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File No. 2021-11

May 20, 2021

Ministry of Energy, Mines
& Low Carbon Innovation
South Central Region
2nd Floor, 441 Columbia Street
Kamloops, BC
V2C 2T3

Attention: Inspector of Mines

Dear Sirs:

**Re: BMID Review - Proposed Quarry – Joe Rich
Lot 1, Plan 38841, Sections 10, 11, 14 and 15, Township 27, ODYD**

1.0 INTRODUCTION

This letter provides Black Mountain Irrigation District's comments in regards to the proposed Joe Rich quarry. The proposed quarry is to be located on a 75-acre parcel legally identified as Lot 1, Plan KAP 38841. It is on the hillside above Highway 33, immediately east of the Eight-Mile Ranch property.

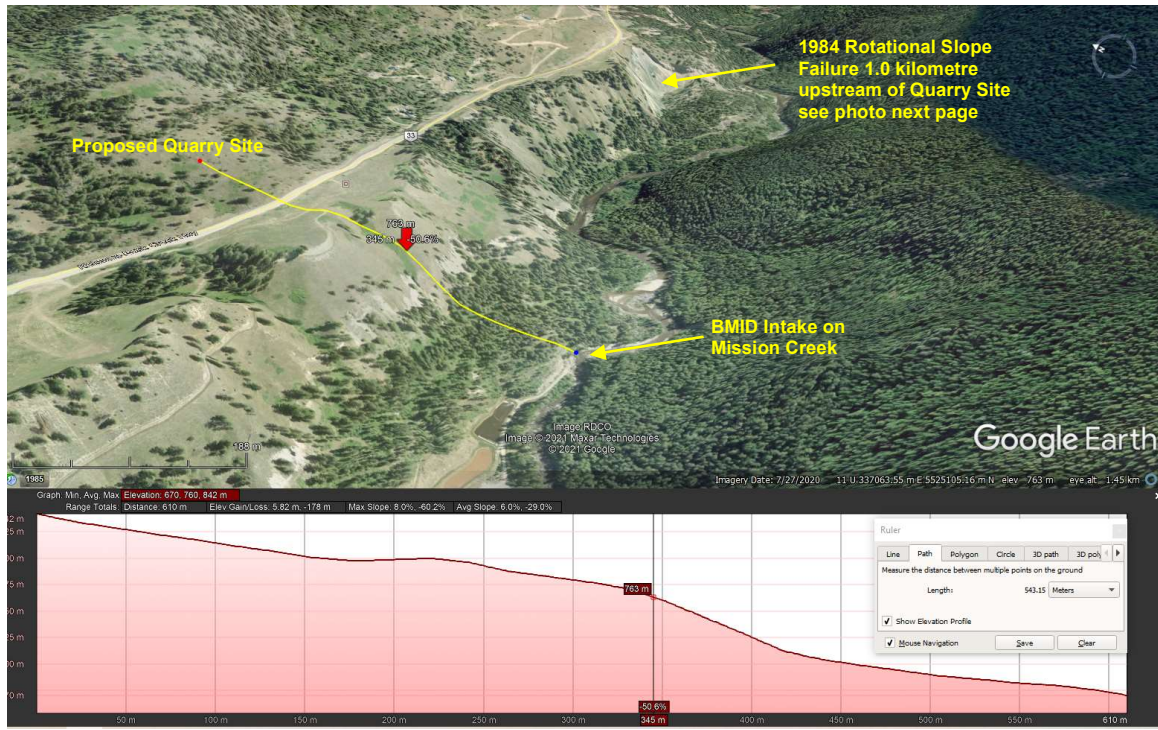
BMID does not have property immediately adjacent to this land, however our Water Treatment Plant facilities and intake are located downslope from this site, some 130m below and 500m to the south along Mission Creek. The quarry is proposed above sensitive silt bluff slopes in the Mission Creek canyon corridor.

The proposed property for the quarry is situated between elevations ranging from 810m near Highway 33 to as high as 940m elevation. The BMID water supply intake and Water Treatment Plant below this site is at an elevation of 660 metres.

BMID can appreciate the need in our region for high quality aggregate. We also can appreciate the amount of work needed to set up, develop and operate a quarry operation.

We are strongly opposed to the development of this site due to the location and proximity to our community water supply system. BMID is one of the largest water suppliers in the Okanagan valley providing domestic water to approximately 28,000 persons and irrigation water to over 5,000 acres of land. Mission Creek is one of two primary domestic water supply sources to the Kelowna region with the other being Okanagan Lake. In the long term, the intake for Mission Creek will likely have higher and higher importance as we are continually challenged to protect the quality of water in the Mission Creek watershed and within Okanagan Lake.

Figure 1 - Quarry Site Proximity to BMID Intake (545m) Plan & Section View



The water supply source for Mission Creek is set up to supply a much larger population than it currently supplies. The integrity and safety of the water supply facilities is of primary importance to the long-term health of the community for the next century and beyond.

2.0 MISSION CREEK CORRIDOR SLOPE ISSUES

The Mission Creek corridor from Layer Cake mountain to the Belgo Creek confluence, a distance of some 16 kilometers, is known to be an area with unstable silt slopes. There have been numerous slope failures that have affected the BMID water supply in the past century. Over that time BMID has been very careful in monitoring and advising residents, Provincial Ministries, and the Regional District of the potential risks. We have collectively been able to maintain some stability for those land-use activities that can be managed.



Photo – 1984 slope failure

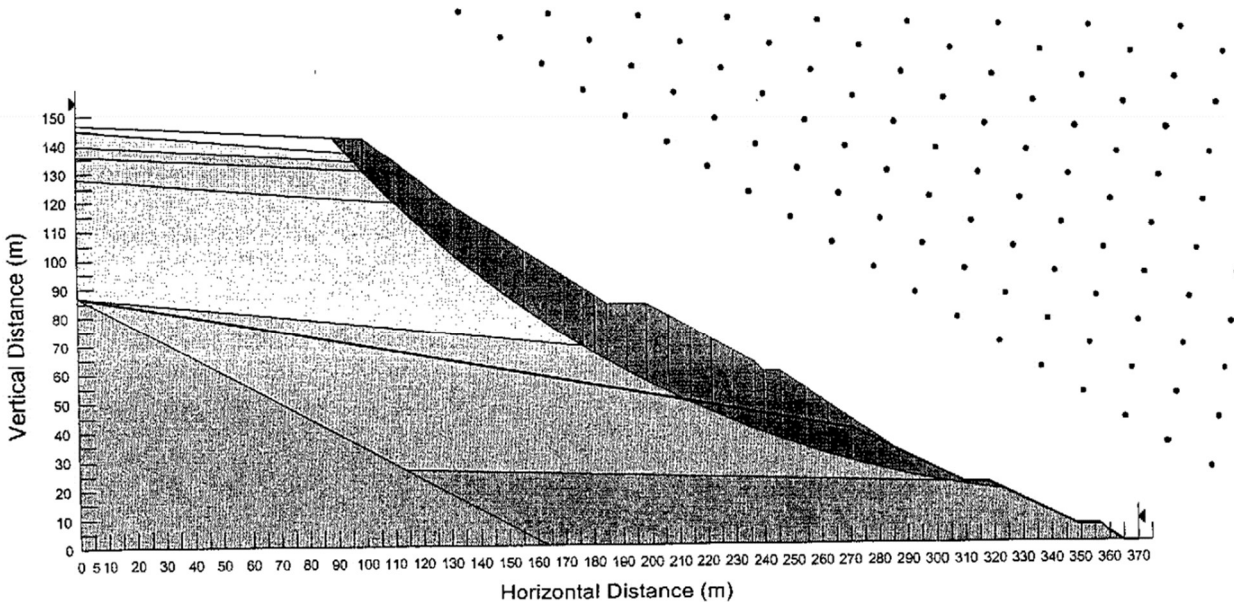
BMID is continually challenged by the natural events that occur through the Mission Creek corridor. These include the rotational slope failure of 1984 (see photo), the transmission main breaks in 1973, 1998, 2011, and two recent leaks in 2018. Other challenges include the destructive Philpott Road fire in 2017, and the flood flows that occurred in 2012, 2017 and 2018. Increasing the risk to our facilities through human activities is not in the interest of the greater community.

Of concern is the stability of the silt slopes below this site. Any added vibrations such as drilling and blasting and heavy equipment will shake the hillside. The 1984 slope failure some 1,000m to the east of this site is shown in the photo. This slope failure was caused by construction and the unnatural ponding of water at the top of the slope (reference: Heinz Koetz, BMID Trustee 1973-2010). The result was a 120m high rotational failure that filled the valley and moved debris some 25 metres up the south side of the Mission Creek valley.

2005 SLOPE ANALYSIS

In 2004-05, Willie Rometsch, then owner of Eight-Mile ranch which is the property immediately east of the quarry site, applied to develop a resort to house 170 MF units. The wastewater was to go to the slopes above the BMID Water Treatment Plant. Geotechnical reports were carried out by EBA Engineering Consultants and a review of their report was conducted by Golder Associates Ltd. The reports are on-file at BMID and have been forwarded to the applicant.

Figure 2.1 - EBA Model Showing Critical Slope Failure (Golder Review Report, 2004)



These reports investigated the probability of a slope failure including a larger rotational failure as illustrated in Figure 2.1. The work, at the time, included deeper borehole drilling of the slope to determine subsurface strata at depth. The general outcome of the Golder review was that the slope was stable at present, however the slope Factor-of-Safety was close to 1.0, additional effluent into the ground from a large wastewater system was not recommended.

2018 SLOPE INSTABILITY

In 2018, BMID experienced a slope movement situation at our supply conduit that was created by high groundwater flows from upstream catchment areas. The area of concern was in the Mission Creek corridor below Pyman Road. The high groundwater levels caused the ground to move which created a small leak that grew to the point where a major washout could have occurred. BMID found the leak in time in October of 2018 and repaired it. Fortunately, groundwater levels stabilized and were lowered. BMID spent over \$750,000 in 2018 and early 2019 to protect this water supply conduit. The photo on next page shows BMID staff unloading the lateral pressures on this section of 1500mm diameter steel conduit.

BMID is in the process of securing right-of-way for a 1,650m long rock tunnel that is to replace a 50-year-old covered flume. The tunnel will provide a secure route for water supply through some of the most difficult topography that BMID must cross. These slope issues reiterate BMID's concerns and commitment to maintaining slope stability for those areas that we must cross to supply water to our community.

The proposed 1650m long rock tunnel under the shoulder of Black Knight Mountain will connect to BMID's existing 1,000m long *McDougall Rock Tunnel* that has been in service since the 1940's. The proposed tunnel will be an extension of the existing tunnel.



2018 Photo – Relieving upstream slope pressure on BMID 1500mm diameter transmission main

3.0 ECONOMIC IMPACT

During the 2018 slope movement event, BMID carried out an economic analysis of the losses to agriculture if there was a major failure in the water supply conduit in mid-summer.

Table 3.1 - Loss of Community Water Supply - Agriculture

LOSS OF COMMUNITY WATER SUPPLY - AGRICULTURAL IMPACT												
Groupings	Acres	Revenue / Acre	Replant Cost / ac.	Gross cost / yr	TOTAL LOSS	Replant Cost/ac	2019	2020	2021	2022	2023	2024
Cherry	538.40	\$ 45,000	\$ 15,000	\$24,228,000	\$ 158,289,600	\$ 8,076,000	\$24,228,000	\$24,228,000	\$24,228,000	\$24,228,000	\$24,228,000	\$16,232,760
Sour Cherry	37.23	\$ 20,000	\$ 15,000	\$ 744,513	\$ 5,174,363	\$ 558,384	\$ 744,513	\$ 744,513	\$ 744,513	\$ 744,513	\$ 744,513	\$ 498,823
Apple HD	537.69	\$ 25,000	\$ 36,136	\$13,442,208	\$ 75,887,177	\$ 19,429,905	\$13,442,208	\$13,442,208	\$13,442,208	\$ 9,006,279	\$ 4,435,929	\$ 2,688,442
Apple MD	163.79	\$ 10,000	\$ 36,136	\$ 1,637,912	\$ 12,797,989	\$ 5,918,759	\$ 1,637,912	\$ 1,637,912	\$ 1,637,912	\$ 1,097,401	\$ 540,511	\$ 327,582
Apple LD	197.61	\$ 5,000	\$ 36,136	\$ 988,040	\$ 11,290,530	\$ 7,140,763	\$ 988,040	\$ 988,040	\$ 988,040	\$ 661,987	\$ 326,053	\$ 197,608
Soft Fruit Apricot/Peach/Pear/Plum	37.46	\$ 15,000	\$ 15,000	\$ 561,951	\$ 2,922,143	\$ 561,951	\$ 561,951	\$ 561,951	\$ 561,951	\$ 376,507	\$ 185,444	\$ 112,390
Berry Crop (rasp,strawberry, berry)	29.16	\$ 30,000	\$ 15,000	\$ 874,877	\$ 4,111,920	\$ 437,438	\$ 874,877	\$ 874,877	\$ 874,877	\$ 586,167	\$ 288,709	\$ 174,975
Grape - Vineyard	80.95	\$ 20,000	\$ 15,000	\$ 1,618,908	\$ 8,013,594	\$ 1,214,181	\$ 1,618,908	\$ 1,618,908	\$ 1,618,908	\$ 1,084,668	\$ 534,240	\$ 323,782
Floriculture (flowers)	0.29	\$ 50,000	\$ 20,000	\$ 14,500	\$ 63,800	\$ 5,800	\$ 14,500	\$ 14,500	\$ 14,500	\$ 14,500	\$ 14,500	
Cash-Crop-Garden (corn, veget....)	65.56	\$ 15,000	\$ 4,000	\$ 983,348	\$ 2,750,097	\$ 262,226	\$ 983,348	\$ 983,348	\$ 324,505	\$ 196,670		
Turf farm	57.91	\$ 20,000	\$ 2,500	\$ 1,158,203	\$ 3,075,030	\$ 144,775	\$ 1,158,203	\$ 1,158,203	\$ 382,207	\$ 231,641		
Forage / Pasture / Grass	439.74	\$ 2,000	\$ 500	\$ 879,476	\$ 2,444,943	\$ 219,869	\$ 879,476	\$ 879,476	\$ 290,227	\$ 175,895		200 days
Alfalfa	99.75	\$ 2,250	\$ 500	\$ 224,441	\$ 617,713	\$ 49,876	\$ 224,441	\$ 224,441	\$ 74,066	\$ 44,888		
Greenhouse / nursery	44.67	\$ 100,000	\$ 25,000	\$ 4,466,894	\$ 10,050,511	\$ 1,116,723	\$ 4,466,894	\$ 4,466,894				
TOTAL	2330.20	acres			\$ 297,489,411	\$ 45,136,650	\$ 51,823,270	Order trees, two years		replant		
	2019	Complete Loss Year				Replant	Year of failure					
	2020-22	Order trees, new stock										

The economic impact for agriculture (if the existing orchards were lost) could be greater than \$300,000,000. As set out in Table 3.1, loss of fruit trees and vineyards would require several years to recover. If completely lost, time would be required to order new trees, plant them, and allow them to mature before average revenues can be generated. This estimate does not include the compounding effect of losses on support businesses and work to the agriculture industry.

BMID constructed Hadden Reservoir (1969), the BMID primary chlorination building (1988), Stevens Reservoir (1993) and the Water Treatment plant and intake (1999) knowing of the slopes above and the need to protect their integrity.

The location for the BMID facilities is fixed due to the elevation and the requirement to access Mission Creek for water.

4.0 SUMMARY

This section summarizes our concerns regarding this proposed land use:

1. BMID strongly opposes the development of a quarry on the 75-acre site above our intake and Water Treatment Plant. The vibrations, blasting and operation of heavy equipment is not desired in this sensitive location. Even if the blasting is small and controlled, the long-term continued vibrations would shake the silt bluffs above our facilities. With global warming and extreme high groundwater levels such as those in 2018, the natural risks are already increasing. A quarry in this location would compound the risks that we already face;
2. BMID recognizes that a rock quarry is needed in the region and BMID will support the development of a quarry in the watershed, however, not at this site;
3. There is a large rotational failure on the north slope of Mission Creek corridor only 1.0 kilometre upstream of the proposed quarry site. See the photo on Page 2. The slopes along this corridor have seen major slumps and failures over time. These are normally triggered by the creek flow impinging on the silt banks, but in the case of the 1984 failure, we understand it was caused by human activity and water ponding above the slope;
4. BMID has a 2004 Geotechnical Report prepared by EBA Engineering and a 2005 Review Report prepared by Golder Associates for the slope above our Water Treatment Plant and below the proposed quarry. The report reviewed work by EBA included a deep borehole investigation. The Golder report reviewed EBA's work and recommended against the development that was proposed. These reports have been provided to the applicant.
5. We have identified a nearby large land-holding that should be considered for a rock and granular material quarry. The G.P. Sandhers Holdings properties, 1500 acres in size, are located on the north side of Highway 33 immediately west of 8-Mile Ranch. These lands are also located above BMID facilities, but with a much greater set back and lower risk of slope failure. BMID is in the process of designing a rock tunnel to safely convey water below these lands. The contact person for G.P. Sandhers is Bob Fisher-Fleming, phone (250) 938-0841. Their land is in the ALR, but with an owner that is one of the largest growers in the region, reclamation of the land back to agriculture would be a requirement by the ALR. BMID would support a quarry at the G.P. Sandhers lands, provided that once mining is completed, the land would then be reclaimed for agriculture.

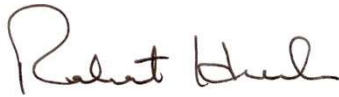
BMID recognizes that aggregate is needed in our region. We believe that the security of the community water supply including the largest supply of water for agriculture in the Kelowna area, should not be put at risk by a blasting operation situated above the silt bluffs above our water intake. The infrastructure for BMID has been planned for a timeline greater than 100 years. If we fail to protect the quality of water in Okanagan Lake, in time, the BMID intake may become the primary domestic water supply source for much of Kelowna. The importance of the security of the BMID facilities cannot be overemphasized.

Joe Rich Quarry
Referral Response
May 20, 2021

This letter and these conditions were reviewed at the May 19th, 2021 BMID Board Meeting and are supported by the Board. We trust that our position on this matter is clear.

Yours truly,

BLACK MOUNTAIN IRRIGATION DISTRICT



Bob Hrasko, P.Eng.
Administrator

cc: BMID Board of Trustees
Rick Adams – Applicant’s Representative, Westridge Quarries
RDCO Todd Cashin, Director of Planning
Brittany Lange, Environmental Planner
Mark Bartyik, Area Director
Minister – Mines and Energy
Agriculture Land Commission – Executive Director
Bob Fischer-Fleming – G.P.Sandher Holdings
Norm Letnick – MLA - Kelowna-Lake Country