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Allnorth Information			
Project #:	2202179	VICTORIA GOLD CORP.	
Document #:	221207	Client Project #:	
Document Rev. #:	1	Client Document #:	
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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
Α	IFR	22/10/06	SBB	DW	DW	Issued for Review
0	IFA	22/11/01	SBB	DW	DW	Issued for Approval
1	IAF	22/12/07	SBB	DW	DW	Issued as Final

Status:

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

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1 BACKGROUND

In September, 2022, 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, EIT of Allnorth conducted the inspection on September 13th through 15th. 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 2021, 2020, 2019, and 2018. 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 13th – 15th of 2022. 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 in bedrock. 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 the 2022 inspection. A site plan for the 2021, 2020, and 2019 inspections are available in **Appendixes B, C,** and **D** for comparison. A site plan for the 2018 inspection was not available.

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 end of Ditch C when water levels are high enough to warrant it. Once the Water Treatment Plant is operational flows may be diverted there instead. 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 (Figure 2,) but this erosion was rectified with the completion of Ditch A between the 2020 and 2021 inspections (Figure 3). The area is showing signs of cracking as of the 2022 inspection (Figure 4).



Figure 2: LDSP – Erosion on the Southwest slope 2020

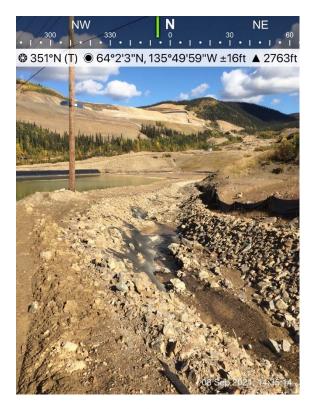


Figure 3: LDSP – Erosion rectified on the Southwest slope 2021



Figure 4: LDSP - Cracking on the Southwest slope 2022

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, 2020 and 2021 (Figure 5, Figure 6, Figure 7) and still present as of this inspection (Figure 8). Liner was installed under the culvert outlet at the time of this inspection to alleviate erosion (Figure 8).



Figure 5: LDSP - Some flow from adjacent culvert 2019



Figure 6: LDSP – Some flow from adjacent culvert 2020

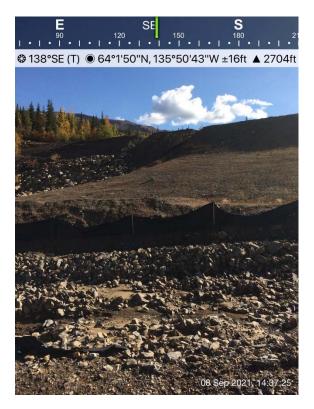


Figure 7: LDSP – Some flow from adjacent culvert 2021



Figure 8: LDSP – Some flow from adjacent culvert 2022

4 SECONDARY STOCKPILE

4.1 Benches and Cut Slopes

1. The Secondary Stockpile (also known as the 90 Day Stockpile) was completed in 2020 (Figure 9). Some over-steepened cut slopes were observed during the 2021 inspection where the slopes had begun to collapse/erode and material was collecting at the base of the slope (Figure 10). This was also the case during this years inspection (Figure 11).



Figure 9: Secondary Stockpile Cut Slopes 2020



Figure 10: Secondary Stockpile Cut Slopes 2021



Figure 11: Secondary Stockpile Cut Slopes 2022

4.2 Perimeter Interception Ditch

1. A perimeter interception ditch extends around the downhill toe of the Secondary Stockpile area. The construction of this ditch was not complete in 2020 but has since had rock armoring installed (Figure 12, Figure 13). 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 14).



Figure 12: Perimeter Ditching 2020



Figure 13: Perimeter Ditching 2021



Figure 14: Perimeter Ditching 2022

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 15, Figure 16, Figure 17).



Figure 15: Unconnected Ditch Section 2020



Figure 16: Unconnected Ditch Section 2021



Figure 17: Unconnected Ditch Section 2022

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 18. By the time of the 2020 inspection the Phase 1B expansion was largely complete as shown in Figure 19. During the 2021 inspection land was being cleared and graded for the Phase 2 expansion as shown in Figure 20, and for the 2022 inspection liner was installed on part of the cleared area (Figure 21).



Figure 18: Heap Leach Facility Overview 2019



Figure 19: Heap Leach Facility Overview 2020



Figure 20: Heap Leach Facility Overview 2021



Figure 21: Heap Leach Facility Overview 2022

5.2 Toe Slope

Some scouring and rilling was noted along the toe slope below the HLF and above the unnamed stockpile area and HLF Underdrain Monitoring Vault in the 2020 inspection (Figure 22).
 The slope has since been seeded and there appears to be less scouring of material off the toe slope as inspected in 2021 (Figure 23) and 2022 (Figure 24).



Figure 22: Scouring and rilling along toe slope of HLF (2020)



Figure 23: Seeded grass on toe slope of HLF (2021)



Figure 24: Seeded grass on toe slope of HLF (2022)

5.3 HLF Interception Ditch

1. The HLF interception ditch was constructed before the 2022 inspection. The interception ditch has collected silt/material in some sections, almost blocking culverts in some areas (Figure 25).



Figure 25: Material deposited in HLF Interception Ditch (2022)

5.4 Phase 2 Grade Clearing

1. The Phase 2 of the HLF was mostly cleared at the time of inspection with grading nearly finished as well (Figure 26). No issues noted for the cleared area.



Figure 26: Phase 2 graded area

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 27). Since the 2021 inspection the collapsed area has been resloped (Figure 28). Some minor cracking was noted on the re-sloped surface (Figure 29). The area had also been seeded with grass by helicopter and the grass was starting to sprout at the time of this inspection.



Figure 27: HLF Overburden Stockpile collapse - plan view 2021



Figure 28: HLF Overburden Stockpile collapse – plan view 2022



Figure 29: HLF Overburden Stockpile collapse – slope cracking 2022

2. Sumps have been constructed downslope from the overburden collapse to collect silt run-off from the collapse (Figure 30). The sumps are holding water and appear soundly constructed (Figure 31)

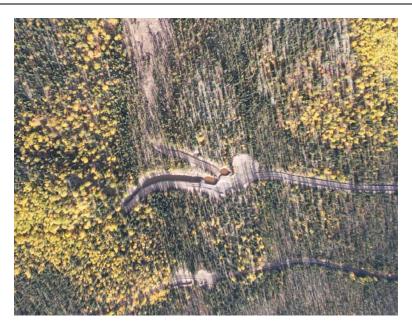


Figure 30: HLF Overburden sump system 2022



Figure 31: HLF Overburden sump system 2022

7 OPEN PIT

1. The pit walls appear stable, and largely constructed in competent rock (Figure 32). There are some areas with erosion visible from an aerial drone (Figure 33).



Figure 32: Open Pit Walls



Figure 33: Erosion on Pit Walls

2. There is a section at the base of the pit where water collects and is unable to drain, resulting in pooled water (Figure 34).



Figure 34: Phase 1 Pit pooled water

3. There is a section between the open pit and the eagle pup dump where run-off has eroded a cut into the slope above the primary crusher access road (Figure 35, Figure 36).



Figure 35: Open Pit Erosion – Aerial View



Figure 36: Open Pit Erosion – From Base

8 PLATINUM GULCH DUMP

1. Platinum Gulch Dump is currently operational, and the side slopes generally appear to be stable. See Figure 37 and Figure 38 below.



Figure 37: Platinum Gulch Dump (Base)



Figure 38: Platinum Gulch Dump (Aerial View)

2. Some sections of pooling water and cracking were noted on the first level of the dump (Figure 39, Figure 40).



Figure 39: Platinum Gulch Dump Water Pooling



Figure 40: Platinum Gulch Dump Cracking

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 as shown in Figure 41. The rock drain has since been completed and the dump is in use. Some areas of water pooling can be seen in Figure 42.

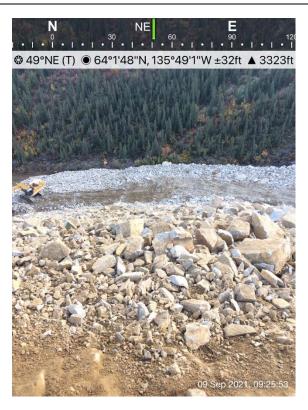


Figure 41: Eagle Pup Dump drain rock 2021



Figure 42: Eagle Pup Dump (Aerial View)

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 43 - Figure 45). No changes were visually identified from the 2021 inspection.



Figure 43: Primary Crusher MSE Walls



Figure 44: Primary Crusher North-West Wall



Figure 45: 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 46).



Figure 46: North-West fill slopes

11 SECONDARY/TERTIARY CRUSHER

11.1 MSE Wall

 No apparent damage or deterioration was noted during the inspection of the Secondary/Tertiary Crusher MSE wall (Figure 47, Figure 48). No changes were visually identified from the 2021 inspection.

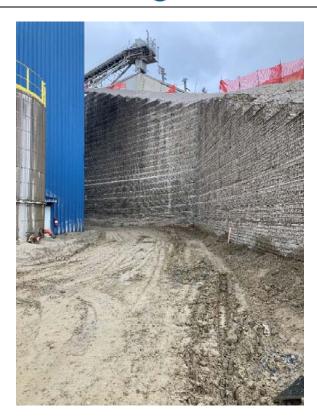


Figure 47: South side of MSE wall

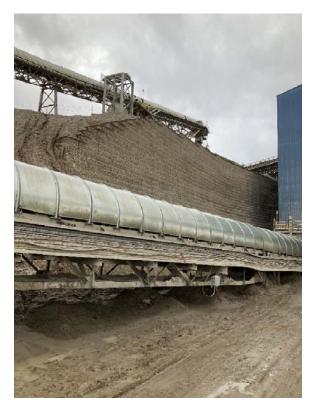


Figure 48: North side of MSE wall

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 49) show a relatively clear slope, photos taken during the 2022 inspection show the silt build-up since the previous inspection (Figure 50, Figure 51).



Figure 49: Cut slopes above Secondary/Tertiary Crusher 2021



Figure 50: Cut slopes above Secondary/Tertiary Crusher 2022



Figure 51: Cut slopes above Secondary/Tertiary Crusher 2022

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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 52)



Figure 52: Slopes behind ADR (2022)

12.2 North Toe Ditch

1. There is a small V ditch, referred to here as the North Toe Ditch (Figure 53), 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.

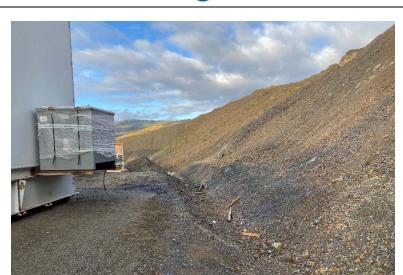


Figure 53: Typical North Toe Ditch cross section

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 54: Overall view of event pond

2. Rill erosion and scour channels on the cut slopes above the event pond and the heap leach spillway were noted in this inspection as shown in Figure 55.





Figure 55: Rill erosion above HLF spillway

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 56). Pooling water had also been noted in this location on the 2021 and 2020 inspections (Figure 57, Figure 58).



Figure 56: Pooling water above Event Pond 2022

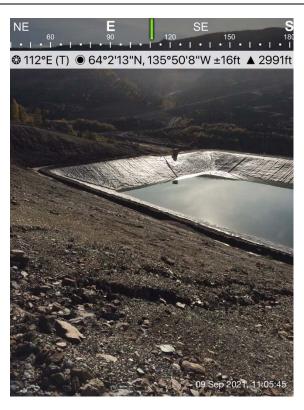


Figure 57: Pooling water above Event Pond 2021

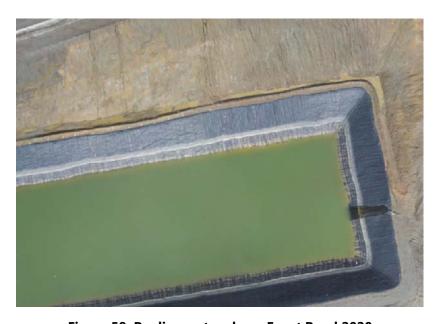


Figure 58: Pooling water above Event Pond 2020

13.3 Heap Leach Spillway

1. As noted in Section 13.1 scouring 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 59). At

the time of this inspection some of the damage had been repaired (Figure 60) but there were still damaged sections that had not been repaired (Figure 61).



Figure 59: Heap leach spillway damage (2021)



Figure 60: Heap leach spillway repairs (2022)

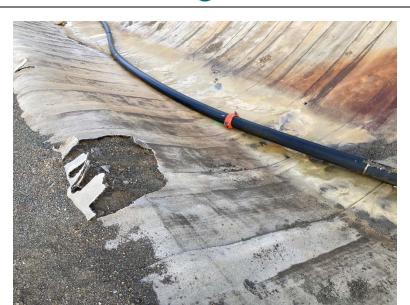


Figure 61: Heap leach spillway damage (2022)

13.4 Events Pond Emergency Spillway

1. The emergency spillway has been temporarily blocked by crushed material by site 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 62).



Figure 62: Events Pond Emergency spillway crush blockage

14 EMERGENCY POND

1. Between the 2021 and 2022 inspections an emergency pond was partially constructed to the East of the LDSP. At the time of this inspection the earthworks were mostly complete, lining had not been installed (Figure 63, Figure 64).



Figure 63: Emergency Pond (Aerial view)



Figure 64: Emergency Pond

15 DITCH A

1. Ditch A carries flow from the Platinum Gulch Dump down to the Control Pond (Figure 65). The ditch was completed at the time of the 2021 inspection.



Figure 65: 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 (Figure 66). The secondary culvert was also partially submerged in material.



Figure 66: Ditch A culvert blocked

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 67).



Figure 67: 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 or a conveyance channel for water released from the control pond through the low level outlet. At this point Ditch C is not in use as water from the LDSP is being pumped direct to the outlet of Ditch C at Haggart Creek when LDSP water levels are high enough (Figure 68, Figure 69). Once the Water Treatment Plant is operational this water will be diverted for treatment before discharge.

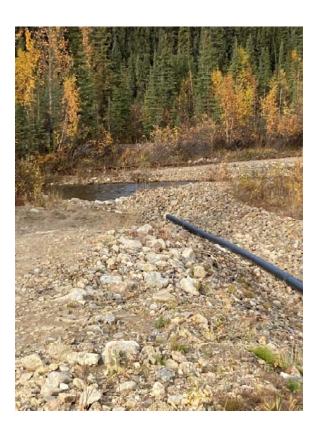


Figure 68: Ditch C Outlet (LDSP Pipeline Discharge)



Figure 69: LDSP Pumping Station

18 HEAVY DUTY TRUCK SHOP

1. The heavy duty truck shop was under construction during the 2021 inspection and completed at the time of this inspection. Some minor rilling was present on the cut slope behind the truck shop (Figure 70).



Figure 70: Truck Shop cut slopes

2. A drain ditch had been cut around the base of the cut slope (Figure 71) but it does not tie into any other ditching, as it is blocked with material (Figure 72).



Figure 71: Truck Shop Drain Ditch



Figure 72: Truck Shop Drain Ditch Blockage

3. 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 73).



Figure 73: 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 as shown in Figure 74 and Figure 75.



Figure 74: Cracking – Warehouse Pad



Figure 75: Cracking – Warehouse Pad

20 WATER TREATMENT PLANT

1. A water treatment plant was under construction at the time of this inspection, adjacent to Ditch C. Slopes surrounding the water treatment plant pad appear stable (Figure 76).



Figure 76: Water Treatment Plant Slopes

21 ORICA LAYDOWN

1. An unlined, unarmored ditch from the portable structures of the laydown has pools of sediment (Figure 77) but the overall grade of the ditch continues to flow to the sump (Figure 78) uninterrupted.



Figure 77: Orica ditch sediment build-up



Figure 78: Orica ditch sump & drain culvert

2. Since the previous inspection sediment and material has accumulated behind the Orica site trailer from the cut slope behind it.



Figure 79: Orica site trailer sediment build-up

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 80, Figure 81), but there is little risk to other infrastructure. The area is currently mostly un-used.



Figure 80: Some stockpiles with steep side slopes



Figure 81: Additional stockpiles with steep side slopes

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23 RECOMMENDATIONS

23.1 General

- 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.

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 pooled water at base of pit, remove water via trash pump or other solution as needed.

23.7 Platinum Gulch Dump

1. Monitor pooled water and cracking on first bench.

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.
- 4. Repair excavator damage to HLF spillway liner.

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. Connect drain ditch to other main ditches on site (currently does not connect to anything).
- 3. 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

- Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.
- 2. Consider re-sloping area behind Orica site trailer to prevent further sediment build-up, remove existing build-up.



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,

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PERMIT TO PRACTICE Signature 2022-12-07 Date **PERMIT NUMBER PP 123** Association of Professional

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2022-12-07

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