

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Rural Municipality of Elton  
**PROPOSAL NAME:** Forrest Sewage Lagoon Expansion  
**CLASS OF DEVELOPMENT:** 2  
**TYPE OF DEVELOPMENT:** Wastewater Treatment Lagoon  
**CLIENT FILE NO.:** 4738.00

### **OVERVIEW:**

On February 6, 2002, the Department received an Environment Act Proposal (EAP) on behalf of the Rural Municipality of Elton to expand an existing 2-cell wastewater treatment lagoon located in SW 31 - 11 - 18 WPM to serve the community of Forrest and rural residents of the RM. Effluent (treated wastewater) from the wastewater treatment lagoon would be discharged eastward in the existing natural drain to a 3<sup>rd</sup> order municipal drain that flows into Willow Creek with eventual discharge to the Assiniboine River. Effluent would be discharged between June 15<sup>th</sup> and November 1<sup>st</sup> of any year..

The Proposal and supporting documentation, prepared by Stantec Consulting Ltd., indicates that the soil types at the site of the lagoon and lagoon expansion are primarily clay and silty clay to a depth of at least 3 metres. Supporting documentation indicates that the silty clay soil available at the site is expected to meet provincial standards regarding hydraulic conductivity of soils used for construction of wastewater treatment lagoons.

The Department, on February 19, 2002, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station); the Centennial Public Library and the Western Manitoba Regional Library in Brandon 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 Brandon Sun on Saturday, February 23, 2002. The newspapers and TAC notifications invited responses until March 20, 2002.

On April 4, 2002, Manitoba Conservation submitted responses from the TAC members to the appropriate Public Registries. No comments were received from the public.

On April 5, 2002 Manitoba Conservation forwarded comments that had been received from the TAC to the proponent. Additional information that would address the concerns presented in the comments was requested from the proponent.

On April 16, 2002, the consultant submitted a response to the concerns presented to Manitoba Conservation and distributed the response to the TAC members from which the comments and requests for additional information had originated.

On May 6, 2002, Prairie Farm Rehabilitation Administration (PFRA), representing the CEAA, requested responses to additional questions regarding the proposed lagoon expansion.

On May 30, 2002, the consultant submitted a response to PFRA. Representation from PFRA indicated that no additional information would be required, aside from an opportunity to review an Environment Act Licence relative to this EAP.

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

There were no comments from the public.

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

#### **Agriculture and Food**

- *No concerns.*

#### **Health**

- *The need for fencing, gates and warning signs should be included in the proposal to ensure public safety, in case of unsupervised public access to the development;*
- *Consideration of inclusion of odor nuisance clause;*
- *Please ensure that any discharge of effluent is in compliance with Manitoba Environment's guidelines as its drainage course includes Willow Creek and the Assiniboine River;*
- *Please ensure containment design provides the best possible groundwater protection for the area; and*
- *Please consider leachate monitoring.*

#### **Disposition:**

- A chain link fence and gate will surround the lagoon. The gate will be signed to identify the facility and to state that no trespassing is allowed. The drain will also be signed downstream to warn school children;
- The lagoon is located 310 metres east of the school and does not have a history of creating an odour nuisance. A clause specific to this has not been incorporated to the Licence;
- The Licence requires effluent quality to meet typical standards for lagoon discharge;

- The Licence requires that the lagoon have a continuous liner under all interior surfaces of the cells; and
- There is no justification for monitoring the lagoon area for seepage at this time.

### **Historic Resources**

- *No concerns.*

### **Intergovernmental Affairs**

- *It is noted that the existing and proposed lagoons are approximately 300 metres east of Elton Collegiate. If health and environmental authorities are satisfied with this situation, I would have no objection to the proposal.*
- *The municipality's zoning by-law would appear to provide for this type of development as a conditional use. Council should proceed with a conditional use application to establish the expansion of the lagoons.*

### **Disposition:**

- The lagoon and the school are separated by approximately 300 metres, the minimum separation distance indicated by lagoon guidelines;
- The R.M. Council were requested to obtain Conditional Use approval.

### **Sustainable Resource Management Branch**

- *The new primary cell has an area of 0.42 hectares, which would result in an organic loading greater than 56 kg/day BOD<sub>5</sub> potentially causing odour problems if poor mixing were to take place between the cells. An alternative would be to remove the berm in the old lagoon system and install the truck dump station at that cell;*
- *Following construction the berms should be tested to ensure that the hydraulic conductivity is less than  $1 \times 10^{-7}$ ;*
- *Results of effluent quality testing should be provided to the Regional Staff;*
- *The lagoon expansion area should be fenced with a locked gate and warning signs. An appropriate splash pad should be installed at the truck dump area to prevent erosion and facilitate ease of clearing;*
- *The RM should monitor the SAR of the wastewater to ensure that no detrimental impacts will result to vegetation along the drainage route;*
- *Due to the proximity of the lagoon to the Elton Collegiate consideration should be given to posting the drainage route to minimize risk of human contact with the effluent discharge; 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 the Assiniboine River and associated waterways and watersheds.*

Disposition:

- The existing south dike of the existing west cell and the west dike of the existing east primary cell will be removed. The valve between the old secondary cell and the new secondary cell will be removed to the valve and plugged and backfilled with clay;
- The berms will be post construction tested to confirm they meet requirements respecting hydraulic conductivity for liners of standard lagoons;
- Effluent quality test results, proving that all limits have been met, must be provided to the Environment Officer prior to each discharge;
- The site will be fenced and locked. Warning signs will be put up. A splash pad will be installed.
- The Licence requires testing and reporting regarding SAR prior to each discharge for a minimum of three years.
- The drainage route will be posted. The lagoon will be between the drainage route and the school.
- The Licence requires that the proponent actively participate in any future watershed based management study, plan or nutrient reduction program, approved by the Director, for the Assiniboine River and associated waterways and watersheds.

**Transportation and Government Services**

- *No concerns.*

**Environmental Approvals Contact**

- *Only limited information was provided regarding:*
  - *how the lagoon would be operated using the proposed and existing interconnections and discharge pipes;*
  - *the design and location of the proposed soil liner(s) including the proposed method(s) of integrating the soil liner(s) of the existing lagoon cells with the soil liner(s) of the proposed cells;*
  - *the potential impacts of accumulated sludge on the operation and estimated storage capacity of the proposed lagoon;*
  - *what measures will be implemented to ensure that the SAR of the proposed lagoon effluent will be less than 6?*
  - *the design of components that will control access to the lagoon, such as a locking gate;*

- *the general design characteristics of the proposed truck dump structure and access road (include preliminary design information and drawings);*
- *proposed methods of record keeping for trucked delivery to the lagoon, especially for delivery of septage; and*
- *when the proposed Community of Forrest inlet forcemain, valve and inlet structure will be installed and when will they commence operation.*

Disposition:

- The three primary cells will have interconnecting dyke sections removed so that the primary cells can be considered as free flowing. It is understood that the lagoon operator will be trained under the proposed Operators' Certificate Program for a Class 1 sewage treatment facility;
- The new and existing cells are located in an area of continuous clay, as shown by the test holes, which meets  $1 \times 10^{-7}$  cm/sec hydraulic conductivity;
- The accumulated sludge in this 14-year old lagoon will be determined during the design field investigation. The sludge will be removed by contract if significant. If there is minor sludge buildup, it will be left;
- The R.M. will institute a program of testing for SAR prior to each discharge;
- The fence and gate surrounding the lagoon will be to Manitoba Water Services Board Specification;
- Plans of the proposed truck dump structure, pad and road have been prepared. The plans indicate acceptable design criteria;
- The access gate will be locked at all times. The RM will licence haulers to haul septage from the community. The haulers will be restricted to one cumulative truck load per day. RM staff will unlock the gate and allow the truck to enter and dump as required. The RM will maintain a daily record of truck haul dumping; and
- The Community inlet forcemain, valve and inlet structure will be installed at the same time as the lagoon construction. The primary cell will be drawn down. A small temporary clay coffer dam will be constructed around the inlet during installation. The low pressure sewer project and the lagoon project will be constructed simultaneously in the summer of 2002.

**COMMENTS FROM FEDERAL REPRESENTATION:**

**Canadian Environmental Assessment Agency**

- *The 2001 CEAA responses have indicated that application of The Canadian Environmental Assessment Act with respect to this proposal will be required. Environment Canada and Health Canada would be able to provide specialist advice in accordance with Section 12(3) of the Act.*
- *What is the cause of septic field failing? High groundwater, impervious soils?*

- *What is the SAR and electrical conductivity of the existing lagoon secondary cell contents? (current and typical)*
- *What is the existing geology/hydrogeology at the site? EAP Report has not described it and test holes are only to a depth of 3.0 m?*
- *Has there been any recent testing of hydraulic conductivity of the cell liner or local evidence of seepage?*
- *Has the Manitoba Conservation file on the operation of the lagoon been reviewed for compliance, issues and complaints?*
- *The investigations performed by Stantec to a depth of 3m below the ground surface were not of sufficient depth to identify soil conditions below the proposed lagoon and are therefore inadequate. The liner specification for the Forrest lagoon should be similar to the other sites whereby the clay in the dyke should be the clay soil tested in undisturbed state compacted to a minimum of 95% standard Proctor dry density. The liner thickness should be at least 1m; however, it would be normal to compact the entire dyke to minimize settlement and related cracking. Often the upstream zone is compacted to the above specification and the downstream zone to a slightly lesser degree. Foundation preparation including key trench excavation is also part of the seepage control measures and should be specified in terms of removal of topsoil and organic soils in upstream zone and topsoil only in the downstream zone. The depth of key trench can be specified based on the information determined in the site investigation as reported in the test hole logs which in the case of Stantec reports are inadequate for this purpose.*

Disposition:

- MWSB undertook a study in 2000 that included a short assessment of the septic fields. The fields have apparently failed due to the relatively impervious clay soils underlying and presumably some undersizing of the fields. Also, fields do not meet minimum separation requirements and minimum lot size.
- No SAR tests have been done. The Licence requires testing and reporting regarding SAR prior to each discharge for a minimum of three years.

- The clay type soil at the site is indicated to meet the maximum hydraulic conductivity limit of  $1 \times 10^{-7}$  cm/sec. It is indicated that there will be a minimum of 2 metres of clay soil liner. The geology/hydrology beyond the clay liner should not be critical. A 1987 Water Resources report states that the clay till extends to a 10 m thickness at the existing lagoon site and is underlain by a sand and gravel layer which is expected to be a fairly extensive aquifer.
- The existing lagoon clay till was confirmed by drilling 4 - 3m deep test holes. All holes showed the same continuous clay till which is the same material that had an acceptable tested hydraulic conductivity of  $5.5 \times 10^{-8}$  cm/sec. Lagoon seepage has not been reported or observed.
- There have been no new issues with respect to compliance or complaints.
- It is intended that the homogenous clay till soil of the lagoon floor will be scarified and compacted. Any pockets of sand/gravel would be removed and replaced with clay. A clay core trench is not expected to be required. Compaction will be a minimum of 95% standard Proctor dry density.
- The 4:1 interior slope is acceptable for lagoon construction using clay type soil.

#### **Environment Canada - Environmental Protection**

- *The EAP is comprised primarily of engineering and design information. It provides little or no environmental assessment information. We recommend that additional information be requested to allow for a more complete assessment of the potential impacts, such as:*
  - a. Lagoon site: existing conditions at the proposed lagoon construction site, potential wildlife impacts, potential erosion problems during site clearing or after construction, any required mitigative measures;*
  - b. Drainage route: a better description of the discharge route, since some drains become habitat for various aquatic species - should include possible impacts to aquatic species from ammonia or other pollutants (ammonia can adversely affect aquatic species at any time of year and during all life stages);*
  - c. Cumulative effects - a description of other wastewater discharges along the drainage route and possible cumulative impacts.*
- *It is noted on page 2 that the proponent has acknowledged the possible need to participate in future nutrient reduction programs. In light of concerns that have been raised with nutrient discharges to the Assiniboine River and Lake Winnipeg drainage basin, the province should consider requiring proponents of any new or expanded wastewater treatment facilities to provide information on the expected nutrient discharges and an assessment of their impacts on the environment. Where appropriate, information on nutrient removal/reduction methods or technologies should also be provided. In many cases, it may be more cost-effective to implement nutrient removal/reduction at the design stage.*

Disposition:

- The existing/proposed lagoon site is located on cleared land, which is partly grass and partly cultivated.

There are no potential erosion problems during construction as the natural drain will likely be dry and it will be rerouted around the south side of the new cells. Should any erosion potential be seen during construction, then silt control through silt fences or straw wattles would be provided.

- The lagoon is located adjacent to the natural drain described in the Proposal. The drain currently receives effluent from the existing lagoon and is well defined in its length as shown on aerial photographs. This is an intermittent drain that is dry in the dry times of the summer. It meanders primarily through cultivated land with limited marsh type vegetation adjacent to it. There is little chance of flooding with a planned discharge, which considers other runoff that could be in the waterway. There is no other lagoon effluent drainage going into this 15 km long drain. Only domestic sewage is being received in the lagoon and there are no industrial or agricultural waste products.
- No adverse environmental impacts from this sewage lagoon project are anticipated.
- The Licence requires that the proponent actively participate in any future watershed based management study, plan or nutrient reduction program, approved by the Director, for the Assiniboine River and associated waterways and watersheds.

**PUBLIC HEARING:**

A public hearing was not requested.

**RECOMMENDATION:**

An Environment Act Licence be issued in accordance with the attached draft. Enforcement of the Licence should be assigned to the Approvals Branch until the soil testing has been completed.

PREPARED BY:

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