

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Riverdale Holding Co. Ltd.  
**PROPOSAL NAME:** Riverdale Colony Wastewater Treatment Lagoon Expansion  
**CLASS OF DEVELOPMENT:** 2  
**TYPE OF DEVELOPMENT:** Wastewater Treatment Lagoon  
**CLIENT FILE NO.:** 1981.20

### **OVERVIEW:**

On March 2, 2007, the Department received an Environment Act Proposal (EAP) on behalf of the Riverdale Holding Co. Ltd. for the expansion of the Riverdale Colony wastewater treatment lagoon located in SE 9-14-12WPM in the Rural Municipality of Westbourne to service the Riverdale Colony farmsite located in the adjoining north half of Section 4-14-12WPM. The cells of an existing wastewater treatment lagoon that currently services the farmsite will be decommissioned in stages as the cells of the new wastewater treatment lagoon are constructed. Treated wastewater from the wastewater treatment lagoon will be discharged to Bear Creek that flows into the Whitemud River between June 15<sup>th</sup> and November 1<sup>st</sup> of any year.

The Department, on March 19, 2007, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station), the Millenium Public Library, the Portage la Prairie City Library, and the Manitoba Eco-Network and provided copies of the EAP report to the Canadian Environmental Assessment Agency (CEAA), and TAC members. As well, the Department placed public notifications of the EAP in the Central Plains Herald on Saturday, March 4, 2007 and in the Neepawa Banner on Monday, March 26, 2007. The newspaper and TAC notifications invited responses until April 24, 2007.

On July 6, 2007, Manitoba Conservation forwarded requests for additional information from the TAC to the proponent. The proponent's September 26, 2007 response to the requests was then provided to the TAC for review and comment on September 27, 2007. There were no additional comments from the TAC.

### **COMMENTS FROM THE PUBLIC:**

There were no comments from the public.

## **COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:**

### **Historic Resources – Manitoba Conservation**

- *No concerns with regard to this project's potential to impact heritage resources.*

### **Sustainable Resource & Policy Management Branch – Manitoba Conservation**

April 25, 2007

- *Riverdale Colony proposes to construct the new lagoon at the site of the existing lagoon; were any other sites considered?;*
- *In Clause 5.2.2 of the proposal, the consultant discusses potential evaporation of water from the lagoon; was there any attempt to quantify the likely amount of evaporation at the lagoon?;*
- *In Chapter 7, the consultant indicates that the Colony wishes to continue to discharge treated effluent to Bear Creek. Was any consideration given to discharging treated effluent to the land as irrigation water?;*
- *The discussions of effluent quality and downstream impact in Chapter 8 of the proposal include a good description of the likely impacts from ammonia but no discussion of potential phosphate impacts;*
- *The discussion of downstream impacts seems to be limited to Bear Creek and does not extend to the Whitemud River which the creek flows into;*
- *Section 8.4 discusses potential groundwater impacts; are there any plans to install monitoring wells at the new wastewater treatment lagoon?;*
- *This facility will be located in close proximity to Bear Creek. However, this close proximity is mitigated by the following considerations:*
  1. *The proposed facility will replace existing facilities at that site (including one that is not licenced and for which little information on design and construction is available);*
  2. *The proposed facility design includes installation of a 30-mil PVC liner to address seepage concerns with local sandy soil conditions;*
  3. *The proposed facility will offer superior treatment of sewage in comparison to the existing facilities.*

### **Proponent Responses – September 26, 2007**

- **Alternate sites were considered but were rejected after preliminary review due to the fact that suitable clay was not located in the area and all other sites would require the installation of a lift station and forcemain in addition to the new lagoon.**
- **Environment Canada's National Climate Data and Information Archive was consulted to provide an indication of the evaporation and precipitation experienced in Winnipeg from 1971 - 2000. Based on the available information, an average of**

approximately 235 millimetres (mm) of precipitation was recorded over the period of November – June 15 (227 day storage period). Evaporation information is only available for May – September and therefore only the overlap period between May – June 15 for evaporation can be compared to the November – June 15 precipitation period. However, the evaporation from May – June 15 alone is approximately 225 mm. Therefore, it can be concluded that average precipitation over the course of the typical storage period does not influence the storage requirements of the lagoon, as generally assumed.

- Consideration was given to applying the effluent to land, but ultimately, the decision was made to continue discharging to the surface watercourse. The risk associated with applying effluent to land is that in wet years (such as 2004 and 2005), there may not be any land available in which to apply the effluent. In addition, there are the inevitable conflicts of time with the normal agricultural operations of the Colony.
- The new Riverdale Colony lagoon has been designed to service a population of approximately 130 people. Based on Manitoba Conservation Report 2002-04 “*A Preliminary Estimate of Total Nitrogen and Total Phosphorus Loading to Streams in Manitoba, Canada*” the following assumption was incorporated to approximate the nutrient loading from the new lagoon facility:

~ Influent TP = 3.38 g/c/d, with a removal efficiency of 65.5%

Therefore, the maximum design population of Riverdale Colony will generate wastewater with 55 kg/y of TP. This nutrient level can be compared to the loading to Lake Winnipeg from the three main tributaries and atmospheric deposition from the above mentioned report. TP loading from the Riverdale Colony facility equates to  $(55 / 5,858,000 =) 0.001 \%$  of the total mean load to Lake Winnipeg. This comparison shows the impact from the proposed development to be minor in terms of the total nutrient loading to the Lake. The nutrient loading to Bear Creek is expected to be minimal, perhaps with enhanced vegetation growth along the route.

- The effluent from the lagoon facility will meander approximately 2.5 kilometres (km) in Bear Creek before converging with the Whitemud River. After travelling this distance within the Bear Creek watercourse all parameters are expected to be near or at background levels. The maximum discharge from the lagoon totals 6,360 m<sup>3</sup>, which will occur in approximately 2-3 days. Based on these factors, the impact to Whitemud River is expected to be non-detectable.
- There are no plans to install monitoring wells at the lagoon site. Groundwater monitoring will be performed as required by Manitoba Conservation.
- General comments noted.

#### Disposition:

- The draft Environment Act Licence contains clauses that provide limits, terms and conditions respecting the liner of the cells of the wastewater treatment lagoon.

- The draft Environment Act Licence contains a clause that requires the licensee to actively participate in any future watershed-based management study, plan and/or nutrient reduction program, approved by the Director, for the Whitemud River and associated waterways and watersheds.
- The draft Environment Act Licence contains a clause that requires the proponent to propose a groundwater investigation and monitoring plan to the Director for approval within six months of the date of the Licence.

### **Infrastructure and Transportation**

- *No concerns.*

### **Ecological Services Division – Water Stewardship**

- *Under the proposed Nutrient Management Regulation under The Water Protection Act, no person shall construct, install, site, locate, replace, expand or modify a wastewater treatment lagoon in a Nutrient Buffer Zone. The proponent is advised that a Nutrient Buffer Zone extends 3 metres from the high water mark of Bear Creek (or the top of the outermost bank on that side of the water body which ever is further from the water). This Nutrient Buffer Zone must be covered in permanent vegetation. Otherwise, the Nutrient Buffer Zone would extend 8 metres.*
- *The Water Quality Management Section is concerned with any discharges that have the potential to impact the aquatic environment and/or restrict present and future uses of the water. Therefore it is recommended that the license require the proponent to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director, for Bear Creek, the Whitemud River, Lake Manitoba and associated waterways.*
- *The R.M. of Westbourne, the Town of Gladstone and private users (if any) located at downstream should be aware of this discharge route.*
- *Bear Creek, assessed by DFO has having Type A habitat and indicator species, also enters Whitemud River. The Whitemud River is recreationally and commercially fished.*
- *While overall, given the current condition of the existing lagoons, the upgrades, which include lining the two cells, should improve the situation, we have the following considerations:*
  - *Given the fish bearing capacity of Bear Creek, proponents should undertake a monitoring program where the effluent enters the creek. This should be an annual requirement of the license with consultation from Water Quality section on parameters required. Ammonia levels as well as chlorine (if used to reduce fecal coliform MPN) would be of interest to fisheries but we defer to Water Quality's recommendations.*

- *The report indicates seepage occurred but there does not appear to have been any groundwater or surface water monitoring to determine the effects, if any, to date.*
- *During construction what will be done with the soils that are saturated with effluent.*
- *Temporary and permanent erosion and sediment measures need to be implemented to prevent runoff into creek.*
- *As DFO has jurisdiction over habitat under the federal Fisheries Act, our comments do not take precedent over their review. As long as they are involved in reviewing this proposal and manage fish habitat to meet the intent of their no net loss policy, provincial fisheries management interests should be met.*

#### Proponent Responses – September 26, 2007

- The proposed lagoon design was reviewed in light of the Nutrient Buffer Zone comments and slight revisions were made to the drawings.
- Any party involved in a future watershed based management study, plan/or nutrient reduction program for the Bear Creek and Whitemud River is welcome to contact the Colony.
- The Riverdale Colony lagoon is an existing facility and the discharge route is unmodified. The project was advertised in the Central Plains Herald Leader on March 24, 2007 and the Neepawa Banner on March 26, 2007.
- Effluent monitoring will be performed by Manitoba Conservation as detailed in a new Environment Act Licence.
- Groundwater monitoring will be performed as required by Manitoba Conservation.
- An earthwork calculation was performed on the original lagoon design to balance the excavation and embankment quantities. All suitable excavated materials in the development are intended to be used in the construction of the new lagoon.
- All potential erosion areas involving Bear Creek created by the lagoon development will be sufficiently armoured with rip rap. The only potential sediment concern involves the new perimeter ditch proposed for the facility. This ditch will be seeded to grass after completion.
- It is our understanding that DFO is involved in reviewing the Environment Act Proposal.
- General comments noted.

#### Disposition:

- The draft Environment Act Licence contains clauses that identify limits for quality and timing of effluent discharge as well as for effluent monitoring and reporting requirements that are the responsibility of the licensee;

- Clause 27 of the draft Environment Act Licence requires that the Licencee obtain samples of treated wastewater prior to each effluent discharge and have them analyzed for total ammonia nitrogen, total Kjeldahl nitrogen, nitrate-nitrite nitrogen; total dissolved phosphorus; total phosphorus, and inorganic phosphorus. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence;
- The draft Environment Act Licence contains a clause that requires the licensee to actively participate in any future watershed-based management study, plan and/or nutrient reduction program, approved by the Director, for the Whitemud River and associated waterways and watersheds;
- The draft Environment Act Licence contains a clause that requires the proponent to propose a groundwater investigation and monitoring plan to the Director for approval within six months of the date of the Licence.

#### **COMMENTS FROM FEDERAL REPRESENTATION:**

##### **Canadian Environmental Assessment Agency**

- *Based on the responses to the CEAA survey, application of The Canadian Environmental Assessment Act with respect to this proposal will not be required. Environment Canada and Health Canada provided comments while Fisheries and Oceans Canada is willing to provide specialist if requested. Health Canada would like to participate in the provincial review of the project.*

##### **Environment**

- *Environment Canada (EC) received a copy of the above noted proposed project document from the Canadian Environmental Assessment Agency (CEAA) for review. EC has no trigger under Section 5, of CEAA, however, would like to participate in the provincial review of the proposed project consistent with the intent of Clause 62 of the new Canada-Manitoba Agreement on Environmental Assessment Co-operation.*
- *Environment Canada has reviewed the above project description proposed by Riverdale Holding Co. Ltd., and understands that the Riverdale Holding Co. Ltd. proposes to construct an expanded two-cell lagoon requiring the restructuring of the existing lagoon. The setback distance from the proposed expanded lagoon to the Bear Creek (Type "A" complex habitat) is not obvious.*
- *The proponent proposes to install a 30-mil PVC liner in the cells (s. 5.12, proposed design), however, EC notes that geomembrane material properties (ASTM method) indicate that 30-mil Liner Low Density Polyethylene (LLDPE) and 60-mil High Density Polyethylene (HDPE) geomembranes appear to be superior to 30-mil PVC. Therefore, it is not clear why the proponent is opting to use 30-mil PVC. .*

Proponent Responses – September 26, 2007

- The lagoon design proposes a 3 metre setback from the top bank of the Bear Creek.
- To our knowledge, LLDPE is not an approved liner according to Manitoba Conservation and we defer this half of the question to them. Currently the Manitoba Conservation approved liners are 30-mil PVC and 60-mil HDPE, both of which are required to be covered by a 0.3 metre perpendicular layer of granular cover or sand. At present, 30-mil PVC is more economical to install, although bidding contractors are welcome to quote the installation of a 60-mil HDPE if they are able to acquire a more competitive price.

**Health**

- *The following are comments offered in accordance with the Canada-Manitoba Agreement on Environmental Assessment Cooperation as based on the review of Cochrane Engineering's Environment Act Proposal (EAP), dated June 2006 as forwarded by your office:*
  - *The EAP does not indicate the location of all water resource users in the vicinity of the project, the aquifer characteristics, and the potential for the aquifer to be affected by the existing and proposed wastewater treatment operations.*
  - *Will the project be protected from flooding to a 1 in 100 year flood event level or better?*
  - *The EAP does not indicate whether staff operating the new facility will be trained/certified as required.*
  - *Wastewater treatment lagoon construction typically requires a minimum setback of 300 m from residences or more when aeration is not used or prevailing winds are a concern. Section 2.0 states that the new lagoon will be 190 m from the nearest residence. How will this situation be mitigated?*

Proponent Responses – September 26, 2007

- Well logs from Manitoba Water Well reports were included in Appendix B of the Geotechnical Report. There is only one well listed in 9-14-12 WPM, in the northeast quarter, which is at minimum 650 metres from the lagoon site. Since a groundwater report is not available for the area, only a general discussion of the aquifers is presented in the Geotechnical Report. The potential affects to these aquifers are expected to be non-detectable and groundwater monitoring will be performed as may be required by Manitoba Conservation.
- Since its construction (believed to be 1979), any high water levels have not been an issue for the existing lagoon.
- The lagoon operator has not been trained, but will seek training at the next offered opportunity.
- The proposed lagoon development is in the location of the existing lagoon facility. An existing hog barn already separates the lagoon from the housing.

Disposition:

- The draft Environment Act Licence contains a clause that requires the proponent to propose a groundwater investigation and monitoring plan to the Director for approval within six months of the date of the Licence;

**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 lagoon construction and liner characteristics should be assigned to the Approvals Branch until all soil testing has been completed.

PREPARED BY:

Robert Boswick, P. Eng.  
Environmental Engineer  
Environmental Assessment and Licensing Branch  
Manitoba Conservation  
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Telephone: (204) 945-6030

Fax: (204) 945-5229

E-mail Address: robert.boswick@gov.mb.ca