

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Rural Municipality of Springfield
PROPOSAL NAME: R.M. of Springfield Wastewater Treatment Lagoon Expansion
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Waste/Scrap Wastewater Treatment Lagoons
CLIENT FILE NO.: 4929.10

OVERVIEW:

On April 21, 2009, the Department received a Proposal from Stantec Consulting Ltd. on behalf of the Rural Municipality of Springfield for the expansion and operation of the existing wastewater treatment lagoon located in NE 11-11-5EPM in the R.M. of Springfield. The treated wastewater from the wastewater treatment lagoon will be discharged between June 15th and November 1st of any year into a municipal ditch which flows south and discharges to the Cook's Creek Diversion.

The Department, on May 8, 2009, placed copies of the Proposal in the Public Registries located at 123 Main St. (Union Station), the Millennium Public Library, the Manitoba Eco-Network, the Brokenhead River Regional Library, and the R.M. of Springfield Municipal Office. Copies of the Proposal were also provided to the Technical Advisory Committee (TAC) members. The Department placed a public notification of the Proposal in The Winnipeg Free Press on Saturday, May 16, 2009 and in the Beausejour Clipper Weekly on Tuesday, May 19, 2009. The newspaper and TAC notifications invited responses until June 17, 2009. On June 24, 2009, TAC comments were forwarded to the consultant for response. On August 21, 2009, a response from the consultant was received and was forwarded to the TAC members who had requested additional information on August 31, 2009. The draft Licence and Summary of Comments/Recommendations was sent to TAC for review on November 25, 2009 with a December 8, 2009 deadline for comments.

COMMENTS FROM THE PUBLIC:

No responses were received from the public notification.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Agriculture, Food and Rural Initiatives

- *No concerns.*

Conservation – Wildlife and Ecosystem Protection Branch

- *No comments received.*

Conservation – Parks and Natural Areas Branch

- *No concerns.*

Conservation - Sustainable Resource & Policy Management

- *No concerns.*

Conservation – Environmental Services

1. *Test holes 1 through 7 are indicated on Drawing C-101, but no indication where the remaining test holes are located, and the complete bore logs are not attached.*
2. *The soil lab results from Eng Tech are not provided.*
3. *Are there existing monitoring wells at this facility? If so, please provide laboratory results.*
4. *Why is the proposed design only for a 10 year projection?*
5. *Why is the unmetered water use only 270 L/pp*d. (Typically in rural areas, with unmetered water the use is in the range of 330-360 L/pp*d)?*
6. *Why is there no record of the water consumption for the new developments in Oakbank that have metered water from the water treatment plant?*
7. *Why is the organic loading from septage constant for the entire design period (2008 to 2020)?*
8. *Why is the septage calculated as a daily organic loading while typically the majority of septage tanks are emptied during a 45 day period in the fall, prior to septage hauling restrictions coming into force for winter months?*
9. *What is the total number of dwelling services by septic tanks in the service area of the lagoon (including rural and urban)?*
10. *In the text of the document the outside slopes are listed as 3:1 (minimum) whereas on drawing C-501 they are shown at 4:1. Please clarify which is correct.*
11. *Why are there two discharge pipes from the proposed secondary cell 2?*
12. *Why does the cost estimates indicate 300 mm of riprap, whereas drawing C-501 shows 600mm?*
13. *Is there any provisions for nutrient removal planned and will nutrients be monitored?*
14. *Environmental Services recommends that the discharge splash pads have curbing to dissipate energy, and all interior dykes should be lower than the perimeter dykes.*
15. *There is no signature or date on the engineering seal for the March 24, 2009 study submitted.*

Proponent Response (received August 21, 2009):

- Test holes 8 to 10 are located south of the proposed expansion area in SE 11-11-5E.
- Laboratory test results from the 2002 field sampling are attached. Post construction hydraulic conductivity testing met Manitoba Conservation's minimum requirement of 1×10^{-7} cm/s. Similar material was encountered throughout the entire half-section, including the proposed expansion area.
- There are no monitoring wells at this facility.
- A 10-year design period was utilized for this expansion because of unprecedented recent growth. We feel that a conservative growth rate has been utilized and that it is unlikely to continue at such a rate for the next 20 years. There is also insufficient funding available to construct a 20-year expansion at this time.

- The R.M. of Springfield is taking steps to implement a public water distribution system for all of Oakbank that would ultimately reduce water consumption. A weeping tile disconnection program is also underway. At present, we know the total volume of wastewater discharging to the lagoon. It is unknown what percentage of this flow is domestic wastewater versus inflow and infiltration. The assumptions made will account for all wastewater arriving at the expanded lagoon.
- Metered water records are available for customers connected to the public water system in Oakbank, however, these are a minority of customers connected to the wastewater system.
- The current maximum day volume of trucked septage will be maintained throughout the 10-year design period. Septic hauling is allowed between June 15 and November 1 and it will be the responsibility of individual septic haulers to balance their workload over that time period. The facility has an electronic card swipe access system that allows the R.M. to monitor hauling activity. Haulers are also required to submit records to support the electronic data.
- The total number of septic tanks in the R.M. of Springfield is unknown. All septic haulers dumping at the lagoon are required to submit records to the R.M. of Springfield and volumes are monitored from these records.
- Maximum slopes of 4:1 on the outside dykes will be utilized. We anticipate excess material and will likely wind up with flatter slopes during detailed design.
- Two discharge pipes are required to discharge the volume of water stored in the facility in a timely manner. A single large pipe is not cost effective since larger gate valves (i.e. 450mm diameter) are considerable more expensive than smaller sizes.
- The correct thickness of riprap is 300mm as was constructed in the existing facility. The drawings will be revised during final design.
- Phosphorus removal, if required, will be accomplished by dispersing a precipitating agent (alum) throughout the secondary cells prior to testing and subsequent discharge.
- We have used curbed discharge splash pads in the past; however, they were a frequent complaint of contractors. Rip rap, which is a common method of dissipating energy for stormwater and effluent outfalls can be added as an alternative, if required.
- It is common engineering practice for all lagoon dykes to be constructed at the same elevation. The lagoon is monitored closely during periods of high volume.
- A signed and dated copy of the report is attached.

Conservation – Environmental Services Response (September 18, 2009):

- *Though most of the concerns have been addressed, please consider the following suggestions:*
 - *We still feel the volume assumed is underestimated. Having said that, it is the responsibility of the engineer to consider a more practical figure for the design.*
 - *The use of two 300mm (12 in.) pipes for the discharge of effluent for the secondary cell #2 may result in a very high discharge rate. We recommend Environmental Licensing office potentially limit the allowable flow to protect downstream channel. We also request the placement of rip rap protection at the discharge locations.*

Disposition:

- A clause requiring trickle discharge, when possible, has been included in the draft Licence to reduce the erosion of the downstream channel (Clause 32).
- A clause requiring the placement of riprap at the effluent discharge locations has been included in the draft Licence (Clause 23).

Science, Technology, Energy and Mines – Mines Branch

- *No concerns.*

Culture, Heritage and Tourism - Historic Resources

- *No concerns.*

Water Stewardship

- *The Water Rights Act indicates that no person shall control water or construct, establish or maintain any “water control works” unless he or she holds a valid licence to do so. “Water control works” are defined as any dyke, dam, surface or subsurface drain, drainage, improved natural waterway, canal, tunnel, bridge, culvert borehole or contrivance for carrying or conducting water, that temporarily or permanently alters or may alter the flow or level of water, including but not limited to water in a water body, by any means, including drainage, OR changes or may change the location or directly of flow of water, including but not limited to water in a water body, by any means, including drainage. If a proposal advocated any of the aforementioned activities, an application for a Water Rights Licence to Construct Water Control Works is required. Application forms are available from any office of Manitoba Water Stewardship.*
- *The proponent needs to be informed that if the proposal in question advocates any construction activities, erosion and sediment control measures should be implemented until all of the sites have stabilized.*
 - *Use of appropriate short and long term erosion and sediment control measures at effluent outlet structure until site has been stabilized and annual monitoring to ensure it remains stabilized.*
- *The Lake Winnipeg Stewardship Board has recommended that all small wastewater treatment facilities, including municipal lagoons, should meet a phosphorus limit of 1.0 mg/L. The proposed phosphorus limit of 1.0 mg/L is consistent with efforts underway across Manitoba and in upstream jurisdictions to reduce nutrient loads to*

Lake Winnipeg and its watershed. In the Lake Winnipeg Stewardship Board's December 2006 report to the Minister of Water Stewardship, the Board provides several strategies on how nutrient reduction could be achieved for small wastewater treatment facilities (see recommendations 14-20) including effluent irrigation. Project alternatives should be reviewed and compared.

- *The Department would like to create awareness of steps being taken elsewhere to increase nutrient removal. Multilaterally reducing phosphorus is required to restore Lake Winnipeg and the proposed 1 mg/L phosphorus limit is consistent with measures underway in other jurisdictions.*
 - *The R.M. of Headingley will be removing organic and nutrient (nitrogen and phosphorus) to meet anticipated discharge objectives.*
 - *Dischargers to Lake Winnipeg such as the Town of Gimli have implemented phosphorus removal to 1 mg/L.*
 - *In addition, phosphorus removal to 1 mg/L is now implemented at new and expanding provincial park facilities.*
 - *Minnesota, which shares a portion of the Red River watershed with North Dakota and Manitoba, has a similar phosphorus standard to protect lakes and rivers from the negative effects of excess nutrients.*
 - *Finally, the Ste. Anne's facility is recently required to meet 1 mg/L phosphorus limit.*
- *Trickle discharge (at least two (2) weeks) will provide time for the nutrient rich effluent to be assimilated in the drainage path, prior to reaching the Lake Manitoba.*
 - *Effluent discharge occurs between June 16th to October 31st.*
- *The Department 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, the Department recommends that an Environment Act Licence shall require the proponent to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director, Water Science and Management Branch, Manitoba Water Stewardship.*

Disposition:

After receiving the additional information from the proponent, Water Stewardship had no further comments or concerns.

Infrastructure and Transportation

- *No concerns with the project.*

Intergovernmental Affairs

- *The expansion of the lagoon is proposed for the remainder of NE ¼ 11-11-5 EPM, plus an additional storage cell to be located in SE ¼ 11-11-5 EPM. The subject lands, owned by the RM of Springfield, are designated "Agricultural Preserve" pursuant to the RM of Springfield Development Plan. As per policy 8.3(6) of the Development Plan, Public utilities may be located in all rural areas designations. Development Plan policies pertaining to Utilities and Municipal Services are contained within Section 15.5, which reads, in part, as follows:*

15.5.2 OBJECTIVES

In order to provide safe and efficient utilities and municipal services it is the objective to:

5. *Provide safe and economical liquid and solid waste disposal facilities for all residents of the Municipality.*
6. *Ensure utilities are located in areas that provide efficient services while not negatively impacting adjacent land uses and the environment.*

15.5.3 POLICIES

1. *The Municipality will continue to work cooperatively with utility companies and other levels of government in order to resolve land use issues and to ensure the provision of safe, economical and efficient services to its rate payers.*
 2. *Utilities may be permitted in any land designation provided the site is suited for the purpose required.*
 4. *The Municipality will monitor the sewage treatment capacities of the Dugald and Oakbank Lagoons and plan for additional capacities or alternative treatment facilities as required.*
 5. *All future developments in Oakbank and Dugald shall be connected to public sewage systems.*
- *As such, the proposed wastewater treatment lagoon expansion does not contravene the policies of the RM of Springfield Development Plan.*
 - *The subject lands are zoned “A – Rural and Agricultural Zone” pursuant to the RM of Springfield Zoning By-law. As per 3.3.9 of the Zoning By-law, “Nothing in this By-law shall be so interpreted as to interfere with the construction, maintenance and operation of the facilities of any public utility, as defined by this By-law, or public service such as police and fire protection, provided that the requirements of such public utility or public service is of a standard compatible with the adjacent area as determined by the Development Officer, and that any building or structure erected in any zone complies with the yard and area requirements applicable to the zone, but shall not be required to have a site area greater than one (1) acre.”*
 - *As approximately 40 acres are required for the primary lagoon cell, the proposal exceeds the one (1) acre site area maximum and therefore does not comply with RM of Springfield Zoning By-law 85-26. A variation of Section 3.3.9 would be required in order for the proposal to comply.*
 - *The new RM of Springfield Zoning By-law, which received first reading on August 6, 2008, proposes that the land be zoned “AG – Agricultural General Zoning District.” Public Utility Service will be a permitted use in this zone, and as per Section 5.2 of the proposed Zoning By-law, “Nothing in this By-law shall be so interpreted as to interfere with the construction, maintenance and operation of the facilities of any Public Utility Service or Protective and Emergency Service, as defined in this By-law.”*
 - *Existing surrounding land uses are primarily agricultural in nature. The proposal indicates that the lagoon expansion will be situated greater than 300 metres from the nearest residence to minimize the effects of odour. The subject lands are currently used for the production of cereal crops.*
 - *The lagoon expansion study proposes a design year of 2020, which appears consistent with similar wastewater treatment expansion proposals which project capacity in a range of ten to twenty years.*

- *The proposal projects an annual growth rate of 5% for Oakbank and 1% for Dugald, which is consistent with growth over the last five years. Projected growth in Anola does not account for any growth to the community itself, but allows for outstanding connections to be made (approximately 27 connections).*
- *The projected hydraulic capacity also includes twice the current loading from holding tank pump-out.*
- *Based on these projections, it is estimated that an additional surface area of 4 hectares is required to treat the projected organic loading for the year 2020 at 1.5m liquid depth. This Environment Act study proposes the conversion of the existing northwest secondary cell to a primary cell which will provide an additional 7.7 hectares of surface area at 1.5m liquid depth, far exceeding the minimum expansion required based on projected growth rates.*
- *The current Development Plan, adopted in 2001 and written in 1998, projected that Oakbank would see the addition of 250 new homes in the next decade, and that growth in Dugald and Anola would be limited.*
- *Between 1998 and 2008, the population of Oakbank increased from 2,400 to 3,139 people. At 3.2 people per dwelling, this is an increase of approximately 230 homes to the town. However, as shown in the permit statistics table below, 204 single family dwellings have been constructed in Oakbank since 2005. The projected population for the 2020 design year is 5,639 people, or an increase of approximately 781 new homes over the next decade.*
- *Permit statistics collected since the initial installation of the sewer system show the following trends:*

	2008	2007	2006	2005
Single Family Dwellings				
Municipality	118	109	114	89
Oakbank	55	55	62	32
Duplex/Multi Family Dwellings				
Municipality	1	2	0	0
Oakbank	0	1	0	0
Sewer Connections	58	61	66	41

- *Based on these statistics, if approximately 60 new connections are added each year until 2020, this would constitute an additional 660 new connections. However, numerous substantial developments have been proposed in Oakbank, and it may therefore be pragmatic to adjust the population projections and number of additional sewer connections required accordingly.*
- *The population of Dugald increased from 380 to 423 people between 1998 and 2008. At 2.5 people per dwelling, this is an increase of approximately 17 new homes. Projected population for the 2020 design year is 479, or an increase of approximately 22 new homes, which is consistent with past trends.*
- *The Anola settlement centre has seen little growth in the last ten years. As per the 2020 Projected Average Daily Winter Hydraulic Loading table on page 5.1 of the proposal, two times the current loading for Anola has been taken into account when*

calculating expansion requirements. With limited new growth forecasted, this is adequate to allow for the connection of outstanding potential sewer customers.

- *The Development Plan designates a substantial amount of land for residential, commercial and industrial usage which has yet to be developed. If the RM encourages development to be directed to these areas, substantial increases to the population of Dugald and Anola could be seen. Projections should account for the possibility of growth in these two areas to prevent capacity shortages over the next ten year period.*

Intergovernmental Affairs Response (September 8, 2009):

- *Community Planning Services has no further concerns with this proposal.*

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 has offered to provide specialist advice with respect to the project if specifically requested.*

Fisheries and Oceans Canada

To reduce potential impacts to fish and fish habitat we are recommending the following mitigation measures be including into your plans:

- *No in-water construction will occur between April 1 and June 15 of any given year.*
- *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 fuel, hydraulic fluids, oil, sediment, etc.) do not enter any water body.*
- *Install effective short-term and long-term erosion and sediment control measures (e.g. erosion control blankets, sediment barriers, check dams) prior to construction on areas to be disturbed; minimizing soil laden runoff from entering any watercourse, and they remain in place until vegetation is re-established to stabilize the effected area.*
- *Inspect sediment and erosion control measures regularly during the course of the work and until vegetation is fully established to ensure they are functioning properly. Make all necessary repairs and adjustments if any damage is discovered or if these measures are not effective in controlling erosion and sedimentation.*
- *Excavated materials and debris are disposed of above the high water mark and located such that they do not enter any watercourse.*
- *The culvert works are isolated from flowing water or constructed in the dry.*
 - *Culvert inlets and outlets are adequately protected to prevent erosion and scour of the bed and banks of the channel*
 - *Use only clean rock for armouring the inlets and outlets of the culvert, and haul it in from an appropriate land-based source. Avoid using poor quality limestone that breaks down quickly when exposed to the elements.*

All rock should be clean and free of fine materials and of appropriate size to resist displacement during high flow events.

- *Operate machinery from outside of the water and in a manner that minimizes disturbance to the banks of the water body.*
 - *Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.*
 - *Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.*
 - *Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.*
- *Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or biodegradable erosion control blankets to prevent soil erosion and to help seeds germinate. If there is insufficient time in the growing season remaining for the seeds to germinate, stabilize the site (e.g. cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and then vegetate the following spring.*

PUBLIC HEARING:

A public hearing was not requested and is not recommended.

RECOMMENDATION:

The Proponent should be issued a Licence for the expansion and operation of the wastewater treatment lagoon in accordance with the specifications, limits, 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.

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