Licence No.: 2591
Licence Issued: March 4, 2003

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

INCORPORATED COMMUNITY OF SOUTH INDIAN LAKE and DEPARTMENT OF ABORIGINAL AND NORTHERN AFFAIRS; "the Licencees"

for the construction and operation of the Development being a wastewater treatment lagoon located on the south half of Section 36-89-10 WPM near the Community of South Indian Lake in accordance with the Proposal filed under The Environment Act on April 11, 2002, the additional information dated June 10, 2002, and the Notice of Alteration dated February 4, 2003 and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"access road" means a road that leads from a Provincial Trunk/Highway, Provincial Road, or a municipal road;

"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;

"approved" means approved by the Director in writing;

"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;

"bentonite" means specially formulated standard mill grade sodium bentonite conforming to American Petroleum Institute Specification 13-A;

"cut-off" means a vertical-side trench filled with compacted clay or a wall constructed from compacted clay;

"differential settlement" means the net difference between two points which were at the same elevation upon completion of construction of the development but which have settled unequally due to thawing of the permafrost or other cause;

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

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

"grab sample" means a quantity of wastewater taken at a given place and time;

"high water mark" means the line on the interior surface of the primary and secondary cells which is normally reached when the cell is at the maximum allowable liquid level;

"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;

"low water mark" means the line on the interior surface of the primary and secondary 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;

"primary cell" means the first in a series of cells of the wastewater treatment lagoon system and which is the cell that receives the untreated wastewater;

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

"secondary cell" means a cell of the wastewater treatment lagoon system which is the cell that receives partially treated wastewater from the primary cell;

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

"sludge" means accumulated solid material, containing large amounts of entrained water, that has separated from 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;

"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;

"waste disposal ground" means an area of land designated by a person, municipality, provincial government agency, or crown corporation for the disposal of waste and approved for use in accordance with Manitoba Regulation 150/91, or subsequent revision thereof, or a Licence issued pursuant to The Environment Act;

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

"wastewater treatment lagoon" means the component of this development which consists of an impoundment into which wastewater is discharged for storage and treatment by natural oxidation.

GENERAL TERMS AND CONDITIONS

This Section of the Licence contains requirements intended to provide guidance to the Licencees 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. In addition to any of the following specifications, limits, terms and conditions specified in this Licence, the Licencees shall, upon the request of the Director:

    a. sample, monitor, analyze 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, ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, and for such duration and at such frequencies as may be specified;

b. determine the environmental impact associated with the release of any pollutant 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.

2. The Licencees shall, unless otherwise specified in this Licence:

   a. carry out all preservations and analyses on liquid samples in accordance with the methods prescribed in the Standard Methods for the Examination of Water and Wastewater, or in accordance with an equivalent analytical methodology approved by the Director;
   b. ensure that all analytical determinations are undertaken by an accredited laboratory; and
   c. report the results to the Director, in writing and in an electronic format acceptable to the Director, within 60 days of the samples being taken.

3. The Licencees shall submit all information required to be provided to the Director under this Licence, in writing, in such form (including number of copies) and of such content as may be required by the Director.

4. The Licencees shall direct all wastewater generated within the Community of South Indian Lake toward the wastewater treatment lagoon or other approved wastewater treatment facilities.

5. The Licencees shall construct and maintain an all-weather access road to the wastewater treatment lagoon.

6. The Licencees shall construct and maintain a truck dumping station for truck hauled septage and wastewater. The truck dumping facility shall be equipped with an influent pipe fitted with a quick-coupler. All trucks used to deliver wastewater are to be equipped with a flexible hose and matching adapters for the quick-coupler. All wastewater delivered to the truck dumping station is to be discharged through the hose and influent pipe into the trash tank below the liquid surface.

7. The Licencees shall operate and maintain the wastewater treatment lagoon and wastewater collection system in such a manner that the release of offensive odours is minimized.

8. The Licencees shall install and maintain a fence around the wastewater treatment lagoon to limit access.

9. The Licencees shall actively participate in any future watershed or drainage basin management plan, approved by the Director, for South Indian Lake and associated waterways and watersheds.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

10. The Licencees shall construct and maintain the wastewater treatment lagoon such that the wastewater load does not exceed the design capacities as follows:

    a. the organic loading on the primary cell, as indicated by the five-day biochemical oxygen demand, is not in excess of 56 kilograms per hectare per day; and
    b. the depth of liquid in all primary and secondary cells does not exceed 1.5 metres.

11. The Licencees shall, prior to the construction of the dykes for the wastewater treatment lagoon, remove all organic topsoil from the area where the dykes will be constructed.

12. The Licencees shall construct and maintain the wastewater treatment lagoon with a continuous liner, including cut-offs, 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; and
d. the liner shall be constructed to an elevation of 2.5 metres above the floor elevation of both the primary and secondary cells.

13. The Licencees shall, if differential settlement of the liner exceeds 0.6 metres or if requested by the Director in writing:

a. carry out an assessment of the structural stability and containment capacity of the lagoon;
b. prepare a report of the assessment and provide to the Director, within such time as may be specified by the Director, a copy of the assessment report; and
c. complete any repairs in accordance with the written instructions of the Director.

14. The Licencees shall not discharge effluent from the wastewater treatment lagoon:

a. where the organic content of the effluent, as indicated by the five-day biochemical oxygen demand, is in excess of 30 milligrams per litre;
b. where the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample;
c. 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
d. between the 1st day of November of any year and the 15th day of June of the following year.

15. The Licencees 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 Licencees shall take and test samples, in accordance with Schedule "A" attached to this Licence, from the liner of the 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 45 samples.

17. The Licencees shall, within 60 days of the date on which the samples were taken, submit to the Director the results of the tests carried out pursuant to Clause 16 of this Licence.

18. The Licencees shall, if in the opinion of the Director significant erosion of the interior surfaces of the dykes occurs, place riprap 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.

19. The Licencees shall discharge truck hauled septage and wastewater at the truck dumping station in accordance with Clause 6 of this Licence and shall not discharge truck hauled septage and wastewater directly into the wastewater treatment lagoon.

20. The Licencees shall provide and maintain a grass cover on the dykes of the 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.

21. The Licencees shall annually remove by mechanical methods all reeds, rushes and trees located above the low water mark in every cell of the wastewater treatment lagoon.

22. The Licencees shall implement an ongoing program to ensure that burrowing animals are removed from the site of the wastewater treatment lagoon.

MONITORING AND REPORTING SPECIFICATIONS

23. The Licencees shall, prior to each effluent discharge campaign, obtain grab samples of the treated wastewater

and have them analyzed for:

a. the organic content as indicated by the five day biochemical oxygen demand and expressed as milligrams per litre;
b. the fecal coliform content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample; and
c. the total coliform content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample.

24. The Licencees shall, once each year for five years following the introduction of wastewater into the lagoon and thereafter at a frequency approved by the Director:

a. have the development inspected for settlement and impacts of permafrost;
b. have the development surveyed for current elevations and compared with the "as constructed drawings";
c. within 60 days of each inspection carried out pursuant to Clauses 24a) and 24b) of this Licence, submit to the Director a site inspection report, prepared by a professional engineer registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, or another qualified person acceptable to the Director, who is knowledgeable and experienced in the field of engineering design and construction in permafrost areas; and
d. carry out any required repairs, studies or other actions as may be specified by the Director.

25. The Licencees 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 Clause 25 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.

26. The Licencees shall:

a. prior to placing the Development into operation, submit to the Director for approval:

i. a testing and reporting plan to ensure that standby power for the lift stations is maintained in proper working order; and
ii. a backflow prevention plan to prevent the lagoon from emptying into the collection system; and

b. carry out the approved plans.

27. The Licencees 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 1st day of September, 2004, two copies of the "as constructed drawings" of the wastewater treatment lagoon.

28. The Licencees shall, in case of physical or mechanical breakdown of the wastewater collection and/or treatment system:

a. notify the Director immediately;
b. identify the repairs required to the wastewater collection and/or treatment system; and
c. complete the repairs in accordance with the written instructions of the Director.

DECOMMISSIONING

29. The Licencees shall, after placing the Development into operation, decommission the existing wastewater treatment plant in accordance with the following decommissioning terms and any written instructions of the Director:

    a. liquid from the sequencing batch reactor tanks shall be pumped into the community wastewater collection system;
    b. sludge from the sequencing batch reactor tanks shall be removed to the primary cell;
    c. all mechanical and electrical equipment, piping and wiring from the inside of the building shall be removed;
    d. a qualified asbestos removal contractor shall remove and dispose of any asbestos;
    e. the structure and metal tanks shall be demolished and disposed in a waste disposal ground;
    f. the site shall be tested for contamination, a contamination report shall be submitted to the Director and the site shall be remediated in accordance with any written instructions of the Director;
    g. the site shall be backfilled with compacted granular or till material and graded to surrounding natural grade; and
    h. the site shall be seeded with grass to prevent erosion.

REVIEW AND REVOCATION

A. This Licence replaces Licence No. 1922 which is hereby rescinded effective on the date of commissioning of the Development.

B. If, in the opinion of the Director, the Licencees have exceeded or are exceeding or have or are 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, 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.: 4776.00

Schedule "A" to Environment Act Licence No. 2591

Soil Sampling:

1. The Licencees shall provide a drilling rig, acceptable to the designated Environment Officer, to extract samples from the liner that is not placed or found at the surface of the lagoon structure. This includes all wastewater treatment lagoons constructed with clay cut-offs at the interior base of the dyke or with a clay cut-off in the centre of the dyke. The drill rig shall have the capacity to drill to the maximum depth of the clay cut-off plus an additional depth of 2 metres. The drill rig shall be equipped with both standard and hollow stem augers. The minimum diameter of the hole shall be 5 inches.

2. For lagoon liners placed or found at the surface of the lagoon structure, the Licencees 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. 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 Licencees as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample where 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 or weathered soils.

5. The Licencees shall provide, to the designated Environment Officer and to the laboratory technician, a report on the collection of soil samples that includes but is not limited to the following: a plot plan indicating all drill holes, onsite visual observations, 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 that 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 where the sample was taken, which ever is greater.
    c. A 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 that 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. A complete laboratory report, as outlined in ASTM D 2435, shall be supplied for each soil sample collected in the field.