



Conservation

Climate Change and Environmental Protection Division
Environmental Assessment and Licensing Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

CLIENT FILE NO.: 5478.00

September 16, 2011

Chris Hanson
Water/Wastewater Program Manager
Riding Mountain National Park
Wasagaming MB R0J 2H0

Dear Mr. Hanson:

Enclosed is **Environment Act Licence No. 2983** dated September 16, 2011 issued to Parks Canada for the operation of the Development being land application of sludge that has been removed from the Wasagaming wastewater treatment lagoon located in NE 24-19-19WPM and stockpiled at the Gray Owl Landfill located in NE 4-20-18 WPM, both being within Riding Mountain National Park, the removal of the sludge from the landfill, the transportation of the sludge, and the disposal of the sludge to agricultural land in SW 10-19-19WPM; NE, NW, and SE 15-19-19WPM; NE and NW (E half), 21-19-19WPM and NE (half), NW, and SW 22-19-19WPM in the Rural Municipality of Park and in accordance with the Proposal issued under The Environment Act on June 15, 2010 and subsequent information provided in letters dated October 21, 2010 and March 25, 2011.

In addition to the enclosed Licence requirements, please be informed that all other applicable federal, provincial and municipal regulations and by-laws must be complied with. Notice of Alteration must be filed with the Director for approval prior to any alteration to the Development as licensed.

For further information on the administration and application of the Licence, please feel free to contact Rob Boswick, Environmental Engineer (204) 945-0030.

Pursuant to Section 27 of The Environment Act, this licensing decision may be appealed by any person who is affected by the issuance of this Licence to the Minister of Conservation within 30 days of the date of the Licence.

Yours truly,


Tracey Traut, M.Sc.
Director
Environmental Operations

Enc.

c: Don Labossiere, Director, Environmental Operations
David Whetter, M.Sc., P.Ag., Stantec
Public Registries

NOTE: Confirmation of Receipt of this Licence No. 2983 (by the Licensee only) is required by the Director of Environmental Assessment and Licensing. Please acknowledge receipt by signing in the space provided below and faxing a copy (letter only) to the Department by September 24, 2011.

On behalf of Parks Canada

Date

****A COPY OF THE LICENCE MUST BE KEPT ON SITE AT THE DEVELOPMENT AT ALL TIMES****

LICENCE

Licence No. / Licence n°

2983

Issue Date / Date de délivrance

September 16, 2011

In accordance with The Environment Act (C.C.S.M. c. E125)
Conformément à la Loi sur l'environnement (C.P.L.M. c. E125)

Pursuant to Section 11(1) / Conformément au Paragraphe 11(1)

THIS LICENCE IS ISSUED TO: / CETTE LICENCE EST DONNÉE À:

PARKS CANADA, RIDING MOUNTAIN NATIONAL PARK,
"the Licencee"

for the operation of the Development being the application of sludge that has been removed from the Wasagaming wastewater treatment lagoon located in NE 24-19-19WPM and stockpiled at the Grey Owl landfill located in NE 4-20-18 WPM, both being within Riding Mountain National Park, the removal of the sludge from the landfill, the transportation of the sludge, and the disposal of the sludge to agricultural land on SW 10-19-19WPM; NE, NW, and SE 15-19-19WPM; NE and NW(E half) 21-19-19WPM; and NE(S half), NW, and SW 21-19-19WPM in the Rural Municipality of Park and in accordance with the Proposal filed under The Environment Act on June 15, 2010 and subsequent information provided in letters dated October 21, 2010 and March 25, 2011 and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"**accredited laboratory**" means a laboratory accredited by the Standard Council of Canada (SCC), another accrediting agency recognized by Manitoba Conservation to be equivalent to the SCC, or at a laboratory which can demonstrate to Manitoba Conservation 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;

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

"**approved**" means approved by the Director, or an assigned Environment Officer, in writing;

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“**aquifer**” means a water saturated geologic unit that will yield water to wells or springs at a sufficient rate so that the wells or springs can serve as practical sources of water supply;

“**biosolids**” means accumulated organic solids, resulting from wastewater treatment processes, that have received adequate treatment to permit the material to be recycled;

“**Director**” means an employee so designated pursuant to *The Environment Act*;

“**first order waterway**” means a drain or watercourse serving a watershed with a drainage area of up to one square mile;

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

“**NIST**” means the National Institute of Standards and Technology;

“**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, 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.

“**plant-available nitrogen**” means nitrogen which is readily available to plants by uptake through the roots and is determined by adding 20 percent of the organic nitrogen (as nitrogen), 100 percent of the ammonia (as nitrogen) and 100 percent of the nitrate (as nitrogen);

“**reference material**” means soil or sludge material which is used as a reference;

“**reference value**” means the value established by the agency that supplied the reference material;

“**second order waterway**” means a drain or watercourse servicing a watershed with a drainage area greater than one square mile or having a tributary or tributaries which are first order waterways;

“**sludge solids**” means solids in sludge;

“**sludge**” means accumulated solid material containing large amounts of entrained water, which 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; and

“**water table**” means the upper surface of the zone of saturation of a water bearing geologic unit.

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. In addition to all other following specifications, limits, terms and conditions specified in this Licence, the Licencee 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, handling, treatment and disposal systems, for such pollutants, ambient quality, aquatic toxicity, seepage characteristics and discharge rates and for such duration and 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, bioassay data, flow rate measurements and such other information as may from time to time be requested.

2. The Licencee shall, unless otherwise specified in this Licence:
 - a) carry out all preservations and analyses of liquid samples in accordance with the methods prescribed in the Standard Methods for the Examination of Water and Wastewater or in accordance with equivalent preservation and analytical methodologies approved by the Director; and
 - b) have all analytical determinations undertaken by an accredited laboratory.
 3. The Licencee 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, and each submission shall be clearly labelled with the Licence Number and Client File Number associated with this Licence.
 4. The Licensee shall, in the event of a release, spill, leak, or discharge of pollutant or contaminant in an amount or concentration, or any level of rate of release, that exceeds the limit that is expressly provided under this Act, another Act of the Legislature, or an Act of Parliament, or in a licence, permit, order, instruction, directive or other approval or authorization issued or made under one of those Acts, immediately report the release, spill, leak, or discharge by calling 204-944-4888. The report shall indicate the nature of the release, leak, or discharge, the time and estimated duration of the event and the reason for the release, spill, leak, or discharge.
 5. The Licencee shall, during all sludge land application activities, comply with the requirements of *Manitoba Regulation 62/2008* respecting *Nutrient Management Regulation* or any future amendment thereof.
 6. The Licence shall only apply to sludge to agricultural land located on SW 10-19-19WPM; NE, NW and SW 19-19WPM; NE and NW(E half) 21-19-19WPM; and NE(S half), NW, and SW 22-19-19WPM in the Rural Municipality of Park.
- The Licencee shall transport sludge solids in containers in such a manner to prevent loss of sludge solids to the satisfaction of an Environment Officer.
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.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

9. The Licencee shall notify the assigned Environment Officer not less than five days prior to the commencement of loading, transportation and land incorporation

of sludge solids. The notification shall include the intended starting date of the activities and the name of the contractor responsible for the activities.

10. The Licencee shall, during loading, transportation and land incorporation of sludge solids, operate, maintain and store all materials and equipment in a manner that prevents any deleterious substances (fuel, oil, grease, hydraulic fluid, coolant, paint, uncured concrete and concrete wash water, etc.) from entering the wastewater treatment lagoon, the discharge route and associated watercourses.
11. The Licencee shall locate all 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* and any future amendment thereof.
12. The Licencee shall:
 - a) apply the sludge solids to the identified agricultural land;
 - b) incorporate the sludge solids a minimum of 15 centimetres below the soil surface within 48 hours of application; and
 - c) complete the application and incorporation of the sludge solids such that it is acceptable to an Environment Officer.
13. The Licencee shall apply sludge solids such that the amounts of residual nitrate-nitrogen in the 0-24 inch soil depth and Olsen-P phosphorus in the 0-6 inch soil depth do not exceed the limits of the most limiting Nutrient Management Zone, regardless of size, set forth in the *Nutrient Management Regulation* under *The Water Stewardship Act* or any future amendment thereof. Annual post harvest soil testing of each field for nitrate-N (0 – 24”) and phosphorus using the Olsen-P test (0 – 6”) is required for 3 years following biosolids application. Additionally, the Licencee shall supply information from the producer regarding the amounts of nutrients from other sources (fertilizer, manure, etc) being added to the field. Such soil test, fertilization, and cropping information shall be submitted to Manitoba Water Stewardship on or before the 15th day of March of each year following a year when application of sludge solids occurred.
14. The Licencee shall not permit the application of sludge solids:
 - a) between November 10th of any year and April 10th of the following year;
 - b) to frozen soil;
 - c) less than 300 metres from any occupied residence (other than the residence occupied by the owner of the land on which the sludge solids are to be applied);
 - d) less than 1 kilometre from a residential area;

- e) less than 15 metres from a first order waterway;
 - f) less than 30 metres from a second, or higher order waterway;
 - g) less than 50 metres from any groundwater well;
 - h) on land designated as being in Nutrient Management Zone N4 (Section 3(1) of the *Nutrient Management Regulation* under *The Water Protection Act* or any future amendment thereof; or
 - i) on land that is subject to flooding.
15. The Licencee shall not apply sludge solids on land:
- a) with a depth of clay or clay till of less than 10 centimetres between the surface and the water table;
 - b) within 100 metres of an identifiable boundary of an aquifer which is exposed to the ground surface;
 - c) where, prior to the application of sludge solids, the soil pH is less than 6.0;
 - d) where the surface slope of the land is greater than 5 percent;
 - e) where, prior to the application of sludge solids, the level of nitrate-nitrogen exceeds 100 kilograms per hectare in the upper 100 centimetres of the soil; or
 - f) where, prior to the application of sludge solids, the concentration of sodium bicarbonate extractable phosphorous, (SBC-P), exceeds 60 micrograms per gram in the upper 15 centimetres of the soil.
16. The Licencee shall not allow cattle to pasture on land on which sludge solids have been applied, for a period of three years from the date of application of the sludge solids.
17. The Licencee shall, on agricultural land onto which sludge solids have been applied, plant one of the following crops at the commencement of the next growing season following such application and for a period of three years from the date of application of the sludge solids:
- a) a cereal crop;
 - b) a forage crop;
 - c) a soil seed crop;
 - d) field peas; or
 - e) lentils.
18. The Licencee shall apply sludge solids onto agricultural land such that the cumulative weight per hectare of each heavy metal in the soil, as calculated by adding the amount of each heavy metal in the sludge solids applied to the background level of the same metal, does not exceed the following levels: *

<u>Metal</u>	<u>Kilogram per Hectare</u>
Arsenic	21.6
Cadmium	2.5
Chromium (total)	115.2
Copper	113.4
Lead	126
Mercury	11.9
Nickel	90
Zinc	360

*Calculated values shall be based on a soil bulk density of 200 kilograms per cubic metre and a soil depth of 15 centimetres. Analysis of heavy metals must be carried out in accordance with Schedule "B" of this Licence.

MONITORING AND REPORTING REQUIREMENTS

19. The Licencee shall submit to the Director, at least two weeks prior to commencing with the sludge solids land application activities, the details of the sludge solids sampling and analysis program used to determine the if phosphorus-based or nitrogen-based sludge application limits are most appropriate and for determining field specific application rates for the lands on which the sludge solids are to be applied.
20. The Licencee shall submit to the Director, not later than on or before the 1st day of December in the year of sludge solids application, the details of the sludge solids sampling and analysis program used to determine the volume and solids content of the sludge solids applied on a daily basis and the volume and the solids content of sludge solids applied to each field.
21. The Licencee shall submit to the Director, not later than on or before the 1st day of December in the year of application, the details of the field monitoring program on the sludge solids disposal operation used to determine:
 - a) the sodium bicarbonate extractable phosphorous, as P, in the upper 15 centimetres of the soil;
 - b) the nitrate-nitrogen and total nitrogen in the upper 60 centimetres of the soil;
 - c) the pH of the soil;
 - d) the surface slope of the land;
 - e) the presence of clay and clay till to a depth of 1.5 metres;
 - f) the number of hectares in each field that can receive sludge solids in accordance with the Licence; and
 - g) the number of hectares on which sludge solids were applied on a daily basis.

22. The Licencee shall conduct a monitoring and analysis program that is acceptable to the Director, and in accordance with Schedules “A” and “B” of this Licence to determine:
- the composition of the sludge solids;
 - the background levels of selected soil parameters for each parcel of land;
 - the crops grown on land on which sludge solids have been applied during the previous 3-year period.
23. The Licencee shall, on or before the 1st day of December of each year that this Licence is in effect, submit to the Director a report which will include the following:
- details of the sludge solids land application program carried out during the previous 12 month period including:
 - a description of each parcel of land on which sludge solids were distributed;
 - the background levels of soil parameters as listed in Schedule "A" of this Licence, for each parcel of land;
 - the dry weight of sludge solids applied per hectare;
 - the weight of each heavy metal, in milligrams per kilogram of soil, added to each parcel of land for the metals listed in Schedule "A" of this Licence; and
 - the cumulative weight, in kilograms per hectare, of each heavy metal for each parcel of land calculated by adding the amount of each heavy metal applied to the background level of the same metal;
 - the amount of nitrogen, phosphorus, and potassium which was added per hectare for each parcel of land;
 - the results of analysis of the sludge solids and soil required by this Licence;
 - the analytical procedures used and the results of analysis of reference materials in accordance with Schedule “B” of this Licence; and
 - the type of crops grown on land on which sludge solids were applied during the previous 3-year period.


TERMINATION

24. This Licence shall terminate on the 1st day of December, 2014.

REVIEW AND REVOCATION

- A. 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.

- B. If the Licencee has not commenced operation of the Development within one year of the date of this Licence, the Licence is revoked.
- 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.


Tracey _____, M. Sc.
Director
Environment

FILE: 5473.00

EXPIRED

SCHEDULE "A" TO ENVIRONMENT ACT LICENCE NO. 2983

Sludge Solids

1. A representative sample of sludge solids shall be collected from each cell of the wastewater treatment lagoon from which sludge solids were removed. A representative sample of sludge solids shall be a composite of sludge samples taken from a minimum of 5 locations of each sludge stockpile.
2. The sample of sludge solids shall be analyzed for the following parameters:
 - a) conductivity
 - b) pH
 - c) total solids
 - d) volatile solids
 - e) nitrate nitrogen
 - f) total Kjeldahl nitrogen
 - g) ammonia nitrogen
 - h) organic nitrogen
 - i) total phosphorus
 - j) lead
 - k) mercury
 - l) nickel
 - m) potassium
 - n) cadmium
 - o) copper
 - p) zinc
 - q) chromium
 - r) arsenic

*Analysis for heavy metals must be carried out in accordance with Schedule "B" of this Licence.

Soil

3. Composite samples from each field onto which sludge solids will be applied shall be taken prior to application of sludge solids. Each field of twenty-four hectares or less shall be sampled from a minimum of twelve representative sites or a minimum of one sample site per two hectares for larger fields. Each sample site shall be sampled from 0 to 15 centimetres and from 15 to 60 centimetres. The entire core extracted for each sample shall be collected. All samples from similar depths within a field shall be bulked in one container for thorough mixing prior to analysis yielding two samples per field.
4. Soil samples from 0 to 15 centimetres shall be analyzed for the following:
 - a) potassium
 - b) phosphorus
 - c) nickel
 - d) mercury
 - e) zinc
 - f) sodium bicarbonate extractable phosphorus, as P
 - g) cadmium
 - h) chromium
 - i) copper
 - j) lead
 - k) arsenic

*Analysis for heavy metals must be carried out in accordance with Schedule "B" of this Licence.

5. Soil samples from 0 to 60 centimetres shall be analyzed for the following:
 - a) nitrate nitrogen
 - b) total nitrogen

Crops

6. The type of crop grown on lands on which sludge solids have been applied during the previous 3-year period shall be listed along with the legal description of the land and the date of application of sludge solids.

SCHEDULE "B" TO ENVIRONMENT ACT LICENCE NO. 2983

The analysis for all metals shall be carried out in accordance with the following requirements:

1. Soil and sludge samples shall be prepared using non-contaminating grinding and sieving procedures such as agate or porcelain mortar and pestle along with nylon sieves. Soil samples shall be ground to at least 100 mesh size prior to digestion or sample pretreatment.
2. Analysis for heavy metals must be carried out following strong acid digestion.
3. The laboratory performing these analyses shall operate an acceptable quality assurance program including the following:
 - a) Samples of reference material shall be analyzed to monitor the accuracy of the sludge and soil analyses and each set of ten or less samples of sludge or soil shall include, a minimum of the following:
 - i) For sludge samples:
 - one NIST domestic sludge sample (SRM 2861);
 - ii) For soil samples:
 - one NIST Estuarine Sediment sample (SRM 146), or
 - one NIST San Joaquin Soil sample (SRM 2709), or
 - a replacement reference soil sample acceptable to the Director, with analyte concentrations that reflect values found in the field samples; and
 - b) Field duplicates of samples shall be analyzed based on a frequency of one in each set of ten or less field samples and that the acceptance criteria for duplicate analysis should be within ± 10 percent.
4. A copy of the analytical procedures and the analytical results for the reference materials, and any other controls used in the analysis, shall be submitted with the field sample results.
5. If the analytical results of the reference materials do not meet the following criteria, the soil and/or sludge samples must be re-analyzed:

- Arsenic	± 35 percent from the reference value
- Cadmium	± 25 percent from the reference value (for values above 1 $\mu\text{g/g}$)
- Chromium	± 35 percent from the reference value (for values below 1 $\mu\text{g/g}$)
- Chromium	± 25 percent from the reference value
- Copper	± 25 percent from the reference value
- Lead	± 25 percent from the reference value
- Mercury	± 35 percent from the reference value
- Nickel	± 25 percent from the reference value
- Zinc	± 25 percent from the reference value