

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Rural Municipality of Ritchot  
**PROPOSAL NAME:** St. Adolphe Wastewater Treatment Lagoon  
**CLASS OF DEVELOPMENT:** 2  
**TYPE OF DEVELOPMENT:** Waste/Scrap Wastewater Treatment Lagoons  
**CLIENT FILE NO.:** 2633.10

### **OVERVIEW:**

On December 14, 2006, the Department received a Proposal from Cochrane Engineering Ltd. on behalf of the Rural Municipality of Ritchot for the expansion and operation of the existing wastewater treatment lagoon located on River Lots 239 and 240 in the Parish of St. Norbert, in the Rural Municipality of Ritchot. Treated wastewater from the wastewater treatment lagoon will be discharged into a swale which connects with the St. Adolphe Coulee between June 15<sup>th</sup> and October 31<sup>st</sup> of any year.

The Department, on January 5, 2007, placed copies of the Proposal in the Public Registries located at 123 Main St. (Union Station), the Winnipeg Public Library, the Manitoba Eco-Network, and the R.M. of Ritchot Office. Copies of the Proposal were also provided to the Technical Advisory Committee (TAC) members. The Department placed public notification of the Proposal in the Steinbach Carillon on Thursday, January 18, 2007. The newspaper and TAC notifications invited responses until February 14, 2007.

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

- *No comments were received from the public.*

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

#### **Agriculture, Food and Rural Initiatives**

- *No concerns.*

#### **Conservation - Sustainable Resource & Policy Management**

- *No concerns.*

#### **Water Stewardship**

- *No information was provided on expected impacts of the discharge on water quality in St. Adolphe Coulee, the Seine River Diversion or the Red River. The assessment should include expected wastewater quality and quantity as compared to the receiving water bodies. The proponent indicates that there is a licensed withdrawal for irrigation in the St. Adolphe Coulee and yet provides no assessment of potential impacts of the discharge on water quality for irrigation (i.e. conductivity, SAR, etc.)*
- *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 the Seine River Diversion, Red River and associated waterways.*

- *There has been tremendous effort by the stakeholders of the Seine River watershed to assess watershed health and provide direction to improve water quality concerns.*
- *While the discharge won't occur until after June 15<sup>th</sup>, the effluent will be discharged during periods of potential low flow in the St. Adolphe Coulee and Seine River so we would want to ensure that the effluent meets or exceeds the Manitoba Water Quality Standards, Objectives and Guidelines. Effluent monitoring should be implemented in the Coulee prior to entering the Seine River. Given the Department's "Clean Water" initiatives there may also be the requirement for the effluent to meet reduced phosphorus limits.*
- *Regarding discharge timing windows, rate of discharge and construction works that could result in the addition of sediment to the receiving waters, as long as DFO is involved in reviewing this proposal and manages fish habitat to meet the intent of their no net loss policy, provincial fisheries management interests should be met.*
- *In Section 4.1.1, population was estimated based on the existing sewer connections and subsequently the future demand was estimated. The source of the water supply within the proposed area is not clear. Whether any disinfection is provided to the water supply prior to its use?*
- *Section 3.3 and Figure 3.1 described the proposed discharge route. It is very important to know whether there is any water supply intake located near the discharge route, especially near the outlet at the river.*

Proponent Response (March 22, 2007):

- Additional information will be provided on the impacts on water quality in the St. Adolphe Coulee (SAC) and the Seine River Diversion (SRD) during the spring discharge period (say June 15-July 15) and the fall discharge period (say October 1-31).
- The existing secondary cell of the St. Adolphe lagoon discharges directly to the St. Adolphe Coulee. The proposed secondary cell discharges into a constructed swale and travels ~425 metres before entering the St. Adolphe Coulee. Essentially, the impacts from the lagoon discharge are direct to the Coulee as minimal effluent polishing will occur in the constructed swale when the proposed secondary cell is discharged. The most accurate observation of the impacts of the lagoon effluent on the receiving watercourses would require monitoring at the facility and along the discharge route. It should be noted that the proposed lagoon flows are for the fully developed St. Adolphe Community, and monitoring will only be indicative of the impacts of the current flows.
- Typical in other similar lagoon discharge scenarios, it is expected that as the effluent flows in the St. Adolphe Coulee, nitrification will reduce ammonia levels. Additionally, the presence of emergent vegetation promotes the uptake of nutrients such as phosphorus and dissolved oxygen levels should naturally increase as the effluent flows in the Coulee. If the SAC is flowing prior to discharge, dilution will only further reduce the various parameters in the treated effluent.
- Water quality data for the Seine River Diversion was provided by Water Quality Management Section 2007 – Manitoba Water Stewardship. The samples were

collected in October – November 1996 and June – July 1997. Data for the St. Adolphe Coulee and St. Adolphe lagoon were available in Table 14 and 16 of the *Seine River Diversion Water Quality Model Final Report* (September 2001). It is assumed that the sample information is from 2000-01. Table 1 details the average of the various watercourse water quality parameters and the St. Adolphe lagoon parameters. Only those parameters with comparable data are presented.

Table 1. Comparison of the St. Adolphe Coulee, Seine River Diversion and St. Adolphe lagoon parameters

<b>Parameter</b>	<b>St. Adolphe Coulee</b>	<b>Seine River Diversion</b>	<b>St. Adolphe Lagoon</b>
Ammonia – dissolved (mg/L)	0.33	0.05	7.97
Conductivity (µS/cm)	1036	923	1362
Nitrogen – dissolved NO <sub>2</sub> & NO <sub>3</sub> (mg/L)	0.37	0.09	0
TKN (mg/L)	2.3	2.9	13.9
BOD (mg/L)	4	8 <sup>1</sup>	14
Phosphorus – total (mg/L)	1.02	2.29	3.25
pH	8.0	8.4	8.6

<sup>1</sup>Value was estimated

- In order to present the quality of the combined flow in the specified watercourses, average flows during the spring and fall discharge periods were required. Table 2 outlines the expected flows in cubic meters per second (m<sup>3</sup>/s) from each source during the specified discharge periods. Assessment of Environment Canada’s archived hydrometric data revealed that no monitoring station is or has been situated on the St. Adolphe Coulee. However, a monitoring station (05OE009) exists on the Tourond Creek at the intersection of PTH 52 and PTH 59. The Tourond Creek and St. Adolphe Coulee are the major drains in the Tourond Creek and St. Adolphe Coulee Watershed (No. 6). By determining the gross drainage areas of Tourond Creek at the specified station location and that of the St. Adolphe Coulee at the lagoon discharge point, an association can be made between the flows of the two drains. At Station 05OE009, 210 km<sup>2</sup> of drainage area flows into the Tourond Creek. At the lagoon discharge point, 112 km<sup>2</sup> of drainage area flows into the St. Adolphe Coulee. The flow in the Tourond Creek at Station 05OE009 was assessed from 1975-1993 for the two discharge periods and then by association, the flows in the SAC were determined (Table 2).
- Information for the Seine River Diversion was also available. Station 05OE013, for the period 1973-1979 provided flow information during the two discharge periods (Table 2).

- The flow from the proposed St. Adolphe lagoon will depend on whether the cells discharge individually or simultaneously; typically cells discharge *individually*. Even though the proposed secondary cell is larger, based on elevations the existing secondary cell is expected to discharge at a higher average rate, being 135 litres per second (L/s) in 5.7 days versus 123 L/s in 8.7 days for the proposed cell. Therefore, for simultaneous discharge 258 L/s will be discharged into the St. Adolphe Coulee (Table 2). If one cell was discharged followed without delay by the other cell, the discharge time would be approximately 14-15 days.

Table 2. St. Adolphe Coulee, Seine River Diversion and St. Adolphe lagoon flows (m<sup>3</sup>/s)

Discharge Period		St. Adolphe Coulee	Seine River Diversion	St. Adolphe lagoon – one cell	St. Adolphe lagoon – two cells
June 15 – July 15	Peak	2.93	37.7		
	Average	0.056	1.42	0.135	0.258
	Min.	0	0.003		
October 1-31	Peak	0.063	7.2		
	Average	0.003	0.42	0.135	0.258
	Min.	0	0		

- Apparent from Table 2, there are times when the lagoon discharge may be the only flow in either watercourse, however during these dry periods, the treated effluent may not reach the SRD.
- Since there are two discharge periods and two discharge options (one or two cells), four discharge scenarios are possible for the receiving watercourses of the St. Adolphe Coulee and Seine River Diversion. Table 3 details the theoretical combined water quality in the SAC and SRD during the four discharge scenarios.

Table 3. Theoretical water quality in the St. Adolphe Coulee and Seine River Diversion during discharge from the St. Adolphe lagoon

Parameter	St. Adolphe Coulee				Seine River Diversion			
	Spring disc. – one cell	Spring disc. – two cells	Fall disc. – one cell	Fall disc. – two cells	Spring disc. – one cell	Spring disc. – two cells	Fall disc. – one cell	Fall disc. – two cells
Ammonia – dissolved (mg/L)	5.73	6.61	7.80	7.88	0.72	1.24	1.97	3.05
Conductivity (µS/cm)	1266	1304	1355	1358	964	992	1030	1090
Nitrogen – dissolved NO <sub>2</sub> & NO <sub>3</sub> (mg/L)	0.11	0.07	0.01	0.00	0.09	0.09	0.07	0.06
TKN (mg/L)	10.5	11.8	13.6	13.8	3.8	4.5	5.6	7.1
BOD (mg/L)	11	12	14	14	8	9	9	10
Phosphorus – total (mg/L)	2.60	2.85	3.20	3.22	2.33	2.39	2.52	2.65
pH	8.4	8.5	8.6	8.6	8.4	8.4	8.4	8.5

- These ratios presented in Table 3 may provide the framework to base the water quality on, but the many other factors involved in the actual water quality of the combined flow will only be revealed through actual testing. As a result, these theoretical levels are expected to be lower in reality.
- It is important to note that these flow and water qualities will be dependent on the actual times and volumes of other lagoons discharging in the applicable watersheds.
- Municipal contacts were consulted about the state of the irrigation water licence along the St. Adolphe Coulee. A new owner operates a market garden on the property in question but does not pump water out of the SAC. Therefore, there are no known current water licence users along the SAC.
- Any party involved in a future watershed based management study, plan/or nutrient reduction program for the Seine River Diversion is welcome to contact the R.M. of Ritchot.
- Several paragraphs in the letter Memorandum from Manitoba Water Stewardship reference the Seine River or Seine River Watershed. It must be emphasized that the St. Adolphe lagoon does not discharge into either the Seine River or the Seine River watershed. The lagoon is situated in the Tourond Creek & St. Adolphe watershed. The lagoon effluent travels almost entirely in this watershed before reaching the Red River. In fact the effluent will only travel for ~400 meters in the SRD before reaching the Red River and is expected to have very little effect on the entire SRD watershed.
- The effluent quality prior to discharge from the St. Adolphe lagoon will be subject to the Environment Act Licence discharge parameters and limitations.
- It is our understanding that DFO is a member of Manitoba Conservation's technical advisory committee responsible for reviewing the proposal.
- The Village of St. Adolphe receives their water supply from the Ste. Agathe water treatment plant with source wells near New Bothwell. The treated water is medium hardness (~200 mg/L), low in sodium (<100 mg/L) and low in iron (0.1 mg/L). Since the Community has received this water supply, softening is no longer necessary and most have discontinued use of their softening systems.
- There are no known water supply intakes near the lagoon outlet or along that portion of the St. Adolphe Coulee serving as a discharge route.

Water Stewardship Response (April 16, 2007):

- *Manitoba Water Stewardship has reviewed the above noted proposal and has no further comments or concerns.*

**Culture, Heritage and Tourism - Historic Resources**

- *No concerns.*

**Health**

- *No comments received.*

**Infrastructure and Transportation**

- *No concerns.*

**Intergovernmental Affairs & Trade**

- *No comments received.*

**Canadian Environmental Assessment Agency**

- *Following a review by all federal departments with a potential interest in the proposed development, the application of the CEAA will not be required.*

**Health Canada:**

- *Health Canada has offered to provide specialist advice with respect to the project and provided the following comments:*
  - *The EAP does not indicate to what level the operators of the project will be trained/licensed in order to properly operate the facility.*
  - *It is unclear what measures will be used in the design, construction and operation of the facility to mitigate potential occupational hazards (e.g. heavy equipment use, fall hazard) in all phases of the project.*

**Proponent Response (March 22, 2007):**

- *The current supervisor of the water and wastewater department in the municipality has received water and wastewater certification.*
- *During the design, construction and operation of the lagoon, appropriate signage will be posted. All heavy equipment operators are expected to be properly trained.*

**Disposition:**

After receiving the additional information from the proponent, no further comments were received from Health Canada. This was assumed to indicate that the original comments were satisfied.

**Fisheries and Oceans Canada:**

- *DFO has concluded that the proposed works and undertakings are adequate to protect fish and fish habitat provided that the work is carried out as described in the provided plans and the following additional measures are implemented:*
  1. *Effluent discharge should not occur between April 1 and June 15 of any given year.*
  2. *All works are carried out in a manner that prevents damage to the bed, banks and riparian (streamside) vegetation of any water body.*
  3. *Effective sediment and erosion control measures are installed before starting work to prevent sediment from entering any water body. They are inspected regularly during the course of construction to ensure that they are functioning properly. All necessary repairs are made if any damage is discovered.*
  4. *Effective ground and surface water protection zones are maintained at all times between the work and water bodies either directly or indirectly providing fish habitat.*

5. *Any waste materials removed from the work site are stabilized, above the ordinary high water mark, to prevent them from entering any watercourse. Spoil piles could be contained with silt fence, flattened, covered with biodegradable mats or tarps, and/or planted with preferable native grass or shrubs.*
6. *The deposit of deleterious substances into water frequented by fish is prohibited under the Fisheries Act. Appropriate precautions must therefore be taken to ensure that potentially deleterious substances (such as concrete wash, silt, clay, oil, etc.) do not enter any watercourse.*
7. *Machinery is operated from outside the water in a manner that prevents disturbances to the banks of the water course.*
  - 7.1 Machinery is to arrive on site in a clean condition and maintained free of fluid leaks.
  - 7.2 Equipment does not enter any water body and all excavations are above the average annual high water mark.
  - 7.3 Machinery is washed, refueled and serviced and fuel and other materials are stored for the machinery away from the water to prevent deleterious substances from entering the water.
  - 7.4 An emergency spill kit is kept on site in case of fluid leaks or spills from machinery. All equipment operators should be familiar with how to properly use the spill kits in the case of an emergency.
8. If water is temporarily required from fish bearing waters, the Freshwater Intake End-of-pipe Fish Screen Guidelines (DFO 1995) are followed (Link available at [www.dfo-mpo.gc.ca/Library/223669.pdf](http://www.dfo-mpo.gc.ca/Library/223669.pdf)) and:
  - 8.1 The water withdrawal rate does not exceed 10% of the instantaneous flow in any waterway at the withdrawal point to preserve existing fish habitat.
  - 8.2 Water is not withdrawn from any water body to a degree that would increase the risk of winter or summer fish kills.
9. Hydrostatic testing activities meet or exceed the relevant standards outlined in the “Hydrostatic Test Water Management Guidelines” (Tera Environmental Consultants (Alta.) Limited and CH2M Gore and Storrie Limited 1996).
10. Annual effluent releases do not change the instantaneous discharge in any flowing water by more than 10%. The initiation and cessation of releases should be gradual rather than sudden.

### **PUBLIC HEARING:**

A public hearing is not recommended.

### **RECOMMENDATION:**

The Proponent should be issued a Licence for the expansion and operation of a wastewater treatment lagoon in accordance with the specifications, terms and conditions of the attached draft Licence. Enforcement of the Licence should be assigned to the Environmental Assessment and Licensing Branch until the liner testing has been completed and the Development is commissioned.

PREPARED BY:

Jennifer Winsor, P.Eng.  
Environmental Engineer  
Municipal, Industrial and Hazardous Waste Section

May 17, 2007  
Telephone: (204) 945-7012  
Fax: (204) 945-5229  
E-mail Address: Jennifer.Winsor@gov.mb.ca