21:00	179.20	10.43
6/28/23 22:00	128.40	11.12
6/28/23 23:00	82.20	8.87
6/29/23 0:00	113.20	7.28
6/29/23 1:00	195.10	8.63
6/29/23 2:00	188.80	10.03
6/29/23 3:00	231.00	14.75
6/29/23 4:00	36.46	8.75
6/29/23 5:00	348.80	10.14
6/29/23 6:00	291.00	11.34
6/29/23 7:00	269.60	17.29
6/29/23 8:00	259.60	7.41
6/29/23 9:00	152.00	8.04
6/29/23 10:00	193.50	7.24
6/29/23 11:00	236.50	7.66
6/29/23 12:00	244.70	9.01
6/29/23 13:00	255.90	8.99
6/29/23 14:00	269.10	9.60
6/29/23 15:00	240.20	10.26
6/29/23 16:00	284.80	8.04
6/29/23 17:00	322.10	11.62
6/29/23 18:00	332.10	11.79
6/29/23 19:00	20.67	16.72
6/29/23 20:00	39.17	15.15
6/29/23 21:00	43.42	12.92
6/29/23 22:00	36.01	12.15
6/29/23 23:00	34.85	9.84
6/30/23 0:00	10.27	12.73

Date	Wind Direction (°)	Wind speed (km/h)
6/30/23 1:00	20.00	11.01
6/30/23 2:00	41.11	10.40
6/30/23 3:00	58.15	11.95
6/30/23 4:00	59.10	10.94
6/30/23 5:00	53.60	10.61
6/30/23 6:00	62.52	14.35
6/30/23 7:00	55.85	21.88
6/30/23 8:00	60.52	24.61
6/30/23 9:00	61.36	21.05
6/30/23 10:00	52.81	27.62
6/30/23 11:00	57.45	30.06
6/30/23 12:00	84.90	25.93
6/30/23 13:00	101.90	25.16
6/30/23 14:00	114.70	21.59
6/30/23 15:00	95.10	23.70
6/30/23 16:00	89.80	23.66
6/30/23 17:00	88.80	22.72
6/30/23 18:00	97.90	24.01
6/30/23 19:00	95.30	27.15
6/30/23 20:00	94.60	28.64
6/30/23 21:00	98.90	28.38
6/30/23 22:00	101.70	26.41
6/30/23 23:00	102.20	27.14
7/1/23 0:00	110.00	29.52
7/1/23 1:00	109.10	28.48
7/1/23 2:00	106.60	25.38
7/1/23 3:00	115.10	22.69
7/1/23 4:00	128.90	20.17
7/1/23 5:00	99.20	19.57
7/1/23 6:00	72.56	14.78
7/1/23 7:00	127.80	14.29
7/1/23 8:00	152.90	20.87
7/1/23 9:00	174.60	21.24
7/1/23 10:00	170.20	20.17
7/1/23 11:00	167.90	19.81
7/1/23 12:00	184.60	17.39
7/1/23 13:00	180.10	19.03
7/1/23 14:00	156.70	18.41
7/1/23 15:00	160.60	11.86
7/1/23 16:00	144.20	8.42
7/1/23 17:00	96.10	7.96
7/1/23 18:00	104.00	18.45
7/1/23 19:00	111.50	17.34
7/1/23 20:00	110.40	16.67
7/1/23 21:00	104.60	15.85
7/1/23 22:00	104.30	16.52
7/1/23 23:00	123.40	10.81
7/2/23 0:00	123.80	10.26
7/2/23 1:00	99.20	9.03
7/2/23 2:00	121.80	6.58
7/2/23 3:00	108.80	9.05
7/2/23 4:00	113.20	10.05
7/2/23 5:00	80.20	13.54
7/2/23 6:00	72.47	15.06
7/2/23 7:00	76.53	18.99
7/2/23 8:00	74.14	21.01
7/2/23 9:00	65.77	23.64
7/2/23 10:00	71.30	27.84
7/2/23 11:00	75.01	29.41
7/2/23 12:00	59.59	29.34
7/2/23 13:00	65.61	27.41
7/2/23 14:00	58.61	29.84
7/2/23 15:00	59.87	31.43
7/2/23 16:00	61.75	32.58
7/2/23 17:00	54.86	38.63
7/2/23 18:00	53.06	40.68
7/2/23 19:00	53.57	41.36
7/2/23 20:00	54.95	35.89
7/2/23 21:00	57.83	31.39
7/2/23 22:00	59.18	24.87
7/2/23 23:00	58.19	23.95
7/3/23 0:00	58.70	21.40
7/3/23 1:00	57.84	20.85
7/3/23 2:00	59.68	22.00
7/3/23 3:00	52.24	18.66
7/3/23 4:00	42.19	15.85
7/3/23 5:00	48.11	18.15
7/3/23 6:00	57.44	21.64
7/3/23 7:00	57.68	22.12
7/3/23 8:00	53.38	23.12
7/3/23 9:00	61.24	23.77

Date	Wind Direction (°)	Wind speed (km/h)
7/3/23 10:00	65.39	23.07
7/3/23 11:00	55.65	20.13
7/3/23 12:00	29.17	19.22
7/3/23 13:00	26.58	17.88
7/3/23 14:00	36.19	16.83
7/3/23 15:00	17.18	17.13
7/3/23 16:00	12.52	11.55
7/3/23 17:00	4.96	10.27
7/3/23 18:00	2.98	14.43
7/3/23 19:00	336.40	12.36
7/3/23 20:00	330.10	12.46
7/3/23 21:00	330.20	8.77
7/3/23 22:00	278.20	9.70
7/3/23 23:00	256.70	11.20
7/4/23 0:00	254.70	12.89
7/4/23 1:00	250.00	17.55
7/4/23 2:00	245.40	19.31
7/4/23 3:00	258.10	21.42
7/4/23 4:00	267.80	21.92
7/4/23 5:00	261.40	18.83
7/4/23 6:00	276.70	21.49
7/4/23 7:00	300.60	19.45
7/4/23 8:00	330.90	18.91
7/4/23 9:00	308.40	13.82
7/4/23 10:00	309.70	22.58
7/4/23 11:00	305.40	23.12
7/4/23 12:00	310.40	21.49
7/4/23 13:00	305.90	24.34
7/4/23 14:00	296.00	26.88
7/4/23 15:00	1.73	15.29
7/4/23 16:00	2.84	23.49
7/4/23 17:00	2.86	21.33
7/4/23 18:00	5.53	20.01
7/4/23 19:00	15.94	19.40
7/4/23 20:00	24.14	18.66
7/4/23 21:00	37.34	20.95
7/4/23 22:00	42.70	18.21
7/4/23 23:00	42.88	15.52
7/5/23 0:00	48.04	18.47
7/5/23 1:00	45.25	15.97
7/5/23 2:00	54.90	18.01
7/5/23 3:00	59.82	20.31
7/5/23 4:00	45.01	20.17
7/5/23 5:00	44.98	21.30
7/5/23 6:00	55.60	23.13
7/5/23 7:00	54.45	22.53
7/5/23 8:00	52.87	23.97
7/5/23 9:00	46.42	24.37
7/5/23 10:00	44.81	20.88
7/5/23 11:00	53.20	19.98
7/5/23 12:00	55.99	18.40
7/5/23 13:00	58.46	18.82
7/5/23 14:00	51.83	17.04
7/5/23 15:00	48.42	16.64
7/5/23 16:00	30.76	15.85
7/5/23 17:00	25.75	15.15
7/5/23 18:00	30.62	16.29
7/5/23 19:00	30.60	17.19
7/5/23 20:00	30.33	14.50
7/5/23 21:00	33.31	9.42
7/5/23 22:00	342.10	5.69
7/5/23 23:00	295.90	6.26
7/6/23 0:00	283.20	9.19
7/6/23 1:00	286.70	11.04
7/6/23 2:00	289.60	13.09
7/6/23 3:00	290.00	14.00
7/6/23 4:00	280.50	12.01
7/6/23 5:00	291.80	17.51
7/6/23 6:00	306.20	15.71
7/6/23 7:00	325.40	17.20
7/6/23 8:00	330.90	18.40
7/6/23 9:00	345.20	21.22
7/6/23 10:00	356.40	19.62
7/6/23 11:00	344.40	19.02
7/6/23 12:00	308.90	18.47
7/6/23 13:00	311.90	15.99
7/6/23 14:00	309.20	18.59
7/6/23 15:00	310.80	22.46
7/6/23 16:00	313.80	24.91
7/6/23 17:00	322.70	23.22
7/6/23 18:00	339.70	20.93

Date	Wind Direction (°)	Wind speed (km/h)
7/6/23 19:00	7.29	21.75
7/6/23 20:00	23.19	20.60
7/6/23 21:00	41.65	11.40
7/6/23 22:00	46.05	8.49
7/6/23 23:00	50.76	8.69
7/7/23 0:00	53.70	2.44
7/7/23 1:00	278.90	1.87
7/7/23 2:00	230.00	5.42
7/7/23 3:00	253.40	9.19
7/7/23 4:00	246.00	16.06
7/7/23 5:00	244.70	12.33
7/7/23 6:00	224.30	12.40
7/7/23 7:00	230.30	14.59
7/7/23 8:00	237.40	16.01
7/7/23 9:00	235.80	15.02
7/7/23 10:00	253.00	13.05
7/7/23 11:00	241.60	10.14
7/7/23 12:00	272.90	7.53
7/7/23 13:00	290.70	10.16
7/7/23 14:00	306.50	15.97
7/7/23 15:00	309.90	17.76
7/7/23 16:00	344.70	13.40
7/7/23 17:00	44.54	21.59
7/7/23 18:00	53.87	13.25
7/7/23 19:00	134.90	7.64
7/7/23 20:00	185.60	3.05
7/7/23 21:00	280.10	8.81
7/7/23 22:00	287.50	8.75
7/7/23 23:00	289.80	9.17
7/8/23 0:00	340.10	10.87
7/8/23 1:00	346.10	13.04
7/8/23 2:00	341.50	10.35
7/8/23 3:00	350.10	10.06
7/8/23 4:00	19.87	14.80
7/8/23 5:00	56.10	18.91
7/8/23 6:00	58.98	22.36
7/8/23 7:00	60.73	24.38
7/8/23 8:00	59.89	22.18
7/8/23 9:00	58.41	24.26
7/8/23 10:00	47.40	22.02
7/8/23 11:00	35.53	21.13
7/8/23 12:00	33.67	20.54
7/8/23 13:00	37.46	21.16
7/8/23 14:00	32.16	21.85
7/8/23 15:00	30.72	22.32
7/8/23 16:00	33.02	25.00
7/8/23 17:00	65.07	22.23
7/8/23 18:00	71.30	21.07
7/8/23 19:00	65.20	20.65
7/8/23 20:00	61.38	18.65
7/8/23 21:00	64.46	16.12
7/8/23 22:00	70.96	13.76
7/8/23 23:00	48.97	13.07
7/9/23 0:00	45.24	12.55
7/9/23 1:00	39.43	11.87
7/9/23 2:00	39.37	12.61
7/9/23 3:00	33.50	13.25
7/9/23 4:00	27.59	15.63
7/9/23 5:00	24.37	15.98
7/9/23 6:00	37.38	19.83
7/9/23 7:00	30.40	22.58
7/9/23 8:00	38.24	22.17
7/9/23 9:00	45.72	21.48
7/9/23 10:00	54.62	20.87
7/9/23 11:00	51.65	17.41
7/9/23 12:00	62.25	16.32
7/9/23 13:00	70.68	17.98
7/9/23 14:00	77.06	18.39
7/9/23 15:00	94.80	15.12
7/9/23 16:00	103.90	16.29
7/9/23 17:00	102.50	17.85
7/9/23 18:00	107.10	17.26
7/9/23 19:00	102.10	17.58
7/9/23 20:00	91.70	13.11
7/9/23 21:00	75.72	8.65
7/9/23 22:00	58.59	9.32
7/9/23 23:00	82.20	10.39
7/10/23 0:00	107.80	9.03
7/10/23 1:00	137.90	7.43
7/10/23 2:00	146.50	4.52
7/10/23 3:00	110.40	8.50

Date	Wind Direction (°)	Wind speed (km/h)
7/10/23 4:00	122.70	9.36
7/10/23 5:00	124.20	11.27
7/10/23 6:00	128.70	10.44
7/10/23 7:00	140.30	11.60
7/10/23 8:00	162.60	13.15
7/10/23 9:00	176.80	13.61
7/10/23 10:00	177.30	11.56
7/10/23 11:00	174.70	10.55
7/10/23 12:00	162.10	9.89
7/10/23 13:00	167.30	10.55
7/10/23 14:00	182.20	11.04
7/10/23 15:00	182.90	9.51
7/10/23 16:00	188.00	11.95
7/10/23 17:00	173.40	13.00
7/10/23 18:00	165.70	12.55
7/10/23 19:00	162.70	11.69
7/10/23 20:00	156.30	10.30
7/10/23 21:00	141.10	9.15
7/10/23 22:00	124.50	7.84
7/10/23 23:00	135.70	9.74
7/11/23 0:00	122.80	9.77
7/11/23 1:00	124.50	8.91
7/11/23 2:00	126.80	7.02
7/11/23 3:00	174.30	8.09
7/11/23 4:00	189.30	7.94
7/11/23 5:00	171.00	5.77
7/11/23 6:00	182.70	5.19
7/11/23 7:00	207.90	3.21
7/11/23 8:00	109.10	1.62
7/11/23 9:00	102.70	2.98
7/11/23 10:00	104.30	5.10
7/11/23 11:00	151.00	4.50
7/11/23 12:00	69.75	6.31
7/11/23 13:00	2.28	5.23
7/11/23 14:00	328.00	5.93
7/11/23 15:00	326.70	5.81
7/11/23 16:00	327.40	6.92
7/11/23 17:00	341.80	5.71
7/11/23 18:00	47.15	7.93
7/11/23 19:00	66.00	11.49
7/11/23 20:00	60.59	9.46
7/11/23 21:00	73.60	5.79
7/11/23 22:00	43.51	10.34
7/11/23 23:00	46.09	10.24
7/12/23 0:00	68.39	5.76
7/12/23 1:00	39.43	2.88
7/12/23 2:00	9.59	8.28
7/12/23 3:00	321.40	10.36
7/12/23 4:00	339.80	12.90
7/12/23 5:00	315.60	11.07
7/12/23 6:00	315.30	11.03
7/12/23 7:00	322.70	14.82
7/12/23 8:00	340.90	22.26
7/12/23 9:00	4.59	23.41
7/12/23 10:00	14.41	26.93
7/12/23 11:00	21.30	28.87
7/12/23 12:00	28.95	32.36
7/12/23 13:00	45.94	28.41
7/12/23 14:00	29.01	30.60
7/12/23 15:00	35.20	29.45
7/12/23 16:00	29.67	28.18
7/12/23 17:00	17.18	29.88
7/12/23 18:00	16.37	29.12
7/12/23 19:00	20.33	26.23
7/12/23 20:00	24.44	17.65
7/12/23 21:00	5.78	16.16
7/12/23 22:00	359.30	17.74
7/12/23 23:00	359.80	18.18
7/13/23 0:00	4.03	20.61
7/13/23 1:00	2.94	21.54
7/13/23 2:00	8.83	23.19
7/13/23 3:00	15.53	26.51
7/13/23 4:00	11.83	26.98
7/13/23 5:00	12.41	26.93
7/13/23 6:00	14.37	32.65
7/13/23 7:00	16.48	35.35
7/13/23 8:00	16.76	38.41
7/13/23 9:00	17.45	40.54
7/13/23 10:00	21.11	39.89
7/13/23 11:00	20.13	40.25
7/13/23 12:00	19.14	40.79

Date	Wind Direction (°)	Wind speed (km/h)
7/13/23 13:00	20.58	39.38
7/13/23 14:00	28.80	37.08
7/13/23 15:00	30.85	33.12
7/13/23 16:00	28.26	33.66
7/13/23 17:00	26.26	30.82
7/13/23 18:00	27.38	29.81
7/13/23 19:00	25.71	30.71
7/13/23 20:00	22.22	30.78
7/13/23 21:00	23.63	29.81
7/13/23 22:00	25.21	26.48
7/13/23 23:00	22.74	27.42
7/14/23 0:00	24.15	26.58
7/14/23 1:00	33.36	27.37
7/14/23 2:00	28.72	26.45
7/14/23 3:00	38.37	24.93
7/14/23 4:00	23.82	27.75
7/14/23 5:00	27.48	25.10
7/14/23 6:00	21.51	22.99
7/14/23 7:00	25.41	23.78
7/14/23 8:00	26.66	22.58
7/14/23 9:00	24.32	22.41
7/14/23 10:00	29.53	22.84
7/14/23 11:00	30.96	21.22
7/14/23 12:00	36.40	22.22
7/14/23 13:00	34.68	20.03
7/14/23 14:00	35.92	19.59
7/14/23 15:00	33.29	21.88
7/14/23 16:00	30.25	20.92
7/14/23 17:00	31.24	20.19
7/14/23 18:00	32.41	20.17
7/14/23 19:00	28.09	20.00
7/14/23 20:00	31.54	19.14
7/14/23 21:00	25.90	16.26
7/14/23 22:00	77.81	19.07
7/14/23 23:00	124.70	11.79
7/15/23 0:00	114.80	11.55
7/15/23 1:00	92.20	9.31
7/15/23 2:00	84.30	14.77
7/15/23 3:00	95.50	13.27
7/15/23 4:00	81.30	13.03
7/15/23 5:00	81.60	13.44
7/15/23 6:00	83.40	12.22
7/15/23 7:00	90.60	13.37
7/15/23 8:00	108.00	13.07
7/15/23 9:00	103.10	11.66
7/15/23 10:00	106.60	12.44
7/15/23 11:00	110.90	12.80
7/15/23 12:00	116.90	12.56
7/15/23 13:00	112.10	9.08
7/15/23 14:00	126.50	8.11
7/15/23 15:00	139.70	8.39
7/15/23 16:00	145.30	9.81
7/15/23 17:00	174.70	8.94
7/15/23 18:00	176.40	10.79
7/15/23 19:00	181.30	10.34
7/15/23 20:00	171.50	11.76
7/15/23 21:00	158.60	9.68
7/15/23 22:00	151.00	10.66
7/15/23 23:00	158.50	12.36
7/16/23 0:00	181.20	11.43
7/16/23 1:00	192.50	11.75
7/16/23 2:00	200.10	12.52
7/16/23 3:00	196.20	11.33
7/16/23 4:00	183.20	7.19
7/16/23 5:00	182.60	9.06
7/16/23 6:00	177.90	9.61
7/16/23 7:00	184.60	9.71
7/16/23 8:00	190.80	10.74
7/16/23 9:00	184.80	9.30
7/16/23 10:00	171.90	9.91
7/16/23 11:00	178.90	11.67
7/16/23 12:00	182.60	13.17
7/16/23 13:00	184.00	13.60
7/16/23 14:00	186.80	13.23
7/16/23 15:00	194.60	12.07
7/16/23 16:00	176.30	11.24
7/16/23 17:00	174.90	10.49
7/16/23 18:00	185.00	8.59
7/16/23 19:00	210.90	10.27
7/16/23 20:00	208.40	7.83
7/16/23 21:00	194.70	5.67

Date	Wind Direction (°)	Wind speed (km/h)
7/16/23 22:00	191.30	6.00
7/16/23 23:00	174.20	7.21
7/17/23 0:00	180.40	4.96
7/17/23 1:00	177.20	6.79
7/17/23 2:00	182.20	6.89
7/17/23 3:00	181.00	7.64
7/17/23 4:00	172.20	6.75
7/17/23 5:00	173.30	6.66
7/17/23 6:00	174.50	6.74
7/17/23 7:00	182.00	8.22
7/17/23 8:00	184.60	9.10
7/17/23 9:00	185.00	7.87
7/17/23 10:00	187.90	6.89
7/17/23 11:00	205.90	6.61
7/17/23 12:00	212.40	7.01
7/17/23 13:00	211.40	9.34
7/17/23 14:00	219.30	7.60
7/17/23 15:00	216.00	8.32
7/17/23 16:00	207.80	8.11
7/17/23 17:00	185.30	8.37
7/17/23 18:00	177.30	7.74
7/17/23 19:00	158.30	6.39
7/17/23 20:00	145.80	2.76
7/17/23 21:00	138.50	4.53
7/17/23 22:00	228.50	8.00
7/17/23 23:00	273.30	4.22
7/18/23 0:00	292.20	4.67
7/18/23 1:00	293.80	3.79
7/18/23 2:00	313.80	5.04
7/18/23 3:00	317.80	3.25
7/18/23 4:00	354.80	5.21
7/18/23 5:00	349.50	7.28
7/18/23 6:00	0.54	8.69
7/18/23 7:00	358.80	4.13
7/18/23 8:00	1.92	4.87
7/18/23 9:00	341.20	3.54
7/18/23 10:00	297.50	5.42
7/18/23 11:00	312.40	5.01
7/18/23 12:00	314.20	6.72
7/18/23 13:00	317.80	7.62
7/18/23 14:00	269.50	7.61
7/18/23 15:00	247.30	5.12
7/18/23 16:00	16.39	5.23
7/18/23 17:00	67.44	3.30
7/18/23 18:00	60.51	7.63
7/18/23 19:00	33.29	7.97
7/18/23 20:00	285.30	13.38
7/18/23 21:00	283.80	9.78
7/18/23 22:00	291.30	7.73
7/18/23 23:00	318.30	7.73
7/19/23 0:00	16.07	4.16
7/19/23 1:00	102.00	3.10
7/19/23 2:00	333.90	3.06
7/19/23 3:00	317.70	7.28
7/19/23 4:00	298.20	6.17
7/19/23 5:00	299.40	3.51
7/19/23 6:00	286.10	3.28
7/19/23 7:00	351.50	6.51
7/19/23 8:00	20.80	5.76
7/19/23 9:00	14.91	3.26
7/19/23 10:00	343.20	5.47
7/19/23 11:00	26.67	6.37
7/19/23 12:00	310.60	4.15
7/19/23 13:00	271.10	5.93
7/19/23 14:00	319.60	7.94
7/19/23 15:00	337.40	10.76
7/19/23 16:00	319.10	13.04
7/19/23 17:00	352.40	13.76
7/19/23 18:00	341.70	12.42
7/19/23 19:00	350.90	10.49
7/19/23 20:00	42.69	7.53
7/19/23 21:00	85.70	6.24
7/19/23 22:00	107.40	4.07
7/19/23 23:00	216.90	5.42
7/20/23 0:00	258.50	6.88
7/20/23 1:00	275.90	10.97
7/20/23 2:00	269.10	12.60
7/20/23 3:00	271.80	13.98
7/20/23 4:00	281.20	15.00
7/20/23 5:00	279.70	11.83
7/20/23 6:00	279.80	13.49

Date	Wind Direction (°)	Wind speed (km/h)
7/20/23 7:00	291.40	11.51
7/20/23 8:00	299.30	13.90
7/20/23 9:00	316.20	16.57
7/20/23 10:00	333.60	13.34
7/20/23 11:00	358.50	13.02
7/20/23 12:00	322.30	12.50
7/20/23 13:00	319.20	14.61
7/20/23 14:00	322.80	17.90
7/20/23 15:00	311.80	21.60
7/20/23 16:00	310.10	24.96
7/20/23 17:00	302.90	25.81
7/20/23 18:00	316.30	24.74
7/20/23 19:00	315.70	16.66
7/20/23 20:00	323.60	11.64
7/20/23 21:00	316.20	10.05
7/20/23 22:00	313.40	10.60
7/20/23 23:00	319.30	10.60
7/21/23 0:00	315.30	9.38
7/21/23 1:00	304.70	8.91
7/21/23 2:00	305.60	8.29
7/21/23 3:00	344.10	13.15
7/21/23 4:00	359.30	15.83
7/21/23 5:00	14.68	17.77
7/21/23 6:00	17.85	17.65
7/21/23 7:00	19.40	21.99
7/21/23 8:00	28.29	23.48
7/21/23 9:00	22.05	22.44
7/21/23 10:00	22.04	24.93
7/21/23 11:00	12.78	25.35
7/21/23 12:00	18.66	26.13
7/21/23 13:00	16.32	23.26
7/21/23 14:00	29.98	23.47
7/21/23 15:00	22.41	21.06
7/21/23 16:00	18.84	20.08
7/21/23 17:00	36.65	20.14
7/21/23 18:00	25.27	17.39
7/21/23 19:00	21.07	16.46
7/21/23 20:00	45.77	12.11
7/21/23 21:00	56.43	7.89
7/21/23 22:00	53.99	3.34
7/21/23 23:00	54.59	0.13
7/22/23 0:00	311.10	2.23
7/22/23 1:00	279.60	5.32
7/22/23 2:00	74.35	6.03
7/22/23 3:00	84.00	3.05
7/22/23 4:00	73.49	3.10
7/22/23 5:00	72.81	3.25
7/22/23 6:00	113.90	3.47
7/22/23 7:00	147.10	4.66
7/22/23 8:00	291.00	3.98
7/22/23 9:00	315.60	8.06
7/22/23 10:00	322.10	10.50
7/22/23 11:00	311.40	12.70
7/22/23 12:00	316.60	10.60
7/22/23 13:00	321.10	10.67
7/22/23 14:00	299.10	11.26
7/22/23 15:00	297.80	16.70
7/22/23 16:00	309.80	16.67
7/22/23 17:00	308.50	14.88
7/22/23 18:00	314.30	13.08
7/22/23 19:00	305.70	9.27
7/22/23 20:00	317.30	7.28
7/22/23 21:00	140.00	6.13
7/22/23 22:00	211.80	5.73
7/22/23 23:00	258.50	9.19
7/23/23 0:00	258.10	13.75
7/23/23 1:00	283.20	29.52
7/23/23 2:00	280.40	18.13
7/23/23 3:00	249.10	13.53
7/23/23 4:00	283.40	11.37
7/23/23 5:00	278.70	15.07
7/23/23 6:00	303.40	17.09
7/23/23 7:00	322.10	12.40
7/23/23 8:00	340.10	12.89
7/23/23 9:00	325.50	12.74
7/23/23 10:00	304.00	15.00
7/23/23 11:00	306.90	14.18
7/23/23 12:00	299.00	11.72
7/23/23 13:00	292.10	9.00
7/23/23 14:00	288.80	12.27
7/23/23 15:00	293.00	16.30

Date	Wind Direction (°)	Wind speed (km/h)
7/23/23 16:00	294.20	16.32
7/23/23 17:00	299.10	13.91
7/23/23 18:00	298.00	11.59
7/23/23 19:00	300.40	10.95
7/23/23 20:00	16.12	8.88
7/23/23 21:00	141.80	8.13
7/23/23 22:00	200.00	9.73
7/23/23 23:00	217.80	10.13
7/24/23 0:00	261.10	7.87
7/24/23 1:00	63.04	7.91
7/24/23 2:00	64.61	5.63
7/24/23 3:00	47.71	7.30
7/24/23 4:00	47.30	4.11
7/24/23 5:00	36.32	7.61
7/24/23 6:00	41.20	4.68
7/24/23 7:00	84.50	11.56
7/24/23 8:00	112.80	12.78
7/24/23 9:00	115.80	13.74
7/24/23 10:00	100.70	16.74
7/24/23 11:00	107.10	22.64
7/24/23 12:00	103.60	25.06
7/24/23 13:00	104.70	24.82
7/24/23 14:00	102.30	23.03
7/24/23 15:00	104.20	21.92
7/24/23 16:00	103.60	21.69
7/24/23 17:00	105.00	21.08
7/24/23 18:00	104.60	23.23
7/24/23 19:00	104.90	24.41
7/24/23 20:00	108.30	21.08
7/24/23 21:00	106.20	19.98
7/24/23 22:00	106.90	18.08
7/24/23 23:00	111.80	16.46
7/25/23 0:00	114.60	16.10
7/25/23 1:00	111.20	18.40
7/25/23 2:00	109.20	17.01
7/25/23 3:00	106.80	16.80
7/25/23 4:00	112.30	16.35
7/25/23 5:00	115.20	14.65
7/25/23 6:00	114.10	16.10
7/25/23 7:00	117.60	16.43
7/25/23 8:00	110.80	18.98
7/25/23 9:00	107.50	23.56
7/25/23 10:00	110.20	26.65
7/25/23 11:00	105.80	28.12
7/25/23 12:00	101.80	29.05
7/25/23 13:00	98.30	30.06
7/25/23 14:00	92.40	31.21
7/25/23 15:00	100.20	30.38
7/25/23 16:00	104.10	30.17
7/25/23 17:00	103.30	29.95
7/25/23 18:00	97.10	30.64
7/25/23 19:00	94.60	28.69
7/25/23 20:00	95.80	25.30
7/25/23 21:00	91.20	21.00
7/25/23 22:00	85.80	18.90
7/25/23 23:00	83.40	15.93
7/26/23 0:00	90.60	18.38
7/26/23 1:00	94.40	16.88
7/26/23 2:00	93.90	15.83
7/26/23 3:00	104.40	15.81
7/26/23 4:00	105.00	13.37
7/26/23 5:00	89.80	13.39
7/26/23 6:00	87.40	15.10
7/26/23 7:00	90.80	19.01
7/26/23 8:00	90.60	20.62
7/26/23 9:00	95.20	27.68
7/26/23 10:00	96.00	28.59
7/26/23 11:00	94.50	27.03
7/26/23 12:00	98.90	24.67
7/26/23 13:00	93.30	24.83
7/26/23 14:00	109.00	24.93
7/26/23 15:00	106.60	23.81
7/26/23 16:00	109.40	22.55
7/26/23 17:00	110.70	19.11
7/26/23 18:00	102.80	17.13
7/26/23 19:00	99.00	16.24
7/26/23 20:00	100.80	13.40
7/26/23 21:00	93.60	8.76
7/26/23 22:00	69.58	7.87
7/26/23 23:00	72.50	7.17
7/27/23 0:00	69.88	6.43

Date	Wind Direction (°)	Wind speed (km/h)
7/27/23 1:00	58.87	7.78
7/27/23 2:00	58.68	6.98
7/27/23 3:00	47.88	6.96
7/27/23 4:00	62.72	6.84
7/27/23 5:00	55.33	4.49
7/27/23 6:00	62.79	3.63
7/27/23 7:00	168.50	1.17
7/27/23 8:00	251.00	2.36
7/27/23 9:00	345.60	3.78
7/27/23 10:00	49.73	6.39
7/27/23 11:00	24.79	5.83
7/27/23 12:00	80.90	6.54
7/27/23 13:00	59.09	7.06
7/27/23 14:00	333.70	7.68
7/27/23 15:00	335.20	7.68
7/27/23 16:00	323.70	8.45
7/27/23 17:00	330.40	9.73
7/27/23 18:00	323.30	11.22
7/27/23 19:00	314.20	10.65
7/27/23 20:00	310.50	10.06
7/27/23 21:00	300.30	9.30
7/27/23 22:00	299.60	7.55
7/27/23 23:00	286.20	8.79
7/28/23 0:00	288.10	8.54
7/28/23 1:00	285.40	9.16
7/28/23 2:00	289.00	9.64
7/28/23 3:00	275.10	11.26
7/28/23 4:00	277.90	13.07
7/28/23 5:00	281.70	8.97
7/28/23 6:00	270.60	7.28
7/28/23 7:00	283.30	8.86
7/28/23 8:00	278.90	10.34
7/28/23 9:00	281.00	10.21
7/28/23 10:00	281.70	10.51
7/28/23 11:00	284.00	9.60
7/28/23 12:00	277.50	8.79
7/28/23 13:00	275.10	11.06
7/28/23 14:00	261.70	13.17
7/28/23 15:00	252.00	11.60
7/28/23 16:00	262.00	11.74
7/28/23 17:00	241.60	12.14
7/28/23 18:00	229.90	12.73
7/28/23 19:00	244.30	13.86
7/28/23 20:00	241.60	13.23
7/28/23 21:00	242.60	13.29
7/28/23 22:00	236.50	12.41
7/28/23 23:00	242.00	13.06
7/29/23 0:00	245.80	15.00
7/29/23 1:00	236.90	14.32
7/29/23 2:00	240.90	14.74
7/29/23 3:00	237.50	15.79
7/29/23 4:00	239.10	15.37
7/29/23 5:00	225.30	10.86
7/29/23 6:00	211.50	10.40
7/29/23 7:00	211.40	9.30
7/29/23 8:00	200.00	6.82
7/29/23 9:00	185.20	8.31
7/29/23 10:00	178.60	8.86
7/29/23 11:00	188.30	12.15
7/29/23 12:00	180.10	15.13
7/29/23 13:00	201.10	15.00
7/29/23 14:00	225.90	13.94
7/29/23 15:00	239.50	13.12
7/29/23 16:00	233.80	11.22
7/29/23 17:00	309.80	8.79
7/29/23 18:00	292.90	7.82
7/29/23 19:00	273.30	7.80
7/29/23 20:00	253.80	8.59
7/29/23 21:00	223.10	10.91
7/29/23 22:00	230.70	13.55
7/29/23 23:00	231.60	11.91
7/30/23 0:00	245.30	13.65
7/30/23 1:00	244.90	13.41
7/30/23 2:00	247.90	10.22
7/30/23 3:00	230.70	6.52
7/30/23 4:00	223.30	9.51
7/30/23 5:00	238.70	8.37
7/30/23 6:00	213.60	10.13
7/30/23 7:00	195.40	7.35
7/30/23 8:00	201.40	7.01
7/30/23 9:00	95.20	3.46

Date	Wind Direction (°)	Wind speed (km/h)
7/30/23 10:00	115.20	4.42
7/30/23 11:00	116.60	5.98
7/30/23 12:00	107.60	10.29
7/30/23 13:00	115.70	7.93
7/30/23 14:00	106.50	10.91
7/30/23 15:00	77.05	15.30
7/30/23 16:00	78.26	14.37
7/30/23 17:00	79.55	14.00
7/30/23 18:00	90.90	15.76
7/30/23 19:00	83.10	17.83
7/30/23 20:00	72.43	16.21
7/30/23 21:00	64.35	15.57
7/30/23 22:00	58.07	14.91
7/30/23 23:00	54.47	14.16
7/31/23 0:00	45.45	13.30
7/31/23 1:00	56.99	14.14
7/31/23 2:00	65.01	14.86
7/31/23 3:00	62.07	13.54
7/31/23 4:00	66.56	14.70
7/31/23 5:00	69.96	14.01
7/31/23 6:00	68.69	13.61
7/31/23 7:00	77.22	16.07
7/31/23 8:00	66.03	17.25
7/31/23 9:00	68.40	20.74
7/31/23 10:00	75.04	24.75
7/31/23 11:00	69.09	27.76
7/31/23 12:00	67.30	28.04
7/31/23 13:00	59.67	28.34
7/31/23 14:00	70.72	28.77
7/31/23 15:00	69.97	25.19
7/31/23 16:00	64.64	18.28
7/31/23 17:00	77.57	17.23
7/31/23 18:00	87.40	16.48
7/31/23 19:00	87.60	16.86
7/31/23 20:00	80.40	14.77
7/31/23 21:00	65.06	13.22
7/31/23 22:00	53.34	15.18
7/31/23 23:00	54.31	17.54
8/1/23 0:00	45.73	17.14
8/1/23 1:00	47.26	22.67
8/1/23 2:00	55.84	24.06
8/1/23 3:00	43.02	20.09
8/1/23 4:00	42.09	20.67
8/1/23 5:00	50.67	23.73
8/1/23 6:00	50.22	24.47
8/1/23 7:00	48.78	25.75
8/1/23 8:00	52.41	30.31
8/1/23 9:00	51.26	33.77
8/1/23 10:00	49.86	32.76
8/1/23 11:00	55.00	29.30
8/1/23 12:00	56.15	29.34
8/1/23 13:00	52.12	27.97
8/1/23 14:00	60.34	27.42
8/1/23 15:00	59.20	26.62
8/1/23 16:00	60.31	26.12
8/1/23 17:00	66.06	24.14
8/1/23 18:00	84.50	22.52
8/1/23 19:00	92.10	20.55
8/1/23 20:00	86.20	16.21
8/1/23 21:00	83.20	12.44
8/1/23 22:00	58.61	10.92
8/1/23 23:00	63.82	12.82
8/2/23 0:00	49.49	10.46
8/2/23 1:00	20.97	11.53
8/2/23 2:00	28.13	11.46
8/2/23 3:00	38.17	10.71
8/2/23 4:00	49.14	12.54
8/2/23 5:00	69.52	14.49
8/2/23 6:00	78.29	13.09
8/2/23 7:00	65.97	12.22
8/2/23 8:00	78.36	10.98
8/2/23 9:00	84.80	8.51
8/2/23 10:00	44.29	7.87
8/2/23 11:00	21.09	7.10
8/2/23 12:00	70.78	8.76
8/2/23 13:00	138.40	8.17
8/2/23 14:00	238.50	2.59
8/2/23 15:00	320.50	3.50
8/2/23 16:00	13.92	5.95
8/2/23 17:00	314.00	5.65
8/2/23 18:00	276.30	1.96

Date	Wind Direction (°)	Wind speed (km/h)
8/2/23 19:00	206.50	4.29
8/2/23 20:00	326.50	4.15
8/2/23 21:00	351.60	8.37
8/2/23 22:00	3.86	6.69
8/2/23 23:00	34.07	5.04
8/3/23 0:00	59.08	7.81
8/3/23 1:00	69.18	4.34
8/3/23 2:00	45.11	7.16
8/3/23 3:00	59.82	10.16
8/3/23 4:00	84.20	11.04
8/3/23 5:00	104.50	8.47
8/3/23 6:00	103.80	10.35
8/3/23 7:00	109.10	10.04
8/3/23 8:00	103.80	10.19
8/3/23 9:00	120.50	8.91
8/3/23 10:00	137.60	9.08
8/3/23 11:00	133.70	13.70
8/3/23 12:00	142.60	16.10
8/3/23 13:00	154.30	18.16
8/3/23 14:00	163.00	19.55
8/3/23 15:00	151.00	16.71
8/3/23 16:00	164.20	15.12
8/3/23 17:00	151.50	15.48
8/3/23 18:00	168.30	12.05
8/3/23 19:00	177.20	13.24
8/3/23 20:00	187.10	11.63
8/3/23 21:00	197.40	8.42
8/3/23 22:00	177.80	5.13
8/3/23 23:00	158.30	1.29
8/4/23 0:00	116.80	3.67
8/4/23 1:00	104.20	4.02
8/4/23 2:00	207.00	1.95
8/4/23 3:00	274.80	5.61
8/4/23 4:00	305.00	7.37
8/4/23 5:00	304.90	9.69
8/4/23 6:00	305.10	9.51
8/4/23 7:00	302.60	6.50
8/4/23 8:00	285.30	6.36
8/4/23 9:00	284.40	7.16
8/4/23 10:00	273.00	5.24
8/4/23 11:00	282.70	5.55
8/4/23 12:00	287.60	7.64
8/4/23 13:00	286.70	8.19
8/4/23 14:00	306.50	13.66
8/4/23 15:00	325.30	26.23
8/4/23 16:00	335.60	21.01
8/4/23 17:00	343.60	19.46
8/4/23 18:00	10.74	25.99
8/4/23 19:00	33.82	14.15
8/4/23 20:00	12.74	14.40
8/4/23 21:00	32.08	16.11
8/4/23 22:00	30.14	19.18
8/4/23 23:00	36.44	19.11
8/5/23 0:00	36.83	19.71
8/5/23 1:00	27.98	17.13
8/5/23 2:00	37.22	17.99
8/5/23 3:00	34.95	15.19
8/5/23 4:00	36.04	13.88
8/5/23 5:00	35.54	14.21
8/5/23 6:00	32.63	14.55
8/5/23 7:00	32.78	16.96
8/5/23 8:00	51.19	17.60
8/5/23 9:00	44.69	12.47
8/5/23 10:00	49.55	9.60
8/5/23 11:00	26.66	13.23
8/5/23 12:00	9.59	14.75
8/5/23 13:00	30.50	14.59
8/5/23 14:00	20.78	16.56
8/5/23 15:00	7.97	17.80
8/5/23 16:00	11.14	19.32
8/5/23 17:00	5.12	17.92
8/5/23 18:00	6.11	16.90
8/5/23 19:00	13.86	18.09
8/5/23 20:00	22.51	15.99
8/5/23 21:00	14.67	12.78
8/5/23 22:00	8.37	11.26
8/5/23 23:00	359.00	9.97
8/6/23 0:00	2.45	10.41
8/6/23 1:00	358.20	10.14
8/6/23 2:00	358.30	11.28
8/6/23 3:00	5.54	12.08

Date	Wind Direction (°)	Wind speed (km/h)
8/6/23 4:00	1.20	10.74
8/6/23 5:00	11.71	15.04
8/6/23 6:00	19.38	17.02
8/6/23 7:00	32.64	20.10
8/6/23 8:00	45.74	24.12
8/6/23 9:00	49.85	24.19
8/6/23 10:00	66.89	23.85
8/6/23 11:00	69.90	21.29
8/6/23 12:00	55.57	18.97
8/6/23 13:00	62.03	18.96
8/6/23 14:00	59.86	18.74
8/6/23 15:00	67.30	17.07
8/6/23 16:00	79.89	15.52
8/6/23 17:00	75.00	16.34
8/6/23 18:00	74.79	14.68
8/6/23 19:00	93.10	13.54
8/6/23 20:00	84.80	15.13
8/6/23 21:00	80.60	10.89
8/6/23 22:00	90.30	11.34
8/6/23 23:00	83.00	7.95
8/7/23 0:00	44.02	9.65
8/7/23 1:00	57.42	11.64
8/7/23 2:00	59.95	11.66
8/7/23 3:00	62.82	12.05
8/7/23 4:00	57.29	10.47
8/7/23 5:00	32.20	9.85
8/7/23 6:00	17.65	10.51
8/7/23 7:00	33.97	14.85
8/7/23 8:00	44.84	19.68
8/7/23 9:00	56.89	20.80
8/7/23 10:00	52.28	19.20
8/7/23 11:00	61.93	17.77
8/7/23 12:00	71.14	18.53
8/7/23 13:00	81.70	19.81
8/7/23 14:00	98.00	18.42
8/7/23 15:00	107.60	18.62
8/7/23 16:00	112.30	14.59
8/7/23 17:00	107.90	10.31
8/7/23 18:00	86.70	8.37
8/7/23 19:00	86.50	11.04
8/7/23 20:00	88.50	10.31
8/7/23 21:00	58.95	10.84
8/7/23 22:00	77.94	11.52
8/7/23 23:00	86.50	9.85
8/8/23 0:00	109.20	9.96
8/8/23 1:00	131.20	8.85
8/8/23 2:00	118.60	4.85
8/8/23 3:00	158.40	5.65
8/8/23 4:00	140.10	5.41
8/8/23 5:00	143.30	5.72
8/8/23 6:00	160.80	6.06
8/8/23 7:00	158.30	6.36
8/8/23 8:00	163.90	7.66
8/8/23 9:00	183.70	9.36
8/8/23 10:00	179.30	8.89
8/8/23 11:00	182.00	10.78
8/8/23 12:00	159.30	12.42
8/8/23 13:00	170.70	11.16
8/8/23 14:00	183.40	14.70
8/8/23 15:00	194.20	13.51
8/8/23 16:00	168.60	11.83
8/8/23 17:00	150.20	16.18
8/8/23 18:00	165.60	13.80
8/8/23 19:00	156.00	13.11
8/8/23 20:00	146.40	11.90
8/8/23 21:00	140.90	12.14
8/8/23 22:00	158.10	12.32
8/8/23 23:00	156.80	11.10
8/9/23 0:00	180.20	11.72
8/9/23 1:00	182.20	9.41
8/9/23 2:00	169.40	10.60
8/9/23 3:00	176.40	7.99
8/9/23 4:00	180.40	5.17
8/9/23 5:00	169.20	8.80
8/9/23 6:00	162.40	10.81
8/9/23 7:00	164.50	10.65
8/9/23 8:00	163.50	11.54
8/9/23 9:00	159.80	10.00
8/9/23 10:00	170.40	12.96
8/9/23 11:00	173.90	15.89
8/9/23 12:00	181.50	14.74

Date	Wind Direction (°)	Wind speed (km/h)
8/9/23 13:00	187.40	18.33
8/9/23 14:00	197.80	18.62
8/9/23 15:00	199.80	16.48
8/9/23 16:00	222.30	13.65
8/9/23 17:00	212.60	12.23
8/9/23 18:00	215.70	11.42
8/9/23 19:00	215.50	11.02
8/9/23 20:00	184.40	4.55
8/9/23 21:00	145.40	8.02
8/9/23 22:00	140.50	7.76
8/9/23 23:00	119.40	6.93
8/10/23 0:00	131.10	6.43
8/10/23 1:00	155.00	5.88
8/10/23 2:00	176.10	7.01
8/10/23 3:00	208.70	11.62
8/10/23 4:00	202.80	10.58
8/10/23 5:00	184.60	8.54
8/10/23 6:00	155.40	3.11
8/10/23 7:00	165.90	3.47
8/10/23 8:00	167.50	2.64
8/10/23 9:00	173.30	5.58
8/10/23 10:00	139.00	8.47
8/10/23 11:00	150.30	12.35
8/10/23 12:00	155.30	11.51
8/10/23 13:00	167.30	12.83
8/10/23 14:00	144.90	13.70
8/10/23 15:00	169.90	12.96
8/10/23 16:00	166.30	11.46
8/10/23 17:00	176.60	9.79
8/10/23 18:00	157.80	10.35
8/10/23 19:00	163.00	10.09
8/10/23 20:00	189.20	7.57
8/10/23 21:00	174.90	6.09
8/10/23 22:00	227.50	4.55
8/10/23 23:00	218.90	2.53
8/11/23 0:00	197.50	5.44
8/11/23 1:00	181.60	5.60
8/11/23 2:00	195.20	5.46
8/11/23 3:00	196.80	4.55
8/11/23 4:00	274.20	4.95
8/11/23 5:00	201.30	5.30
8/11/23 6:00	235.00	2.96
8/11/23 7:00	211.60	5.51
8/11/23 8:00	237.40	7.52
8/11/23 9:00	243.20	8.06
8/11/23 10:00	238.90	11.53
8/11/23 11:00	237.60	14.88
8/11/23 12:00	240.70	13.32
8/11/23 13:00	228.20	17.67
8/11/23 14:00	229.80	19.51
8/11/23 15:00	244.30	17.99
8/11/23 16:00	244.30	20.19
8/11/23 17:00	240.50	22.37
8/11/23 18:00	250.10	20.08
8/11/23 19:00	237.10	21.05
8/11/23 20:00	240.40	20.19
8/11/23 21:00	238.20	19.75
8/11/23 22:00	237.70	20.30
8/11/23 23:00	243.70	19.89
8/12/23 0:00	245.90	14.59
8/12/23 1:00	244.40	15.70
8/12/23 2:00	243.90	16.57
8/12/23 3:00	234.80	15.74
8/12/23 4:00	226.20	13.80
8/12/23 5:00	229.70	11.37
8/12/23 6:00	240.10	8.69
8/12/23 7:00	263.40	6.84
8/12/23 8:00	244.50	6.72
8/12/23 9:00	217.00	12.38
8/12/23 10:00	213.30	13.27
8/12/23 11:00	236.70	17.78
8/12/23 12:00	238.10	20.46
8/12/23 13:00	247.10	20.11
8/12/23 14:00	241.50	22.17
8/12/23 15:00	237.10	23.58
8/12/23 16:00	236.80	21.43
8/12/23 17:00	235.40	21.16
8/12/23 18:00	236.80	21.18
8/12/23 19:00	234.60	21.59
8/12/23 20:00	234.20	21.37
8/12/23 21:00	236.10	18.99

Date	Wind Direction (°)	Wind speed (km/h)
8/12/23 22:00	213.70	14.42
8/12/23 23:00	211.70	15.25
8/13/23 0:00	215.30	15.29
8/13/23 1:00	218.40	12.12
8/13/23 2:00	207.30	14.68
8/13/23 3:00	201.00	17.41
8/13/23 4:00	198.70	15.49
8/13/23 5:00	199.40	13.57
8/13/23 6:00	194.00	18.03
8/13/23 7:00	188.40	22.60
8/13/23 8:00	198.30	25.03
8/13/23 9:00	185.70	26.66
8/13/23 10:00	186.30	26.52
8/13/23 11:00	188.50	31.46
8/13/23 12:00	198.90	35.86
8/13/23 13:00	226.80	42.41
8/13/23 14:00	233.60	42.44
8/13/23 15:00	260.00	36.54
8/13/23 16:00	266.90	35.78
8/13/23 17:00	266.70	38.63
8/13/23 18:00	290.10	42.34
8/13/23 19:00	295.50	45.29
8/13/23 20:00	299.90	45.40
8/13/23 21:00	311.40	38.59
8/13/23 22:00	314.40	34.45
8/13/23 23:00	315.40	33.98
8/14/23 0:00	320.20	31.79
8/14/23 1:00	322.20	22.00
8/14/23 2:00	309.80	22.26
8/14/23 3:00	306.90	23.04
8/14/23 4:00	307.70	24.27
8/14/23 5:00	297.30	20.61
8/14/23 6:00	295.60	23.02
8/14/23 7:00	306.50	25.52
8/14/23 8:00	311.70	26.33
8/14/23 9:00	303.30	28.02
8/14/23 10:00	294.50	28.80
8/14/23 11:00	302.80	30.89
8/14/23 12:00	304.20	33.98
8/14/23 13:00	306.70	28.91
8/14/23 14:00	309.40	30.02
8/14/23 15:00	313.00	28.54
8/14/23 16:00	309.90	28.11
8/14/23 17:00	307.60	26.79
8/14/23 18:00	289.50	27.86
8/14/23 19:00	296.10	25.64
8/14/23 20:00	292.80	26.40
8/14/23 21:00	279.20	20.90
8/14/23 22:00	280.70	20.45
8/14/23 23:00	300.40	24.92
8/15/23 0:00	291.90	27.53
8/15/23 1:00	304.10	26.46
8/15/23 2:00	307.30	27.02
8/15/23 3:00	305.10	25.91
8/15/23 4:00	295.20	25.51
8/15/23 5:00	298.50	27.50
8/15/23 6:00	296.40	29.92
8/15/23 7:00	293.20	28.56
8/15/23 8:00	287.60	29.52
8/15/23 9:00	293.00	28.52
8/15/23 10:00	294.20	27.94
8/15/23 11:00	291.20	30.20
8/15/23 12:00	292.90	31.75
8/15/23 13:00	293.20	30.42
8/15/23 14:00	291.50	27.41
8/15/23 15:00	303.00	28.13
8/15/23 16:00	299.90	27.94
8/15/23 17:00	302.50	29.74
8/15/23 18:00	302.70	27.66
8/15/23 19:00	310.20	25.15
8/15/23 20:00	316.10	17.63
8/15/23 21:00	304.90	14.30
8/15/23 22:00	297.80	15.60
8/15/23 23:00	301.10	15.75
8/16/23 0:00	301.50	16.60
8/16/23 1:00	303.70	17.26
8/16/23 2:00	304.00	17.29
8/16/23 3:00	307.10	16.76
8/16/23 4:00	294.30	14.48
8/16/23 5:00	304.50	16.86
8/16/23 6:00	306.60	20.16

Date	Wind Direction (°)	Wind speed (km/h)
8/16/23 7:00	302.90	22.44
8/16/23 8:00	293.10	24.85
8/16/23 9:00	292.70	27.91
8/16/23 10:00	299.90	28.07
8/16/23 11:00	300.60	29.38
8/16/23 12:00	298.50	30.53
8/16/23 13:00	303.80	30.42
8/16/23 14:00	292.30	28.94
8/16/23 15:00	288.50	28.59
8/16/23 16:00	288.10	24.90
8/16/23 17:00	289.50	27.09
8/16/23 18:00	303.70	19.08
8/16/23 19:00	288.00	11.06
8/16/23 20:00	238.10	7.98
8/16/23 21:00	221.20	7.58
8/16/23 22:00	219.30	11.58
8/16/23 23:00	202.30	9.48
8/17/23 0:00	202.00	13.10
8/17/23 1:00	206.40	11.24
8/17/23 2:00	212.10	13.91
8/17/23 3:00	202.20	9.57
8/17/23 4:00	207.80	7.72
8/17/23 5:00	215.80	5.26
8/17/23 6:00	17.61	4.29
8/17/23 7:00	116.00	4.67
8/17/23 8:00	91.70	9.74
8/17/23 9:00	91.10	8.30
8/17/23 10:00	111.30	8.23
8/17/23 11:00	100.40	6.03
8/17/23 12:00	72.62	3.95
8/17/23 13:00	54.92	6.62
8/17/23 14:00	30.01	9.71
8/17/23 15:00	16.69	13.47
8/17/23 16:00	25.24	15.72
8/17/23 17:00	32.90	19.10
8/17/23 18:00	34.19	21.48
8/17/23 19:00	20.67	22.73
8/17/23 20:00	18.35	20.20
8/17/23 21:00	16.06	16.20
8/17/23 22:00	12.51	15.15
8/17/23 23:00	0.06	15.02
8/18/23 0:00	355.80	13.82
8/18/23 1:00	355.00	16.00
8/18/23 2:00	347.00	17.68
8/18/23 3:00	348.80	18.00
8/18/23 4:00	345.00	19.29
8/18/23 5:00	345.50	19.52
8/18/23 6:00	344.50	17.23
8/18/23 7:00	344.90	19.92
8/18/23 8:00	348.40	20.21
8/18/23 9:00	342.80	19.81
8/18/23 10:00	343.40	19.48
8/18/23 11:00	334.60	19.03
8/18/23 12:00	315.70	20.56
8/18/23 13:00	318.50	20.34
8/18/23 14:00	310.90	21.40
8/18/23 15:00	308.90	19.67
8/18/23 16:00	299.60	20.61
8/18/23 17:00	280.90	23.51
8/18/23 18:00	276.80	22.56
8/18/23 19:00	276.30	23.63
8/18/23 20:00	264.50	22.45
8/18/23 21:00	240.40	23.35
8/18/23 22:00	240.10	24.92
8/18/23 23:00	244.00	24.34
8/19/23 0:00	279.90	21.78
8/19/23 1:00	340.50	24.18
8/19/23 2:00	333.00	20.10
8/19/23 3:00	325.30	26.98
8/19/23 4:00	320.60	27.50
8/19/23 5:00	328.70	27.67
8/19/23 6:00	318.20	23.64
8/19/23 7:00	312.80	26.08
8/19/23 8:00	316.60	31.03
8/19/23 9:00	319.40	30.35
8/19/23 10:00	328.00	29.23
8/19/23 11:00	322.90	27.07
8/19/23 12:00	311.10	28.54
8/19/23 13:00	308.20	27.37
8/19/23 14:00	309.40	25.69
8/19/23 15:00	302.20	25.04

Date	Wind Direction (°)	Wind speed (km/h)
8/19/23 16:00	314.10	21.87
8/19/23 17:00	314.30	18.50
8/19/23 18:00	330.00	17.82
8/19/23 19:00	323.50	13.22
8/19/23 20:00	312.90	15.49
8/19/23 21:00	340.00	12.93
8/19/23 22:00	309.60	10.76
8/19/23 23:00	281.40	12.38
8/20/23 0:00	279.90	16.92
8/20/23 1:00	300.70	20.29
8/20/23 2:00	303.70	20.94
8/20/23 3:00	308.60	22.05
8/20/23 4:00	317.20	22.04
8/20/23 5:00	313.80	19.26
8/20/23 6:00	312.40	20.71
8/20/23 7:00	316.00	20.76
8/20/23 8:00	313.10	23.61
8/20/23 9:00	313.50	24.06
8/20/23 10:00	297.40	24.89
8/20/23 11:00	284.00	24.84
8/20/23 12:00	276.10	26.13
8/20/23 13:00	282.50	28.71
8/20/23 14:00	293.20	22.05
8/20/23 15:00	274.10	22.27
8/20/23 16:00	270.70	24.81
8/20/23 17:00	270.10	22.51
8/20/23 18:00	271.40	22.20
8/20/23 19:00	288.70	22.37
8/20/23 20:00	300.10	21.24
8/20/23 21:00	256.20	16.52
8/20/23 22:00	250.80	20.50
8/20/23 23:00	245.40	22.32
8/21/23 0:00	256.50	26.13
8/21/23 1:00	289.10	24.34
8/21/23 2:00	304.30	20.09
8/21/23 3:00	304.30	20.61
8/21/23 4:00	298.40	19.13
8/21/23 5:00	285.60	15.93
8/21/23 6:00	287.40	13.20
8/21/23 7:00	275.80	12.43
8/21/23 8:00	296.00	17.95
8/21/23 9:00	309.20	19.11
8/21/23 10:00	301.20	21.59
8/21/23 11:00	305.70	21.44
8/21/23 12:00	305.40	24.54
8/21/23 13:00	305.90	22.60
8/21/23 14:00	311.80	21.50
8/21/23 15:00	312.40	20.12
8/21/23 16:00	318.00	19.70
8/21/23 17:00	297.30	19.91
8/21/23 18:00	285.90	17.12
8/21/23 19:00	280.40	16.00
8/21/23 20:00	278.50	12.01
8/21/23 21:00	259.70	11.74
8/21/23 22:00	257.40	10.93
8/21/23 23:00	244.50	8.85
8/22/23 0:00	245.10	13.04
8/22/23 1:00	248.00	9.20
8/22/23 2:00	211.40	7.52
8/22/23 3:00	193.40	8.06
8/22/23 4:00	211.30	13.03
8/22/23 5:00	216.30	15.27
8/22/23 6:00	195.60	10.50
8/22/23 7:00	180.10	10.92
8/22/23 8:00	171.50	13.38
8/22/23 9:00	178.80	17.95
8/22/23 10:00	187.60	21.63
8/22/23 11:00	211.10	23.50
8/22/23 12:00	252.80	22.59
8/22/23 13:00	288.00	26.65
8/22/23 14:00	304.50	27.61
8/22/23 15:00	311.00	29.56
8/22/23 16:00	312.20	26.20
8/22/23 17:00	308.90	24.18
8/22/23 18:00	309.40	25.34
8/22/23 19:00	332.10	25.61
8/22/23 20:00	327.00	20.18
8/22/23 21:00	322.80	14.45
8/22/23 22:00	334.40	12.96
8/22/23 23:00	351.70	13.06
8/23/23 0:00	29.10	11.03

Date	Wind Direction (°)	Wind speed (km/h)
8/23/23 1:00	40.57	12.76
8/23/23 2:00	41.46	10.98
8/23/23 3:00	43.94	9.22
8/23/23 4:00	29.70	10.71
8/23/23 5:00	46.85	11.13
8/23/23 6:00	34.03	9.47
8/23/23 7:00	37.93	8.41
8/23/23 8:00	57.59	7.05
8/23/23 9:00	95.10	9.08
8/23/23 10:00	105.50	6.13
8/23/23 11:00	109.00	5.29
8/23/23 12:00	135.90	4.91
8/23/23 13:00	310.60	5.24
8/23/23 14:00	307.10	4.56
8/23/23 15:00	294.00	4.58
8/23/23 16:00	291.70	5.38
8/23/23 17:00	240.80	5.23
8/23/23 18:00	262.50	5.57
8/23/23 19:00	242.00	15.01
8/23/23 20:00	100.10	7.57
8/23/23 21:00	229.00	12.15
8/23/23 22:00	238.30	14.68
8/23/23 23:00	237.30	14.93
8/24/23 0:00	238.80	13.25
8/24/23 1:00	239.70	11.87
8/24/23 2:00	241.20	12.63
8/24/23 3:00	242.90	14.55
8/24/23 4:00	241.00	15.35
8/24/23 5:00	236.20	14.18
8/24/23 6:00	232.50	13.98
8/24/23 7:00	232.90	12.29
8/24/23 8:00	235.60	12.00
8/24/23 9:00	250.90	13.03
8/24/23 10:00	271.40	12.99
8/24/23 11:00	285.50	13.73
8/24/23 12:00	301.00	11.33
8/24/23 13:00	327.30	9.40
8/24/23 14:00	342.10	9.37
8/24/23 15:00	291.90	6.67
8/24/23 16:00	264.80	14.56
8/24/23 17:00	272.70	16.83
8/24/23 18:00	300.50	12.84
8/24/23 19:00	38.53	7.97
8/24/23 20:00	113.20	7.29
8/24/23 21:00	153.30	7.15
8/24/23 22:00	159.40	7.51
8/24/23 23:00	187.90	7.67
8/25/23 0:00	201.20	9.41
8/25/23 1:00	218.70	14.27
8/25/23 2:00	220.30	15.70
8/25/23 3:00	233.00	20.94
8/25/23 4:00	200.10	15.11
8/25/23 5:00	198.20	15.45
8/25/23 6:00	202.80	22.50
8/25/23 7:00	225.10	25.99
8/25/23 8:00	230.90	28.56
8/25/23 9:00	236.10	26.60
8/25/23 10:00	238.70	21.52
8/25/23 11:00	247.50	17.83
8/25/23 12:00	256.10	20.00
8/25/23 13:00	268.10	21.61
8/25/23 14:00	271.00	22.29
8/25/23 15:00	267.20	21.12
8/25/23 16:00	233.00	18.26
8/25/23 17:00	223.20	16.21
8/25/23 18:00	209.10	16.32
8/25/23 19:00	208.50	18.26
8/25/23 20:00	213.50	18.01
8/25/23 21:00	203.50	21.36
8/25/23 22:00	204.90	23.86
8/25/23 23:00	214.90	28.73
8/26/23 0:00	228.80	33.41
8/26/23 1:00	238.70	26.36
8/26/23 2:00	256.30	24.20
8/26/23 3:00	282.50	19.04
8/26/23 4:00	312.90	24.77
8/26/23 5:00	317.60	18.01
8/26/23 6:00	343.30	21.95
8/26/23 7:00	31.30	28.08
8/26/23 8:00	39.63	29.84
8/26/23 9:00	41.50	28.10

Date	Wind Direction (°)	Wind speed (km/h)
8/26/23 10:00	44.97	26.36
8/26/23 11:00	43.10	26.85
8/26/23 12:00	45.41	23.88
8/26/23 13:00	37.90	24.67
8/26/23 14:00	34.24	19.43
8/26/23 15:00	26.94	16.06
8/26/23 16:00	24.77	13.47
8/26/23 17:00	29.68	13.07
8/26/23 18:00	23.37	10.23
8/26/23 19:00	28.81	9.17
8/26/23 20:00	44.08	7.93
8/26/23 21:00	54.01	8.35
8/26/23 22:00	78.29	4.98
8/26/23 23:00	146.20	3.37
8/27/23 0:00	149.60	3.94
8/27/23 1:00	154.00	3.69
8/27/23 2:00	167.60	3.97
8/27/23 3:00	193.40	6.91
8/27/23 4:00	201.50	9.50
8/27/23 5:00	216.40	11.96
8/27/23 6:00	216.00	11.39
8/27/23 7:00	208.80	11.22
8/27/23 8:00	212.40	12.73
8/27/23 9:00	208.40	13.27
8/27/23 10:00	224.50	13.24
8/27/23 11:00	217.30	13.97
8/27/23 12:00	210.80	13.59
8/27/23 13:00	212.60	13.87
8/27/23 14:00	214.20	15.89
8/27/23 15:00	211.20	14.59
8/27/23 16:00	214.20	14.79
8/27/23 17:00	207.10	11.50
8/27/23 18:00	201.80	12.89
8/27/23 19:00	201.70	11.06
8/27/23 20:00	198.80	7.55
8/27/23 21:00	198.00	5.61
8/27/23 22:00	188.20	2.04
8/27/23 23:00	200.30	4.94
8/28/23 0:00	194.30	2.97
8/28/23 1:00	204.50	2.89
8/28/23 2:00	212.40	6.70
8/28/23 3:00	210.70	8.81
8/28/23 4:00	187.20	7.34
8/28/23 5:00	200.30	11.03
8/28/23 6:00	193.90	7.80
8/28/23 7:00	190.00	6.49
8/28/23 8:00	207.30	12.20
8/28/23 9:00	213.20	17.82
8/28/23 10:00	206.80	20.71
8/28/23 11:00	221.00	22.31
8/28/23 12:00	229.60	22.33
8/28/23 13:00	238.90	20.40
8/28/23 14:00	261.80	17.85
8/28/23 15:00	284.20	22.38
8/28/23 16:00	298.40	16.29
8/28/23 17:00	317.20	12.88
8/28/23 18:00	322.30	8.40
8/28/23 19:00	22.32	4.50
8/28/23 20:00	159.70	2.53
8/28/23 21:00	191.40	6.16
8/28/23 22:00	234.70	11.14
8/28/23 23:00	238.80	13.07
8/29/23 0:00	262.30	15.61
8/29/23 1:00	275.40	16.26
8/29/23 2:00	285.30	13.66
8/29/23 3:00	293.50	12.02
8/29/23 4:00	286.60	12.85
8/29/23 5:00	317.40	14.05
8/29/23 6:00	4.22	16.04
8/29/23 7:00	23.06	14.94
8/29/23 8:00	31.54	13.42
8/29/23 9:00	38.79	17.29
8/29/23 10:00	45.91	15.04
8/29/23 11:00	61.66	11.82
8/29/23 12:00	69.44	11.71
8/29/23 13:00	82.20	11.71
8/29/23 14:00	80.20	12.48
8/29/23 15:00	83.30	9.08
8/29/23 16:00	81.10	11.93
8/29/23 17:00	67.98	11.79
8/29/23 18:00	128.40	8.25

Date	Wind Direction (°)	Wind speed (km/h)
8/29/23 19:00	116.00	6.79
8/29/23 20:00	101.80	7.34
8/29/23 21:00	122.00	8.83
8/29/23 22:00	123.30	9.58
8/29/23 23:00	122.50	10.54
8/30/23 0:00	116.20	10.46
8/30/23 1:00	123.30	10.91
8/30/23 2:00	154.20	12.51
8/30/23 3:00	150.00	10.90
8/30/23 4:00	145.80	11.26
8/30/23 5:00	135.00	15.08
8/30/23 6:00	128.40	13.04
8/30/23 7:00	109.10	16.04
8/30/23 8:00	114.80	15.04
8/30/23 9:00	124.40	15.85
8/30/23 10:00	111.40	17.14
8/30/23 11:00	94.80	18.28
8/30/23 12:00	108.60	24.27
8/30/23 13:00	107.30	26.86
8/30/23 14:00	109.40	29.09
8/30/23 15:00	106.30	27.40
8/30/23 16:00	123.00	29.02
8/30/23 17:00	113.50	20.91
8/30/23 18:00	102.20	18.86
8/30/23 19:00	87.90	16.76
8/30/23 20:00	93.40	15.86
8/30/23 21:00	90.40	15.78
8/30/23 22:00	93.80	16.77
8/30/23 23:00	97.60	16.98
8/31/23 0:00	101.70	16.20
8/31/23 1:00	102.30	13.04
8/31/23 2:00	87.20	15.12
8/31/23 3:00	81.10	16.38
8/31/23 4:00	79.20	16.95
8/31/23 5:00	83.50	18.72
8/31/23 6:00	81.50	20.92
8/31/23 7:00	89.90	22.39
8/31/23 8:00	80.10	22.64
8/31/23 9:00	71.49	23.64
8/31/23 10:00	69.51	24.73
8/31/23 11:00	71.57	27.07
8/31/23 12:00	79.89	28.39
8/31/23 13:00	78.18	26.14
8/31/23 14:00	76.57	24.59
8/31/23 15:00	81.20	26.62
8/31/23 16:00	91.10	25.82
8/31/23 17:00	99.80	28.08
8/31/23 18:00	104.50	26.73
8/31/23 19:00	104.30	27.22
8/31/23 20:00	103.00	29.59
8/31/23 21:00	102.70	28.04
8/31/23 22:00	113.30	27.70
8/31/23 23:00	124.70	26.85
9/1/23 0:00	122.00	25.89
9/1/23 1:00	131.60	25.02
9/1/23 2:00	142.10	25.08
9/1/23 3:00	147.10	23.70
9/1/23 4:00	150.40	26.29
9/1/23 5:00	160.30	25.47
9/1/23 6:00	166.80	22.20
9/1/23 7:00	170.20	23.41
9/1/23 8:00	181.90	22.20
9/1/23 9:00	192.90	20.91
9/1/23 10:00	201.50	22.53
9/1/23 11:00	211.10	23.44
9/1/23 12:00	224.00	27.69
9/1/23 13:00	224.70	22.42
9/1/23 14:00	213.60	21.31
9/1/23 15:00	217.80	21.63
9/1/23 16:00	226.30	27.75
9/1/23 17:00	230.90	32.72
9/1/23 18:00	209.20	20.16
9/1/23 19:00	192.90	20.76
9/1/23 20:00	204.60	19.53
9/1/23 21:00	237.60	17.85
9/1/23 22:00	268.20	15.94
9/1/23 23:00	279.20	18.51
9/2/23 0:00	296.50	23.70
9/2/23 1:00	309.70	23.44
9/2/23 2:00	308.90	23.13
9/2/23 3:00	318.30	27.37

Date	Wind Direction (°)	Wind speed (km/h)
9/2/23 4:00	321.70	28.30
9/2/23 5:00	322.60	25.15
9/2/23 6:00	324.10	28.55
9/2/23 7:00	317.30	27.19
9/2/23 8:00	309.20	31.61
9/2/23 9:00	308.60	30.78
9/2/23 10:00	304.60	32.04
9/2/23 11:00	304.10	38.12
9/2/23 12:00	304.90	38.45
9/2/23 13:00	301.00	43.96
9/2/23 14:00	312.20	39.17
9/2/23 15:00	310.20	45.00
9/2/23 16:00	306.30	46.44
9/2/23 17:00	306.40	40.64
9/2/23 18:00	306.60	39.24
9/2/23 19:00	318.70	33.59
9/2/23 20:00	328.20	34.45
9/2/23 21:00	329.80	34.74
9/2/23 22:00	330.70	33.41
9/2/23 23:00	333.30	30.31
9/3/23 0:00	335.00	31.79
9/3/23 1:00	332.50	28.62
9/3/23 2:00	331.60	29.59
9/3/23 3:00	330.10	26.10
9/3/23 4:00	334.50	24.40
9/3/23 5:00	340.00	20.71
9/3/23 6:00	344.50	22.45
9/3/23 7:00	333.90	19.60
9/3/23 8:00	339.90	20.75
9/3/23 9:00	349.20	22.24
9/3/23 10:00	340.70	19.14
9/3/23 11:00	332.00	14.09
9/3/23 12:00	326.70	12.56
9/3/23 13:00	320.00	12.39
9/3/23 14:00	321.50	11.38
9/3/23 15:00	335.70	10.89
9/3/23 16:00	337.00	8.34
9/3/23 17:00	11.43	9.55
9/3/23 18:00	2.46	5.92
9/3/23 19:00	49.05	5.77
9/3/23 20:00	71.23	10.20
9/3/23 21:00	90.30	9.94
9/3/23 22:00	63.21	11.34
9/3/23 23:00	97.20	11.19
9/4/23 0:00	123.20	10.44
9/4/23 1:00	142.60	8.59
9/4/23 2:00	107.00	10.79
9/4/23 3:00	97.60	10.14
9/4/23 4:00	104.90	12.57
9/4/23 5:00	120.80	9.76
9/4/23 6:00	107.20	10.68
9/4/23 7:00	118.40	9.20
9/4/23 8:00	135.50	9.16
9/4/23 9:00	112.30	12.95
9/4/23 10:00	101.70	14.31
9/4/23 11:00	91.90	14.43
9/4/23 12:00	100.90	17.58
9/4/23 13:00	98.50	17.01
9/4/23 14:00	106.30	16.34
9/4/23 15:00	103.20	14.62
9/4/23 16:00	100.90	13.10
9/4/23 17:00	109.60	11.08
9/4/23 18:00	97.30	9.13
9/4/23 19:00	129.80	10.44
9/4/23 20:00	161.90	8.97
9/4/23 21:00	160.50	11.13
9/4/23 22:00	175.10	13.09
9/4/23 23:00	184.70	12.70
9/5/23 0:00	192.10	10.91
9/5/23 1:00	198.50	12.91
9/5/23 2:00	200.60	12.70
9/5/23 3:00	204.20	12.49
9/5/23 4:00	205.90	13.72
9/5/23 5:00	229.00	11.80
9/5/23 6:00	302.80	11.27
9/5/23 7:00	321.50	11.88
9/5/23 8:00	334.70	12.29
9/5/23 9:00	347.50	17.18
9/5/23 10:00	0.11	14.95
9/5/23 11:00	9.69	12.95
9/5/23 12:00	21.42	11.17

Date	Wind Direction (°)	Wind speed (km/h)
9/5/23 13:00	17.62	11.74
9/5/23 14:00	17.58	13.58
9/5/23 15:00	27.11	13.60
9/5/23 16:00	22.58	14.15
9/5/23 17:00	32.81	16.58
9/5/23 18:00	41.70	15.42
9/5/23 19:00	49.59	15.38
9/5/23 20:00	46.79	13.22
9/5/23 21:00	60.66	11.55
9/5/23 22:00	67.49	6.90
9/5/23 23:00	76.89	11.60
9/6/23 0:00	89.20	11.98
9/6/23 1:00	74.06	14.23
9/6/23 2:00	88.10	13.86
9/6/23 3:00	82.80	13.95
9/6/23 4:00	94.10	12.88
9/6/23 5:00	81.60	14.42
9/6/23 6:00	86.50	14.75
9/6/23 7:00	86.90	16.75
9/6/23 8:00	95.60	16.97
9/6/23 9:00	97.70	17.65
9/6/23 10:00	108.20	17.63
9/6/23 11:00	111.90	17.53
9/6/23 12:00	106.80	17.46
9/6/23 13:00	112.30	16.71
9/6/23 14:00	132.30	16.53
9/6/23 15:00	123.00	17.03
9/6/23 16:00	97.30	18.56
9/6/23 17:00	106.40	17.56
9/6/23 18:00	128.20	13.14
9/6/23 19:00	123.70	11.59
9/6/23 20:00	104.90	10.76
9/6/23 21:00	110.00	10.48
9/6/23 22:00	104.40	10.70
9/6/23 23:00	108.20	9.67
9/7/23 0:00	120.70	7.10
9/7/23 1:00	94.70	7.13
9/7/23 2:00	109.50	6.22
9/7/23 3:00	134.10	4.29
9/7/23 4:00	165.90	5.39
9/7/23 5:00	215.50	9.05
9/7/23 6:00	241.20	10.74
9/7/23 7:00	255.90	7.13
9/7/23 8:00	248.20	6.97
9/7/23 9:00	249.50	7.68
9/7/23 10:00	265.50	8.40
9/7/23 11:00	259.80	9.57
9/7/23 12:00	266.20	11.51
9/7/23 13:00	287.20	12.44
9/7/23 14:00	300.90	13.47
9/7/23 15:00	290.10	11.45
9/7/23 16:00	316.00	10.00
9/7/23 17:00	304.10	5.85
9/7/23 18:00	185.60	20.93
9/7/23 19:00	177.40	20.60
9/7/23 20:00	165.80	12.65
9/7/23 21:00	246.10	7.43
9/7/23 22:00	269.00	4.78
9/7/23 23:00	238.30	7.17
9/8/23 0:00	252.10	7.33
9/8/23 1:00	286.30	10.60
9/8/23 2:00	289.20	8.15
9/8/23 3:00	300.20	4.35
9/8/23 4:00	208.20	4.18
9/8/23 5:00	164.30	2.43
9/8/23 6:00	182.70	3.70
9/8/23 7:00	168.60	4.16
9/8/23 8:00	236.10	3.22
9/8/23 9:00	194.10	3.61
9/8/23 10:00	202.00	5.40
9/8/23 11:00	253.70	6.62
9/8/23 12:00	258.10	6.33
9/8/23 13:00	229.40	10.02
9/8/23 14:00	221.90	13.08
9/8/23 15:00	237.20	12.91
9/8/23 16:00	237.70	13.94
9/8/23 17:00	234.00	15.14
9/8/23 18:00	234.20	13.80
9/8/23 19:00	241.40	13.51
9/8/23 20:00	240.10	10.93
9/8/23 21:00	245.00	10.04

Date	Wind Direction (°)	Wind speed (km/h)
9/8/23 22:00	236.00	9.92
9/8/23 23:00	230.50	8.58
9/9/23 0:00	236.70	12.11
9/9/23 1:00	245.00	14.57
9/9/23 2:00	248.80	11.57
9/9/23 3:00	244.10	15.89
9/9/23 4:00	247.60	17.03
9/9/23 5:00	245.70	10.98
9/9/23 6:00	236.70	11.88
9/9/23 7:00	237.40	11.89
9/9/23 8:00	256.70	9.92
9/9/23 9:00	264.40	11.65
9/9/23 10:00	281.50	12.41
9/9/23 11:00	304.80	12.81
9/9/23 12:00	319.80	11.69
9/9/23 13:00	332.80	13.29
9/9/23 14:00	327.70	13.94
9/9/23 15:00	3.18	16.98
9/9/23 16:00	5.91	17.54
9/9/23 17:00	1.03	17.77
9/9/23 18:00	12.01	16.01
9/9/23 19:00	25.05	9.92
9/9/23 20:00	37.51	7.54
9/9/23 21:00	111.10	3.33
9/9/23 22:00	129.10	4.39
9/9/23 23:00	115.10	6.11
9/10/23 0:00	106.60	7.29
9/10/23 1:00	136.70	7.02
9/10/23 2:00	156.20	7.63
9/10/23 3:00	148.50	7.17
9/10/23 4:00	144.50	8.56
9/10/23 5:00	151.20	8.33
9/10/23 6:00	171.40	9.89
9/10/23 7:00	149.30	8.20
9/10/23 8:00	140.00	8.61
9/10/23 9:00	148.00	10.19
9/10/23 10:00	140.80	9.75
9/10/23 11:00	159.40	13.46
9/10/23 12:00	166.30	13.91
9/10/23 13:00	175.80	17.44
9/10/23 14:00	170.20	18.80
9/10/23 15:00	175.70	19.68
9/10/23 16:00	179.60	20.74
9/10/23 17:00	179.40	22.02
9/10/23 18:00	172.10	17.02
9/10/23 19:00	152.80	14.29
9/10/23 20:00	153.10	17.17
9/10/23 21:00	165.20	15.88
9/10/23 22:00	179.60	13.47
9/10/23 23:00	187.10	11.37
9/11/23 0:00	189.20	14.95
9/11/23 1:00	186.40	17.37
9/11/23 2:00	193.80	17.75
9/11/23 3:00	194.60	17.51
9/11/23 4:00	200.00	11.89
9/11/23 5:00	201.10	12.67
9/11/23 6:00	201.00	13.85
9/11/23 7:00	200.80	15.54
9/11/23 8:00	204.80	17.34
9/11/23 9:00	206.10	20.83
9/11/23 10:00	208.60	22.59
9/11/23 11:00	215.80	25.05
9/11/23 12:00	215.40	23.17
9/11/23 13:00	212.70	22.94
9/11/23 14:00	220.70	24.43
9/11/23 15:00	217.60	23.87
9/11/23 16:00	223.80	23.27
9/11/23 17:00	222.90	20.29
9/11/23 18:00	218.60	15.27
9/11/23 19:00	219.50	14.09
9/11/23 20:00	228.90	10.80
9/11/23 21:00	219.50	10.18
9/11/23 22:00	218.70	9.93
9/11/23 23:00	216.10	9.31
9/12/23 0:00	211.20	12.60
9/12/23 1:00	193.00	9.18
9/12/23 2:00	167.10	6.67
9/12/23 3:00	134.70	6.05
9/12/23 4:00	90.80	7.72
9/12/23 5:00	88.50	10.57
9/12/23 6:00	97.50	11.38

Date	Wind Direction (°)	Wind speed (km/h)
9/12/23 7:00	105.70	13.89
9/12/23 8:00	106.20	13.26
9/12/23 9:00	110.70	19.34
9/12/23 10:00	108.50	23.09
9/12/23 11:00	109.00	24.15
9/12/23 12:00	107.60	21.39
9/12/23 13:00	123.20	21.25
9/12/23 14:00	121.40	21.56
9/12/23 15:00	115.70	23.57
9/12/23 16:00	114.30	22.30
9/12/23 17:00	120.80	18.33
9/12/23 18:00	120.40	14.98
9/12/23 19:00	119.30	16.57
9/12/23 20:00	116.10	16.97
9/12/23 21:00	112.80	13.76
9/12/23 22:00	112.70	14.05
9/12/23 23:00	114.20	16.06
9/13/23 0:00	111.10	15.06
9/13/23 1:00	109.40	15.74
9/13/23 2:00	107.40	15.26
9/13/23 3:00	101.90	15.52
9/13/23 4:00	97.80	18.73
9/13/23 5:00	95.00	18.75
9/13/23 6:00	92.10	21.09
9/13/23 7:00	91.80	23.14
9/13/23 8:00	94.50	21.59
9/13/23 9:00	97.30	22.46
9/13/23 10:00	95.40	23.78
9/13/23 11:00	96.20	23.12
9/13/23 12:00	98.60	23.86
9/13/23 13:00	101.30	24.37
9/13/23 14:00	106.60	24.76
9/13/23 15:00	103.10	26.11
9/13/23 16:00	98.90	27.72
9/13/23 17:00	97.70	27.86
9/13/23 18:00	101.90	26.85
9/13/23 19:00	107.60	26.73
9/13/23 20:00	107.10	25.74
9/13/23 21:00	102.90	27.67
9/13/23 22:00	103.00	28.30
9/13/23 23:00	103.40	29.38
9/14/23 0:00	100.60	28.84
9/14/23 1:00	100.10	26.67
9/14/23 2:00	98.40	28.54
9/14/23 3:00	97.80	26.97
9/14/23 4:00	99.10	28.53
9/14/23 5:00	100.50	26.45
9/14/23 6:00	99.30	26.46
9/14/23 7:00	101.20	26.25
9/14/23 8:00	109.20	26.37
9/14/23 9:00	117.50	25.79
9/14/23 10:00	117.30	24.02
9/14/23 11:00	114.40	22.86
9/14/23 12:00	116.10	25.92
9/14/23 13:00	113.90	24.85
9/14/23 14:00	110.50	22.27
9/14/23 15:00	111.40	21.01
9/14/23 16:00	127.80	19.90
9/14/23 17:00	130.20	16.28
9/14/23 18:00	125.80	15.40
9/14/23 19:00	118.70	16.95
9/14/23 20:00	118.10	17.77
9/14/23 21:00	132.90	13.73
9/14/23 22:00	136.50	14.34
9/14/23 23:00	134.80	14.81
9/15/23 0:00	134.50	16.06
9/15/23 1:00	135.20	17.05
9/15/23 2:00	138.00	14.66
9/15/23 3:00	147.90	13.84
9/15/23 4:00	152.70	15.37
9/15/23 5:00	157.10	14.44
9/15/23 6:00	161.80	14.97
9/15/23 7:00	158.50	16.44
9/15/23 8:00	171.90	19.24
9/15/23 9:00	177.00	22.01
9/15/23 10:00	183.90	20.12
9/15/23 11:00	190.00	24.86
9/15/23 12:00	183.30	25.64
9/15/23 13:00	172.80	24.67
9/15/23 14:00	169.90	25.66
9/15/23 15:00	168.20	25.97

Date	Wind Direction (°)	Wind speed (km/h)
9/15/23 16:00	167.60	26.55
9/15/23 17:00	171.00	27.78
9/15/23 18:00	160.80	24.71
9/15/23 19:00	153.30	22.10
9/15/23 20:00	160.60	23.31
9/15/23 21:00	158.20	22.31
9/15/23 22:00	162.10	18.62
9/15/23 23:00	163.00	15.59
9/16/23 0:00	165.70	11.92
9/16/23 1:00	166.00	11.12
9/16/23 2:00	163.80	11.03
9/16/23 3:00	167.60	11.69
9/16/23 4:00	168.90	13.75
9/16/23 5:00	166.00	12.02
9/16/23 6:00	157.20	11.13
9/16/23 7:00	160.10	12.47
9/16/23 8:00	167.80	13.71
9/16/23 9:00	184.90	13.87
9/16/23 10:00	184.30	11.34
9/16/23 11:00	192.90	10.57
9/16/23 12:00	210.80	12.83
9/16/23 13:00	233.00	17.62
9/16/23 14:00	238.40	13.27
9/16/23 15:00	258.10	13.97
9/16/23 16:00	276.30	15.53
9/16/23 17:00	298.10	21.07
9/16/23 18:00	306.00	22.46
9/16/23 19:00	296.60	18.78
9/16/23 20:00	290.70	14.62
9/16/23 21:00	295.30	15.58
9/16/23 22:00	301.60	15.61
9/16/23 23:00	320.00	16.67
9/17/23 0:00	320.00	13.54
9/17/23 1:00	335.60	11.64
9/17/23 2:00	337.80	12.05
9/17/23 3:00	344.10	6.94
9/17/23 4:00	341.00	3.19
9/17/23 5:00	321.20	1.01
9/17/23 6:00	58.30	1.02
9/17/23 7:00	120.00	6.07
9/17/23 8:00	136.90	10.17
9/17/23 9:00	159.80	12.86
9/17/23 10:00	160.60	13.91
9/17/23 11:00	147.70	13.82
9/17/23 12:00	131.90	14.31
9/17/23 13:00	124.20	14.31
9/17/23 14:00	125.10	16.50
9/17/23 15:00	130.20	16.44
9/17/23 16:00	124.30	19.33
9/17/23 17:00	119.90	19.13
9/17/23 18:00	111.80	15.75
9/17/23 19:00	121.90	18.30
9/17/23 20:00	120.00	16.74
9/17/23 21:00	111.90	17.37
9/17/23 22:00	104.40	20.21
9/17/23 23:00	102.90	21.85
9/18/23 0:00	111.90	23.34
9/18/23 1:00	110.40	23.53
9/18/23 2:00	109.40	24.09
9/18/23 3:00	109.80	21.98
9/18/23 4:00	114.20	24.17
9/18/23 5:00	113.40	24.07
9/18/23 6:00	105.70	21.61
9/18/23 7:00	106.50	22.91
9/18/23 8:00	112.50	24.22
9/18/23 9:00	114.20	25.50
9/18/23 10:00	122.80	24.99
9/18/23 11:00	128.00	24.06
9/18/23 12:00	129.00	21.17
9/18/23 13:00	135.50	21.03
9/18/23 14:00	144.20	20.30
9/18/23 15:00	166.20	18.18
9/18/23 16:00	178.30	13.90
9/18/23 17:00	181.50	10.49
9/18/23 18:00	180.40	10.38
9/18/23 19:00	165.90	7.21
9/18/23 20:00	158.00	6.49
9/18/23 21:00	182.60	7.58
9/18/23 22:00	190.30	9.50
9/18/23 23:00	199.90	11.78
9/19/23 0:00	218.90	9.53

Date	Wind Direction (°)	Wind speed (km/h)
9/19/23 1:00	137.70	8.96
9/19/23 2:00	153.90	3.41
9/19/23 3:00	141.20	6.18
9/19/23 4:00	186.20	10.18
9/19/23 5:00	225.20	5.14
9/19/23 6:00	223.30	11.77
9/19/23 7:00	240.00	10.70
9/19/23 8:00	246.80	14.53
9/19/23 9:00	233.80	18.40
9/19/23 10:00	225.90	19.95
9/19/23 11:00	199.50	14.59
9/19/23 12:00	205.80	14.10
9/19/23 13:00	220.80	21.17
9/19/23 14:00	226.80	22.94
9/19/23 15:00	241.10	22.54
9/19/23 16:00	250.30	16.16
9/19/23 17:00	246.30	21.42
9/19/23 18:00	244.20	23.31
9/19/23 19:00	235.30	25.51
9/19/23 20:00	232.90	26.36
9/19/23 21:00	230.30	27.08
9/19/23 22:00	240.70	23.81
9/19/23 23:00	243.70	22.87
9/20/23 0:00	247.90	22.79
9/20/23 1:00	245.80	20.86
9/20/23 2:00	238.50	23.32
9/20/23 3:00	227.40	22.83
9/20/23 4:00	229.50	25.50
9/20/23 5:00	242.50	22.20
9/20/23 6:00	241.50	22.40
9/20/23 7:00	246.70	21.33
9/20/23 8:00	259.80	22.23
9/20/23 9:00	276.70	23.33
9/20/23 10:00	281.40	24.36
9/20/23 11:00	297.40	28.72
9/20/23 12:00	279.00	18.80
9/20/23 13:00	286.20	23.77
9/20/23 14:00	288.60	27.15
9/20/23 15:00	281.40	25.80
9/20/23 16:00	279.20	23.24
9/20/23 17:00	278.10	23.46
9/20/23 18:00	276.30	19.71
9/20/23 19:00	262.20	15.43
9/20/23 20:00	262.30	16.03
9/20/23 21:00	251.60	17.26
9/20/23 22:00	247.70	17.49
9/20/23 23:00	247.60	17.44
9/21/23 0:00	256.40	17.01
9/21/23 1:00	254.90	15.03
9/21/23 2:00	224.40	13.19
9/21/23 3:00	209.30	13.23
9/21/23 4:00	215.10	13.55
9/21/23 5:00	188.00	11.87
9/21/23 6:00	171.30	11.66
9/21/23 7:00	162.00	12.88
9/21/23 8:00	161.10	11.42
9/21/23 9:00	171.30	17.90
9/21/23 10:00	182.50	25.11
9/21/23 11:00	187.20	23.45
9/21/23 12:00	186.10	25.45
9/21/23 13:00	187.30	27.55
9/21/23 14:00	191.40	29.34
9/21/23 15:00	195.70	32.29
9/21/23 16:00	196.70	27.46
9/21/23 17:00	196.80	19.98
9/21/23 18:00	207.30	18.60
9/21/23 19:00	216.10	19.99
9/21/23 20:00	218.80	21.43
9/21/23 21:00	231.10	25.16
9/21/23 22:00	244.40	19.76
9/21/23 23:00	252.50	19.14
9/22/23 0:00	261.10	16.90
9/22/23 1:00	256.50	13.43
9/22/23 2:00	261.60	12.41
9/22/23 3:00	277.60	10.15
9/22/23 4:00	252.60	8.61
9/22/23 5:00	222.10	6.73
9/22/23 6:00	277.30	3.03
9/22/23 7:00	274.50	3.46
9/22/23 8:00	202.50	5.00
9/22/23 9:00	182.10	5.64

Date	Wind Direction (°)	Wind speed (km/h)
9/22/23 10:00	160.80	9.25
9/22/23 11:00	177.30	12.35
9/22/23 12:00	174.70	14.74
9/22/23 13:00	168.40	16.52
9/22/23 14:00	158.50	16.76
9/22/23 15:00	158.20	17.91
9/22/23 16:00	156.80	17.40
9/22/23 17:00	156.10	13.60
9/22/23 18:00	167.10	16.36
9/22/23 19:00	174.70	15.31
9/22/23 20:00	181.40	20.00
9/22/23 21:00	189.60	19.19
9/22/23 22:00	194.60	17.23
9/22/23 23:00	189.30	16.56
9/23/23 0:00	185.80	17.73
9/23/23 1:00	174.10	16.77
9/23/23 2:00	187.60	20.56
9/23/23 3:00	192.20	20.25
9/23/23 4:00	184.20	19.98
9/23/23 5:00	182.00	19.89
9/23/23 6:00	185.10	18.56
9/23/23 7:00	194.50	18.90
9/23/23 8:00	187.00	21.44
9/23/23 9:00	187.70	27.13
9/23/23 10:00	197.00	27.72
9/23/23 11:00	201.20	25.77
9/23/23 12:00	209.00	25.32
9/23/23 13:00	218.90	18.53
9/23/23 14:00	228.40	18.21
9/23/23 15:00	211.20	15.44
9/23/23 16:00	238.70	8.89
9/23/23 17:00	271.20	8.22
9/23/23 18:00	285.20	7.03
9/23/23 19:00	329.00	5.85
9/23/23 20:00	70.55	6.83
9/23/23 21:00	121.00	11.15
9/23/23 22:00	107.60	9.61
9/23/23 23:00	142.90	7.74
9/24/23 0:00	186.20	13.27
9/24/23 1:00	191.50	15.47
9/24/23 2:00	197.10	17.67
9/24/23 3:00	198.60	14.76
9/24/23 4:00	189.00	16.00
9/24/23 5:00	187.50	16.70
9/24/23 6:00	183.30	15.70
9/24/23 7:00	179.80	11.20
9/24/23 8:00	165.90	14.30
9/24/23 9:00	160.30	17.77
9/24/23 10:00	162.20	19.43
9/24/23 11:00	162.10	22.73
9/24/23 12:00	156.60	22.47
9/24/23 13:00	157.00	28.72
9/24/23 14:00	166.80	32.33
9/24/23 15:00	166.50	28.56
9/24/23 16:00	180.70	29.66
9/24/23 17:00	190.30	28.98
9/24/23 18:00	193.60	28.80
9/24/23 19:00	183.60	29.23
9/24/23 20:00	190.40	27.67
9/24/23 21:00	207.10	20.28
9/24/23 22:00	216.00	17.60
9/24/23 23:00	234.10	22.74
9/25/23 0:00	235.10	24.15
9/25/23 1:00	236.20	24.27
9/25/23 2:00	241.30	23.03
9/25/23 3:00	250.70	15.98
9/25/23 4:00	249.70	19.70
9/25/23 5:00	248.70	18.60
9/25/23 6:00	256.10	19.16
9/25/23 7:00	262.50	22.34
9/25/23 8:00	275.10	25.07
9/25/23 9:00	278.00	27.13
9/25/23 10:00	280.10	32.44
9/25/23 11:00	284.80	34.85
9/25/23 12:00	284.60	35.89
9/25/23 13:00	290.80	37.55
9/25/23 14:00	293.50	35.96
9/25/23 15:00	292.10	37.40
9/25/23 16:00	295.30	36.54
9/25/23 17:00	298.40	35.96
9/25/23 18:00	296.90	31.79

Date	Wind Direction (°)	Wind speed (km/h)
9/25/23 19:00	315.00	23.56
9/25/23 20:00	323.10	22.24
9/25/23 21:00	330.20	17.71
9/25/23 22:00	330.30	14.53
9/25/23 23:00	337.50	8.37
9/26/23 0:00	16.96	5.57
9/26/23 1:00	68.05	6.20
9/26/23 2:00	87.90	10.57
9/26/23 3:00	136.30	5.95
9/26/23 4:00	119.70	9.63
9/26/23 5:00	125.70	17.38
9/26/23 6:00	95.10	20.64
9/26/23 7:00	115.90	25.02
9/26/23 8:00	118.10	29.20
9/26/23 9:00	113.80	30.74
9/26/23 10:00	111.60	37.76
9/26/23 11:00	113.50	41.76
9/26/23 12:00	105.60	44.89
9/26/23 13:00	108.10	44.89
9/26/23 14:00	103.20	43.60
9/26/23 15:00	95.30	42.26
9/26/23 16:00	105.50	37.94
9/26/23 17:00	101.80	37.26
9/26/23 18:00	106.00	35.14
9/26/23 19:00	105.10	30.74
9/26/23 20:00	107.20	24.97
9/26/23 21:00	113.10	21.54
9/26/23 22:00	107.60	17.26
9/26/23 23:00	99.00	15.68
9/27/23 0:00	91.90	14.52
9/27/23 1:00	88.40	12.17
9/27/23 2:00	90.10	12.77
9/27/23 3:00	75.04	12.65
9/27/23 4:00	64.72	9.64
9/27/23 5:00	56.72	10.84
9/27/23 6:00	64.04	11.49
9/27/23 7:00	58.06	12.44
9/27/23 8:00	46.48	11.15
9/27/23 9:00	39.35	12.83
9/27/23 10:00	41.62	11.87
9/27/23 11:00	28.67	11.08
9/27/23 12:00	34.82	12.32
9/27/23 13:00	45.84	9.57
9/27/23 14:00	41.40	12.19
9/27/23 15:00	41.78	12.05
9/27/23 16:00	32.08	15.40
9/27/23 17:00	37.95	17.52
9/27/23 18:00	35.98	17.61
9/27/23 19:00	36.36	19.37
9/27/23 20:00	40.69	21.42
9/27/23 21:00	38.50	20.72
9/27/23 22:00	37.74	23.40
9/27/23 23:00	38.40	23.67
9/28/23 0:00	36.00	22.66
9/28/23 1:00	40.41	22.46
9/28/23 2:00	38.06	20.68
9/28/23 3:00	33.98	19.67
9/28/23 4:00	40.65	18.48
9/28/23 5:00	42.24	18.73
9/28/23 6:00	40.11	18.11
9/28/23 7:00	40.43	15.27
9/28/23 8:00	41.25	16.28
9/28/23 9:00	41.71	16.49
9/28/23 10:00	36.46	17.95
9/28/23 11:00	40.70	19.08
9/28/23 12:00	41.23	18.76
9/28/23 13:00	45.15	15.74
9/28/23 14:00	27.12	15.36
9/28/23 15:00	17.47	15.99
9/28/23 16:00	21.32	16.71
9/28/23 17:00	11.37	19.05
9/28/23 18:00	18.13	17.40
9/28/23 19:00	15.66	12.04
9/28/23 20:00	16.11	12.47
9/28/23 21:00	0.50	11.26
9/28/23 22:00	350.30	11.60
9/28/23 23:00	343.90	12.68
9/29/23 0:00	342.80	12.95
9/29/23 1:00	345.10	16.10
9/29/23 2:00	348.60	19.59
9/29/23 3:00	345.80	18.63

Date	Wind Direction (°)	Wind speed (km/h)
9/29/23 4:00	349.40	18.77
9/29/23 5:00	341.70	17.96
9/29/23 6:00	342.90	12.92
9/29/23 7:00	350.60	16.51
9/29/23 8:00	339.60	16.55
9/29/23 9:00	353.90	18.16
9/29/23 10:00	354.00	18.79
9/29/23 11:00	346.10	19.10
9/29/23 12:00	334.40	17.54
9/29/23 13:00	329.90	18.90
9/29/23 14:00	342.60	18.51
9/29/23 15:00	339.30	19.28
9/29/23 16:00	344.40	18.16
9/29/23 17:00	329.60	17.74
9/29/23 18:00	327.80	17.22
9/29/23 19:00	313.20	15.41
9/29/23 20:00	307.00	16.09
9/29/23 21:00	318.40	14.93
9/29/23 22:00	332.00	15.58
9/29/23 23:00	332.90	16.38
9/30/23 0:00	334.80	15.87
9/30/23 1:00	335.20	14.32
9/30/23 2:00	333.40	13.59
9/30/23 3:00	330.10	14.03
9/30/23 4:00	330.40	12.52
9/30/23 5:00	313.40	10.68
9/30/23 6:00	303.10	13.73
9/30/23 7:00	294.80	14.36
9/30/23 8:00	287.30	13.22
9/30/23 9:00	288.70	15.12
9/30/23 10:00	296.40	17.91
9/30/23 11:00	286.80	17.94
9/30/23 12:00	286.00	17.57
9/30/23 13:00	278.10	16.15
9/30/23 14:00	280.60	17.42
9/30/23 15:00	284.60	18.59
9/30/23 16:00	301.70	15.51
9/30/23 17:00	300.70	17.59
9/30/23 18:00	299.90	18.35
9/30/23 19:00	299.40	10.49
9/30/23 20:00	310.90	10.61
9/30/23 21:00	319.40	7.84
9/30/23 22:00	309.50	1.61
9/30/23 23:00	275.80	4.74
10/1/23 0:00	223.00	3.84
10/1/23 1:00	209.90	6.10
10/1/23 2:00	192.60	7.55
10/1/23 3:00	181.70	6.95
10/1/23 4:00	178.20	9.58
10/1/23 5:00	158.00	6.24
10/1/23 6:00	141.60	8.36
10/1/23 7:00	136.50	11.15
10/1/23 8:00	129.00	13.73
10/1/23 9:00	120.40	14.40
10/1/23 10:00	135.80	14.72
10/1/23 11:00	136.30	14.89
10/1/23 12:00	154.20	17.77
10/1/23 13:00	162.70	18.78
10/1/23 14:00	148.10	20.70
10/1/23 15:00	139.00	21.79
10/1/23 16:00	136.40	21.14
10/1/23 17:00	133.40	16.20
10/1/23 18:00	126.70	16.28
10/1/23 19:00	112.90	15.45
10/1/23 20:00	124.00	14.36
10/1/23 21:00	140.20	12.96
10/1/23 22:00	144.70	14.09
10/1/23 23:00	157.40	15.60
10/2/23 0:00	156.50	14.32
10/2/23 1:00	137.20	13.82
10/2/23 2:00	132.40	13.86
10/2/23 3:00	139.20	15.48
10/2/23 4:00	140.50	16.59
10/2/23 5:00	132.70	14.76
10/2/23 6:00	138.60	16.71
10/2/23 7:00	136.50	16.86
10/2/23 8:00	136.90	15.72
10/2/23 9:00	134.70	17.83
10/2/23 10:00	137.40	19.92
10/2/23 11:00	150.80	20.87
10/2/23 12:00	143.50	18.23

Date	Wind Direction (°)	Wind speed (km/h)
10/2/23 13:00	140.00	17.40
10/2/23 14:00	133.10	16.79
10/2/23 15:00	133.30	16.33
10/2/23 16:00	134.30	15.37
10/2/23 17:00	127.50	14.72
10/2/23 18:00	120.90	11.75
10/2/23 19:00	116.40	11.35
10/2/23 20:00	111.50	11.76
10/2/23 21:00	115.60	10.22
10/2/23 22:00	109.50	8.87
10/2/23 23:00	107.70	8.79
10/3/23 0:00	104.70	8.65
10/3/23 1:00	111.60	6.16
10/3/23 2:00	129.80	4.27
10/3/23 3:00	132.70	1.01
10/3/23 4:00	132.90	0.30
10/3/23 5:00	132.50	1.43
10/3/23 6:00	133.00	3.93
10/3/23 7:00	133.40	4.94
10/3/23 8:00	301.00	6.20
10/3/23 9:00	282.80	9.99
10/3/23 10:00	287.50	5.33
10/3/23 11:00	252.20	4.59
10/3/23 12:00	293.10	6.25
10/3/23 13:00	263.50	3.71
10/3/23 14:00	273.10	6.91
10/3/23 15:00	260.90	3.06
10/3/23 16:00	182.80	4.85
10/3/23 17:00	235.60	7.17
10/3/23 18:00	211.90	5.51
10/3/23 19:00	212.60	7.41
10/3/23 20:00	220.00	5.72
10/3/23 21:00	205.00	2.35
10/3/23 22:00	185.20	2.26
10/3/23 23:00	259.70	6.51
10/4/23 0:00	197.80	2.46
10/4/23 1:00	117.30	2.67
10/4/23 2:00	67.97	3.73
10/4/23 3:00	79.58	1.96
10/4/23 4:00	200.70	5.26
10/4/23 5:00	209.00	5.72
10/4/23 6:00	260.60	4.53
10/4/23 7:00	277.40	4.81
10/4/23 8:00	285.20	5.25
10/4/23 9:00	285.10	3.10
10/4/23 10:00	283.30	7.19
10/4/23 11:00	294.60	10.57
10/4/23 12:00	292.10	13.29
10/4/23 13:00	293.50	11.66
10/4/23 14:00	312.60	11.33
10/4/23 15:00	308.00	10.28
10/4/23 16:00	290.60	11.26
10/4/23 17:00	286.40	11.46
10/4/23 18:00	320.60	8.40
10/4/23 19:00	319.50	7.61
10/4/23 20:00	342.50	6.25
10/4/23 21:00	334.30	7.79
10/4/23 22:00	350.90	10.55
10/4/23 23:00	3.00	7.78
10/5/23 0:00	337.60	9.09
10/5/23 1:00	347.20	15.42
10/5/23 2:00	337.90	17.02
10/5/23 3:00	3.02	17.53
10/5/23 4:00	7.13	18.00
10/5/23 5:00	0.90	20.51
10/5/23 6:00	357.50	21.92
10/5/23 7:00	357.40	24.59
10/5/23 8:00	1.33	25.22
10/5/23 9:00	16.21	31.64
10/5/23 10:00	15.10	29.81
10/5/23 11:00	7.83	31.18
10/5/23 12:00	3.45	30.10
10/5/23 13:00	2.28	26.79
10/5/23 14:00	358.20	25.30
10/5/23 15:00	346.40	26.21
10/5/23 16:00	344.50	26.04
10/5/23 17:00	346.00	23.77
10/5/23 18:00	343.50	19.22
10/5/23 19:00	345.10	20.70
10/5/23 20:00	346.10	15.85
10/5/23 21:00	338.50	17.25

Date	Wind Direction (°)	Wind speed (km/h)
10/5/23 22:00	341.70	15.27
10/5/23 23:00	338.30	14.59
10/6/23 0:00	342.20	20.52
10/6/23 1:00	342.90	18.09
10/6/23 2:00	347.30	13.13
10/6/23 3:00	352.00	11.57
10/6/23 4:00	24.64	9.64
10/6/23 5:00	35.40	8.52
10/6/23 6:00	81.10	2.51
10/6/23 7:00	48.14	4.90
10/6/23 8:00	99.80	6.89
10/6/23 9:00	113.90	11.75
10/6/23 10:00	125.90	20.78
10/6/23 11:00	132.10	20.53
10/6/23 12:00	132.40	21.49
10/6/23 13:00	127.10	23.09
10/6/23 14:00	120.30	23.28
10/6/23 15:00	119.10	25.57
10/6/23 16:00	114.10	29.23
10/6/23 17:00	113.60	29.20
10/6/23 18:00	113.80	27.89
10/6/23 19:00	114.00	29.59
10/6/23 20:00	112.70	29.30
10/6/23 21:00	113.70	29.34
10/6/23 22:00	112.40	29.02
10/6/23 23:00	112.90	27.24
10/7/23 0:00	113.80	25.23
10/7/23 1:00	110.80	23.99
10/7/23 2:00	115.50	22.65
10/7/23 3:00	113.50	21.00
10/7/23 4:00	89.00	20.68
10/7/23 5:00	85.10	19.00
10/7/23 6:00	84.80	18.56
10/7/23 7:00	86.40	19.74
10/7/23 8:00	91.10	17.73
10/7/23 9:00	97.90	18.24
10/7/23 10:00	107.80	17.73
10/7/23 11:00	136.00	16.06
10/7/23 12:00	153.60	12.73
10/7/23 13:00	162.50	10.74
10/7/23 14:00	157.10	9.91
10/7/23 15:00	169.30	10.54
10/7/23 16:00	170.40	9.63
10/7/23 17:00	186.40	10.08
10/7/23 18:00	185.60	7.68
10/7/23 19:00	155.80	10.40
10/7/23 20:00	160.50	12.11
10/7/23 21:00	153.20	11.99
10/7/23 22:00	152.50	15.66
10/7/23 23:00	158.70	16.91
10/8/23 0:00	160.70	21.51
10/8/23 1:00	161.10	24.95
10/8/23 2:00	162.70	25.74
10/8/23 3:00	167.70	22.57
10/8/23 4:00	160.20	24.80
10/8/23 5:00	157.90	29.74
10/8/23 6:00	168.90	28.57
10/8/23 7:00	174.30	29.05
10/8/23 8:00	187.20	29.84
10/8/23 9:00	187.40	33.98
10/8/23 10:00	186.40	35.21
10/8/23 11:00	188.80	38.48
10/8/23 12:00	189.80	37.66
10/8/23 13:00	189.00	36.25
10/8/23 14:00	185.00	35.57
10/8/23 15:00	185.70	29.59
10/8/23 16:00	211.10	23.67
10/8/23 17:00	215.90	21.02
10/8/23 18:00	212.90	19.26
10/8/23 19:00	214.20	23.84
10/8/23 20:00	213.10	21.86
10/8/23 21:00	213.70	20.83
10/8/23 22:00	211.70	18.00
10/8/23 23:00	205.70	13.53
10/9/23 0:00	216.30	8.24
10/9/23 1:00	225.90	10.94
10/9/23 2:00	226.40	14.41
10/9/23 3:00	223.90	15.83
10/9/23 4:00	210.50	10.90
10/9/23 5:00	201.10	6.67
10/9/23 6:00	206.40	7.80

Date	Wind Direction (°)	Wind speed (km/h)
10/9/23 7:00	207.60	8.27
10/9/23 8:00	193.40	4.91
10/9/23 9:00	130.40	1.31
10/9/23 10:00	103.50	4.89
10/9/23 11:00	88.10	7.84
10/9/23 12:00	80.70	13.19
10/9/23 13:00	79.16	16.14
10/9/23 14:00	77.49	21.18
10/9/23 15:00	87.30	21.97
10/9/23 16:00	82.70	21.12
10/9/23 17:00	62.27	17.37
10/9/23 18:00	64.93	17.00
10/9/23 19:00	80.00	17.79
10/9/23 20:00	92.30	17.04
10/9/23 21:00	114.60	20.69
10/9/23 22:00	115.70	17.47
10/9/23 23:00	112.40	15.67
10/10/23 0:00	113.30	17.09
10/10/23 1:00	111.50	12.32
10/10/23 2:00	105.30	12.65
10/10/23 3:00	109.00	10.00
10/10/23 4:00	113.10	11.56
10/10/23 5:00	116.40	12.42
10/10/23 6:00	120.60	12.57
10/10/23 7:00	146.60	12.79
10/10/23 8:00	148.00	14.20
10/10/23 9:00	166.90	19.56
10/10/23 10:00	173.80	26.29
10/10/23 11:00	188.10	26.10
10/10/23 12:00	191.80	24.37
10/10/23 13:00	189.30	22.75
10/10/23 14:00	192.50	20.60
10/10/23 15:00	181.90	14.05
10/10/23 16:00	189.80	15.58
10/10/23 17:00	176.10	6.26
10/10/23 18:00	170.90	7.81
10/10/23 19:00	164.30	12.50
10/10/23 20:00	177.80	13.47
10/10/23 21:00	186.60	11.01
10/10/23 22:00	193.60	13.56
10/10/23 23:00	192.30	15.58
10/11/23 0:00	190.90	15.06
10/11/23 1:00	174.40	12.30
10/11/23 2:00	162.60	8.14
10/11/23 3:00	165.40	7.73
10/11/23 4:00	163.10	8.82
10/11/23 5:00	164.30	13.64
10/11/23 6:00	177.10	15.22
10/11/23 7:00	162.40	12.96
10/11/23 8:00	176.20	11.37
10/11/23 9:00	185.50	11.21
10/11/23 10:00	180.40	15.42
10/11/23 11:00	185.40	17.30
10/11/23 12:00	185.00	17.20
10/11/23 13:00	184.40	15.45
10/11/23 14:00	182.10	14.38
10/11/23 15:00	174.30	14.03
10/11/23 16:00	196.50	12.55
10/11/23 17:00	193.90	12.10
10/11/23 18:00	203.60	11.77
10/11/23 19:00	206.20	13.58
10/11/23 20:00	203.20	14.30
10/11/23 21:00	202.60	17.66
10/11/23 22:00	198.00	17.77
10/11/23 23:00	203.90	15.16
10/12/23 0:00	204.30	12.79
10/12/23 1:00	208.30	11.19
10/12/23 2:00	216.00	7.73
10/12/23 3:00	213.30	12.06
10/12/23 4:00	204.80	13.35
10/12/23 5:00	211.70	14.28
10/12/23 6:00	218.00	13.32
10/12/23 7:00	218.80	15.47
10/12/23 8:00	209.40	15.21
10/12/23 9:00	208.80	15.62
10/12/23 10:00	200.30	14.46
10/12/23 11:00	230.80	12.52
10/12/23 12:00	237.20	10.65
10/12/23 13:00	234.40	12.33
10/12/23 14:00	233.70	11.91
10/12/23 15:00	232.50	11.54

Date	Wind Direction (°)	Wind speed (km/h)
10/12/23 16:00	217.00	11.52
10/12/23 17:00	215.20	10.03
10/12/23 18:00	210.50	8.69
10/12/23 19:00	217.20	11.66
10/12/23 20:00	309.40	8.81
10/12/23 21:00	56.18	8.33
10/12/23 22:00	68.47	5.06
10/12/23 23:00	110.60	7.07
10/13/23 0:00	157.40	7.06
10/13/23 1:00	163.20	6.72
10/13/23 2:00	162.40	6.40
10/13/23 3:00	151.70	7.62
10/13/23 4:00	164.40	7.21
10/13/23 5:00	171.20	8.67
10/13/23 6:00	180.30	10.19
10/13/23 7:00	182.30	13.01
10/13/23 8:00	189.30	14.07
10/13/23 9:00	189.40	18.56
10/13/23 10:00	187.70	17.78
10/13/23 11:00	201.70	15.30
10/13/23 12:00	197.90	18.07
10/13/23 13:00	186.50	19.43
10/13/23 14:00	199.40	23.15
10/13/23 15:00	210.30	21.42
10/13/23 16:00	203.80	18.74
10/13/23 17:00	189.60	13.56
10/13/23 18:00	185.60	15.06
10/13/23 19:00	192.90	12.73
10/13/23 20:00	192.70	14.72
10/13/23 21:00	199.90	14.88
10/13/23 22:00	199.60	15.04
10/13/23 23:00	196.60	13.85
10/14/23 0:00	196.60	13.35
10/14/23 1:00	194.60	9.66
10/14/23 2:00	196.60	11.33
10/14/23 3:00	198.40	4.87
10/14/23 4:00	202.70	18.71
10/14/23 5:00	201.70	19.47
10/14/23 6:00	201.30	21.21
10/14/23 7:00	200.60	20.21
10/14/23 8:00	187.40	21.50
10/14/23 9:00	202.40	23.05
10/14/23 10:00	196.20	24.40
10/14/23 11:00	188.80	19.69
10/14/23 12:00	196.10	24.22
10/14/23 13:00	194.50	23.95
10/14/23 14:00	202.70	27.30
10/14/23 15:00	199.50	21.44
10/14/23 16:00	186.50	19.90
10/14/23 17:00	172.60	15.27
10/14/23 18:00	161.00	18.84
10/14/23 19:00	171.20	17.35
10/14/23 20:00	185.10	17.14
10/14/23 21:00	190.20	18.12
10/14/23 22:00	199.80	17.49
10/14/23 23:00	188.50	18.22
10/15/23 0:00	178.50	16.77
10/15/23 1:00	169.30	13.24
10/15/23 2:00	172.50	15.03
10/15/23 3:00	170.70	18.01
10/15/23 4:00	175.90	14.82
10/15/23 5:00	173.00	10.18
10/15/23 6:00	172.50	13.58
10/15/23 7:00	166.40	13.33
10/15/23 8:00	167.70	13.95
10/15/23 9:00	167.40	12.63
10/15/23 10:00	185.10	19.71
10/15/23 11:00	193.70	25.30
10/15/23 12:00	199.50	22.71
10/15/23 13:00	204.30	23.63
10/15/23 14:00	205.60	22.45
10/15/23 15:00	215.30	19.77
10/15/23 16:00	200.10	17.19
10/15/23 17:00	199.50	14.94
10/15/23 18:00	203.50	12.54
10/15/23 19:00	206.10	12.68
10/15/23 20:00	206.70	14.75
10/15/23 21:00	206.40	15.71
10/15/23 22:00	217.10	14.86
10/15/23 23:00	226.80	12.18
10/16/23 0:00	220.20	13.78

Date	Wind Direction (°)	Wind speed (km/h)
10/16/23 1:00	219.50	14.23
10/16/23 2:00	222.10	15.39
10/16/23 3:00	219.20	15.88
10/16/23 4:00	215.20	13.91
10/16/23 5:00	221.00	13.31
10/16/23 6:00	227.10	12.97
10/16/23 7:00	243.80	16.57
10/16/23 8:00	277.50	16.43
10/16/23 9:00	286.90	11.33
10/16/23 10:00	286.30	10.39
10/16/23 11:00	287.40	11.01
10/16/23 12:00	302.70	10.32
10/16/23 13:00	285.20	8.48
10/16/23 14:00	317.00	12.11
10/16/23 15:00	334.20	15.14
10/16/23 16:00	329.80	14.12
10/16/23 17:00	327.50	15.08
10/16/23 18:00	333.60	17.38
10/16/23 19:00	344.10	18.41
10/16/23 20:00	349.50	15.31
10/16/23 21:00	348.50	15.67
10/16/23 22:00	347.70	15.14
10/16/23 23:00	349.90	17.70
10/17/23 0:00	350.60	19.70
10/17/23 1:00	346.60	20.42
10/17/23 2:00	354.10	18.25
10/17/23 3:00	343.60	20.20
10/17/23 4:00	349.40	19.86
10/17/23 5:00	0.67	11.24
10/17/23 6:00	328.50	6.99
10/17/23 7:00	324.20	11.72
10/17/23 8:00	340.80	14.33
10/17/23 9:00	337.60	15.24
10/17/23 10:00	324.00	15.43
10/17/23 11:00	320.40	15.60
10/17/23 12:00	310.40	14.52
10/17/23 13:00	299.60	17.41
10/17/23 14:00	300.20	17.58
10/17/23 15:00	320.60	16.97
10/17/23 16:00	315.90	15.24
10/17/23 17:00	319.10	14.32
10/17/23 18:00	305.60	13.55
10/17/23 19:00	311.50	10.88
10/17/23 20:00	281.20	11.19
10/17/23 21:00	286.70	9.94
10/17/23 22:00	279.30	6.56
10/17/23 23:00	210.80	7.99
10/18/23 0:00	202.00	7.94
10/18/23 1:00	206.10	13.74
10/18/23 2:00	205.70	16.15
10/18/23 3:00	210.10	16.06
10/18/23 4:00	202.50	14.97
10/18/23 5:00	186.10	17.36
10/18/23 6:00	179.30	18.61
10/18/23 7:00	173.10	19.65
10/18/23 8:00	153.40	19.26
10/18/23 9:00	145.70	20.11
10/18/23 10:00	139.70	20.37
10/18/23 11:00	146.50	18.80
10/18/23 12:00	146.90	19.62
10/18/23 13:00	145.30	21.79
10/18/23 14:00	137.60	21.00
10/18/23 15:00	139.10	19.95
10/18/23 16:00	144.80	19.69
10/18/23 17:00	144.10	19.80
10/18/23 18:00	148.70	21.10
10/18/23 19:00	150.00	19.38
10/18/23 20:00	148.10	16.91
10/18/23 21:00	148.10	17.42
10/18/23 22:00	152.30	16.35
10/18/23 23:00	147.80	14.69
10/19/23 0:00	145.00	16.09
10/19/23 1:00	144.40	17.31
10/19/23 2:00	147.00	17.21
10/19/23 3:00	146.00	18.34
10/19/23 4:00	146.50	17.15
10/19/23 5:00	146.00	15.24
10/19/23 6:00	151.00	14.36
10/19/23 7:00	159.20	14.49
10/19/23 8:00	164.70	14.40
10/19/23 9:00	173.00	14.44

Date	Wind Direction (°)	Wind speed (km/h)
10/19/23 10:00	180.60	13.27
10/19/23 11:00	182.00	14.66
10/19/23 12:00	183.10	15.73
10/19/23 13:00	179.30	14.37
10/19/23 14:00	181.40	13.39
10/19/23 15:00	177.70	14.52
10/19/23 16:00	172.60	14.45
10/19/23 17:00	167.00	14.66
10/19/23 18:00	171.60	17.24
10/19/23 19:00	185.50	18.31
10/19/23 20:00	184.40	13.93
10/19/23 21:00	189.00	8.52
10/19/23 22:00	174.00	9.86
10/19/23 23:00	177.50	14.12
10/20/23 0:00	171.70	14.91
10/20/23 1:00	181.10	12.83
10/20/23 2:00	182.20	14.61
10/20/23 3:00	185.20	16.16
10/20/23 4:00	193.40	15.92
10/20/23 5:00	196.20	16.87
10/20/23 6:00	204.70	12.45
10/20/23 7:00	217.20	12.04
10/20/23 8:00	233.50	15.15
10/20/23 9:00	261.00	17.72
10/20/23 10:00	289.40	28.66
10/20/23 11:00	308.70	42.34
10/20/23 12:00	309.90	46.66
10/20/23 13:00	315.90	47.56
10/20/23 14:00	313.90	46.80
10/20/23 15:00	312.90	49.79
10/20/23 16:00	310.80	48.85
10/20/23 17:00	314.30	39.10
10/20/23 18:00	305.50	40.61
10/20/23 19:00	300.70	35.68
10/20/23 20:00	288.40	34.02
10/20/23 21:00	293.10	31.82
10/20/23 22:00	297.90	29.70
10/20/23 23:00	292.00	32.18
10/21/23 0:00	289.70	28.43
10/21/23 1:00	276.90	22.18
10/21/23 2:00	272.20	28.07
10/21/23 3:00	296.90	36.36
10/21/23 4:00	290.40	35.60
10/21/23 5:00	293.20	34.88
10/21/23 6:00	285.90	31.32
10/21/23 7:00	282.50	28.48
10/21/23 8:00	287.70	33.01
10/21/23 9:00	286.50	30.92
10/21/23 10:00	280.00	30.38
10/21/23 11:00	280.30	28.14
10/21/23 12:00	275.60	28.13
10/21/23 13:00	280.00	30.78
10/21/23 14:00	284.90	36.00
10/21/23 15:00	277.00	33.12
10/21/23 16:00	283.30	37.94
10/21/23 17:00	285.00	41.15
10/21/23 18:00	278.10	35.75
10/21/23 19:00	279.80	32.76
10/21/23 20:00	280.70	30.92
10/21/23 21:00	282.20	37.48
10/21/23 22:00	277.40	34.49
10/21/23 23:00	273.90	37.58
10/22/23 0:00	276.90	40.18
10/22/23 1:00	276.60	40.68
10/22/23 2:00	276.50	40.36
10/22/23 3:00	272.20	40.86
10/22/23 4:00	270.60	39.31
10/22/23 5:00	271.20	41.83
10/22/23 6:00	275.50	46.01
10/22/23 7:00	272.50	45.90
10/22/23 8:00	273.00	45.97
10/22/23 9:00	273.90	51.34
10/22/23 10:00	276.80	51.73
10/22/23 11:00	277.10	52.52
10/22/23 12:00	280.80	51.88
10/22/23 13:00	286.20	57.20
10/22/23 14:00	290.20	58.00
10/22/23 15:00	292.80	57.06
10/22/23 16:00	291.80	54.47
10/22/23 17:00	292.80	53.46
10/22/23 18:00	303.20	58.75

Date	Wind Direction (°)	Wind speed (km/h)
10/22/23 19:00	303.40	55.73
10/22/23 20:00	303.10	54.32
10/22/23 21:00	303.20	57.92
10/22/23 22:00	303.50	55.12
10/22/23 23:00	306.00	50.87
10/23/23 0:00	307.60	50.58
10/23/23 1:00	309.10	47.74
10/23/23 2:00	309.50	49.46
10/23/23 3:00	313.40	46.15
10/23/23 4:00	314.90	47.38
10/23/23 5:00	315.60	44.03
10/23/23 6:00	313.70	41.54
10/23/23 7:00	310.70	42.66
10/23/23 8:00	308.40	42.66
10/23/23 9:00	306.80	41.83
10/23/23 10:00	308.00	45.43
10/23/23 11:00	310.70	47.52
10/23/23 12:00	314.80	44.68
10/23/23 13:00	329.90	39.31
10/23/23 14:00	335.60	37.40
10/23/23 15:00	337.60	35.42
10/23/23 16:00	334.10	31.64
10/23/23 17:00	329.50	33.52
10/23/23 18:00	339.00	31.07
10/23/23 19:00	339.50	29.12
10/23/23 20:00	337.10	28.54
10/23/23 21:00	339.50	26.09
10/23/23 22:00	338.00	24.41
10/23/23 23:00	337.50	23.77
10/24/23 0:00	332.40	25.06
10/24/23 1:00	329.10	27.22
10/24/23 2:00	321.00	25.68
10/24/23 3:00	315.30	25.52
10/24/23 4:00	318.70	25.14
10/24/23 5:00	318.80	25.11
10/24/23 6:00	330.40	27.39
10/24/23 7:00	328.00	27.28
10/24/23 8:00	323.70	24.34
10/24/23 9:00	325.50	26.29
10/24/23 10:00	319.00	26.48
10/24/23 11:00	330.30	28.66
10/24/23 12:00	342.90	28.94
10/24/23 13:00	337.70	24.47
10/24/23 14:00	336.00	23.03
10/24/23 15:00	338.00	23.16
10/24/23 16:00	336.70	22.69
10/24/23 17:00	331.80	29.56
10/24/23 18:00	331.20	26.97
10/24/23 19:00	332.10	22.67
10/24/23 20:00	333.60	22.63
10/24/23 21:00	340.60	19.97
10/24/23 22:00	341.50	19.23
10/24/23 23:00	340.30	16.65
10/25/23 0:00	312.60	22.19
10/25/23 1:00	317.10	23.89
10/25/23 2:00	317.20	22.96
10/25/23 3:00	314.10	23.49
10/25/23 4:00	312.40	22.21
10/25/23 5:00	313.50	19.46
10/25/23 6:00	288.60	25.07
10/25/23 7:00	293.00	29.02
10/25/23 8:00	282.70	23.61
10/25/23 9:00	278.80	20.87
10/25/23 10:00	270.80	21.33
10/25/23 11:00	271.20	25.46
10/25/23 12:00	279.40	27.31
10/25/23 13:00	280.70	27.53
10/25/23 14:00	282.50	30.35
10/25/23 15:00	284.00	27.68
10/25/23 16:00	291.80	27.56
10/25/23 17:00	282.50	19.92
10/25/23 18:00	271.00	19.76
10/25/23 19:00	283.00	22.75
10/25/23 20:00	310.20	21.21
10/25/23 21:00	301.70	21.19
10/25/23 22:00	302.00	24.94
10/25/23 23:00	316.80	33.91
10/26/23 0:00	334.60	38.02
10/26/23 1:00	339.00	35.93
10/26/23 2:00	336.70	32.69
10/26/23 3:00	339.60	33.88

Date	Wind Direction (°)	Wind speed (km/h)
10/26/23 4:00	337.60	26.73
10/26/23 5:00	334.90	22.39
10/26/23 6:00	319.30	22.88
10/26/23 7:00	315.80	25.49
10/26/23 8:00	313.20	18.82
10/26/23 9:00	309.80	22.88
10/26/23 10:00	354.80	15.74
10/26/23 11:00	323.60	13.07
10/26/23 12:00	324.50	17.83
10/26/23 13:00	335.50	17.66
10/26/23 14:00	341.60	19.70
10/26/23 15:00	336.20	15.54
10/26/23 16:00	333.00	22.84
10/26/23 17:00	337.20	26.57
10/26/23 18:00	326.50	20.01
10/26/23 19:00	321.00	23.26
10/26/23 20:00	330.70	18.66
10/26/23 21:00	351.40	14.21
10/26/23 22:00	340.10	14.48
10/26/23 23:00	341.40	17.63
10/27/23 0:00	339.10	17.01
10/27/23 1:00	349.40	21.82
10/27/23 2:00	338.90	20.72
10/27/23 3:00	339.50	20.53
10/27/23 4:00	331.80	15.66
10/27/23 5:00	326.20	20.75
10/27/23 6:00	328.50	25.19
10/27/23 7:00	328.20	24.24
10/27/23 8:00	329.90	24.16
10/27/23 9:00	331.70	21.07
10/27/23 10:00	326.10	18.25
10/27/23 11:00	329.90	21.92
10/27/23 12:00	332.20	20.74
10/27/23 13:00	325.70	16.64
10/27/23 14:00	329.20	15.31
10/27/23 15:00	343.60	11.70
10/27/23 16:00	335.90	8.19
10/27/23 17:00	322.90	8.14
10/27/23 18:00	303.20	9.33
10/27/23 19:00	326.40	10.73
10/27/23 20:00	312.40	10.85
10/27/23 21:00	315.80	11.36
10/27/23 22:00	312.90	12.08
10/27/23 23:00	301.30	11.45
10/28/23 0:00	304.60	12.76
10/28/23 1:00	285.60	9.18
10/28/23 2:00	280.00	11.60
10/28/23 3:00	279.20	7.73
10/28/23 4:00	273.10	10.33
10/28/23 5:00	275.20	11.30
10/28/23 6:00	277.60	13.09
10/28/23 7:00	280.70	12.39
10/28/23 8:00	284.70	14.13
10/28/23 9:00	291.00	10.60
10/28/23 10:00	303.20	14.75
10/28/23 11:00	327.30	12.27
10/28/23 12:00	308.00	11.71
10/28/23 13:00	314.70	14.00
10/28/23 14:00	312.50	20.74
10/28/23 15:00	296.50	19.29
10/28/23 16:00	297.90	22.27
10/28/23 17:00	325.40	32.51
10/28/23 18:00	330.10	33.26
10/28/23 19:00	329.00	33.41
10/28/23 20:00	329.70	29.05
10/28/23 21:00	326.00	30.89
10/28/23 22:00	326.90	33.16
10/28/23 23:00	331.30	30.02
10/29/23 0:00	328.70	31.46
10/29/23 1:00	326.30	30.85
10/29/23 2:00	326.10	32.22
10/29/23 3:00	348.30	30.89
10/29/23 4:00	339.10	22.09
10/29/23 5:00	329.30	20.89
10/29/23 6:00	315.10	26.52
10/29/23 7:00	316.80	32.18
10/29/23 8:00	323.90	29.27
10/29/23 9:00	320.40	29.09
10/29/23 10:00	319.70	29.09
10/29/23 11:00	317.70	29.95
10/29/23 12:00	321.10	32.08

Date	Wind Direction (°)	Wind speed (km/h)
10/29/23 13:00	329.60	32.47
10/29/23 14:00	350.70	30.78
10/29/23 15:00	357.30	23.65
10/29/23 16:00	1.57	18.95
10/29/23 17:00	0.93	19.30
10/29/23 18:00	357.00	17.08
10/29/23 19:00	347.60	14.69
10/29/23 20:00	345.70	14.74
10/29/23 21:00	341.10	13.85
10/29/23 22:00	348.50	12.83
10/29/23 23:00	327.30	10.38
10/30/23 0:00	310.40	8.40
10/30/23 1:00	298.10	7.35
10/30/23 2:00	284.60	7.60
10/30/23 3:00	278.10	6.52
10/30/23 4:00	253.50	5.46
10/30/23 5:00	241.60	8.09
10/30/23 6:00	241.60	13.67
10/30/23 7:00	226.70	14.76
10/30/23 8:00	213.70	15.02
10/30/23 9:00	212.90	15.60
10/30/23 10:00	238.60	21.35
10/30/23 11:00	241.10	30.53
10/30/23 12:00	235.90	36.43
10/30/23 13:00	240.20	35.24
10/30/23 14:00	243.60	32.98
10/30/23 15:00	244.00	30.85
10/30/23 16:00	244.90	26.71
10/30/23 17:00	244.90	29.09
10/30/23 18:00	254.90	25.84
10/30/23 19:00	256.00	28.36
10/30/23 20:00	259.80	26.27
10/30/23 21:00	269.60	26.24
10/30/23 22:00	281.70	25.33
10/30/23 23:00	308.10	21.55
10/31/23 0:00	322.80	20.25
10/31/23 1:00	341.60	24.21
10/31/23 2:00	346.10	19.17
10/31/23 3:00	0.12	21.72
10/31/23 4:00	18.55	21.92
10/31/23 5:00	14.48	17.23
10/31/23 6:00	0.88	11.65
10/31/23 7:00	328.50	18.28
10/31/23 8:00	339.40	20.03
10/31/23 9:00	338.30	21.19
10/31/23 10:00	341.80	18.45
10/31/23 11:00	316.50	18.89
10/31/23 12:00	311.80	26.08
10/31/23 13:00	324.10	26.76
10/31/23 14:00	331.20	22.53
10/31/23 15:00	328.70	26.71
10/31/23 16:00	332.70	27.04
10/31/23 17:00	315.00	23.60
10/31/23 18:00	309.60	22.86
10/31/23 19:00	315.80	23.12
10/31/23 20:00	331.60	25.55
10/31/23 21:00	318.10	22.40
10/31/23 22:00	317.90	19.30
10/31/23 23:00	312.10	19.58
11/1/23 0:00	297.70	18.73
11/1/23 1:00	271.30	16.96
11/1/23 2:00	271.70	16.55
11/1/23 3:00	276.50	20.08
11/1/23 4:00	284.90	24.39
11/1/23 5:00	286.20	24.30
11/1/23 6:00	286.20	25.97
11/1/23 7:00	284.20	25.40
11/1/23 8:00	301.80	24.71
11/1/23 9:00	313.00	28.52
11/1/23 10:00	316.70	24.88
11/1/23 11:00	331.30	24.53
11/1/23 12:00	19.90	21.71
11/1/23 13:00	5.54	17.54
11/1/23 14:00	0.08	16.47
11/1/23 15:00	356.70	23.14
11/1/23 16:00	348.40	21.43
11/1/23 17:00	352.10	20.73
11/1/23 18:00	347.50	19.92
11/1/23 19:00	7.85	18.98
11/1/23 20:00	354.50	19.00
11/1/23 21:00	344.40	21.92

Date	Wind Direction (°)	Wind speed (km/h)
11/1/23 22:00	351.30	23.61
11/1/23 23:00	357.70	27.18
11/2/23 0:00	346.10	23.77
11/2/23 1:00	343.10	23.09
11/2/23 2:00	334.90	24.04
11/2/23 3:00	336.50	27.29
11/2/23 4:00	339.90	27.51
11/2/23 5:00	344.90	28.87
11/2/23 6:00	343.50	28.23
11/2/23 7:00	342.20	24.31
11/2/23 8:00	346.60	26.15
11/2/23 9:00	346.20	31.21
11/2/23 10:00	341.20	29.48
11/2/23 11:00	341.80	29.99
11/2/23 12:00	342.30	30.60
11/2/23 13:00	342.40	29.34
11/2/23 14:00	340.80	27.56
11/2/23 15:00	343.70	24.62
11/2/23 16:00	342.70	26.20
11/2/23 17:00	342.00	25.68
11/2/23 18:00	339.40	26.93
11/2/23 19:00	337.60	26.67
11/2/23 20:00	328.80	24.55
11/2/23 21:00	338.80	25.55
11/2/23 22:00	333.90	24.21
11/2/23 23:00	328.60	25.25
11/3/23 0:00	338.50	25.90
11/3/23 1:00	338.40	26.14
11/3/23 2:00	334.80	25.68
11/3/23 3:00	333.90	25.92
11/3/23 4:00	336.10	25.08
11/3/23 5:00	334.80	25.98
11/3/23 6:00	340.20	27.82
11/3/23 7:00	343.20	25.07
11/3/23 8:00	337.10	23.07
11/3/23 9:00	339.70	21.88
11/3/23 10:00	337.20	23.35
11/3/23 11:00	331.00	25.68
11/3/23 12:00	328.60	20.89
11/3/23 13:00	322.80	18.22
11/3/23 14:00	330.70	21.77
11/3/23 15:00	327.90	19.28
11/3/23 16:00	328.00	17.32
11/3/23 17:00	324.30	16.81
11/3/23 18:00	316.10	15.51
11/3/23 19:00	331.70	15.33
11/3/23 20:00	312.00	12.92
11/3/23 21:00	312.20	13.17
11/3/23 22:00	327.30	12.42
11/3/23 23:00	318.70	12.17
11/4/23 0:00	321.80	11.34
11/4/23 1:00	301.10	9.42
11/4/23 2:00	302.60	7.54
11/4/23 3:00	306.30	5.57
11/4/23 4:00	324.20	3.51
11/4/23 5:00	343.40	3.33
11/4/23 6:00	346.60	1.92
11/4/23 7:00	355.50	0.89
11/4/23 8:00	326.80	1.99
11/4/23 9:00	341.10	1.55
11/4/23 10:00	313.90	1.61
11/4/23 11:00	330.50	1.26
11/4/23 12:00	352.50	0.79
11/4/23 13:00	42.72	1.01
11/4/23 14:00	76.14	0.08
11/4/23 15:00	151.40	0.57
11/4/23 16:00	139.70	0.84
11/4/23 17:00	65.13	1.01
11/4/23 18:00	46.23	1.26
11/4/23 19:00	49.31	1.29
11/4/23 20:00	60.66	0.76
11/4/23 21:00	85.40	7.31
11/4/23 22:00	90.00	10.74
11/4/23 23:00	65.59	13.55
11/5/23 0:00	67.70	15.02
11/5/23 1:00	74.44	16.57
11/5/23 2:00	95.50	14.27
11/5/23 3:00	113.60	14.53
11/5/23 4:00	113.00	14.89
11/5/23 5:00	113.30	14.51
11/5/23 6:00	90.20	15.96

Date	Wind Direction (°)	Wind speed (km/h)
11/5/23 7:00	95.90	16.67
11/5/23 8:00	98.10	16.45
11/5/23 9:00	120.50	19.71
11/5/23 10:00	115.10	21.81
11/5/23 11:00	124.80	23.21
11/5/23 12:00	130.60	22.35
11/5/23 13:00	131.30	20.97
11/5/23 14:00	124.90	19.51
11/5/23 15:00	120.80	20.47
11/5/23 16:00	117.80	20.71
11/5/23 17:00	127.20	19.90
11/5/23 18:00	116.90	20.51
11/5/23 19:00	122.40	23.93
11/5/23 20:00	120.60	21.45
11/5/23 21:00	127.30	17.94
11/5/23 22:00	131.90	19.82
11/5/23 23:00	128.10	16.44
11/6/23 0:00	125.40	13.97
11/6/23 1:00	117.50	16.94
11/6/23 2:00	123.10	17.82
11/6/23 3:00	121.20	16.68
11/6/23 4:00	124.60	20.40
11/6/23 5:00	121.60	20.01
11/6/23 6:00	129.00	18.07
11/6/23 7:00	132.20	15.34
11/6/23 8:00	138.70	16.61
11/6/23 9:00	145.90	13.45
11/6/23 10:00	145.90	10.69
11/6/23 11:00	136.50	10.92
11/6/23 12:00	131.70	16.24
11/6/23 13:00	130.10	17.15
11/6/23 14:00	128.20	14.00
11/6/23 15:00	123.20	12.32
11/6/23 16:00	121.30	14.70
11/6/23 17:00	108.90	15.60
11/6/23 18:00	108.80	14.50
11/6/23 19:00	113.30	11.03
11/6/23 20:00	113.80	13.03
11/6/23 21:00	107.80	12.78
11/6/23 22:00	98.50	13.27
11/6/23 23:00	106.50	13.62
11/7/23 0:00	85.30	13.15
11/7/23 1:00	64.98	14.55
11/7/23 2:00	66.30	16.71
11/7/23 3:00	62.16	16.55
11/7/23 4:00	63.71	15.20
11/7/23 5:00	67.84	16.49
11/7/23 6:00	57.97	15.80
11/7/23 7:00	55.72	15.13
11/7/23 8:00	59.63	14.07
11/7/23 9:00	57.94	15.16
11/7/23 10:00	62.24	16.31
11/7/23 11:00	61.99	17.41
11/7/23 12:00	61.25	22.42
11/7/23 13:00	65.28	23.01
11/7/23 14:00	64.28	20.06
11/7/23 15:00	60.99	22.56
11/7/23 16:00	62.01	24.36
11/7/23 17:00	66.10	25.65
11/7/23 18:00	66.67	26.04
11/7/23 19:00	68.32	24.98
11/7/23 20:00	68.08	23.87
11/7/23 21:00	69.63	23.77
11/7/23 22:00	69.07	21.99
11/7/23 23:00	73.92	21.81
11/8/23 0:00	70.57	22.61
11/8/23 1:00	71.29	24.43
11/8/23 2:00	71.54	23.95
11/8/23 3:00	69.19	19.36
11/8/23 4:00	72.34	21.09
11/8/23 5:00	75.34	23.39
11/8/23 6:00	83.20	27.99
11/8/23 7:00	85.20	27.27
11/8/23 8:00	87.70	25.31
11/8/23 9:00	95.00	21.25
11/8/23 10:00	113.10	19.80
11/8/23 11:00	103.20	20.26
11/8/23 12:00	112.70	18.31
11/8/23 13:00	119.30	18.84
11/8/23 14:00	114.70	18.74
11/8/23 15:00	92.00	17.54

Date	Wind Direction (°)	Wind speed (km/h)
11/8/23 16:00	111.30	17.84
11/8/23 17:00	118.50	18.60
11/8/23 18:00	117.90	17.03
11/8/23 19:00	120.90	17.57
11/8/23 20:00	133.40	15.62
11/8/23 21:00	141.70	14.88
11/8/23 22:00	149.80	14.76
11/8/23 23:00	156.40	15.45
11/9/23 0:00	165.40	15.10
11/9/23 1:00	176.40	13.99
11/9/23 2:00	172.50	13.76
11/9/23 3:00	174.10	14.70
11/9/23 4:00	185.40	11.79
11/9/23 5:00	190.80	16.18
11/9/23 6:00	190.10	18.76
11/9/23 7:00	191.50	17.94
11/9/23 8:00	191.90	20.49
11/9/23 9:00	185.00	17.49
11/9/23 10:00	185.20	19.02
11/9/23 11:00	186.10	18.75
11/9/23 12:00	188.80	18.67
11/9/23 13:00	185.80	19.16
11/9/23 14:00	179.60	19.45
11/9/23 15:00	181.80	22.32
11/9/23 16:00	191.90	23.52
11/9/23 17:00	203.70	29.48
11/9/23 18:00	204.50	31.14
11/9/23 19:00	201.20	27.09
11/9/23 20:00	205.70	28.63
11/9/23 21:00	207.30	26.93
11/9/23 22:00	205.90	26.57
11/9/23 23:00	214.90	15.19
11/10/23 0:00	216.60	16.57
11/10/23 1:00	201.00	14.77
11/10/23 2:00	198.60	12.75
11/10/23 3:00	208.80	12.58
11/10/23 4:00	210.90	12.84
11/10/23 5:00	182.90	12.02
11/10/23 6:00	138.00	10.08
11/10/23 7:00	133.30	7.49
11/10/23 8:00	127.10	8.13
11/10/23 9:00	109.50	9.84
11/10/23 10:00	111.50	8.37
11/10/23 11:00	121.10	9.97
11/10/23 12:00	153.20	12.89
11/10/23 13:00	184.40	18.64
11/10/23 14:00	187.70	18.98
11/10/23 15:00	184.30	18.77
11/10/23 16:00	189.00	17.84
11/10/23 17:00	193.50	18.54
11/10/23 18:00	182.90	17.63
11/10/23 19:00	172.90	19.27
11/10/23 20:00	173.20	13.17
11/10/23 21:00	179.20	13.40
11/10/23 22:00	187.90	16.18
11/10/23 23:00	190.90	19.52
11/11/23 0:00	200.50	23.83
11/11/23 1:00	209.30	27.40
11/11/23 2:00	215.10	28.22
11/11/23 3:00	224.60	33.91
11/11/23 4:00	232.50	35.64
11/11/23 5:00	235.00	29.95
11/11/23 6:00	232.50	29.45
11/11/23 7:00	228.00	29.02
11/11/23 8:00	226.90	24.81
11/11/23 9:00	218.90	17.01
11/11/23 10:00	198.10	15.33
11/11/23 11:00	150.70	10.29
11/11/23 12:00	128.90	9.85
11/11/23 13:00	121.20	11.49
11/11/23 14:00	113.00	9.73
11/11/23 15:00	96.40	9.27
11/11/23 16:00	84.60	9.47
11/11/23 17:00	110.30	16.35
11/11/23 18:00	107.70	13.50
11/11/23 19:00	118.00	15.50
11/11/23 20:00	126.70	17.45
11/11/23 21:00	127.70	15.18
11/11/23 22:00	131.80	15.97
11/11/23 23:00	139.50	19.44
11/12/23 0:00	144.10	18.22

Date	Wind Direction (°)	Wind speed (km/h)
11/12/23 1:00	135.50	15.27
11/12/23 2:00	120.00	13.10
11/12/23 3:00	113.20	12.42
11/12/23 4:00	105.30	11.24
11/12/23 5:00	111.50	11.64
11/12/23 6:00	113.90	10.08
11/12/23 7:00	116.00	9.55
11/12/23 8:00	107.30	10.14
11/12/23 9:00	102.20	9.66
11/12/23 10:00	98.00	8.65
11/12/23 11:00	92.80	8.61
11/12/23 12:00	88.50	9.46
11/12/23 13:00	90.00	13.20
11/12/23 14:00	89.90	17.08
11/12/23 15:00	72.69	16.72
11/12/23 16:00	64.92	16.81
11/12/23 17:00	59.53	18.96
11/12/23 18:00	58.15	16.53
11/12/23 19:00	46.35	17.78
11/12/23 20:00	35.17	17.64
11/12/23 21:00	30.82	17.86
11/12/23 22:00	24.96	19.14
11/12/23 23:00	18.91	18.34
11/13/23 0:00	12.76	15.90
11/13/23 1:00	8.21	14.35
11/13/23 2:00	1.82	15.76
11/13/23 3:00	353.30	14.88
11/13/23 4:00	339.80	15.16
11/13/23 5:00	345.10	17.36
11/13/23 6:00	333.90	17.79
11/13/23 7:00	327.10	14.22
11/13/23 8:00	306.30	13.99
11/13/23 9:00	315.20	16.16
11/13/23 10:00	306.90	16.94
11/13/23 11:00	298.90	17.56
11/13/23 12:00	287.30	15.33
11/13/23 13:00	287.90	20.25
11/13/23 14:00	282.90	17.06
11/13/23 15:00	282.40	15.71
11/13/23 16:00	281.90	12.39
11/13/23 17:00	271.90	10.91
11/13/23 18:00	250.20	12.79
11/13/23 19:00	247.50	9.79
11/13/23 20:00	245.60	8.47
11/13/23 21:00	226.00	8.98
11/13/23 22:00	194.10	7.31
11/13/23 23:00	179.70	8.77
11/14/23 0:00	181.60	9.36
11/14/23 1:00	168.70	12.25
11/14/23 2:00	171.20	19.29
11/14/23 3:00	168.70	22.35
11/14/23 4:00	169.70	27.07
11/14/23 5:00	170.00	29.27
11/14/23 6:00	167.60	27.54
11/14/23 7:00	173.80	26.78
11/14/23 8:00	179.50	25.06
11/14/23 9:00	185.10	22.09
11/14/23 10:00	172.70	17.22
11/14/23 11:00	162.90	16.38
11/14/23 12:00	157.00	17.65
11/14/23 13:00	154.80	21.20
11/14/23 14:00	154.40	20.94
11/14/23 15:00	154.00	20.79
11/14/23 16:00	154.50	17.80
11/14/23 17:00	151.60	15.17
11/14/23 18:00	148.00	12.30
11/14/23 19:00	147.20	9.45
11/14/23 20:00	152.30	6.75
11/14/23 21:00	125.80	6.53
11/14/23 22:00	94.70	6.36
11/14/23 23:00	61.45	8.40
11/15/23 0:00	47.70	7.31
11/15/23 1:00	43.38	8.34
11/15/23 2:00	59.12	9.45
11/15/23 3:00	55.31	10.08
11/15/23 4:00	47.33	11.34
11/15/23 5:00	49.00	11.07
11/15/23 6:00	46.39	12.73
11/15/23 7:00	45.32	14.21
11/15/23 8:00	41.80	12.60
11/15/23 9:00	32.20	12.83

Date	Wind Direction (°)	Wind speed (km/h)
11/15/23 10:00	25.79	13.56
11/15/23 11:00	27.01	15.26
11/15/23 12:00	28.90	16.33
11/15/23 13:00	24.06	16.74
11/15/23 14:00	29.92	16.06
11/15/23 15:00	29.21	14.92
11/15/23 16:00	22.59	14.37
11/15/23 17:00	12.92	14.70
11/15/23 18:00	9.07	16.20
11/15/23 19:00	13.87	14.77
11/15/23 20:00	7.41	13.97
11/15/23 21:00	15.32	14.08
11/15/23 22:00	19.96	9.06
11/15/23 23:00	352.60	10.82
11/16/23 0:00	352.10	12.68
11/16/23 1:00	10.41	9.31
11/16/23 2:00	328.10	6.96
11/16/23 3:00	10.75	4.49
11/16/23 4:00	324.70	4.42
11/16/23 5:00	341.10	6.29
11/16/23 6:00	322.20	8.88
11/16/23 7:00	358.20	4.75
11/16/23 8:00	39.60	1.75
11/16/23 9:00	140.10	5.14
11/16/23 10:00	167.50	4.60
11/16/23 11:00	195.70	4.40
11/16/23 12:00	197.00	4.87
11/16/23 13:00	158.50	1.65
11/16/23 14:00	183.00	2.71
11/16/23 15:00	168.90	5.99
11/16/23 16:00	174.70	13.74
11/16/23 17:00	161.90	12.58
11/16/23 18:00	153.30	11.10
11/16/23 19:00	137.00	9.25
11/16/23 20:00	142.90	10.75
11/16/23 21:00	147.40	12.84
11/16/23 22:00	143.00	12.85
11/16/23 23:00	139.50	11.65
11/17/23 0:00	137.50	13.80
11/17/23 1:00	142.60	14.10
11/17/23 2:00	145.90	12.69
11/17/23 3:00	136.20	12.53
11/17/23 4:00	145.70	13.63
11/17/23 5:00	142.00	13.59
11/17/23 6:00	140.10	11.22
11/17/23 7:00	138.30	8.18
11/17/23 8:00	137.80	5.73
11/17/23 9:00	111.80	5.49
11/17/23 10:00	102.70	4.22
11/17/23 11:00	105.60	1.49
11/17/23 12:00	59.19	3.87
11/17/23 13:00	29.59	3.46
11/17/23 14:00	21.38	3.49
11/17/23 15:00	308.90	4.46
11/17/23 16:00	296.80	7.88
11/17/23 17:00	282.00	7.35
11/17/23 18:00	298.50	7.54
11/17/23 19:00	301.50	7.82
11/17/23 20:00	304.90	9.49
11/17/23 21:00	295.70	9.21
11/17/23 22:00	316.60	7.12
11/17/23 23:00	310.30	6.59
11/18/23 0:00	305.20	6.64
11/18/23 1:00	297.50	7.07
11/18/23 2:00	297.90	5.41
11/18/23 3:00	285.40	3.74
11/18/23 4:00	304.20	3.83
11/18/23 5:00	336.70	5.13
11/18/23 6:00	333.30	5.80
11/18/23 7:00	323.70	3.96
11/18/23 8:00	341.40	4.98
11/18/23 9:00	356.40	2.06
11/18/23 10:00	38.98	3.08
11/18/23 11:00	83.90	2.18
11/18/23 12:00	96.00	2.74
11/18/23 13:00	136.00	4.26
11/18/23 14:00	109.50	6.94
11/18/23 15:00	114.30	9.56
11/18/23 16:00	134.30	10.86
11/18/23 17:00	122.20	10.41
11/18/23 18:00	108.50	9.93

Date	Wind Direction (°)	Wind speed (km/h)
11/18/23 19:00	113.80	11.94
11/18/23 20:00	133.20	13.90
11/18/23 21:00	120.30	10.73
11/18/23 22:00	115.10	14.33
11/18/23 23:00	128.10	16.46
11/19/23 0:00	127.90	10.07
11/19/23 1:00	135.80	7.79
11/19/23 2:00	129.60	6.69
11/19/23 3:00	133.90	6.66
11/19/23 4:00	138.80	6.76
11/19/23 5:00	130.60	6.97
11/19/23 6:00	119.50	6.65
11/19/23 7:00	119.90	6.57
11/19/23 8:00	118.20	6.10
11/19/23 9:00	125.50	9.89
11/19/23 10:00	131.90	18.00
11/19/23 11:00	124.70	15.14
11/19/23 12:00	126.70	16.11
11/19/23 13:00	124.80	17.88
11/19/23 14:00	128.40	17.85
11/19/23 15:00	137.60	20.39
11/19/23 16:00	142.20	19.59
11/19/23 17:00	139.90	16.68
11/19/23 18:00	136.20	15.92
11/19/23 19:00	147.00	15.52
11/19/23 20:00	145.30	13.81
11/19/23 21:00	127.70	13.47
11/19/23 22:00	144.90	9.58
11/19/23 23:00	165.40	6.00
11/20/23 0:00	163.50	4.55
11/20/23 1:00	149.00	2.89
11/20/23 2:00	163.80	3.06
11/20/23 3:00	206.10	2.65
11/20/23 4:00	257.80	4.81
11/20/23 5:00	263.60	7.85
11/20/23 6:00	299.70	13.12
11/20/23 7:00	315.70	19.41
11/20/23 8:00	322.10	22.89
11/20/23 9:00	317.20	28.33
11/20/23 10:00	321.20	37.94
11/20/23 11:00	317.40	42.98
11/20/23 12:00	316.40	44.78
11/20/23 13:00	312.00	46.04
11/20/23 14:00	310.30	47.81
11/20/23 15:00	309.80	52.31
11/20/23 16:00	310.80	54.72
11/20/23 17:00	310.40	55.55
11/20/23 18:00	311.00	47.27
11/20/23 19:00	311.70	47.23
11/20/23 20:00	315.80	52.60
11/20/23 21:00	314.30	46.37
11/20/23 22:00	317.70	44.50
11/20/23 23:00	328.90	46.87
11/21/23 0:00	322.90	44.53
11/21/23 1:00	313.80	43.81
11/21/23 2:00	309.10	39.92
11/21/23 3:00	313.80	40.57
11/21/23 4:00	319.80	36.29
11/21/23 5:00	317.00	34.34
11/21/23 6:00	319.10	34.09
11/21/23 7:00	310.00	36.68
11/21/23 8:00	318.40	32.29
11/21/23 9:00	313.40	33.08
11/21/23 10:00	319.90	33.91
11/21/23 11:00	331.90	35.24
11/21/23 12:00	331.30	36.40
11/21/23 13:00	334.10	34.92
11/21/23 14:00	338.20	33.52
11/21/23 15:00	338.60	26.29
11/21/23 16:00	340.60	26.29
11/21/23 17:00	331.10	26.64
11/21/23 18:00	316.00	23.97
11/21/23 19:00	324.90	25.55
11/21/23 20:00	324.60	26.84
11/21/23 21:00	322.50	26.19
11/21/23 22:00	321.30	26.17
11/21/23 23:00	324.30	28.47
11/22/23 0:00	329.40	31.61
11/22/23 1:00	323.10	25.42
11/22/23 2:00	326.40	23.16
11/22/23 3:00	321.60	20.90

Date	Wind Direction (°)	Wind speed (km/h)
11/22/23 4:00	328.70	22.15
11/22/23 5:00	319.40	17.85
11/22/23 6:00	300.80	18.95
11/22/23 7:00	289.50	19.12
11/22/23 8:00	295.10	21.98
11/22/23 9:00	289.70	20.11
11/22/23 10:00	292.30	20.33
11/22/23 11:00	293.90	20.79
11/22/23 12:00	310.00	22.45
11/22/23 13:00	311.10	20.43
11/22/23 14:00	300.90	17.01
11/22/23 15:00	296.00	16.43
11/22/23 16:00	286.80	17.19
11/22/23 17:00	293.30	14.10
11/22/23 18:00	295.50	13.64
11/22/23 19:00	296.00	14.62
11/22/23 20:00	293.70	12.08
11/22/23 21:00	292.40	13.96
11/22/23 22:00	289.00	14.79
11/22/23 23:00	280.20	17.63
11/23/23 0:00	285.20	15.76
11/23/23 1:00	277.40	16.35
11/23/23 2:00	272.30	18.18
11/23/23 3:00	272.20	20.88
11/23/23 4:00	275.90	20.78
11/23/23 5:00	270.20	14.03
11/23/23 6:00	262.00	15.17
11/23/23 7:00	252.70	23.16
11/23/23 8:00	261.60	19.05
11/23/23 9:00	245.70	24.34
11/23/23 10:00	238.70	21.90
11/23/23 11:00	234.00	22.48
11/23/23 12:00	229.00	24.07
11/23/23 13:00	216.50	29.48
11/23/23 14:00	234.90	32.47
11/23/23 15:00	239.80	29.02
11/23/23 16:00	224.80	33.62
11/23/23 17:00	229.80	36.04
11/23/23 18:00	229.70	27.53
11/23/23 19:00	233.20	26.21
11/23/23 20:00	232.20	27.50
11/23/23 21:00	233.20	24.36
11/23/23 22:00	231.10	25.97
11/23/23 23:00	233.70	23.79
11/24/23 0:00	247.90	17.15
11/24/23 1:00	251.50	14.69
11/24/23 2:00	270.60	16.50
11/24/23 3:00	286.50	19.58
11/24/23 4:00	286.60	20.31
11/24/23 5:00	290.80	21.45
11/24/23 6:00	298.10	24.59
11/24/23 7:00	310.00	30.46
11/24/23 8:00	309.60	27.68
11/24/23 9:00	301.80	22.33
11/24/23 10:00	297.60	17.44
11/24/23 11:00	292.80	22.54
11/24/23 12:00	294.50	23.08
11/24/23 13:00	293.90	23.81
11/24/23 14:00	300.50	24.53
11/24/23 15:00	303.20	22.22
11/24/23 16:00	315.40	24.53
11/24/23 17:00	321.70	26.24
11/24/23 18:00	316.40	23.99
11/24/23 19:00	319.20	27.93
11/24/23 20:00	329.20	29.48
11/24/23 21:00	317.80	26.02
11/24/23 22:00	320.90	22.70
11/24/23 23:00	324.60	26.25
11/25/23 0:00	340.50	42.01
11/25/23 1:00	343.70	42.62
11/25/23 2:00	338.20	39.06
11/25/23 3:00	329.00	39.20
11/25/23 4:00	331.20	44.68
11/25/23 5:00	331.30	48.46
11/25/23 6:00	328.90	46.33
11/25/23 7:00	331.10	49.03
11/25/23 8:00	332.50	45.25
11/25/23 9:00	331.50	40.97
11/25/23 10:00	326.30	37.30
11/25/23 11:00	325.70	34.49
11/25/23 12:00	330.50	34.74

Date	Wind Direction (°)	Wind speed (km/h)
11/25/23 13:00	330.90	31.97
11/25/23 14:00	337.60	30.56
11/25/23 15:00	333.70	23.80
11/25/23 16:00	324.40	22.44
11/25/23 17:00	328.50	25.72
11/25/23 18:00	321.20	18.14
11/25/23 19:00	324.90	19.48
11/25/23 20:00	327.80	20.33
11/25/23 21:00	327.80	19.43
11/25/23 22:00	322.40	20.95
11/25/23 23:00	327.90	14.22
11/26/23 0:00	332.50	14.17
11/26/23 1:00	329.00	13.67
11/26/23 2:00	333.20	11.79
11/26/23 3:00	325.80	9.51
11/26/23 4:00	312.30	7.22
11/26/23 5:00	336.30	6.80
11/26/23 6:00	328.80	7.66
11/26/23 7:00	343.10	5.87
11/26/23 8:00	21.05	1.74
11/26/23 9:00	218.30	5.84
11/26/23 10:00	273.30	6.31
11/26/23 11:00	297.60	5.21
11/26/23 12:00	127.10	3.72
11/26/23 13:00	208.20	6.20
11/26/23 14:00	282.00	3.38
11/26/23 15:00	276.40	3.56
11/26/23 16:00	108.30	5.07
11/26/23 17:00	176.30	6.61
11/26/23 18:00	221.50	8.40
11/26/23 19:00	255.80	9.36
11/26/23 20:00	262.10	7.80
11/26/23 21:00	242.90	6.68
11/26/23 22:00	230.70	7.42
11/26/23 23:00	237.20	5.25
11/27/23 0:00	207.30	7.81
11/27/23 1:00	196.50	5.77
11/27/23 2:00	199.40	8.64
11/27/23 3:00	191.90	11.59
11/27/23 4:00	190.30	10.17
11/27/23 5:00	202.90	5.89
11/27/23 6:00	190.50	12.21
11/27/23 7:00	190.40	14.30
11/27/23 8:00	178.00	15.53
11/27/23 9:00	175.00	18.45
11/27/23 10:00	174.90	25.55
11/27/23 11:00	174.10	25.73
11/27/23 12:00	171.80	28.58
11/27/23 13:00	176.80	31.57
11/27/23 14:00	164.50	29.70
11/27/23 15:00	153.20	29.95
11/27/23 16:00	146.90	30.60
11/27/23 17:00	138.00	27.53
11/27/23 18:00	136.00	25.24
11/27/23 19:00	133.80	23.47
11/27/23 20:00	127.50	19.71
11/27/23 21:00	121.10	23.26
11/27/23 22:00	110.30	23.88
11/27/23 23:00	105.90	23.42
11/28/23 0:00	106.50	18.47
11/28/23 1:00	95.20	21.55
11/28/23 2:00	75.06	20.20
11/28/23 3:00	72.32	23.88
11/28/23 4:00	72.02	25.09
11/28/23 5:00	85.20	23.33
11/28/23 6:00	97.20	19.10
11/28/23 7:00	85.70	10.42
11/28/23 8:00	65.49	11.88
11/28/23 9:00	73.70	11.42
11/28/23 10:00	67.24	13.38
11/28/23 11:00	87.10	13.81
11/28/23 12:00	99.30	14.45
11/28/23 13:00	113.10	14.48
11/28/23 14:00	118.30	10.20
11/28/23 15:00	132.70	8.41
11/28/23 16:00	137.70	6.35
11/28/23 17:00	111.20	6.88
11/28/23 18:00	110.80	7.00
11/28/23 19:00	97.20	8.59
11/28/23 20:00	89.20	11.22
11/28/23 21:00	82.10	13.96

Date	Wind Direction (°)	Wind speed (km/h)
11/28/23 22:00	88.50	16.08
11/28/23 23:00	102.90	15.77
11/29/23 0:00	107.50	11.78
11/29/23 1:00	105.60	13.24
11/29/23 2:00	95.50	13.68
11/29/23 3:00	85.00	15.00
11/29/23 4:00	83.60	17.06
11/29/23 5:00	82.60	15.36
11/29/23 6:00	87.60	15.21
11/29/23 7:00	85.50	15.94
11/29/23 8:00	87.20	14.34
11/29/23 9:00	85.60	13.71
11/29/23 10:00	80.50	17.40
11/29/23 11:00	70.48	16.23
11/29/23 12:00	77.49	15.08
11/29/23 13:00	75.18	11.21
11/29/23 14:00	65.98	11.52
11/29/23 15:00	57.97	8.97
11/29/23 16:00	46.51	9.47
11/29/23 17:00	54.75	7.99
11/29/23 18:00	51.62	6.72
11/29/23 19:00	33.47	5.63
11/29/23 20:00	43.34	3.22
11/29/23 21:00	78.07	2.35
11/29/23 22:00	44.26	1.63
11/29/23 23:00	332.90	4.33
11/30/23 0:00	313.50	9.24
11/30/23 1:00	315.70	9.48
11/30/23 2:00	310.10	8.11
11/30/23 3:00	310.80	10.76
11/30/23 4:00	309.40	11.11
11/30/23 5:00	323.30	7.59
11/30/23 6:00	306.90	11.68
11/30/23 7:00	308.60	13.25
11/30/23 8:00	319.70	11.80
11/30/23 9:00	330.90	10.71
11/30/23 10:00	345.00	11.22
11/30/23 11:00	348.40	11.87
11/30/23 12:00	345.00	11.47
11/30/23 13:00	339.40	10.00
11/30/23 14:00	343.90	10.83
11/30/23 15:00	345.00	10.03
11/30/23 16:00	345.60	8.98
11/30/23 17:00	335.90	8.11
11/30/23 18:00	325.70	7.54
11/30/23 19:00	325.20	8.52
11/30/23 20:00	336.60	6.93
11/30/23 21:00	351.00	5.36
11/30/23 22:00	336.90	5.13
11/30/23 23:00	329.30	4.74
12/1/23 0:00	326.70	4.52
12/1/23 1:00	330.90	3.56
12/1/23 2:00	328.10	3.17
12/1/23 3:00	312.50	3.75
12/1/23 4:00	299.20	4.97
12/1/23 5:00	296.60	4.60
12/1/23 6:00	295.10	4.33
12/1/23 7:00	323.20	2.78
12/1/23 8:00	322.70	2.86
12/1/23 9:00	301.30	3.96
12/1/23 10:00	297.80	2.99
12/1/23 11:00	292.30	2.49
12/1/23 12:00	301.20	2.80
12/1/23 13:00	306.20	2.60
12/1/23 14:00	311.20	2.47
12/1/23 15:00	307.00	1.59
12/1/23 16:00	312.50	1.59
12/1/23 17:00	306.80	0.60
12/1/23 18:00	0.00	0.00
12/1/23 19:00	0.00	0.00
12/1/23 20:00	0.00	0.00
12/1/23 21:00	0.00	0.00
12/1/23 22:00	0.00	0.00
12/1/23 23:00	0.00	0.00
12/2/23 0:00	0.00	0.00
12/2/23 1:00	0.00	0.00
12/2/23 2:00	0.00	0.00
12/2/23 3:00	0.00	0.00
12/2/23 4:00	0.00	0.00
12/2/23 5:00	0.00	0.00
12/2/23 6:00	0.00	0.00

Date	Wind Direction (°)	Wind speed (km/h)
12/2/23 7:00	0.00	0.00
12/2/23 8:00	0.00	0.00
12/2/23 9:00	0.00	0.00
12/2/23 10:00	0.00	0.00
12/2/23 11:00	0.00	0.00
12/2/23 12:00	0.00	0.00
12/2/23 13:00	0.00	0.00
12/2/23 14:00	0.00	0.00
12/2/23 15:00	0.00	0.00
12/2/23 16:00	0.00	0.00
12/2/23 17:00	0.00	0.00
12/2/23 18:00	0.00	0.00
12/2/23 19:00	0.00	0.00
12/2/23 20:00	0.00	0.00
12/2/23 21:00	0.00	0.00
12/2/23 22:00	0.00	0.00
12/2/23 23:00	0.00	0.00
12/3/23 0:00	0.00	0.00
12/3/23 1:00	0.00	0.00
12/3/23 2:00	0.00	0.00
12/3/23 3:00	0.00	0.00
12/3/23 4:00	0.00	0.00
12/3/23 5:00	0.00	0.00
12/3/23 6:00	0.00	0.00
12/3/23 7:00	0.00	0.00
12/3/23 8:00	0.00	0.00
12/3/23 9:00	0.00	0.00
12/3/23 10:00	0.00	0.00
12/3/23 11:00	0.00	0.00
12/3/23 12:00	0.00	0.00
12/3/23 13:00	0.00	0.00
12/3/23 14:00	0.00	0.00
12/3/23 15:00	0.00	0.00
12/3/23 16:00	0.00	0.00
12/3/23 17:00	0.00	0.00
12/3/23 18:00	0.00	0.00
12/3/23 19:00	0.00	0.00
12/3/23 20:00	0.00	0.00
12/3/23 21:00	0.00	0.00
12/3/23 22:00	0.00	0.00
12/3/23 23:00	0.00	0.00
12/4/23 0:00	0.00	0.00
12/4/23 1:00	0.00	0.00
12/4/23 2:00	0.00	0.00
12/4/23 3:00	0.00	0.00
12/4/23 4:00	0.00	0.00
12/4/23 5:00	0.00	0.00
12/4/23 6:00	0.00	0.00
12/4/23 7:00	0.00	0.00
12/4/23 8:00	0.00	0.00
12/4/23 9:00	0.00	0.00
12/4/23 10:00	0.00	0.00
12/4/23 11:00	0.00	0.00
12/4/23 12:00	59.92	0.00
12/4/23 13:00	0.00	0.00
12/4/23 14:00	0.00	0.00
12/4/23 15:00	0.00	0.00
12/4/23 16:00	0.00	0.00
12/4/23 17:00	0.00	0.00
12/4/23 18:00	0.00	0.00
12/4/23 19:00	0.00	0.00
12/4/23 20:00	0.00	0.00
12/4/23 21:00	0.00	0.00
12/4/23 22:00	0.00	0.00
12/4/23 23:00	0.00	0.00
12/5/23 0:00	0.00	0.00
12/5/23 1:00	0.00	0.00
12/5/23 2:00	0.00	0.00
12/5/23 3:00	0.00	0.00
12/5/23 4:00	0.00	0.00
12/5/23 5:00	0.00	0.00
12/5/23 6:00	0.00	0.00
12/5/23 7:00	0.00	0.00
12/5/23 8:00	0.00	0.00
12/5/23 9:00	0.00	0.00
12/5/23 10:00	0.00	0.00
12/5/23 11:00	0.00	0.00
12/5/23 12:00	0.00	0.00
12/5/23 13:00	0.00	0.00
12/5/23 14:00	0.00	0.00
12/5/23 15:00	123.50	0.00

Date	Wind Direction (°)	Wind speed (km/h)
12/5/23 16:00	120.40	0.00
12/5/23 17:00	110.70	0.00
12/5/23 18:00	111.30	0.01
12/5/23 19:00	113.80	3.92
12/5/23 20:00	113.70	5.61
12/5/23 21:00	116.10	9.11
12/5/23 22:00	122.30	8.03
12/5/23 23:00	116.10	7.26
12/6/23 0:00	113.00	6.44
12/6/23 1:00	112.50	4.90
12/6/23 2:00	115.80	4.41
12/6/23 3:00	107.50	3.71
12/6/23 4:00	123.80	2.13
12/6/23 5:00	0.00	0.00
12/6/23 6:00	0.00	0.00
12/6/23 7:00	0.00	0.00
12/6/23 8:00	0.00	0.00
12/6/23 9:00	0.00	0.00
12/6/23 10:00	0.00	0.00
12/6/23 11:00	0.00	0.00
12/6/23 12:00	0.00	0.00
12/6/23 13:00	0.00	0.00
12/6/23 14:00	0.00	0.00
12/6/23 15:00	0.00	0.00
12/6/23 16:00	0.00	0.00
12/6/23 17:00	0.00	0.00
12/6/23 18:00	0.00	0.00
12/6/23 19:00	0.00	0.00
12/6/23 20:00	0.00	0.00
12/6/23 21:00	0.00	0.00
12/6/23 22:00	0.00	0.00
12/6/23 23:00	0.00	0.00
12/7/23 0:00	0.00	0.00
12/7/23 1:00	0.00	0.00
12/7/23 2:00	0.00	0.00
12/7/23 3:00	0.00	0.00
12/7/23 4:00	0.00	0.00
12/7/23 5:00	0.00	0.00
12/7/23 6:00	0.00	0.00
12/7/23 7:00	0.00	0.00
12/7/23 8:00	0.00	0.00
12/7/23 9:00	0.00	0.00
12/7/23 10:00	0.00	0.00
12/7/23 11:00	0.00	0.00
12/7/23 12:00	118.70	0.19
12/7/23 13:00	0.00	0.00
12/7/23 14:00	0.00	0.00
12/7/23 15:00	0.00	0.00
12/7/23 16:00	0.00	0.00
12/7/23 17:00	0.00	0.00
12/7/23 18:00	0.00	0.00
12/7/23 19:00	0.00	0.00
12/7/23 20:00	0.00	0.00
12/7/23 21:00	0.00	0.00
12/7/23 22:00	0.00	0.00
12/7/23 23:00	0.00	0.00
12/8/23 0:00	0.00	0.00
12/8/23 1:00	0.00	0.00
12/8/23 2:00	0.00	0.00
12/8/23 3:00	0.00	0.00
12/8/23 4:00	336.90	0.27
12/8/23 5:00	336.60	3.32
12/8/23 6:00	343.90	4.01
12/8/23 7:00	341.10	3.91
12/8/23 8:00	338.40	4.74
12/8/23 9:00	340.20	6.55
12/8/23 10:00	333.00	7.40
12/8/23 11:00	317.80	7.09
12/8/23 12:00	328.10	7.67
12/8/23 13:00	335.90	7.63
12/8/23 14:00	337.30	7.48
12/8/23 15:00	343.50	7.74
12/8/23 16:00	352.00	7.96
12/8/23 17:00	358.20	7.58
12/8/23 18:00	4.04	7.34
12/8/23 19:00	351.50	6.77
12/8/23 20:00	354.00	4.64
12/8/23 21:00	2.15	5.14
12/8/23 22:00	16.12	4.51
12/8/23 23:00	11.92	4.22
12/9/23 0:00	23.66	3.79

Date	Wind Direction (°)	Wind speed (km/h)
12/9/23 1:00	62.79	5.05
12/9/23 2:00	86.30	3.15
12/9/23 3:00	80.80	3.33
12/9/23 4:00	85.20	3.14
12/9/23 5:00	85.60	3.21
12/9/23 6:00	91.30	2.70
12/9/23 7:00	92.80	2.56
12/9/23 8:00	112.70	3.56
12/9/23 9:00	124.90	2.07
12/9/23 10:00	146.50	0.36
12/9/23 11:00	134.70	0.52
12/9/23 12:00	125.80	4.27
12/9/23 13:00	127.10	5.84
12/9/23 14:00	143.80	6.80
12/9/23 15:00	144.40	6.90
12/9/23 16:00	142.50	6.34
12/9/23 17:00	143.50	6.68
12/9/23 18:00	144.30	7.09
12/9/23 19:00	151.20	7.23
12/9/23 20:00	144.30	5.61
12/9/23 21:00	147.80	4.64
12/9/23 22:00	156.20	3.68
12/9/23 23:00	151.90	2.27
12/10/23 0:00	147.30	0.31
12/10/23 1:00	0.00	0.00
12/10/23 2:00	0.00	0.00
12/10/23 3:00	0.00	0.00
12/10/23 4:00	0.00	0.00
12/10/23 5:00	0.00	0.00
12/10/23 6:00	0.00	0.00
12/10/23 7:00	0.00	0.00
12/10/23 8:00	0.00	0.00
12/10/23 9:00	0.00	0.00
12/10/23 10:00	0.00	0.00
12/10/23 11:00	57.55	0.00
12/10/23 12:00	58.26	0.00
12/10/23 13:00	0.00	0.00
12/10/23 14:00	55.74	0.00
12/10/23 15:00	47.37	0.00
12/10/23 16:00	28.11	0.00
12/10/23 17:00	19.14	0.01
12/10/23 18:00	16.21	2.34
12/10/23 19:00	11.67	5.16
12/10/23 20:00	8.20	5.04
12/10/23 21:00	4.10	6.15
12/10/23 22:00	0.61	8.51
12/10/23 23:00	0.43	9.80
12/11/23 0:00	356.20	22.01
12/11/23 1:00	348.70	27.86
12/11/23 2:00	340.70	33.16
12/11/23 3:00	333.60	31.50
12/11/23 4:00	331.00	33.80
12/11/23 5:00	329.60	32.80
12/11/23 6:00	320.20	30.38
12/11/23 7:00	316.60	28.11
12/11/23 8:00	310.00	28.50
12/11/23 9:00	310.10	28.87
12/11/23 10:00	319.10	27.01
12/11/23 11:00	316.80	27.21
12/11/23 12:00	322.20	24.71
12/11/23 13:00	322.00	24.19
12/11/23 14:00	323.90	21.41
12/11/23 15:00	305.50	18.89
12/11/23 16:00	299.40	16.62
12/11/23 17:00	294.90	14.15
12/11/23 18:00	292.90	12.65
12/11/23 19:00	288.60	14.38
12/11/23 20:00	294.50	11.15
12/11/23 21:00	289.50	10.36
12/11/23 22:00	291.90	8.24
12/11/23 23:00	287.70	9.46
12/12/23 0:00	286.50	4.97
12/12/23 1:00	207.90	0.36
12/12/23 2:00	0.00	0.00
12/12/23 3:00	145.60	2.36
12/12/23 4:00	149.40	5.74
12/12/23 5:00	200.40	6.31
12/12/23 6:00	189.20	9.32
12/12/23 7:00	182.10	11.27
12/12/23 8:00	173.70	10.51
12/12/23 9:00	172.70	10.48

Date	Wind Direction (°)	Wind speed (km/h)
12/12/23 10:00	153.30	8.27
12/12/23 11:00	142.40	8.96
12/12/23 12:00	150.00	9.35
12/12/23 13:00	160.80	8.51
12/12/23 14:00	146.70	7.68
12/12/23 15:00	134.00	8.49
12/12/23 16:00	144.90	13.64
12/12/23 17:00	147.50	23.19
12/12/23 18:00	152.30	23.57
12/12/23 19:00	155.10	23.41
12/12/23 20:00	149.70	20.23
12/12/23 21:00	170.00	24.77
12/12/23 22:00	171.80	29.12
12/12/23 23:00	167.60	23.86
12/13/23 0:00	170.90	23.59
12/13/23 1:00	176.20	23.80
12/13/23 2:00	184.90	21.99
12/13/23 3:00	195.50	28.70
12/13/23 4:00	197.50	27.83
12/13/23 5:00	201.10	25.76
12/13/23 6:00	206.10	28.80
12/13/23 7:00	207.10	21.10
12/13/23 8:00	215.90	11.66
12/13/23 9:00	216.40	17.74
12/13/23 10:00	218.70	20.18
12/13/23 11:00	214.40	22.31
12/13/23 12:00	208.80	16.43
12/13/23 13:00	195.00	11.31
12/13/23 14:00	195.70	16.56
12/13/23 15:00	211.90	23.50
12/13/23 16:00	219.70	28.49
12/13/23 17:00	218.10	27.27
12/13/23 18:00	213.80	31.79
12/13/23 19:00	222.70	35.53
12/13/23 20:00	223.70	32.83
12/13/23 21:00	237.10	36.14
12/13/23 22:00	247.20	41.58
12/13/23 23:00	250.40	41.51
12/14/23 0:00	250.10	49.50
12/14/23 1:00	264.00	52.70
12/14/23 2:00	292.00	54.50
12/14/23 3:00	287.30	51.34
12/14/23 4:00	290.40	58.03
12/14/23 5:00	286.50	54.65
12/14/23 6:00	290.20	53.57
12/14/23 7:00	290.30	53.06
12/14/23 8:00	292.00	56.48
12/14/23 9:00	304.30	54.40
12/14/23 10:00	310.20	51.48
12/14/23 11:00	317.50	48.46
12/14/23 12:00	324.50	46.80
12/14/23 13:00	330.00	38.52
12/14/23 14:00	319.00	37.19
12/14/23 15:00	333.40	34.78
12/14/23 16:00	332.60	29.59
12/14/23 17:00	329.30	27.64
12/14/23 18:00	324.60	22.08
12/14/23 19:00	317.50	18.37
12/14/23 20:00	295.10	18.99
12/14/23 21:00	288.10	14.23
12/14/23 22:00	285.30	15.25
12/14/23 23:00	284.90	9.67
12/15/23 0:00	263.50	9.19
12/15/23 1:00	246.50	4.38
12/15/23 2:00	213.90	7.81
12/15/23 3:00	208.20	8.57
12/15/23 4:00	203.60	9.51
12/15/23 5:00	203.00	10.59
12/15/23 6:00	177.30	13.39
12/15/23 7:00	172.30	14.48
12/15/23 8:00	166.20	16.71
12/15/23 9:00	152.60	18.30
12/15/23 10:00	145.80	21.16
12/15/23 11:00	144.20	19.52
12/15/23 12:00	132.50	16.56
12/15/23 13:00	143.30	14.19
12/15/23 14:00	132.50	11.01
12/15/23 15:00	96.30	10.33
12/15/23 16:00	108.30	12.00
12/15/23 17:00	99.70	13.62
12/15/23 18:00	103.30	16.63

Date	Wind Direction (°)	Wind speed (km/h)
12/15/23 19:00	95.60	16.76
12/15/23 20:00	82.50	17.11
12/15/23 21:00	70.79	18.50
12/15/23 22:00	68.40	25.06
12/15/23 23:00	73.06	28.84
12/16/23 0:00	71.05	31.68
12/16/23 1:00	70.59	33.77
12/16/23 2:00	63.51	37.84
12/16/23 3:00	57.84	35.35
12/16/23 4:00	48.64	34.92
12/16/23 5:00	39.31	32.22
12/16/23 6:00	31.55	33.77
12/16/23 7:00	29.89	35.39
12/16/23 8:00	27.98	34.81
12/16/23 9:00	25.34	30.46
12/16/23 10:00	22.67	23.22
12/16/23 11:00	16.99	15.29
12/16/23 12:00	28.34	16.55
12/16/23 13:00	9.71	10.55
12/16/23 14:00	31.24	6.83
12/16/23 15:00	5.39	6.11
12/16/23 16:00	336.30	6.09
12/16/23 17:00	316.50	7.92
12/16/23 18:00	310.90	7.90
12/16/23 19:00	303.50	7.24
12/16/23 20:00	306.30	7.77
12/16/23 21:00	294.80	5.57
12/16/23 22:00	286.70	6.73
12/16/23 23:00	261.10	4.99
12/17/23 0:00	243.90	5.71
12/17/23 1:00	252.00	14.69
12/17/23 2:00	259.90	19.81
12/17/23 3:00	272.40	19.32
12/17/23 4:00	273.80	18.57
12/17/23 5:00	283.40	23.74
12/17/23 6:00	296.50	25.89
12/17/23 7:00	296.40	24.48
12/17/23 8:00	282.60	19.00
12/17/23 9:00	274.20	18.85
12/17/23 10:00	279.20	23.75
12/17/23 11:00	276.60	18.58
12/17/23 12:00	287.20	20.78
12/17/23 13:00	282.40	25.47
12/17/23 14:00	283.90	22.99
12/17/23 15:00	285.80	20.60
12/17/23 16:00	254.80	12.32
12/17/23 17:00	242.20	13.98
12/17/23 18:00	249.00	11.61
12/17/23 19:00	216.50	7.11
12/17/23 20:00	197.40	6.74
12/17/23 21:00	212.40	8.81
12/17/23 22:00	226.50	12.17
12/17/23 23:00	203.90	12.38
12/18/23 0:00	202.10	7.29
12/18/23 1:00	133.10	4.82
12/18/23 2:00	98.90	6.81
12/18/23 3:00	105.00	7.78
12/18/23 4:00	100.60	8.32
12/18/23 5:00	98.90	5.37
12/18/23 6:00	94.10	7.86
12/18/23 7:00	103.00	10.44
12/18/23 8:00	106.00	14.62
12/18/23 9:00	96.90	17.49
12/18/23 10:00	87.10	16.95
12/18/23 11:00	69.02	15.83
12/18/23 12:00	62.98	16.55
12/18/23 13:00	58.63	12.59
12/18/23 14:00	35.55	12.80
12/18/23 15:00	31.50	18.95
12/18/23 16:00	38.92	19.16
12/18/23 17:00	48.24	13.30
12/18/23 18:00	28.03	11.04
12/18/23 19:00	6.58	11.21
12/18/23 20:00	10.90	13.27
12/18/23 21:00	10.81	14.43
12/18/23 22:00	345.40	7.76
12/18/23 23:00	350.80	8.21
12/19/23 0:00	351.40	7.50
12/19/23 1:00	17.95	9.86
12/19/23 2:00	38.26	9.33
12/19/23 3:00	65.69	8.87

Date	Wind Direction (°)	Wind speed (km/h)
12/19/23 4:00	62.56	6.14
12/19/23 5:00	67.02	7.55
12/19/23 6:00	65.84	6.10
12/19/23 7:00	62.99	3.86
12/19/23 8:00	65.92	6.62
12/19/23 9:00	91.20	9.87
12/19/23 10:00	94.40	11.93
12/19/23 11:00	105.50	9.93
12/19/23 12:00	131.60	8.12
12/19/23 13:00	139.10	6.62
12/19/23 14:00	142.00	5.14
12/19/23 15:00	147.20	4.45
12/19/23 16:00	121.10	4.31
12/19/23 17:00	122.20	3.70
12/19/23 18:00	140.50	3.31
12/19/23 19:00	161.20	4.21
12/19/23 20:00	159.60	3.68
12/19/23 21:00	152.00	3.32
12/19/23 22:00	157.40	3.76
12/19/23 23:00	157.60	3.60
12/20/23 0:00	164.10	3.55
12/20/23 1:00	166.60	2.19
12/20/23 2:00	159.80	3.18
12/20/23 3:00	163.00	3.42
12/20/23 4:00	141.90	2.44
12/20/23 5:00	136.80	3.01
12/20/23 6:00	129.10	3.42
12/20/23 7:00	137.90	4.32
12/20/23 8:00	141.10	4.41
12/20/23 9:00	133.40	3.38
12/20/23 10:00	131.30	3.16
12/20/23 11:00	136.50	2.93
12/20/23 12:00	116.50	3.08
12/20/23 13:00	95.10	1.83
12/20/23 14:00	129.90	1.70
12/20/23 15:00	131.30	3.36
12/20/23 16:00	130.90	3.62
12/20/23 17:00	141.50	3.40
12/20/23 18:00	133.50	2.47
12/20/23 19:00	143.60	2.22
12/20/23 20:00	144.00	2.03
12/20/23 21:00	153.30	2.20
12/20/23 22:00	151.90	2.00
12/20/23 23:00	149.80	1.22
12/21/23 0:00	158.70	1.13
12/21/23 1:00	178.60	1.11
12/21/23 2:00	170.50	0.42
12/21/23 3:00	205.30	0.31
12/21/23 4:00	211.10	1.24
12/21/23 5:00	235.00	1.66
12/21/23 6:00	245.20	2.14
12/21/23 7:00	248.20	2.33
12/21/23 8:00	269.40	1.91
12/21/23 9:00	262.30	1.93
12/21/23 10:00	248.50	2.28
12/21/23 11:00	256.20	2.83
12/21/23 12:00	264.40	3.17
12/21/23 13:00	269.40	2.98
12/21/23 14:00	273.90	3.10
12/21/23 15:00	265.70	3.02
12/21/23 16:00	265.30	3.60
12/21/23 17:00	265.90	3.20
12/21/23 18:00	251.10	2.70
12/21/23 19:00	261.40	1.93
12/21/23 20:00	252.10	1.72
12/21/23 21:00	240.50	1.48
12/21/23 22:00	258.60	1.31
12/21/23 23:00	271.40	0.18
12/22/23 0:00	0.00	0.00
12/22/23 1:00	0.00	0.00
12/22/23 2:00	0.00	0.00
12/22/23 3:00	0.00	0.00
12/22/23 4:00	0.00	0.00
12/22/23 5:00	0.00	0.00
12/22/23 6:00	0.00	0.00
12/22/23 7:00	0.00	0.00
12/22/23 8:00	0.00	0.00
12/22/23 9:00	0.00	0.00
12/22/23 10:00	0.00	0.00
12/22/23 11:00	92.40	0.00
12/22/23 12:00	76.36	0.00

Date	Wind Direction (°)	Wind speed (km/h)
12/22/23 13:00	69.71	0.00
12/22/23 14:00	78.97	0.00
12/22/23 15:00	88.20	0.00
12/22/23 16:00	76.64	0.00
12/22/23 17:00	81.10	0.01
12/22/23 18:00	83.40	0.00
12/22/23 19:00	94.00	0.01
12/22/23 20:00	99.40	0.01
12/22/23 21:00	90.90	0.01
12/22/23 22:00	81.10	0.00
12/22/23 23:00	87.20	0.00
12/23/23 0:00	81.80	0.05
12/23/23 1:00	83.50	2.45
12/23/23 2:00	80.10	11.04
12/23/23 3:00	80.40	41.04
12/23/23 4:00	83.70	45.76
12/23/23 5:00	88.90	48.20
12/23/23 6:00	78.35	44.03
12/23/23 7:00	81.20	41.51
12/23/23 8:00	79.14	42.84
12/23/23 9:00	73.64	44.06
12/23/23 10:00	74.91	38.70
12/23/23 11:00	64.31	35.28
12/23/23 12:00	52.65	37.69
12/23/23 13:00	43.82	38.09
12/23/23 14:00	37.67	38.02
12/23/23 15:00	31.86	36.29
12/23/23 16:00	26.95	35.10
12/23/23 17:00	14.04	34.27
12/23/23 18:00	4.74	34.13
12/23/23 19:00	355.20	33.59
12/23/23 20:00	353.50	30.49
12/23/23 21:00	352.80	25.77
12/23/23 22:00	354.80	21.26
12/23/23 23:00	330.40	18.48
12/24/23 0:00	327.30	17.19
12/24/23 1:00	314.50	18.27
12/24/23 2:00	331.40	17.95
12/24/23 3:00	322.40	18.21
12/24/23 4:00	309.60	14.91
12/24/23 5:00	300.60	17.04
12/24/23 6:00	303.60	16.67
12/24/23 7:00	315.00	12.59
12/24/23 8:00	349.50	11.00
12/24/23 9:00	2.19	10.76
12/24/23 10:00	348.60	4.69
12/24/23 11:00	64.52	2.53
12/24/23 12:00	89.00	5.48
12/24/23 13:00	105.80	3.50
12/24/23 14:00	107.50	5.90
12/24/23 15:00	109.10	8.04
12/24/23 16:00	102.20	7.93
12/24/23 17:00	117.30	7.90
12/24/23 18:00	120.40	8.05
12/24/23 19:00	107.40	4.68
12/24/23 20:00	104.30	4.80
12/24/23 21:00	119.70	10.70
12/24/23 22:00	128.30	7.94
12/24/23 23:00	124.60	12.15
12/25/23 0:00	131.00	13.10
12/25/23 1:00	130.40	17.31
12/25/23 2:00	139.00	19.48
12/25/23 3:00	139.60	21.84
12/25/23 4:00	140.60	22.47
12/25/23 5:00	139.70	24.33
12/25/23 6:00	139.90	29.23
12/25/23 7:00	145.10	31.25
12/25/23 8:00	151.90	32.87
12/25/23 9:00	157.50	34.24
12/25/23 10:00	162.50	33.88
12/25/23 11:00	169.90	28.26
12/25/23 12:00	180.20	27.33
12/25/23 13:00	169.80	29.34
12/25/23 14:00	176.60	31.18
12/25/23 15:00	187.10	24.35
12/25/23 16:00	180.10	20.44
12/25/23 17:00	160.80	4.85
12/25/23 18:00	181.40	11.00
12/25/23 19:00	201.50	21.53
12/25/23 20:00	198.80	19.62
12/25/23 21:00	201.10	19.02

Date	Wind Direction (°)	Wind speed (km/h)
12/25/23 22:00	206.30	20.78
12/25/23 23:00	204.00	17.70
12/26/23 0:00	195.00	12.98
12/26/23 1:00	184.20	8.84
12/26/23 2:00	174.40	8.69
12/26/23 3:00	173.30	8.65
12/26/23 4:00	178.00	11.16
12/26/23 5:00	186.40	15.96
12/26/23 6:00	183.10	16.62
12/26/23 7:00	168.20	14.96
12/26/23 8:00	160.30	14.25
12/26/23 9:00	147.10	11.58
12/26/23 10:00	152.60	16.98
12/26/23 11:00	163.30	21.39
12/26/23 12:00	168.20	19.84
12/26/23 13:00	174.20	25.86
12/26/23 14:00	177.80	24.18
12/26/23 15:00	181.00	15.98
12/26/23 16:00	183.50	18.18
12/26/23 17:00	182.30	21.10
12/26/23 18:00	178.00	21.63
12/26/23 19:00	182.10	20.40
12/26/23 20:00	177.30	12.59
12/26/23 21:00	168.00	15.67
12/26/23 22:00	169.80	12.15
12/26/23 23:00	179.90	7.71
12/27/23 0:00	174.60	15.68
12/27/23 1:00	191.00	19.69
12/27/23 2:00	184.50	22.19
12/27/23 3:00	197.50	16.44
12/27/23 4:00	187.30	18.13
12/27/23 5:00	194.80	19.23
12/27/23 6:00	200.90	17.92
12/27/23 7:00	205.70	26.46
12/27/23 8:00	195.50	22.19
12/27/23 9:00	188.40	19.89
12/27/23 10:00	221.70	37.37
12/27/23 11:00	235.50	40.57
12/27/23 12:00	253.20	37.62
12/27/23 13:00	273.10	45.32
12/27/23 14:00	276.90	46.94
12/27/23 15:00	277.00	44.03
12/27/23 16:00	273.30	38.88
12/27/23 17:00	270.30	37.80
12/27/23 18:00	267.10	36.83
12/27/23 19:00	278.90	42.08
12/27/23 20:00	277.50	37.94
12/27/23 21:00	283.00	40.43
12/27/23 22:00	282.40	35.86
12/27/23 23:00	280.30	40.10
12/28/23 0:00	272.70	34.56
12/28/23 1:00	265.40	31.03
12/28/23 2:00	283.80	30.31
12/28/23 3:00	287.00	28.76
12/28/23 4:00	274.00	20.09
12/28/23 5:00	277.90	19.32
12/28/23 6:00	271.70	19.23
12/28/23 7:00	249.70	15.15
12/28/23 8:00	256.00	16.74
12/28/23 9:00	252.80	19.28
12/28/23 10:00	256.60	22.72
12/28/23 11:00	274.20	25.57
12/28/23 12:00	275.00	24.01
12/28/23 13:00	271.00	27.92
12/28/23 14:00	276.10	20.25
12/28/23 15:00	269.90	17.80
12/28/23 16:00	270.10	20.38
12/28/23 17:00	271.30	23.02
12/28/23 18:00	272.70	23.36
12/28/23 19:00	275.60	22.34
12/28/23 20:00	270.70	22.91
12/28/23 21:00	270.60	20.87
12/28/23 22:00	256.10	21.06
12/28/23 23:00	262.10	18.17
12/29/23 0:00	256.90	16.10
12/29/23 1:00	260.50	15.88
12/29/23 2:00	269.60	17.06
12/29/23 3:00	276.90	16.48
12/29/23 4:00	275.40	15.54
12/29/23 5:00	278.50	17.01
12/29/23 6:00	261.30	14.34

Date	Wind Direction (°)	Wind speed (km/h)
12/29/23 7:00	264.00	11.12
12/29/23 8:00	253.10	8.10
12/29/23 9:00	195.10	4.86
12/29/23 10:00	205.50	3.38
12/29/23 11:00	180.20	4.34
12/29/23 12:00	124.50	4.54
12/29/23 13:00	154.70	6.26
12/29/23 14:00	150.90	7.31
12/29/23 15:00	144.00	5.57
12/29/23 16:00	88.60	10.35
12/29/23 17:00	92.50	11.90
12/29/23 18:00	77.11	14.87
12/29/23 19:00	83.20	13.32
12/29/23 20:00	73.97	12.95
12/29/23 21:00	77.37	13.26
12/29/23 22:00	99.00	13.98
12/29/23 23:00	94.90	11.12
12/30/23 0:00	98.70	10.85
12/30/23 1:00	84.00	12.09
12/30/23 2:00	89.30	14.42
12/30/23 3:00	88.80	11.34
12/30/23 4:00	100.90	9.17
12/30/23 5:00	94.30	6.70
12/30/23 6:00	99.20	5.98
12/30/23 7:00	114.20	3.83
12/30/23 8:00	113.10	7.89
12/30/23 9:00	121.70	8.22
12/30/23 10:00	136.20	5.99
12/30/23 11:00	125.20	5.40
12/30/23 12:00	138.60	4.64
12/30/23 13:00	128.20	6.83
12/30/23 14:00	146.90	6.22
12/30/23 15:00	152.70	5.83
12/30/23 16:00	145.20	8.95
12/30/23 17:00	149.70	12.34
12/30/23 18:00	143.80	13.17
12/30/23 19:00	136.10	14.49
12/30/23 20:00	123.20	17.24
12/30/23 21:00	126.90	17.56
12/30/23 22:00	141.70	19.57
12/30/23 23:00	154.40	25.98
12/31/23 0:00	175.10	12.74
12/31/23 1:00	169.90	7.37
12/31/23 2:00	125.50	6.94
12/31/23 3:00	153.70	12.65
12/31/23 4:00	183.50	8.54
12/31/23 5:00	212.10	10.14
12/31/23 6:00	232.70	13.69
12/31/23 7:00	242.90	11.18
12/31/23 8:00	247.30	7.64
12/31/23 9:00	252.70	9.81
12/31/23 10:00	264.50	13.47
12/31/23 11:00	300.40	12.22
12/31/23 12:00	308.40	10.63
12/31/23 13:00	301.90	11.91
12/31/23 14:00	307.00	14.19
12/31/23 15:00	301.90	14.18
12/31/23 16:00	302.50	18.27
12/31/23 17:00	318.20	22.35
12/31/23 18:00	328.60	27.33
12/31/23 19:00	326.80	28.08
12/31/23 20:00	332.00	27.33
12/31/23 21:00	343.00	23.66
12/31/23 22:00	28.36	22.71
12/31/23 23:00	25.42	22.83