February 25, 2018

Town of St. Paul Council

County of St. Paul Council

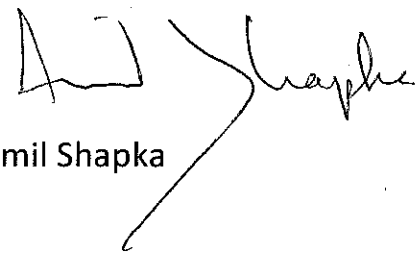
Dear Councils,

As a major stakeholder in the Evergreen Regional Waste Management Services Commission, you are aware that the landfill approval is up for renewal this December. A number of affected residents had serious concerns about the initial placement of that landfill which resulted in a lengthy and expensive appeal. The concerns centered around the suitability of that site based on its hydrogeology, whether or not significant aquifers were present and the financial sustainability of that landfill: these concerns remain. As reasonable lay people, we appreciate our limitations and the complexity of the issues at hand.

It is our understanding that the Commission continues to operate under significant monthly deficits and this is in part due to the costs related to leachate removal. Our concern about the suitability of that site is supported by the August 7, 2003 memorandum from Jason Pentland, Contaminant Hydrogeologist (copy attached). A second letter (also attached) from Julie Wang, Alberta Environment Engineer, echoes our sentiments about possible groundwater infiltration. Our questions at this time are: "Is the landfill functioning as intended and more specifically, does it have a groundwater infiltration/leachate problem?" The detailed site investigation was completed between 2001 and 2002 at a time of historic low water tables and things have changed significantly since then. Our concern is both financial and environmental. If the integrity of the clay liner/cell

design has been compromised, we see the development of additional cells compounding what we suspect is a groundwater infiltration problem and placing an additional financial burden on the Commission. Of even greater concern is that a return to a low water table could potentially result in leachate exiting the landfill. At the time of appeal we were unable to prove the presence of an exceptional aquifer. We now have reason to believe that the scale house well is in fact that, which would be troubling. The financial and environmental responsibility for that landfill will be borne by the Commission members and therefore ultimately so by the rate payers and those who live in proximity to it.

Respectfully,



Amil Shapka

Alberta
ENVIRONMENT

Memorandum

Regional Services
Northern Region

111 Twin Atria Building
4999 – 98 Avenue
Edmonton, Alberta T6B 2X3

FROM Jason Pentland
Contaminant Hydrogeologist
Northern Region

OUR REFERENCE

TO David Curran
Municipal Approvals Engineer
Northern Region

DATE August 7, 2003

TELEPHONE 427-6019
FAX 427-9102

SUBJECT **Evergreen Regional Class II Landfill Detailed Hydrogeological Investigation**

I have had the opportunity to review the Detailed Hydrogeological Investigation prepared by Omni-McCann for the Evergreen Regional Class II Landfill at the request of Margaret Klebek.

I have the following comments as a result of the review:

1. The site is underlain by glacial till to 10.9 to 19.5 m below ground surface. The till is predominantly silty clayey sand based on textural classification, but plots as a low to intermediate plasticity clay based on the modified Unified Classification System. The till has an average hydraulic conductivity of 5×10^{-9} m/s with hydraulic conductivity as high as 3×10^{-7} m/s in highly weathered zones. Twelve of twenty-seven tests indicated hydraulic conductivity greater than 1×10^{-8} m/s. Based on the information provided, the site does not meet the requirement of the current *Code of Practice For Landfills* alternative landfill design criteria (i.e. 10 m of clayey material with hydraulic conductivity of 1×10^{-8} m/s) and will therefore require a liner and leachate collection system.

2. The report indicates that glacial-fluvial sand/gravel and sand till up to 3 m in thickness are present at the surface of the site. The sand and gravel does not appear to be continuous across the site based on the report. The report recommends that this material be removed prior to liner construction and stockpiled for road construction or cover material. As part of the detailed design for the landfill, further delineation of this surficial sand should be conducted.

3. Beneath the till in the northeast portion of the site at depths of approximately 11 m to 15 m is glacial sand, ranging in thickness from 1 m to 8 m in the northeast portion of the site. As part of the detailed landfill design, Omni-McCann recommends conducting a risk assessment on the potential for contaminant

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transfer to the sand. This risk assessment should consider the potential for contaminant migration to the sand and the potential of the sand to be a domestic use aquifer.

4. The report indicates that the water table at the site is 4 m to 6 m below ground surface. However, it also indicates that the water table rose sharply in response to rainfall in the spring of this year. The water table at 4 m to 6 m below ground surface may be indicative of the water table during dry conditions (i.e. drought conditions in 2002) and may not represent the long-term water table at the site. Moisture content profiles for the borehole logs provided indicate that the soil is close to saturated to near the ground surface. Further groundwater measurements should be taken throughout the design phase of the landfill project.

5. Omni-McCann uses the hydraulic conductivity value obtained in slug tests when calculating vertical groundwater movement velocity at the site. They should provide comment on the suitability of this approach, given that vertical hydraulic conductivities are typically different from horizontal hydraulic conductivities due to soil anisotropy.

Should you require anything further, please let me know.

Jason Pentland

Julie Wang

From: Julie Wang
Sent: Wednesday, September 03, 2008 3:13 PM
To: Rasel Hossain
Cc: Kem Singh
Subject: Leachate issue of Evergreen Regional Landfill

Rasel,

During the review of the Evergreen Regional Landfill Application, we found the leachate level is Cell 1# was 2.0 m above the liner, leachate level increased from 649.11m (August 15, 2007) to 650.43m (August 21, 2007), and 2558 m3 of leachate was removed. At the same time, a higher groundwater level was also found in 2007.

- Liner top 648.34m
- Highest leachate level: 650.43m (Figure F-VII)

Water table contour (Figure F-IV):

- Northeast of Cell 1#: 651m
- Southwest of Cell 1: 650m
- east of cell 2#: 652m.

My guess the high leachate level may be caused by a heavy storm, run-on control system failure or groundwater infiltration. If it is due to groundwater infiltration, there is a good reason to worry about the liner integrity because the liner should cover the bottom of the cell, slopes of the cell and extends to the top of cell berm. That's why I am asking for QA/QC and as built reports, surface run-on and runoff control systems drawings to show flow direction, annual precipitation for 2005, 2006 and 2007. When I asked why the leachate level was so high and such amount of leachate was removed in 2007, the answer was "leachate removed was for Cell 1# and Cell 2#".

I understand that it is an existing landfill, Code of Practice for landfills applies to Cell 1# and Cell 2#. I am not asking for information to punish them, I am asking for information to identify problems. Please understand, there is no new design for future landfill cells was submitted with the approval application, which means the design of cell 1# will be used for future cell development, at least we can not see the consultant and the commission want to change it.

When 0.3 m leachate level is required, we try to minimize the pressure of leachate head, and minimize contamination migration. When groundwater level 2-4m higher than the cell liner, I really don't know what would be the best leachate head level technically and financially. This may need a closer look.

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