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				MPOOIL	
TO: Mount Polley Mining Corporat	ion	ŕa:	X: 250-790-22	268	
ATTN: Don Parsons			۴		
Cc: George Headley, MEM Victori					
Ed Beswick, MEM Prince Geor	rge (250 565-60	915)			
Brian Kynoch / Peter Campbell, Imperial Metals (687-4030)					
Eric LeNeve, Mount Polley Site	2				
SUBJECT: Meeting Minutes – January 26	Meeting				

Don,

The minutes from the January 26 meeting on Stage 3 Cycloned Sand construction are attached. Two other items were identified as deliverables, including the following:

- The construction schedule. A draft has been completed and is currently being reviewed. It will be forwarded as soon as it is finalized.
- The letter addressing stability during localized cycloned sand deposition is being prepared. It will be forwarded as soon as it is finalized.

Regards,

On Culie .

Ken Embree Attachments:

January 26, 200 Meeting Minutes

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TABLE 1

MOUNT POLLEY MINING CORPORATION

MOUNT POLLEY MINE

TAILINGS STORAGE FACILITY

MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION

January 31, 2000

ITEM	DESCRIPTION	ACTION BY	DATE
1.0	Introduction		T
	 Meeting at KPL offices, January 26, 2000, 8:30 am to 11:00 am 		
	Present at Meeting:		
	Brian Kynoch (BK), Don Parsons (DP), Peter Campbell (PC), MPMC		
	➢ George Headley (GH), MEM		
	Ken Brouwer (KJB), Ken Embree (KDE), Jeremy Kinch (JRK), KPL		
	Meeting called to discuss KPL report "Report on Cycloned Sand Construction of Stage 3 and On-going Stages of	1	
	the Tailings Storage Facility Vol I and II" (Ref. No. 11162/12-2).		
	GH provided items for discussion in a letter dated January 24, 2000 (copy attached).		
	 Primary concern is downstream embankment stability and construction/operation methodology. 		
	KJB commented that schedule for hydraulic placement presented in the report might be too optimistic. The		
	revised method will see cycloned sand placed hydraulically at the Main Embankment only, and only for the first 2		
	to 4 lifts. The remaining fill will be placed mechanically from drained cycloned sand stockpiles.		
	• The revised plan offers increased flexibility and allows additional hydraulic placement if conditions are favourable.		
	The Mount Polley tailings embankments have a low permeability core zone that precludes the development of a		
	steady state phreatic surface within the cycloned sand fill.		
	• Water is introduced to the cycloned sand during hydraulic placement of overlying lifts, which results in localized.		
	transient wetting fronts for short periods of time but does not affect the long term stability of the embankment.		
	This was observed in the trial berm constructed during 1999.		
2.0	Operations		
	Operations Manual Content:		
	OM&S Manual was developed for Stage 1a (water) and Stage 1b (tailings) embankments, and is being		
	updated to reflect the shift to cycloned sand construction. The report will be issued pending the completion of		
	cyclone system and pumpback system design (MPMC).	10000	
	Estimated time of completion: 2 months (End of March)	MPMC/KPL	26-Jan-00
	Personnel Training/Supervision & Experience/Management:		
	Operator error has occurred at Gibraitar, particularly during line flushing, which results in erosion of cycloned and		
	Sallu.		
	system observe drainang characteristics and train the operators. Bevised plan makes preater use of		
	mechanically placed sand, which decreases the possibility of operators error		
	Most of the tailings operators on staff, some of whom have been with the Gibraltar Mine tailings crew, have		
	experience with cyclone systems.		
	Operators will monitor underflow density and line pressure during cyclone operations. The Marcy density		
	gauge and visual observation are used to monitor underflow properties.		
	> The OA/QC program will continue as per the trial program. Composite samples are collected frequently		
	(each shift) for PSA with results typically within semi-weekly.		
	Piezometers will be installed and monitored. Trigger levels will be established.		
	> The trial berm had a complete underdrainage blanket. Most of Stage 3 will be completely drained by the		
	Zone T haul road.		
	Subsequent longitudinal drains will be placed at 20 m intervals.	KPL	26-Jan-00
	A detailed construction schedule is being developed to identify goals and key dates.		
	10" cyclones should result in better product, with more sand produced. However, a test program to be		
	conducted in the mill will determine optimum cyclone sizing.		
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TABLE 1

MOUNT POLLEY MINING CORPORATION MOUNT POLLEY MINE

TAILINGS STORAGE FACILITY

MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION

3.0	Col	nstruction Methodology		
	•	Underflow will be piped from the crest to the bottom to avoid eroding the existing downstream face.		
	•	Stockpiles will be established at the Main Embankment abutments to start. The current schedule assumes that		
		these will be allowed to drain for 6 weeks, if necessary.		
	•	Cells will be developed and, if required, will be allowed to drain for at least three weeks before placing the next lift.		
	•	Perimeter Embankment construction will start at the end of June with either local borrow or mechanically placed		
		sand. (to be confirmed)		
		DP noted that it would be best to start construction at the Perimeter Embankment early. 5,000 m ³ /day (double		
		shift) has been used in the schedule.		
		Coarse cycloned material would be beneficial near the end of construction as it would drain more quickly and		
		allow the 6 week waiting period for stockpiles to be reduced.		
		GH asked if fine material placed in initial lifts would adversely affect vertical drainage in future raises. KJB		
		commented that cycloned sand would be placed for periods of short duration, possibly resulting in a short		
		saturation "pulse" migrating through the underlying partially saturated cycloned sand. The underlying material Is		
		partially saturated, so elevated pore water pressure would not be sustained.		
	•	Stratification and segregation of cycloned sand will occur to some extent, with coarse material deposited near the		
	1	discharge point and fine material collecting at the toe of each cell.		
	ŀ	The maximum lift height is 10 m at the Main Embankment (for the first lift). The maximum lift height in the trial		
		berm was 5 m.		
	•	Segregation will be controlled through the use of a discharge pipe and more efficient operations.		
	•	The revised plan does not require the cyclones to be moved as often as the original plan.		
	•	Expedient construction: Engineering concerns will not be overlooked because of production requirements. KPL		
		will be involved in on-going review of progress and scheduling.		
4.0	Des	lgn		
	•	The underdrain consists of select shot rock, but does not have a perfect filter relationship with the cycloned sand.		
		The redundancy of the drains will allow drainage to continue if a section is blinded off by sand. Outflows from the		
		trial berm were monitored and fines migration was not observed.	8	
	•	The only source of water is from hydraulically placed sand. There is no sustained phreatic surface due to the low		
1		permeability core zone and higher permeability sands.		
	•	GH noted that sinkholes formed hear one drain at Gibraitar. These were caused by cyclone drainage water only.		
	•	Zone I was scarified before sand placement in the trial borm. Filter fabric was used in the rockfill toe berm.		
		Simes blinded of the filter fabric, resulting in ponding on the upstream side of the toe berm.		
	•	Ponded water will have to be pumped or piped out.		
	•	GH suggested using transition material in the rock too berms. KDE noted that Zone material is probably		
		acceptable but segregation can occur during ini placement. Transition will be included it filler criteria are not	1	
		Sausingu.	KPL	26-Jan-00
		involved. The total draining flows are expected to be less than 20 l/s. KPL to confirm data and voilly consolity		
		Additional too harms will be added for further expansions		
		No continuous we beints will be abled to human expansions.		
		no contragency measures are required to provide ventical dialitage. Cens are allowed 5 weeks to dialit before the next lift is placed		
		There will not be enough water draining from the active cells to cause a large scale night failure. Also, the	(
	-	Innoitudinal drains are placed at 20 m spacing and facilitate efficient drainage of the entire length of the	1	
		downstream toe. This precludes the development of a phreatic surface in the sand. The tinger drains provide an		
		additional drainage capacity and help to route flows into the sediment control ponds.		
	•	The upstream toe drain is already installed at the Main Embankment. It includes concrete encased pipe and		
		seepage collars at the core zone penetrations. This provides operational contingency.		l

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MOUNT POLLEY MINING CORPORATION

MOUNT POLLEY MINE

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MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION

	 GH thought SEEP/W model shows chimney drain extending into sand. This is not the case in reality but ha cffect on the model, as both the chimney drain and cycloned sand have permeability orders of magnitude hi than the till core. 	s no igher	
	 Drainage water will be directed to ponds via ditches. Hydraulically placed sand can "spill" into adjacent cells to the slope of the ground. The lowest cell can overflow into the pond. Ditching and the road provide ultima containment at the Main Embankment. 	s due ite	
5.0	Stability Assessment		
	 Stability analysis assumed all downstream sand was drained. GH asked if analysis had been done for local saturated sand during cycloning operations. These results will be updated and provided by KPL. 	lly KPL	28-Jan-00
	Piping prevented by close spacing of longitudinal drains.		
	- Liquefaction can only occur if sand is saturated, therefore it can only occur during operations. Even if it could	ld	
	occur, it would be localized. It is also difficult to re-saturate material with surface recharge.		
	Equipment traffic will be beneficial, as saturated material will be densified.		
	Loss of freeboard stability is not an issue, as sand will be placed mechanically adjacent to the core zone. The core zone is the core zone is the core zone.	his	
	material must be unsaturated in order to be placed and is therefore non-liquefiable.		
6.0	Risk Assessment		
	GH concerned with phreatic surface and piping failure.		
	 To minimize risk, skilled and experienced operators are required to monitor the operation 24 hours a day. Supervision of operators is also required. 		
	 GH concerned that uncontrolled erosion could expose an undrained area and subsequent sloughing could or saturated sands are exposed in the area of active deposition. 	ccur if	
	 Partial saturation causes suction, which will cause upper layers to drain faster. 		
	• The mill will have to notify the tailings operators in the event of a shutdown and flushing of the line. It takes approximately 15 minutes for tailings/water to reach the tailings facility.		
.	 Trigger levels will be set for piezometers. A monitoring schedule will be determined, with a higher frequency readings than for embankment diezometers during initial operations. 	rof	
	Standning niezometers may be used in addition to vibrating wina operations.	KPL	26-Jan-00
70	Monitoring and Operational Controls:		<u>├</u>
7.0	Monitoring and operational conditions,		
	OA/OC Testing discussed		
	 MPMC to construct drainage system and toe herms. KPL would inspect after work is completed and confirm 		
	suitability to Ministry of Mines.		
8.0	Requirements:	~	
	 Meeting minutes, comments on stability, schedule (28-Jan-00) 	KPL	26-Jan-00
	OM&S Manual. Preferred before starting stockpile. Focus on water management. (1-Apr-00)	KPL/MPMC	26-Jan-00
	- Excavate test pits in existing toe berm for particle size analysis and filter relationship calculations.	KPL	26-Jan-00
	- GH requested discussion of cell drainage for future raises/lifts. Review possible methods and provide letter		
	report. Not required Immediately.	KPL	26-Jan-00
	C.C. minutes to Ed Beswick in Prince George		