



December 3, 2015

File: 105809

Brian Farquhar
Manager, Parks & Trails Division
Planning & Development Department
CVRD
175 Ingram Street
Duncan BC V9L 1N8

Dear Mr. Farquhar:

Thank you very much for your letter dated December 2, 2015 regarding Storm Water Assessment and Water Quality Testing. As you are aware the Ministry of Environment (MoE) has been very actively involved in overseeing the activities occurring at the South Island Aggregates (SIA) Lot 23 property and we take matters of environmental protection very seriously.

On November 13, 2015 it was reported to the Ministry that there was surface water runoff flowing off the site from the vicinity of the MoE-permitted areas on Lot 23. MoE staff have attended the site on four occasions in November to conduct inspections and collect samples of soil, the surface water flowing off the site and the permitted discharge. Results from the Ministry's sampling as well as from sampling conducted by the permittee confirmed that the water leaving the site was non-contact stormwater runoff, which had not come into contact with contaminated soil. Based on the compliance assessments and spill reports related to the site, the Ministry issued a letter to the permittee on November 18, 2015 advising them of their legal obligations and requiring the submission of additional information to determine if further action was needed on the part of the Ministry.

In immediate response to the November 13, 2015 incident, the permittee installed surface water ditching and swales to prevent further uncontrolled flow of non-contact surface water off the western property boundary. They are also taking other actions including retaining an independent qualified professional to fully review the water management works, systems and procedures in place on the site to ensure they are all functioning according to plans, specifications and permit conditions. At this time the Ministry has no reason to believe that there are any issues with the contact water management systems; however, their performance will be also be fully reviewed by the independent qualified professional as part of the full review of site water management. This includes the settling pond. If the review reveals any inadequacies in the system, the Ministry will take swift action to ensure protection of the environment.

Attached to your December 2, 2015 letter you provided a copy of a report by Thurber Engineering. Ministry staff have received and reviewed the Thurber report and a brief summary of our review is attached as Appendix A. The report recommends additional review of water management infrastructure and procedures and your letter has requested a more detailed assessment. As mentioned above, this will be done and the Ministry will forward the Thurber report to the permittee and their qualified professional(s) for consideration in that review.

Also attached to your letter is a copy of a report by Madrone Environmental Services Ltd. Ministry staff have received and reviewed the Madrone report as well and a brief summary of our review is attached as Appendix B. The report summarizes some limited sampling conducted on behalf of the CVRD. The report confirms that all water quality guidelines were met at the ephemeral creek sampling site which receives all runoff and water from the portion of Lot 23 which is of interest. These results are generally consistent with significant additional datasets collected by the Ministry as well as by the permittee.

Ministry of Environment staff have been working extremely hard to address ongoing concerns raised at this site. Ministry staff have received in excess of 50 individual complaints and queries, and staff have conducted four inspections of the SIA site since November 12, 2015. At this time we are satisfied with the permittee's response to date and their planned activities. No further action is contemplated by the Ministry at this time.

Yours truly,



A.J. Downie
Director, Authorizations South
Ministry of Environment

cc: P. Hasselback, Medical Health Officer, Island Health Authority paul.hasselbackj@viha.ca

Appendix A: Ministry Review of Thurber Report

Thurber conducted a visual site assessment of the stormwater management works and indicated:

- Surface water ditching and swales were recently installed by the permittee to prevent a previous uncontrolled flow of non-contact surface water off the western property boundary. No surface water was observed to be crossing the property boundary at this location.
- The sediment pond basin is relatively porous. The presence of the large volume of water emerging from under the rock armour at the head of the ephemeral stream indicates that runoff storm water sourced from the SIA site is bypassing the sediment pond (i.e. by flowing under it) and is being discharged directly onto the land owned by the CVRD.
- The majority of the discharge volume contained within the stream is storm water that infiltrated into the shallow-subsurface on the SIA site, as well as storm and post-treatment water that infiltrated through the bottom of the sediment pond basin.
- It is not clear from SIA's WMP how rainfall falling within this portion of the site (i.e. the Cell 1 landfill area) is contained and managed, particularly during intermittent filling stages prior to the final placement of the landfill cap.

Recommendations include:

- A more detailed assessment of water management practices at the SIA site, particularly in the area of Cell #1 (including during its construction) would be required to assess the environmental risk to CVRD property.
- The CVRD bring the observations and concerns regarding the water management system to the attention of SIA and the BC Ministry of Environment.

Ministry response:

- The assessment was conducted by reviewing some published materials and by making visual observations from off-site. It is possible that some of the comments and conclusions may be based on incomplete information or without full understanding of permit requirements and engineered details (eg. As-built drawings for the Cell 1 landfill).
- The Environmental Appeal Board (EAB) carefully reviewed the permit, including all its requirements, considered all the evidence including with regard to surface water management and the movement of groundwater, and confirmed the permit subject to directions. The ministry amended the permit in accordance with the EAB directions. The ministry expects the permittee to comply with the permit including all its requirements.
- The required Environmental Procedures Manual (EPM) includes a Water Management Plan (section 7) that describes the management of contact water (leachate) and non-contact surface runoff from non-disturbed and disturbed areas.
- The permit requires that contact water (leachate) from the engineered lined soil management area and the engineered lined landfill facility be collected and, as necessary, treated, to achieve stringent water quality guidelines, prior to discharge to the settling/sediment pond. The Thurber report does not indicate that this is not occurring.

- The permittee has recently installed surface water ditching and swales to prevent a previous uncontrolled flow of non-contact surface water off the western property boundary some of the concerns raised have now been addressed.
- It is recognized that groundwater seepage will migrate through the subsurface to the ephemeral tributary to the west of the Site, i.e., to the area of the settling pond discharge.
- The EAB decision included consideration of groundwater seepage at the base of the quarry, and the EAB was aware that the groundwater seepage will be conveyed through the subsurface towards the west slope and may report to the ephemeral tributary, or may remain below grade as shallow groundwater flow; and that any groundwater that enters the seepage blanket from below the pit will be considered non-contact water, and this water will remain subsurface as groundwater flow while it is on the site (paragraph 489).
- The permit does not refer to a lined settling pond, nor does it prohibit exfiltration of water into the ground. The As-Built drawing for the settling/sediment pond does not show a liner and shows rip-rap on the bottom and interior sides of the settling pond around the pond outlet. To ensure the setting pond is functioning as designed by the permittee's qualified professional, a review is being undertaken (see below).
- Beginning on November 18, 2015 the Ministry initiated actions that will result in a full review of the water management works, systems and procedures in place on the site to ensure they are all functioning according to plans, specifications and permit conditions.
- A copy of the Thurber report will be provided to the permittee and their qualified professional(s) for review, response and consideration in the review.

Appendix B: Ministry Review of Madrone Report

Ministry Review of the CVRD-commissioned Madrone Report Findings:

- The CVRD water quality results overall were quite similar to the MoE results. Some parameters were higher in the MoE samples while others were lower. For example, the MoE discharge quality results had higher concentrations for copper, iron and aluminum than the CVRD results while the CVRD perimeter surface flows off-site had higher aluminum and copper than MoE sample results. Without additional information such as total suspended solids and turbidity for the CVRD samples, it is difficult to determine the reasons for the differences.
- The report states that sampling at MSW-2 (samples 2 & 4) was conducted while ditch digging and diversion was ongoing. This could affect the representativeness of the sample results by introducing excessive solids which can contribute to higher parameter results. Interestingly the CVRD off-site flow quality results upslope (MSW-2 #3) of the diversion works, showed consistently higher total metals concentrations than the downslope sample (MSW-2 #4).
- All PAHs and PCB water quality results for all samples were found to be below laboratory detection limits.
- At the ephemeral stream site (MSW-1) metals results were below BC Approved Water Quality Guidelines for the protection of aquatic life.
- The report found that some of the overland flow samples (MSW-2 #3 and #4) had elevated levels of copper, zinc, selenium and aluminum:
 - Levels of copper and zinc are reported to be over WQG for the protection of aquatic life but met the Health Canada drinking water guideline. The copper WQG used in the report needs to be hardness corrected. However, the overland flow samples both still exceed the hardness corrected copper guideline.
 - Sample #3 had a slight selenium exceedance above guidelines.
 - The total aluminum results were also significantly elevated (114mg/L and 29.5 mg/L) and were reported to be above guidelines; however, the BC Approved WQGs for Aluminum listed were incorrectly stated as 5000ug/L and should be *100 ug/L as dissolved aluminum*. No dissolved metals results were reported. While the exact reason for the elevated aluminum is difficult to determine, it may be due to elevated concentrations of solids entering the water quality sample containers due to disturbance near the sampling site.
 - For all contaminants, because these elevated levels were found in intermittent overland flow of disturbed soil and not in the ephemeral creek itself, the risk associated with these exceedances is likely very minimal, if any.
- It appears that the qualified professional who prepared the report is a hydro-geologist; a biologist with water quality impact assessment expertise is in the best position to assess and interpret water quality data.

General comments pertaining to report as well as other materials submitted by Sonia Furstenau on behalf of the CVRD (received via email on Monday November 30, 2015 @2:20pm):

- Comments made by Ms. Furstenau about pollution are incorrect and her comparison of stormwater runoff to the Shawnigan Creek mainstem upstream are inappropriate:

- Under the BC *Environmental Management Act* (EMA), we do not expect effluent discharges or even nearfield receiving environment concentrations to match those of background. EMA is structured to recognize that there is an assimilative capacity in the environment and constituents can be discharged in a certain quantities that still allow for the environment to be protected.
- In most places, it is not reasonable to expect or assume that tributary conditions are the same as mainstem conditions. Generally, each tributary does not make an equivalent contribution to the larger watershed and it would be necessary to consider both parameter concentrations and flows to give a true weight to each tributary. Monitoring episodic surface flows from a small focus area, can lead to inappropriate conclusions about risks to aquatic resources or humans.
- In the absence of extensive spatial coverage for flows and parameter concentrations, the MoE relies on water quality meeting Provincial Approved and Working Water Quality Guidelines and Site Specific Water Quality Objectives. Of particular relevance are those that are set to protect human health and aquatic life.
- Pollution has a very specific definition in the legislation and this definition talks about “substantial impairment of the usefulness of the environment”. The data does not appear to support that there is pollution occurring.
- Concerns about surface water quality are best addressed by a whole watershed planning and monitoring approach. Baseline information for the Shawnigan Lake watershed should be used to inform land use decisions. While managing individual stormwater contributions are important, they need to be considered within the context of a cumulative effects assessment of all surface flows and how they contribute to overall watershed planning and decisions for land uses.
- The Ministry has extensive experience with monitoring programs around the Province and the runoff water quality results at SIA are within the range or better than stormwater quality measured from other jurisdictions experiencing mixed rural and urban land uses.
- Aside from the issues above related to sampling of stormwater runoff and interpretation of this information, the Madrone report is consistent with MoE data and other data collected by the permittee which shows that **water quality guidelines were met for all parameters in the ephemeral stream** (which is downstream from the stormwater sampling sites), and this is what is most important in terms of characterizing risks to aquatic resources or human health.