WSP Ref.: 181-05884-00

October 23, 2018

John McKiernan
Manager of Environmental Services
Kneehill County
PO Box 400
Three Hills, Alberta
T0M 2A0

Subject: Kneehill Landfill Evaluation
Kneehill County Class III Landfill and Transfer Station
SW 20-032-26 W4M

BACKGROUND

Kneehill County retained WSP to complete an evaluation of their existing Class III Landfill and Transfer Station (the site) located at SW 20-032-26 W4M (Attachment A). The site is located approximately 27 km northwest of Three Hills, Alberta.

The Class III Landfill and Transfer Station operates under Alberta Environment and Parks (AEP) Code of Practice for Landfills, registration number 68468-00-00. The site is assumed to have been in operation since 2000 and provides the residents of Kneehill County a place to dispose and recycle inert waste items.

The landfill and transfer station offers a variety of services such as a burn pit, bins for household refuse, an assortment of recycling options (tires, scrap metal, cardboard, paint), and three dry disposal cells for unrecyclable items. The customers that use the landfill consist of Kneehill County residents and commercial customers. Occasionally, residents that do not reside in the County will use the site for their disposal needs. The site is open on Wednesday and Saturday of each week from 10:00 am to 6:00 pm and services approximately 65 to 100 vehicles a day.

Each year, an annual report is submitted to AEP; the last inspection completed by AEP was in 2012. Currently, there are three groundwater monitoring wells on-site that are sampled twice a year, and water levels are measured each month.

OBJECTIVE

To provide an evaluation of the Class III Landfill and transfer station, looking specifically at anticipated life expectancy of cells currently in use and options for a new cell, along with a general site assessment and recommended upgrades.

SCOPE OF WORK

The scope of work consisted of the following tasks:

- Project set-up and communication
- Review site history and available reports
- Conduct a site visit to verify background information and characterize various aspects of the site
- Complete a site topographic survey including available air space of active dry disposal cell #3
- Calculate life expectancy of the cell using the available air space
- Provide options for future cell(s) locations
- Provide a short form report along with findings and estimated upgrades and expansion estimates

SITE VISIT RESULTS

The site visit took place on May 23, 2018. The site was assessed and each area was documented so all background information collected could be verified.

A detailed site plan is presented in Attachment A. The landfill disturbance footprint occupies an area of approximately 66,516 m^2 and is surrounded by pastureland on all sides. The landfill is secured by a gate at the entrance and is surrounded by a 1.5 m (5 ft.) high chain-link fence. The landfill does not have a scale and estimates a weight of 350 kilograms (kg) per load.

The following features noted on-site during the site visit are as follows:

- Filled and capped disposal cell 1
- Dry disposal cell 2 (no air space available)
- Dry disposal cell 3 (active cell)
- Compactor pad
- White metal, scrap metal, propane bottles, appliance and tire storage areas
- Waste pile and gravel pile
- Various recyclable disposal bins and crates
- Various recyclable storage areas
- Burn pit
- Shack at landfill entrance
- County equipment building

Site photographs are presented in Attachment B.

TOPOGRAPHIC SURVEY RESULTS

The topographic survey took place on July 6, 2018. The topographic survey was completed to gather data about elevation points across the site to determine air space remaining in the active cell (dry disposal cell #3) as well as to determine surface drainage on-site.

The survey indicated the surface drainage on-site is towards the east. It was determined while on-site that there was only available air space in dry disposal cell 3, which is the active cell currently being used by the landfill and has been in use since 2013. Based on the results of the topographic survey, it was calculated that there is 18,704 m^3 of air space remaining in dry disposal cell 3 (Attachment A).

REMAINING AIR SPACE ESTIMATES

To determine the remaining life expectancy of the cell, WSP used information provided in the annual reports from 2016 and 2017 provided by Kneehill County. In 2016, there were 2,558 reported loads and in 2017, 2,378 loads were received. As noted above, an average weight of 350 kg per load is being used to estimate the amount of waste received per year.

Based on a waste density of 133 kg/m^3 for uncompacted waste and 18,704 m^3 (for remaining air space), the anticipated life expectancy for dry disposal cell 3 would be 2.9 years. However, it is understood that compaction equipment is used at the site. Based on a waste density of 450 kg/m^3 for compacted waste and 18,704 m^3 (for remaining air space), the anticipated life expectancy for dry disposal cell 3 would be 9.7 years.

OPTIONS FOR NEW CELL LOCATION

The quarter section owned by Kneehill County was reviewed on aerial imagery to determine options for new cell locations. The area directly west of the site was determined to be most suitable for two additional cells to minimize disturbance footprint, clearing, and access road construction. The two additional cells were plotted on a site diagram (Attachment A) using the same disturbance footprint of dry disposal cell 3. It was determined that the approximate volume of air space for each additional cell would be approximately 25,920 m^3 using the dimensions from the current cells onsite (length 192 m, width 30 m, depth 4.5 m). Based on the waste densities as noted, each cell would have a life expectancy of:

- approximately 4 years assuming a waste density of 133 kg/m^3 for uncompacted waste
- approximately 13.5 years assuming a waste density of 450 kg/m^3 for compacted waste

A geotechnical assessment of the proposed cells location would need to be completed to confirm that suitable soils exist in the area prior to construction.

During the aerial review of SW 20-032-26 W4M, it was noted that a Crossroads Gas Co-op Ltd. Pipeline enters the site from the west. The assumption is made that the gas line would run in the ditch

parallel to the access road into site; if the gas line does not run along the ditch line this could become a limitation or conflict with the proposed cell locations.

REGULATORY PROCESS

The *Code of Practice for Landfills* will continue to apply to this site if the tonnage of waste received is not more than 10,000 tonnes per year. In addition, the *Standards for Landfills in Alberta* outlines requirements for Class III landfills, and the *Alberta Transfer Station Technical Guidance Manual* outlines requirements for waste transfer stations. As such, no liner, leachate collection system or scale is required.

The original registration would have included the design and footprint of the existing landfill development. As new cells are being proposed beyond the original design, a re-registration is required. It is recommended that follow up with the AEP regional office be conducted to facilitate an expedient process.

An application for registration will need to be completed for development of the new cells. A copy is provided in Attachment C.

A site investigation, including five boreholes completed as groundwater monitoring wells, is recommended. It is estimated that the registration application, site investigation and engineering design can be completed within about 3 months, and the review of the registration application by AEP will take between 3 and 6 months. It is suggested that a conference call meeting or in-person meeting with AEP be initiated at the beginning of the process to facilitate a timely review and response.

COST ANALYSIS

A preliminary cost analysis was prepared for construction of the new cells. The cost analysis was based on the following assumptions:

- No land acquisition costs
- No infrastructure costs in respect of access roads, utilities, site office or shop
- No liner, leachate collection system and no stormwater management pond
- Five groundwater monitoring wells
- Does not include operational or monitoring costs

The preliminary costs are provided in the following table.

Table 1 Preliminary Cost Analysis for Landfill Cell Development

ITEM	UNIT PRICE	ESTIMATED QUANTITY	ESTIMATED COST
Construction Costs			
Site Preparation	$10,000/hectare	0.6 hectares	$6,000
Cell Costs			
Cell Excavation	$5/m^3	26,000 m^3	$130,000
Groundwater Monitoring Wells	$5,000 each	5	$25,000
Closure Costs			
Landfill Closure	$10/m^2	7,000	$70,000
Other Costs			
Professional Services	12%	$161,000	$19,320
Contingency	35%	$180,320	$63,112
TOTAL CAPITAL COSTS			**$313,432**

CONCLUSIONS

Based on a waste density of 450 kg/m^3 for compacted waste and 18,704 m^3 (for remaining air space), the anticipated life expectancy for dry disposal cell 3 would be 9.7 years.

The creation of two additional cells to the west of site would have an additional life expectancy of approximately 27 years total.

If Kneehill County was to construct the two additional cells, the remaining life expectancy of the landfill would be approximately 37 years assuming a waste density of 450 kg/m^3 for compacted waste.

CLOSURE

We trust the above report is suitable for the continued environmental management of the site. If you have any questions regarding the content of this report, please contact Gloria Gerber at 780-410-6781 or by email at gloria.gerber@wsp.com.

CERTIFICATION OF WORK

WSP prepared this report solely for the use of the intended recipient, Kneehill County, in accordance with the professional services agreement. The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

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Attachments:
Attachment A Figures
Attachment B Site Photographs
Attachment C Registration Form

Attachment A

FIGURES

KNEEHILL COUNTY
LANDFILL EVALUATION

KNEEHILL COUNTY LANDFILL AND WASTE TRANSFER SITE

DRAWING NU
C101
C102


NW20 32-26-4
GRAVEL PIT
652 LK
SHACK
ACCESS ROAD
COUNTY EQUIPMENT
BUILDING
COMPACTOR PAD
WHITE
METAL
STORAGE
SCRAP
METAL
STORAGE
TIRE
STORAGE
SW20 32-26-4


N
FILLED AND CAPPED
DISPOSAL CELL 1
DRY DISPOSAL
CELL 2
DRY DISPOSAL CELL 3
AVAILABLE AIR SPACE VOLUME =
18,704 m3


NW20 32-26-4
GRAVEL PIT
652 LK
SHACK
ACCESS ROAD
COUNTY EQUIPMENT BUILDING
Proposed Dry Disposal Cell #5
Available Air Space Volume
Approximately 25,920 m3
Proposed Dry Disposal Cell #4
Available Air Space Volume
Approximately 25,920 m3
COMPACTOR PAD
WHITE METAL STORAGE
SCRAP METAL STORAGE
TIRE STORAGE
SW20 32-26-4

Attachment B

SITE PHOTOGRAPHS

May 23, 2018

Photograph 1 – Looking East from the Entrance of the Landfill

May 23, 2018

Photograph 2 – Looking Southeast at the Electronics Storage Location

May 23, 2018

Photograph 3 – Looking Northeast at the Cardboard Disposal Bin

May 23, 2018

Photograph 4 – Looking South at the Scrap Metal Storage Area

May 23, 2018

Photograph 5 – Looking North at the Compactor Pad

May 23, 2018

Photograph 6 – Looking East at Dry Disposal Cell 3

May 23, 2018

Photograph 7 – Looking Southwest at Dry Disposal Cell 3

May 23, 2018

Photograph 8 – Looking East at Disposal Cell 1,2 & 3

May 23, 2018

Photograph 9 – Looking West at Landfill Entrance, which includes Burn Pile, Disposal Bins and Landfill Entrance Shack

Note the proposed dry disposal cells location behind the burn pile

May 23, 2018

Photograph 10 – Looking Southeast at the Location of the Proposed Dry Disposal Cells

Attachment C

REGISTRATION FORM

APPROVAL OR REGISTRATION OF A CLASS II OR CLASS III LANDFILL UNDER THE *ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT*

APPLICATION FORM

INTRODUCTION

This application form outlines the content requirements under the *Environmental Protection and Enhancement Act* (EPEA) for Class II and Class III landfill proposals requiring either an Approval or Registration. This form should also be used to renew a previous Approval, or to amend, add, or delete terms or conditions from an existing Approval. The requirements are in accordance with the EPEA *Activities Designation Regulation*, the EPEA *Approvals and Registrations Procedure Regulation,* and the EPEA *Waste Control Regulation*. It is recommended that applicants consult the *Code of Practice for Landfills*, the *Guidelines for Landfills in Alberta*, and the *Standards for Landfills in Alberta*, as published by Alberta Environment and Sustainable Resource Development, when preparing the application.

Furthermore, a person planning to undertake an activity that may affect the location, flow or quality of the water or aquatic environment should consult the Water Act to determine if an Approval is required.

TO: ALL APPLICANTS

1. The Director shall not review an application for the purpose of making a decision until it is a complete application.

2. The Director may request additional information during the review process, including information that is addressed in a Standard, Code of Practice, or Guideline published or adopted by the Director.

3. The applicant must include all information in a stand-alone application and may not reference information previously submitted under the *Environmental Protection and Enhancement Act.* If there is relevant information that was previously submitted to the department it must be resubmitted as part of the new application.

4. Applications are available for public review and for certain projects the applicant may be required to hold public information meetings. All decisions on Approval applications may be appealed.

5. Prior to the submission of the application for a new or laterally expanding landfill, a Disclosure Plan must be submitted to the Director. The Disclosure Plan must describe the proposed processes for public consultation, responding to concerns identified during the public consultation, technical investigations of the site, and obtaining other approvals such as a development permit.

6. Four copies of the completed application and attachments should be submitted to:

Regulatory Approvals Centre
Alberta Environment and Sustainable
Resource Dvelopment
7th Floor, Oxbridge Place
9820 – 106 Street
Edmonton, Alberta
T5K 2J6
Telephone: (780) 427-6311
Facsimile: (780) 422-0154

APPROVAL OR REGISTRATION OF A CLASS II OR CLASS III LANDFILL UNDER THE *ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT*

APPLICATION FORM

FOR OFFICE USE ONLY:

Application Number:_____

Date Received: _____

Review by: _____

ADMINISTRATIVE INFORMATION

Date of Application: ____/____/____
(Day/ Month/ Year)

Applicant Information

Name: _____
(Company or Corporation) Email: _____

Contact Person: _____ Tel: _____
(Owner or Agent)

Address: _____ Fax: _____
(Street, Avenue, Road, R.R. Box, etc.,), Postal Code)

_____
(City, Town Village)

_____
(postal code)

Facility Information:

Name: _____

Location: _____
(Street, Avenue, Road, R.R., Box etc.)

_____ _____
(City, Town, Village) (postal code)

Legal Location: _____
(¼ Section, Section, Township, Range, Meridian)

_____
(Plan, Block, Lot)

STATEMENT OF CONFIRMATION

I certify that I am familiar with the information contained in this application and enclosures, and that to the best of my knowledge and belief, such information is true, complete and accurate.

Signature of Applicant:_____ Date: _____
(Signature)

Printed Name of Applicant: _____

Title of Applicant: _____

Contact Information of Applicant: (Tel:)_____ (email:) _____

Note: All applications must be signed and certified by a principal executive officer of the applicant of at least the level of vice-president or a duly authorized representative of that person.

SECTION ONE: GENERAL INFORMATION

1.1 Type of Application:

☐ A New Approval ☐ A New Registration

- Proposed date for construction commencement:_____
- Proposed date for construction completion: _____
- Proposed date for operational commencement:_____

☐ A Renewal of an Approval: Approval No. _____

☐ An Amendment to an Approval: Approval No. _____

1.2 Application for:

☐ Class II Landfill
☐ Private ☐ Public ☐ Private and Public

☐ Class III Landfill
☐ Private ☐ Public ☐ Private and Public

proposed airspace available _____ m^3

proposed estimated life span _____ years

1.3 Type of Class II Landfill:

☐ Municipal (predominantly municipal solid waste)

☐ Industrial (predominantly industrial wastes)

1.4 Non Municipal Solid Waste types accepted:

☐ treated biomedical waste ☐ oilfield ☐ specified risk material

☐ dead animals/parts ☐ asbestos ☐ soil containing hydrocarbon

☐ radioactive waste ☐ naturally occurring radioactive materials

☐ specified risk materials ☐ other _____

1.5 Liner Design:

☐ compacted clay Liner ☐ composite ☐ no liner

☐ other _____

1.6 Leachate management:

Storage

☐ leachate pond

☐ above ground tanks

☐ other _____

Disposal

☐ wastewater treatment plant

☐ recirculation

☐ deep well

☐ other _____

1.7 Landfill Final Cover Design:

Type of System

☐ compacted clay/soil barrier system

☐ capillary barrier system

☐ anisotropic

☐ oxidative layer

☐ evapotranspiration

☐ other _____

Materials (check all that apply)

☐ compacted clay

☐ synthetic (HDPE, LDPE, PVC, other)

☐ composite clay liner

☐ geosynthetic clay liner

☐ compost

☐ natural soils (sand, till, etc.)

☐ other _____

1.8 Other proposed activities onsite:

☐ composting ☐ cogeneration ☐ treatment of soil containing hydrocarbon

☐ incineration ☐ leachate treatment ☐ landfill gas recovery

☐ recycling ☐ open pit burning ☐ collection of household hazardous waste

☐ other _____

1.9 Provide a summary description of the proposed facility, including the capacity and size of the landfill.

1.10 State whether an Environmental Impact Assessment Report is required and summarize any review of the proposed project completed under the environmental assessment process.

1.11 Attach copies of existing Approvals that were issued under the *Environmental Protection and Enhancement Act*, a predecessor of the Act, or the *Public Health Act*. Also attach any Approvals that were issued under the *Water Act* or its predecessor and any temporary field approvals issued under the *Public Lands Act*.

1.12 Describe any public consultation undertaken or proposed. Briefly describe the target audiences and any environmental concerns identified in the review, and how those concerns were addressed.

1.13 Attach a copy of the information package delivered to all people who are directly affected by the landfill or to any interested parties, and all responses received as a result.

1.14 Provide a certified copy of the title to the site and of any lease, right-of-way agreement, or other documents necessary to show that the applicant has legal control of the proposed site.

1.15 Provide documentation obtained from the local authority confirming that the proposed site conforms to local land use bylaws and is designated or suitable for landfill development. This may include, but not limited to the following: a development permit, proof of zoning, direct control district. Alberta Environment and Sustainable Resource Developement's consideration of this application for approval will depend on whether development approval is granted by the local authority.

1.16 Provide information on any water wells in proximity to the landfill and whether the water wells meet the 450m setback requirement prescribed in the *Nuisance and General Sanitation Regulation*.

1.17 Provide financial security or environmental reserve fund documentation for closure and post-closure activities.

SECTION TWO: LANDFILL DEVELOPMENT AND SITING

To assess the environmental impact of the proposed facility, the applicant shall provide:

2.1 An analysis of:
- (a) the geographical area that the facility will service and the source of the waste that will be accepted; and
- (b) waste generation records and waste forecasts for the area to be served;

2.2 If the application is for a renewal:
- (a) a summary of the environment monitoring information and other operational records gathered during the previous approval period;
- (b) a summary of the performance of a substance release control system used during the previous approval period; and
- (c) a summary of the types and volumes of waste that were landfilled during the previous approval period.

2.3 A description of the criteria used to select the proposed site for the landfill, as well as any alternative sites.

2.4 Scale diagrams of the facility site and surrounding area, demonstrating conformance with established landfill setbacks in:
- (a) the *Nuisance and General Sanitation Regulation (AR243/2003)*;
- (b) the *Subdivision and Development Regulation (AR 43/2002)*; and
- (c) Section 2.1(a) of the *Standards for Landfills*.

2.5 If varying from setbacks required in 2.4(a) and 2.4(b), attach the written authorization provided for the variance of the setback.

2.6 If varying from setbacks required in 2.4(c) provide evidence that surface water and groundwater will not be impacted.

2.7 A Detailed Technical Investigation Program Report prepared by APEGGA registered professional(s) with expertise in the subject areas, including, at a minimum, all of the following information:
- (a) a description of the topography, surface drainage patterns, geology, hydrogeology, existing and surrounding land use within 800 metres of the proposed site;
  - (i) a drawing showing the proposed site in relation to:
    - i. adjacent development and infrastructure;
    - ii. natural and constructed physical features such as streams, rivers, water bodies, canals and drainage controls;
    - iii. domestic, municipal and other licensed water well locations within 5 km of the proposed site; and
    - iv. municipal wellhead protection zones;
- (b) a detailed site plan showing:
  - (i) surface topography; and
  - (ii) locations and surface elevations of all boreholes and monitoring wells;
- (c) the profile and depths of the topsoil and subsoil;

(d) detailed borehole records showing the geologic and hydrogeologic conditions encountered and the depth of all major stratigraphic features;
(e) site stability;
(f) cross-sections showing:
  (i) an interpretation of the geologic stratigraphy to the depth of the hydrogeologic characterization component;
  (ii) directions of groundwater flow; and
  (iii) hydraulic conductivities of the geologic strata that influence or control groundwater movement;
(g) a detailed written interpretation of the hydrologic, hydrogeologic and geotechnical conditions on a regional and local scale;
(h) a statement that the site is suitable for landfill development in accordance with applicable regulatory requirements in Alberta; and
(i) recommendations for:
  (i) the area suitable for landfilling;
  (ii) the landfill design based on the hydrologic and hydrogeologic conditions; and
  (iii) dealing with the implications of the conditions in 2.7 (h) on possible landfill development.

SECTION THREE: DESIGN AND CONSTRUCTION

The applicant shall provide:

3.1 A Landfill Design Plan and Specifications prepared by APEGGA registered professional(s) with expertise in the subject areas, which shall include, at a minimum, all of the following information:
  (a) an engineering design report that provides:
    (i) a description of the type and quantity of waste that is anticipated to be accepted at the landfill;
    (ii) a description of the design intent and a summary of the components included in the design to achieve the design intent;
    (iii) an evaluation of the potential for leachate generation and leachate composition based on site specific conditions;
    (iv) an evaluation of the potential for landfill gas generation and gas composition based on the type of waste accepted, climate, the landfill design, or other site specific conditions;
    (v) a description of monitoring systems;
    (vi) a preliminary closure plan that includes at a minimum:
      i. a staging plan for closure of the landfill or portions of the landfill;
      ii. a plan to manage surface water infiltration or moisture additions according to the design intent of the landfill cells;
      iii. a proposed design for the final landfill cover system;
      iv. general information of the final elevation and slopes;
      v. a re-vegetation plan of completed areas of the landfill; and
      vi. a description of the potential end-use of the landfill after final landfill closure; and
  (b) engineering design maps and plans that provide:

(i) topographic maps showing the overall proposed site development and setbacks;
(ii) a site plan that shows the proposed landfill footprint and the location of the compliance boundary;
(iii) a minimum 30 metre separation between the waste footprint and the landfill property line;
(iv) cross-sections showing the proposed surface elevations, base elevations and grades for the landfill development;
(v) drawings for structural components of the landfill including, but not limited to, liner systems and leachate collection and removal systems;
(vi) a run-on control system to prevent flow onto the active landfill area for events up to at least the peak discharge from a 1 in 25 year – 24 hour duration rainfall event;
(vii) a run-off control system for the active landfill area to collect and control at least the run-off water volume resulting from a 1 in 25 year – 24 hour duration rainfall event; and
(viii) a groundwater monitoring system as per the minimum requirements in Section 5.6 of the *Standards for Landfills in Alberta.*

3.2 A Construction Quality Assurance Plan and a Construction Quality Control Plan.

3.3 A statement outlining any deviations from minimum design and construction standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable.

3.4 A report explaining any deviation from minimum design and construction standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable, including a description of any potential impacts that may result from the deviation.

SECTION FOUR: LANDFILL OPERATION

The applicant shall provide:

4.1 A copy of the proposed operations plan for the facility, which shall address:
(a) waste acceptance policies and procedures as per Section 4.4 of the *Standards for Landfills;*
(b) polices and procedures for wastes requiring special handing, if accepted;
(c) operating procedures for nuisance management as per Section 4.5 of the *Standards for Landfills;*
(d) wildlife management plan as per section 4.6 of the *Standards for Landfills;*
(e) procedures for covering the waste including a description of proposed materials and the frequency of cover applications;
(f) a plan for the protection of liners;
(g) an emergency response plan;
(h) a site safety plan;
(i) a plan for the detection and management of subsurface landfill gas, if applicable;

(j) a plan for the management of leachate including its collection, removal, treatment and disposal;
(k) a plan for leachate pond management, if applicable;
(l) a plan for the management of surface water run-off and run-on control systems; and
(m) a plan for other operations where they are included at the landfill site such as the storage, processing, recycling or composting of segregated waste or feedstocks.

4.2 Copies of any emergency response plans required to be filed with the municipality in which the facility is located, or with the Disaster Services Branch, Municipal Affairs and confirmation that these documents have been filed with the appropriate agency as required.

4.3 A copy of the proposed soil conservation plan and procedures based on the soils inventory, including the depths and volumes of topsoil and subsoil to be salvaged, methods of topsoil and subsoil stockpiling, storage locations of topsoil and subsoil, and measures to be taken to prevent the use or loss of topsoil and subsoil during storage.

4.4 A list of substances, the sources of the substances, and the amount of each substance that will be released into the environment as a result of the new or laterally expanding landfill, the methods by which the substances will be released, and the steps taken to reduce the amount of substances release.

4.5 A statement outlining any deviations from minimum landfill operation standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable.

4.6 A report explaining any deviation from minimum landfill operation standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable, including a description of any potential impacts that may result from the deviation.

SECTION FIVE: MONITORING, ANALYSIS, AND CORRECTIVE ACTION

The applicant shall provide:

5.1 A proposed Landfill Monitoring Plan prepared in accordance with Section 5.1 of the *Standards for Landfills,* which shall include the following:
(a) A Groundwater Monitoring Program prepared in accordance with Section 5.2 of the *Standards for Landfills*;
(b) A Surface Water Monitoring Program prepared in accordance with Section 5.7 of the *Standards for Landfills*;
(c) A Leachate Monitoring Program prepared in accordance with Section 5.9 of the *Standards for Landfills*, if applicable; and
(d) A Sub-surface Landfill Gas Monitoring Program prepared in accordance with Section 5.11 of the *Standards for Landfills*, if applicable.

5.2 A statement outlining any deviations from minimum monitoring, analysis and corrective action standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable.

5.3 A report justifying any deviation from minimum monitoring, analysis and corrective action standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable, including a description of any potential impacts that may result from the deviation.

SECTION SIX: FINAL CLOSURE AND POST CLOSURE

The applicant shall provide:

6.1 A description of the plan developed to perform any planned or unplanned closure of the facility, or any part of it, at any point during its active life.

6.2 A description of the proposed post-closure monitoring.

6.3 An estimate, in current dollars, of the cost of unplanned or planned closure and of post-closure monitoring and site maintenance.

6.4 The financial assurance instruments that the applicant will provide to cover the cost of landfill closure and post-closure.

6.5 An estimate of the expected year of final closure of the facility.

6.6 The expected land use and zoning of the site after effective closure.

6.7 A statement outlining any deviations from minimum final closure and post closure standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable.

6.8 A report explaining any deviation from minimum final closure and post closure standards described in a standard, code of practice, or guideline published or adopted by the Director, if applicable, including a description of any potential impacts that may result from the deviation.

APPROVAL OR REGISTRATION OF A CLASS II OR CLASS III LANDFILL UNDER THE *ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT*

FOR OFFICE USE ONLY

EMS DATA

Facility Name: _____

Approval ID: _____

Manual Approval ID: _____

Status: _____

Status Date: _____

Status Comments: _____

Operation ID: _____

Effective Date: _____

Expiry Date: _____

Renewal Allowed: _____

Document Type: _____

Comments: _____

OPERATION EMS DATA

Operation ID: _____

Facility Name: _____

Parent Op ID: _____

Description: _____

Operator: _____

Owner: _____

Legal Land Location: _____

Municipality: _____

District: _____

Provincial Electoral Division: _____

River Basin: _____

River Sub Basin: _____

Region: _____