

## SUMMARY OF COMMENTS/RECOMMENDATIONS

**PROPONENT:** Sturgeon Creek Holding Co. Ltd.  
**PROPOSAL NAME:** Sturgeon Creek Colony Wastewater Treatment Lagoon Expansion  
**CLASS OF DEVELOPMENT:** 2  
**TYPE OF DEVELOPMENT:** Wastewater Treatment Lagoon  
**CLIENT FILE NO.:** 4913.00

### OVERVIEW:

On February 18, 2003, the Department received an Environment Act Proposal (EAP) on behalf of the Sturgeon Creek Holding Co. Ltd. for the Sturgeon Creek Colony wastewater treatment lagoon upgrade and expansion. The lagoon facility is located within the northwest quarter of Section 17-Township 11-Range 1EPM in the Rural Municipality of Rosser. The proposed alterations include the joining of the existing primary and secondary cells to form one larger primary cell and the construction of an additional clay-lined secondary cell adjacent to the north side of the existing lagoon. The treated wastewater will be discharged twice annually between June 15 and November 1 to a drainage ditch which flows into Sturgeon Creek, which discharges to the Assiniboine River approximately 16 kilometres southeast of the lagoon.

The Department, on February 24, 2003, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station); the Centennial Public Library, the Manitoba Eco-Network and the R.M. of Rosser office and provided copies of the EAP report to the Canadian Environmental Assessment Agency (CEAA), the Clean Environment Commission, and TAC members. As well, the Department placed public notifications of the EAP in the Headingley Headliner on Monday, March 3, 2003. The newspaper and TAC notifications invited responses until March 27, 2003.

This EAP relates to expansion of an existing wastewater treatment lagoon that currently does not have an Environment Act Licence.

On April 1, 2003, Manitoba Conservation forwarded requests for additional information from the TAC to the proponent. The proponent's response to the requests was then provided to the TAC for review and comment. The TAC responded with several supplementary comments and suggested options to assist in mitigating potential impacts. Comments from the public were also received both during and after the review period. The main issues relate to the assimilative capacity of the receiving stream and potential impacts on aquatic life.

**COMMENTS FROM THE PUBLIC:**

<u>Name</u>	<u>Address</u>	<u>Date</u>	<u>Comment(s)</u>
Anseeuw, Brian	Box 178 Oak Bluff, MB R0G 1N0	03/03/10	<ul style="list-style-type: none"> <li>Expressing concern over potential surface water quality impacts</li> </ul>
Sturgeon Creek Watershed Enhancement Project  (Wain, Duncan)	74 Prairie View Road Wpg., MB R3J 1G9	03/06/30	<ul style="list-style-type: none"> <li>Identifying concerns relative to potential impacts on fish habitats resulting from added nutrient loadings, increased oxygen demands, potential chlorine residual;</li> <li>Suggesting alternative wastewater treatment or disposal methods be explored.</li> </ul>

Proponent Responses

- Concern for the environment is legitimate. The global nature of nutrient loading to Lake Winnipeg is not addressed by placing extraordinary limits on a relatively small project such as the Sturgeon Creek Colony wastewater lagoon. While it may be necessary to take small steps in solving global problems, applying prohibitive limits when they are not mandated by current legislation and standards would be discriminatory to the colony.
- Notwithstanding the lesser comparative impact of ammonia and phosphorus, and the lesser oxygen depletion potential of the effluent discharge from the expansion to the existing wastewater treatment lagoon for the Sturgeon Creek Colony, the discharge ditch between the outlet of the lagoon and the Sturgeon Creek drain will serve to further reduce the impact of the effluent on Sturgeon Creek. This ditch is about 200 metres long. It will be lower in elevation than the culvert which is the final outlet to the Sturgeon Creek drain. This will cause the development of a rich growth of emergent vegetation in the discharge ditch. This vegetation, along with the retained water, will result in oxygenation of the effluent and uptake of nutrients. It is not to be compared to a full scale wetland for nutrient management. But it will result in measurable reductions in ammonia and in the overall load of nutrients prior to the water reaching the drain. This is considered to be a bonus since the effluent is expected to be well within the limits set forth in the Province of Manitoba Water Quality Standards, Objectives and Guidelines.

Disposition:

- The draft Environment Act Licence includes a clause that disallows lagoon discharge between the 1<sup>st</sup> day of November of any year and the 1<sup>st</sup> day of September of the following year. This will assist in reducing the potential for impacts of lagoon discharge on Sturgeon Creek.

**COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:**

**Agriculture and Food**

- *No concerns.*

**Historic Resources**

- *No concerns.*

**Intergovernmental Affairs**

- *No concerns.*

**Sustainable Resource Management Branch**

March 28, 2003

- *The proposal has not adequately assessed all potential impacts to Sturgeon Creek. The proponent has completed their assessment on the basis of one set of samples collected in September, 2002. The Water Quality Management Section has considerable data on Sturgeon Creek that could be used in this assessment;*
- *The quality of the effluent is considerably poorer than the water quality in Sturgeon Creek. Under low flow conditions there is concern that the high nutrient effluent may cause excessive plant growth in pools and behind the Grant's Mill Dam;*
- *Rather than referring to the CCME guidelines for ammonia the ammonia objectives from the Manitoba Water Quality Guidelines, Objectives and Standards should have been used. Under low flow conditions the effluent discharge may represent the total stream flow resulting in little or no assimilative capacity. In this case the ammonia levels are likely to exceed those specified in the Manitoba Water Quality Guidelines;*
- *Sturgeon Creek has a history of fish kills that are likely related to depleted oxygen. Also, in recent years fish habitat enhancement work has been carried out downstream of the colony. It would be preferable if the effluent was not released to Sturgeon Creek. The proponent should explore alternative effluent disposal options such as effluent irrigation. If other alternatives are not feasible additional effluent stabilization by means of a constructed marsh adjacent to the upgraded lagoon should be considered; and*
- *The proponent should be required to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director, for Sturgeon Creek, the Assiniboine River and associated waterways and watersheds.*

### Proponent Responses

- As requested, more data has been obtained from the Water Quality Management Section. Of specific interest is the data regarding temperature, pH, ammonia, nitrate-nitrite and total phosphorus. We have reviewed data at the colony, at the Perimeter Highway, at Hamilton Bridge and at Woodhaven. These are the four main sampling stations and are representative of Sturgeon Creek between the colony and the Assiniboine River. Only one series of data for ammonia and nitrate-nitrite was provided. Those data are from August and September of 1993. The September data could be relevant, as a lagoon discharge could start in September but will likely occur in October. The main discharge of every year will occur in June.

Comparing this data to that presented in Table 8.2 of the EAP report, shows that ammonia and phosphorus levels are typically higher than when the tests of the creek were taken during the lagoon discharge of late September 2002. Nitrate-nitrite-N tests are comparable, pH tests are typically lower. This confirms the earlier conclusion that the lagoon discharge was not having a measurable impact on the drain at the time....It is true that the quality of the effluent is poorer than the quality of the water in the drain. This will be true of virtually every discharge of effluent from wastewater treatment systems in Manitoba. Firstly, the issue is whether the discharge quality meets the criteria set forth in Manitoba for such effluents. The Tier I – Water Quality Standards (MWQSOG) for “Municipal Wastewater Effluents” will readily be met by the proposed expanded facility. The tests were done on September 27, 2002. At the time there was only a trickle of flow (perhaps only contributed by the lagoon effluent) over a small weir near the colony. That can be considered as the lowest-flow condition. The nutrients are assimilated by the growth of emergent vegetation in the ditch and creek as shown in the photographs in the original report. These nutrients are not the cause of “excessive plant growth in pools and behind the Grant’s Mill Dam”, though they will contribute an incremental part as do all the nutrients that exist in the flow from the 580-square kilometer watershed area and indeed from the City of Winnipeg Northwest.

- As requested, the MWQSOG have been referenced rather than the CCME guidelines. The former are, in fact, typically less restrictive for ammonia than the latter. Actual allowable ammonia calculations for various temperatures and pH levels have been made. A range of values was calculated. The ammonia value in the effluent does not exceed that of the MWQSOG at the pH and temperature of the effluent at the time of testing. The sample was taken in the local drainage ditch adjacent to the outlet from the lagoon. Similarly, a sample of the water from the mixing zone in the Sturgeon Creek drain registered an ammonia value of 0.04 mg/l. This is below the accepted MWQSOG value at the pH of 8.56 and temperature of 15°C. The sample was taken at a location of 1.5 metres from shore and 5 metres downstream from where the effluent entered the Sturgeon Creek drain. These considerable margins of acceptability are expected to prevail over the range of temperatures and pH values that will be experienced in June and October of any year.

- We have requested more specific data on the reported fish kills but have not been provided with any. It is likely that any fish kills will have occurred under ice cover in the lower reaches of Sturgeon Creek where small dams and spillway structures are located. The colony reports that they have not seen any fish in the channel near the colony where it is a machine-made agricultural drain. Discharges from the current or the proposed enlarged wastewater treatment lagoon in June and October will not result in measurable oxygen depletion. Dissolved oxygen levels in Sturgeon Creek, in September and October, are reported in the healthy range of 7 to 10 mg/l. The BOD concentration will meet the Tier I requirement of 30 mg/l and will probably be 10 mg/l or even less. It will not have a residual oxygen demand that will cause fish kills under the ice in the lower reaches of the creek. The sources and remedies for that problem must be found elsewhere.
- The proponent has explored other means of effluent disposal, such as land irrigation. This would require the acquisition of irrigation pumping and application equipment. In addition to the added expense and work involved with this, two times every year, it is probable, if not guaranteed that there will be spring and fall situations where irrigation is not practical or possible. A number of licencees (mostly colonies) are requesting alterations to their licences (where expedient in the first instance to suggest or impose irrigation) because of the reality of the problems with land application under wet soil conditions.
- It is undoubtedly the case that the proponent, as represented by various farm and agricultural agencies and by the municipality, will participate in any watershed management studies and programs.

July 10, 2003

- *Sturgeon Creek has a minimal assimilative capacity. Fish kills and cray-fish deaths have been observed in the creek under open water conditions. Although it is recognized that the lagoon is only one of the many loading sources to the stream, efforts should be undertaken to reduce the impacts from all sources;*
- *A local stewardship organization is responsible for undertaking significant restoration activities along the creek with other restoration activities planned for the future. Consequently, all efforts should be undertaken to minimize the impact of the lagoon discharge on Sturgeon Creek. There are 3 options that may help mitigate the impacts:*
  1. *Effluent irrigation, with a provision to discharge in wet years when irrigation is not feasible;*
  2. *A once-a-year fall discharge (minimizing the nutrient loading during the peak aquatic growing season);*
  3. *Allowing a slow trickle discharge from the lagoon between mid-June and October, while maximizing retention of the effluent in the 200-m drainage ditch. This should maximize nutrient infiltration and vegetation uptake.*

Disposition:

- The draft Environment Act Licence includes a clause that requires the Licencee to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director, for Sturgeon Creek, the Assiniboine River and associated waterways and watersheds.
- The draft Environment Act Licence includes a clause that disallows lagoon discharge between the 1<sup>st</sup> day of November of any year and the 1<sup>st</sup> day of September of the following year. This will assist in reducing the potential for impacts of lagoon discharge on Sturgeon Creek.

**Transportation and Government Services**

- *The Department has no major concerns, but wishes to note the following:*
  - *Based on the information provided, we assume the additional flow into Sturgeon Creek will not impact the hydraulic capacity of the existing culverts on our Department Roads. However, it should be noted that any increased capacity that may be required is the responsibility of the applicant.*

**COMMENTS FROM FEDERAL REPRESENTATION:**

**Canadian Environmental Assessment Agency**

- *CEAA responses have indicated that application of The Canadian Environmental Assessment Act with respect to this proposal will not be required. Environment Canada and Health Canada would be able to provide specialist advice in accordance with Section 12(3) of the Act.*

**PUBLIC HEARING:**

A public hearing was not requested.

**RECOMMENDATION:**

Issue an Environment Act Licence in accordance with the attached draft. Enforcement of the components of the new Licence that relate to soil liner characteristics should be assigned to the Approvals Branch until all soil testing has been completed.

PREPARED BY:

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