

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Borderland School Division  
**NAME OF DEVELOPMENT:** Ross L. Gray School Subsurface Wastewater Infiltration System  
**CLASS OF DEVELOPMENT:** Two  
**TYPE OF DEVELOPMENT:** Waste Treatment – Sewage Treatment Plant  
**CLIENT FILE NO.:** 5352.00

### **OVERVIEW:**

The Proposal was received on June 16, 2008. It was dated June 9, 2008. The advertisement of the proposal was as follows:

“A Proposal has been filed by Stantec Consulting Ltd. on behalf of the Borderland School Division for the re-construction and operation of a subsurface wastewater infiltration system for Ross L. Gray School in Sprague. A new effluent distribution system and new infiltration media would be installed. The facility would be located in the southeast corner of the school property at the same location as the existing facility. Construction of the project is proposed for the summer of 2008.”

The Proposal was advertised in the Steinbach Carillon on Thursday, July 3, 2008. It was placed in the Main, Millennium Public Library (Winnipeg), Eco-Network, and Jake Epp Public Library public registries and in the office of the R. M. of Piney as a registry location. The Proposal was distributed to TAC members on June 25, 2008. The closing date for comments from members of the public and TAC members was July 31, 2008.

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

No public comments.

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

**Manitoba Conservation – Sustainable Resource and Policy Management** No concerns.

### **Manitoba Conservation – Environmental Services**

Environmental Services, Onsite Wastewater Systems Program has reviewed the above noted Environment Act Proposal. Comments for your review and consideration are as follows:

The septic field proposed is located on Canham Avenue in the Sprague Manitoba (SW Sec 15-Twp 1-Rge 14 E). This location is not identified as land in nutrient management zone N4 as described in the Nutrient Management Regulation.

#### Section 1.1 Existing Site Conditions

The proposal does not indicate the distance of the proposed new septic field to the existing wells on the property.

Drawing 1 does not indicate the distance of the existing drilled well to the proposed new septic field.

#### Section 3.4 Treated Effluent Disposal

Page 3.2 indicates that the subsurface wastewater infiltration system (SWIS) is to be constructed as a pressurized sand filter and chamber system as per the Manitoba guidelines.

The Onsite Wastewater Management Systems Regulation (MR 83/2003) and Supplementary Information Package (2008) does not provide information or specify construction standards for a subsurface “pressurized sand filter and chamber system”. The only pressurized sand treatment system using wastewater effluent chambers identified in our supplementary information package is the above grade pressurized sand treatment mound. The sand used in sand mound treatment systems is specified ASTM C-33 sand which is not indicated in this proposal.

The document describes the septic field as an in-ground ‘pressurized sand filter chamber system’. Pressurized chamber systems using sand are normally constructed at grade in Manitoba.

Page 3.3 indicates approved leaching bed fill material shall be used, however the proposal does not provide a specification regarding the imported fill. As the size of the field bed was calculated base on sandy clay loam (application rate of 13.70 litres per day per square metre) one would expect that the imported fill would be sandy clay loam, however, the proposal does not indicate this. Drawing 1 indicates that the imported fill is  $T = 5-15$  min/cm which would be indicative of proposing to use sandy loam imported fill material.

Page 3.3 indicates the distribution piping and chambers are to be placed on top of the fill layer. Manitoba Conservation recommends that when imported fill material is used the chambers should be placed on a layer of rock (minimum 5 cm/2 inches) for stability and so that chambers do not “knife” into the imported fill material when the field becomes saturated. It is likely that the chambers would require stability when set on a sandy loam imported fill material. The use of aggregate is not indicated in the proposal or Drawing 1.

On page 3.4 the proposal uses the total area field sizing formula found in Section 2(6) (b) of Schedule A in MR 83/2003 to calculate the infiltrative surface area of the septic field. The proposal indicates an infiltrative surface area for a total area field of 1,533 m<sup>2</sup>. The length of chamber required for a total area field should be calculated using the manufactures specification of 19.2 sf/chamber for Infiltrator Quick 4 High Capacity rating.

However further down on page 3.4 and on page 3.3 the proposal indicates to use a total length of wastewater effluent chamber based on the calculation for a subsurface trench style disposal field using wastewater effluent chambers. There seems to be some confusion in the proposal as to whether calculations for the length of wastewater effluent chamber to be used is based on the formula as set out in Section 2(5) (b) of MR 83/2003 for subsurface trench fields using wastewater effluent chambers or the formula used in Section 2(6) (b) for total area fields. The proposal appears to be utilizing both formulas which are for two completely different types of septic fields.

\* Please note that the formula for determining length of trench found in MR 83/2003 in Section 2(5) (b) contains a typo and should read:

$$\text{Length of trench} = \frac{\text{daily effluent flow}}{(\text{application rate}) \times (\text{application area})}$$

(Note\* The application area for chambers is provided by the manufacturer)

The style of septic field described in the proposal and identified in drawing 1 is a subsurface trench style disposal field using wastewater effluent chambers set in imported fill. The formula used to calculate the length of trench for a subsurface septic field using wastewater effluent chambers is specified in MR 83/2003 Schedule A, Section 2(5).

Page 3.6 indicates lateral shall be 32 mm (1 to 1/2 "nominal) diameter. Laterals 1/2 inch in diameter are not recommended as they are more prone to plugging when this type of primary quality effluent is being produced. Generally laterals with a diameter of 1 - 2 inches are preferred when this type of effluent is produced.

### 3.5 Effluent Pumping Chamber

The proposal does not indicate what type of material the existing septic tank and pump chamber is made from.

The report does not indicate the type of material the new effluent pump chamber will be composed of.

The proposal should show a diagram of the existing septic tank and the location of the new pump chamber.

As the existing septic tank is circa (1970) it should be verified that the tank is water tight and any extension collars are water tight.

### 3.6 Sludge Disposal

The proposal does not identify where the material excavated from the existing field will be disposed of.

### 4.0 Recommendations

The licence should require that an operation and maintenance plan be drafted for use by School Division maintenance staff.

#### Disposition:

Additional information was requested to address most of these comments. Some of the comments can be addressed as licence conditions.

### **Manitoba Conservation – Eastern Region**

- The school is listed in the application to have 175 attending students and 35 staff members (page 1.1). Showers and a Home Economics classroom are also included in the proposal.
  - Stantec Consulting Ltd. indicates 80 litres per student day of wastewater will be generated for the 175 students, equating to 14,000 litres/day of effluent (page 3.1); there is no mention of staff in the calculations or of any extra-curricular activities that may occur after school hours. Approximately 17% more total people would be included in the calculations if staff were included in calculations for the sizing of the proposed septic field.
- Elevation and depth data noted in the calculations and siting of the septic field are inconsistent; some measurements are listed in elevation and some are listed in depth below ground. The inconsistencies in measurements can cause confusion to readers.
- The application also states that “150 MPN/100 mL is common in any normal shallow groundwater system” (page 2.3) while referring to total coliforms found while performing soil test analysis. Manitoba Conservation asks where this common number is derived and notes that it appears to be higher than normal values for in situ soils.
- Based upon the Onsite Wastewater Management Systems Regulation (M.R. 83/2003), systems installed in soils of >60% clay content shall be above ground systems. Soil test results accompanying the proposal indicate clay contents > 60% in the zone of proposed install. Based on the information provided, this is a concern as the soil type may not be appropriate for this type of onsite wastewater management system.
- Manitoba Conservation notes that there are no licensed wastewater treatment facilities near the proposed subsurface wastewater infiltration system and asks where sludge generated in the septic tank will be transported too. We also note that there is no mention of any grease traps associated with the proposed system.
- The application notes the Sprague Creek is 200 meters from the school (page 1.1), but does not indicate the setback distance from the creek to the subsurface wastewater infiltration system.

#### Disposition:

Additional information was requested to address most of these comments.

### **Manitoba Conservation – Parks and Natural Areas Branch**

No comments.

### **Manitoba 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 direction of flow of water, including but not limited to water in a water body, by any means, including drainage. If the proposal in question advocates any of these activities, application for a Water Rights Licence to Construct Water Control Works is required.
- The proponent needs to be informed that erosion and sediment control measures should be implemented until all of the sites have stabilized.
- The consultant for the proponent has indicated in Section 2.2 that the well records for this area are not readily available and consequently made a number of suppositions as to the aquifers being used within Sprague and the depth to those aquifers. In fact, well records are readily available from the provincial government including a record for the school well. A copy of these records has been provided to the proponent’s consultant on an annual basis for a number of years. The proponent’s consultant should become aware of the information provided by the well logs and update their submission based on this revised understanding.
- The proposal indicates that sand/gravel aquifers in this area are overlain by thick layers of low permeability till but the proposal has not provided information to support this statement. Test holes were drilled only to 8.2 m depth maximum and no reference has been made to other sources of information such as water well logs. Since information in this regard is readily available, the current statement should be properly supported or revised.
- The proposal also states that the lower aquifer is well protected from surface effects. Again, referring to the point above, this statement has not been supported through a reference to available information.
- The proposal refers to a groundwater analysis on a sample from TH1 east of the septic field. Interpretation of the results from analysis of this sample are incorrect. The high suspended solids load in the sample is not normal from properly constructed monitoring wells completed in the clayey materials, nor is the total coliform count of 150 normal. Undoubtedly both the suspended solids and coliform are a result of collecting a sample from a test hole that has just been drilled and left open so that a sample could be collected. A properly completed monitoring well would not be expected to produce water with similar results.
- There exists a questionable interpretation by the consultant that the water table at this location will be found at a depth greater than 8 metres or a seasonally high water table below 3 metres; in fact, there is evidence to suggest that the water table will be found at quite a shallow depth. This is likely rather critical to the successful

operation of the proposed replacement leaching field. Evidence for a shallower water table comes from the logs in Appendix C reporting the till to be grey in colour (indicating reducing conditions which would result from the water table being above the upper till contact) and from a static water level of 1.8 m below ground in TH1 (Appendix B) due to seepage from silt layers in the clay. The fact that seepage was not observed in a number of holes may simply be to the low permeability of these materials; should the holes have been left open for long enough to allow slow seepage to occur, the water table may have been found to have been above the base of the holes.

- The hydraulic conductivity value, which has been chosen for the till in order to calculate the field size, is not clear. The lab K value on remoulded samples was about  $10^{-08}$  cm/s; however, it appears the proponent has rejected this value and, based on grain size analyses, has used a value closer to  $10^{-04}$  cm/s. This is a concern since the tills are often somewhat consolidated and cemented, which would reduce their hydraulic conductivity below what one would estimate from a grain size analysis.
- It may be appropriate to return to the site and install one or two shallow monitoring wells into the tills at about 3-4 m depth and allow them to equilibrate for up to several weeks to determine actual depth to the water table. If the water table is in fact above the base of these monitoring wells, the water table recovery information could be used to obtain a representative hydraulic conductivity for the tills.
- Processes should be in place to monitor the Subsurface Wastewater Infiltration System to ensure it does not freeze and cause ponding on surface. Without proper maintenance, the complete wastewater system could fail and surface and ground water supplies could be contaminated.
  - The Department recommends that an *Environment* Act licence requires the proponent to conduct regular inspection and maintenance on the Subsurface Wastewater Infiltration System.
- The proponent should adopt efficient water conservation devices (e.g. water-efficient toilets) to reduce the load to the Subsurface Wastewater Infiltration System. Furthermore, the proponent should avoid sending anti-bacterial products and solvents (bleach, cleaners, and paint) to the treatment system.
- Surface water should not drain onto the leaching bed area and should be diverted away from the system (e.g. school roof drains).
- A fence should be constructed around the system to eliminate traffic over system.
- Since flow to the system will be intermittent (personal communication with Miles MacCormack, Project Manager, Stantec, 4 minutes/hr/zone) extra precautions should be taken to ensure the system does not freeze. An option could include implementing a styrofoam covering in winter or 1 foot of mulch. The proposal indicates vegetative cover will be established on the top of the system (ref: drawing 1, detail 'typical modified pressurized sand treatment system – chambers'). Vegetative cover could be allowed to grow tall to capture snow and/or a snow fence could be implemented to

capture snow in the winter for extra insulation. Implementing a snow fence may be particularly helpful in the first season when grasses have not had a chance to establish.

- 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 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, for all downstream waterways.

**Disposition:**

These comments were provided to the proponent's consultant for information and consideration. Many of the comments will be considered by the consultant in conjunction with other TAC comments that address design aspects of the project. Several of the comments can also be addressed through licence conditions.

**Historic Resources Branch** No concerns. If at any time however, significant heritage resources are recorded in association with these lands during development, the Historic Resources Branch may require that an acceptable heritage resource management strategy be implemented by the developer to mitigate the affects of development on the heritage resources.

**Manitoba Infrastructure and Transportation** No concern.

**Manitoba Agriculture, Food and Rural Initiatives** No agricultural or agricultural land use issues/concerns.

**Manitoba Intergovernmental Affairs**

Ross L. Gray School is located in the Town of Sprague in the RM of Piney, immediately north of Canham Avenue and west of Allan Street. The school is located on the west half of the parcel, a soccer field is located on the northeast corner, and the onsite wastewater management system is located in the southeast corner. The area around the school is predominantly agricultural land, with the exception of residential areas adjacent to the north and west of the site.

The engineering report prepared by Stantec Consulting indicates that the current subsurface wastewater infiltration system that services the school is failing. An onsite sewage treatment and subsurface wastewater infiltration system (SIWS) is deemed to be the only feasible means of treatment and disposal because there are currently no municipal sanitary services in Sprague. The proposal is to upgrade the existing subsurface wastewater infiltration system.

The RM of Piney has yet to adopt a Development Plan and Zoning By-law. As such, Provincial Land Use Policies (PLUPs) are used to evaluate environmental licensing applications. Policy #1 A. 4. states that wherever possible, development is to be in compatible and in harmony with other land uses.

As this proposal will alleviate the current problems with the onsite wastewater management system and bring the system into compliance with current regulations, the development is deemed to be compatible with other land uses. This office has no concerns with respect to the proposal.

**Canadian Environmental Assessment Agency** I have completed a survey of federal departments with respect to determining interest in the project noted above. I can confirm that the project information that was provided has been reviewed by all federal departments with a potential interest. Based on the responses to the survey, application of the Canadian Environmental Assessment Act (the Act) will not be required for this project.

#### **ADDITIONAL INFORMATION:**

Additional information was requested on August 12, 2008 to address TAC comments. The attached response was received on November 14, 2008. The material was circulated to Manitoba Conservation, Environmental Services and Manitoba Water Stewardship for review and comment on November 26, 2008. The following replies were received:

#### **Manitoba Conservation, Eastern Region**

1. Due to the high water table levels shown in the well logs provided with the November 13, 2008 letter as well as the high clay content (>60% Clay) shown in the soil analysis submitted with the original application, it is recommended that the septic field be installed above grade.
2. Given the high water table, soil and loading conditions it is requested that a design engineered sealed document from the manufacturer indicating that this is an appropriate use of their product be submitted. As well, the letter that was submitted on Nov 13, 2008 should be sealed by a P.Eng, not just signed.
3. Properly signed & sealed as-built drawings should be required upon completion of the project.

#### **Disposition:**

As the proposed system has been designed by a professional engineer who will remain responsible for the adequacy of the design, the first two comments are adequately addressed by the additional information. The third comment can be addressed through standard licence conditions.



**Manitoba Water Stewardship**

- The Department is agreeable that with the promised installation of two observation wells at the locations indicated, the issues concerning depth to water table and permeability of the subsurface materials will be adequately addressed.

**PUBLIC HEARING:**

As no requests for a public hearing were made, a public hearing is not recommended.

**RECOMMENDATION:**

All comments received on the Proposal that require follow-up have been addressed through additional information or as licence conditions. Therefore, it is recommended that the Development be licensed under The Environment Act subject to the limits, terms and conditions as described on the attached Draft Environment Act Licence. It is further recommended that enforcement of the Licence be assigned to the Eastern Region.

PREPARED BY:

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Bruce Webb, P. Eng.  
Environmental Assessment and Licensing - Environmental Land Use Section  
(for Municipal, Industrial and Hazardous Waste Section)  
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Telephone: (204) 945-7021  
Fax: (204) 945-5229  
E-mail: bruce.webb@gov.mb.ca