

**Interim Closure and Reclamation Plan**  
***Ulu Gold Project***  
**(including Hood River, Roma and other licenced projects)**

**Kitikmeot Region, Nunavut**

**March 2021**



## **SUMMARY**

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This *Interim Closure and Reclamation Plan* (the Plan) describes what will be done to conduct progressive reclamation, seasonal closure, future final closure, and post-closure activities at the Ulu Gold Project (Ulu), near Kugluktuk, Nunavut. This Plan also describes clean-up work associated with Blue Star's exploration activities in the area including drilling and temporary camp operation.

Previous owners of the Ulu Gold Project intended to mine and transport the ore to the Lupin mill or to a potential mill at High Lake. Underground workings were developed, ore was brought to surface for testing and waste rock was used to construct material laydown areas. Much of the equipment and infrastructure mobilized to site in 1996 is no longer useful, and there has been some contamination of the land.

When Blue Star acquired Ulu, the site was in care and maintenance and undergoing some clean-up. Blue Star has restarted exploration and is cleaning up the site so becomes more like an exploration project but may still be able to be a mine in the future should that opportunity arise.

## REVISION HISTORY

| Revision #               | Date     | Section   | Summary of Changes  | Author               | Approver   |
|--------------------------|----------|---|---|----------------------|------------|
| 2BM-ULU2030, 2BE-HRP1924 |          |   |   |                      |            |
| 2                        | Mar 2021 | Summary Revision History Sections 1.0, 1.1, 1.2, 2.3.1, 4.2.4, 12 Table 1 | Amalgamated existing approved Hood River Abandonment and Restoral Plan with the existing Ulu Interim Closure and Reclamation Plan into 1 document for operational efficiency as all activities will be centralized and based out of Ulu. Changes throughout to reflect name of project, related activities and authorizations. Content provided is consistent with existing approved plans. | S. Hamm              | D. Lindsay |
|                          |          | Sections 1.4, 6.2, 6.3, 6.5, 9.1 Tables 2, 9                              | Replaced calendar year (ie. 2020, 2021) with program year (Year 1, Year 2)  |                      |            |
|                          |          | Section 4.2   | Updated contact info.   |                      |            |
|                          |          | Throughout  | Minor non-technical edits and formatting for readability and consistency with other Blue Star management plans  |                      |            |
| 2BE-HRP1924              |          |   |   |                      |            |
| 1                        | Apr 2019 | Abandonment and Restoration Plan  | Approved July 15, 2019  | Blue Star Gold Corp. |            |
| 2BE-HRP1419              |          |   |   |                      |            |
| 2                        | Sep 2015 | Abandonment and Restoration Plan  | Approved March 7, 2016  | WPC Resources Inc.   |            |
| 1                        | May 2014 | Abandonment and Restoration Plan  | -   | WPC Resources Inc.   |            |
| 2BM-ULU2030              |          |   |   |                      |            |
| 1                        | Mar 2020 | Interim Closure and Reclamation Plan                                      | Approved May 15, 2020   | Blue Star Gold Corp. |            |
| 2BM-ULU1520              |          |   |   |                      |            |
| 4                        | Mar 2018 | Progressive Reclamation Plan  | -   | Bonito Capital Corp. |            |

|                         |          |  |                           |                        |
|-------------------------|----------|--|---------------------------|------------------------|
| 3                       | Sep 2017 | Progressive Reclamation Plan             | -                         | Bonito Capital Corp.   |
| 2                       | Mar 2016 | Interim Closure and Reclamation Plan     | -                         | Bonito Capital Corp.   |
| 1                       | Mar 2013 | Interim Closure and Reclamation Plan     | Approved May 13, 2015     | Bonito Capital Corp.   |
| 2BM-ULU0914             |          |  |                           |                        |
| 2                       | May 2014 | Care and Maintenance Plan                | -                         | Bonito Capital Corp.   |
| 1b                      | Aug 2011 | Interim Abandonment and Restoration Plan | -                         | Elgin Mining Inc.      |
| 1a                      | Aug 2011 | Care and Maintenance Plan                | -                         | Elgin Mining Inc.      |
| NWB1ULU0008/2BM-ULU0008 |          |  |                           |                        |
| 4                       | Nov 2007 | Abandonment and Restoration Plan         | -                         | Zinifex Canada Inc.    |
| 3                       | Jan 2004 | Interim Abandonment and Restoration Plan | Approved October 16, 2006 | Wolfden Resources Inc. |
| 2                       | Apr 2001 | Interim Abandonment and Restoration Plan | Approved January 7, 2004  | Echo Bay Mines         |
| 1                       | Aug 1998 | Interim Abandonment and Restoration Plan | -                         | Echo Bay Mines         |

## TERMS AND ABBREVIATIONS

| Abbreviation | Term  |
|--------------|---|
| °C           | Degrees Celsius   |
| F1           | Petroleum Hydrocarbon fraction F1 encompasses the equivalent normal straight-chain hydrocarbon boiling point range C6 to C10    |
| F2           | Petroleum Hydrocarbon fraction F2 encompasses the equivalent normal straight-chain hydrocarbon boiling point range >C10 to C16  |
| F3           | Petroleum Hydrocarbon fraction F1 encompasses the equivalent normal straight-chain hydrocarbon boiling point range >C16 to C34  |
| F4           | Petroleum Hydrocarbon fraction F1 encompasses the equivalent normal straight-chain hydrocarbon boiling point range >C34 to C50+ |
| FCP          | Final Closure Plan  |
| ICRP         | Interim Closure and Reclamation Plan  |
| IOL          | Inuit Owned Land  |
| KIA          | Kitikmeot Inuit Association   |
| ML/ARD       | Metal leaching and acid rock drainage   |
| NIRB         | Nunavut Impact Review Board   |
| NPC          | Nunavut Planning Commission   |
| NWB          | Nunavut Water Board   |
| PHC          | Petroleum Hydrocarbon   |
| STF          | Soil treatment facility   |

## CONCORDANCE TABLE: ULU PROGRESSIVE RECLAMATION COST ESTIMATE

| Interim Closure and Reclamation Plan |                                  |             |   | Closure Cost Estimate |                |             |   | Reference Documents   |
|--------------------------------------|----------------------------------|-------------|---|-----------------------|----------------|-------------|---|---|
| Task No.                             | Task                             | Subtask No. | Subtask                                   | Section No.           | Section        | Subtask No. | Subsection                                    |   |
| 6                                    | Progressive Reclamation Measures | 6.3         | Mine Workings                             | 1                     | Direct Costs   | 1.5         | Mine Workings                                 | -   |
|                                      |                                  | 6.4         | Mine Sump                                 | 1                     | Direct Costs   | 1.4         | Ore Management                                | -   |
|                                      |                                  | 6.5         | Ore and Waste Rock                        | 1                     | Direct Costs   | 1.4         | Ore Management                                | Appendix A: 2019 Geochemical Monitoring: ML/ARD Summary of Waste Rock, Ulu, Nunavut. Prepared by SRK Consulting for Blue Star Gold Corp. March 16, 2020 |
|                                      |                                  | 6.5         | Ore and Waste Rock                        | 2                     | Indirect Costs | 2.2         | ML/ARD Investigation                          | Appendix A: 2019 Geochemical Monitoring: ML/ARD Summary of Waste Rock, Ulu, Nunavut. Prepared by SRK Consulting for Blue Star Gold Corp. March 16, 2020 |
|                                      |                                  | 6.6         | Infrastructure and Equipment              | 1                     | Direct Costs   | 1.1. & 1.2  | Building Demolition Non-Hazardous Landfill    | <i>Landfill Management Plan</i>   |
|                                      |                                  | 6.7         | Hazardous Materials and Contaminated Soil | 1                     | Direct Costs   | 1.2         | Hazardous Material Management                 | Appendix B: Results of 2019 Contaminated Soil Investigation at Ulu Gold Project. Prepared by SRK Consulting for Blue Star Gold Corp. March 12, 2020     |
|                                      |                                  | 6.7         | Hazardous Materials and Contaminated Soil | 1                     | Direct Costs   | 1.3         | Soil Treatment Facility                       | <i>Soil Treatment Facility Management Plan</i>  |
|                                      |                                  | 6.8         | Borrow and Quarry Materials               | 1                     | Direct Costs   | 1.7         | Borrow and Quarry                             | <i>Borrow Pits and Quarry Management Plan</i>   |
|                                      |                                  | 6.9         | Monitoring and Maintenance                | 2                     | Indirect Costs | 2.3 & 2.4   | Monitoring and Reporting Management and QA/QC | Water License 2BM-ULU2030<br><i>Landfill Management Plan</i><br><i>Soil Treatment Facility Management Plan</i>  |

## TABLE OF CONTENTS

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|       |   |    |
|-------|---|----|
| 1.0   | INTRODUCTION .....  | 1  |
| 1.1   | Overview .....  | 1  |
| 1.2   | Scope .....   | 2  |
| 1.3   | Objectives.....   | 2  |
| 1.4   | Project Schedule .....  | 2  |
| 1.5   | Plan Management.....  | 3  |
| 1.6   | Plan Implementation .....   | 4  |
| 2.0   | SITE DESCRIPTION .....  | 6  |
| 2.1   | Location and Access .....   | 6  |
| 2.2   | Past Development Activities .....                                       | 6  |
| 2.3   | Ongoing Activities .....  | 7  |
| 2.3.1 | <i>Exploration and Other Activities</i> .....                           | 7  |
| 2.3.2 | <i>Site Monitoring and Maintenance</i> .....                            | 7  |
| 2.4   | Completed Reclamation Measures.....                                     | 7  |
| 3.0   | EXISTING CONDITIONS.....  | 11 |
| 3.1   | Physical and Chemical Environment.....                                  | 11 |
| 3.1.1 | <i>Physiography</i> .....   | 11 |
| 3.1.2 | <i>Surficial and Bedrock Geology</i> .....                              | 11 |
| 3.1.3 | <i>Geochemical Characterization of Borrow, Ore and Waste Rock</i> ..... | 12 |
| 3.1.4 | <i>Surface Water</i> .....  | 12 |
| 3.1.5 | <i>Contaminated Soil</i> .....  | 12 |
| 3.2   | Biological Environment .....  | 13 |
| 3.2.1 | <i>Vegetation and Wildlife</i> .....                                    | 13 |
| 3.2.2 | <i>Fish and Fish Habitat</i> .....                                      | 13 |
| 3.3   | Atmospheric Environment.....  | 16 |
| 3.4   | Site Facilities.....  | 17 |
| 3.4.1 | <i>Buildings, Other Structures and Equipment</i> .....                  | 17 |
| 3.4.2 | <i>Mine Workings</i> .....  | 20 |
| 3.4.3 | <i>Mine Sump</i> .....  | 20 |
| 3.4.4 | <i>Ore and Waste Rock</i> .....   | 21 |
| 3.4.5 | <i>Roads and Airstrip</i> .....   | 21 |
| 3.4.6 | <i>Borrow Pit</i> .....   | 21 |
| 3.4.7 | <i>Waste, Chemical and Sewage Storage Areas</i> .....                   | 21 |
| 4.0   | RECLAMATION PLANNING .....  | 22 |

4.1 Approach to Planning..... 22

4.2 Roles and Responsibilities..... 22

4.2.1 *Staff, Contractors, Suppliers and Visitors*..... 22

4.2.2 *Managers and Supervisors*..... 23

4.2.3 *Reclamation Manager*..... 23

4.2.4 *Drill Contractors* ..... 23

4.3 Status of Planning ..... 23

4.3.1 *Past Closure Planning*..... 23

4.3.2 *Current Closure Planning*..... 24

4.4 Community Engagement Summary ..... 25

4.5 Alternatives Assessment..... 25

4.6 Reclamation Research..... 26

5.0 OBJECTIVES & DESIGN CRITERIA ..... 26

5.1 Objectives..... 26

5.1.1 *Progressive Reclamation Goal and Objectives*..... 26

5.1.2 *Temporary Closure Goal and Objectives* ..... 27

5.1.3 *Permanent Closure and Reclamation Goal and Objectives*..... 27

5.1.4 *Adaptive Management* ..... 27

5.2 Design Criteria..... 28

5.2.1 *Landfill Cover Design*..... 28

5.2.2 *Soil Treatment Facility*..... 28

5.2.3 *Petroleum Hydrocarbon Contaminated Soil Remediation* ..... 28

6.0 PROGRESSIVE RECLAMATION MEASURES ..... 29

6.1 Definition of Progressive Reclamation..... 29

6.2 Opportunities for Progressive Reclamation..... 29

6.3 Mine Workings..... 29

6.4 Mine Sump ..... 30

6.5 Ore and Waste Rock..... 30

6.6 Infrastructure and Equipment ..... 31

6.6.1 *Building and Equipment Demolition* ..... 31

6.6.2 *Waste Storage and Disposal Areas* ..... 32

6.6.3 *Fuel Storage* ..... 32

6.7 Hazardous Materials and Contaminated Soil..... 32

6.8 Borrow and Quarry Materials ..... 33

6.9 Monitoring and Maintenance ..... 34

6.9.1 *Progressive Reclamation Monitoring and Maintenance Programs* ..... 34

6.9.2 *Post-Progressive Reclamation Monitoring and Maintenance Programs*..... 34

6.9.3 *Contingencies* ..... 34

7.0 TEMPORARY CLOSURE MEASURES ..... 36

7.1 Mine Workings ..... 36

7.2 Water Management ..... 36

7.3 Buildings and Storage Facilities ..... 36

7.3.1 *Ulu Camp* ..... 36

7.3.2 *Fuel and Material Storage* ..... 37

7.4 Mobile Equipment ..... 37

7.5 Waste Management ..... 37

7.6 Drills ..... 37

7.7 Monitoring and Maintenance ..... 37

8.0 FINAL CLOSURE MEASURES ..... 38

8.1 Roads and Airstrip ..... 38

8.2 Borrow and Quarries ..... 38

8.3 Mine Workings ..... 38

8.4 Waste Management ..... 38

8.5 Risk Management ..... 38

8.6 Monitoring and Maintenance ..... 39

8.6.1 *Closure Monitoring and Maintenance Programs* ..... 39

8.6.2 *Post-Closure Monitoring, Maintenance and Reporting* ..... 39

9.0 FINAL ENVIRONMENT CONDITIONS ..... 39

9.1 Residual Effects Prediction ..... 39

9.2 Landforms and Vegetation ..... 39

10.0 CLOSURE SCHEDULE AND EXECUTION STRATEGY ..... 40

10.1 Regulatory Framework ..... 40

10.2 Final Closure Schedule and Execution Strategy ..... 40

11.0 RECLAMATION AND CLOSURE LIABILITY ..... 40

12.0 HOOD RIVER, ROMA & OTHER REGIONAL ACTIVITIES ..... 41

12.1 Scope ..... 41

12.2 Closure Objectives ..... 41

12.3 Seasonal & Temporary Closure ..... 42

12.3.1 *Camp* ..... 42

12.3.2 *Fuel & Material Storage* ..... 42

12.3.3 *Waste* ..... 42

12.3.4 *Water Intake* ..... 42

12.3.5 *Core Shack* ..... 43

12.3.6 *Drills* ..... 43

|      |                                |    |
|------|--------------------------------|----|
| 12.4 | Final Closure.....             | 43 |
| 12.5 | Reporting & Documentation..... | 43 |
| 12.6 | Security .....                 | 43 |
| 13.0 | REFERENCES.....                | 44 |

**LIST OF TABLES**

|          |  |    |
|----------|--|----|
| Table 1. | Related project documents, permits and licences.....                 | 1  |
| Table 2. | Project Schedule.....  | 3  |
| Table 3. | Petroleum hydrocarbon contaminated soil volume estimate. ....        | 13 |
| Table 4. | Precipitation and temperature normals based on Lupin A records.....  | 18 |
| Table 5. | Weather data comparison for the region – 1990-1992. ....             | 18 |
| Table 6. | List of Existing Equipment. ....                                     | 19 |
| Table 7. | Soil quality remediation objectives for petroleum hydrocarbons. .... | 29 |
| Table 8. | List of equipment planned for disposal.....                          | 31 |
| Table 9. | Soil treatment facility schedule and quantity estimates. ....        | 33 |

**LIST OF FIGURES**

|            |   |    |
|------------|---|----|
| Figure 1.  | Ulu Gold Project site map. ....                   | 5  |
| Figure 2.  | Ulu Gold Project site access.....                 | 8  |
| Figure 3.  | Ulu Gold Project site plan. ....                  | 9  |
| Figure 4.  | Ulu Gold Project exploration site facilities..... | 10 |
| Figure 5.  | Ulu Gold Project regional physiography. ....      | 14 |
| Figure 6.  | Ulu Gold Project regional geology. ....           | 15 |
| Figure 7.  | Temperature and precipitation normals.....        | 16 |
| Figure 8.  | Underground development. ....                     | 20 |
| Figure 9.  | Soil treatment facility overview .....            | 33 |
| Figure 10. | Progressive reclamation site facilities.....      | 35 |

**LIST OF APPENDICES**

- Appendix A: 2019 Geochemical Monitoring
- Appendix B: 2019 Contaminated Soil Investigation
- Appendix C: Progressive Reclamation Cost Estimate



## 1.0 INTRODUCTION

Blue Star Gold Corp. (Blue Star) is undertaking exploration activities and conducting progressive reclamation in the Kitikmeot Region of Nunavut, including the Ulu Gold Project (Ulu), that previously defined as the Hood River Gold Project area and regional exploration areas of interest (Hood River); the majority of activities are based out of the Ulu camp and undertaken in the local area (the Project).

Blue Star’s near-term plans are to undertake mineral exploration locally and regionally and to undertake progressive reclamation of the Ulu site. This *Interim Closure and Reclamation Plan* (ICRP; the Plan) is intended exclusively for use by Blue Star and its contractors. Its purpose is to ensure that best practices to minimize potential environmental impacts and liabilities during progressive reclamation and exploration activities are implemented, and also to ensure that the conditions of the water and land use licences are met in all work areas, including camps, fuel caches, airstrip, reclamation work area, quarries and drill sites. The ICRP should be read in conjunction with the documents listed in Table 1, which may be updated from time to time.

Blue Star and it’s wholly owned subsidiaries, Ulu Mining Inc. (Ulu Mining) and Inukshuk Exploration Inc. (Inukshuk) hold all Project authorizations. For the purposes of this document and other Project-related documents, Blue Star, Ulu Mining and Inukshuk may be used interchangeably. In 2019, Blue Star changed its name; it was previously known as WPC Resources Inc..

Table 1. Related project documents, permits and licences.

| Document                                       | Authors                        |
|--|--------------------------------|
| <i>Landfill Management Plan</i>                | Blue Star Gold Corp.           |
| <i>Soil Treatment Facility Management Plan</i> | Blue Star Gold Corp.           |
| <i>Engagement Plan</i>                         | Blue Star Gold Corp.           |
| <i>Spill Response Plan</i>                     | Blue Star Gold Corp.           |
| <i>Waste Management Plan</i>                   | Blue Star Gold Corp.           |
| <i>Borrow Pits and Quarry Management Plan</i>  | Blue Star Gold Corp.           |
| <i>Wildlife Protection Plan</i>                | Environmental Dynamics Inc.    |
| <i>Interim Water Management Plan</i>           | Gartner Lee Ltd.               |
| Mining lease, mineral claims                   | Government of Canada           |
| Mineral Exploration Agreement                  | Nunavut Tunngavik Incorporated |
| Screening Decision Reports                     | Nunavut Impact Review Board    |
| Water Licences                                 | Nunavut Water Board            |
| Land Use Licence                               | Kitikmeot Inuit Association    |

## 1.1 OVERVIEW

The Ulu site is located in the Kitikmeot region of Nunavut, approximately 200 km southeast of Kugluktuk, Nunavut (see Figure 1). Underground exploration at Ulu was conducted in 1996, 1997, 2005, and 2006. Since 2006, the Ulu camp has been reopened to support surface exploration and progressive reclamation activities in 2012, 2014, and annually since 2018. Blue Star acquired the Ulu Project from Bonito Capital Corp. and the water licence was assigned December 2019. Blue Star is now responsible for activities associated with the Project, including the implementation of this Plan.

The Hood River area has been explored intermittently since 1960. The mineral tenure is currently held by Inukshuk, under a mineral exploration agreement with Nunavut Tunngavik Incorporated (NTI), and is contiguous with the Ulu mining lease. Initially as WPC Resources Inc., Blue Star commenced exploration at Hood River in 2014 and subsequently established a seasonal camp in 2019.

Ongoing exploration activities local to Ulu and Hood River, as well as those occurring throughout the region, such as Blue Star's Roma project (mineral claims acquired in 2021), will be based out of Ulu and may involve temporary and seasonal satellite camp and fuel cache establishment in accordance with requisite licence terms and conditions.

## **1.2 SCOPE**

This ICRP provides details of Blue Star's near-term plan to recommence exploration while concurrently progressively reclaiming the site to support exploration activities, yet also allowing for potential future mine development. The Plan predominantly describes the procedures for progressive reclamation and temporary closure of Ulu, and outlines considerations for future final closure at Ulu. Additional measures pertaining to seasonal temporary and final closure of additional exploration related facilities (Hood River and Roma) is also addressed. Unless otherwise specified, the majority of this plan applies specifically to the Ulu site; aspects pertaining to Hood River, Roma and other regional activities are specifically addressed in Section 12.0.

## **1.3 OBJECTIVES**

Blue Star's team endeavours to fulfill its reclamation and closure objectives for the Project. Accordingly, the objectives of this plan are to:

- Ensure employees and contractors are aware of their responsibilities regarding progressive reclamation, temporary closure of the site, and associated monitoring activities.
- Outline appropriate measures to remediate areas affected by petroleum hydrocarbons and to treat the soil.
- Outline appropriate measures to dispose of infrastructure no longer necessary for ongoing exploration at the site.
- Outline potential scenarios and studies required for future final closure of the site.

## **1.4 PROJECT SCHEDULE**

The Project currently is a surface exploration site and with historical underground workings. Table 2 outlines the Project schedule as currently envisioned by Blue Star. Exploration activities and camp relocation are expected to occur in the near term, yet this is contingent upon a variety of factors that include safety, logistics, conditions on site, exploration success, and market conditions.

Table 2. Project Schedule.

| Year           | Summary of Main Project Activities  |
|----------------|---|
| 1 <sup>1</sup> | Recommence surface exploration.<br>Construct a soil treatment facility. Excavate and treat petroleum hydrocarbon contaminated soils.<br>Establish an on-site landfill for the disposal of non-hazardous materials. Implement selected management option for the stockpiled ore.<br>Assess alternate camp locations.<br>Close the landfill at the end of each season.<br>Initiate reclamation research to evaluate requirements and options for future final closure of site roads, constructed pads, and historical mine openings.<br>Conduct monitoring in accordance with water and land use licences terms and conditions. |
| 2              | Continue surface exploration.<br>Continue treatment of contaminated soil in the soil treatment facility.<br>Close the landfill at the end of each season.<br>Relocate the Ulu camp to a new location closer to the airstrip.<br>Commence limited baseline environmental studies.<br>Conduct monitoring in accordance with water and land use licences terms and conditions  |
| 3-5            | Continue surface exploration.<br>Commence underground exploration. Undertake mine development planning.<br>Continue treatment of contaminated soil in the soil treatment facility. Continue baseline environmental studies.<br>Conduct monitoring in accordance with water and land use licences terms and conditions.  |
| 6              | Continue exploration.<br>Close the soil treatment facility.<br>Dispose of remaining non-hazardous waste in the landfill (i.e., soil treatment facility liner).<br>Close the landfill.<br>Continue baseline environmental studies.<br>Conduct monitoring in accordance with water and land use licences terms and conditions.  |
| 7 Onwards      | Continue exploration.<br>Continue baseline environmental studies.<br>Conduct monitoring in accordance with water and land use licences terms and conditions.  |

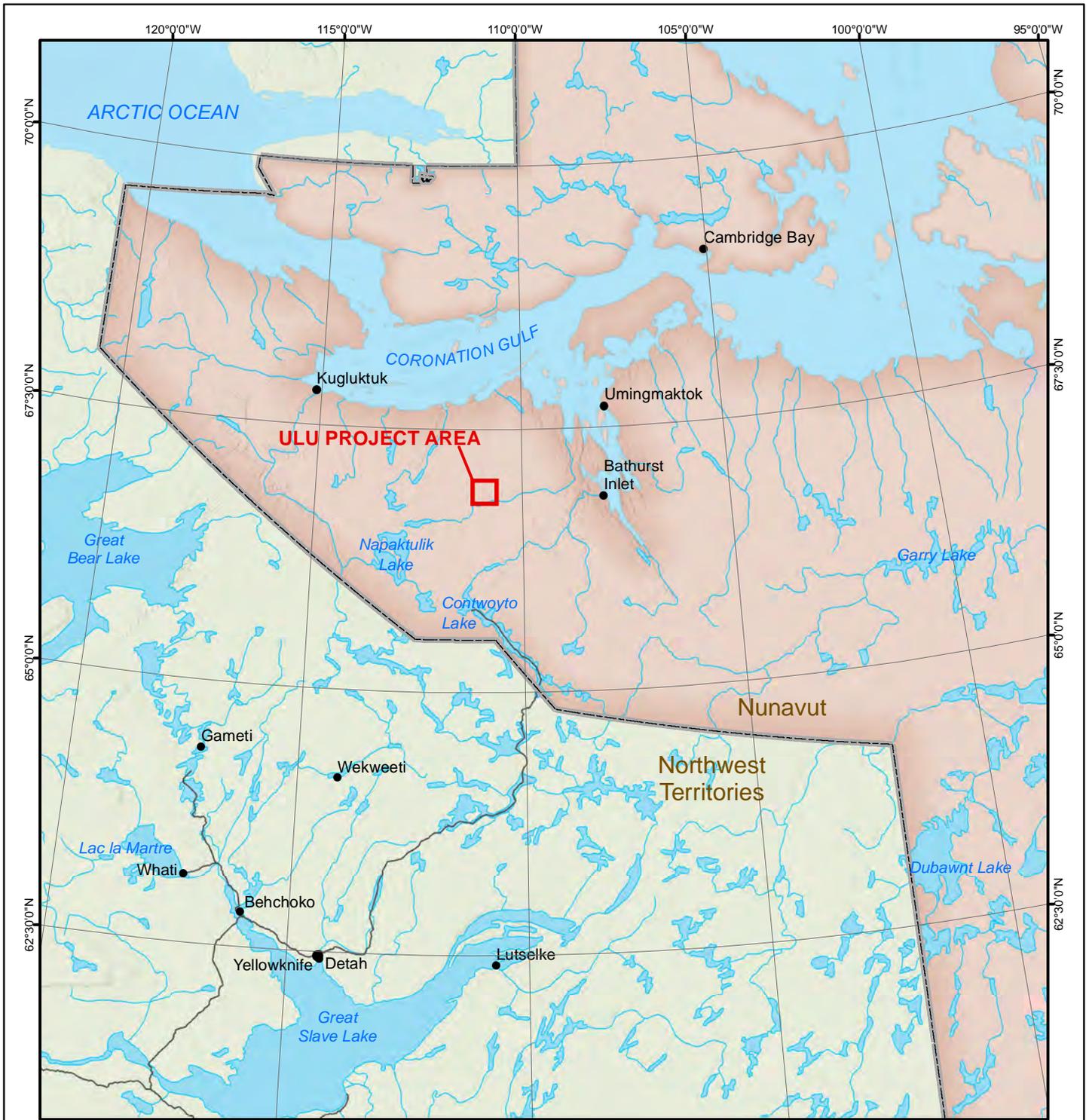
<sup>1</sup>Year 1 generally corresponds with the ICRP approval, being 2020.

## 1.5 PLAN MANAGEMENT

The Plan is reviewed annually by Blue Star’s Project Manager and is updated as needed following receipt of or amendments to licences and permits, to ensure alignment with relevant terms and conditions. When material changes occur, the updated document will be provided to parties in accordance with the *Engagement Plan*.

## **1.6 PLAN IMPLEMENTATION**

This Plan is effective upon approval and is valid throughout all phases of the Project. The Project Manager or their designate is responsible for Plan implementation. A copy of this Plan is posted in key locations at the site while the camp is open. All employees and contractors conducting progressive reclamation and monitoring activities will be made aware of its contents.



**Legend**

- Community
- Territorial Boundary
- Road Network
- Watercourse
- Waterbody

**Map 1. Ulu Gold Project Site Location**

Data Sources:  
 Topography and Road Network Data courtesy Esri.  
 Community data provided courtesy GNWT and GN spatial data warehouses.

Disclaimer  
 EDI Environmental Dynamics Inc. has made every effort to ensure this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

0 50 100 150 200 250  
 Kilometres

Map Scale: 1:6,000,000 (printed on 8.5 x 11)  
 Map Projection: NAD 1983 CSRS UTM Zone 12N

|              |                   |             |                  |
|--------------|-------------------|-------------|------------------|
| Drawn:<br>MP | Checked:<br>RR/SH | Drawing: #1 | Date: 2020-03-04 |
|--------------|-------------------|-------------|------------------|

**MAP AREA**

Northwest Territories, Nunavut, Yukon, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario

**BLUE STAR GOLD CORP.** **EDI**

## **2.0 SITE DESCRIPTION**

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### **2.1 LOCATION AND ACCESS**

The Project is located in the Kitikmeot region of Nunavut, approximately 523 km north–northeast of Yellowknife, Northwest Territories, approximately 45 km north of the Arctic Circle, and 126 km north of Lupin mine. The Project is centred at Ulu, at longitude 110°58'24 "W and latitude 66°54 '27"N. The closest population centres are Kugluktuk, approximately 200 km to the northwest, and Cambridge Bay, approximately 340 km to the northeast. The proposed deep-water port at Grays Bay is located 100 km to the north.

The Project is accessible by aircraft. A 3.5 km gravel road connects the 1,200 m by 32 m gravel airstrip to the Project. Float- and ski-equipped aircraft may also land on adjacent lakes. A winter road was constructed from the Lupin mine to the site to transport equipment and may be re-established as a winter trail in the future. The proposed route corridor for the all-weather Grays Bay road passes in close proximity to the Project. Figure 2 illustrates the location of the overland routes.

### **2.2 PAST DEVELOPMENT ACTIVITIES**

The original Ulu claim was staked in 1988 by BHP Minerals Canada Ltd. (BHP) and the current Ulu mining lease corresponds to the original claim. The Flood Zone was discovered in 1989 and environmental baseline studies commenced in 1990.

Echo Bay Mines Ltd. (Echo Bay) purchased the Ulu project from BHP in 1995 with the intent of developing it to provide mill feed to the Lupin mine. In 1996, Echo Bay mobilized surface and underground equipment and supplies with low-ground pressure (Nodwell and Commander) vehicles to a temporary camp, Camp 3 (Figure 3). In 1996, Echo Bay collared a portal, installed a ramp to access the Flood Zone, and completed construction of the Ulu camp (Figure 4). Echo Bay suspended mining operations and surface exploration activities in 1997.

Kinross Gold Corp. (Kinross) acquired the Ulu project in a business combination with Echo Bay in 2002. In 2003, Wolfden Resources Inc. (Wolfden) acquired the Ulu mining lease from Kinross. The Ulu camp was reopened to support surface exploration, engineering, environmental and archaeological studies between 2004 and 2006. The portal was reopened in 2005 and 2006.

Wolfden was acquired by Zinifex Ltd. in 2007, which merged with Oxiana Ltd. to become Oz Minerals Limited in 2008. A portion of Oz Minerals' assets, including the Ulu Gold Project, was acquired in 2009 by China Non Ferrous Metals Co Ltd. (Minmetals), the company now operating as MMG Resources Inc. Bonito Capital Corp. (Bonito), a wholly owned subsidiary of Elgin Mining Inc., acquired the property in 2011. The Ulu camp was inactive during this period.

In 2012, Bonito refurbished and updated the 50-person camp and kitchen to conduct surface exploration. In 2014, Bonito was acquired by Mandalay Resources Corporation. The Ulu camp has been reopened seasonally since 2015 to conduct care and maintenance work, progressive reclamation, and support surface exploration in the region. Blue Star acquired 100% interest in the Ulu Gold Project in February 2020.

## **2.3 ONGOING ACTIVITIES**

### **2.3.1 EXPLORATION AND OTHER ACTIVITIES**

Concurrent with progressive reclamation of Ulu, Blue Star is undertaking exploration-related activities at Ulu, the adjacent Hood River area, and regionally including the Roma project area, with all activities licenced under either 2BE-HRP1924 or 2BM-ULU2030 (as amended or succeeded). Exploration activities include geophysics, mapping, sampling and drilling. Crews will be based predominantly out of Ulu, but may establish temporary satellite camps and fuels caches throughout the regional study area.

Blue Star may also undertake local and regional baseline environmental studies in support of a future impact assessment.

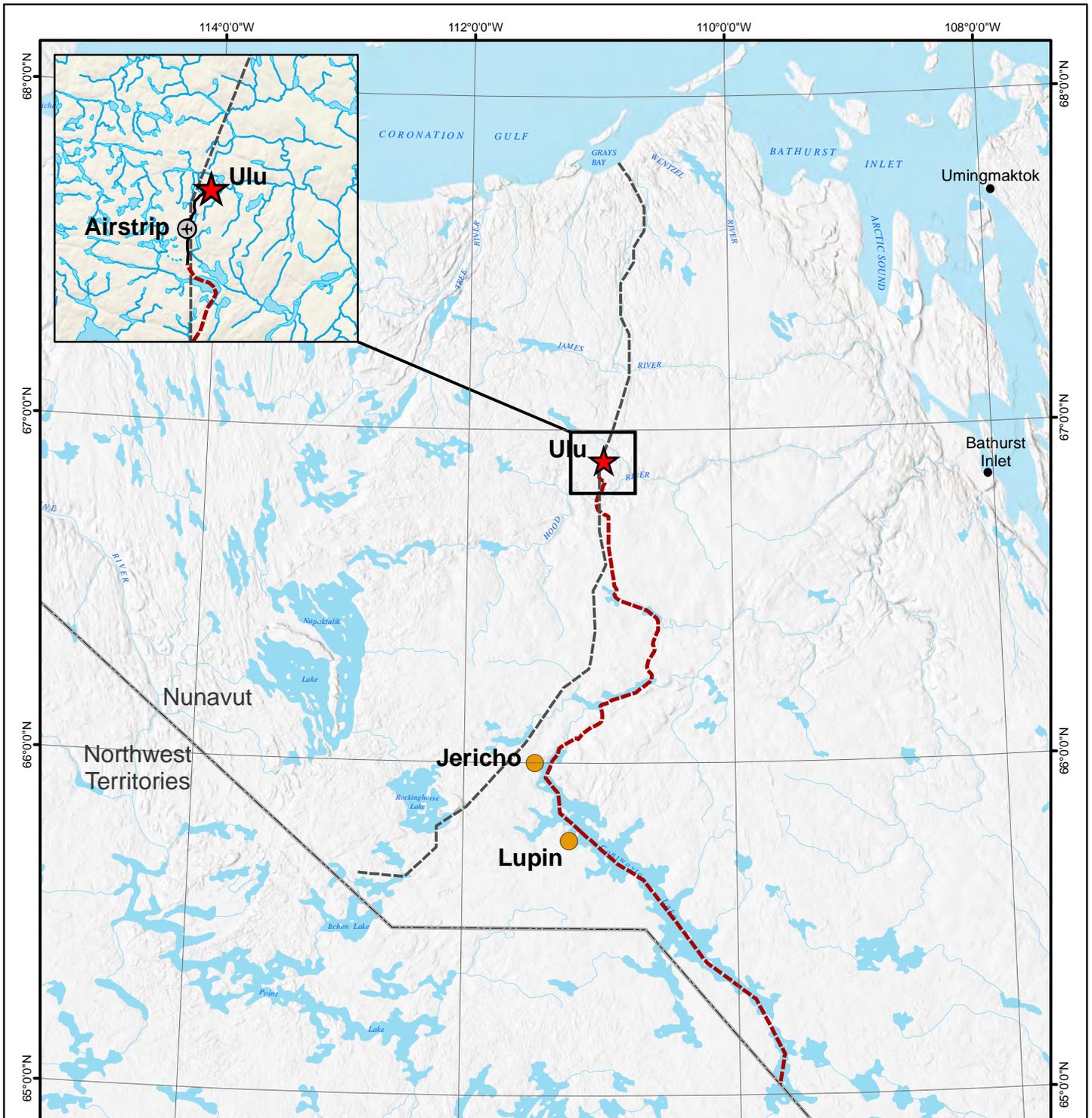
### **2.3.2 SITE MONITORING AND MAINTENANCE**

Site monitoring and maintenance will be carried out in accordance with site authorizations and approved management plans.

## **2.4 COMPLETED RECLAMATION MEASURES**

When underground and surface exploration activities were suspended in 1996, Echo Bay (the property owner at that time) relocated some tools, small equipment, and supplies by air to the Lupin Mine. The accommodations at Camp 3 were removed upon the development of the Ulu Camp, with the exception of the garage by Echo Bay. The Ulu site was placed into a care and maintenance status and no progressive reclamation activities were completed until 2014. Since 2014, the preceding owner undertook progressive reclamation of Ulu. At the time of acquisition, the following key activities are understood to have taken place:

- Backhaul of waste and hazardous materials to Yellowknife for offsite disposal.
- Demolition of the Camp 3 fuel tank farm, excavation of the adjacent impacted soil, and relocation of the contaminated soil to the Ulu Camp.
- Removal from service, cleaning, and demolishing all fuel tanks.
- Demolition of accommodations considered by the preceding owner to be unnecessary for future site activities.
- Demolition of the Camp 3 garage.
- Decommissioning of the sewage treatment facility and associated infrastructure.
- Decommissioning of the water supply infrastructure.
- Burning of wood waste.
- Consolidation of the resulting demolition waste into select areas at the Ulu camp.
- Backfilling the vent raise.
- Cutting a number of diamond drill casings flush with the ground.
- Road maintenance repairs.



**Legend**

-  Ulu Site
-  Ulu Airstrip
-  Mine Site
-  Access Road
-  Winter Trail
-  Proposed Grays Bay Route Corridor (approximated)

**Map 2. Ulu Gold Project Site Access**

**Data Sources**

Mineral tenure and leases provided courtesy of Government of Canada; Indigenous and Northern Affairs Canada, Geomatics Services, accessed March 5, 2019.

Exploration Projects dataset was created by converting the CSV downloaded from the Nunavut Geoscience NUMMN showings website (<http://nunavutgeoscience.ca/apps/showing/showQuery.php>).

**Disclaimer**  
 EDI Environmental Dynamics Inc. has made every effort to ensure this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

  
 0 10 20 30 40 50  
 Kilometres

Map Scale: 1:1,900,000 (printed on 8.5 x 11)  
 Map Projection: NAD 1983 CSRS UTM Zone 12N

|              |                   |             |                  |
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495000

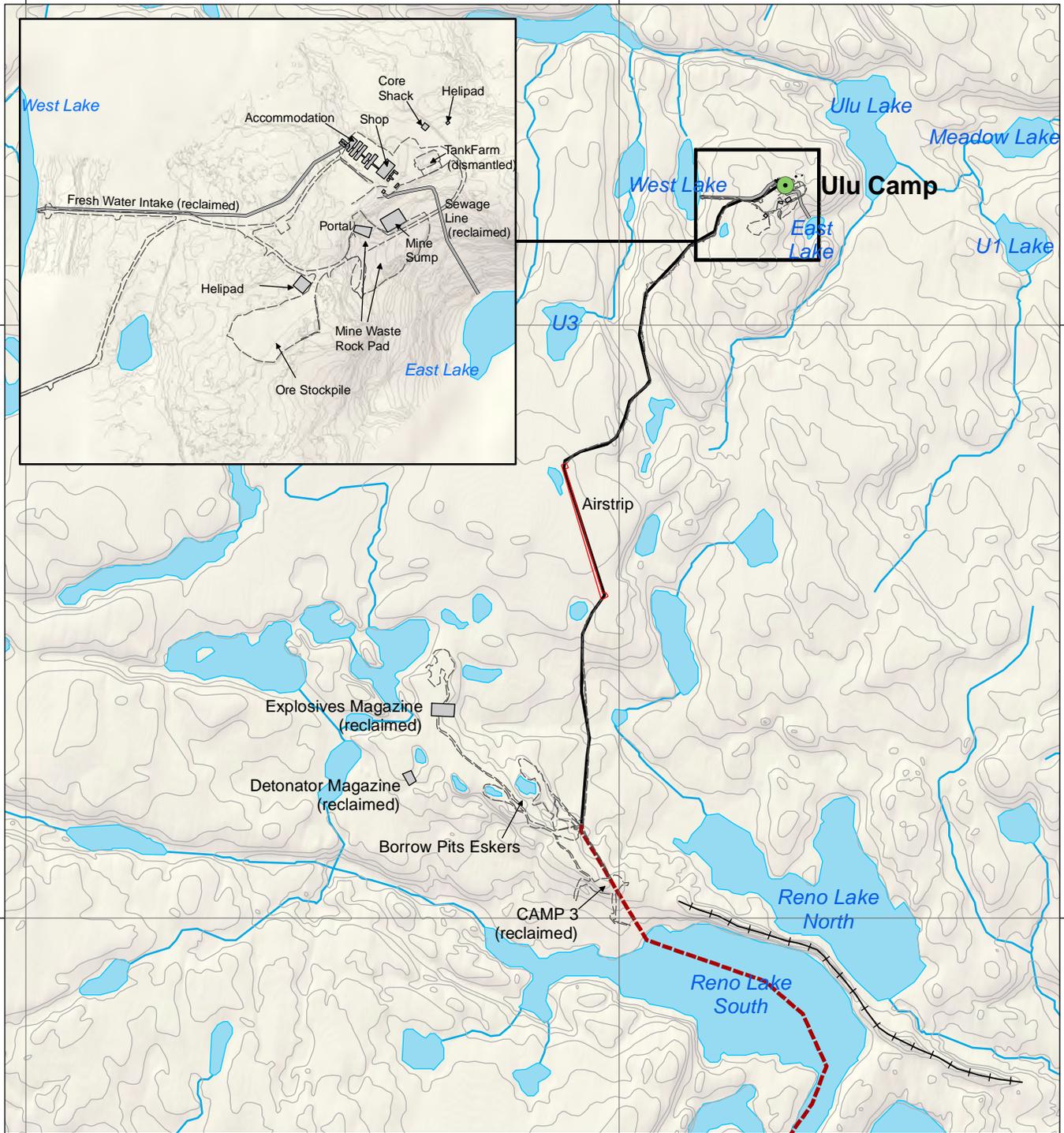
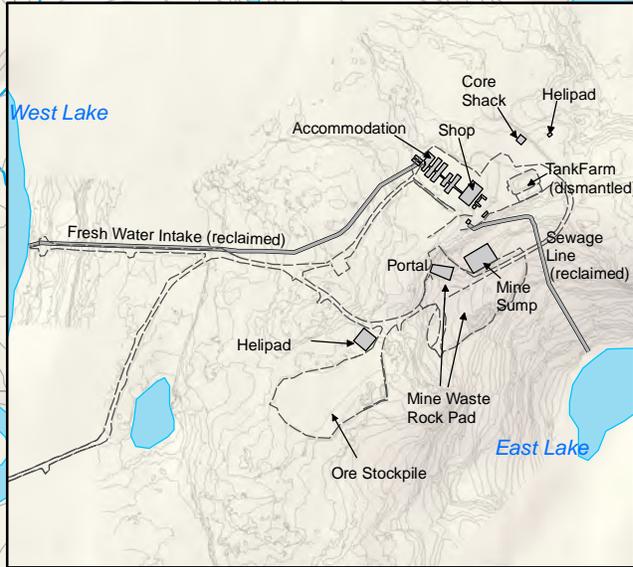
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**Legend**

- Ulu Camp Location
- Esker / Borrow Pit Zone
- Access Road
- - - Winter Trail
- - - Road Access/Disturbance Area
- Site Infrastructure (linear)
- ▭ Site Infrastructure/Buildings
- ▭ Airstrip

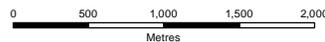
**Map 3. Ulu Gold Project Site Plan**

**Data Sources**

Mineral tenure and leases provided courtesy of Government of Canada; Indigenous and Northern Affairs Canada; Geomatics Services, accessed March 5, 2019.

Exploration Projects dataset was created by converting the CSV downloaded from the Nunavut Geoscience NUMM showings website (<http://nunavutgeoscience.ca/apps/showing/showQuery.php>).

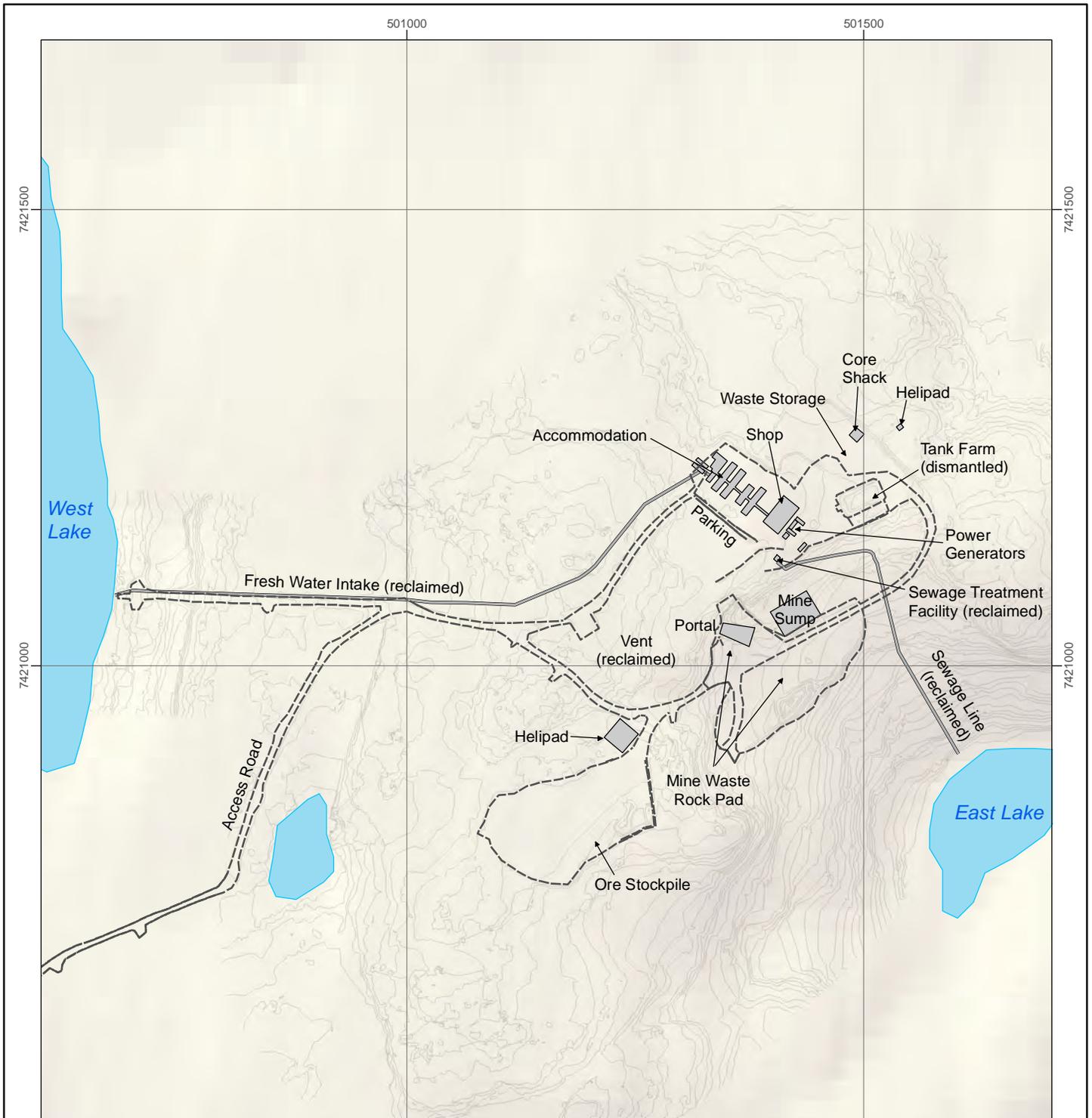
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Map Scale: 1:50,000 (printed on 8.5 x 11)  
Map Projection: NAD 1983 CSRS UTM Zone 12N

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| Drawn:<br>MP | Checked:<br>RR/SH | Drawing: #1 | Date: 2020-03-09 |
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**Legend**

- Elevation Contour (1 metre interval)
- - - Road Access/Disturbance Area
- Site Infrastructure (linear)
- Site Infrastructure/Buildings
- Airstrip

### Map 4. Ulu Gold Project Exploration Site Facilities

**Data Sources**

Mineral tenure and leases provided courtesy of Government of Canada; Indigenous and Northern Affairs Canada; Geomatics Services, accessed March 5, 2019.

Exploration Projects dataset was created by converting the CSV downloaded from the Nunavut Geoscience NUMIN showings website (<http://nunavutgeoscience.ca/apps/showing/showQuery.php>).

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Metres

Map Scale: 1:6,224 (printed on 8.5 x 11)  
 Map Projection: NAD 1983 CSRS UTM Zone 12N

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| Drawn:<br>MP | Checked:<br>RR/SH | Drawing: #1 | Date: 2020-03-10 |
|--------------|-------------------|-------------|------------------|

## 3.0 EXISTING CONDITIONS

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### 3.1 PHYSICAL AND CHEMICAL ENVIRONMENT

#### 3.1.1 PHYSIOGRAPHY

The Ulu site is situated in the treeless arctic tundra where rock and glacial features dominate the landscape. The topography of the Ulu mining lease is characterized by deeply incised linear valleys bounded by steep bluffs, for about 85 m of relief. The basalt units form topographic plateaus, elevated above the sediments and granitic rocks. The typical landscape surface consists of 50-60% outcrops, north-trending lakes (accounting for less than 15%), and grassy swamps, boulder-strewn glacial drift and frost-heaved blocks (Cowley 2015).

Regional drainage is easterly into Bathurst Inlet. Major rivers include the James River to the north and the Hood River which is located 8 km south-southeast of Ulu (Figure 5). Drainage in the vicinity of the Ulu mining lease is characterized by ponds of standing water without associated inlets or outlets. Locally, the property is located within the Rio Fido watershed which includes Penthouse Lake, located approximately 2.5 km southeast of Ulu and draining northeastward into Frayed Knots River, a tributary of the Hood River. The Hood River valley is incised more than 100 m below the surrounding upland plateau. The Hood River eventually flows into the Arctic Ocean near Bathurst Inlet (Cowley 2015).

#### 3.1.2 SURFICIAL AND BEDROCK GEOLOGY

Quaternary surficial deposits include thin bouldery sandy-silty till veneers less than 2 m thick, thicker hummocky drift sheets likely composed of both subglacial and ablation tills which obscure bedrock, and areas of extensive glaciofluvial sediments such as eskers, esker complexes, deltas, and kames (Cowley 2015).

Permafrost 50 km north of the site (at the High Lake exploration project), calculated from temperature measurements in exploration drill holes, is approximately 440 metres deep (TBT Engineering, 2010). Thermistors installed underground at Ulu on the 75 m level indicated an average rock temperature of minus (-) 9.5 degree Celsius (°C) at that elevation (Tansey, 1997).

The Project is located within the Slave Structural Province, an Archean granite-greenstone terrain. Rocks within the Slave Structural Province are assigned to the following three lithotectonic assemblages: an early assemblage of gneisses, granitic rocks and quartz arenites; greywackes, mudstones, volcanic rocks and syn-volcanic intrusions of the Yellowknife Supergroup; and a younger sedimentary-plutonic assemblage of clastic sediments and granitic rocks.

The Ulu deposit is an epigenetic lode-gold occurrence. It is located on the western margin of the High Lake Volcanic Belt, where Yellowknife Supergroup rocks are in contact with an Archean granitic batholith. On the property, the greenschist- to amphibolite-facies mafic volcanic and sedimentary rocks are folded into a 3 km long anticline (Figure 6). Gold-arsenic zones show a strong spatial association with the trace of this anticline. The Flood zone, the largest gold-rich zone, is localized at the core of this fold. It generally dips steeply (70° to 80°) to the southwest. Mineralization is hosted in high-iron tholeiitic basalt characterized by a lower amphibolite mineral assemblage of ferrohornblende + plagioclase + ilmenite with accessory quartz and epidote. Alteration minerals consist of biotite, chlorite, hornblende,

actinolite-tremolite, and potassium feldspar (microcline) with minor calcite, epidote, tourmaline, and titanite. The highest gold values occur where brecciated clasts of basaltic wall rock are replaced by acicular arsenopyrite + quartz + K-feldspar (Flood *et al.*, 2004).

### **3.1.3 GEOCHEMICAL CHARACTERIZATION OF BORROW, ORE AND WASTE ROCK**

In 2019, prior to completing the Project acquisition, Blue Star retained qualified professionals to assess the geochemical characteristics of the ore and waste rock on surface at the Ulu camp and review past geochemistry assessments of the ore and waste rock in order to inform progressive reclamation planning. The resulting metal leaching / acid rock drainage (ML/ARD) assessment is included in Appendix A. The assessment confirmed previous findings that the ore currently on surface may generate acidic drainage within a short timeframe and the rates of metal leaching are expected to increase under acidic conditions. Increased rates of metal leaching may be expected from the waste rock on surface under acidic conditions. Historical kinetic testing of crushed waste rock (0.2 to 3.0 mm in size) indicated that the onset of acidic conditions would be delayed for decades.

A geochemical assessment of the existing esker borrow pits has not been located within historical files.

### **3.1.4 SURFACE WATER**

West Lake has been the licensed source of water since 1997, and East Lake received sewage treatment plant effluent prior to 2012. Surface runoff (including all runoff from the ore storage pad, portal laydown area, and main camp area) flows predominately towards East Lake, which in turn drains into Ulu Lake (Gartner Lee, 2006).

As presented in the Environmental Assessment for the Ulu Project (EBM 1997) Reno Lake North, Reno Lake South, West Lake and Ulu Lake are oligotrophic, having soft water, and being highly sensitive to acidity. Concentrations of essential nutrients are low.

In 2004, preliminary baseline water quality studies were carried out in the Ulu area to build on the previous studies carried out at the Project (Gartner Lee 2005). Study areas included Ulu, West and East lakes as well as several creeks. Ulu Lake was considered to be a suitable reference site at the time. West Lake is similar in character to Ulu Lake, although has higher hardness, conductivity, and sulphate levels than that observed in other lakes in the area. East Lake is similar in water quality to the other lakes in the area yet contained a moderate level of nutrients, is moderately productive and meso-eutrophic.

### **3.1.5 CONTAMINATED SOIL**

In 2019, under the supervision of the preceding owners, Blue Star retained a qualified professional to conduct a site assessment to determine the volume and character of petroleum hydrocarbon (PHC) impacts at the site. The assessment is included as Appendix B. An estimated uppermost limit of the volume of PHC contaminated soil to be managed is provided in Table 3.

Table 3. Petroleum hydrocarbon contaminated soil volume estimate.

| Area             | Soil to be treated (m <sup>3</sup> ) | Soil to be managed by burial (m <sup>3</sup> ) | Soil to be shipped offsite for treatment (m <sup>3</sup> ) |
|------------------|--------------------------------------|--|--|
| Camp 3 Tank Farm | 0                                    | 0  | 0  |
| Camp 3 Stockpile | 125 <sup>1</sup>                     | 1,100  | 0  |
| Main Tank Farm   | 5,000                                | <sup>2</sup>                                   | 0  |
| Day Tank Farm    | 300 <sup>3</sup>                     |  | 0  |
| Shop Floor       | 100                                  | <sup>2</sup>                                   | 40   |
| Parking Areas    |                                      | 25   | 10   |

Notes:

<sup>1</sup>The soil may be sufficiently remediated to meet subsoil objectives when it is off-loaded and buried 1.5 m or more below surface.

<sup>2</sup>Segregation of soil during excavation could reduce the volume of soil destined for treatment in the soil treatment facility

<sup>3</sup>This volume assumes that the contamination extends from surface to bedrock. The actual volume of contaminated soil to be managed may be closer to 30 m<sup>3</sup>.

## 3.2 BIOLOGICAL ENVIRONMENT

### 3.2.1 VEGETATION AND WILDLIFE

The Project is located within the Southern Arctic Ecozone and the Takijuq Lake Upland Ecoregion. Much of this region is composed of unvegetated rock outcrops. Vegetative cover is characterized by shrub tundra, consisting of dwarf birch, willow, northern Labrador tea, avens species and blueberry species. Organic cryosols are the dominant soils in the lowlands and permafrost is deep and continuous (ECCC 2019).

Characteristic wildlife includes barren-ground caribou, muskoxen, grizzly bear, wolverine, Arctic hare, Arctic fox, red fox and wolf. Small mammals (e.g., Arctic ground squirrel, voles, and lemmings) are distributed throughout the region and provide an important food source for predators. Many species of migratory birds are present in the area during the summer season, including waterfowl, raptors, songbirds, and shorebirds, while some bird species are present year-round (e.g., ptarmigan, gyrfalcon, and common raven) (ECCC 2019).

### 3.2.2 FISH AND FISH HABITAT

As presented in Gartner Lee Ltd. (2006), results of food web, fish, and fish habitat studies indicate that West Lake has a similar benthic community composition to that found in other lakes in the area, being one dominated by arthropods. Compared to other lakes in the area, West Lake was observed to have a higher plankton species richness, dominated by a diatom that is characteristic of a low-nutrient lake. Adult lake trout were sampled in West Lake and some sampled were found to be in spawning condition. West Lake provides rearing, spawning and nursery habitat.

490000

510000

530000

7440000

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7400000



**Legend**

- ★ Ulu Site
- ⊕ Ulu Airstrip
- Esker
- Access Road
- - - Winter Trail

**Map 5. Ulu Gold Project Regional Physiography**

**Data Sources**

Mineral tenure and leases provided courtesy of Government of Canada; Indigenous and Northern Affairs Canada; Geomatics Services, accessed March 5, 2019.

Exploration Projects dataset was created by converting the CSV downloaded from the Nunavut Geoscience NUMM showings website (<http://nunavutgeoscience.ca/apps/showing/showQuery.php>).

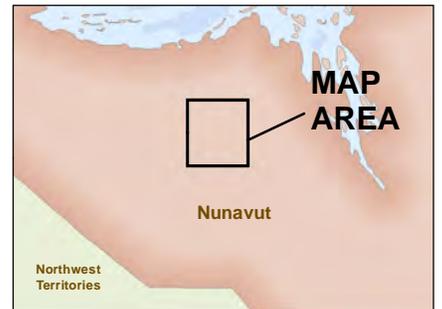
**Disclaimer**

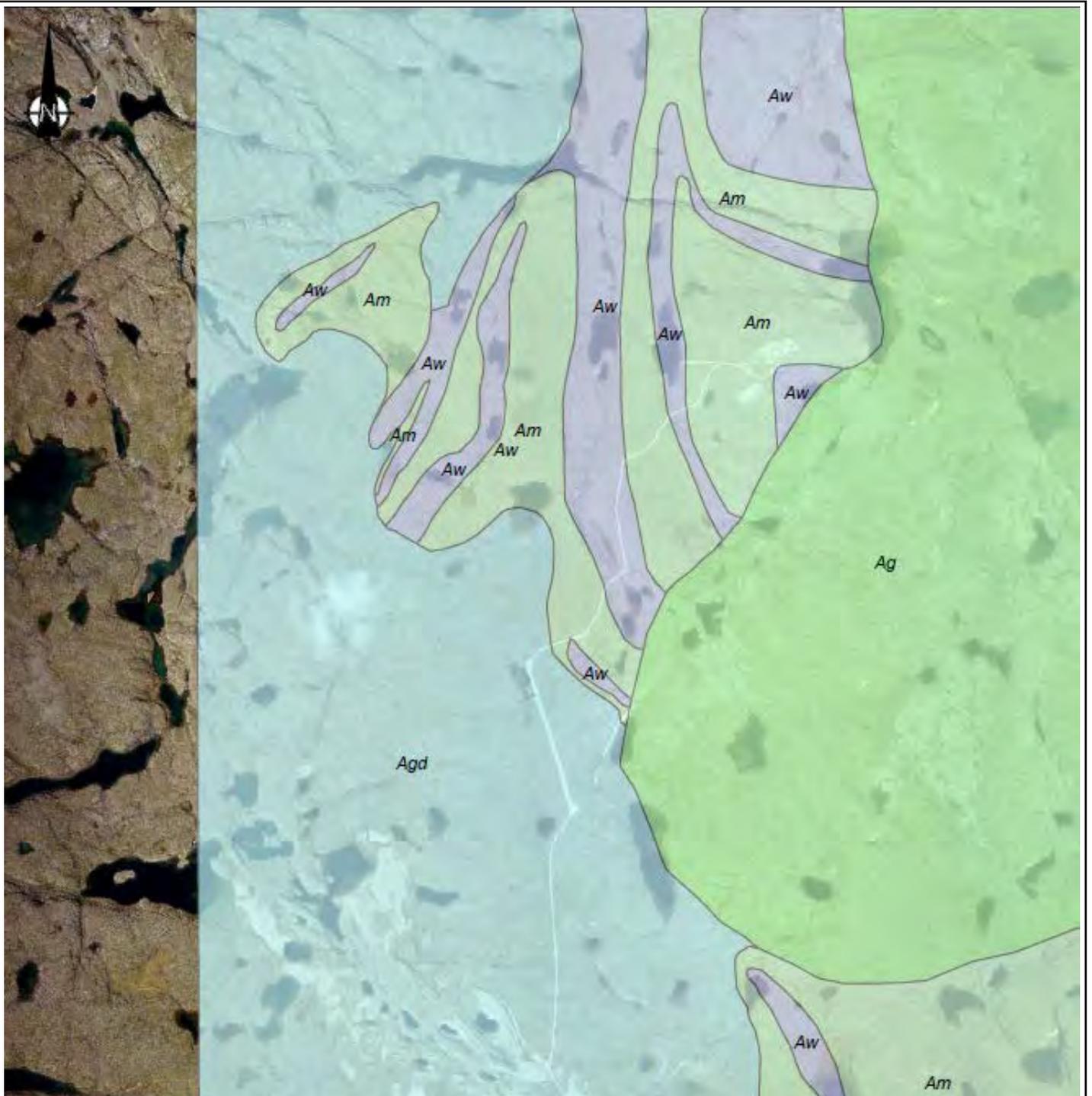
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Map Scale: 1:350,000 (printed on 8.5 x 11)  
Map Projection: NAD 1983 CSRS UTM Zone 12N

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**Lithology Legend**

- Ag Leucocratic
- Agd Homblende/biotite Granodiorite
- Am Mafic metavolcanics rocks and contemporaneous dykes, sills
- Aw Metagreywacke
- Q Unconsolidated Sediments



Interim Reclamation and Closure Plan

**Regional Geology**

Ulu Gold Project

Date:  
Date

Approved:  
AS

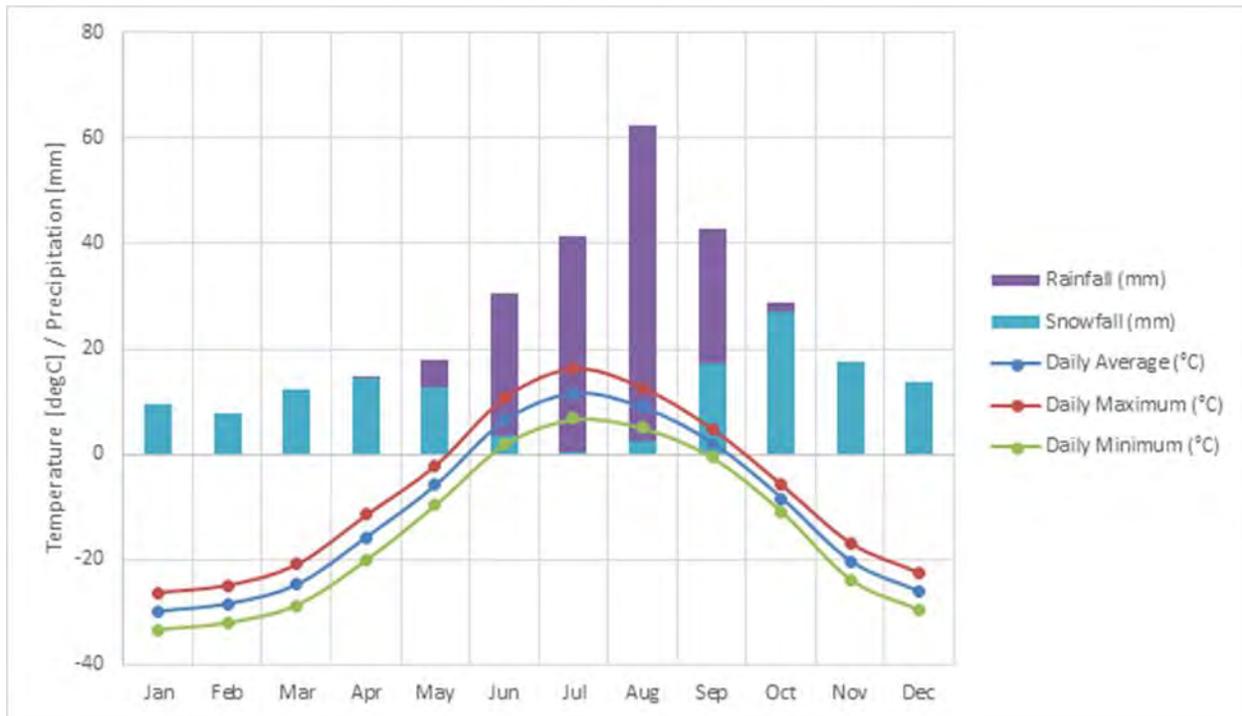
Figure:

### 3.3 ATMOSPHERIC ENVIRONMENT

Weather is typical of the continental barrenlands, which experience cool summers and extremely cold winters. Winter temperatures can reach -45°C and high winds can create extreme wind chill conditions and extensive drifting snow. Summer temperatures are generally in the range of 5° to 10°C. Based on regional normals from Lupin A station between 1980 and 2010 (ECCC, 2020), average yearly rainfall in the region is 160 mm, mostly occurring during July and August, and average yearly snowfall is equivalent to 138 mm of water, most of which falls during autumn and spring. The average yearly temperature is -10.9°C. Monthly precipitation and temperature normals are described in Figure 7 and Table 4.

The ground remains snow-covered for more than 250 days a year. Snow accumulation begins in September and remains into June. Average annual snowfall rarely exceeds 0.5 m, most of which falls during autumn and spring storms. Small lakes are clear of ice usually by the third week in June (though ice on the larger lakes can persist into the middle of July) and start freezing over again in mid to late September. Wind speeds have been recorded in excess of 100 km per hour (Cowley 2015).

Weather information was collected between June and mid-September between 1990 and 1992 by BHP from its portable weather station at Penthouse Lake. Data collected from Penthouse Lake is compared to data collected at Lupin and Kugluktuk during the same time period in Table 5. For the majority of the time, recorded wind speeds were in excess of 25 km per hour and generally were from the south (Cowley 2015).



Source: \\srk.ad\dfs\va\van\Projects\01\_SITES\Ulu\1CB041.000\_Landfill\_Design\Task1020\_WaterManagement\Ulu\_Hydrology\_20200120\_COG\_V01.xlsx

Figure 7. Temperature and precipitation normals.

## 3.4 SITE FACILITIES

### 3.4.1 BUILDINGS, OTHER STRUCTURES AND EQUIPMENT

#### Camp 3

A fuel tank farm (consisting of two 1,324,895 L and six 52,995 L tanks), explosives magazine, detonator magazine, garage, and the esker borrow pits were developed at Camp 3. The borrow pits were used to build and maintain the road and airstrip and to establish the camp pad and portal pad at the Ulu exploration camp. The fuel tank farm was demolished in 2018 and associated PHC contaminated soil transported to the Ulu camp for storage. The camp and garage have been demolished. Demolition waste has been transported to Ulu camp for disposal. Mobile equipment located at the Ulu camp was used to demolish, excavate contaminated soil, and transport the waste.

#### Ulu Camp

At the time of acquisition, the remaining Weatherhaven residential complex consisted of 20 rooms, a kitchen, and dry. Additional infrastructure at Ulu camp consists of a vehicle repair shop, vehicle parking, generators, core shack, core storage, ore storage pad, portal pad (waste rock pad), mine workings, mine sump (water retention pond), access roads, and lined fuel containment areas. The tanks in the fuel tank farm (which had consisted of five 52,995 L tanks) and day tank farm were demolished in 2018. The freshwater system, sewage treatment plant, and sewage line were decommissioned by the preceding owner.

A list of mobile equipment at Ulu camp and its operational status at the time of acquisition (as provided by the preceding owner) is provided in Table 6. The decommissioned equipment has been stockpiled by the preceding owner in preparation for disposal.

Table 4. Precipitation and temperature normals based on Lupin A records.

| Parameter                      | Jan   | Feb   | Mar   | Apr   | May  | Jun  | Jul  | Aug  | Sep  | Oct   | Nov   | Dec   | Year  |
|--------------------------------|-------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|-------|
| Rainfall (mm)                  | 0     | 0     | 0     | 0.4   | 5.3  | 26.8 | 41.1 | 59.8 | 25.5 | 1.6   | 0     | 0     | 160.5 |
| Snowfall (mm)                  | 9.4   | 7.8   | 12.2  | 14.3  | 12.5 | 3.6  | 0.4  | 2.6  | 17.1 | 27.1  | 17.4  | 13.7  | 138   |
| Precipitation (mm)             | 9.4   | 7.8   | 12.2  | 14.6  | 17.8 | 30.4 | 41.5 | 62.5 | 42.6 | 28.7  | 17.4  | 13.7  | 298.5 |
| Daily Average Temperature (°C) | -29.9 | -28.5 | -24.8 | -15.8 | -5.9 | 6.4  | 11.5 | 8.8  | 2.1  | -8.4  | -20.4 | -26.2 | -10.9 |
| Daily Maximum Temperature (°C) | -26.3 | -24.9 | -20.9 | -11.5 | -2.1 | 10.8 | 16.3 | 12.6 | 4.8  | -5.8  | -16.9 | -22.6 | -7.2  |
| Daily Minimum Temperature (°C) | -33.4 | -32.1 | -28.7 | -20.1 | -9.6 | 1.9  | 6.7  | 5    | -0.6 | -10.9 | -23.9 | -29.7 | -14.6 |

Source: Compiled into text from ECCC 2020a [\\srk.ad\dfs\navan\Projects\01\\_SITES\Ulu\1CB041.000\\_Landfill\\_Design\Task1020\\_WaterManagement\Ulu\\_Hydrology\\_20200120\\_COG\\_V01.xlsx](#)

Table 5. Weather data comparison for the region – 1990-1992.

| Parameter |                  | Penthouse Lake | Lupin   | Kugluktuk |
|-----------|------------------|----------------|---------|-----------|
| JUNE      | Mean Daily Temp. | 5.8°C          | 4.7°C   | 3.8°C     |
|           | Max. Temp.       | 28.0°C         | 24.4°C  | 27.8°C    |
|           | Min. Temp.       | -6.0°C         | -13.9°C | -15.0°C   |
|           | Rainfall (mm)    | 0              | 24      | 14        |
| JULY      | Mean Daily Temp. | 11.6°C         | 9.7°C   | 9.7°C     |
|           | Max. Temp.       | 30.0°C         | 27.2°C  | 32.2°C    |
|           | Min. Temp.       | -2.0°C         | -2.2°C  | 0.6°C     |
|           | Rainfall (mm)    | 18             | 36      | 25        |
| AUG       | Mean Daily Temp. | 5.5°C          | 8.7°C   | 8.7°C     |
|           | Max. Temp.       | 22.0°C         | 24.4°C  | 29.4°C    |
|           | Min. Temp.       | -4.0°C         | -3.2°C  | -3.3°C    |
|           | Rainfall (mm)    | 23             | 41      | 38        |
| SEPT      | Mean Daily Temp. | 1.4°C          | 2.0°C   | 2.5°C     |
|           | Max. Temp.       | 15.0°C         | 16.7°C  | 26.1°C    |
|           | Min. Temp.       | -7.0°C         | -11.9°C | -20.0°C   |

Source: Cowley 2015

Table 6. List of Existing Equipment.

| Equipment                             | Reported Status                |
|---------------------------------------|--------------------------------|
| Ford B-600 School Bus                 | operating                      |
| Cat 311 Excavator                     | operating                      |
| 1993 Ford F350 4 × 4 Pickup - Brown   | operating (pending inspection) |
| Cat 988B Wheel Loader                 | operating (pending inspection) |
| Elphinstone R-1700 Scooptram (7.5 yd) | operating (pending inspection) |
| Wagner ST-7.5Z Scooptram (7.5 yd)     | operating (pending inspection) |
| Getman A-64 Scissor Lift              | operating (pending inspection) |
| Kubota M5400 Man Carrier              | operating (pending inspection) |
| Compressor 825 cfm Gardner-Denver     | operating (pending inspection) |
| Compressor 375 cfm Leroi              | operating (pending inspection) |
| Gen Set 600 kW CAT                    | operating (pending inspection) |
| Gen Set 250 kW Detroit (8V92T)        | operating (pending inspection) |
| Volvo Water Truck                     | operating (pending inspection) |
| Cat Loader 966D                       | operating (pending inspection) |
| Cat Bulldozer D8N, with ripper        | operating (pending inspection) |
| Cat Rock Truck 769                    | operating (pending inspection) |
| Cat 14G Grader                        | operating (pending inspection) |
| Ford Pickup - F-350 4 × 4 Blue        | operating (pending inspection) |
| Ford Pickup - F-350 4 × 4 White       | operating (pending inspection) |
| Lincon Welder SAE-400                 | operating (pending inspection) |
| Foremost Delta Commander              | operating (pending inspection) |
| Cat Rock Truck 769                    | needs repairs                  |
| Ford 800 Boom Truck                   | needs repairs                  |
| 1980 Ford LW9000 Flat Deck, Hiab      | needs tires                    |
| Peterbilt Tri-Axel tanker             | needs tires                    |

| Equipment                           | Reported Status      |
|-------------------------------------|----------------------|
| 1993 Ford F350 4 × 4 Pickup - Green | out of service       |
| Cat Water Truck                     | out of service       |
| Fuel Truck (1000 gal) Mack          | out of service       |
| Atlas Copco Rocket 322S Drill Jumbo | to be decommissioned |
| Tamrock HS205M Maxi Drill Jumbo     | to be decommissioned |
| Wagner MT-444 Haul Truck            | to be decommissioned |
| Wagner MT-426 Haul Truck            | to be decommissioned |
| Wagner ST-3.5 Scooptram             | to be decommissioned |
| Wagner ST-2D Scooptram              | to be decommissioned |
| Tamrock H-102 Micro Drill Jumbo     | to be decommissioned |
| Compressor 600 cfm Gardner-Denver   | to be decommissioned |
| Generator 250 kW Detroit (8V92T)    | to be decommissioned |
| Generator 250 kW Detroit (8V92T)    | to be decommissioned |
| Cat-563 Drum Packer                 | to be decommissioned |
| Generator 600 kW Cat                | decommissioned       |
| Generator 600 kW Cat                | decommissioned       |
| Generator 500 kW Cummins            | decommissioned       |
| Generator 500 kW Cummins            | decommissioned       |
| Cat 824C Rubber Tired Bulldozer     | decommissioned       |
| Cat 930 Front- End Loader           | decommissioned       |
| Generator 600 kW Cat                | decommissioned       |
| Generator 500 kW Cummins            | decommissioned       |
| Generator 500 kW Cummins            | decommissioned       |
| Cat 824C Rubber Tired Bulldozer     | decommissioned       |
| Cat 930 Front- End Loader           | decommissioned       |

Note:

Definitions for the terms used to describe the status of the equipment have not been provided. The operating status of the equipment is to be confirmed pending inspection by Blue Star.



**3.4.2 MINE WORKINGS**

In 1996, a 632 m long 5.2 m wide by 4.9 m high -15% ramp was developed to the 75 m level to access the Flood Zone. In 1997, the ramp was extended to the 155 m level, an escape way/fresh air vent raise and seven cross cuts were excavated (Figure 8). The portal was closed to prevent access and the vent raise was backfilled by the preceding owner.

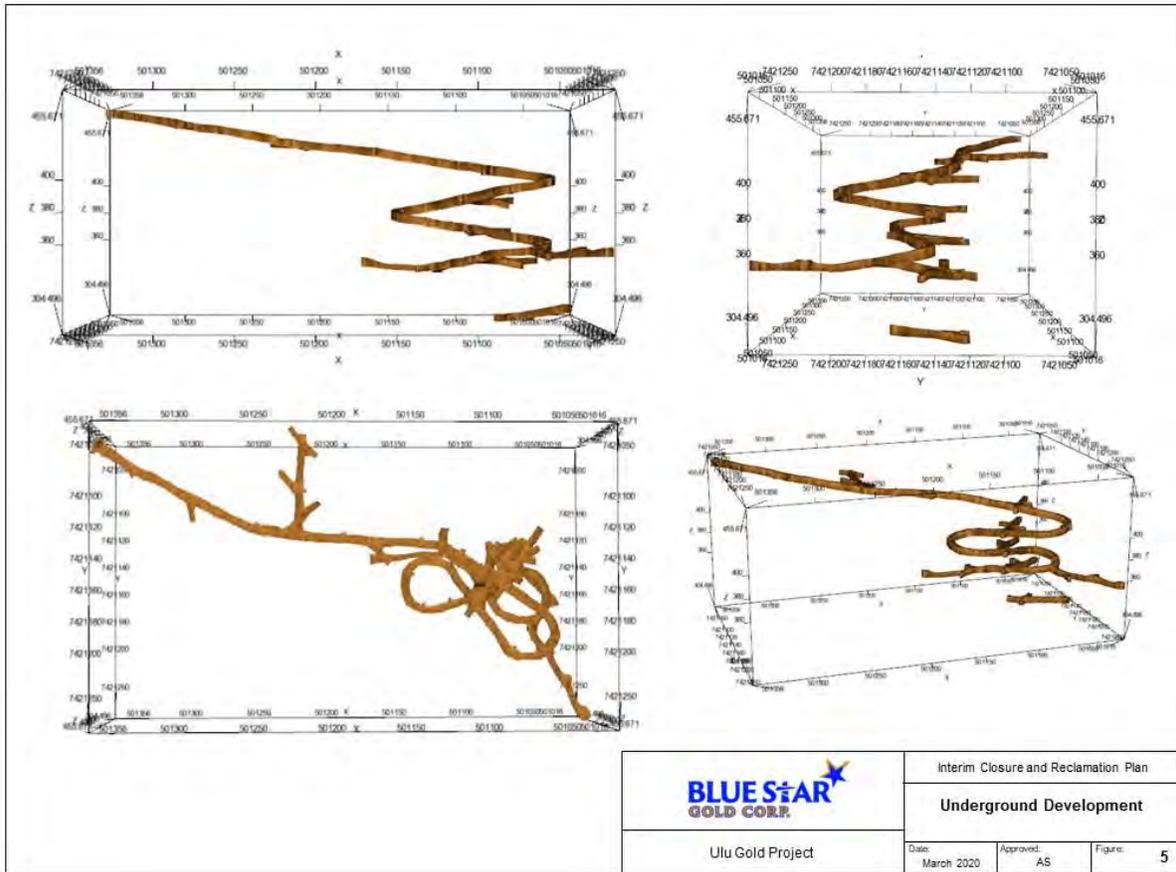


Figure 8. Underground development.

**3.4.3 MINE SUMP**

The mine sump, also referred to as the water retention pond, was established adjacent to the mine portal. Its purpose was to provide containment for the settling and sediment retention of water pumped from the mine decline ramp and the mine portal entrance. The 30 × 50 m sump was built above ground and is lined with a geomembrane; portions of the berm were constructed using mineralized rock. This sump was used periodically during camp operations for containment of sewage treatment plant effluent.

### 3.4.4 ORE AND WASTE ROCK

Approximately 2,227 tonnes of ore were stockpiled at the ore pad from the 1996/1997 underground program (Tansey 1997); a resulting 750 kg bulk sample was recovered in 1996 for metallurgical test work at Lupin. The preceding owner reported that 1,738 m<sup>3</sup> (3,358 tonnes assuming a specific gravity of 1.93 tonnes per m<sup>3</sup>) of ore was relocated to a stockpile between the portal and the mine sump. The discrepancy in ore volume between the previous reports is noted, Blue Star assumes the greater value for the progressive reclamation work planning.

Approximately 126,900 tonnes of waste rock were extracted from the underground workings (BGC *et al* 2005). The waste rock was used to construct the ore pad, and to expand the camp pad and portal pad; it is estimated that approximately 5,000 m<sup>3</sup> of waste rock is stockpiled on the portal pad. The pads were capped with a thin layer of esker material to provide a base for infrastructure construction and material laydown. Development waste rock was also backhauled to Camp 3 area for use as riprap. The location and volume of waste rock at Camp 3 is unknown.

### 3.4.5 ROADS AND AIRSTRIP

A network of roads (14 km), constructed from material sourced from the esker borrow pit, connect the Ulu camp and portal area with the airstrip (1,200 m long) and Camp 3 as shown on Figure 3. Culverts were installed in the road to provide unrestricted flow to the drainage courses during spring melt and precipitation events. Silt fences were placed below the culverts by the preceding owner to provide sediment control.

### 3.4.6 BORROW PIT

The borrow pit used for the road, airstrip, and final grade on the camp pad is located near Camp 3 at Reno lakes.

### 3.4.7 WASTE, CHEMICAL AND SEWAGE STORAGE AREAS

The preceding owner demolished unused facilities and stockpiled them in preparation for disposal at the portal entrance, as illustrated in Figure 4. Blue Star intends to licence and utilize a non-hazardous waste surface landfill that does not compromise the underground workings, as outlined in the *Landfill Management Plan*. The preceding owner backhauled oil/waste oil and hazardous waste offsite. The existing inventory of fuel and waste oil at the time of acquisition includes 16 totes and 217 205-litre drums, based on the number of totes and drums observed on site by Blue Star in July 2019. The volume of hazardous waste is estimated to be 70 m<sup>3</sup>, assuming the totes and drums are full. The volume does not include the waste oil/fuel that is expected to be drained when decommissioning equipment.

The preceding owner excavated the PHC contaminated soil at the Camp 3 fuel tank farm following the demolition of the facility. Approximately 1,220 m<sup>3</sup> of PHC impacted soil was transported to the Ulu Camp tank farm and stockpiled into the area that had previously held the fuel tanks.

## **4.0 RECLAMATION PLANNING**

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### **4.1 APPROACH TO PLANNING**

The ICRP further develops the measures and methods previously approved in the preceding interim closure plan iterations for the Project. Since early 2019, Blue Star has undertaken, and continues to undertake, work with the landowner (Kitikmeot Inuit Association; KIA) to understand the KIA's interests regarding land use in the Ulu area. The aim is to scope and refine the proposed progressive reclamation measures, allowing for the continued use of the Ulu site for exploration-related activities while preserving the site's future mining potential. In support of developing a mutual understanding of the site and a path forward on planned site activities, a coordinated site visit was undertaken in 2019 prior to commencing the water licence assignment process, and collaboration among the KIA's and Blue Star's technical advisors is ongoing, which includes the development of this Plan.

### **4.2 ROLES AND RESPONSIBILITIES**

Blue Star is responsible for activities associated with the Project, including implementation and management of this Plan. Blue Star's contact information is provided below.

Blue Star Gold Corp.  
Suite 507-700 W. Pender Street  
Vancouver BC V6C 1G8  
Phone: 1 778-379-1433

Contact: Darren Lindsay, Vice President of Exploration  
Phone: 1 778-379-1433  
Email: d.lindsay@bluestargold.ca

#### **4.2.1 STAFF, CONTRACTORS, SUPPLIERS AND VISITORS**

All personnel conducting activities on site, including staff, contractors, suppliers and visitors, are required to be guided by this Plan as it pertains to their activities on site. Specifically, these responsibilities include:

- Taking all necessary steps to minimize negative effects to water, land and air;
- Cooperating fully with your supervisor and/or Blue Star management to implement an environmental protection program in your work area;
- Only carrying out duties and tasks that you are experienced at and trained to perform;
- Where there is uncertainty, asking questions and bringing concerns to the attention of your supervisor when working with products or conducting tasks that may pose potential environmental risks;
- Reporting wildlife observations, spills and emergency situations in accordance with relevant management plans.

#### **4.2.2 MANAGERS AND SUPERVISORS**

Managers and supervisors have a responsibility to ensure that staff, contractors, consultants and visitors have been trained in Blue Star procedures. Additional supervisor and manager responsibilities include:

- Maintaining a no blame work environment in implementing mitigation measures and follow-up actions;
- Ensuring site-, task- and material-specific training is provided to all departments and staff;
- Ensuring there are appropriate and sufficient supplies on site to support implementing mitigation measures and follow-up actions;
- Providing assistance in responding to environmental hazards;
- Maintaining records regarding inspections, personnel training, equipment testing and maintenance and decommissioning;
- Ensuring compliance reporting is undertaken in a timely manner; and
- Engaging with relevant parties in a timely and transparent manner, where appropriate.

#### **4.2.3 RECLAMATION MANAGER**

In addition to the responsibilities listed above the Reclamation Manager is responsible for:

- Overseeing soil and waste handling, transport, sampling, and management;
- Day-to-day oversight of all related reclamation efforts;
- Coordinating with other managers and supervisors to ensure safe and appropriate allocation of resources on site; and
- Maintaining the reclamation schedule, and where schedule changes occur, advising the Project Manager in a timely manner.

#### **4.2.4 DRILL CONTRACTORS**

Drill contractors are responsible for ensuring each drill site is cleaned up to the satisfaction of a Blue Star inspector following each drill move and prior to commencing drilling at a new drill target. Closure-related activities to be undertaken include:

- Removing all drill timbers, hoses, equipment, debris and garbage from the drill site;
- Cut drill stems flush with the ground surface;
- Cap or plug drill holes;
- Backfill flush with the ground surface any areas that may have eroded or subsided around the drill stem;
- Remove to a sump any drill cuttings that may have been spilled to the surrounding land;
- Ensure cuttings sump is stable;
- Implement erosion control measures where necessary.

### **4.3 STATUS OF PLANNING**

#### **4.3.1 PAST CLOSURE PLANNING**

Blue Star has reviewed the previous closure and reclamation (previously referred to as abandonment and restoration) plans filed with the Nunavut Water Board (NWB) and the historical water licences associated with the property. Blue Star notes that the content of the plans has changed little since 2001. Several studies were undertaken in support of the environmental assessment of the Project (Nunavut

Impact Review Board file # 99WR055) and of the development of the initial interim closure plan submitted to the NWB; these include, but are not limited to, the following documents:

- Ulu Project: Preliminary Assessment of Acid Rock Drainage Potential, Klohn-Crippen Consultants Ltd., October 1996.
- Fisheries Assessment of Streams and Lakes in the Ulu Project Area, RL&L Environmental Services Ltd., November 1996.
- Notes on Wildlife in the Vicinity of the Echo Bay Mines Ulu Project and Associated Transportation Corridor, Hubert and Associates and Canamera Geological Ltd., August 1996.
- Wildlife and Wildlife Habitat Assessment, Canamera Geological Ltd., Environmental Resources Division, November 1996.
- Ulu Mine Project Archaeological Impact Assessment: Phase I, Quaternary Consultants Ltd., July 1996.
- Ulu Mine Project Archaeological Impact Assessment: Phase II, Quaternary Consultants Ltd., September 1996.
- Land-Cover and Vegetation of the Ulu Site and Ulu/Lupin Winter Road, Nunavut, Canada, Institute for Advanced Field Education Ltd., January 1998.
- Kinetic Testing of Sulfide-Rich Material from Ulu, Klohn-Crippen Consultants Ltd., April 1998.
- Baseline Aquatic Studies Program in the Ulu Project Area, Nunavut, RL&L Environmental Services Ltd., May 1998.

The following studies were undertaken by Wolfden in anticipation of resuming underground activities at the site:

- Hydrological Assessment of West Lake, Gartner Lee Limited, May 2006.
- Preliminary Baseline Water Quality Assessment – Ulu, Gartner Lee Limited, February 2005.
- Review of Field Column Kinetic Test Data, Mehling Environmental Management Inc., December 2004.

#### **4.3.2 CURRENT CLOSURE PLANNING**

It is understood that a body of work, which includes baseline environmental studies, was undertaken at Ulu from 2004 to 2006; however, this information was not available for informing this Plan. Blue Star is in the process of obtaining access to those data.

Closure, abandonment, and restoration of a mine is the final stage in the life cycle of a viable mining operation and the decision for final closure comes after careful consideration of all other options available.

Closure planning for mining projects is best understood as a continuum that evolves from a basic conceptual level during pre-production stages towards detailed designs as facilities are completed and as-built details are available for consideration in closure designs. The level of closure planning detail and the timelines to complete closure activities vary with the development of the different components of the site.

In the late 1990s, the Project was in an advanced stage of exploration, given its ability to provide mill feed to the Lupin Mine. Since the Lupin Mine owners sold their interest in the Project in 2003, the Project has transitioned from exploration to near feasibility and back to exploration again as discussed in

Section 2.2. Until 2017, reclamation and closure planning did not advance to recognize the change in the status of the site.

This ICRP considers the *Interim Closure and Reclamation Plan* for the Ulu Exploration Project (Bonito, 2013 [NWB approved], 2016 [not approved]) and the *Ulu Project – Progressive Reclamation Workplan* (Bonito, 2018 [not approved]) prepared by the previous site operators. This version of the ICRP presents Blue Star's approach to progressive reclamation required to return the Project to a scale appropriate for exploration activities and has been developed through discussions with the KIA. Activities listed in Section 2.4 are assumed to be completed; their status will be confirmed by Blue Star at earliest opportunity.

#### 4.4 COMMUNITY ENGAGEMENT SUMMARY

Blue Star has undertaken a number of engagements since early 2019 on matters relating to both specific aspects of its operation in Nunavut as well as general aspects relating to its current and future planned activities in the region, including reclamation and exploration at the Ulu site.

Through the property acquisition process and the related licence assignment processes, Blue Star worked closely with the KIA and the Government of Canada to develop a mutual understanding of the current conditions at Ulu and Blue Star's near-term plans for the site. As the acquisition of the Project did not conclude until January 2020, Blue Star was unable to formally engage with the public on specific aspects of Ulu interim closure planning until after this time. Since the acquisition of Project, Blue Star has met with the KIA in person several times and has dialogued with stakeholders over email and by phone. Public meetings planned for Kugluktuk and Cambridge Bay in mid-March 2020 were postponed in response to a pandemic and will be held at the earliest opportunity.

In addition to participation in the public processes administered by the Nunavut Planning Commission, the Nunavut Impact Review Board (NIRB) and the NWB, Blue Star commits to upholding its *Engagement Plan*.

#### 4.5 ALTERNATIVES ASSESSMENT

In the process of planning the progressive reclamation strategies for the Project, several tools, techniques, and methodologies were utilized with the following goals:

- Examine possible alternatives to reclaim project components.
- Determine which alternatives are best suited to the site, the desired near-term closure objectives, future long-term closure objectives, and end land use.

This included the following assessments:

- Landfill needs and location options.
- Management options for PHC contaminated soil.
- Analysis of various liner systems for the soil treatment facility.
- Planning for future rock quarry development.

## **4.6 RECLAMATION RESEARCH**

Reclamation research will be an ongoing component of Blue Star's closure planning process and will focus primarily on the key closure measures proposed for the site, both in the near term and long term. This research will include the following topics:

- Material suitability for landfill erosion covers.
- Rock quarry assessments.
- Ore and waste rock management.

## **5.0 OBJECTIVES & DESIGN CRITERIA**

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### **5.1 OBJECTIVES**

Closure principles guide the selection of closure objectives. Four core closure principles are applicable to advanced mineral exploration and mine sites: physical stability, chemical stability, no long-term active care requirements, and future use (including aesthetics and values) ensuring future generations of Inuit will be able to enjoy the land as Inuit do today (MWLWB/AANDC 2013; NTI 2008).

Blue Star considers the overarching objectives of NTI's *Reclamation Policy* (2008) applicable in this context which include:

- Establishing goals for the reclamation of Inuit Owned Lands (IOL) and setting out the obligations of the land user.
- Minimizing the environmental liability to Inuit from the use of IOL.
- Ensuring that reclamation requirements are incorporated in a reclamation plan.
- Integrating Inuit Qaujimajatuqangit and consultation with Inuit into the reclamation process.
- Maximizing the benefits of reclamation to Inuit.

#### **5.1.1 PROGRESSIVE RECLAMATION GOAL AND OBJECTIVES**

Blue Star wishes to recommence exploration and undertake progressive reclamation to return the site to a condition reflective of the currently intended level of exploration activity, yet supportive of potential future mine development. In considerations of the closure principles of advanced mineral exploration sites, the near-term closure and reclamation objectives are the following:

- Stabilize the site through progressive reclamation and ensure environmental protection to the extent necessary to minimize liability to Inuit, and yet support the continued use as an exploration site allowing for future development of a mine and mine-related infrastructure and benefit to Inuit.
- Ensure that there is no danger to the health or safety of people and wildlife.

### 5.1.2 TEMPORARY CLOSURE GOAL AND OBJECTIVES

Temporary closure, or a planned shutdown, is considered a short-term event and the result of seasonal, economic, or regulatory requirements. The Project is expected to temporarily close seasonally, between periods of exploration and progressive reclamation activities. The goal for temporary closure is to maintain the site for future exploration and progressive reclamation activities. The objectives for temporary closure are to ensure that:

- No danger to the health or safety of people and wildlife is posed over the reasonably foreseen closure period.
- Degradation of the site facilities is minimized.
- Monitoring required under the various authorizations may be undertaken to enable implementation of adaptive management measures and fulfillment of compliance obligations.

### 5.1.3 PERMANENT CLOSURE AND RECLAMATION GOAL AND OBJECTIVES

Permanent closure and reclamation of the site occur at the end of mine life, when economic ore reserves have been exhausted or a decision has been made to abandon the site. Objectives of permanent closure are the following:

- Ensure that no danger is posed to the health or safety of people and wildlife.
- Ensure the requirements for long-term maintenance and monitoring associated with all of the site facilities are minimized.
- Ensure contaminant loadings to the environment from the closed facilities are minimized or prevented.
- Ensure the site and affected areas are returned to a condition that is compatible with the surrounding original undisturbed area with respect to its future potential/productivity uses.

### 5.1.4 ADAPTIVE MANAGEMENT

Adaptive management is an approach to environmental management that, according to the NIRB's *Technical Guide Series, Terminology and Definitions* (2018), is a systematic and ongoing decision-making process that, when uncertainty exists, aims to reduce that uncertainty over time and is well suited to mine closure planning, given the long-term planning horizon and associated uncertainty. Adaptive management is precautionary in nature and allows for contribution of improved science to the development of robust mitigation measures. A key characteristic of adaptive management is monitoring, which is used to advance scientific understanding and to adjust management policies in an iterative process. Embedding adaptation into closure planning involves thinking about how the results of monitoring will change planned management actions.

Adaptive management planning identifies actions needed when a predetermined threshold is met or triggered, and allows for performance monitoring and project re-evaluation in the future. Risk triggers provide progressive decision points that identify how and when management action should be taken. At a high level, adaptive management may include the following steps:

- Identifying risk triggers associated with vulnerabilities or uncertainties.
- Quantifying impacts and uncertainties.
- Evaluating strategies and define an implementation path that allows for multiple options at specific triggers.
- Monitoring the performance and critical variables in the system.
- Implementing or re-evaluate strategies when triggers are reached.

## **5.2 DESIGN CRITERIA**

Design criteria are presented in design documents appended to the respective facility management plans. The information in this section is provided for summary purposes only, the design documents stand alone and take precedence.

### **5.2.1 LANDFILL COVER DESIGN**

Design criteria for final cover on the non-hazardous waste onsite landfill (the Landfill) include but are not limited to the following parameters:

- Maximum side slopes of 4H:1V.
- PHC concentrations of material placed within the Landfill shall not exceed the CCME 2008 guidelines (Table 7 Soil quality remediation objectives for petroleum hydrocarbons.).
- Minimized surface run-off through the area during operations and post-closure.
- Drainage gradient of the Landfill's outer surfaces post-closure shall not be less than 1%.

### **5.2.2 SOIL TREATMENT FACILITY**

The design criteria for the soil treatment facility (STF) includes, but is not limited to, the following features:

- Average height of soil undergoing active treatment will be no greater than 1.5 m.
- Floor of each cell will be sloped at a minimum slope of 1% towards a sump.
- Each cell will be accessed via access ramps sloped at 5H:1V.
- Each cell shall be lined with a low permeability liner with a hydraulic conductivity of less than  $1 \times 10^{-7}$  cm/s.
- Minimum 0.5 m freeboard, based on the capacity to store a 24-hour 10-year frequency storm event and on the average annual snow accumulation using a 10:1 ratio.
- Berms will have a minimum height of 1.5 m.
- Inner berm slopes of 2H:1V and outer berm slopes of 1.5H:1V.
- Located greater than 500 m from sensitive areas.
- Located on a site with slope less than 5%.
- Groundwater table must be greater than 1 m from the base of the facility.

### **5.2.3 PETROLEUM HYDROCARBON CONTAMINATED SOIL REMEDIATION**

The soil quality remediation objectives for PHC fractions F1 to F4 (Table 7) are based on the Government of Nunavut's *Environmental Guideline for Contaminated Site Remediation* (2009) Tier 2 guidelines for:

- Wildland land use.
- Relevant exposure pathways.
- Coarse-grained soils. Selection of the remediation objectives based on future land use and the exposure pathways present at the site is described in the 2019 contaminated soil investigation report (Appendix B).

Table 7. Soil quality remediation objectives for petroleum hydrocarbons.

| Objectives for Coarse-Grained Soils | F1<br>mg/kg | F2<br>mg/kg | F3<br>mg/kg | F4<br>mg/kg |
|-------------------------------------|-------------|-------------|-------------|-------------|
| Surface (0 to 1.5 m depth)          | 210         | 150         | 300         | 2,800       |
| Subsoil (>1.5 m depth)              | 700         | 1,000       | 2,500       | 10,000      |

Source: CCME 2008

Note: "Coarse" means coarse-textured soil having a median grain size of &gt;75 µm

## 6.0 PROGRESSIVE RECLAMATION MEASURES

### 6.1 DEFINITION OF PROGRESSIVE RECLAMATION

Progressive reclamation takes place prior to permanent closure, and is the reclamation of components and/or decommissioning of those facilities that no longer serve a purpose. These activities can be completed concurrently with exploration activities at the site, utilizing available resources to reduce future liability, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving the future final closure objectives and may provide valuable experience on the effectiveness of certain measures that may be implemented during permanent closure.

### 6.2 OPPORTUNITIES FOR PROGRESSIVE RECLAMATION

Blue Star's approach to progressive reclamation is to utilize the operable equipment available at site to dispose of non-useable equipment and materials in the Landfill and to manage PHC contaminated soil in the STF. Blue Star plans on using the following equipment that is available on site:

- Excavator;
- Front end loader;
- Ore truck(s);
- Bulldozer with ripper;
- Grader;
- Fuel truck;
- Light vehicles for transport;
- Bus.

To commence implementation of the progressive reclamation measures, a crew of approximately 20 persons will be mobilized to site in Year 1 to open the existing Ulu camp and service the vehicles and equipment required for progressive reclamation. Figure 10 shows the infrastructure required for progressive reclamation activities described in the following sections.

### 6.3 MINE WORKINGS

The vent raise was backfilled with waste rock and esker sand by the preceding owner; documentation verifying that the work was certified by a qualified engineer has not been provided by the preceding owner. The vent raise backfill will be monitored during progressive reclamation activities and observations included in the annual geotechnical inspection reports. A qualified professional engineer

will be retained prior to the cessation of progressive reclamation activities to determine if additional measures are necessary, and if required, to certify the closure measures completed.

The mine portal has been sealed to prevent access. Two sea cans will be placed in front of the portal to enhance the current access restriction measures. The portal seal will be monitored during progressive reclamation activities and observations included in the annual geotechnical inspection report.

The steel recovered from the demolished fuel tanks is thought to be appropriate for steel closure of mine entrances; however, the dimensions of the remaining intact sheets are unknown. An assessment of the quality and dimensions of the scrap steel will be made in Year 1 and suitable materials will be set aside for possible reuse. Steel not re-purposed will be landfilled prior to the cessation of progressive reclamation activities. For the purposes of the progressive reclamation security estimate (Appendix C), it is assumed the vent raise will be capped with steel under the direction of a qualified professional engineer.

#### **6.4 MINE SUMP**

The mine sump will either be decommissioned or be modified to manage the ore stockpiled on surface, as describe in Section 6.5. Mineralized rock used to construct the berms will be managed with the existing ore stockpile material and the berm will be re-established with unmineralized waste rock. For the purposes of the security estimate, it is assumed the sump will be utilized for ore storage. This will include replacement of the mineralized material within the berms and base liner system as well as a liner and esker cover. If the sump is decommissioned, the geomembrane liner will be removed and disposed of in the Landfill.

#### **6.5 ORE AND WASTE ROCK**

The ore stockpiled on surface has the potential to generate metal leachate and acidic rock drainage within the next decade. Studies will be undertaken in Year 1 by a qualified professional to determine the optimal method for managing the ore stockpiled on surface; these studies will include sampling, laboratory analysis, and reporting of findings with recommendations. The following options are being considered:

- Neutralization in place;
- Relocation; or
- Neutralization and/or encapsulation in either the mine sump or the STF following soil treatment.

The ore remaining on the ore pad and the mineralized rock used for the construction of the mine sump will be managed with the stockpiled ore.

The NWB will be notified 30 days prior to the implementation of the selected option, or as otherwise stipulated under the water licence. Management of the ore stockpile will be undertaken during progressive reclamation activities.

A systematic geochemical sampling program will be conducted along the existing infrastructure to determine the proportion and distribution of rock with high ML/ARD risk.

## 6.6 INFRASTRUCTURE AND EQUIPMENT

### 6.6.1 BUILDING AND EQUIPMENT DEMOLITION

With the possible exception of the core shack, all buildings at the Project are collapsible and are designed to be dismantled easily. Blue Star intends to assess the condition and usefulness of the buildings on site to support future exploration. Anything deemed no longer useful, irreparable, or unsalvageable will be disposed of in the Landfill. For the purposes of the security estimate, it is assumed that all buildings except the core shack will be disposed of in the Landfill during progressive reclamation activities.

Much of the existing equipment and parts found on site are no longer useful, are in a mature state of disrepair, or are completely decommissioned. Accordingly, Blue Star considers this equipment suitable for disposal in the Landfill. Prior to disposal, all fluids, batteries, and mercury switches will be removed from the equipment. If air conditioners are present, they will be checked for refrigerants which will be removed by approved personnel prior to dismantling. Table 8 lists the equipment that is planned for disposal. Salvageable equipment will be retained and transferred for use and storage when an exploration camp is established closer to the airstrip.

Table 8. List of equipment planned for disposal.

| Equipment                           |                                       |
|-------------------------------------|---------------------------------------|
| 1993 Ford F350 4 × 4 Pickup - Brown | 1993 Ford F350 4 × 4 Pickup - Green   |
| Ford Pickup - F-350 4 × 4 Blue      | Ford Pickup - F-350 4 × 4 White       |
| 1980 Ford LW9000 Flat Deck, Hiab    | Ford 800 Boom Truck                   |
| Fuel Truck (1000 gal) Mack          | Peterbilt Tri-Axle tanker             |
| Cat 930 Front End Loader            | Cat 824C Rubber-Tired Bulldozer       |
| Cat Rock Truck 769                  | Cat Water Truck                       |
| Getman A-64 Scissor Lift            | Volvo Water Truck                     |
| Cat-563 Drum Packer                 | Foremost Delta Commander              |
| Compressor 600 cfm Gardner-Denver   | Compressor 825 cfm Gardner-Denver     |
| Compressor 375 cfm Leroi            | Generator 600 kW Cat                  |
| Generator 600 kW Cat                | Generator 600 kW Cat                  |
| Generator 250 kW Detroit (8V92T)    | Generator 250 kW Detroit (8V92T)      |
| Generator 500 kW Cummins            | Generator 500 kW Cummins              |
| Atlas Copco Rocket 322S Drill Jumbo | Tamrock H-102 Micro Drill Jumbo       |
| Tamrock HS205M Maxi Drill Jumbo     | Elphinstone R-1700 Scooptram (7.5 yd) |
| Wagner MT-426 Haul Truck            | Wagner MT-444 Haul Truck              |
| Wagner ST-2D Scooptram              | Wagner ST-3.5 Scooptram               |
| Wagner ST-7.5Z Scooptram (7.5 yd)   | Kubota M5400 Man Carrier              |

### 6.6.2 WASTE STORAGE AND DISPOSAL AREAS

The Landfill, a new waste management facility, will be constructed, operated, and closed during the progressive reclamation work program. The Landfill will have the capacity to receive approximately 20,000 m<sup>3</sup> of non-hazardous solid waste. Its proposed location, illustrated on Figure 10, occurs in an area situated between the former Ulu Camp tank farm and the portal access road. It is also situated in proximity to all consolidated waste stockpiled by the previous site operator in 2018/2019. The Landfill is intended to operate during progressive reclamation activities as described in the *Landfill Management Plan*. Details of the Landfill design and engineering drawings are included as an appendix to the *Landfill Management Plan*.

### 6.6.3 FUEL STORAGE

Fuel will be stored in fuel caches. Oil, lubricants, and coolant will be stored within secondary containment inside the shop until its demolition.

## 6.7 HAZARDOUS MATERIALS AND CONTAMINATED SOIL

Hazardous materials and domestic waste generated during progressive reclamation will be handled in accordance with the *Waste Management Plan*. This will include fluids recovered when equipment is decommissioned, and fluids generated when fuel tanks and drums are decontaminated (if needed).

PHC contaminated soil is to be excavated and the resulting floor and sidewalls of the excavations are to meet the soil quality remediation objectives (Table 7). The remediation confirmatory sampling procedure is provided in Appendix B of the *Soil Treatment Facility Management Plan*.

An STF will be constructed and operated to remediate PHC contaminated soil in accordance with the *Soil Treatment Facility Management Plan*. Soil treatment will use naturally occurring micro-organisms contained in the soil and volatilization to break down PHC in what are known as biopiles. Nutrients and water will be added, and the soil aerated to enhance microbial activity. The treatment of contaminated soil will be restricted to the warmer months when the soil is not frozen or covered with snow. The planned location for the STF is identified in Figure 9. The security cost estimate is based on the schedule and quantity estimates in Table 9, taken from the *Soil Treatment Facility Management Plan*.

The soil underlying secondary containment in areas used for equipment dismantling and fuel caches during progressive reclamation will be tested when the caches are removed, and any impacted soil will be recovered and treated in the STF or packaged and shipped off-site for treatment. The removal will be done through backhauling (utilizing the return flights of fuel and large item delivery) of the material to a treatment facility off site. The current estimate of contaminated material unsuitable for treatment in the STF and therefore requiring backhaul and off-site is 110 m<sup>3</sup> (see Section 3.1.5 and Section 3.4.7).

Upon completion of the soil remediation activities Blue Star intends to assess the condition of and usefulness of the lined facility to be re-purposed to support future exploration. For the purposes of the progressive reclamation security estimate it is assumed the STF will be decommissioned.

Table 9. Soil treatment facility schedule and quantity estimates.

| Year | Volume (m <sup>3</sup> ) | Comments  |
|------|--------------------------|---|
| 1    | 4,000                    | Placement of estimated volume for treatment within the soil treatment facility. Active season of material aeration. |
| 2    | 2,500                    | Remediated for removal.   |
| 3    | 800                      | Remediated for removal.   |
| 4    | 800                      | Remediated for removal.   |
| 5    | To be confirmed          | Repeated process based on the yearly remediated quantities and remaining PHC contaminated material.                 |

Notes: Volumes based on investigation conducted in 2019 (SRK 2020).

Assumes 1/3 PHC contaminated soil will be acceptable for subsoil management.



Figure 9. Soil treatment facility overview

## 6.8 BORROW AND QUARRY MATERIALS

Eskers have historically provided a source of aggregate for the Project. Disturbed areas will be rounded and contoured with a bulldozer to minimize erosion. This will involve walking/tramming the machine to and from camp.

Should a rock quarry be established and developed, it will be operated and closed in accordance with the *Borrow Pits and Quarry Management Plan*. Prospective quarry sites and the geochemical characterization program are described in the *Borrow Pits and Quarry Management Plan*.

## 6.9 MONITORING AND MAINTENANCE

### 6.9.1 PROGRESSIVE RECLAMATION MONITORING AND MAINTENANCE PROGRAMS

The performance of the backfill in the vent raise, the cover on the Landfill (and the cover on the ore stockpile) will be monitored during progressive reclamation. Observations will be recorded in the annual geotechnical report.

Surface and seepage water monitoring will be undertaken in accordance with the water licence during the annual geotechnical inspection.

Monitoring of the STF includes: biopile PHC concentrations and moisture content, surface water accumulation, groundwater quality, visual inspections during operations, and annual geotechnical inspections as outlined in the *Soil Treatment Facility Management Plan*. Maintenance of the facility will be undertaken, along with reporting and documentation, as outlined in the *Soil Treatment Facility Management Plan*.

Regular inspections of the Landfill are to be conducted to ensure operational compliance and specifically following a rain event when the site is occupied. Surface water quality and Landfill cover performance are to be monitored as outlined in the *Landfill Management Plan*. Reporting and documentation requirements are provided in this plan.

The road and airstrip will be maintained as necessary to complete progressive reclamation activities. The progressive reclamation will extend for a period of 6 years; this will include the time required to complete the progressive reclamation work, remediate the remaining PHC contaminated soil, and achieve final closure of the Landfill and STF.

### 6.9.2 POST-PROGRESSIVE RECLAMATION MONITORING AND MAINTENANCE PROGRAMS

Upon decommissioning the STF, soil samples are to be taken and compared to baseline soil samples to confirm that there is no migration of contaminants into the foundation or surrounding area, as outlined in the *Soil Treatment Facility Management Plan*.

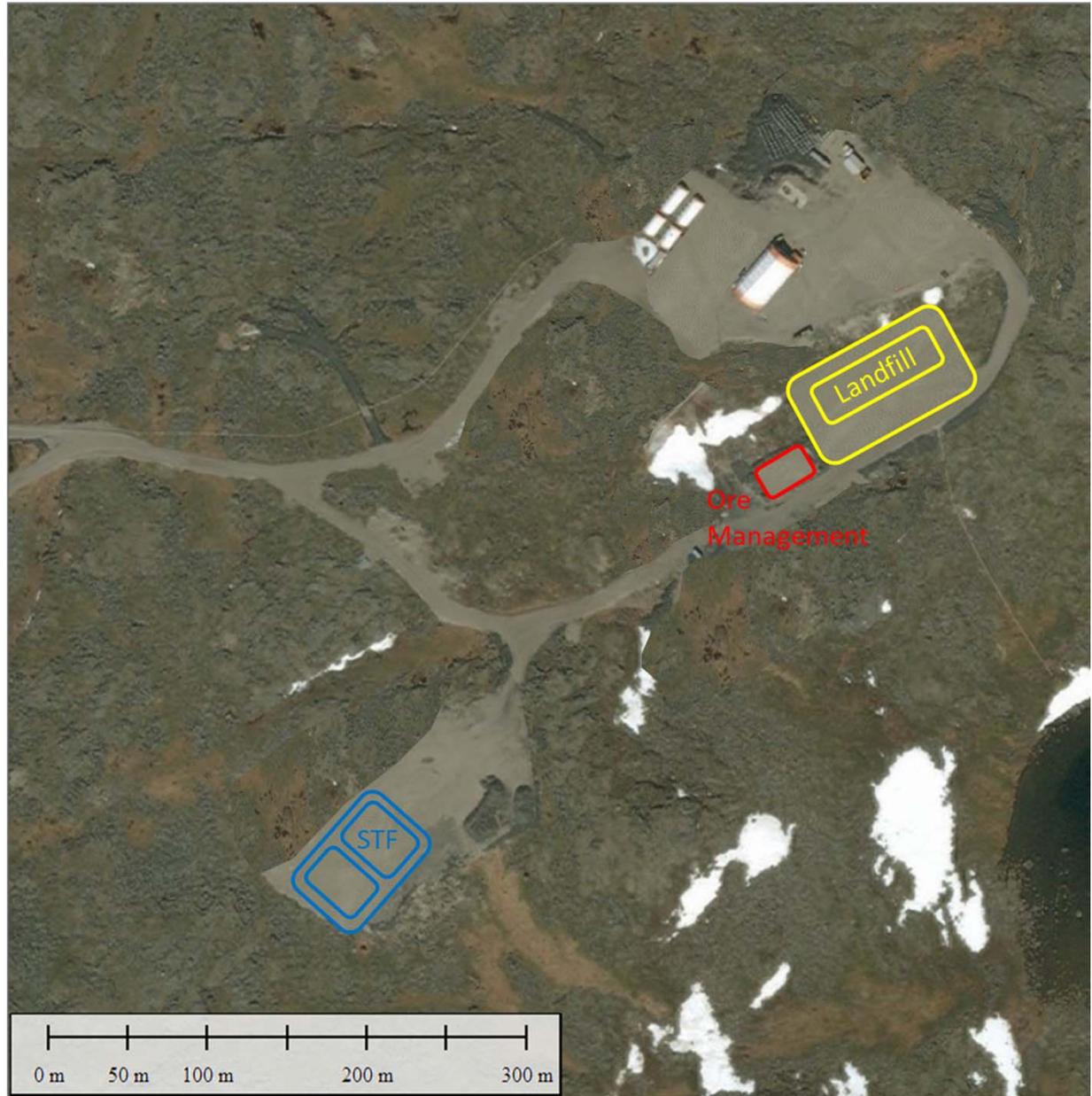
Landfill cover (and ore stockpile cover, if used) performance monitoring by a geotechnical engineer will occur in accordance with the water licence.

The post closure period is identified as 4 years and will include continued visual inspections, water quality monitoring, and geotechnical inspection.

### 6.9.3 CONTINGENCIES

A proposed schedule for undertaking the progressive reclamation activities is provided in Section 1.4. The proponent acknowledges that this may change in consideration of logistics and on-site conditions; however, the intent to carry out the work as licensed remains.

Should monitoring determine that the work as licensed not be a successful means of achieving progressive reclamation criteria and objectives, alternatives will be developed.



Ulu Gold Project

Interim Reclamation and Closure Plan

**Progressive Reclamation Site Facilities**

Date:  
April 2020

Approved:  
DG

Figure: **10**

## 7.0 TEMPORARY CLOSURE MEASURES

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As described in Section 0, temporary closure of the site may occur for different reasons; however, related closure activities are the same regardless of the reasons for temporary closure.

Monitoring and administrative activities would continue to maintain all compliance requirements. At a minimum, annual site inspections will take place. Typical activities associated with temporary closure of each project component are outlined below.

### 7.1 MINE WORKINGS

The portal and vent raise will be inspected to ensure there are no areas of subsidence; control measures would be implemented if necessary.

### 7.2 WATER MANAGEMENT

The water intake hose will be removed from the lake and securely stored on site. The water pump will be drained, and the pump placed into storage.

Site drainage patterns will be inspected, and sediment control features upgraded where necessary.

### 7.3 BUILDINGS AND STORAGE FACILITIES

#### 7.3.1 ULU CAMP

Temporary camp closure is expected to take approximately one week, using available on-site labour and supervision.

Most consumable supply inventories would be brought to a minimum through scheduled use, reducing the risk of long-term storage at the site. Valuables will be removed from camp to off-site storage. Remaining items key to the closure and start-up of the camp will be secured inside the Weatherhaven residential complex.

The rooms, kitchen, and dry in the residential complex will be cleaned out, fuel disconnected, and doors wired shut to prevent snow and wildlife ingress. All food will be removed to off-site storage. The kitchen will be emptied and cleaned, including the grease traps, so as not to attract wildlife. A small amount of non-perishable food may be left on site in the core shack, as emergency rations.

The greywater sump will be inspected to ensure it is free from wildlife attractants. Erosion control measures will be implemented where necessary.

The doors and windows of the core shack will be boarded to prevent snow and wildlife ingress. Core storage areas will be inspected for stability. The incinerator and surrounding area will be cleaned out, ash and debris removed in accordance with the *Waste Management Plan*, and the incinerator secured in such a manner as to prevent snow ingress into the chambers and wildlife attraction.

### **7.3.2 FUEL AND MATERIAL STORAGE**

Fuel and other materials such as drill additives, lubricants, and coolants may remain in fuel caches and inside the sea container at the airstrip for emergency use and to support camp closure and start-up. All barrels and other storage containers will be inspected to ensure integrity. Fuel remaining in caches will be covered with tarps.

### **7.4 MOBILE EQUIPMENT**

The remaining operational vehicle fleet will be parked inside the vehicle repair shop (when present). Batteries will be removed from key pieces of equipment and moved to off-site storage. Provisions to secure a loader at the airstrip over winter will be considered.

### **7.5 WASTE MANAGEMENT**

Hazardous and domestic waste generated during the season will be managed in accordance with the *Waste Management Plan*.

### **7.6 DRILLS**

Drills will be demobilized from the field and stored in a designated area on site. Fuel lines will be disconnected, and fuel tanks stored in secondary containment and covered. Drill cuttings sumps will undergo a final inspection to ensure proper containment and erosion control. The area around drill stems will undergo a final inspection to ensure any areas of subsidence have been backfilled in such a manner as to prevent water accumulation.

### **7.7 MONITORING AND MAINTENANCE**

Site components and infrastructure will be visually inspected at least annually and in accordance with the applicable authorizations. The visual inspections will document unexpected conditions as they relate to protection of health, safety and the environment, physical stability, and security. Blue Star management will be notified of all unexpected conditions; these will be investigated and addressed as required. In general, all monitoring and reporting will occur in accordance with the applicable authorizations and will include but not be limited to the following:

- Regular inspections of buildings, Landfill, ore stockpile, STF, borrow pits, and roads.
- Implementation of inspection follow-up actions as necessary.
- Regular inspection of available water storage capacity.

All inspections and monitoring activities will be recorded and filed with the corporate office.

Infrastructure maintenance will be undertaken and will include the following tasks:

- Culvert repair and other road repairs as required.
- STF maintenance in accordance with the *Soil Treatment Facility Management Plan*.
- Equipment maintenance as required.
- Landfill maintenance in accordance with the *Landfill Management Plan*.

## **8.0 FINAL CLOSURE MEASURES**

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Final closure commences when a formal notice of abandonment is filed during the final stages of mining or exploration, or during a long-term shut down event. Once a decision for final abandonment has been made, a Final Closure Plan (FCP) will be submitted to the NWB.

Decommissioning of the site would then commence in accordance with an approved FCP during the next available construction season. It would include either on-site disposal where appropriate and/or removal of camp components and equipment either by air, or via a future winter trail or an all-season road, for off-site disposal.

Post closure monitoring will be undertaken in accordance with an approved FCP and water licence. Inspections will be carried out in accordance with the various authorizations.

Future final closure measures may reasonably include those presented below.

### **8.1 ROADS AND AIRSTRIP**

Upon final closure, all roads would be regraded with the shoulder slopes flattened to reduce erosion and promote positive drainage. All culverts will be removed and the drainage opened to allow natural flow. In order to promote natural growth of vegetation, the roads will be scarified to provide the needed microclimate sites for seed establishment. No active seeding is planned. The roads that are raised above the natural topography will be reduced in height and contoured prior to scarifying.

Depending upon the requirements of the KIA as the landowner, the airstrip may also be regraded and the surface scarified upon final closure.

### **8.2 BORROW AND QUARRIES**

Esker borrow areas will be contoured to minimize erosion. Quarries, if developed, will be inspected to ensure slopes are suitable for long-term slope stability and water shedding, and any stockpiled overburden will be distributed to promote the establishment of vegetation islands.

### **8.3 MINE WORKINGS**

Upon final abandonment of the Project, the portal will be sealed in accordance with an engineered design. The area immediately in front of the portal will be re-contoured for long-term stability and drainage.

### **8.4 WASTE MANAGEMENT**

Waste items may be disposed of either underground, in a surface landfill, or off-site. Engineered designs for the disposal of bulky materials underground or in a surface landfill will be developed.

### **8.5 RISK MANAGEMENT**

As part of the development of future final closure measures, Blue Star may establish a set of adaptive management terms and apply them to the waste rock that was removed from the underground workings in 1996 and 1997.

## 8.6 MONITORING AND MAINTENANCE

### 8.6.1 CLOSURE MONITORING AND MAINTENANCE PROGRAMS

#### Soil Contamination

The soil underlying those areas used for fuel caches during closure will be tested prior to final closure. Any impacted soil will be recovered, packaged, and shipped off-site for treatment.

### 8.6.2 POST-CLOSURE MONITORING, MAINTENANCE AND REPORTING

Post-closure monitoring is anticipated to involve water quality monitoring downstream of reclaimed infrastructure and geotechnical stability assessments of the closed landfill and reclaimed areas.

#### Water Quality

Post-closure, the camp pad and material laydown pads will continue to be exposed to the environment. Accordingly, it is reasonable to anticipate the need for post-closure water quality monitoring for some time. Research conducted during the progressive reclamation activities will better inform the duration of post-closure monitoring.

#### Geotechnical

Monitoring of the stability of the portal closure measures, cover(s), closed roads, airstrip, borrow, and quarries is reasonable to include in post-closure monitoring.

## 9.0 FINAL ENVIRONMENT CONDITIONS

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### 9.1 RESIDUAL EFFECTS PREDICTION

Historically, previous site owners used waste rock to construct site infrastructure such as roads, pads, and berms. The potential for negative residual effects as a result of the legacy waste rock on surface is not currently understood. Past assessments of waste rock geochemistry indicate that the delay to onset of acidic conditions in the waste rock is likely to be decades and that treatment may be required to reclaim waste rock in place. To better understand potential future residual effects at closure and to inform development of appropriate mitigation measures, an assessment of the different size fractions of waste rock on surface is to be completed in Year 1 (see Appendix A). Once the volume/percentage of fine-grained material is known, treatment options will be better understood. In the interim, monitoring in accordance with the water licence to assess the possibility of attenuation or concentration of metals by acidic tundra soils is considered adequate.

### 9.2 LANDFORMS AND VEGETATION

Revegetation of disturbed areas at the Project will focus on the enhancement of the ground surfaces by promoting natural reintroduction of native species while reducing the opportunity for erosion. Scarifying of hard-packed surfaces to open up the ground will provide the required microclimate for natural plant growth, enhancing seed entrapment, moisture retention, and wind protection. The roads, currently raised above the natural topography, will be reduced in height and contoured prior to scarifying.

The site has been constructed to provide a level pad for camp construction and materials laydown. This grading is only minimally raised above the fractured rock outcropping and boulders, leaving very little

flexibility in the final topography. At this time, it is anticipated that the areas near the natural slopes will be shaped to blend in with the natural topography.

## **10.0 CLOSURE SCHEDULE AND EXECUTION STRATEGY**

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### **10.1 REGULATORY FRAMEWORK**

Should Blue Star decide to proceed to final closure at Ulu in the future, an application will be submitted to the Nunavut Planning Commission (NPC) for a conformity review. It is reasonably anticipated that the NPC will refer the application to the NIRB for screening or review, after which Blue Star will apply to the NWB for an amendment to its water licence to approve a Final Closure Plan. Depending on the surface and subsurface agreements in place at the time, related submissions may need to be made to the KIA, the Government of Canada, and NTI.

### **10.2 FINAL CLOSURE SCHEDULE AND EXECUTION STRATEGY**

Final closure will proceed once an FCP has been approved and the water licence has been amended. The closure activity schedule will be determined during planning of final closure; it will consider the site conditions existing at that time, as well as equipment and workforce availability and cost. Closure work will be undertaken using equipment previously transferred to the adjacent exploration site, as described in Section 6.6.1. Depending on the status of exploration activities and available bed space, the establishment of a temporary camp may be needed to support the closure.

## **11.0 RECLAMATION AND CLOSURE LIABILITY**

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Table 10 provides a summary of the costs for completing the tasks outlined in Section 6.0. A detailed breakdown of these costs is included in Appendix C.

The financial security held by the Minister of Crown-Indigenous Relations and Northern Affairs (CIRNA) has remained largely the same, approximately \$1,680,000, since 2000 (\$1,685,542 is currently held by CIRNA). Blue Star posted \$750,000 as additional financial security with the KIA to address the shortfall in reclamation security held by CIRNA and the KIA during the licence assignment process. It should be noted that in the time between licence assignment to Blue Star and the submission of this plan, no new work has been undertaken on site.

A staged approach to security administration is considered suitable; this will allow exploration to proceed, planned reclamation to be undertaken as was contemplated in the licence assignment process, and additional related progressive reclamation activities to be undertaken as needed in the future.

The Licensee acknowledges that following completion of progressive reclamation, historical mine-related infrastructure and liabilities will remain on site, such as roads and pads, airstrip, mine portal, and waste rock. Prior to advancing the project to construction and operations, an assessment of future closure requirements and of the appropriate financial security needed for implementation will be required. The Licensee commits, through the amendments to the licence and approval of this ICRP, to submit and maintain appropriate financial security as the project moves through the mine life cycle.

Table 10. Progressive reclamation cost estimate.

| <b>Task</b>                             | <b>Costs C\$</b> |
|---|------------------|
| <b>Direct Costs</b>                     | <b>1,074,749</b> |
| Building Demolition                     | 33,491           |
| Non-Hazardous Waste Landfill            | 287,597          |
| Soil Treatment Facility                 | 517,773          |
| Ore Management                          | 80,411           |
| Mine Workings                           | 55,760           |
| Hazardous Material Management           | 55,492           |
| Borrow & Quarry                         | 4,807            |
| Construction Material Transport to Site | 39,418           |
| <b>Indirect Costs</b>                   | <b>1,479,617</b> |
| Mobilization                            | 421,140          |
| Waste Rock ML/ARD Investigation         | 43,418           |
| Monitoring and Reporting                | 205,539          |
| Management and QA/QC                    | 145,600          |
| Bonding/Insurance                       | 10,747           |
| Health and Safety                       | 10,747           |
| Project Management                      | 53,737           |
| Engineering                             | 53,737           |
| <b>Contingency</b>                      | <b>534,950</b>   |
| <b>Total</b>                            | <b>2,554,367</b> |

## 12.0 HOOD RIVER, ROMA & OTHER REGIONAL ACTIVITIES

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### 12.1 SCOPE

This portion of the Plan applies to seasonal, temporary and final closure of the exploration activities licenced under Hood River including seasonal temporary camp, associated fuel caches and core storage areas.

### 12.2 CLOSURE OBJECTIVES

The temporary closure objective for Hood River is to ensure that the facilities are not posing a risk to the physical environment, wildlife or humans.

Final closure objectives for Hood River are to:

- re-establish pre-disturbance terrain conditions, where possible;
- restore areas occupied by the undertaking to a condition compatible with future land use.

### **12.3 SEASONAL & TEMPORARY CLOSURE**

Seasonal and temporary closure may occur for different reasons; however, related closure activities are the same. Typical activities associated with temporary closure of each project component are outlined below.

#### **12.3.1 CAMP**

Valuables are removed from a seasonal camp to Ulu or off-site storage. Remaining items key to the closure and start-up of the camp are secured inside one hard-sided tent (ie. core shack), reinforced to withstand heavy snow accumulation.

Tents are cleaned out, fuel disconnected and doors wired shut to prevent snow and wildlife ingress.

All perishable food and most non-perishable food is removed to off-site storage. A small amount of non-perishable food may be left on site, stored in a manner such that it is not a wildlife attractant, as emergency rations.

The kitchen is emptied and cleaned, including the grease traps, in a manner such it is not a wildlife attractant.

The greywater sump is inspected to ensure it is stable and free from wildlife attractants. Erosion control measures are implemented where necessary.

The incinerator and surrounding area are cleaned out, ash and debris removed, and incinerator secured in such a manner as to prevent snow ingress into the chambers and wildlife attraction.

If in place, the dock is removed from the lake.

#### **12.3.2 FUEL & MATERIAL STORAGE**

Fuel and other materials such as drill additives, lubricants and coolants may remain in fuel caches for emergency use and to support camp closure and start-up. Fuel remaining in caches is inspected to ensure integrity of barrels or other storage containers, and is stored in covered secondary containment.

#### **12.3.3 WASTE**

Hazardous and domestic waste generated during the preceding season is backhauled for off-site disposal or treatment.

#### **12.3.4 WATER INTAKE**

The water intake facility is removed from the lake and securely stored on site. Fuel is removed from the water pump prior to storage.

### **12.3.5 CORE SHACK**

The core shack is cleaned out, fuel disconnected and doors wired shut to prevent snow and wildlife ingress, and is reinforced to withstand heavy snow accumulation. Core storage areas are inspected for stability.

### **12.3.6 DRILLS**

Drills are demobilized from the field and stored in a designated, durable area on site or at Ulu. Fuel lines are disconnected, and fuel tanks are stored in secondary containment. Drill cuttings sumps undergo a final inspection to ensure stability. The area around drill stems undergo a final inspection to ensure any areas of subsidence around drill stems have been backfilled in such a manner as to prevent water accumulation.

## **12.4 FINAL CLOSURE**

Final closure at the end of the Hood River project involves a planned abandonment of the property, and entails removal of all temporary facilities rectified onsite.

Where possible, reusable equipment and supplies will be salvaged for reuse at Ulu or elsewhere. Structures will be emptied and dismantled. Clean wood not suitable for reuse will be either chipped or open-burned on site. Chipped wood may be mixed with overburden, bentonite chips or drill cuttings and used to fill depressions (subsidence around drill stems, sumps). Materials not suitable for reuse or open burning will be transported off site for final disposal at appropriate facilities. Core will remain on site, stored in a stable manner.

Fuel, hazardous wastes, recyclables and other materials will be bulked and packaged in a manner suitable for off-site transport and disposal, recycle or resale, as appropriate.

Fuel caches will be decommissioned. Instaberms will be inspected to determine if they are suitable for reuse on other sites. If not suitable for reuse, instaberms will be disposed of off site. Following fuel cache decommissioning, the land underneath will be visually inspected for evidence of leaks resulting in contamination. If any soil contamination is detected, contamination delineation and clean-up will be coordinated in consultation with the KIA and CIRNA.

## **12.5 REPORTING & DOCUMENTATION**

Annual reporting occurs in accordance with water licence and land use licence and permit terms and conditions. Temporary and final closure efforts will be photo-documented.

## **12.6 SECURITY**

Security is posted with the KIA in relation to the undertaking associated with the land use licence.

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**Appendix A: 2019 Geochemical Monitoring**

## **Appendix B: 2019 Contaminated Soil Investigation**

## **Appendix C: Progressive Reclamation Cost Estimate**

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