Earth Tech Canada Inc.

17203 - 103 Avenue, Edmonton, Alberta T5S 1J4 Canada

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City of Iqaluit
Building 961
P.O. Box 460
Iqaluit, NU X0A 0H0

Attention: Brad Sokach, P.Eng.

Via Fax: (867) 975-8505

Dear Sir:

Re: City of Iqaluit Wastewater Treatment Plant
Phase 1 Primary Treatment Discussion

Telephone
780.488.6800
Facsimile
780.488.2121

As requested, Earth Tech has reviewed the effectiveness of the proposed Phase 1 Primary Treatment System in relation to the existing lagoon.

The screw screens, which have openings of 3 mm diameter, will remove particulate matter with a dimension larger than 3 mm. The openings on the primary filters are 300 microns. Initially, particles smaller than 300 microns will pass through the filter. However, as the screened sewage continues to pass through the filter, a blanket of solids accumulates so that the filter becomes effective in removing particles of decreasing size. The primary filter effluent can be expected to be similar in quality to primary effluent from a conventional primary sedimentation tank, or primary clarifier.

The question is - would additional treatment be achieved by passing the primary filter effluent through the existing sewage lagoon?

We understand that due to the size of the lagoon and solids accumulation in the lagoon, its working volume provides hydraulic retention of only several days. There will be short circuiting in the flow patterns through the lagoon. Therefore we wouldn't expect that any appreciable additional removal of solids by sedimentation would occur. The solids that might otherwise have settled in the lagoon would have been removed by the primary filter.

Because there is no source of oxygen most of the year due to ice cover, we could not expect there to be any significant amount of aerobic activity by bacteria to reduce the BOD (biochemical oxygen demand) of the soluble and suspended organic material. Even in the summer when the lagoon is ice free, the retention time is too small to allow substantial BOD removal. Design of facultative lagoons on the prairies normally includes at least 30 days

hydraulic retention capacity. Also, the hydraulic retention is too small to allow anaerobic decomposition of the soluble and suspended dissolved organic material.

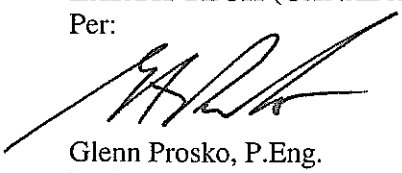
Therefore, by passing the primary filter effluent through the lagoon, we could expect no significant additional removal of particulate matter and no significant removal of soluble or suspended BOD. Our opinion is that additional removals of TSS and BOD, if any, would be no more than a couple of percentage points from that achieved by the Phase 1 primary filters.

The disadvantage of providing lagoon "treatment" downstream of the primary filters is that it would require installation of an additional sewage lift station with forcemain (estimated cost approximately $500,000). Once Phase 2 is constructed, this facility would have little if any use. (The lagoon could still be used as a place to divert raw sewage in the event of a power failure. If the raw sewage lift pumps shut down, then the sewage would back up into the upstream manhole and eventually overflow into the line to the lagoon. At that time, there would be no flow originating from the primary filter effluent lift station, due to the power failure.)

We trust this is satisfactory and should you have any questions or comments, do not hesitate to contact the undersigned at (780) 453-0717.

Very truly yours,

EARTH TECH (CANADA) INC.
Per:



Glenn Prosko, P.Eng.
Project Manager

cc: Mike Whalley, Earth Tech