

Zamora, Phil

From: Cochrane, Norman A
Sent: February 17, 2003 10:52 AM
To: Zamora, Phil
Subject: White's Cove Quarry Blasting Plan

Attachments: Whites_Cove.doc

Phil

I have commented on individual items of Global Quarry Products response to Mr. Petrie's letter of Dec. 11/2002 in the attached document.

In general, the concept of blasting within a few hours of low water would help alleviate problems of ground acceleration - at least for ecosystem components confined to the water column - not sure about intertidal community. The modified blast sequence would also seem to help in preventing strong "beaming" of energy toward the water. One should ensure similar care be exercised on all subsequent blasts.



Whites_Cove.doc
(25 KB)

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General Comment 1 (Response) – It would appear that if blasting is indeed conducted within 3 hours of low water the separation of detonation point from significant spawning habitat should be met. This, of course, does not take into account “beaming” effects from near-simultaneous shot hole detonations. One assumes the contractor will be bound to detonating within 3 hours of low tide.

General Comment 2 (Response) – I do not fully understand the comment in the last sentence “.. this initial blast represents the most critical blast in relation to the marine environment and will be closely monitored.” Is this blast “most critical” because it will be the only blast closely monitored? (The blasting plan p. 5 seems to imply there will be 3 monitoring stations for the original blast and only one for subsequent blasts – will this be proximate (?) – the wording is unclear!). Or will this blast be unique in being closest to the shoreline or having larger charge weights? Certainly other points in the quarry area are about the same distance from the shoreline. The quarry operator also reserves the right to vary the charge size per hole as blasting objectives warrant to presumably greater than 45 kg/detonation. It is not clear exactly how “Subsequent blasts will be designed based on the information gathered from monitoring the initial blast” or “..all blasts will be designed to meet or exceed the parameters set forth in your Blasting Guidelines” based on data collected on the initial blast. For instance if ground velocities monitored during the initial blast are lower than those predicted from the empirical formulas does this justify modifying the formula for future predictions? (This might be eventually justifiable – but one should have more good quality data than that obtained from one proximate monitoring site during 1 shot to justify it. Depth of shot holes hence possible coupling will vary for future shots).

Specific Comment 1 (Response) - It is advantageous that blasts will be infrequent – 1 per week or 1 per 2 weeks. The colony is a fair distance from the blast site. I don't have the expertise to speculate on possible effects. Perhaps an experienced biologist could make few spot observations of the colony during early blasting or blasting during the breeding season. Atmospheric conditions might have significant effects on sound propagation at this range.

Specific Comment 2 (Response) – Don't have the expertise to really comment on this. I flagged it initially only because there is a general concern about using ANFO explosive near water. Monitoring measures are apparently in place for surface run-off that will include the monitoring of nitrates. I would speculate that the main concern would be for local streams and the beach zone above high water. The flushing action would be extreme for any residue to reach open water.

Specific Comment 3 (Response) – The modification to produce a minimum of 8 ms delay between any two blasts over the entire pattern would seem to help. Can cumulative blast delays be predicted as accurately as the numbers suggest? I don't know. The physics of the problem would suggest beaming of energy could occur whenever the sound propagation interval between any arbitrary pair of shot holes exceeds the pair-specific inter-hole delay time. Guessing at a local propagation velocity of around 3 k/s, sound should propagate across the shot pattern large dimension in about 10 ms or so. Therefore some degree of “beaming” is still theoretically possible. However, examining the specific pattern by eye (not a rigorous computer simulation) I do not observe any obvious cases of where energy would be beamed straight at the nearest part of the coastline. In part, this may be due to the specific layout of the lines and the starting of the detonation sequence at the westernmost corner. I would be inclined to give the benefit of the doubt to the quarry operators in this case. Hopefully, future blasts will be laid out with similar care?

Specific Comment 4 (Response) – As stated above, blasting within 3 hours of low water would appear to meet the criteria.

Specific Comment 5 (Response) - Would appear reasonable care will be taken to prevent fly rock being a hazard to wildlife.

Specific Comment 6 (Response) – The original comment was intended more to point out possible shortcomings of the Wright & Hopky “Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters” rather than to be a direct criticism of the submitted Blasting Plan. The minimum blast separation

of 118 m from the water column is about three times the 35.6 m set back. This is probably quite O.K. as far as immediate physical damage to fish is concerned.

Specific Comment 7 – Probably others can better assess if there is any potential noise problem here.

Specific Comment 8 – Same.