Manitoba
Conservation and Water Stewardship

Environmental Stewardship Division
Environmental Approvals 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.: 5788.00

November 27, 2015

Dale Overton
Overton Environmental Enterprises Inc.
13- 601 Bowman Ave.
Winnipeg MB R2K 1P7

Dear Mr. Overton:

Enclosed is **revised Environment Act Licence No. 3155 R** dated November 27, 2015 issued to **Overton Environmental Enterprises Inc.** for the re-establishment and operation of the Development being a composting facility to be known as the Giroux Compost and Bulk Materials Handling Facility located in the Rural Municipality of Ste. Anne, Manitoba in accordance with the Proposal filed under *The Environment Act* on July 27, 2015, and additional information provided on August 24, 2015.

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. A 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 Diane Oertel, Environment Officer at 204-345-1486.

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 and Water Stewardship within 30 days of the date of the Licence.

Yours truly,

"original signed by"

_____

Tracey Braun, M.Sc.
Director
Environment Act

c: Don Labossiere, Donna Smiley, Diane Oertel, Environmental Compliance and Enforcement
Public Registries

NOTE: Confirmation of Receipt of this Licence No. 3155 R *(by the Licencee only)* is required by the Director of Environmental Approvals. Please acknowledge receipt by signing in the space provided below and faxing a copy (letter only) to the Department by December 10, 2015.

On behalf of Overton Environmental Enterprises Inc. **Date**

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

THE ENVIRONMENT ACT
LOI SUR L'ENVIRONNEMENT

LICENCE

Licence No. / Licence n° **3155 R**

Issue Date / Date de délivrance **October 19, 2015**

Revised: **November 27, 2015**

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 10(1) / Conformément au Paragraphe 11(1)

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

OVERTON ENVIRONMENTAL ENTERPRISES INC.;
"the Licencee"

for the re-establishment and operation of the Development being a composting facility to be known as the Giroux Compost and Bulk Materials Handling Facility located on NW ¼ 25-7-7 EPM and legal subdivisions 3, 4, 5 and 6 of 25-7-7 EPM in the Rural Municipality of Ste. Anne, Manitoba in accordance with the Proposal filed under *The Environment Act* on July 27, 2015, and additional information provided on August 24, 2015, and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"accredited laboratory" means an analytical facility accredited by the Standards Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Conservation and Water Stewardship 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;

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

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

"CCME" means Canadian Council of Ministers of the Environment;

"compost" means solid mature product resulting from composting;

"composting" means a managed process of bio-oxidation of a solid heterogeneous organic substrate including a thermophilic phase;

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

"engineer(s)" means an engineer or engineers registered with Engineers Geoscientists Manitoba;

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

"green waste" means leaf, grass, garden waste, prunings, shrubs, small branches or other yard wastes, or other larger branches which are chipped or used for compost bulking;

"groundwater" means water below the ground surface in a zone of saturation;

"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;

"monitoring well" means a well drilled to measure groundwater levels and collect groundwater samples for the purpose of physical, chemical or biological analysis to determine the concentration of groundwater constituents;

"noise nuisance" means an unwanted sound, in an affected area, which is annoying, troublesome, 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 unwanted sound

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 unwanted sound 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, 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;

"particulate matter" means any finely divided liquid or solid matter other than water droplets;

"particulate residue" means that part or portion of an atmospheric emission which is deposited onto a surface;

"point source" means any point of emission from a Development where pollutants are emitted to the atmosphere by means of a stack;

“potato waste ” means organic waste materials from the processing of potatoes to include belt filter press cake, tare waste, wet waste and other degradable biological byproducts and materials from the Simplot Canada (II) Limited facility located in the Rural Municipality of Portage la Prairie;

"pollutant" means a pollutant as defined in *The Environment Act*;

"site" means the area both permanent and temporary which is required for the construction and operation of the Development;

"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 Water Works Association and the Water Environment Federation; and

"wood waste" means clean, not treated, dimensional or manufactured wood products or natural trees or parts thereof, that are chipped or shredded for use in the composting process.

GENERAL TERMS AND CONDITIONS

This Section of the Licence contains terms and conditions 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.

General Terms

1. The Licencee shall reduce the production and dissemination of wastes by initiating and maintaining waste reduction and waste recycling programs at the Development.

Reporting Format

2. The Licencee shall submit all information required to be provided to the Director or Environment Officer under this Licence, in written and electronic format, in such form (including number of copies) and of such content as may be required by the Director or Environment Officer, and each submission shall be clearly labelled with the Licence Number and File Number associated with this Licence.

3. The Licencee shall carry out any remedial measures, modifications, or alterations, as deemed necessary by the Director, in respect to matters authorized under this Licence.

Future Sampling

4. 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 pollutants 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.

Sampling Methods

5. 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 the most current edition of Standard Methods for the Examination of Water and Wastewater or in accordance with equivalent preservation and analytical methodologies approved by the Director;
   b) carry out all sampling of, and preservation and analyses on soil, compost and air samples in accordance with methodologies approved by the Director;
   c) have all analytical determinations undertaken by an accredited laboratory; and
   d) report the results to the Director, in writing and in an electronic format acceptable to the Director, within sixty (60) days of the samples being taken, or within another timeframe as specified by the Director.

Equipment Operation

6. The Licencee shall implement a high standard of equipment maintenance and good housekeeping and operational practices with respect to the Development, at all times.

Fire Reporting

7. The Licencee shall in the event of a fire which continues in excess of thirty (30) minutes, or requires fire suppression assistance from personnel outside of the Development (e.g., fire department) report the fire by calling (204) 944-4888 (toll free 1-855-944-4888), identifying the type of materials involved and the location of the fire.

Approvals and Permits

8. The Licencee shall locate fuel storage and equipment servicing areas established for the construction and operation of the Development in compliance with the requirements of *Manitoba Regulation 188/2001* respecting *Storage and Handling of Petroleum Products and Allied Products* or any future amendments thereof.

9. The Licencee shall obtain approval in writing from the Director for any proposed alteration to the Development before proceeding with the alteration.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Odours and Air Emissions

10. The Licencee shall not burn waste or combustible materials, or allow the burning of waste or combustible materials at the Development unless approved by the Director.

11. 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.

12. The Licencee, upon written request of and in a timeframe stipulated by the Director, shall comply with any air emission or ambient air quality criteria specified by the Director for any pollutant of concern to the Director which has been identified pursuant to Clauses 4 or 13 of this Licence.

13. The Licencee shall not emit particulate matter from the Development such that:
    a) particulate matter:
        i) exceeds 0.23 grams per dry standard cubic metre calculated at 25 degrees Celsius and 760 millimetres of mercury, corrected to 12 percent carbon dioxide for processes involving combustion, from any point source of the Development;
        ii) exhibits a visible plume with an opacity of greater than 5 percent at any point beyond the property line of the Development; or
        iii) results in the deposition of visible particulate residue at any time beyond the property line of the Development; or
    b) opacity from any point source of the Development equals or exceeds:
        i) 20 percent as the average of any 24 consecutive opacity observations taken at 15 second intervals;
        ii) 20 percent for more than 16 individual opacity observations within any 1 hour period; or
        iii) 40 percent for any individual opacity observation.

Noise

14. 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.

Responsible Party

15. The Licencee shall assign an engineer(s) or a qualified person(s) to be responsible for the construction of the Development and any required remediation action in accordance with the plans, specifications and design report(s) submitted in support of this Licence.

16. The Licencee shall designate an employee, within sixty (60) days of the date of issuance of this Licence, as the Licencee's Environmental Coordinator, whose job description will include assisting the Licencee in complying with the limits, terms and conditions in this Licence and assisting Senior Management of the Licencee to manage environmental issues at the Development. The name of the Environmental Coordinator shall be submitted in writing to the Director within fourteen (14) days of appointment and any subsequent appointment.

Site Preparation

17. The Licencee shall, prior to any new construction of any component of the Development, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

Mitigating Erosion and Runoff

18. The Licencee shall with respect to on-site earthen construction works, construct and maintain silt fences in the drainage routes transporting surface runoff off the property of the Development until vegetation has been re-established on the disturbed areas.

Pest Control

19. The Licencee shall institute a pest control program at the Development in a manner acceptable to the Director.

Chemical Storage and Spill Containment

20. The Licencee shall provide containment for all vessels containing chemicals and in each area of the Development where the chemicals are stored, loaded, transferred, used or otherwise handled, in compliance with the National Fire Code of Canada (2010), or any future amendment thereof, such that any product leakage or spillage and any contaminated liquid generated is contained within the Development and contamination of groundwater and surface water is prevented.

21. The Licencee shall, in a manner approved by the Director, remove and dispose of all spilled dangerous goods.

Construction

22. The Licencee shall, prior to initiating any construction at the Development, submit two paper copies and one electronic copy of final engineering design plans, sealed by an engineer(s), to the Director. The plans will show the engineering details of each new component and the location of each new component with respect to other components.

23. The Licencee shall construct the Development in accordance with the design plans submitted to the Director pursuant to Clause 22 of this Licence.

24. The Licencee shall, to facilitate inspection of the Development during construction and operation, provide such access as the Director deems necessary, to an Environment Officer throughout the duration of construction and operation of the Development.

Operating Plan

25. The Licencee shall develop and submit to the Director, within six (6) months of the date of issuance of this Licence, the Operating Plan which is to include information regarding all aspects of the Development, to include but not be limited to:
    a) dust, litter and odour control procedures;
    b) vector control procedures;
    c) identification of operational records to be maintained; and
    d) methodologies and processes for all sampling of groundwater, surface water, soil, and compost.

26. The Licencee shall implement the Operating Plan submitted pursuant to Clause 25 of this Licence, and subject to any terms and conditions set by the Director in the acknowledgement.

Site Security

27. The Licencee shall secure the Development so that gates are provided to control all access locations to the site.

Future Construction/Expansion

28. The Licencee shall submit to the Director, at least sixty (60) days prior to construction, design plans, sealed by an engineer(s) or qualified professional, which address construction specifications for any alterations to the composting facility and includes, but are not limited to the following:
    a) design with respect to construction of any future composting facility components;
    b) specifications with respect to construction of a compost pad, designed with a minimum of 0.5-metre thick compacted clay liner with a hydraulic conductivity of not greater than $1x10^{-7}$ cm/sec or equivalent as approved by the Director;
    c) the location of all weather road(s) to the composting area;
    d) details of the compost facility drainage system and integration into the surface water system for the Development or isolated compost leachate collection system (if applicable); and
    e) specifications with respect to construction of the onsite compost leachate pond (if applicable) designed with a minimum one (1) metre thick compacted clay liner with a hydraulic conductivity of 1×10^{-7} cm/s or less; or equivalent liner as approved by the Director.

29. The Licencee shall alter the composting facility in accordance with the design plans submitted pursuant to Clause 28 of this Licence and subject to any terms and conditions set by the Director.

Composting Pad

30. The Licencee shall only conduct composting activities on the Compost Pad identified as 'Section A' of Appendix 'A' or on a compost pad that consists of a minimum 0.5 metre thick compacted clay liner with a hydraulic conductivity of $1x10^{-7}$ cm/s or less or a compost pad approved by the Director.

31. 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, unless otherwise approved by the Environment Officer.

32. The Licencee shall take and test undisturbed soil samples, in accordance with Appendix 'B' attached to this Licence, from:
    a) the clay of any new compost pad(s) and any new compost leachate pond, if applicable; and
    b) any clay component of the Development requiring testing by the Director**.**

    The number and location of samples and test methods will be specified by the designated Environment Officer up to a maximum of twenty (20) samples per pond, compost pad or clay component of the Development.

33. The Licencee shall, prior to operation of the area tested in accordance with Clause 32, receive the approval of the Environment Officer for the results of the tests carried out pursuant to Clause 32 of this Licence.

Operation

34. The Licencee shall only accept and use green waste, potato waste, feed mill waste, wood waste, straw, manure and bedding waste as compost feedstock for the Development. The Licencee shall obtain written approval from an Environment Officer prior to the use or collection of any other feedstock materials.

35. The Licencee shall not sell or make available, to any third party, compost generated at the Development that does not achieve the quality requirements and specifications as contained in the most recent edition of the CCME publication entitled "*Guidelines for Compost Quality – PN 1340*" or equivalent standard approved by the Director.

36. The Licencee shall, upon receiving a written request from an Environment Officer, cover compost windrows undergoing active composting, with a material acceptable to the Environment Officer.

GROUNDWATER

Monitoring and Reporting – Groundwater

37. The Licencee shall install at minimum three (3) groundwater monitoring wells within eight (8) months of the date of issuance of this Licence.

38. Groundwater monitoring well samples shall be collected, stored and analyzed using approved field and laboratory techniques for dissolved analysis. The analytical results shall be retained in a format acceptable to Manitoba Conservation and Water Stewardship and must show previous results and analytical trends.

39. The Operator shall sample the groundwater monitoring wells once per year in late summer for those parameters identified in Appendix 'C' or selected parameters and frequency, as approved by the Director.

40. The Operator shall submit an annual report, in a format acceptable to the Director, detailing the results of groundwater sampling complete with previous results and trends. The report shall be submitted to the designated Environment Officer no later than December 31 annually.

41. As a result of the operation of the Development, the Licencee shall not cause the concentration values of the parameters listed in Appendix 'C', attached to this Licence, to exceed background levels in groundwater at the compliance boundary.

SURFACE WATER MANAGEMENT

Surface Water Management

42. The Licencee shall manage surface water, both impacted and non-impacted, at the Development to prevent uncontrolled release from the Development. The Licencee shall not discharge compost leachate from the on-site compost leachate pond without prior approval from the Director.

43. The Licencee shall direct all compost leachate generated from composting at the Development to the onsite compost leachate pond.

Construction – Surface Water Management System

44. The Licencee shall obtain a Water Rights Licence from the Water Resources Branch, Conservation and Water Stewardship, if required, for drainage works that cause water to leave the Development. The Licencee shall provide to the Director, a copy of the Water Rights Licence at minimum ten (10) days prior to any construction identified within that Licence.

RECORDS AND ANNUAL REPORT

Operation and Monitoring Records

45. The Licencee shall have available for inspection by an Environment Officer or the Director upon request, records of all operational activities, monitoring and analytical results, reports and documents identified in this Licence or the Operating Plan of Clause 25.

46. The Licencee shall keep for inspection, operating and monitoring records at the Development site office including:
    a) as-built drawings showing the location and development of any future construction;
    b) records of annual tonnage received and removed from the development;
    c) monitoring results (including temperature, moisture, and final compost quality); and
    d) complaints received and actions taken.

Annual Report

47. The Licencee shall, unless otherwise approved by the Director, on or before the 15th day of April of each year and beginning in 2017, prepare an annual report with respect to all activities at the Development conducted pursuant to this Licence during the previous calendar year. The format of the report shall be approved by the Director and contain at minimum:
    a) a summary of any construction activities which occurred at the Development;
    b) the mass of each type of feedstock received;
    c) the mass of material that was removed from the Development;
    d) a summary of the monitoring report results;
    e) summary report of noise or odour complaints received; and
    f) summary report of any fires within the development requiring notification as per Clause 7.

EMERGENCY RESPONSE PLAN

48. The Licencee shall maintain an Emergency Response Plan, in accordance with the Canadian Centre for Occupational Health and Safety emergency planning guidelines or other document acceptable to the Director, outlining procedures to be used in the event of leak, spill, fire, flood or other hazardous condition at the Development, or if compost functions are disrupted.

49. The Licencee shall have available for inspection by an Environment Officer, upon request, records of the details of all incidents requiring the implementation of the Emergency Response Plan at the Development site office.

SITE SAFETY PLAN

50. The Licencee shall maintain a Site Safety Plan in the Operating Procedures in accordance with Provincial and City requirements.

DECOMISSIONING

51. The Licencee shall submit to the Director, not less than six (6) months prior to decommissioning of the Development, a plan for the removal of materials and closure of the Development.

REVIEW AND REVOCATION

A. Licence No. 3155 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, 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 10 of *The Environment Act*.

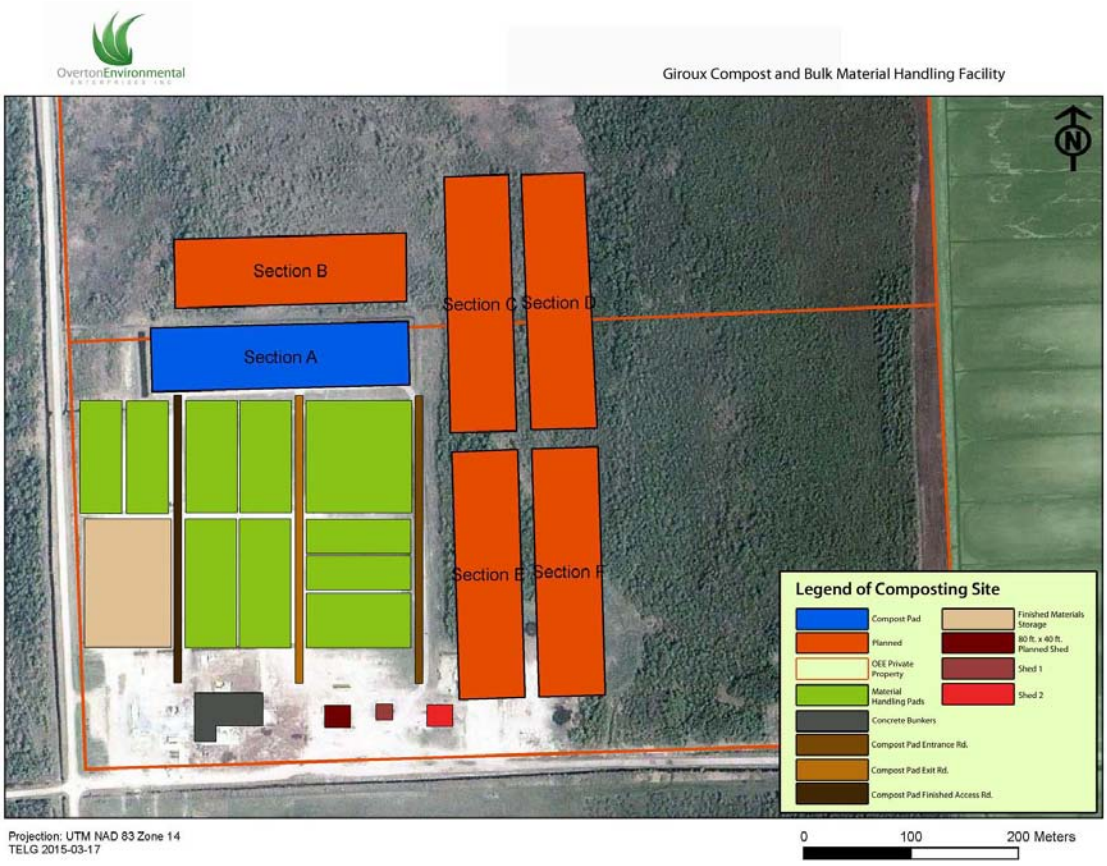
"original signed by"

Tracey Braun, M.Sc.
Director
Environment Act

File No.: 5788.00

Appendix 'A' to Environment Act Licence No. 3155 R

Site Plan pursuant to Clause #30



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

Appendix 'B' to Environment Act Licence No. 3155 R

Liner sampling and testing requirements pursuant to Clause #32

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 compost pad or leachate pond structure. This includes all infrastructure 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 liners placed or found at the surface of the leachate pond 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 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 and weathered soils. The rigid-wall, compaction-mold permeameter test shall be used on soil-bentonite mixtures that have elevated moisture contents and that cannot be sampled without the use of additional containment devices.

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 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.

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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, whichever 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.

3. Rigid-Wall, Compaction-Mold Permeameter Test Method
   a) The soil samples shall be tested for hydraulic conductivity with a rigid-wall, compaction permeameter using ASTM D 5856. The rigid wall permeameter shall be equipped with a variable pressure loading plate at the top of the rigid wall pressure cell.
   b) Soil specimens shall have a minimum diameter of 70 mm (2.75 inches) and a minimum height of 60 mm (2.36 inches). The soil specimens shall be selected from a section of the sample that contains the most porous material based on a visual inspection. The hydraulic gradient shall not exceed 30 during sample preparation. The specimen shall be fully saturated with water prior to commencing the test. The effective stress used during saturation 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, whichever is greater. The vertical stress during the test shall not exceed the stress level that is expected in the field location where the sample was taken.
   c) Additional bentonite shall not be used to coat the inside of the permeameter.
   d) The complete laboratory report, as outlined in ASTM 5856 – 95, shall be supplied for each soil sample collected in the field.

APPENDIX 'C'
TO ENVIRONMENT ACT LICENCE NO. 3155 R Clauses 39 and 41

Ground Water Chemistry Parameters

Chemical Parameters		
Inorganics		
Alkalinity – Total		Magnesium – Dissolved
Ammonia – Total		Manganese – Dissolved
Arsenic – Total		Mercury – Dissolved
Barium – Dissolved		Nitrate - Reported as N
Boron – Dissolved		Nitrite - Reported as N
Cadmium – Dissolved		Total Kjeldahl Nitrogen – Reported as N
Calcium – Dissolved		pH
Calcium Carbonate		Total Phosphorous
Chloride		Potassium – Dissolved
Chromium – Dissolved		Silicon – Dissolved
Conductivity		Sodium – Dissolved
Copper – Dissolved		Total Dissolved Solids (TDS)
Iron – Dissolved		Sulphate
Lead – Dissolved		Uranium – Dissolved
		Zinc – Dissolved
Volatile Organic Compounds (VOC's)		
BTEX		
Other Organics		
Biological Oxygen Demand (BOD)		Chemical Oxygen Demand (COD)
Dissolved Organic Carbon (DOC)		
Field Parameters		
pH		Groundwater Elevation
Conductivity		Dissolved Oxygen
Temperature		

Note: All metals (except Arsenic) are to be sampled for dissolved analysis. Dissolved samples should be filtered in the field and preserved in the field at time of sampling. If dissolved samples are not to be filtered and preserved in the field then Conservation and Water Stewardship and the Laboratory must be notified prior to sampling.