

Licence No.: 2550

Licence Issued: December 4, 2002

**IN ACCORDANCE WITH THE MANITOBA ENVIRONMENT ACT (C.C.S.M. c. E125)
THIS LICENCE IS ISSUED PURSUANT TO SECTION 11(1) TO:**

RURAL MUNICIPALITY OF HANOVER; "the Licencee"

for the construction, operation and maintenance of the Development being a wastewater collection system and an aerated wastewater treatment lagoon located on NE and SE 32-7-6 EPM and NW and SW 33-7-6 EPM in the Rural Municipality of Hanover and with discharge of treated effluent to drainage ditches located on NE and NW 32-7-6 EPM and SW 5-8-6 EPM that flow into the Youville Drain which empties into the Seine River Diversion which empties into the Red River, in accordance with the Proposal filed under The Environment Act on April 25, 2002 and subsequent information provided on May 3, 2002, May 17, 2002, June 6, 2002, July 25, 2002 and September 10, 2002 and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"accredited laboratory" means an analytical facility accredited by the Standard Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Conservation to be equivalent to the SCC, or be able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the international standard ISO/IEC 17025, or otherwise approved by the Director;

"aerated" means the bringing about of intimate contact between air and a liquid by bubbling air through the liquid;

"aerated cell" means a cell of a wastewater treatment lagoon system in which mechanical or diffused-air aeration is used to supplement the oxygen supply;

"aerated wastewater treatment lagoon" means the component of the Development which consists of impoundments into which wastewater is discharged for treatment by mechanical aeration and storage;

"affected area" means a geographical area, excluding the property of the Development;

"approved" means approved by the Director in writing;

"appurtenances" means machinery, appliances, or auxiliary structures attached to a main structure to enable it to function, but not considered an integral part of it;

"as constructed drawings" means engineering drawings complete with all dimensions which indicate all features of the Development as it has actually been built;

"ASTM" means the American Society for Testing and Materials;

"Director" means an employee so designated pursuant to The Environment Act;

"effluent" means treated wastewater flowing or pumped out of the aerated wastewater treatment lagoon;

"fecal coliform" means aerobic and facultative, Gram-negative, nonspore-forming, rod-shaped bacteria capable of growth at 44.5° C, and associated with fecal matter of warm-blooded animals;

"five-day biochemical oxygen demand" means that part of the oxygen demand usually associated with biochemical oxidation of organic matter within five days at a temperature of 20° C;

"flooding" means the flowing of water onto lands, other than waterways, due to the overtopping of a waterway or waterways;

"high water mark" means the line on the interior surface of the aerated and storage cells which is normally reached when the cell is at the maximum allowable liquid level or the line of the exterior of the perimeter dykes which is reached during local flooding;

"hydraulic conductivity" means the quantity of water that will flow through a unit cross-sectional area of a porous material per unit of time under a hydraulic gradient of 1.0;

"in-situ" means on the site;

"industrial use agreement" means an agreement to discharge industrial wastewater to municipal wastewater collection and treatment systems;

"industrial wastewater" means wastewater derived from an industry which manufactures, handles or processes a product and does not include wastewater from commercial or residential buildings;

"influent" means water, wastewater or other liquid flowing into a wastewater treatment or pre-treatment facility or any components of the facility;

"low water mark" means the line on the interior surface of the aerated and storage cells which is normally reached when the cell is discharged;

"MPN Index" means the most probable number of coliform organisms in a given volume of wastewater which, in accordance with statistical theory, would yield the observed test result with the greatest frequency;

"noise nuisance" means a continuous or repeated noise in an affected area, which is offensive, obnoxious, troublesome, annoying, unpleasant or disagreeable to a person:

- a. residing in an affected area;
- b. working in an affected area; or
- c. present at a location in an affected area which is normally open to members of the public;

if the noise

- d. is the subject of at least 5 written complaints received by the Director in a form satisfactory to the Director and within a 90 day period, and from 5 different persons falling within clauses a), b) or c) who do not live in the same household; or
- e. is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the noise had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90 day period from 5 different persons who do not live in the same household;

"odour nuisance" means a continuous or repeated odour, smell or aroma in an affected area which is offensive, obnoxious, troublesome, annoying, unpleasant or disagreeable to a person:

- a. residing in an affected area;
- b. working in an affected area; or
- c. present at a location in an affected area which is normally open to members of the public;

if the odour, smell or aroma

- d. is the subject of at least 5 written complaints received by the Director in a form satisfactory to the Director and within a 90 day period, and from 5 different persons falling within clauses a), b) or c) who do not live in the

same household; or

- e. is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the odour, smell or aroma had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90 day period from 5 different persons who do not live in the same household;

"riprap" means small, broken stones or boulders placed compactly or irregularly on dykes or similar embankments for protection of earth surfaces against wave action or current;

"septage" means the sludge produced in individual on-site wastewater disposal systems such as septic tanks;

"sewage" means household and commercial wastewater that contains human waste;

"sludge" means the accumulated solids separated from liquids, such as water or wastewater, during processing;

"Standard Methods for the Examination of Water and Wastewater" means the most recent edition of Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, the American Waterworks Association and the Water Environment Federation;

"storage cell" means a cell of the aerated wastewater treatment lagoon system which is a cell that receives partially treated wastewater from the aerated cell and retains the wastewater for a period of time;

"total coliform" means a group of aerobic and facultative anaerobic, Gram-negative, nonspore-forming, rod-shaped bacteria, that ferment lactose with gas and acid formation within 48 hours at 35° C, and inhabit predominantly the intestines of man or animals, but are occasionally found elsewhere and include the sub-group of fecal coliform bacteria;

"wastewater" means the spent or used water of a community or industry which contains dissolved and suspended matter;

"wastewater collection system" means the sewer and pumping system used for the collection and conveyance of domestic, commercial and industrial wastewater; and

"wet industry" means an industry that generates manufacturing or processing wastewater but does not include an industry that generates only cooling process wastewater.

GENERAL TERMS AND CONDITIONS

This Section of the Licence contains requirements intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

1. The Licencee shall direct all wastewater generated within the Local Urban District of Blumenort toward the Rural Municipality of Hanover - Blumenort aerated wastewater treatment lagoon or other approved sewage treatment facilities.
2. In addition to any of the limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
 - a. sample, monitor, analyze and/or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, treatment, handling, disposal or emission systems, for such pollutants or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, for such duration and at such frequencies as may be specified;
 - b. determine the environmental impact associated with the release of any pollutant(s) from the Development; or

- c. provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and analytical procedures being used, bioassay data, flow rate measurements and such other information as may from time to time be requested.
3. The Licencee shall, in case of physical or mechanical breakdown of the aerated wastewater treatment lagoon:
 - a. notify the Director immediately;
 - b. identify the repairs required to the aerated wastewater treatment lagoon;
 - c. undertake all repairs to minimize unauthorized discharges of wastewater; and
 - d. complete the repairs in accordance with any written instructions of the Director.
4. The Licencee shall, unless otherwise specified in this Licence:
 - a. carry out all preservations and analyses on liquid samples in accordance with the methods prescribed in "Standard Methods for the Examination of Water and Wastewater" or in accordance with an equivalent analytical methodology approved by the Director;
 - b. have all analytical determinations undertaken by an accredited laboratory; and
 - c. report the results to the Director, in writing or in a format acceptable to the Director, within 60 days of the samples being taken.
5. The Licencee shall not allow the discharge of any industrial wastewater from a wet industry into the wastewater collection system and aerated wastewater treatment lagoon unless the wet industry discharging the wastewater has first entered into an industrial use agreement with the Licencee.
6. Notwithstanding Clause 5 of this Licence, the Licencee shall establish an industrial use agreement with wet industries that do not currently have an industrial use agreement within six months of the date of this Licence. Any such agreement(s) shall specify the quality, quantity and timing of discharges into the wastewater collection system.
7. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.
8. The Licencee shall not cause or permit an odour nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate an odour nuisance.
9. The Licencee shall, during construction and operation of the Development, report spills of fuels or other contaminants to an Environment Officer in accordance with the requirements of *Manitoba Regulation 439/87* respecting *Environmental Accident Reporting*.
10. The Licencee shall dispose of non-reusable demolition and construction debris from the Development at a waste disposal ground operating under the authority of a permit issued under *Manitoba Regulation 150/91* respecting *Waste Disposal Grounds* or a Licence issued under The Environment Act.
11. The Licencee shall locate fuel storage and equipment servicing areas established for the construction and operation of the Development a minimum distance of 100 metres from any waterbody, and shall comply with the requirements of *Manitoba Regulation 188/2001* respecting *Storage and Handling of Petroleum Products and Allied Products*.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Respecting Construction:

12. The Licencee shall notify the designated Environment Officer not less than two weeks prior to beginning construction of the Development.
13. The Licencee shall, prior to the construction of the dykes for the aerated wastewater treatment lagoon, remove the organic topsoil from the area where the dykes will be constructed.
14. The Licencee shall construct and maintain the aerated wastewater treatment lagoon with a continuous liner under all interior surfaces of the cells in accordance with the following specifications:
 - a. the liner shall be made of clay;
 - b. the liner shall be at least one metre in thickness;
 - c. the liner shall have a hydraulic conductivity of 1×10^{-7} centimetres per second or less at all locations;
 - d. the liners of the cells located in NE and SE 32-7-6 EPM shall be constructed to an elevation of 5.10 metres above the floor elevation of the aerated cells and a minimum elevation of 3.25 metres above the floor elevation of the storage cells; and
 - e. the liners of the cells located in NW and SW 33-7-6 EPM shall be constructed to elevations of 2.5 metres above the floor elevation of the storage cells.
15. The Licencee shall arrange with the designated Environment Officer a mutually acceptable time and date for any required soil sampling between the 15th day of May and the 15th day of October of any year.
16. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "A" attached to this Licence, from the liner of the aerated wastewater treatment lagoon; the number and location of samples and test methods to be specified by the designated Environment Officer up to a maximum of 70 samples.
17. The Licencee shall, not less than 2 weeks before the aerated wastewater treatment lagoon is placed in operation, submit to the Director the results of the tests carried out pursuant to Clause 16 of this Licence.
18. The Licencee shall install and maintain fences around the aerated wastewater treatment lagoon to control access.
19. The Licencee shall construct and maintain all-weather access roads and a sewage dumping station for truck handled sewage. The dumping station shall have a surface splash ramp with a smooth hard surface that can be easily washed free of solids.

Respecting Operation and Maintenance:

20. The Licencee shall operate and maintain the aerated wastewater treatment lagoon in such a manner that:
 - a. the maximum daily flow rate is not in excess of 3,346 cubic metres per day;
 - b. the organic loading on the aerated wastewater treatment lagoon, in terms of the five-day biochemical oxygen demand, is not in excess of 3,274 kilograms per day;
 - c. a minimum of 2 milligrams of dissolved oxygen per litre is detectable at any location and at all times in the liquid in the aerated cells;
 - d. the depths of liquid in the aerated cells do not exceed 4.10 metres;
 - e. the depths of liquid in the storage cells located in NE and SE 32-7-6 EPM do not exceed 2.25 metres; and
 - f. the depths of liquid in the storage cells located in NW and SW 33-7-6 EPM do not exceed 1.5 metres.
21. The Licencee shall, if in the opinion of the Director, significant erosion of the interior surfaces of the dykes occurs, repair the dyke and install riprap as necessary. The riprap shall be placed on the interior dyke surfaces from 0.6 metres above the high water mark to at least 0.6 metres below the low water mark to protect the dykes from wave action.

22. The Licencee shall provide and maintain a grass cover on the dykes of the aerated wastewater treatment lagoon and shall regulate the growth of the vegetation so that the height of the vegetation does not exceed 0.3 metres on all dykes.
23. The Licencee shall annually remove by mechanical methods all reeds, rushes and trees located above the low water mark in every cell of the aerated wastewater treatment lagoon.
24. The Licencee shall implement an ongoing program to remove burrowing animals from the site of the aerated wastewater treatment lagoon.

Respecting Hauled Influent:

25. The Licencee shall:
 - a. submit to the Director for approval, on or before the 1st day of February, 2003, a monitoring plan for ensuring septage, sewage and wastewater hauling quantities and qualities are characterized; and
 - b. incorporate the results of the monitoring plan activities to operation and maintenance activities for the aerated wastewater treatment lagoon.

Respecting Influent Monitoring Station:

26. The Licencee shall:
 - a. construct and make available for use by an Environment Officer, secured and heated monitoring and sample collection station(s) with direct access to all influent pipelines at the ends of all forcemains and located within the aeration building located within NE 32-7-6 EPM as necessary;
 - b. make all monitoring stations accessible to an Environment Officer at all times;
 - c. install and maintain a flow measuring device(s) at the monitoring station or at a location(s) acceptable to the Director which is capable of measuring the volumes of influent with an accuracy of ± 2 percent;
 - d. have the flow measuring device(s) re-calibrated biannually or on the request of an Environment Officer;
 - e. size the influent monitoring station to accommodate a flow proportional 24-hour composite sampler(s);
 - f. equip the station with electronic interfaces to the influent flow metering device(s) whereby the electronic interfaces are compatible with the departmentally owned ISCO sampler; and
 - g. equip the monitoring station(s) with a flow-proportional sampling device(s) equipped to function with the flow measuring device and have the sampling device available on request for use by an Environment Officer.

Respecting Effluent:

27. The Licencee shall not discharge effluent from the aerated wastewater treatment lagoon:
 - a. where the organic content of the effluent, as indicated by the five-day biochemical oxygen demand (BOD₅), is in excess of 30 milligrams per litre;
 - b. where the suspended solids content of the effluent is in excess of 30 milligrams per litre;
 - c. where the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample;
 - d. where the total coliform content of the effluent, as indicated by the MPN index, is in excess of 1500 per 100 millilitres of sample; or
 - e. between the 30th day of November of any year and the 1st day of April of the following year.

28. The Licencee shall take reasonable steps to coordinate discharge periods of the aerated wastewater treatment lagoon with discharge periods of other wastewater treatment lagoons discharging to Seine River Diversion such that related potential environmental effects are minimized.

MONITORING AND REPORTING

Respecting Monitoring, Record Keeping and Reporting:

29. The Licencee shall maintain the influent flow meters and electronic interface devices in proper working order.
30. The Licencee shall monitor, or provide monitored information, on the influent of each source and determine and record:
- a. the daily flow rate (cubic metres per day); and
 - b. the loading (kilograms per day) of 5-day biochemical oxygen demand, on at least two days each week that are also processing days for wet industries for which an industrial use agreement(s) exists.
31. The Licencee shall submit the recorded information pursuant to Clause 30 of this Licence to the Director, in writing and in an electronic format acceptable to the Director, no later than 30 days after the end of the month during which the information was determined.
32. The Licencee shall:
- a. during each year maintain records of:
 - i. wastewater sample dates;
 - ii. original copies of laboratory analytical results of the sampled wastewater; and
 - iii. effluent discharge dates;
 - b. make the records being maintained pursuant to Sub-Clause 32 a) of this Licence available to an Environment Officer upon request; and
 - c. keep the maintained records of any one calendar year available for inspection for a period of three years following the respective calendar year in which they were recorded.
33. The Licencee shall, for each period when discharge of treated effluent from the aerated wastewater treatment lagoon occurs;
- a. collect effluent samples during the beginning, middle and end of the discharge period to create one effluent composite sample and have the sample analyzed for the following parameters:
 - i. total phosphorus;
 - ii. total Kjeldhal nitrogen; and
 - iii. nitrate/nitrite;
 - b. collect effluent samples during the beginning, middle and end of the discharge period and have the samples analyzed for the following parameters:
 - i. BOD₅;
 - ii. fecal coliform content;
 - iii. total coliform content;
 - iv. ammonia and the calculated value of un-ionized ammonia;
 - v. temperature; and
 - vi. pH; and
 - c. not less than 30 days after the results of the sample analyses are available, submit the results of the

analyses to the Director in writing and in an electronic format acceptable to the Director.

34. The Licencee shall:

- a. inspect and assess the operation of the aeration system blowers weekly;
- b. inspect and assess the aeration system annually;
- c. inspect and assess the aeration system for frozen piping weekly during the winter; and
- d. make records of these activities available to the designated Environment Officer on request.

35. The Licencee shall maintain records of the aerated wastewater treatment lagoon operations and/or maintenance requirements with respect to the following:

- a. aeration system pumps daily elapsed time;
- b. aeration system inspection dates, observations, maintenance and repairs completed;
- c. weekly summer and winter liquid levels in all cells and presence of odours and their source;
- d. liquid levels, duration of discharge, and procedures followed at the start of and during discharge(s); and
- e. make these records available to the designated Environment Officer on request.

Respecting a Groundwater Monitoring Plan:

36. The Licencee shall submit to the Director for approval, within six months of the date of this Licence, a local groundwater investigation and monitoring plan for the site of the Development to monitor for liner integrity.

Respecting Nutrient Reduction and Removal Studies, Plans, Strategies & Proposals:

37. The Licencee shall actively participate in any current or future watershed-based management study, plan and/or nutrient reduction program, approved by the Director, for the Youville Drain, Seine River Diversion, Red River or Lake Winnipeg and associated waterways and watersheds.

Respecting Record Drawings:

38. The Licencee shall:

- a. prepare "as constructed drawings" for the Development and shall label the drawings "As Constructed"; and
- b. provide to the Director, on or before the 1st day of December, 2004, two sets of "as constructed drawings" of the Development.

REVIEW AND REVOCATION

- A. This Licence replaces Licence No. 1065 which is hereby rescinded.
- B. If, in the opinion of the Director, the Licencee has exceeded or is exceeding or has or is failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Director may, temporarily or permanently, revoke this Licence.
- C. If the Licencee has not commenced construction of the Development within three years of the date of this Licence, the Licence is revoked.
- D. If, in the opinion of the Director, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Director may require the filing of a new proposal pursuant to Section 11 of The Environment Act.

"original signed by"

Larry Strachan, P. Eng.
Director
Environment Act

Client File No.: 1957.20

Schedule "A" to Environment Act Licence No. 2550

Soil Sampling:

1. The Licencee shall provide a drilling rig, acceptable to the designated Environment Officer, to extract soil samples from the liner which is not placed or found at the surface of the lagoon structure. This includes all wastewater treatment lagoons constructed with clay cutoffs at the interior base of the dyke or with a clay cutoff in the centre of the dyke. The drill rig shall have the capacity to drill to the maximum depth of the clay cutoff plus an additional 2 metres. The drill rig shall be equipped with both standard and hollow stem augers. The minimum hole diameter shall be 5 inches.
2. For lagoon liners placed or found at the surface of the lagoon structure, the Licencee shall provide a machine, acceptable to the designated Environment Officer, capable of pressing a sampling tube into the liner in a straight line motion along the centre axis line of the sample tube and without sideways movement.
3. Soil samples shall be collected and shipped in accordance with ASTM Standard D 1587 (Standard Practice for Thin-Walled Tube Sampling of Soils), D 4220 (Standard Practice for Preserving and Transporting Soil Samples) and D 3550 (Standard Practice for Ring-Lines Barrel Sampling of Soils). Thin-walled tubes shall meet the stated requirements including length, inside clearance ratio and corrosion protection. An adequate venting area shall be provided through the sampling head.
4. At the time of sample collection, the designated Environment Officer shall advise the Licencee as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample were the Environment Officer determines that the soil sample is taken from an undisturbed clay soil which has not been remoulded and which is homogeneous and unweathered. The triaxial test shall be used for all samples taken from disturbed and remoulded soils or from non homogenous and weathered soils.
5. The Licencee shall provide a report on the collection of soil samples to the designated Environment Officer and to the laboratory technician which includes but is not limited to: a plot plan indicating sample location, depth or elevation of sample, length of advance of the sample tube length of soil sample contained in the tube after its advancement, the soil test method specified by the Environment Officer for each soil sample and all necessary instructions from the site engineer to the laboratory technician.
6. All drill and sample holes shall be sealed with bentonite pellets after the field drilling and sampling has been completed.

Soil Testing Methods:

1. Triaxial Test Method
 - a. The soil samples shall be tested for hydraulic conductivity using ASTM D 5084 (Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter).
 - b. Soil specimens shall have a minimum diameter of 70 mm (2.75 inches) and a minimum height of 70 mm (2.75 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The hydraulic gradient shall not exceed 30 during sample preparation and testing. Swelling of the soil specimen should be controlled to adjust for: the amount of compaction measured during sample collection and extraction from the

tube and the depth or elevation of the sample. The effective stress used during saturation or consolidation of the sample shall not exceed 40 kPa (5.7 psi) or the specific stress level, that is expected in the field location were the sample was taken, which ever is greater.

- c. The complete laboratory report, as outlined in ASTM D 5084, shall be supplied for each soil sample collected in the field.

2. Oedometer Test Method

- a. The soil samples shall be tested for hydraulic conductivity using ASTM D 2435 (Standard Test Method for One-Dimensional Consolidation Properties of Soils).
- b. Soil specimens shall have a minimum diameter of 50 mm (2 inches) and a minimum height of 20 mm (0.8 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The soil specimen shall be taken from an undisturbed soil sample. The soil specimen shall be completely saturated.
- c. The complete laboratory report, as outlined in ASTM D 2435, shall be supplied for each soil sample collected in the field.