



Photograph B2-1 Saddle Dam 1

Date: September 13, 2017 **Photo Number**: 566

<u>Description</u>: From the south abutment (Sta. 0+350) looking north at the downstream face. Notice the sea-can container where a sump is installed.



Photograph B2-2 Saddle Dam 1

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 567

<u>Description</u>: From Sta. 0+150 looking south at the downstream face. Notice the sea-can container where a sump is installed.







Photograph B2-3 Saddle Dam 1

Date: September 13, 2017 **Photo Number**: 563

<u>Description</u>: From approximately Sta. 0+225, looking north at the crest.



Photograph B2-4 Saddle Dam 1

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 564

<u>Description</u>: From approximately Sta. 0+225, looking south at the crest.







Photograph B2-5 Saddle Dam 1

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 560

<u>Description</u>: From approximately Sta. 0+055, looking south at the crest and upstream slope.



Photograph B2-6 Saddle Dam 1

Date: September 13, 2017 **Photo Number**: 562

<u>Description</u>: From approximately Sta. 0+195 upstream, looking south at the upstream slope. Adequate tailings beach against SD1. A small pond of water is present at the surface of the tailings and is not a concern.







Photograph B2-7 Saddle Dam 1

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 561

<u>Description</u>: From approximately Sta. 0+195 upstream, looking north at the upstream slope. Adequate tailings beach against SD1.



Photograph B2-8 Saddle Dam 1

Date: September 13, 2017 **Photo Number**: 565

<u>Description</u>: From the south abutment looking north at the upstream slope. Adequate tailings beach against SD1.

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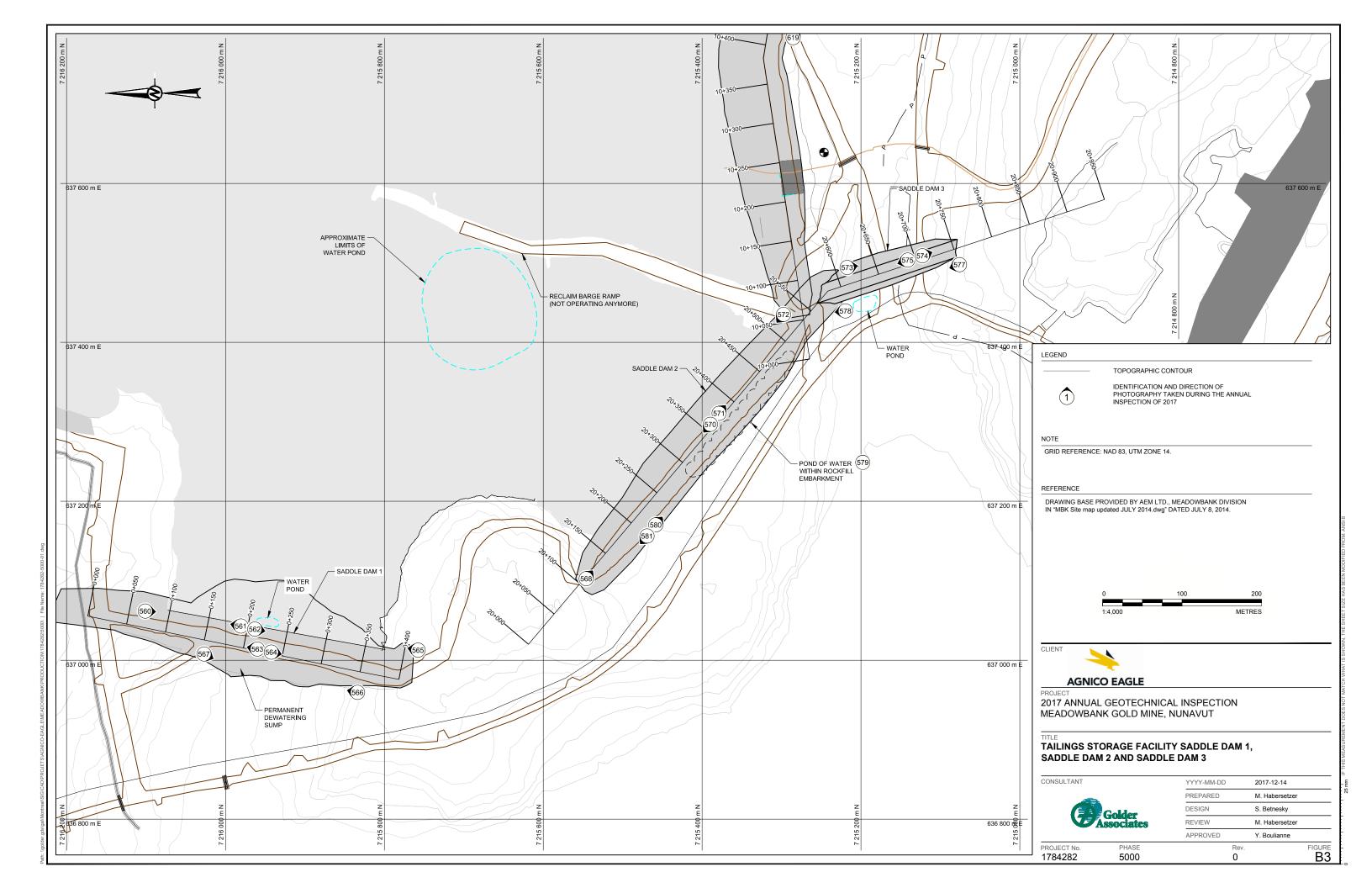


2017 ANNUAL GEOTECHNICAL INSPECTION MEADOWBANK GOLD MINE, NUNAVUT

APPENDIX B3

Saddle Dam 2 Photographic Log and Record of Inspection







Client: AEM By: Yves Boulianne

Project: Meadowbank Date: September 13, 2017

Location: Saddle Dam 2 Reviewed: Yves Boulianne

GENERAL INFORMATION

Dam Type: Rockfill embankment with inverted filter on base, upstream filters, a geomembrane liner tied in a

toe till plug and upstream till blanket.

Weather Conditions: Sunny Temperature: 8°C

INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
1. DAM CREST		568, 570, 571, 572	
1.1 Crest elevation	150 m		Design 150 m
1.2 Reservoir level	149.5 m - tailings		
Current freeboard	0.5 m - tailings		Design 2 m water, 0.5 m tailings
1.3 Distance to tailings pond (if applicable)	>200 m		Adequate tailings beach
1.4 Surface cracking	None at time of inspection		
1.5 Unexpected settlement	None observed		
1.6 Lateral movement	Not apparent		
1.7 Other unusual conditions	None		
2. UPSTREAM SLOPE		568, 570, 571, 572	
2.1 Slope angle	Approx. 3H:1V		Rockfill
2.2 Signs of erosion	None observed		
2.3 Signs of movement (deformation)	None observed		
2.4 Cracks	None observed		
2.5 Face liner condition (if applicable)	Good		
2.6 Other unusual conditions	None		
3. DOWNSTREAM SLOPE		580, 581	
3.1 Slope angle	Approx.1.2H or 1.3H:1V variable		Rockfill





INSI	PECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
3.2	Signs of erosion	None observed		
3.3	Signs of movement (deformation)	None observed		
3.4	Cracks	None observed		
3.5	Seepage or wet areas	None observed on slope		
3.6	Vegetation growth	None observed		
3.7	Other unusual conditions	None		
4. D	OWNSTREAM TOE AREA		580, 581	
4.1	Seepage from dam	No		
4.2	Signs of erosion	None observed		
4.3	Signs of turbidity in seepage water	Not applicable		
4.4	Discoloration/staining	No		
4.5	Outlet operating problem (if applicable)	Not applicable		
4.6	Other unusual conditions	Yes		Water is still ponding within the rockfill embankment between 20+275 to 20+475 approximately.
5. A	BUTMENTS			
5.1	Seepage at contact zone (abutment/embankment)	None observed		
5.2	Signs of erosion	None observed		
5.3	Excessive vegetation	No		
5.4	Presence of rodent burrows	None observed		
5.5	Other unusual conditions	None		
6. R	ESERVOIR		570, 571	
6.1	Stability of slopes	Stable		
6.2	Distance to nearest slide (if applicable)	None observed		
6.3	Estimate of slide volume (if applicable)	Not applicable		
6.4	Floating debris	None observed		
6.5	Other unusual conditions	No		
	MERGENCY SPILLWAY/ DUTLET STRUCTURE			
7.1	Surface condition	No spillway or outlet structure exists, only dewatering pump.		





INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
7.2 Signs of erosion			
7.3 Signs of movement (deformation)			
7.4 Cracks			
7.5 Settlement			
7.6 Presence of debris or blockage			
7.7 Closure mechanism operational			
7.8 Slope protection			
7.9 Instability of side slopes			
7.10 Other unusual conditions			
8. INSTRUMENTATION			
8.1 Piezometers	No		
8.2 Settlement cells	No		
8.3 Thermistors	Yes		See Section 4.0 of the report.
8.4 Settlement monuments	No		Construction drawings show displacement monitoring on Stage 2 crest.
8.5 Seismograph	No		
8.6 Inclinometer	No		
8.7 Weirs and flow monitors	No		
8.8 Data logger(s)	No		
8.9 Other			
9. DOCUMENTATION			
9.1 Operation, Maintenance and Surveillance (OMS) Plan			
9.1.1 OMS Plan exists	Yes		
9.1.2 OMS Plan reflects current dam conditions	Yes		
9.1.3 Date of last revision	March 2017		
9.2 Emergency Preparedness Plan (EPP)			
9.2.1 EPP exists	Yes		Included within the OMS and ERP plan.
9.2.2 EPP reflects current conditions	Yes		
9.2.3 Date of last revision	June 2017		
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	INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
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10. NOTES:

Inspector's Signature	Date:	September 13, 2017
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Photograph B3-1 Saddle Dam 2

Date: September 13, 2017 **Photo Number**: 568

<u>Description</u>: From Saddle Dam 2 (approximately Sta. 20+110) looking southeast at the crest and upstream slope of Saddle Dam 2. The tailings beach against SD2 is adequate.



Photograph B3-2 Saddle Dam 2

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 571

<u>Description</u>: From approximately Sta. 20+370 looking southeast at the crest and upstream slope.







Photograph B3-3 Saddle Dam 2

Date: September 13, 2017 **Photo Number**: 570

<u>Description</u>: From approximately Sta. 20+370 looking northwest at the crest and upstream slope.



Photograph B3-4 Saddle Dam 2

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 581

<u>Description</u>: From approximately Sta. 20+210 downstream, looking northwest at the downstream toe.







Photograph B3-5 Saddle Dam 2

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 580

<u>Description</u>: From approximately Sta. 20+210 downstream, looking southeast at the downstream toe.



Photograph B3-6 Saddle Dam 2

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 572

<u>Description</u>: From approximately Sta. 20+525, looking northwest at the crest.

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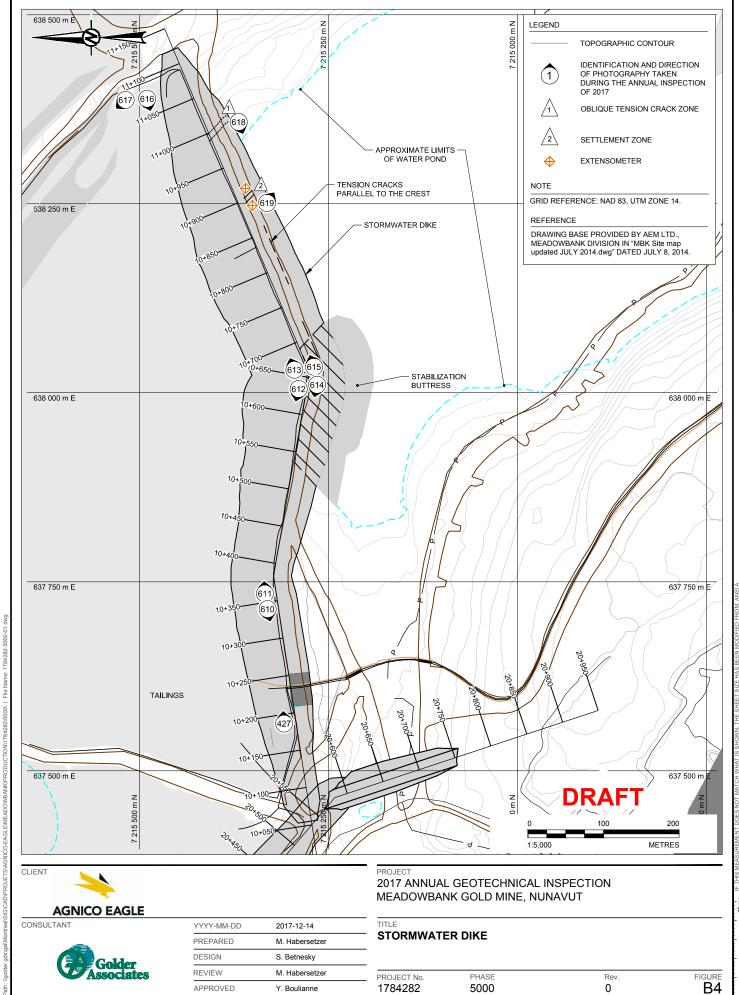


2017 ANNUAL GEOTECHNICAL INSPECTION MEADOWBANK GOLD MINE, NUNAVUT

APPENDIX B4

Stormwater Dike Photographic Log and Record of Inspection





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Client: AEM By: Yves Boulianne

Project: Meadowbank Date: September 13, 2017

Location: Stormwater Dike Reviewed: Yves Boulianne

GENERAL INFORMATION

Dam Type: Rockfill embankment, upstream filters and a bituminous geomembrane liner. Compacted till

placed above liner at toe, prior to tailings deposition.

Weather Conditions: Overcast Temperature: 5°C

INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA	
1. DAM CREST		610, 611, 612, 619		
1.1 Crest elevation	150 m		Design 150 m	
1.2 Reservoir level	136.76 – water (South Cell) 149.5 m tailings (North Cell)			
Current freeboard	13.24 m – water (South Cell) 0.5 m – tailings (North Cell)		Design 2 m in operation and 1 m at closure for water and 0.5 m for tailings.	
1.3 Distance to tailings pond (if applicable)	Adequate (North Cell)		Adequate beach in place all along the dike on North Cell. Some shallow water ponding against dike in some places (from 10+550 to 10+950 approximately). Water has reached the toe of the structure in the South Cell.	
1.4 Surface cracking	Yes	619	Tension cracks and unexpected movement	
1.5 Unexpected settlement	Yes (approx. 300 mm)		were observed (oblique tension cracks extending side to side). They are	
1.6 Lateral movement	Yes		concentrated from 10+850 to 11+025 and appeared in late June after the freshet. No movement has been observed in the zone where a buttress was constructed at the toe in the South Cell. The buttress is covered b the pond.	
1.7 Other unusual conditions				
2. UPSTREAM SLOPE		610, 611, 612, 613, 616		
2.1 Slope angle	Approx. 3H:1V		Rockfill	





INSI	PECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
2.2	Signs of erosion	None observed		
2.3	Signs of movement (deformation)	None observed		
2.4	Cracks	None observed		
2.5	Face liner condition (if applicable)	Good conditions.		
2.6	Other unusual conditions	None		
3. D	OWNSTREAM SLOPE		614, 615, 618	
3.1	Slope angle	Approx.1.2H or 1.5 H:1V variable		Rockfill
3.2	Signs of erosion	None observed		
3.3	Signs of movement (deformation)	None observed		
3.4	Cracks	None observed		
3.5	Seepage or wet areas	None observed on slope		
3.6	Vegetation growth	None observed		
3.7	Other unusual conditions	None		
4. D	OWNSTREAM TOE AREA	Not visible		Downstream toe and berm is submerged by the South Cell pond. The berm was constructed at the downstream toe to stabilise the movement and cracks observed in 2016.
4.1	Seepage from dam	Not visible		
4.2	Signs of erosion	Not visible		
4.3	Signs of turbidity in seepage water	Not visible		
4.4	Discoloration/staining	Not visible		
4.5	Outlet operating problem (if applicable)	Not applicable		
4.6	Other unusual conditions	Not visible		
5. A	BUTMENTS			
5.1	Seepage at contact zone (abutment/embankment)	None observed		
5.2	Signs of erosion	None observed		
5.3	Excessive vegetation	No		
5.4	Presence of rodent burrows	None observed		
5.5	Other unusual conditions	None		





INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
6. RESERVOIR		610, 611, 612, 613, 616, 617	
6.1 Stability of slopes	Stable		
6.2 Distance to nearest slide (if applicable)	None observed		
6.3 Estimate of slide volume (if applicable)	Not applicable		
6.4 Floating debris	None observed		
6.5 Other unusual conditions	No		
7. EMERGENCY SPILLWAY/ OUTLET STRUCTURE	No spillway or outlet structure exists, only dewatering pump		
7.1 Surface condition			
7.2 Signs of erosion			
7.3 Signs of movement (deformation)			
7.4 Cracks			
7.5 Settlement			
7.6 Presence of debris or blockage			
7.7 Closure mechanism operational			
7.8 Slope protection			
7.9 Instability of side slopes			
7.10 Other unusual conditions			
8. INSTRUMENTATION			
8.1 Piezometers	Yes		See Section 4.0
8.2 Settlement cells	No		
8.3 Thermistors	Yes		See Section 4.0
8.4 Settlement monuments	Yes		See Section 4.0
8.5 Seismograph	No		
8.6 Inclinometer	No		
8.7 Weirs and flow monitors	No		
8.8 Data logger(s)	No		
8.9 Other	None		





INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
9. DOCUMENTATION			
9.1 Operation, Maintenance and Surveillance (OMS) Plan			
9.1.1 OMS Plan exists	Yes		
9.1.2 OMS Plan reflects current dam conditions	Yes		
9.1.3 Date of last revision	March 2017		
9.2 Emergency Preparedness Plan (EPP)			
9.2.1 EPP exists	Yes		Included within OMS and ERP.
9.2.2 EPP reflects current conditions	Yes		
9.2.3 Date of last revision	June 2017		

10. NOTES:

Inspector's Signature		Date:	September 13, 2017
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Photograph B4-1 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 616

<u>Description</u>: From the east abutment (11+100 approximately), looking west at the upstream face. Shallow water ponding against portion of the dike (less than 30 cm deep). The tailings beach is considered adequate.



Photograph B4-2 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 617

<u>Description</u>: From the east abutment (11+100 approximately), looking northwest at the North Cell.







Photograph B4-3 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 613

<u>Description</u>: From Sta. 10+650 looking east at the upstream slope. Adequate tailings beach.



Photograph B7-4 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 612

<u>Description</u>: From Sta. 10+650 looking west at the upstream slope. Shallow water against portion of Stormwater Dike. The tailings beach is adequate.







Photograph B7-5 Stormwater Dike

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 611

<u>Description</u>: From approximately Sta. 10+450 looking east at the upstream slope. Adequate tailings beach.



Photograph B7-6 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 610

<u>Description</u>: From approximately Sta. 10+450 looking west at the upstream slope. Adequate tailings beach.







Photograph B7-7 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 618

<u>Description</u>: From approximately Sta. 11+075, looking southwest at the downstream slope. Oblique tension fractures extending from side to side of the dike are present in this zone.



Photograph B7-8 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 619

<u>Description</u>: From approximately Sta. 10+875. Depression of about 300 mm with several fractures oblique to the dike.







Photograph B7-9 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 615

Description: From Sta.10+650, looking east at the crest and the downstream slope.



Photograph B7-10 Stormwater Dike

Date: September 13, 2017 **Photo Number**: 614

<u>Description</u>: From Sta.10+650, looking west at the crest and the downstream slope. A stabilization buttress was built to stabilize the movement of the dike.





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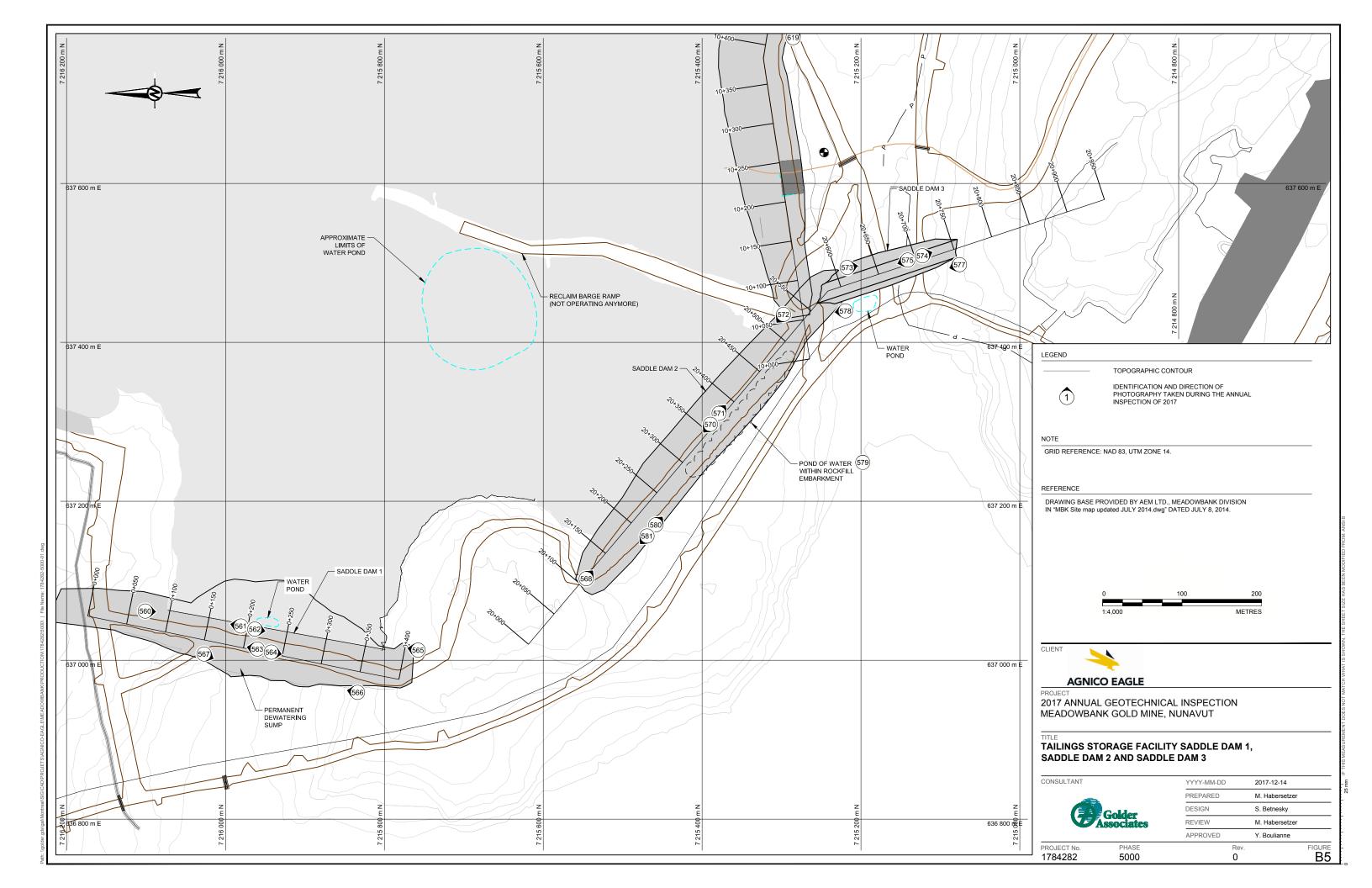


2017 ANNUAL GEOTECHNICAL INSPECTION MEADOWBANK GOLD MINE, NUNAVUT

APPENDIX B5

Saddle Dam 3 Photographic Log and Record of Inspection







Client: AEM By: Yves Boulianne

Project: Meadowbank Date: September 13, 2017

Location: Saddle Dam 3 **Reviewed:** Yves Boulianne

GENERAL INFORMATION

Dam Type: Rockfill embankment with inverted filter on base, upstream filters, a geomembrane liner tied in a

toe till plug and upstream till blanket.

Weather Conditions: Sunny Temperature: 8°C

INS	PECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
1. D	AM CREST		574, 575	
1.1	Crest elevation	145 m		Designed to be able to be raised up to EI. 150 m
1.2	Reservoir Level	136.76 m - water 127 m – tailings (West extremity of the South Cell)		
	Current Freeboard	> 10m		The structure is not operational yet. Water and tailings are not reaching it
1.3	Distance To Tailings Pond (if applicable)	NA		The structure is not operational yet. Water and tailings are not reaching it
1.4	Surface Cracking	None at time of inspection		
1.5	Unexpected Settlement	None observed		
1.6	Lateral Movement	Not apparent		
1.7	Other Unusual Conditions	None		
2. U	PSTREAM SLOPE		573, 574, 575	
2.1	Slope angle	3H:1V		
2.2	Signs of Erosion	None observed		
2.3	Signs of Movement (Deformation)	None observed		
2.4	Cracks	None observed		
2.5	Face liner condition (if applicable)	Good		
2.6	Other Unusual Conditions	None		
3. D	OWNSTREAM SLOPE		577, 578	





INSI	PECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
3.1	Slope angle	1.5H:1V		
3.2	Signs of Erosion	None observed		
3.3	Signs of Movement (Deformation)	None observed		
3.4	Cracks	None observed		
3.5	Seepage or Wet Areas	None observed on slope		
3.6	Vegetation Growth	None observed		
3.7	Other Unusual Conditions	None		
4. D	OWNSTREAM TOE AREA		577, 578	
4.1	Seepage from Dam	No		
4.2	Signs of Erosion	None observed		
4.3	Signs of Turbidity in Seepage Water	Not applicable		
4.4	Discoloration/staining	No		
4.5	Outlet operating problem (if applicable)	Not applicable		
4.6	Other Conditions	Yes		A sump was constructed on the downstream side to collect the ponding water, so its level does not exceed the elevation of the granular layer of the upstream toe liner tie-in.
5. A	BUTMENTS			
5.1	Seepage at contact zone (abutment/embankment)	None observed		
5.2	Signs of Erosion	None observed		
5.3	Excessive Vegetation	No		
5.4	Presence of Rodent Burrows	None observed		
5.5	Other Unusual Conditions	None		
6. R	ESERVOIR			
6.1	Stability of Slopes	Stable		
6.2	Distance to Nearest Slide (if applicable)	None observed		
6.3	Estimate of Slide Volume (if applicable)	Not applicable		
6.4	Floating debris	None observed		
6.5	Other Unusual Conditions	No		



INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
7. EMERGENCY SPILLWAY/ OUTLET STRUCTURE	No spillway or outlet structure exists, only dewatering pump.		
7.1 Surface Condition	·		
7.2 Signs of Erosion			
7.3 Signs of Movement (Deformation)			
7.4 Cracks			
7.5 Settlement			
7.6 Presence of Debris or Blockage			
7.7 Closure mechanism operational			
7.8 Slope Protection			
7.9 Instability of Side Slopes			
7.10 Other Unusual Conditions			
8. INSTRUMENTATION			
8.1 Piezometers	No		
8.2 Settlement Cells	No		
8.3 Thermistors	Yes		See Section 4.0 of the report.
8.4 Settlement Monuments	No		
8.5 Seismograph	No		
8.6 Inclinometer	No		
8.7 Weirs and Flow Monitors	No		
8.8 Data logger(s)	No		
8.9 Other			
9. DOCUMENTATION			
9.1 Operation, Maintenance and Surveillance (OMS) Plan			
9.1.1 OMS Plan exists	Yes		
9.1.2 OMS Plan reflects current dam conditions	Yes		
9.1.3 Date of last revision	March 2017		
9.2 Emergency Preparedness Plan (EPP)			
9.2.1 EPP exists	Yes		Included within the OMS and ERP plan.





INSPECTION ITEM	OBSERVATIONS DATA	РНОТО	COMMENTS & OTHER DATA
9.2.2 EPP reflects current conditions	Yes		
9.2.3 Date of last revision	June 2017		

10. NOTES:

Inspector's Signature	Date:	September 13, 2017

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Photograph B5-1 Saddle Dam 3

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 573

<u>Description</u>: From approximately Sta. 20+610 looking south at the upstream slope.



Photograph B5-2 Saddle Dam 3

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 577

Description: From Sta. 20+750, looking northwest at the downstream slope and toe.



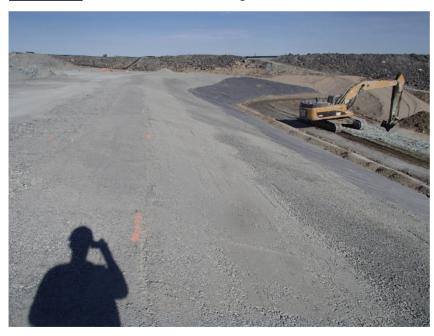




Photograph B5-3 Saddle Dam 3

<u>Date</u>: September 13, 2017 <u>Photo Number</u>: 574

<u>Description</u>: From Sta. 20+700, looking southeast at the crest and the upstream slope.



Photograph B5-4 Saddle Dam 3

Date: September 13, 2017 **Photo Number**: 575

<u>Description</u>: From Sta. 20+700, looking northwest at the crest and the upstream slope.

