

Allnorth Information		VICTORIA GOLD CORP.	
Project #:	2302851	Client Project #:	
Document #:	2302851-800-001	Client Document #:	
Document Rev. #:	0	Client Doc. Rev.#:	
Prepared By:	Spencer Bergin, P.Eng.	Client Contact:	Hugh Coyle
Reviewed By:	Don Williams, P.Eng.		

## Document Description

Annual Physical Stability Assessment Report – Victoria Gold – Eagle Gold Project

### Project Description:

Visual inspection of the following structures: Open Pit, Platinum Gulch Dump, Eagle Pup Dump, Lower Dublin South (Control) Pond, Primary Crusher, Secondary & Tertiary Crushers, Secondary Stockpile, Adsorption, Desorption and Recovery (ADR) Plant, Heap Leach Facility, Heap Leach Overburden Stockpile, Event Pond, Emergency Pond, Ditches A, B, and C, Heavy Duty Truck Shop, Warehouse Pad, Water Treatment Plant, Orica Laydown, Various Un-named Stockpiles.

## REVISION HISTORY

Revision	Status	Date	Prepared By	Checked By	Approved By	Description of Revision
A	IFR	23/10/19	SBB	DW	DW	Issued for Review
0	IAF	23/11/20	SBB	DW	DW	Issued as Final

### Status:

PRE	- Preliminary	IFP	- Issued for Procurement
IFR	- Issued for Review and Comment	IFC	- Issued for Construction
IFA	- Issued for Approval	AB	- As Built
IFQ	- Issued for Quotation	IAF	- Issued as Final

Copyright © ALLNORTH. The information contained in this document is the exclusive property of ALLNORTH and shall not be reproduced, or disclosed, or communicated to any unauthorized person, or used in any other unauthorized way whatsoever without the express written permission of ALLNORTH.

The information contained herein is provided solely for the intended purpose of facilitating construction, maintenance, operation, modification, or repair of subject facility and not for any other purpose, including the duplication thereof, in whole or in part.



# TABLE OF CONTENTS

1	BACKGROUND .....	7
2	SCOPE .....	7
3	LOWER DUBLIN SOUTH (CONTROL) POND.....	8
3.1	Low Level Outlet Conveyance Channel .....	8
3.2	Cut slopes.....	8
4	SECONDARY STOCKPILE .....	11
4.1	Benches and Cut Slopes .....	11
4.2	Perimeter Interception Ditch.....	13
5	HEAP LEACH FACILITY.....	15
5.1	HLF Overview .....	15
5.2	Toe Slope.....	18
5.3	HLF Interception Ditch .....	19
6	HEAP LEACH OVERBURDEN STOCKPILE.....	19
7	OPEN PIT.....	21
8	PLATINUM GULCH DUMP .....	23
9	EAGLE PUP DUMP.....	26
10	PRIMARY CRUSHER.....	27
10.1	MSE Walls.....	27
10.2	Cut and Fill slopes.....	28
11	SECONDARY/TERTIARY CRUSHER.....	29
11.1	MSE Wall.....	29
11.2	Cut Slopes .....	30
12	ADSORPTION, DESORPTION, AND RECOVERY PLANT (ADR).....	31
12.1	Cut and Fill Slopes .....	31
12.2	North Toe Ditch .....	32
13	EVENT POND .....	33
13.1	Cut/Fill Slopes.....	33
13.2	Pooling Water.....	34
13.3	Heap Leach Spillway .....	36
13.4	Events Pond Emergency Spillway .....	37
14	EMERGENCY POND.....	38
15	DITCH A.....	39



16 DITCH B..... 41

17 DITCH C..... 41

18 HEAVY DUTY TRUCK SHOP..... 42

19 WAREHOUSE PAD..... 43

20 WATER TREATMENT PLANT..... 45

21 ORICA LAYDOWN ..... 45

22 UN-NAMED STOCKPILE AREA ..... 48

23 RECOMMENDATIONS ..... 49

    23.1 General..... 49

    23.2 LDSP (Control Pond)..... 50

    23.3 Secondary Stockpile..... 50

    23.4 Heap Leach Facility (HLF)..... 50

    23.5 Heap Leach Overburden Stockpile ..... 50

    23.6 Open Pit..... 50

    23.7 Platinum Gulch Dump..... 51

    23.8 Eagle Pup Dump..... 51

    23.9 Primary Crusher and MSE Wall..... 51

    23.10 Secondary/Tertiary Crusher and MSE Wall..... 51

    23.11 ADR..... 51

    23.12 Event Pond..... 51

    23.13 Emergency Pond ..... 51

    23.14 Ditch A..... 51

    23.15 Ditch B..... 52

    23.16 Ditch C..... 52

    23.17 Heavy Duty Truck Shop..... 52

    23.18 Warehouse Pad..... 52

    23.19 Water Treatment Plant..... 52

    23.20 Orica Laydown..... 52

    23.21 Un-Named Stockpile Area..... 52

24 CONCLUSION ..... 52



## LIST OF FIGURES

Figure 1: LDSP – Low Level Outlet Conveyance Channel.....8

Figure 2: LDSP – Cracking on the Southwest slope 2022 .....9

Figure 3: LDSP – Cracking on the Southwest slope 2023 .....9

Figure 4: LDSP – Some flow from adjacent culvert 2022 ..... 10

Figure 5: LDSP – Some flow from adjacent culvert 2023 ..... 10

Figure 6: Erosion above the LDSP ..... 11

Figure 7: Material wash-out above the LDSP ..... 11

Figure 8: Secondary Stockpile Cut Slopes 2022 ..... 12

Figure 9: Secondary Stockpile Cut Slopes 2023 ..... 12

Figure 10: Secondary Stockpile Cut Slopes 2023 – Surficial Slough ..... 13

Figure 11: Perimeter Ditching 2023..... 14

Figure 12: Unconnected Ditch Section 2020..... 14

Figure 13: Unconnected Ditch Section 2023..... 15

Figure 14: Heap Leach Facility Overview 2019..... 15

Figure 15: Heap Leach Facility Overview 2020..... 16

Figure 16: Heap Leach Facility Overview 2021 ..... 16

Figure 17: Heap Leach Facility Overview 2022..... 17

Figure 18: Heap Leach Facility Overview 2023 ..... 17

Figure 19: Rilling along toe slope of HLF (2020) ..... 18

Figure 20: Seeded grass on toe slope of HLF (2022)..... 18

Figure 21: Seeded grass on toe slope of HLF (2023)..... 19

Figure 22: HLF Interception Ditch (2023) ..... 19

Figure 23: HLF Overburden Stockpile collapse – plan view 2021..... 20

Figure 24: HLF Overburden Stockpile collapse – plan view 2022..... 20

Figure 25: HLF Overburden Stockpile collapse – aerial view 2023..... 21

Figure 26: HLF Overburden Stockpile collapse – slope cracking 2023..... 21

Figure 27: Open Pit Walls ..... 22

Figure 28: Material Failure on Pit Walls ..... 22

Figure 29: Open Pit Erosion – Aerial View 2022 ..... 23

Figure 30: Open Pit Erosion – Aerial View 2023 ..... 23

Figure 31: Platinum Gulch Dump (Base)..... 24

Figure 32: Platinum Gulch Dump (Aerial View)..... 24

Figure 33: Platinum Gulch Dump Water Pooling (2022)..... 25

Figure 34: Platinum Gulch Dump Cracking (2022) ..... 25





Figure 35: Platinum Gulch Dump Erosion Event (Spring 2023) ..... 26

Figure 36: Eagle Pup Dump 2022 (Aerial View) ..... 26

Figure 37: Eagle Pup Dump 2023 (Aerial View) ..... 27

Figure 38: Eagle Pup Dump Rock Drain..... 27

Figure 39: Primary Crusher North-West Wall ..... 28

Figure 40: Primary Crusher South-East Wall ..... 28

Figure 41: North-West fill slopes..... 29

Figure 42: South side of MSE wall..... 29

Figure 43: Cut slopes above Secondary/Tertiary Crusher 2021 ..... 30

Figure 44: Cut slopes above Secondary/Tertiary Crusher 2022 ..... 31

Figure 45: Cut slopes above Secondary/Tertiary Crusher 2023 ..... 31

Figure 46: Slopes behind ADR (2023)..... 32

Figure 47: Typical North Toe Ditch cross section..... 32

Figure 48: Overall view of event pond..... 33

Figure 49: Rill erosion above HLF spillway (2022)..... 33

Figure 50: Rill erosion above HLF spillway (2023)..... 34

Figure 51: Pooling water above Event Pond 2023..... 34

Figure 52: Pooling water above Event Pond 2022..... 35

Figure 53: Pooling water above Event Pond 2021..... 35

Figure 54: Pooling water above Event Pond 2020..... 36

Figure 55: Heap leach spillway damage (2021) ..... 36

Figure 56: Heap leach spillway repairs (2023)..... 37

Figure 57: Events Pond Emergency spillway crush blockage ..... 37

Figure 58: Emergency Pond..... 38

Figure 59: Emergency Pond Slope Erosion..... 38

Figure 60: Ditch A (Base of Platinum Gulch Dump) ..... 39

Figure 61: Ditch A culvert blocked (2023)..... 40

Figure 62: Ditch A culvert blocked (2022)..... 40

Figure 63: Ditch B Erosion (view towards LDSP)..... 41

Figure 64: Ditch C with WTP Pipeline ..... 42

Figure 65: Truck Shop cut slopes..... 42

Figure 66: Over Steepened Slope – Truck Shop ..... 43

Figure 67: Cracking – Warehouse Pad (2022)..... 44

Figure 68: Cracking – Warehouse Pad (2023)..... 44

Figure 69: Water Treatment Plant Slopes..... 45



---

Figure 70: Orica ditch sediment build-up .....	45
Figure 71: Orica ditch sump & drain culvert.....	46
Figure 72: Orica site trailer sediment build-up (2022) .....	47
Figure 73: Orica site trailer new location (2023).....	47
Figure 74: Orica site trailer former location (2023) .....	48
Figure 75: Some stockpiles with steep side slopes .....	48
Figure 76: Additional stockpiles with steep side slopes.....	49



## 1 BACKGROUND

In September, 2023, Allnorth Consultants Limited (Allnorth) was retained by Victoria Gold Corp. (VGC) to conduct a visual physical stability assessment of their Eagle Gold mining operation located in Mayo Mining District, Yukon, Canada in support of Quartz Mining License QML-0011. Spencer Bergin, P.Eng. of Allnorth conducted the inspection on September 13<sup>th</sup> through 15<sup>th</sup>. The inspection was limited to visual inspection and did not include any specific geotechnical or structural testing or evaluation. Visual inspection generally consisted of traversing the structures on foot, and viewing the structures in their entirety from accessible vantage points. Any issues that were discovered were investigated and documented with detailed notes and photographs. The Allnorth inspector was given complete freedom in determining what to look at, and was not restricted access to any locations within the site. Conditions on site were sunny and clear for inspections.

Allnorth previously completed similar inspections in September of 2018 - 2022. Some photos taken during these inspections were used for comparison. Some areas had no basis for comparison, as construction was underway during the previous inspection, and has since been completed. Any photos included from the previous inspections are noted.

The mining project was currently extracting, storing, processing, and refining ore at the time of inspection. Construction of all major infrastructure has been completed and development of successive phases of the Heap Leach Facility (HLF), open pit mine and waste rock area expansion continue. Historical records for survey data are limited to certain facilities at this time. As more survey data is collected and made available this can be used for stability monitoring and will likely become part of the physical stability assessment in the future.

## 2 SCOPE

This report outlines the findings of the physical stability assessment conducted from September 13<sup>th</sup> – 15<sup>th</sup> of 2023. This report documents the findings of the physical stability assessment and makes recommendations for remediation, additional inspection or monitoring of the issues identified. The following structures were included in the assessment:

- Lower Dublin South (Control) Pond and outfall,
- Secondary Stockpile (also known as 90 Day Stockpile),
- Heap Leach Facility,
- Heap Leach Overburden Stockpile,
- Open Pit,
- Platinum Gulch Dump,
- Eagle Pup Dump,
- Cut and fill slopes of the Primary, Secondary, and Tertiary Crushers including MSE walls,
- Cut and fill slopes of the Adsorption, Desorption and Recovery Plant,
- Event Pond,
- Emergency Pond,
- Ditches A, B, and C,
- Heavy Duty Truck Shop,
- Warehouse Pad,
- ADR Plant,
- Water Treatment Plant,
- Orica Laydown,

- Various un-named stockpiles.

The purpose of the inspection is to identify any visual indicators associated with instability of mass earth structures, including but not limited to tension cracking, bulging, pooled water above the slope or near the toe of the slope, falling material, indications of creep, slumps, deposits of debris, or cracking. Additionally, constructed slopes were reviewed for slope angles and compared against the recommend slope angles for known material types on site. Refer to **Appendix A** for a map showing the site plan for this and previous inspections (2023 – 2019 site plans presented in descending order).

### 3 LOWER DUBLIN SOUTH (CONTROL) POND

#### 3.1 Low Level Outlet Conveyance Channel

The low level outlet conveyance channel from the Lower Dublin South Pond (LDSP) is currently not in use, as water is being pumped direct from the LDSP to the Water Treatment Plant. Currently the channel is dry and unused (Figure 1).



Figure 1: LDSP – Low Level Outlet Conveyance Channel

#### 3.2 Cut slopes

1. Some saturated material and erosion was noted on the slope of the southwest corner of the Control Pond over the width of the narrow access road in 2019 and 2020 but this erosion was rectified with the completion of Ditch A between the 2020 and 2021 inspections. The area was showing signs of cracking as of the 2022 inspection (Figure 2) but appeared to be solid as of this years inspection (Figure 3).





**Figure 2: LDSP – Cracking on the Southwest slope 2022**



**Figure 3: LDSP – Cracking on the Southwest slope 2023**

2. There was some flow into Ditch A on the Southwest corner of the LDSP from a culvert crossing a former construction access road, which was observed in 2019 - 2022 (2022 erosion shown in Figure 4). The area appears unchanged as of this inspection (Figure 5).





**Figure 4: LDSP – Some flow from adjacent culvert 2022**



**Figure 5: LDSP – Some flow from adjacent culvert 2023**

3. There was an area above the North-East corner of the LDSP where erosion had worn a channel into the cut slope (Figure 6). Some material appeared to have been washed out over the liner and into the pond further downstream from the initial cut (Figure 7).



**Figure 6: Erosion above the LDSP**



**Figure 7: Material wash-out above the LDSP**

## **4 SECONDARY STOCKPILE**

### **4.1 Benches and Cut Slopes**

1. The Secondary Stockpile (also known as the 90 Day Stockpile) was completed in 2020. Some over-steepened cut slopes were observed during the 2021 inspection where the slopes had begun to slough/erode and material was collecting at the base of the slope, and this was also the case during the 2022 inspection (Figure 8). Since the previous inspection a ditch was cut behind the stockpile laydown area and partially lined with rock. The cut slopes above the ditch were over-steepened (Figure 9) and there were areas where material was sloughing out of the slope (Figure 10).





**Figure 8: Secondary Stockpile Cut Slopes 2022**



**Figure 9: Secondary Stockpile Cut Slopes 2023**





**Figure 10: Secondary Stockpile Cut Slopes 2023 – Surficial Slough**

## 4.2 Perimeter Interception Ditch

1. A perimeter interception ditch extends around the downhill toe of the Secondary Stockpile area. Issues noted in the 2020 inspection including over-steepened and sloughing slopes on the interception ditch appear to have since been addressed. The ditch appears in good condition as of this years inspection (Figure 11).



**Figure 11: Perimeter Ditching 2023**

2. The outlet of one side of the perimeter ditch does not currently tie into the collection sump, this was observed in 2020 as well. (Figure 12, Figure 13).



**Figure 12: Unconnected Ditch Section 2020**

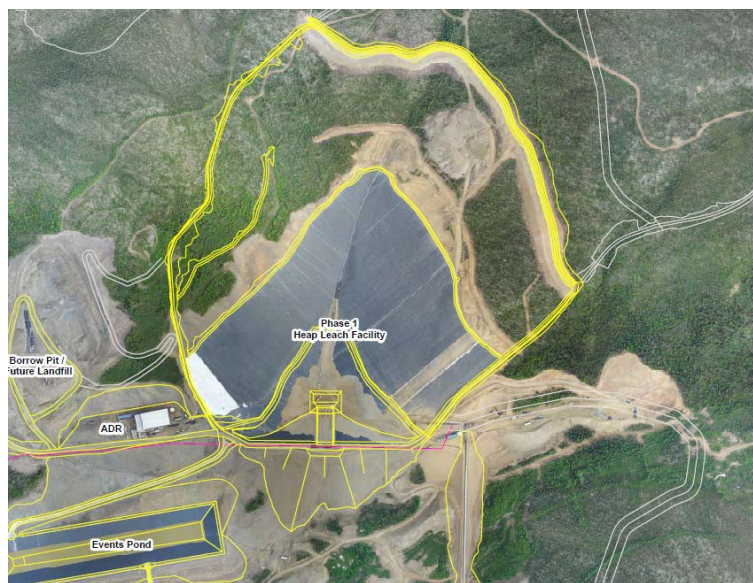


**Figure 13: Unconnected Ditch Section 2023**

## 5 HEAP LEACH FACILITY

### 5.1 HLF Overview

1. The Heap Leach Facility (HLF) is currently operational. In 2019 the Phase 1A expansion had been constructed as shown in Figure 14. By the time of the 2020 inspection the Phase 1B expansion was largely complete as shown in Figure 15. During the 2021 inspection land was being cleared and graded for the Phase 2 expansion as shown in Figure 16, and for the 2022 inspection liner was installed on part of the cleared area (Figure 17). The Phase 2 expansion was complete as of this years inspection (Figure 18).



**Figure 14: Heap Leach Facility Overview 2019**

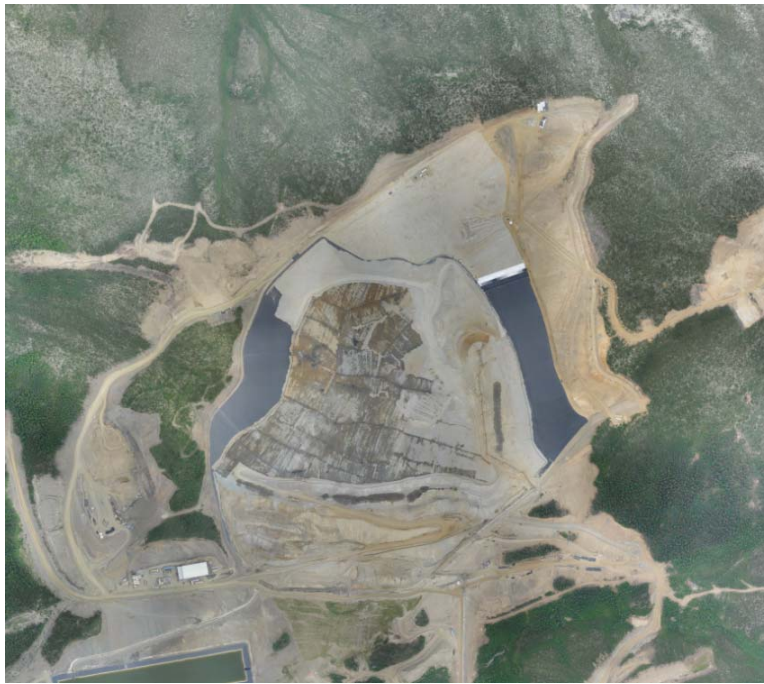




**Figure 15: Heap Leach Facility Overview 2020**



**Figure 16: Heap Leach Facility Overview 2021**



**Figure 17: Heap Leach Facility Overview 2022**



**Figure 18: Heap Leach Facility Overview 2023**



## 5.2 Toe Slope

1. Some rilling was noted along the toe slope below the HLF and above the un-named stockpile area and HLF Underdrain Monitoring Vault in the 2020 inspection (Figure 19). The slope has since been seeded and there appears to be less erosion of material off the toe slope as inspected in 2021 and 2022 (Figure 20). Some erosion was noted in the less seeded area of the toe slope adjacent to the event pond spillway (Figure 21).



**Figure 19: Rilling along toe slope of HLF (2020)**



**Figure 20: Seeded grass on toe slope of HLF (2022)**



**Figure 21: Seeded grass on toe slope of HLF (2023)**

### 5.3 HLF Interception Ditch

1. The HLF interception ditch was constructed before the 2023 inspection. The ditch appears to be in good condition (Figure 22).



**Figure 22: HLF Interception Ditch (2023)**

## 6 HEAP LEACH OVERBURDEN STOCKPILE

1. Overburden from clearing and grading of the HLF expansions has been placed along the North-West back slope of the HLF. Site representatives stated that the HLF overburden pile had



shifted and partially collapsed some time in the late summer of 2021, roughly 4 – 5 weeks prior to the 2021 inspection (Figure 23). Since the 2021 inspection the collapsed area has been re-sloped (Figure 24, Figure 25). Some minor cracking was noted on the re-sloped surface (Figure 26). The area had also been seeded with grass by helicopter and the grass was starting to sprout at the time of this inspection.



**Figure 23: HLF Overburden Stockpile collapse – plan view 2021**



**Figure 24: HLF Overburden Stockpile collapse – plan view 2022**





**Figure 25: HLF Overburden Stockpile collapse – aerial view 2023**



**Figure 26: HLF Overburden Stockpile collapse – slope cracking 2023**

## 7 OPEN PIT

1. The pit walls appear stable, and largely constructed in competent rock (Figure 27). There are some areas where localized sloughing and rockfall had occurred (Figure 28).



**Figure 27: Open Pit Walls**



**Figure 28: Material Failure on Pit Walls**

2. There is a section between the open pit and the eagle pup dump where run-off had eroded a cut into the slope above the primary crusher access road prior to the 2022 inspection (Figure 29). The cut is still present but appears to have partially collapsed in on itself (Figure 30).





**Figure 29: Open Pit Erosion – Aerial View 2022**



**Figure 30: Open Pit Erosion – Aerial View 2023**

## **8 PLATINUM GULCH DUMP**

1. Waste rock deposition in the Platinum Gulch Dump is considered complete, and the side slopes generally appear to be stable. See Figure 31 and Figure 32 below.



**Figure 31: Platinum Gulch Dump (Base)**



**Figure 32: Platinum Gulch Dump (Aerial View)**

2. Some sections of pooling water and cracking were noted on the first level of the dump in 2022 (Figure 33, Figure 34). In the spring of 2023 this area experienced surficial erosion of finer grained material from the crest of the bench (Figure 35, photo provided by site, photo dated May 20<sup>th</sup> 2023) but the affected area was repaired by the time of this inspection (Figure 31, Figure 32)





**Figure 33: Platinum Gulch Dump Water Pooling (2022)**



**Figure 34: Platinum Gulch Dump Cracking (2022)**



**Figure 35: Platinum Gulch Dump Erosion Event (Spring 2023)**

## 9 EAGLE PUP DUMP

1. The Eagle Pup Dump was under construction during the 2021 inspection, with drain rock being placed at the base of the slope. Aerial photos of the dump from 2022 and 2023 can be seen in Figure 36 and Figure 37.



**Figure 36: Eagle Pup Dump 2022 (Aerial View)**





**Figure 37: Eagle Pup Dump 2023 (Aerial View)**

2. Construction of the rock drain at the base of the Eagle Pup Dump continued at the time of this inspection. Ultimately, the drain will connect to Ditch B via an existing culvert that is present within the fill slope of the overland conveyor (the culvert mouth location is flagged in Figure 38). Flows currently passing through the rock drain follow the exiting topography to Ditch B.



**Figure 38: Eagle Pup Dump Rock Drain**

## 10 PRIMARY CRUSHER

### 10.1 MSE Walls

1. No apparent damage or deterioration was noted during the inspection of the Primary Crusher MSE wall (Figure 39, Figure 40). No changes were visually identified from the 2022 inspection.



**Figure 39: Primary Crusher North-West Wall**



**Figure 40: Primary Crusher South-East Wall**

## 10.2 Cut and Fill slopes

1. Cut and fill slopes appear to be acceptable, no stability or erosion issues noted. (Figure 41).





**Figure 41: North-West fill slopes**

## **11 SECONDARY/TERTIARY CRUSHER**

### **11.1 MSE Wall**

1. No apparent damage or deterioration was noted during the inspection of the Secondary/Tertiary Crusher MSE wall (Figure 42). No changes were visually identified from the 2022 inspection.



**Figure 42: South side of MSE wall**

## 11.2 Cut Slopes

1. There has been an accumulation of fine sediment on the South slope above the MSE wall, likely from dust coming off the crusher transfer conveyor. Photos taken during the 2021 inspection (Figure 43) show a relatively clear slope, photos taken during the 2022 inspection show the silt build-up since the previous inspection (Figure 44), and the build-up was still present as of this years inspection (Figure 45).



**Figure 43: Cut slopes above Secondary/Tertiary Crusher 2021**





**Figure 44: Cut slopes above Secondary/Tertiary Crusher 2022**



**Figure 45: Cut slopes above Secondary/Tertiary Crusher 2023**

## **12 ADSORPTION, DESORPTION, AND RECOVERY PLANT (ADR)**

### **12.1 Cut and Fill Slopes**

1. Cut slopes behind the ADR area appear to be competent rock, with some minor rilling and unraveling (Figure 46)



**Figure 46: Slopes behind ADR (2023)**

## 12.2 North Toe Ditch

1. There is a small V ditch, referred to here as the North Toe Ditch (Figure 47), with sides close to 1:1 cut at the base of a large steep slope which is cut into bedrock; the ditch is not armored and contains loose gravel and fines, although there are no apparent scouring issues. There is also a culvert which has been installed along the ditch alignment.



**Figure 47: Typical North Toe Ditch cross section**



## 13 EVENT POND

### 13.1 Cut/Fill Slopes

1. The event pond was constructed between the 2018 and 2019 inspections, with hillslope unraveling noted in the 2019 inspection.



**Figure 48: Overall view of event pond**

2. Rill erosion channels on the cut slopes above the event pond and the heap leach spillway were present in the previous inspection and noted in this inspection as shown in Figure 49 and Figure 50.



**Figure 49: Rill erosion above HLF spillway (2022)**



**Figure 50: Rill erosion above HLF spillway (2023)**

## 13.2 Pooling Water

1. Pooling water appeared to be forming above the North-East corner of the Event Pond at the time of this inspection (Figure 51). Pooling water had also been noted in this location on the 2022, 2021, and 2020 inspections (Figure 52, Figure 53, Figure 54).

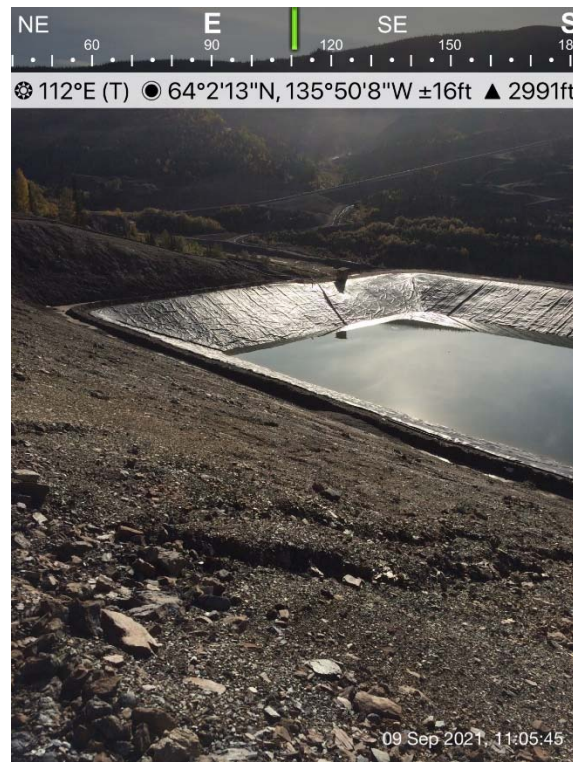


**Figure 51: Pooling water above Event Pond 2023**





**Figure 52: Pooling water above Event Pond 2022**



**Figure 53: Pooling water above Event Pond 2021**



**Figure 54: Pooling water above Event Pond 2020**

### 13.3 Heap Leach Spillway

1. As noted in Section 13.1 rilling was observed upslope and downslope of the heap leach spillway, with material being deposited within the spillway. There is also damage to the spillway liner in sections; site representative reported that this was from an excavator clearing the spillway of snow during winter operations. This was noted in the 2021 inspection (Figure 55). At the time of this inspection most of the damage had been repaired (Figure 56).



**Figure 55: Heap leach spillway damage (2021)**





**Figure 56: Heap leach spillway repairs (2023)**

## 13.4 Events Pond Emergency Spillway

1. Crushed material was observed in the emergency spillway to provide equipment access to the South-East corner of the pond as there is no other easy equipment access to that area of the pond and crush needed to be placed to prevent damage to the spillway liner (Figure 57).



**Figure 57: Events Pond Emergency spillway crush blockage**

## 14 EMERGENCY POND

1. Between the 2021 and 2022 inspections an emergency pond was excavated to the East of the LDSP. At the time of this inspection the earthworks were mostly complete, however per the client there are no immediate plans to complete the structure (Figure 58, Figure 59).



**Figure 58: Emergency Pond**



**Figure 59: Emergency Pond Slope Erosion**



## 15 DITCH A

1. Ditch A carries flow from the Platinum Gulch Dump down to the Control Pond (Figure 60). The ditch was completed at the time of the 2021 inspection.



**Figure 60: Ditch A (Base of Platinum Gulch Dump)**

2. A culvert for a road crossing near the new Truck shop was observed to be almost completely buried. The secondary culvert was also partially submerged in material (Figure 61). This issue was also noted in the 2022 inspection (Figure 62).





**Figure 61: Ditch A culvert blocked (2023)**



**Figure 62: Ditch A culvert blocked (2022)**

## 16 DITCH B

1. Ditch B was completed by the time of the 2021 inspection. Erosion was observed to have created a channel next to Ditch B near the outlet into the LDSP (Figure 63).



**Figure 63: Ditch B Erosion (view towards LDSP)**

## 17 DITCH C

1. Diversion Ditch C begins at the 1500mm outlet culvert for the Control Pond and terminates in Haggart Creek. This ditch acts as both an emergency spillway if the Control Pond is filled over capacity. At this point Ditch C is not in use as water from the LDSP is being pumped direct to the Water Treatment Plant (Figure 64).





**Figure 64: Ditch C with WTP Pipeline**

## 18 HEAVY DUTY TRUCK SHOP

1. The heavy duty truck shop was under construction during the 2021 inspection and completed prior to the 2022 inspection. Some minor rilling was present on the cut slope behind the truck shop (Figure 65).



**Figure 65: Truck Shop cut slopes**

2. There is a section of over-steepened cut slope near the North-West corner of the truck shop pad. Material can be seen collecting at the base of the over steepened slope (Figure 66).





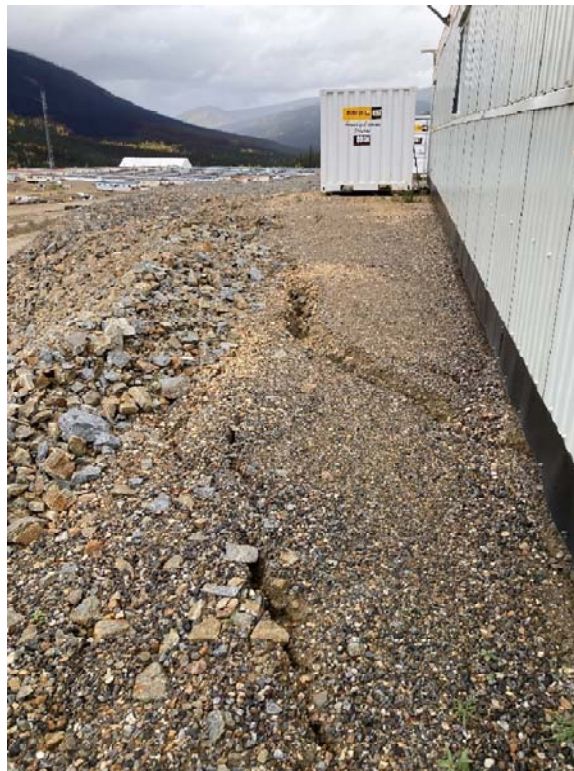
**Figure 66: Over Steepened Slope – Truck Shop**

## **19 WAREHOUSE PAD**

1. The warehouse pad is located South of the camp and mine admin areas. Cracking was observed at the crest of the slope off the warehouse pad during the 2022 inspection (Figure 67) and during this inspection (Figure 68).



**Figure 67: Cracking – Warehouse Pad (2022)**



**Figure 68: Cracking – Warehouse Pad (2023)**

## 20 WATER TREATMENT PLANT

1. A water treatment plant was under construction during the 2022 inspection and has since been completed adjacent to Ditch C. Slopes surrounding the water treatment plant pad appear stable (Figure 69).



**Figure 69: Water Treatment Plant Slopes**

## 21 ORICA LAYDOWN

1. An unlined, unarmored ditch from the portable structures of the laydown has pools of sediment (Figure 70) but the overall grade of the ditch continues to flow to the sump (Figure 71) uninterrupted.



**Figure 70: Orica ditch sediment build-up**





**Figure 71: Orica ditch sump & drain culvert**

2. Between the 2021 and 2022 inspections sediment and material accumulated behind the Orica site trailer from the cut slope behind it (Figure 72). The trailer has since been moved South to a new location where it does not back against a cut slope (Figure 73). The area where the trailer formerly sat has been re-graded (Figure 74).



**Figure 72: Orica site trailer sediment build-up (2022)**



**Figure 73: Orica site trailer new location (2023)**



**Figure 74: Orica site trailer former location (2023)**

## 22 UN-NAMED STOCKPILE AREA

1. Several un-named overburden stockpiles have been placed to the south of the HLF and Event Pond. Some of the stockpiles have over-steepened sides (Figure 75, Figure 76), but there is little risk to other infrastructure. The area is currently mostly un-used.



**Figure 75: Some stockpiles with steep side slopes**





**Figure 76: Additional stockpiles with steep side slopes**

## 23 RECOMMENDATIONS

### 23.1 General

1. VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends if they are not qualified themselves.
  - a. Note, VGC has instituted monitoring programs since the 2021 inspection including regular scanning and review of data on the MSE walls, open pit, and the two rock dumps. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
2. VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.
3. Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.



4. VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
  - a. Note, VGC has instituted monitoring programs since the 2021 inspection including regular scanning and review of data on the MSE walls, open pit, and the two rock dumps. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
5. For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc) VGC should still cordon off the area above and/or below the over-steepened slope depending on what would be accessible to site staff.
6. VGC should consider a ditch and culvert monitoring program to ensure ditches and culverts are cleared of sediment build-up before full blockage occurs. Culvert installation should include a flag/post at either end of the culverts to help identify culvert locations in case material build-up obscures culvert locations.
7. VGC should consider a program to ensure all water discharge on site is controlled and routed into ditches or other appropriate receptacles to prevent erosion and collapse of saturated materials.

## **23.2 LDSP (Control Pond)**

1. Monitor cut slopes above Ditch A for further erosion, sloughing and cracking.

## **23.3 Secondary Stockpile**

1. Monitor over-steepened slopes, cordon off if accessible by site staff.
2. Tie the perimeter ditch into the collection sump.

## **23.4 Heap Leach Facility (HLF)**

1. Continue to monitor the toe slope below the HLF for rill erosion.
2. Check HLF Interception Ditch and monitor sediment collection. Clear sediment collection at culverts.

## **23.5 Heap Leach Overburden Stockpile**

1. Continue to monitor pile for further movement.

## **23.6 Open Pit**

1. Monitor for erosion, ensure water discharge in pit area is controlled.



### **23.7 Platinum Gulch Dump**

1. Monitor first bench for signs of instability following the erosional event and subsequent repair.

### **23.8 Eagle Pup Dump**

1. No specific recommendations at this time.

### **23.9 Primary Crusher and MSE Wall**

1. Continue to develop the monitoring program currently in place for the MSE walls.
  - a. Note, VGC has instituted a monitoring program since the 2022 inspection (evidence conveyed from site via email) including regular prism scanning and review of data on the MSE walls. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.

### **23.10 Secondary/Tertiary Crusher and MSE Wall**

1. Continue to develop the monitoring program currently in place for the MSE walls.
  - a. Note, VGC has instituted a monitoring program since the 2022 inspection (evidence conveyed from site via email) including regular prism scanning and review of data on the MSE walls. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
2. Monitor sediment build-up above the MSE wall.

### **23.11 ADR**

1. No specific recommendations at this time.

### **23.12 Event Pond**

1. Monitor minor erosion of cut slopes and maintain as required.
2. Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).
3. Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.

### **23.13 Emergency Pond**

1. No specific recommendations at this time.

### **23.14 Ditch A**

1. Clear sediment build-up from culvert at the road crossing near the Truck Shop. Monitor culverts for further sediment build-up.





### **23.15 Ditch B**

1. Monitor erosion adjacent to Ditch B near LDSP outflow.

### **23.16 Ditch C**

1. No specific recommendations at this time.

### **23.17 Heavy Duty Truck Shop**

1. Monitor cut slopes for rilling and erosion.
2. Monitor over-steepened slopes near the Truck Shop.

### **23.18 Warehouse Pad**

1. Monitor cracking behind the warehouse pad. Come up with a solution to re-work slope below warehouse pad to eliminate cracking issue.

### **23.19 Water Treatment Plant**

1. No specific recommendations at this time.

### **23.20 Orica Laydown**

1. Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.

### **23.21 Un-Named Stockpile Area**

1. Flag over-steepened slopes in area to protect site staff. Consider dismantling over-steepened slopes depending on proximity to roadways, areas frequented by site staff.

## **24 CONCLUSION**

The structures reviewed in this inspection generally show little evidence of movement or risk indicators. Where risk of movement was identified, the risk is typically low and the consequence of a small instability is managed by minimizing exposure to workers, infrastructure or high value natural resources. Slopes reviewed meet the recommendations for slope angles in most locations.

VGC representatives have noted that they have surveys and monitoring programs for infrastructure where a risk of failure would have significant consequences (i.e. the Open Pit, Platinum Gulch Dump, HLF) but review of that survey data was not included as a part of this inspection. Comparisons to inspection reports from previous years have been noted where relevant.

There are some minor erosional and stability concerns within the project, that can be addressed with some minor planning and maintenance as mining operations continue in order to moderate or eliminate the associated risks.



We trust this report satisfies your requirements at this time and thank you for the opportunity to work with you on the project. If you have questions or concerns do not hesitate to contact our office.

Yours truly,

**ALLNORTH CONSULTANTS LIMITED**

Prepared By:

Spencer Bergin, P. Eng.


Reviewed By:

Don Williams, P. Eng.  
Vice President Operations

Copyright © Allnorth Consultants Limited, all rights reserved. The information contained in this document is the exclusive property of Allnorth Consultants Limited (Allnorth) and shall not be reproduced, or disclosed or communicated to any unauthorized person, or used in any other unauthorized way whatsoever without the express written permission of Allnorth. This report has been prepared by Allnorth exclusively for our client and reflects our judgment based on the information available at the time that it was prepared. Any use of the report by third parties, or any reliance on or decisions made based on it, are the responsibility of such third parties. Allnorth does not accept responsibility for any damages suffered by any third party as a result of their reliance on or use of this report.

Any opinions of probable cost provided in the report are based on Allnorth's experience and information available to Allnorth at the time such estimates are made. Client acknowledges that due to assumptions that must be made, Allnorth shall not be liable for the accuracy of such estimates.

PERMIT TO PRACTICE  
ALLNORTH CONSULTANTS LIMITED

Signature 

Date Nov. 20, 2023

PERMIT NUMBER PP 123  
Association of Professional  
Engineers of Yukon

## **Appendix A Site Plans (2023 – 2019)**



# Eagle Gold Site Plan - 2023





# Eagle Gold Site Plan - 2022

Heap Leach Facility (Phase 2)

HLF Over-Burden Slough

ADR Plant

Heap Leach Facility (Phase 1)

Un-named Stockpile Area

Event Pond

Emergency Pond

LDSP (Control) Pond

Water Treatment Plant

Eagle Pup Dump

Ditch C

Ditch B

Secondary Stockpile

Heavy Duty Truck Shop

Secondary/Tertiary Crushers

Warehouse Pad

Primary Crusher

Open Pit

Ditch A

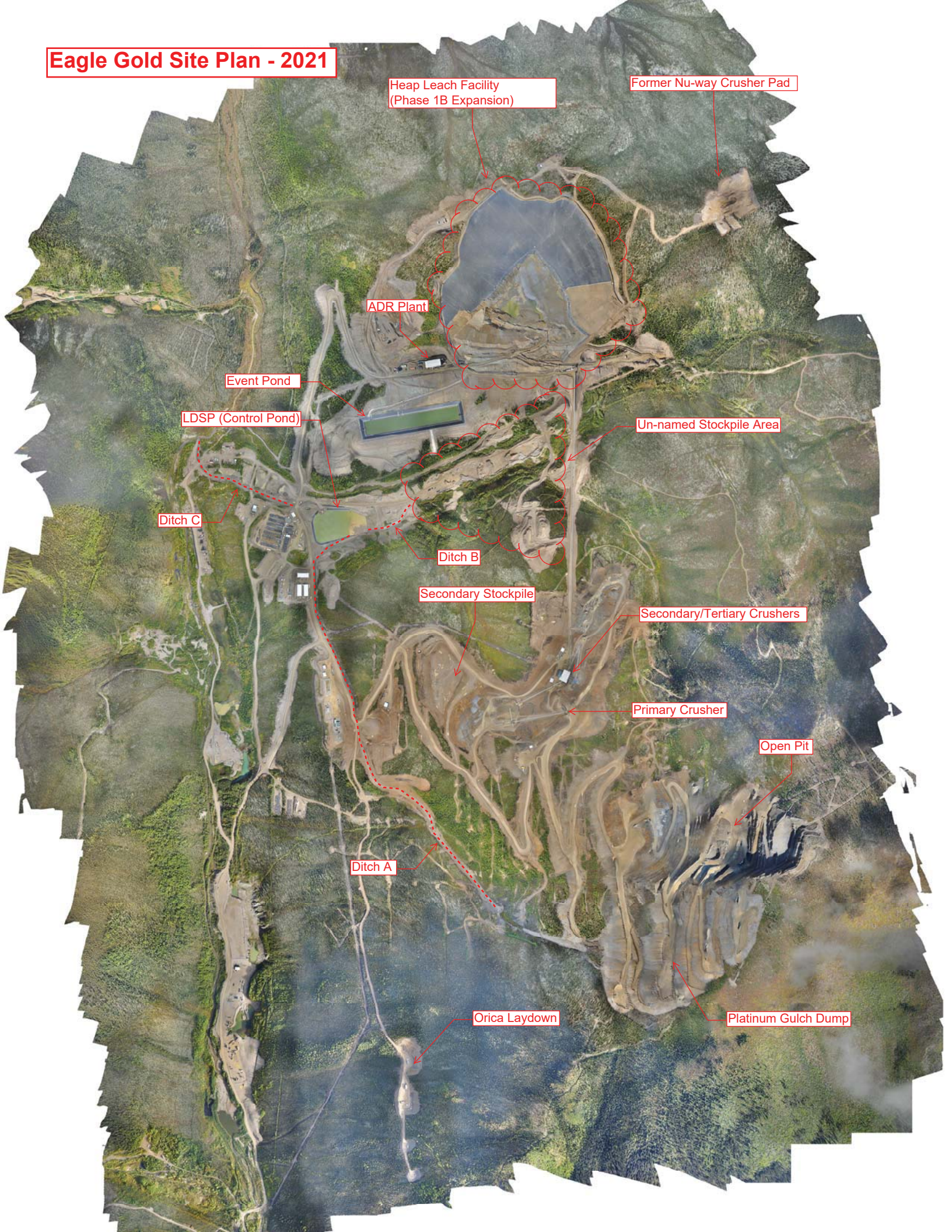
Platinum Gulch Dump

Orica Laydown





# Eagle Gold Site Plan - 2021



Heap Leach Facility  
(Phase 1B Expansion)

Former Nu-way Crusher Pad

ADR Plant

Event Pond

LDSP (Control Pond)

Ditch C

Ditch B

Secondary Stockpile

Un-named Stockpile Area

Secondary/Tertiary Crushers

Primary Crusher

Open Pit

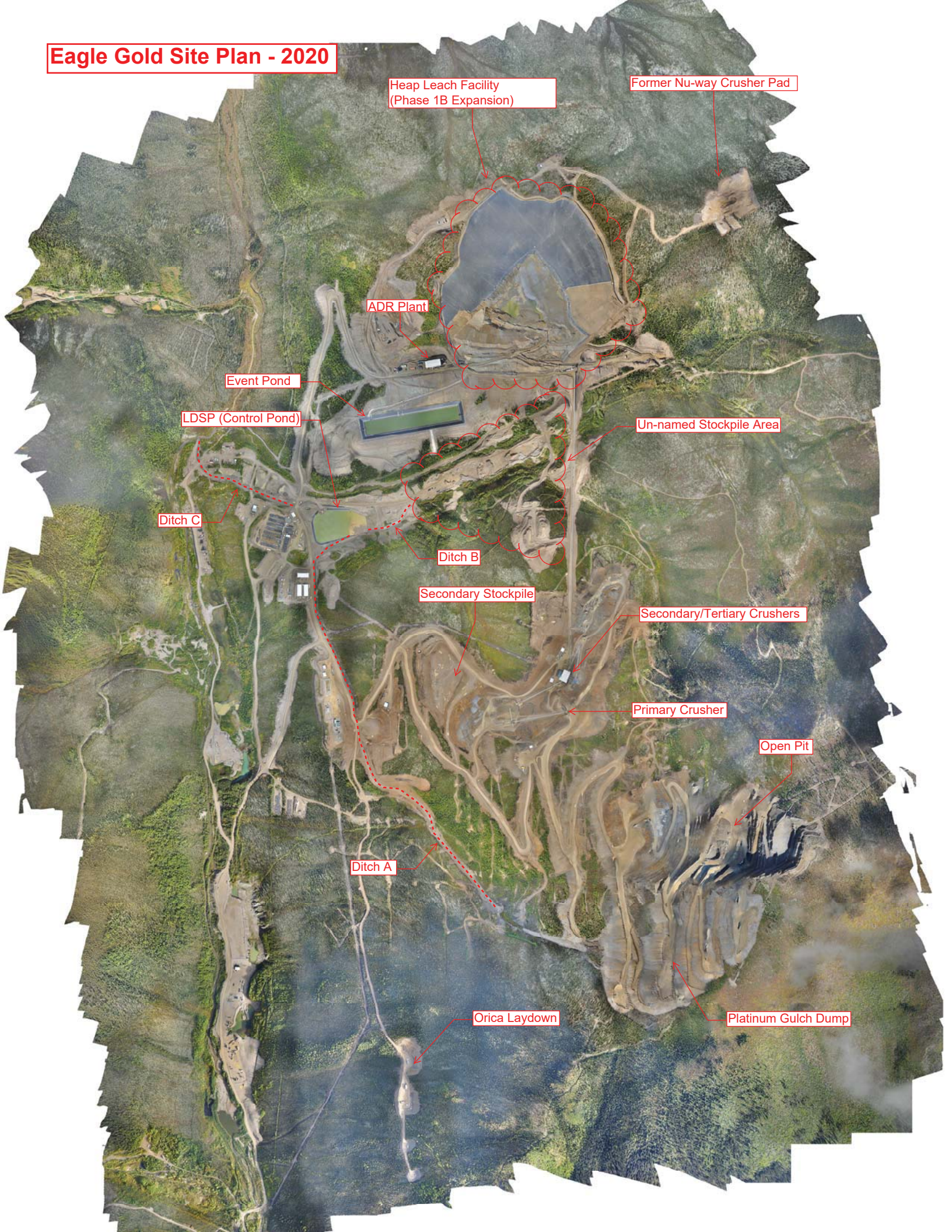
Ditch A

Orica Laydown

Platinum Gulch Dump



# Eagle Gold Site Plan - 2020



Heap Leach Facility  
(Phase 1B Expansion)

Former Nu-way Crusher Pad

ADR Plant

Event Pond

LDSP (Control Pond)

Ditch C

Ditch B

Secondary Stockpile

Secondary/Tertiary Crushers

Primary Crusher

Open Pit

Ditch A

Orica Laydown

Platinum Gulch Dump

Un-named Stockpile Area



# Eagle Gold Site Plan - 2019

