

As noted above, the steep streams along the east side of Perry Ridge have deposited fans on the benchlands. These fans consist, in part, of debris flow deposits. A debris flow is a rapidly moving (several metres per second) mass of viscous material- a wet mixture of mud, sand, stones, boulders, and woody debris \_ that moves down an open slope, or a gully, Dr a steep stream **channel. Debris flows are commonly initiated by the sliding of weathered rock or loose soil on steep hillsides (~debris slides).**

At Perry Ridge, debris slides have occurred (and will occur naturally in the future) on steep slopes alongside the streams. Slide debris mixes with stream water, generating debris flows which descend the stream channel and then spread out on the fans. Residences are located in the potential runout zones on the gently-sloping fans. Although the flows loose momentum as they spread on the gentler slopes, the impact on a building of even slowly moving boulders can be devastating and life-threatening. Even fine-grained debris can partly bury or fill-in houses and other structures. The potential runout zones are difficult, and may be impossible, to define with any degree 01 reliability. AGC believe that debris slides and debris flows are potentially the most damaging and life-threatening of the various landslide types that they mapped along the lower slopes 01 Perry Ridge (upslope from the benchlands). Following his stream channel survey, Chatwin noted that debris flows are "common historically" in the Perry Ridge watersheds.

As typical of fans in general, abandoned stream channels can be found on Perry Ridge fans, recording the normal lateral instability of streams on fans. Such a stream usually changes its course abruptly during a floods, taking up a new, hard-to predict location: an obvious potential hazard.

*Potentially Increased Hazard:* Debris flow hazard will be increased if logging or road construction takes place on steep slopes upslope from creeks that have a constant steep gradient down to the fan. (Current logging plans exclude much of the steep, unstable and potentially unstable slopes, but the reliability of the stability mapping, which dates from 1985, is poorly known.)

**Other Hazards: river bank erosion: changing stream courses.**

#### *sources of Information*

Apex Geoscience Consultants Ltd., 1998. Geological Hazards Mapping of the Siocan Vaney. Phase I, in the Arrow Forest District.

S.Chatwin Geoscience Ltd. • 1999. Perry Ridge Stream Channel Survey.

Consultants reports completed for M.Benedict and A. Greengrass.

J.M.Ryderfield observations, July 18 and 19, 2000. and discussions with Muffin Benedict and Marilyn Burgoon

J.M.Ryder P.Geo.  
September 16, 2000

J.M. Ryder and Associates, Terrain Analysis Inc.

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Hon. Joan Sawicki, Minister of Environment  
Government of British Columbia  
Victoria, C.C.

September 20, 2000

Dear Ms. Sawicki:

*Follow-up to meeting reo PeTTYRidge Area: Considerations Regarding Geo-Hazards*

I appreciate the time you gave to meeting with us on Monday (Sep. 18), but because the meeting was so short, I came away feeling that several matters require clarification. Hence this letter.

Early in the meeting, you indicated that your Ministry staff and others had told you that 'both sides were so entrenched that there was little hope of reaching an agreement. I do not feel that my professional opinion is "entrenched". Rather, it is based on information gained from reports, discussions, air photo interpretation, field observations, and previous experience.

My interest in the Perry Ridge area was initiated when I was asked by the Perry Ridge Water User's Association to review recently completed reports on the terrain and geological hazards of the Perry Ridge area, particularly the bench lands. During the course of this work, it became apparent to me that the current activity of geo-processes here is unusually intense, and that the residents need professional help. My concerns about the area led me to visit for 2 days in July (on my own initiative and at my own expense), when Muffin Benedict and Marilyn Burgoon showed me many intriguing (to a geomorphologist) examples of the effects of recent/current geo-processes. Piping seems to be particularly active here, leading to my statements regarding the uniqueness of this area. Landslides, debris flows, stream floods, water diversions and river bank erosion also threaten private property, roads, and people.

The degree of geo-hazard and risk is unusually high for an area with a relatively large population, and locally extremely high. There has been no appropriate hazard assessment, and as far as I am aware, no land use zoning or other restrictions on land use.

In yesterday's meeting you pointed out that it is not unusual for people to have to live with risk, and so this point alone is not of unusual concern. This is true, but the degree of risk at Perry Ridge is *already unusually high*. This is in large part due to natural circumstances and, to a lesser extent, due to poor land use practices by a minority of residents. The perception of high risk by the local people is based, quite legitimately, on their awareness of the damage already done to nearby homes and property. In areas close to Perry Ridge, they have found landslides blocking roads that they regularly travel, they know of many cases in which landslides have followed logging, and cases in which people have been injured or killed by landslides.

The fact that the residents continue to live on the Perry Ridge benchlands is itself an indication that *they* are willing to accept a significant degree (in places a very high degree) of risk. This is their choice. With regard to the proposed logging however, they are not willing to accept an *increase in the already high* risk imposed against their will by an external agency, when the potential rewards of accepting the additional risk appear to be negligible. Even if the Ministry of Forests' financial prediction is correct, a profit of about \$900 000 over 1 year will likely be more than counterbalanced by the costs of damage to private property, which have not been factored into the analysis. Neither have the costs been included of additional hazard studies.

I have grave concerns about several aspects of the potential effects of logging the Penry Ridge uplands. These include the following:

- Operational plans for logging are being based on terrain mapping that was carried out in 1985, prior to the establishment of both the RIC standards for terrain mapping (1996) and the standards for terrain stability mapping in the Forest Practices Code (first edition in 1995). Although this mapping was "upgraded" to the current stability classification by a paper exercise, there was no rigorous check of original mapping and its quality is unknown.
- Present logging plans are conservative, but based on what is likely a false assumption that removal of a relatively small amount of timber (15% ECA) will have little or no effect on stream regimes. In fact, the effects of both tree removal and road construction in the small, steep basins are likely, during particular weather conditions, to generate high runoff that will result in significantly increased peak flows.
- Even the most careful planning of roads and cutblocks cannot guarantee that accidents (slides, debris flows, floods) will not occur. A single such event on Penry Ridge, where steep slopes and steep creeks descend to highly sensitive terrain with dense rural settlement, could have disastrous effects.

In view of the above, together with information provided to you on Monday, I see no justification for logging on the Penry Ridge uplands.

Yours truly,

**J.M.Ryder Ph.D., .P.Geo.**

03/01/2001 09:56

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JM RYDER AND ASSOCS.

PAGE 01



Reference: 58146

NOV 23 2000

J.M, Ryder
J.M, Ryder and Associates, Terrain Analysis Inc.,
PO Box 45008
Dillbar RPO
V1V 0C6

Dear J.M. Ryder:

I have been asked to respond to your letter dated July 28, 2000, to former minister Joan Sawicki, regarding the geological risks associated with logging on the Peny Ridge,

For the most part, the Ministry of Environment, Lands and Parks (MELP) does not have jurisdiction in the matter of logging on Crown land. The designated official that approves forest development plans (FDP) outside of community watershed is the district manager of the Ministry of Forests (MOF), McFadyen Creek is the only community watershed within the planning area. In this watershed MELP and MOF jointly manage FDPs. The total chance plan indicates there is only a small area that may be suitable for logging on Crown land in the McFadyen Creek watershed. If there is ever a FDP proposing logging in this watershed, the regional water manager, as the MELP designated official, will analyze the public safety question along with the MOF district manager.

In both your letters you describe natural hazards that affect private lands along the east side of Peny Ridge. In your first letter you conclude that prior to any forestry development on slopes that drain to the valley floor east of Peny Ridge, there should be an investigation of the hydrologic links between the lands and existing hazardous conditions on the valley floor. I am advised that this concern was also identified in the Peny Ridge Risk Assessment Report (PRRAR). A scientific panel (Boyer, Jordan and Villidine) prepared this report for the Peny Ridge Local Resource Council (Plan ILRUP). The panel examined the small watersheds and their unit, and identified linkages between the areas at risk on the valley bottom and areas with potential for logging; i.e., areas identified in the total chance plan. The panel recognized the difficulties associated with mapping subsurface flow paths on the valley bottom terrain. They identified two approaches; One approach, which you

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JM RYDER AND ASSOCS.

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diJC~8 in YOItletter. is \o undertake all extensive drIIIInI program \o IIIIPout possible .ubswfllCO flow paths, This would be very expensive IIOrwo\ld not necessarily provide .ufficient inf011IIIlltion to adequately track S\tbsuracc: flows, The other approach, Ihe'one , chosen by the p\_l, is to map the surface Oow patbs on the ground and limit the risle of impacts by limiting tho antount of tree removal and requirng extra care when Iwvestinl: timber and when placing. building. ;md u,ing road~.

I am further advised that the risk ... sessment report idelltit\ed thtee hydroloIU<sup>Cfil</sup> units with ii hiab of Jinkhole ami vall/ly-\>ot!Omlandslides. For two of these unlt. the LRUP **Wi**. recommendo no development. This lel\ one unit, JetOme Creek. as the only high-risk area possibly affected by logging. The pllllllling table adopted reconunenda<sup>tions</sup> limiting the rale and methodt of cutting tiDlber and requited detailed profellSionaJ aseelSments and Code plus practices fur this Ema. Tile risk assessment report also idc:ntlfiedfive hydrologic units with II mO<.letatri.1e of 5in/<hole. and land~Udes. In the!!C units. rec<>tnmen<iationsw/;:te mad. to specifically\_lne hydrolo&ic linkages of!U111111\_=\_urses alld apply the IS pert:ent equivalent c\olll'Cutarea CECA) limit.

In your stCOI'HI letiCI you list three concerns with the potential effect. of logging. IIII stated that you see no justification for any logging on the Perry IUdgc uplands. One of your con~s Is that operational pll1111fdr logging are being based on terrain mapping of IUlknown qII8lity, I have: beell infO'I'II'ICd that the rnappings was checked tWice and judged to be adequate by tho MOF. Tho first check was a general II Sscssment of all the: 19BOsmapping; in tho Slocall Valley. undc:rtakc:n by Peter Jordan. MOF (leomorphoIDgist, aixI Kim Green, malri:!! Earlh Scientist. The !IeOOndcheck was perfonned by consultant Steve Chatwin. He . collCludcd that the original mapping was adequate bl!led on his field traverses of lb. ridge: during channc:l asse!lsments and other ",apping, and II review of the air photos,

Another of your concems is Ihat the present logging pbns arc: conseJVative. but b1ltcd on what you believe to be a raise assuntptiO!\ that nJIIloval of a relatively ;nnall amount of timber (IS percent ECA) will have little or no effect on IIIre81ntogllnct, You state, MIn fact. the eft'ects ofboth trQe removal and road constnlCtion in the small. steep basins \_likely\_, dlIring partkahir W\$alhc:r conditions, to acncraie high IIIIIOffiat will result in Bianlf11181111Y increasing peak flows." However, oil revlewinB the available teseerch on the silbJect. 1M PRRAR found that messurable: eff~& on streamflow are Ulllikely at less !bill! 20-percent ECA, In addltiOll to lihJtIna the amoWll of tree removal and road building, the ,

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PRRAR iild the LRUP IJlbJehave recommended furthellltdl. Idles In areas idendtl~d AS having a high risk of impacts from logging, These studies will require detailed field IISscsments by profemonal engincm or g&escientists, The duiiiIated officla!(I) will have to consider these fllCOMll1endatjions when lpproving any FDP.

Finally, you stato your CONCern that even the Inost careful plalUling of roads and cutblocks cannot auarantee accidents Colides,debris flows, floods) will not occur. I agree. Your comment, however, applies to most areas in Ibo Kootenays IIIldto mllChof the provim:e, If 10WII8 were to be curtailed in this area for this reason !hen why would it be allowed in many other populated rural IreaS. It would not he re85OMbl. to exclude allogging opportuni;08 over such large areas. The Ie'po!13ible thing to do is to identitY tho risk and nxluce the ri.k using \_ .smont procedure. and best practices as is being don" on Perry Ridge.

I understand that the Arrow Forest District and oth"rs are trying to organize o workshop and moetin&\\ith all the jllOtessionals that have been Involved in the risk assenment, You would be mo.t weiCOlllOto attend.

Yours truly,



**R.H. Roberts**  
**Executive Director**  
**Regional Operations and Environmental Assessment**

cc: Brian Simpson, District Manager, MOF, Arrow Forest District



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JM RYDER AND ASSOCS.

PAGE 02

d,Y.IQPme~t; J\_\_ Creek ... malno as a high r.l.k .rN thel could potentially b\*\* n.cted by logging. Yet the hazard to local ""idenl' ~u. to piping and landslides Is *extreme* In tlla! part 01 m& Jerome Crlek "zonB of infuane.' 111.1 have examined on ln8 ground, Evon with the very con.tMIUve forest practices llal you mention, I do not believe tl ls possible aUminate t~ rtsk of Ill@CldD~"luch a8 Gould hIMI drastic impects in the residentia' ar.as doWn.lope. Also, I have be.-advloed \hat, ~the standard "Cave tables" had been used lot lhe ,lsk an.osment, lha and ollltj areas would hove been zoned for "no development". [In tha Cave mol \*\* ,return periods 01 I-500 yr Irt ... tgned a "no development" statu., whereas in the PRRA, raWrrt perloO. of up 10 ~OOyr. r6 osalgn&d 8 "very low hazard")

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1/aconolu.lon, I think th.t lhe planhed logging on the Porry Ridge uplond ~e. very rea' and consider.bl. rl.ka to lDme of the reskJRnto on the benelilendo down~lOp" n.1<slhat hav8 yet to be fully apPreclted by the government 3Q&110iesinvolved.

Yours truly,

J.M.Ryder P.Geo.

c.c.: Mr. Brian Simpson, District Manager, Arrow Forest District, B.C. Ministry of Forests  
 Mr. Dwain Boyer, Engineering Section Head, Water Management Program, MELP, Nelson  
 Mr. Howard Kushner, Ombudsman, British Columbia  
 Ms. Muffin Benedict, Resident, Perry Ridge

<sup>1</sup> A revised cost benefit analysis indicates this figure is \$200 000.

J.M. Ryder and Associates, Terrain Analysis Inc.

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e-mail: june\_ryder@idmail.com Fax: (604) 736-5101

Dwain Boyer, P.Eng.  
Engineering Section Head  
Ministry of Environment  
Nelson, British Columbia

July 18, 2001

Dear Dwain:

I have discovered what could be a serious potential hazard at Perry Ridge: several residences may lie in the path of a possible rock avalanche. (This is a natural hazard unrelated to forestry activities.)

A Slow-moving (or formerly slow moving but presently stationary) rockslide (slump) consisting of slump blocks and broken rock (disintegrated slump blocks) is located between 1000 and 1300 m (approximately) elevation about 1 km east of Newcomen Creek (see attached map). Slide debris extends downslope to the top of a cliff where large blocks and some semi-detached rock pinnacles appear poised to tumble down slope. Some rockfall has already occurred, forming a talus slope (red arrows on map).

No clear evidence of present recent movement is apparent from air photo interpretation. As far as I can tell, the scattered trees in the slump area are mostly vertical (I can see very few tilted trees); no freshly disturbed (i.e., paler toned) rock could be seen. However, the position of this large mass of incoherent rock at the top of a very steep slope suggests that a major rockfall or a rock avalanche could occur here. There are several dwellings immediately downslope, so the *potential hazard to human life could be high*,

The feature can be seen on colour air photos BCC 96051: 106-107 and BCC9B052: 006-009).

I recommend that a thorough ground inspection of this area should be carried out by an *experienced* rock-slope stability specialist in order to assess the likelihood of catastrophic slope movement, the extent of the potential runout zone and the hazard to local residents; and to make **recommendations about remedial measures if necessary.**

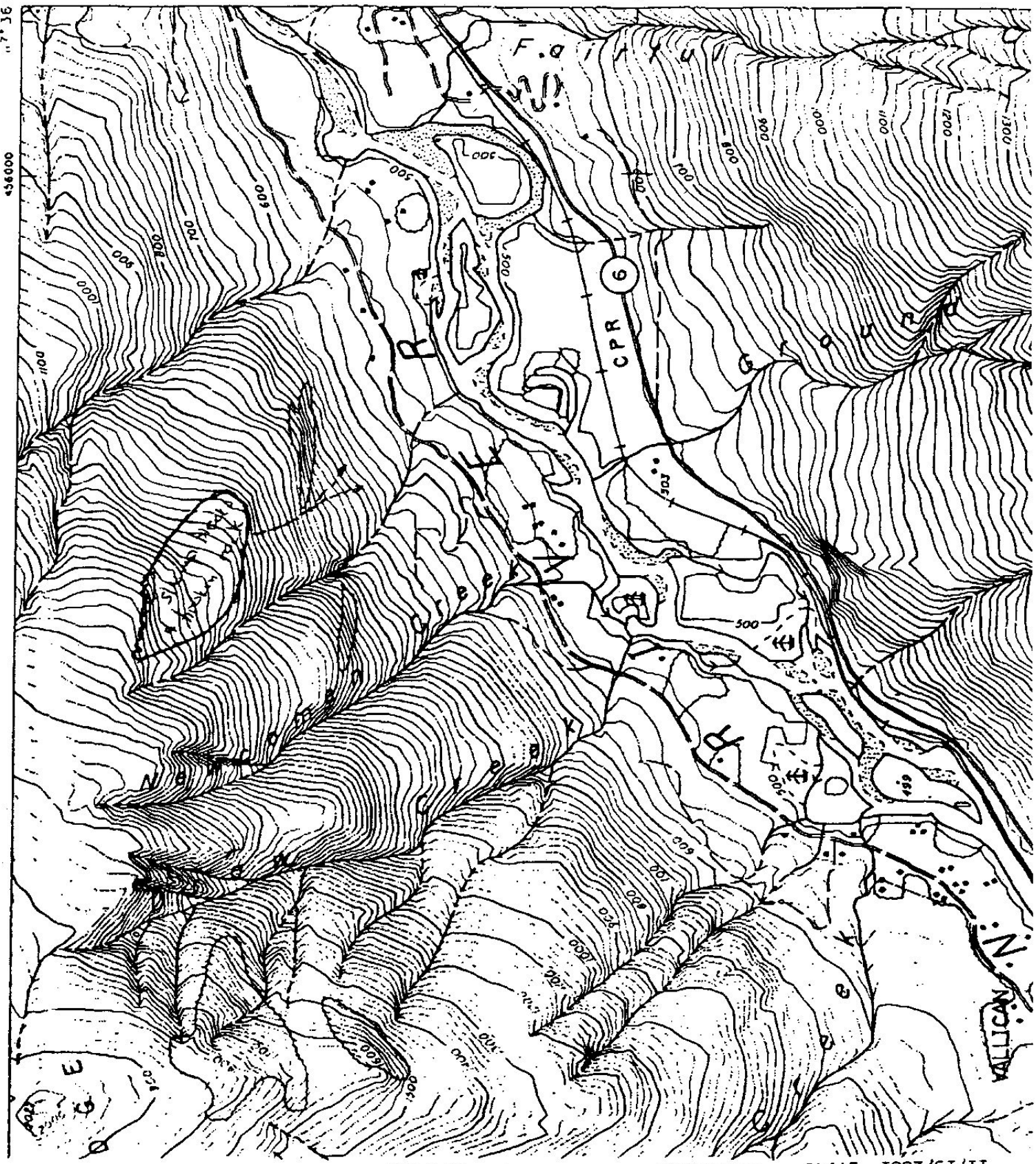
Existing terrain mapping shows this feature, incorrectly, as a talus slope affected by rockfall.

I would be happy to discuss this with you, although the only information I have is from air photo interpretation.

Yours sincerely,



J.M. Ryder P. Geo.



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F.D.



Ministry of  
Transportation  
[www.gov.bc.ca/tran](http://www.gov.bc.ca/tran)

Geotechnical & Materials  
Engineering Branch  
610 Lakeside Drive  
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J.M. Ryder, P.Geo.  
J.M. Ryder and Associates  
Box 45005, Dunbar RPO  
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September 14, 2001

Dear *J.M.* Ryder,

Re: Rock Avalanche Hazard - Perry Ridge Area

As noted in the correspondence from Dwain Boyer, P.Eng., I have received your correspondence of July 16, 2001 regarding your concerns for a potential rock avalanche in the Perry Ridge area of the Slocan Valley.

The Ministry of Transportation is responsible for review of natural hazards that may affect numbered highways. The potential hazard you have identified would likely not impact Highway 6 located across the valley from the site and consequently would not warrant a technical review from our staff. However, our Ministry is responsible for determining if natural hazard assessments are required for proposed subdivision in an unincorporated area. I will forward your concern onto Peter Muirhead the Ministry's Provincial Approving Officer, who will require a natural hazards assessment for any proposed subdivision in this area; facilitating further technical review of the site.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Walsh".

Mike Walsh, P.Eng.  
Manager, Geotechnical & Materials Engineering  
Kootenays Region  
Ministry of Transportation

Cc: Dwain Boyer, P.Eng., MoWLAP  
Peter Muirhead, MDT  
Dave Wahn, Regional District of Central Kootenay

J.M. Ryder and Associates, Terrain Analysis Inc.

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*Statement re: Risk Assessment and Geological Hazards, Perry Ridge Area*

General

Prior to any forestry development on slopes that drain to the terraces on the valley floor east of Perry Ridge, there should be an investigation of the hydrologic links between the uplands and existing hazardous conditions on the valley floor. Such a study should address the nature of the hydrologic processes (water discharge, regime and flow pathways, both surface and, especially subsurface) and the potential changes to hydrologic processes that could result from land use and vegetation changes.

More Detail

For the residents and properties on the terraces west of the Siocan River, the chief hazard is erosion by underground water (piping) in fine-grained glacial lake sediments and adjacent soils. This is an actual, not a potential, hazard. In many places, both recently and during the past few decades, piping has resulted in sudden collapse and/or rapid subsidence of the ground surface and the development of gullies and collapse depressions. As far as I am aware, this area is unique within British Columbia with respect to the *current high degree of piping activity*, although relict piping landforms are widespread elsewhere on glacial lake terraces and examples of ground collapse have been reported. At present, we do not know if the local piping activity has been exacerbated by changes in subsurface drainage (discharge volumes, regime, pathways) associated with changes in recent or historic land use or vegetation (e.g., road construction, tree removal, wildfire, residential development).

Landslides are also a significant hazard in this area. Like piping, they are strongly influenced by subsurface water, and any increase in subsurface water flow could result in increased instability. Inasmuch as piping erosion may create zones of weakness in the ground, it could also give rise to instability.

The standard process required by the Forest Practices Code (terrain stability mapping input to operational planning) does not (as far as I am aware) address the nature of the links between the effects of upland forestry development and potential impacts due to piping *outside the mapped* areas, such as piping on the valley floor terraces. Some impacts outside the area mapped (e.g. downslope runoff of debris slides) may well be recognized and taken account of as a result of terrain stability field assessments, but these are usually done after roads and blocks have been laid out, at a time when operational plans are almost finalized. More importantly, it is unlikely that even the most experienced slope stability specialist would recognize potential groundwater hazards so far removed from the inspection site.

It follows from the foregoing that my recommendation is for a study of the hydrologic links between the Perry Ridge upland and the valley floor terraces. This should be done prior to any land use decisions for the upland. Until the study is completed, the additional risks to residents and properties already affected by piping that are posed by upslope forestry activities cannot be assessed.

Certain aspects of this study, such as a compilation of the history of ground collapses (to compare with land use/vegetation cover changes), monitoring of water-level recorders, and other observations could best be done by local residents. Thus they (Perry Ridge Water Users Association) should be involved in both the planning and operational phases of the work.

*Baurna III Engineering*

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Geotechnical Engineering

Telephone and FAX (604) 898.2303

Don Harrison,  
Planning Manager,  
Regional District of the Central Kootenay,  
601 Vernon St.,  
Nelson, B.C.  
V1L 4E9

March 16, 1997

Dear Mr. Harrison.

Re: Geotechnical hazards in the Slocan Valley,

In August 1997 my wife and I spent 10 days looking for real estate in the Slocan Valley. We only considered undeveloped parcels greater than approximately 1/2 acre. As a result we discovered that significant geotechnical concerns existed on many of the parcels we examined. In many cases it appeared to me as though landowners were selling off marginal land and offering it to the unsuspecting buyer.

Sections of the Municipal Act and the Condominium Act require that the jurisdiction of Transportation and Highways, the Ministry of the Environment, Lands and Parks, and the Regional Districts review subdivision proposals in part to protect against development of geotechnically hazardous areas. If there is a perceived geotechnical risk, it is the responsibility of the Regional District building inspector to call for a geotechnical report before issuing a building permit. My observations (Figures 1-41 to 1-45) indicate a lack of appreciation or understanding of the geotechnical hazards by the overseeing agencies responsible for the Slocan Valley. A number of jurisdictions throughout the province have commissioned geotechnical hazard studies to protect against this situation. Our company conducted the geotechnical overview study for the Pemberton Lillooet Regional District. It is apparent that similar geotechnical planning is required for the Slocan electoral area.

Silly sands deposited in a deglacial lake once filled the Slocan Valley to a depth of approximately 200 to 500 feet elevation. Following deglaciation, the Slocan River cut into the materials to create the modern floodplain. Downcutting resulted in a series of low-level terraces, including upper glaciolacustrine benches and immediate level Oviatt terraces. The river presently incises creating a wide floodplain subject to regular flooding. In areas where the river undercuts glaciolacustrine materials slumping is frequent. Indeed, where active slumping and inactive slump scarps are widespread in the valley. Furthermore, the sidewalls of the Slocan Valley are exceedingly steep, and are the initiation zones for debris flows and mudfalls. These rapid mass movement events impact lower slope positions and the valley flat, forming fans, cones, and talus slopes.

The geotechnical hazard in the Slocan Valley are summarized as follows:

- Rotational failure of glaciolacustrine materials, especially where undercut by the Slocan River. Slumping is most common near the river (within 100 m), but may affect lands much farther away. A number of properties were viewed which were subject to rotational failure. Two examples are presented in Figures 1 & 2.

- Regular flooding: A number of parcels were vic\vcu which CORlsled t'nlin:ly of rivt.1 . level floodplain (Figure 3), No higher level ground existed on these parcels. Exren>IYc.: mitigation would bl;required to construct rc~idcrtial dwelling;; on rhese loIS; The constmction of septic systems would he severely restriclc(L
- Rockfall and dehTi." !low hi.lz~lrcf from steep ..;Iopcs: Steep slopes prone In rockfall ;I!ld debris 110\\'horder the settled portll.)!IS of the SInC<11VValley. \Where~"ll h:ment i" situated close 10 the base of these steep ·slopes. propcny and human life may he a risk In 1996 a house on the Sioean River West Road (Ficure 4) was uestroved by a dchm nnw. In 1997, just sOllth of the destroyed hOllse. In"Otedthe construction ot' a new house on the apex of an JctivC' debris now eonc.

Asioe from direct impacts from spet:ific hazards. there arc more wCiL'srre:lu. Inng-Ienn concerns which may ~lrisc h~cau."c or the lack of geotechnic:ll rlanllin~in [he SIne;]n RIVt valley. As Illorc people sculc Dllllhc river-level flndplain. 11i: likely 11li.1fi\,t:r dyking will he requesleu hy residents. However. if rhe river is arlifki~ll1y confined un!) through noodpiain areas. higher ch;mmel velocities \.1.;l increase hank erosion throu~h naturally conlincu an:"i. N:lLurally coolineLl <Ire;\." include stream-hanks consistn!! of hedrnck. tluvial terraces. imd !!iaciniacuslrinc terraces, In these tC"n~cedarea ....HIC7caserJh;mk erosion will cause pr.ogressive property loss. and may trigger r<ltation~llslum ring ill previollslly "apparcnly st~lblc" areas underlain by g.laciolacustrine m;ttenals.

The conrinul'd lack of geofechnical planning 1111tht: Slo\;~11Rl\T ".":lleywlll h~lv: ..Crf)tl." impacts on unsuspecting feal-estatt! huyer ...~Uldpropc.rty \IWllefS. In the lung-term ...l...tile arca i." increasingly built-ouL ut=\TlopmE.:~lt rrc~:-;lrc on the- !loodplam may {ri~~cr inslahiJi'y in ~lrea~lh;II presently ap~ar stable. This ...!mation will have Imr~lcts nol only on new residcIHs. hUi on lon!!-senlcd n:sitknts ~s weil, G!!"lt:(chnicalzuninE' is an issue Ih;u should he seriously con:"idc;ed for the benefit of all residcnL'i, and c:spc:cially for the long-term health ~nJ aesthetic appeal of the Siocan River v'llley.

\Vc fclthat a geotechnical study. rc;~;,ulting in the preparation nfgeo{cchfllCt/ zoningm;lpS. should be conducted for the SJoca.n electoral area. This mapping would he referred 10 hy Ministry DfTranspOll;ltion and Highways tchni:(al starr heJore ~Irrrnving,>uhdivision dcvdopments. and hy the Region:d District's huifding inspt:clor before issuing hlliidin~ pennits. In arc~L" where geotechnical concems were indicated the developer wnuht he requested to conduc a detailed a.\sscsment indicating potential gl:ntcchnical hazards. covenarHs. and mitigation stra[e~ies.

\Vc raise these issues out of t:llm:al respotlsihility. If the people of"thl: Sincan Valley a~cc with our opinions. we would like to he considered as a potencial contractor 11 h request fmr prop()sals.. Our ctirricl1Iufll \-itaes. are attached ..If you h"lvc-rurther questions regarding .lly. issu{'s. rlc~e do not ht..""STate to calf us.

"Think von.

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\,Pierre Frick. M.Sc.  
;ic(1SCienlist.

ee.

MoELP. Martin Carver  
MoTH. Kurt Edmonds

Slocan re.pr~senl~ltive. Eric Nygren  
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