Township of Longueuil
Waste Disposal Site

Hydrogeological Characterization Study
Longueuil Waste Disposal Site
Part Lot 59, Registered Plan # M-100
United Counties of Prescott and Russell

MOEE Site No. A471601
February, 1997

prepared by

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1.0 Introduction

Neil A Levac Engineering Ltd was retained by the Township of Longueuil, to undertake a hydrogeological characterization study for the township waste disposal site. The waste disposal site is located off County Road 11 (Cassburn Road), approximately 3.5 km south of the Village of L'Orignal in the Township of Longueuil, Ontario. The work was authorized by Council through resolution 221-96 dated October 21,1996.

The township waste disposal site has been operating since 1980 under Certificate of Approval Number A471601. It is understood that the site is operated on a seasonal basis between April and October and that during this period the site is only opened on Saturdays. The site receives mostly solid waste which is brought to the site by township residents. Regular domestic waste throughout the township is collected by a private contractor via a curb side collection program and disposed of at a separate landfill site. Therefore, under the present methods of operation, there are no wet domestic wastes being disposed of at this site.

The investigation was undertaken to comply with the requirement of Section 9.3 (ii) on page 14 of the July 24, 1995, MOEE Compliance Inspection Report. The MOEE report was prepared to assess the Township's compliance with MOEE policies, guidelines, regulations and control documents with respect to the development, operation and closure of its landfill site.

The purpose of this investigation was to:

a) determine the subsoil and groundwater conditions, based on a limited number of boreholes and groundwater sampling and testing;

b) characterize the existing and potential future impacts of the landfill site on groundwater and surface water environment in the area of the site;

c) provide an initial assessment of site compliance under the Ministry of Environment and Energy (MOEE) Reasonable Use Guideline B-7; and

d) include an evaluation of the presence or absence of landfill (methane) gas at the site.

This report has been prepared in consideration of the conditions noted above and the subsoil and groundwater conditions encountered at the borehole locations. Should there be any changes in the operation of the waste disposal site, which may relate to the hydrogeological considerations, Neil A Levac Engineering Ltd should be advised in order to review the report recommendations.

2.0 Adjacent Land Use

The site is located in a rural area of the Township on a parcel of land which is setback approximately 500 metres from the closest public roadway. A narrow strip of land some 640 metres long is presently used as an access road to the property. The access road also serves as physical link for the property to the closest public roadway, County Road 11.

The property having a total area of approximately 24.8 hectares (61 acres) is mostly woodland with a hydro easement crossing through an east-west direction. Only a small portion of the site, about 1.53 hectares, is and has been used for waste disposal since 1980.

The adjacent land use in the immediate vicinity of the active landfill area consists of farming fields to the south and west harvested for corn and woodland or brush to the east and north. Some residential houses can be found along County Road 11, approximately 500 metres west of the site.

During a visit to the site, an inspection of the land located to the north indicated that the property has been formerly used as a sand & gravel pit and as a waste disposal site. Air photo observations have confirmed that a sand & gravel pit was operated on the property to the north during the construction of Highway 17. Further investigation has revealed that the property was used as a wet and dry waste disposal site for the Village of L'Orignal by a private waste collecting contractor between 1950 and 1969. According to our information, the waste disposal site was operated with no official permit but was being monitored at the time by the Eastern Ontario Health Unit.

Inquiries about the adjacent waste disposal site were sent to the Eastern Ontario Health Unit and the Ministry of Environment and Energy. Supporting correspondence was received from the Eastern Ontario Health Unit. However, we are still awaiting reply from the Ministry of Environment and Energy. Copy of the relevant correspondence has been included in Appendix "D".

3.0 Methodology

The field work consisted of drilling and sampling the subsoil at four (4) borehole locations to install a multi-level (2) monitoring well in each borehole for future sampling and testing of groundwater. At the time of the field work, five (5) boreholes were required due to subsoil conditions encountered. The boreholes were put down with continuous flight auger equipment on November 27, 1996, by a professional drilling contractor, working under the direction and supervision of Neil A Levac Engineering Ltd personnel. The holes were put down to approximately 3.00 meters below the groundwater table or to practical refusal depending on the subsoil conditions encountered at the borehole location. The boreholes were sampled at regular intervals with a split spoon sampler for soil identification and laboratory analysis. The holes were terminated at depths varying between 2.13 and 4.88 meters..

A total of seven (7) piezometers were installed for groundwater sampling and testing. Three (3) boreholes were constructed as multi-levels (2) to provide vertical information on the hydrogeological characteristics of the site. A fourth borehole was equipped with only one (1) piezometer. The reason was because the borehole reached practical refusal at a depth of 2.13 meters below groundwater level and was determined at the time, that once a proper plug was set above the piezometer there would be little room left for installing a second piezometer. The fifth borehole was not equipped with piezometers because practical refusal was reached prior to intercepting the groundwater table.

One of the borehole located within the existing landfill was equipped with a third piezometer located above the groundwater table to monitor the presence or absence of landfill gas.

Water levels were recorded in the open boreholes upon completion of the drilling and within the piezometer monitoring wells on December 20, 1996. The results are indicated on the borehole logs in Appendix "B".

Groundwater samples were taken on December 20, 1996, from the seven piezometers after the monitoring wells were fully developed. A surface water sample was also taken at the same time. The surface water sample was taken from a small pond created at the base of the landfill excavation. The water samples were placed into prepared sample bottles and delivered to Accutest Laboratories Ltd in Nepean, Ontario, for analysis. The samples were tested for a number of parameters the results of which are presented in Table I, Appendix "C".

The surveying of the borehole locations and their surface elevations was carried out by Neil A Levac Engineering Ltd personnel. The elevations were referenced to a temporary bench mark, consisting of a nail in the side of a hydro pole, located just north of the existing landfill operation, which was given an arbitrary elevation of 100.00 meters. The approximate location of each borehole is given on the Borehole Location Plan, Drawing L9618.

4.0 Subsoil Conditions

A detailed description of the subsoil conditions encountered at each borehole location is given on the Borehole Logs following the text of this report in Appendix "B". Explanatory notes for interpretation of the borehole logs are given in Appendix "A". The borehole logs indicate the subsoil conditions at the borehole locations only. Boundaries between zones on the logs are often not distinct, but rather are transitional and have been interpreted. The precision with which subsurface conditions are indicated depends on the method of investigation and the uniformity of the subsoil conditions. Subsurface conditions may vary between the borehole locations.

The soil descriptions provided in this report are based on commonly accepted methods of classification employed in geotechnical practice. Classification and identification of soil involves some judgment and Neil A Levac Engineering Ltd does not guarantee the descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. The following is a brief summary of the subsurface conditions encountered at the borehole locations.

The subsoil encountered at the boreholes consist, in general, of a thin layer of sandy topsoil over a deposit of sand which is underlain by a glacial till. The sand deposit was encountered to depths ranging from 0.91 to 4.11m. The sand was found to be moist and loose to very loose in the upper levels, becoming compact and wet with depth. Laboratory tests performed on soil samples taken from the sand deposit indicate a fine grain material with traces of silt which can be classified as a poorly graded sand.

A dense to very dense glacial till was encountered in each of the boreholes below the sand deposit. The till was encountered at depths ranging between 0.91 and 4.11m. The till consists, in general, of grey brown sand and silt with some clay in a matrix of gravel. However, in borehole BH-4, the till was found to consist mainly of sandy silty clay within a gravel matrix.

Till deposits as the one encountered at this site usually contain a wide range of particle size which are not readily intercepted trough a borehole sampling program. However, in comparison with other till deposit in the surrounding area it may be possible to encounter cobbles and boulders within this type of material. The results of laboratory tests performed on samples taken within till revealed a well-distributed material with a relative high content of fine soil.

Boreholes BH-1, BH-2A, BH-2B and BH-4 were terminated at practical auger or spoon refusal on an assumed bedrock below the till at depths of 4.42m in borehole BH-1, 2.13m in borehole BH-2A, 3.66m in borehole BH-2B and 4.27m in borehole BH-4. Borehole BH-3, located within the existing landfill, did not encounter practical refusal but was terminated within the glacial till deposit at a depth of 4.88m.

Although not proven, the bedrock is assumed to vary between arbitrary elevations of 94.44 and 97.69 meters. Bedrock is considered to slope gently in a north east direction except for what appears to be a rise in the formation immediately north of the active waste disposal area. Even though bedrock was not proven within the scope of this study, the typical rock formation that could be encountered in this area is limestone. The limestone can be interbedded with shale, weathered and fissured in the upper layers but usually becoming of sound quality after a short distance.

In Borehole BH-3, located within the existing landfill, fill was encountered to a depth 2.95m. The fill consisted mainly of sand with some crushed stone or gravel and debris such as glass and thin. The fill was considered to be moist and in a loose to compact state of packing.

5.0 Groundwater Conditions

Water levels were measured in each borehole at the time of the field work and in each monitoring well during the sampling program. The water levels were measured with respect to the soil surface and subsequently their relative elevations were determined. This information is also provided on the Borehole Logs in Appendix "B".

Based on the relative elevation of the measured water levels at each borehole location and the natural topography of the land as well as the general direction of surface drainage basins, the anticipated groundwater flow direction for the surficial aquifer at this site is towards the northeast. The seasonal high groundwater table is expected to be near ground surface in some areas of the site.

The results of the in-situ rising head tests conducted within the sand deposit indicate a hydraulic conductivity in the order of $3.6x10^{-3}$ cm/s to $7.2x10^{-4}$ cm/s. This is consistent with the lower range of assumed hydraulic conductivity values for poorly graded sands (SP) which varies between 10^{-1} cm/s to 10^{-4} cm/s. Poorly graded sands are considered as medium permeability soils.

The in-situ rising head tests perform in piezometers located within the till deposit suggest that the hydraulic conductivity of the glacial till ranges between $1.4x10^{-5}$ cm/s to $7.4x10^{-6}$ cm/s. This is consistent with materials having medium to low permeability. The water level measured in monitoring well MW4-2 supports this conclusion whereas the water level is considerably lower than the one in monitoring well MW4-1 which is located in the sand deposit above. A perched groundwater table condition can be assumed for the area immediately adjacent to Borehole BH-4. The dense till deposit with its relatively low permeability appears to be providing some degree of hydrogeological isolation between the landfill and the underlying bedrock.

As part of the study, groundwater samples were taken from each of the monitoring wells and a surface water sample was taken at the base of the landfill excavation. The samples were tested for a number of parameters and the results are shown on Table I, Appendix "C".

The groundwater samples met all of the Ontario Drinking Water Objective (ODWO) parameters tested for, expect for aluminum and cadmium. Aluminum was detected in monitoring wells MW3-2, MW4-1 and MW4-2. The aluminum level only slightly exceeded the ODWO in monitoring well MW3-2 located within the existing landfill. However, the monitoring well located below MW3-2 did not detect the presence of aluminum. Cadmium levels exceeding the ODWO were detected in monitoring wells MW2B and MW4-1. The levels of cadmium measured in the groundwater did not exceed the ODWO by more than one order of magnitude.

The total nitrogen cycle (TKN, ammonia, NO_3 & NO_2) levels measured in the groundwater varied between 0.15 mg/L and 4.27 mg/L. Only two monitoring wells had nitrogen levels that exceeded 2.5 mg/L, MW1-1 and MW3-2. Both wells are located in the upper strata of the underlying soil. One is located near the southwestern property boundary, up grading of the existing waste disposal site but adjacent to a corn field. The other one is located within the existing landfill. All of the nitrogen levels measured during the scope of this study were within the ODWO.

The surface water sample taken at the base of the landfill excavation met all of the Provincial Water Quality Objective (PWQO) parameters tested for, expect for aluminum, cadmium, cobalt and copper. The highest concentration of aluminum was measured in the surface water sample and exceeded the PWQO by a factor of 25. The measured cadmium level exceeded the PWQO by a factor of 6 but is within the ODWO limits. The cobalt and copper levels measured exceeded the PWQO but are considered to be consistent with background levels measured in the groundwater. The surface water sample also produced the highest sum for the nitrogen cycle calculated at 9.73 mg/L.

6.0 Landfill Gas

One of the objective of the study was to assess the presence or absence of landfill (methane) gas. In order to do so, one of the monitoring well, MW3-1, was installed above the groundwater table in the existing landfill.

During of the field work, we did not detect the presence of landfill gas. This is consistent with the nature of the landfill operations being carried out at this site. Whereas the site is only opened to residents of the township once a week between the months of April and October and receives, in general, only dry waste.

However, it may still be possible that landfill gas could be generated from this site. Therefore, it would be recommended to continue monitoring for landfill gas on a periodic basis. Spring and late summer would be preferable for landfill gas monitoring and with the installation of piezometers, the site is now better suited for monitoring.

7.0 Impact Assessment

A waste disposal site constitutes a sources of contaminant which is currently subject to Guideline B-7, Incorporation of the Reasonable Use Concept. The document establishes procedures to determine what constitutes the reasonable use of groundwater on properties adjacent to sources of contaminants and what levels of contaminant discharges are considered acceptable by MOEE. The reasonable use of groundwater at a particular location is based on: the present use of groundwater, its potential use, and the quantity and quality of the groundwater.

Based on the results of the hydrogeological investigation, the groundwater flow direction of the surficial aquifer in the area of the waste disposal site is northeast. There were no wells identified to the northeast within 500 metres of the site. The only wells identified within 500 metres of the site are along County Road 11, which is considered up gradient of the surficial groundwater flow.

Inquiries on previous use of the property located to the north of the landfill site revealed the presence of an old waste disposal site. Therefore, it is considered fair to assume that the reasonable use of the surficial groundwater aquifer down gradient from the waste disposal site is **not** for domestic consumption.

In order to characterize the existing and potential future impacts of the landfill site on the surficial groundwater aquifer, it is necessary to determine the contaminant limits and available attenuation zones. Procedure B-7-1 contains the necessary technical details for the application of the reasonable use approach.

Based on the parameters tested during the monitoring program, cadmium and aluminum was measured at levels that exceeded the ODWO. The proposed maximum allowable concentrations (MAC) for cadmium and aluminum that can be permitted to reach the adjacent property, in accordance with procedure B-7-1, are 0.0025 mg/L and 0.05 mg/L respectively (assuming that the potential use for the surficial aquifer is not for domestic consumption).

To assess the site's compliance under MOEE Reasonable Use Guideline B-7, a prediction of the cumulative cadmium and aluminum impact on the groundwater resource at the site boundary is demonstrated. In assessing contaminant attenuation, dilution with infiltrating water and mixing with groundwater within the contaminant plume was used. Groundwater flow-through from up gradient of the site was not used in the dilution calculation.

The annual average precipitation in the area of the site is considered to be 886 mm/year. Based on the site topography and soil conditions, it was considered reasonable that 40 percent of annual rainfall would infiltrate into the ground. The quantity of leachate generated by the waste disposal site is estimated at 20 percent of the annual rainfall. Approximately 1.53 hectares of the site is presently considered to be occupied by landfill. The total available area for attenuation is estimated at 4.2 hectares.

Based on the above, the predicted cumulative impact of cadmium and aluminum on the groundwater resource at the site boundary is 0.0016 mg/L and 0.025 mg/L respectively which is within maximum allowable concentrations as determined previously.

The impact of the waste disposal site on the surficial groundwater aquifer is considered to be in compliance with Guideline B-7, Incorporation of the Reasonable Use Concept.

The surface water sample taken from a pond located at the base of the landfill excavation is showing signs of impact. Relative to the background concentrations detected in the groundwater collected at monitoring wells MW1-1 and MW1-2, the surface water sample appears to be strongly impacted by aluminum.

The impact of the pond on the surrounding surface water could not be determined at this time because the pond appears be confined. The pond appears to have been created during the trench excavation for the landfill operation which has intercepted the groundwater table at this point.

8.0 Conclusions

1. The site geology consists of a surficial brown fine sand deposit encountered to depths ranging between 0.91 and 4.11 metres which is underlain by a dense to very dense silt and sand glacial till. Bedrock although not proven is assumed to have been encountered below the till at practical refusal at depths ranging between 2.13 and 4.42 metres.

2. Both the sand and glacial till deposits are considered be located within the surficial aquifer. In at least one location, the groundwater within the upper sand unit is considered perched on the surface of the glacial till. The surficial groundwater flow is towards the northeast and no wells were identified to the northeast within 500 metres of the property boundary.

3. The presence of landfill gas was not detected at the time of the field work.

4. The groundwater impact assessment indicates that the site is complying with Reasonable Use requirements. There are some surface water impacts on the site but it appears to be isolated within the active landfill excavation area.

9.0 Recommendations

1. Continued long-term monitoring of groundwater levels and chemistry from the existing wells should be undertaken to confirm the December 1996, analytical results and determine the seasonal trends in groundwater chemistry. The continued monitoring should be carried out during the fall and spring of each year.

2. Carry out additional surface water sampling to include other areas of the site down gradient of the landfill excavation to assess the potential impacts and direction of surface water.

3. Continue monitoring for landfill gas on a periodic basis during spring and late summer.

4. Perform an additional round of borehole drilling and monitoring well installation along the north property line.. The purpose is to assess the potential impacts on the site from the adjacent property where an old landfill was identified and provide background information.

10.0 Limitations

The comments provided in this report are based on subsoil data and groundwater conditions encountered at each borehole locations. Experience indicates that the subsoil and groundwater conditions can vary significantly between and beyond the test locations. For this reason, should there be any changes in the operation of the waste disposal site, which may relate to the hydrogeological considerations, Neil A Levac Engineering Ltd should be advised in order to review the report recommendations.

We trust this report meets with your requirements, if you have any questions or comments, please do not hesitate to contact the undersign.

Neil A Levac Engineering Ltd

Louis LeMay, P.Eng.

Appendixes

Appendix A

Explanatory Notes for Borehole Logs

Explanatory Notes for Borehole Logs

The purpose of the borehole logs is to assemble much of the data resulting from field observations and laboratory testing on a single sheet. The borehole log contains a detailed summary of subsoil, bedrock, and groundwater conditions, which are considered to be important in formulating the recommendations contained in the report.

Geologic Profile

Elev.
Depth

The Elev./Depth column found on the left hand side of the borehole log gives the surface elevation as well as the elevation of the boundaries between the various geological strata encountered during the field testing. The figure entered below the elevation is the depth, below surface grade, of the change in strata.

The accuracy of the boundary between the various strata is dependent on the spacing between the samples. Under normal conditions of sampling, an accuracy of ± 0.3 m should be assigned to the elevation at strata boundaries.

Groundwater

The groundwater level is denoted by the symbol $\overline{\nabla}$, and most often appears on the left side of the page. Where the groundwater level was measured in the borehole or in a piezometer installation, it appears as indicated. If the groundwater table is estimated from sample appearance or from field observations, which are not direct measurements, it will be identified as an estimated water level (i.e. est. $\overline{\nabla}$). The elevation of the water table is given in the Elev./Depth column, if space permits.

Description

Each geological stratum is described on the basis of a visual examination of the subsoil or bedrock recovered from the borehole, from laboratory test results, and from field observations at the time of drilling.

The description utilizes standard geotechnical terminology. The relative density of granular soils is defined on the basis of the Standard Penetration Test and on Cone Penetrometer values. The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by the laboratory or field vane tests, by laboratory compressive strengths, or by a visual assessment of the soil strength.

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

The relative density of granular soils and the consistency of cohesive soils are defined by the following terms:

Relative Density Granular Soils	Standard Penetration Test Value "N"
very loose	0 - 4
loose	4 - 10
compact or medium	10 - 30
dense	30 - 50
very dense	over - 50

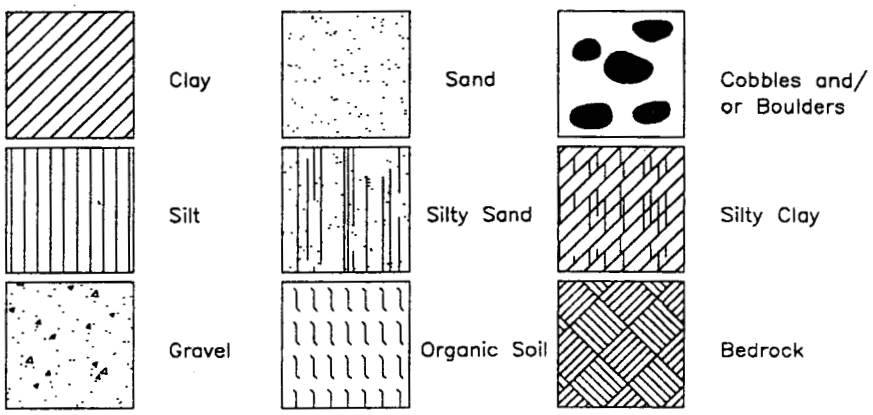
Consistency Cohesive Soils	Undrained Shear Strength (Cu) (kN/m)
very soft	under 10
soft	10 - 25
medium or firm	25 - 50
stiff	50 - 100
very stiff	100 - 200
hard	over - 200

Samples

Data pertaining to the samples is described in the five columns below:

1. Stratigraphy

The stratigraphy column shows the graphical symbols used to identify the various geological strata. The main symbols used to denote the different strata are shown below:



2. Number

Each sample taken from the borehole is numbered in the field as shown in this column. The appropriate depths and lengths of the samples are shown graphically.

3. Type

The type of sample taken from the borehole is indicated by a two letter code, as indicated below:

AS: Auger Sample
SS: Split Spoon Sample
ST: Shelby Tube Sample
WS: Washed Sample
RC: Core Sample

4. Blows

This column indicates the Standard Penetration Resistance (N). It is defined as the number of blows required to advance a Standard Split Barrel sampler 0.3 m into the subsoil, driven by means of a hammer, having 63.5 kg (± 0.5 kg) mass, falling freely a distance of 0.76 m (± 0.02 m).

5. % Recovery

This column is for the data related to samples which have been cored. The percentage is the length of rock core recovered compared to the length of drill run. Where the Rock Quality Designation (RQD) has been determined, it will appear in this column and be identified with the letters RQD.

The RQD number is a measure of the rock quality as determined by examination and measurements of the rock core. It is considered to be a more sensitive means of evaluating the rock quality than is the gross core recovery value. The relationship between RQD and Rock Quality is given below:

Rock Quality Designation (RQD)	Description of Rock Quality
0 -25	very poor
25 - 50	poor
50 - 75	fair
75 - 90	good
90 - 100	excellent

Dynamic Penetration / Consistency

This column contains the technical data, which relates to the strength or competence of the soil. The results of dynamic penetration tests as well as strength measurements of cohesive soils are recorded in this section.

The "consistency" column on the right is used to locate laboratory tests relating to moisture content and soil properties.

Interpretation of Technical Data

The data contained on the right half of the borehole log is considered to be specialized technical information. Often the data in these sections is used as the basis for establishing the bearing capacity of the soil or in evaluating other important geotechnical considerations.

The interpretation of the technical data contained in the above noted sections, by persons other than those approved by Neil A Levac Engineering Ltd, is neither recommended nor authorized.

Appendix B

Borehole Logs

Neil A Levac Engineering Ltd

PROJECT: Hydrogeological Characterization Study
LOCATION: Longueuil Waste Disposal Site
CLIENT: Township of Longueuil
DATUM: Arbitrary
DRILLER: Downing
DRILLING TYPE: Flight--Auger

BOREHOLE: BH-1
JOB REF: L9618
LOGGED BY: L LeMay
DATE STARTED: Nov 27/96
COMPLETED: Nov 27/96

Elev. / Depth m	SOIL DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS (N)	% RECOVERY
99.35 / 0.00	SAND: fine to medium grain, loose to compact, brown and moist.		1	SS	6	
0.50			2	SS	11	
1.00			3	SS	7	
1.50	becoming greyish brown and wet around a depth of 1.5 m.		4	SS	12	
2.00			5	SS	4	
2.50			6	SS	3	
3.00			7	SS	32	
3.50 / 95.24						
4.11 / 94.93	SAND & SILT TILL: with gravel, dense, grey and wet.		8	SS	32	
4.42	END OF BOREHOLE pratical auger refusal on assumed bedrock.					

PENETRATION RESISTANCE (blows/0.3m) ◐
20 40 60 80

SHEAR STRENGTH (kN/m2) ◐ In-situ ○ Remold
25 50 75 100

CONSISTENCY:
Water Content (W) ◐
Liquid Limit (W) ○
Plastic Limit (Wp) ◎
25 50 75

Water Level

Piezometer MW-1.1 installed between 0.90 and 2.44m depth.

Piezometer MW-1.2 installed between 3.00 and 4.42m depth.

Dec20/96
Shallow W
Elev.98.13
Elev.98.03
Deep W
Elev.97.85
Nov27/96

Notes:
-auger starting to deviate from vertical.
-2 piezometers or monitoring wells were

Neil A Levac Engineering Ltd

PROJECT: Hydrogeological Characterization Study
LOCATION: Longueuil Waste Disposal Site
CLIENT: Township of Longueuil
DATUM: Arbitrary
DRILLER: Downing
DRILLING TYPE: Flight-Auger

BOREHOLE: BH-2A
JOB REF: L9218
LOGGED BY: L LeMay
DATE STARTED: Nov 27/96
COMPLETED: Nov 27/96

GEOLOGIC PROFILE		SAMPLES					PENETRATION RESISTANCE (blows/0.3m)	CONSISTENCY:	
Elev. Depth m	SOIL DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS (N)	% RECOVERY	20 40 60 80 SHEAR STRENGTH (kN/m2) ● In-situ ○ Remold 25 50 75 100	Water Content (W) ✪ Liquid Limit (W) ○ Plastic Limit (Wp) ◎ 25 50 75	Water Level
99.82									
0.00	SAND: fine to medium grain, loose to compact, brown and moist.		1	SS	3				
0.50									
98.91			2	SS	23				
0.91	SILTY SAND TILL: with gravel, dense to very dense, brown and moist.								
			3	SS	60				
1.50			4	SS	51				
97.69									
2.13	END OF BOREHOLE pratical auger refusal on assumed bedrock.								

Notes:
- split spoon hammer bouncing at refusal.
- no piezometers or monitoring wells installed.

Neil A Levac Engineering Ltd

PROJECT: Hydrogeological Characterization Study
LOCATION: Longueuil Waste Disposal Site
CLIENT: Township of Longueuil
DATUM: Arbitrary
DRILLER: Downing
DRILLING TYPE: Flight-Auger

BOREHOLE: BH-2B
JOB REF: L9618
LOGGED BY: L LeMay
DATE STARTED: Nov 27/96
COMPLETED: Nov 27/96

Elev. / Depth m	SOIL DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS (N)	% RECOVERY
100.26						
0.00	SAND: fine to medium grain, loose to compact, brown and moist.		1	SS	6	
0.50			2	SS	9	
1.00			3	SS	57	
98.74						
1.52	SAND & SILT TILL: with gravel, dense to very dense, brown and moist to wet.		4	SS	55	
2.00						
2.50			5	SS	55	
3.00						
96.60						
3.66	END OF BOREHOLE pratical auger refusal on assumed bedrock.					

Notes:
-1 piezometer or monitoring well installed.

PENETRATION RESISTANCE (blows/0.3m)
20 40 60 80

SHEAR STRENGTH (kN/m2) ● In-situ ○ Remold
25 50 75 100

CONSISTENCY:
Water Content (W) ●
Liquid Limit (W) ○
Plastic Limit (Wp) ◎
25 50 75

Water Level

Elev.99.07 Dec20/96

Elev.98.73 Nov27/96

Piezometer MW-2B installed between 2.13 and 3.66m depth.

Neil A Levac Engineering Ltd

PROJECT: Hydrogeological Characterization Study
LOCATION: Longueuil Waste Disposal Site
CLIENT: Township of Longueuil
DRILLER: Downing
DATUM: Arbitrary
DRILLING TYPE: Flight-Auger

BOREHOLE: BH-3
JOB REF: L9618
LOGGED BY: L LeMay
DATE STARTED: Nov 27/96
COMPLETED: Nov 27/96

GEOLOGIC PROFILE		SAMPLES					PENETRATION RESISTANCE (blows/0.3m) 20 40 60 80	CONSISTENCY: Water Content (W) ● Liquid Limit (W) ○ Plastic Limit (Wp) ◎	
Elev. Depth m	SOIL DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS (N)	% RECOVERY	SHEAR STRENGTH (kN/m2) ● In-situ ○ Remold 25 50 75 100	25 50 75	Water Level
99.80 0.00	FILL: sand with some crushed stone or gravel & debris (glass, thin, etc.) compact to loose, brown to dark brown and moist.		1	SS	16				
0.50			2	SS	8				
1.00									
1.50			3	SS	6				
2.00			4	SS	24				
2.50 96.85			5	SS	15				
2.95	SAND: fine to medium grain, compact to loose, brown and moist becoming wet at a depth of 1.98m.								
3.00 96.45			6	SS	4				
3.35	SILTY SAND TILL: with clay and gravel, compact to dense, brown, very moist to wet.								
3.50			7	SS	45				
4.00									
4.50 94.92	END OF BOREHOLE		8	SS	21				
4.88	Notes: -3 piezometers or monitoring wells were installed.								

Piezometer MW-3.1 installed between 0.00 and 1.52m depth.

Piezometer MW-3.2 installed between 1.68 and 3.05m depth.

Piezometer MW-3.3 installed between 3.20 to 4.88m depth.

Dec20/96 Shallow W Elev.97.84 Deep W Elev.97.79

Elev.97.82 Nov27/96

Neil A Levac Engineering Ltd

PROJECT: Hydrogeological Characterization Study
LOCATION: Longueuil Waste Disposal Site
CLIENT: Township of Longueuil
DATUM: Arbitrary
DRILLER: Downing
DRILLING TYPE: Flight-Auger

BOREHOLE: BH-4
JOB REF: L9618
LOGGED BY: L LeMay
DATE STARTED: Nov 27/96
COMPLETED: Nov 27/96

GEOLOGIC PROFILE		SAMPLES					PENETRATION RESISTANCE (blows/0.3m) 20 40 60 80	CONSISTENCY: Water Content (W) Liquid Limit (W) Plastic Limit (Wp) 25 50 75	Water Level
Elev. Depth m	SOIL DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS (N)	% RECOVERY	SHEAR STRENGTH (kN/m2) In-situ Romold 25 50 75 100		
98.71									
0.00	SAND: fine to medium grain, very loose to compact, brown and moist becoming wet at a depth of 1.20m.		1	SS	2				
0.50			2	SS	2				98.71
1.00									Shallow W Elev.97.62 Dec20/96
1.50			3	SS	8				Elev.97.49 Nov27/96
2.00			4	SS	10				
96.27									
2.44	SILTY CLAY & SAND TILL: with some gravel, compact to dense, brown and moist to wet.		5	SS	7				
3.00			6	SS	2				
3.50			7	SS	45				Deep W Elev.94.89 Dec20/96
4.00									
94.44									
4.27	END OF BOREHOLE pratical auger refusal on assumed bedrock.								

Notes:
-2 piezometers or monitoring wells installed.

Piezometer MW-4.1 installed between 0.91 and 2.44m depth.

Piezometer MW-4.2 installed between 2.74 and 4.26m depth.

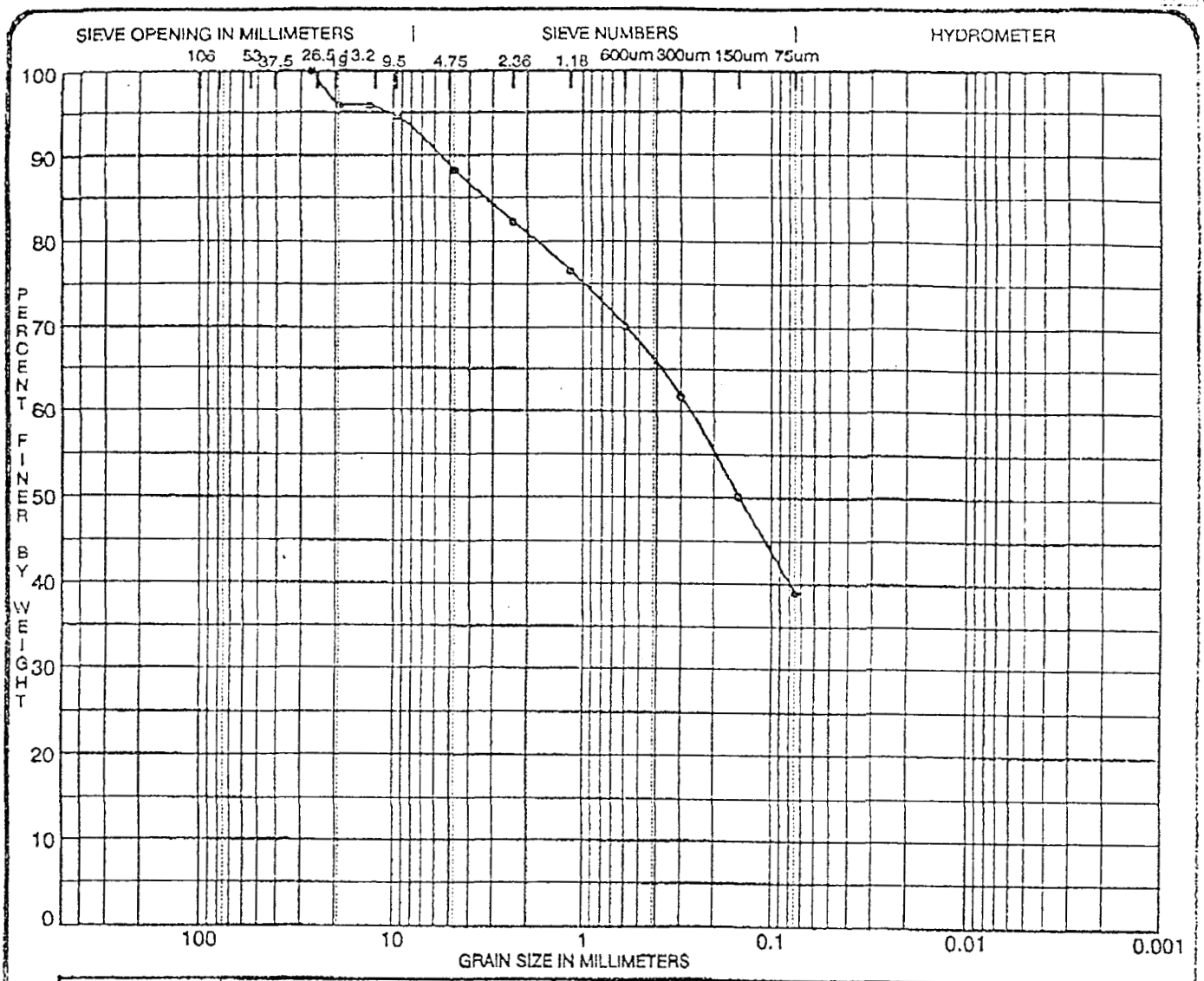
Appendix C

Laboratory Analysis Results

Table I: Results of Groundwater and Surface Water Analysis

Analysis	units	MW1-1	MW1-2	MW2B	MW3-2	MW3-3	MW4-1	MW4-2	MOEE ODWO	SW	MOEE PWQO
Temperature	°C	4.3	4.2	4.8	4.6	4.9	4.2	4.7	< 15 °C	4.0	< 30 °C
pH	-	7.78	8.14	7.08	6.84	6.68	7.58	7.44	6.5 - 8.5	7.08	6.5 - 8.5
Chloride	mg/L	10	17	5	4	9	12	12	250	32	-
Fluoride	mg/L	ND	ND	ND	ND	ND	ND	ND	1.5	ND	-
Ammonia ($N\text{-}NH_3$)	mg/L	0.15	0.87	0.06	0.08	0.08	0.15	ND	-	3.19	-
Ammonia (un-Ionized)	mg/L	-	-	-	-	-	-	-	-	0.005	0.02
Nitrite ($N\text{-}NO_2$)	mg/L	ND	ND	ND	ND	ND	ND	ND	1.0	ND	-
Nitrate ($N\text{-}NO_3$)	mg/L	2.67	0.34	ND	3.08	ND	0.28	ND	10.0	1.20	-
Nitrite + Nitrate	mg/L	2.67	0.34	ND	3.08	ND	0.28	ND	10.0	1.20	-
TKN	mg/L	0.69	1.04	0.30	1.11	0.65	0.89	0.15	-	5.19	-
Sulfate (SO_4)	mg/L	22	25	57	137	226	54	53	500	61	-
TOC	mg/L	13.2	8.8	7.3	9.5	10.6	21.4	3.1	-	20	-
Total Phosphorus	mg/L	12.5	0.13	7.08	0.52	0.02	21.4	2.50	-	0.67	-
Oil & Grease	mg/L	ND	ND	ND	ND	ND	ND	ND	-	ND	-
Calcium (Ca)	mg/L	9	43	49	136	153	35	51	-	60	-
Aluminum (Al)	mg/L	ND	ND	ND	0.14	ND	0.08	0.05	0.1	1.87	0.075
Beryllium (Be)	mg/L	ND	ND	ND	ND	ND	ND	ND	-	ND	1.1
Boron (B)	mg/L	ND	0.01	0.02	0.40	0.22	0.36	0.15	5.0	0.16	0.2
Cadmium (Cd)	mg/L	ND	ND	0.009	ND	ND	0.008	ND	0.005	0.0013	0.0002
Chromium (Cr)	mg/L	0.03	ND	ND	ND	ND	ND	0.02	0.05	0.01	0.1
Cobalt (Co)	mg/L	0.05	0.01	0.05	0.01	0.02	0.10	0.02	-	0.008	0.0006
Copper (Cu)	mg/L	0.242	ND	ND	ND	0.020	0.117	0.039	1.0	0.025	0.005

Notes:
ODWO Ontario Drinking Water Objectives
PWQO Provincial Water Quality Objectives
TOC Total Organic Carbon
TKN Total Kjeldahl Nitrogen
ND Not Detected



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	SAMPLE	CLASSIFICATION	MC%	LL	PL	PI	Cc	Cu
⊙	16963							
	BH-2B -- SS-4							

	SAMPLE	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
⊙	16963	26.50	0.27			11.8	49.2	39.0	

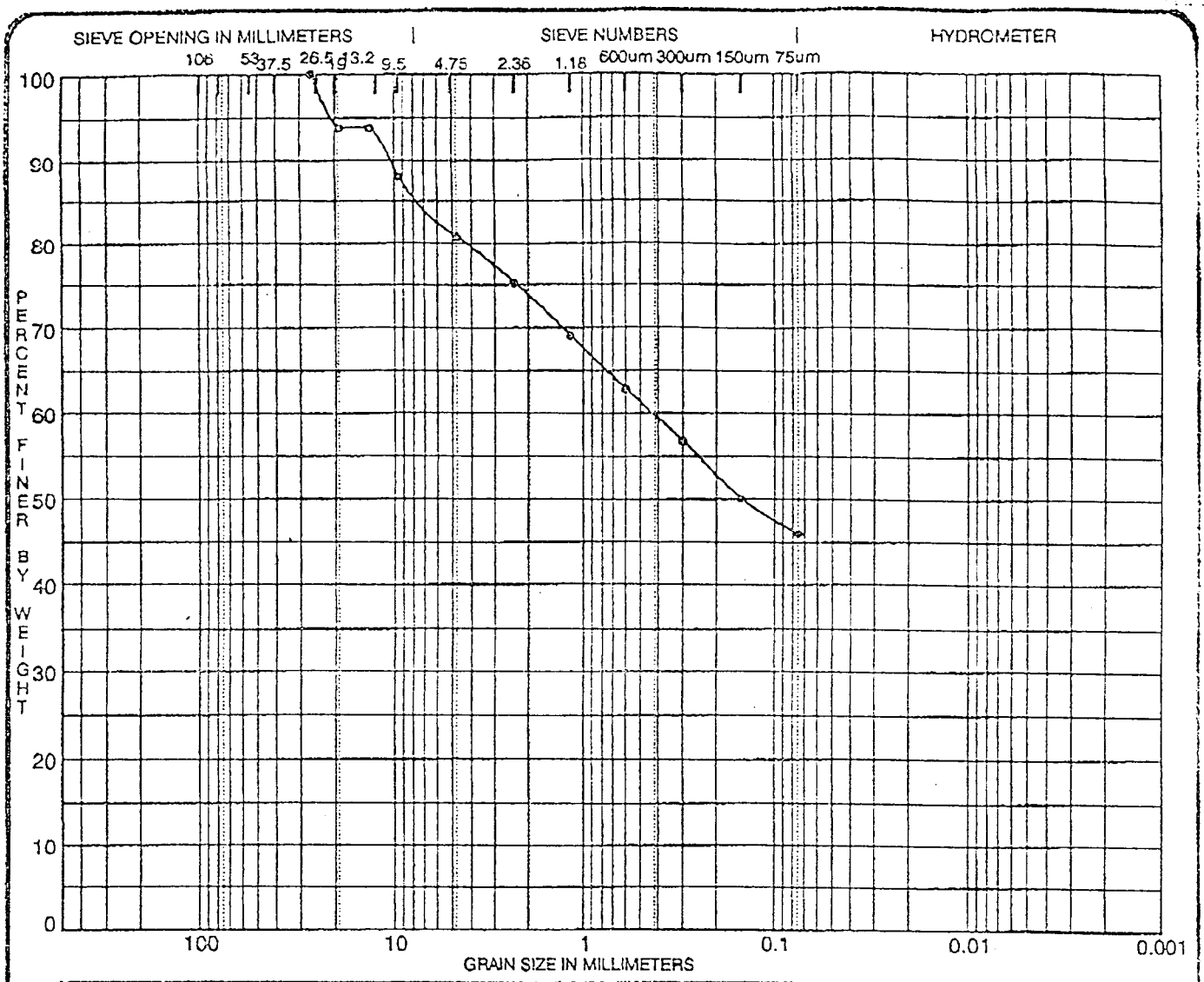
PROJECT LS618

PROJECT NO. H-E693

DATE JAN. '97

GRADATION CURVES

FONDEX



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	SAMPLE	CLASSIFICATION	MC%	LL	PL	PI	Cc	Cu
○	16964							
	BH-4 -- SS-7							

	SAMPLE	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	16964	26.50	0.44			19.3	34.7	46.0	

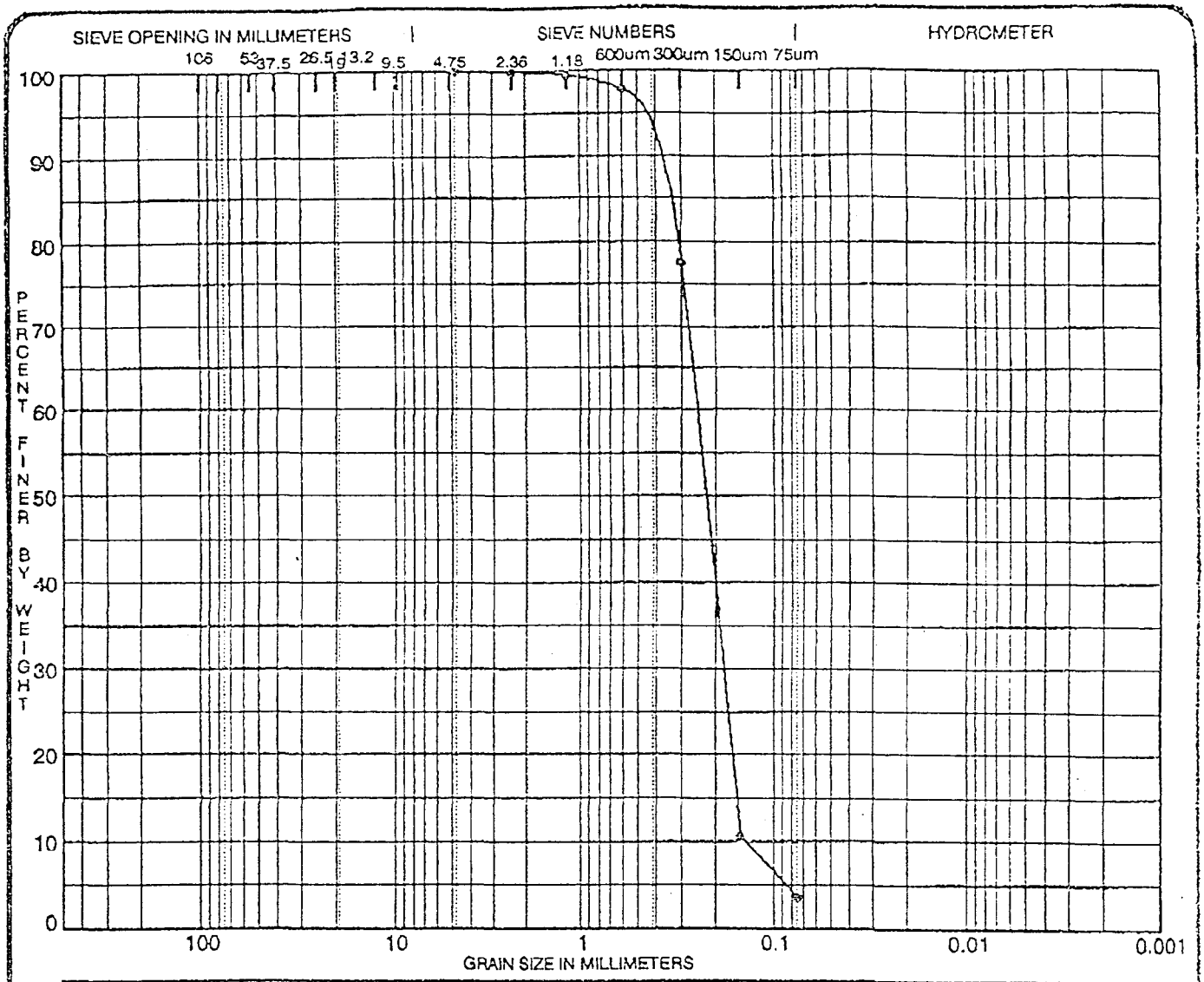
PROJECT L9618

PROJECT NO. H-E693

DATE JAN. '97

GRADATION CURVES

FONDEX



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	SAMPLE	CLASSIFICATION	MC%	LL	PL	PI	Cc	Cu
⊖	16965	POORLY GRADED SAND SP					0.94	1.8
	BH-1 – SS-3+4							

	SAMPLE	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
⊖	16965	4.75	0.25	0.184	0.1427	0.0	96.4	3.6	

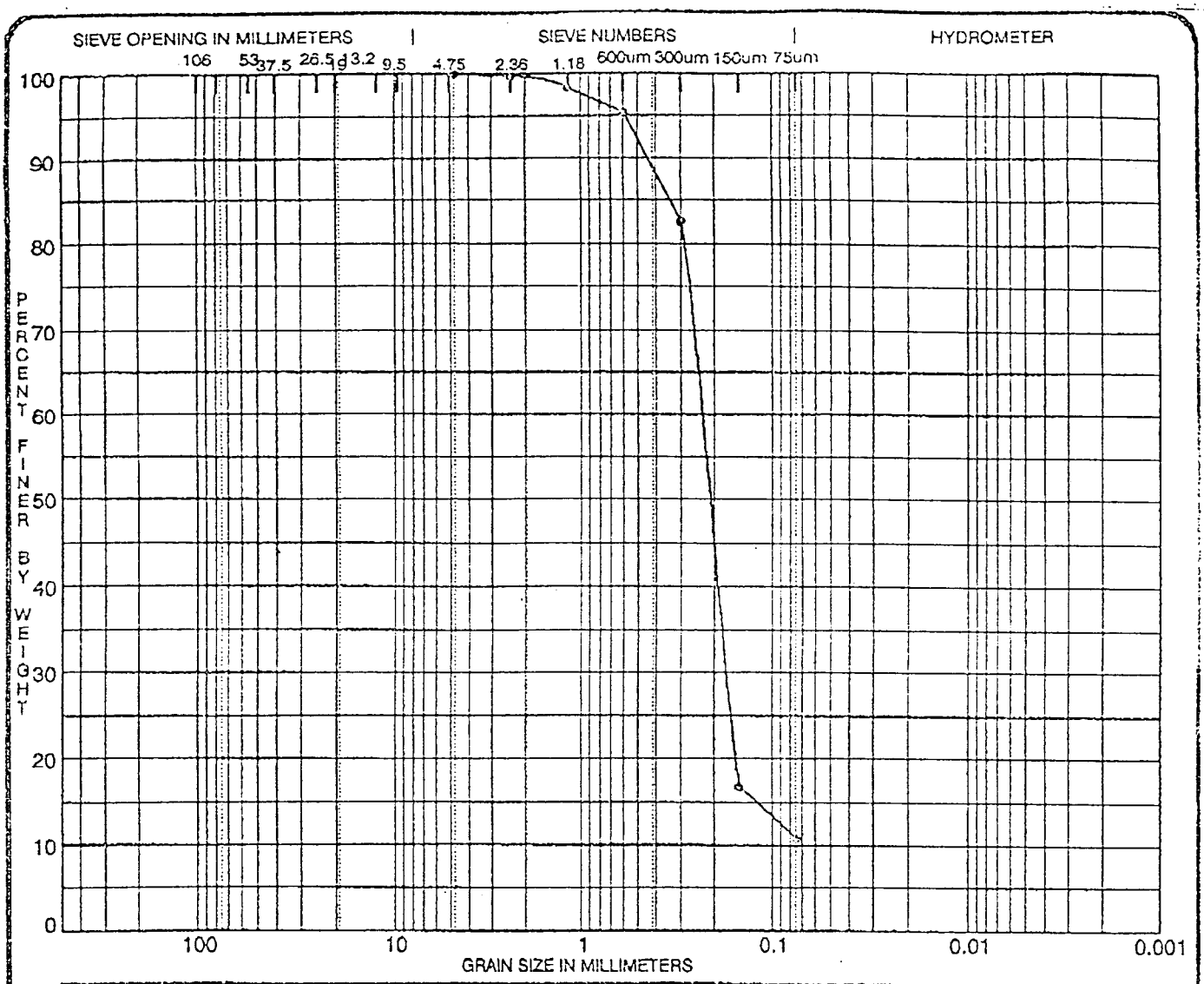
PROJECT L9618

PROJECT NO. H-E693

DATE JAN. '97

GRADATION CURVES

FONDEX



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	SAMPLE	CLASSIFICATION	MC%	LL	PL	PI	Cc	Cu
◇	16962						1.80	3.4
	BH-4 – SS-4							

	SAMPLE	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	16962	4.75	0.24	0.173		0.0	89.3	10.7	

PROJECT L9618

PROJECT NO. H-E693

DATE JAN. '97

GRADATION CURVES

FONDEX

Appendix D

Correspondence

NEIL A. LEVAC ENGINEERING LTD / LTÉE
consulting engineers / ingénieurs conseils

Our File Ref.: L9618
January 6, 1997

Ministry of Environment and Energy
113 Amelia Street
Cornwall, ON K6H 3P1

Attn.: Mr. Gerry A. Murphy
Senior Environmental Officer

RE: Waste Disposal Site - A471601
Township of Longueuil, Ontario
Part Lot 59, Registered Plan # M-100
United Counties of Prescott and Russell

Dear Sir:

On behalf of our client, the Township of Longueuil, we are requesting for any information concerning historical or existing incidents (i.e., past landfill operations) at or in the vicinity of the above noted site which may have been recorded on file with the Ontario Ministry of Environment and Energy.

The property to the north of the site was used as a landfill site between 1950 and 1969. This information was confirmed by Mr. George Larivière, former owner of the site, and Mr. Victor Séguin, former operator of the landfill. According to Mr. Séguin, there were no permit issued to operate the site. Please find attached a copy of Schedule "A" of the township zoning by-law which indicates the location of the site.

If you have any questions or comments, please do not hesitate to contact the undersigned.

Yours truly,
Neil A. Levac Engineering Ltd.

Louis R. LeMay. P.Eng.

cc: Mrs. Jeanne Charlebois - Township of Longueuil

2884 Laporte Street, Rockland, Ontario K4K 1M6 Tel. (613) 446-7777 FAX (613) 446-1427

NEIL A. LEVAC ENGINEERING LTD / LTÉE
consulting engineers / ingénieurs conseils

Our File Ref.: L9618
January 6, 1997

Eastern Ontario Health Unit
41 Racine Street
P.O. Box 338
Casselman, ON K0A 1M0

Attn.: Mr. Sylvain Diotte
Part VIII Director, EPA

RE: Waste Disposal Site
Township of Longueuil, Ontario
Part Lot 59, Registered Plan # M-100
United Counties of Prescott and Russell

Dear Sir:

On behalf of our client, the Township of Longueuil, we are requesting for any information concerning historical or existing incidents (i.e., past landfill operations) at or in the vicinity of the above noted site which may have been recorded on file with the Eastern Ontario Health Unit.

The property to the north of the site was used as a landfill site between 1950 and 1969. This information was confirmed by Mr. George Larivière, former owner of the site, and Mr. Victor Séguin, former operator of the landfill. According to Mr. Séguin, there were no permit issued to operate the site however, Mr. Séguin indicated that he thought the Eastern Health Unit was monitoring. Mr. Jerry Murphy, MOEE, suggested that possibly Mr. Raymond Leblanc may have some information on the activities that took place at this property. Please find attached a copy of Schedule "A" of the township zoning by-law which indicates the location of the site.

If you have any questions or comments, please do not hesitate to contact the undersigned.

Yours truly,
Neil A. Levac Engineering Ltd.

Louis R. LeMay, P.Eng.

cc: Mrs. Jeanne Charlebois - Township of Longueuil

2884 Laporte Street, Rockland, Ontario K4K 1M6 Tel. (613) 446-7777 FAX (613) 446-1427

Eastern Ontario
Health Unit

Bureau de santé
de l'Est de l'Ontario

Health, everyone's responsibility
La santé, c'est l'affaire de tout le monde

January 10, 1997

Neil A. Levac Engineering Ltd.
2884 Laporte Street,
Rockland, Ontario
K4K 1M6

Re: Waste Disposal Site
Township of Longueuil, Ontario
Part of Lot 59, Registered Plan M-100
United Counties of Prescott and Russell
Your file: L9618

Attention: Louis Lemay

I discussed the contents of your letter dated January 6, 1997 with Mr. Raymond Leblanc. He confirmed that in the 1960's the Eastern Ontario Health Unit did monitor the activities of the above noted waste disposal site. At the time, our inspectors monitored and enforced the controls for flying debris, odours and vermin (rats, foxes). The Health Unit would visit the site twice a year or more often in response to complaints to ensure that the owner, Victor Seguin, either burned or buried the waste found on his property.

The Health Unit did not monitor the impacts on the local hydrogeology since, as it was recognized, the staff did not have the expertise to do so. Mr. Leblanc and another health inspector confirmed that we no longer hold any records relating to this site or our activities at the time. Should you have any questions please feel free to contact the undersigned.

Sylvain Diotte
Part VIII Coordinator
Eastern Ontario Health Unit

☐ Central Office/Bureau chef
1000, rue Pitt Street
CORNWALL, Ont. K6J 5T1
(613) 933-1375 or/ou
1-800-267-7120
Fax/télécopieur: (613) 932-7020

☐ 457 est, rue Main Street East
P.O. Box/C.P. 616
WINCHESTER, Ont. K0C 2K0
(613) 774-2739
Fax/télécopieur: (613) 774-2891

☐ P.O. Box/C.P. 329
Highway 34, South
Route 34 sud
ALEXANDRIA, Ont. K0C 1A0
(613) 525-1112
Fax/télécopieur: (613) 525-2924

☐ 1919, rue Labonté Street
P.O. Box/C.P. 89
CLARENCE CREEK, Ont. K0A 1N0
(613) 488-3337
Fax/télécopieur: (613) 488-3306

☐ 134, est rue Main Street East
Bureau/Suite 301
HAWKESBURY, Ont. K6A 1A3
(613) 632-4355
1-800-565-2314

☐ 41, rue Racine Street
P.O. Box/C.P. 336
CASSELMAN, Ont. K0A 1M0
(613) 764-2841
1-800-267-8260

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NO. 686

A BY-LAW TO APPOINT VICTOR SEGUIN FOR SUPERVISION OF THE DUMP AND UPKEEP OF THE ROAD LEADING TO THE DUMP DURING THE WINTER MONTHS

WHEREAS the Council of the Municipality of the Village of L'Orignal deems it expedient and necessary to appoint someone to supervise the dump and to maintain the road leading to the dump during winter months.

NOW THEREFORE the Municipal Council of the Corporation of the Village of L'Orignal hereby ordains and enacts as follows:

1. That Victor Seguin be and the same is appointed for the supervision of the dump and to maintain the road leading to the dump during the winter months.

2. That the said Victor Seguin be compensated and remunerated for his supervision and for the maintenance of the said road at the sum of $300.00 a year to be payable monthly on the first of each month.

3. The provisions of any previous by-laws of this Municipality inconsistent with the foregoing are hereby repealed.

READ A FIRST, second and Third time and finally passed this 1st day of OCTOBER 1963.

André Bénard
Clerk

Reeve

RECU/RECEIVED
18 -12- 1996
19618

Feuillets de transmission par télécopieur
Post-it™ Fax Note 7671

To / À	From / De
Co./Dept. / Cie/Service	Co. / Cie
Phone # / N° de tél	Phone # / N° de tél
Fax # / N° de télécopieur 1-613-446-1427	Fax # / N° de télécopieur

Date 18-12-96 Nombre de pages ▶ 14

L'Orignal, Ontario

His Worship Mayor Alex Seguin,
Village of L'Orignal,
L'Orignal, Ontario.

Sir:

I, the undersigned Victor Seguin, wish to advise you and members of Council that I would be prepared to assume the task of garbage collection for the Village of L'Orignal at a remuneration of $250.00 a month, payable twice a month on the 1st and 15th of the month commencing on the 1st February 1965.

It is understood, of course, and agreed that garbage collection would take place once a week provided that the ratepayers who wish to avail themselves of that service will leave their garbage in solid containers as close as possible to the public way but preferably on their own private driveway and I would be prepared to pick up the garbage on Wednesday on King and Longueuil Streets to the easterly limits of the Village of L'Orignal and on Thursday for the balance of the Village.

I would also include in garbage collection the municipal park during the summer and include all the properties within the corporation limits whether these properties are assessed or not such as the separate schools and the Counties' buildings.

I trust, Sir, that, if Council is willing to retain my services on the basis set out above, the Council will return a copy of this letter to me with the acceptance of Council thereon.

Victor Seguin
Victor Seguin

We, the undersigned, on behalf of the corporation of the Village of L'Orignal hereby accept the above offer and your employment will continue to the pleasure of Council providing, however, that you submit to Council before commencing the said work, a policy of liability insurance with respect to your vehicle and a sufficient evidence that you have paid the Workmens' Compensation Board respecting your employees.

Reeve

André Bénard
Clerk

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NO. 720

A BY-LAW TO APPOINT A GARBAGE COLLECTOR.

WHEREAS the corporation deems it expedient to retain the services of a garbage collector on a permanent basis.

AND WHEREAS for purpose of certainty the Corporation of the Village of L'Orignal desires to set out the agreement being reached.

NOW WITNESSETH THAT:

1. Victor Seguin of the Village of L'Orignal is hereby retained as garbage collector pursuant to the terms of the letter which he has addressed to Council and which has been accepted by Council and which letter is hereto attached and marked as Schedule "A" to this by-law.

2. The position shall be given to the said Victor Seguin to the pleasure of Council and the said Victor Seguin may be dismissed upon fifteen days written notice.

3. For the purpose of accepting the offer communicated to Council, the Reeve and the Clerk are hereby directed to execute on behalf of the Corporation the acceptance of the offer which has been made.

ENACTED and passed this 2nd day of February 1965.

Clerk

Reeve

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NUMBER 745

A BY-LAW TO APPOINT A GARBAGE COLLECTOR,

WHEREAS the Corporation of the Village of L'Orignal deems it expedient to retain the services of a garbage collector on a permanent basis.

AND WHEREAS for purposes of certainty the Corporation of the Village of L'Orignal desires to set out the agreement being reached.

NOW WITNESSETH THAT:

1. Victor Seguin of the Village of L'Orignal is hereby retained as garbage collector pursuant to the terms of the letter which he has addressed to Council and which has been accepted by Council and which letter is hereto attached.

2. The position shall be given to the said Victor Seguin to the pleasure of Council and the said Victor Seguin may be dismissed upon fifteen days written notice.

3. For the purpose of accepting the offer communicated to Council, The Reeve and the Clerk are hereby directed to execute on behalf of the Corporation the acceptance of the offer which has been made.

Done and passed in open Council after a First, second and third reading this 6th day of February 1967.

J. L. A. LeCours
Reeve

André Bénard
Clerk.

L'Orignal, Ontario.

His Worship Mayor J.L.C. LeCours,
Village of L'Orignal,
L'Orignal, Ontario.

Sir:

I, the undersigned Victor Seguin, wish to advise you and members of Council that I would be prepared to continue the task of garbage collection for the Village of L'Orignal at a remuneration of $4,000.00 per year, payable twice a month on the 1st and 15th of the month commencing on the 1st day of January 1967, for a period of one year.

It is understood, of course, and agreed that garbage collection would take place once a week provided that the ratepayers who wish to avail themselves of that service will leave their garbage in solid containers as close as possible to the public way but preferably on their own private driveway and I would be prepared to pick up the garbage on Wednesday on King and Longueuil Streets to the easterly limit of the Village of L'Orignal and on Thursday for the balance of the Village.

I would also include in garbage collection the municipal Park during the summer and include all the properties within the Corporation limits whether these properties are assessed or not such as the separate schools and the Counties' buildings.

I,trust, Sir, that, if Council is willing to retain my services on the basis set out above, the Council will return a copy of this letter to me with the acceptance of Council thereon.

Victor Seguin
Victor Seguin

We, the undersigned, on behalf of the corporation of the Village of L'Orignal, hereby accept the above offer, and your employment will continue to the pleasure of Council providing, however, that you submit to Council before commencing the said work, a policy of liability insurance with respect to your vehicle and a sufficient evidence that you have paid the Workmen's Compensation Board respecting your employees.

J.L.C. LeCours
Reeve

André Bériard
Clerk.

CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NO. 756

Being a By-Law for the establishing, maintaining and regulating the collection, removal, disposal and burning of garbage, refuse and other waste material within the limits of the Village of L'Orignal.

The Municipal Corporation of the Village of L'Orignal enacts as follows:

1.) In this By-Law:-

a) "Corporation" shall mean the Corporation of the Village of L'Orignal.

b) "Inspector" shall mean the Municipal Inspector of the Village of L'Orignal.

c) "Village" shall mean the Village of L'Orignal.

d) "Fire Chief" shall mean the Fire Chief of the Village of L'Orignal and in his absence the Deputy-Fire Chief of the Village of L'Orignal.

e) "Garbage" shall mean and include all kitchen and table waste, decayed meats, fish, fruits, vegetables, tin and other food containers.

f) "Refuse" shall mean and include cans, bottles, broken crockery or glassware, ashes (whether mixed with other materials or not) broken plaster discarded materials from demolition of buildings, discarded clothing, grass cuttings, leaves and other rubbish but not corn and potato stocks or other garden waste or branches of trees.

g) "Garbage Container" shall mean and include a metal can or receptacle of solid construction and in good condition or a polyethelene bag which is not punctured.

h) "Refuse Container" shall mean and include a metal or wood receptacle of solid construction and in good condition or a polyethelene bag which is not punctured.

2. A System for the collection, removal and disposal, at the expense of the Corporation at large of garbage, and refuse is hereby adopted by the Corporation of the Village of L'Orignal.

3. For the purposes aforesaid, the Corporation shall engage the services of a collector of garbage and refuse under such arrangements as may from time to time be agreed upon, or employ for said purposes employees and equipment already in the employ of the Corporation.

By-Law No.

4.) Every occupier of a building or premises from which garbage and refuse is to be collected, shall provide and maintain at his, her or their own expense, sufficient containers as herein defined for his, her or their requirements.

5.) Garbage must be wrapped and substantially free from liquids and deposited from day to day in a container as herein defined.

6.) Refuse must not be placed with garbage and placed in refuse containers as herein defined.

7.) Occupiers of premises, other than those immediately adjacent to the sidewalk or in front of which there is a boulevard, shall place their containers on the edge of their property next to the sidewalk and occupiers of premises immediately adjacent to the sidewalk and of premises in front of which there is a boulevard shall place their receptacles close to the curb on the pavement or upon the boulevard respectively, the intent and purpose of this section being that the containers be placed so that the collector can get same with the least possible loss of time; and no container shall weight more than seventy-five pounds.

8.) Save as hereinafter otherwise provided, the owners of such containers shall keep them on the premises occupied by them and shall not leave them whether in use or not upon any street or public place but on the day specified for collection of garbage or refuse and shall immediately after such garbage or refuse is removed, take same off the street or public place.

9.) The collector, at such regular intervals as may be arranged between the Corporation and himself, shall collect the contents of such receptacles and shall deposit same on the property provided by the Garbage Collector.

10.) The occupiers of premises whose garbage and refuse is not placed in containers as herein defined, shall at their own expense pay for the removal of their garbage and refuse.

11.) No garbage, refuse or other waste material, whether separate or in combination, shall be deposited by anyone at any place within the Village of L'Orignal. No person may deposit garbage or refuse in what is known as the Village Dumping Grounds unless consent has been obtained from the garbage collector.

12.) No person shall without a permit from the Fire Chief burn garbage or refuse within the limits of the Corporation of the Village of L'Orignal; the Fire Chief may grant a permit for the burning of such waste material as may be authorized on the permit in an incenerator approved by him and maintained within the Village of L'Orignal notwithstanding anything herein to the contrary. Such permit may be revoked by the Fire Chief or in his absence the Deputy-Fire Chief.

13.) The costs incidental to the collection, removal and disposal of garbage and refuse shall be provided by way of a levy against all the ratepable property within the Corporation of the Village of L'Orignal.

By-Law No.

14.) Any person convicted of a breach of any of the provisions of this By-Law shall forfeit and pay, at the discretion of the convicting Magistrate, a penalty not exceeding (exclusive of costs) the sum of fifty dollars for each offence, and in default of the said penalty and costs forthwith, the said penalty and costs may be levied by distress and sale of the goods and chattels of the offender, and in case of there being no distress found, out of which such penalty and costs can be levied, the convicting magistrate may commit the offender to the common jail of the United Counties of Prescott and Russell, with or without hard labour for any period not exceeding twenty-one days unless the said penalty and costs (if any) including the costs of the said distress and of the committal and conveyance of the offender to the said jail are sooner paid.

15.) This By-Law shall come into force and take effect from and after the passing thereof.

Enacted this 11th day of DECEMBER 1967

André Bénard
Clerk

J. L. G. LeCours
Reeve.

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NUMBER 771

A BY-LAW TO APPOINT A GARBAGE COLLECTOR,

WHEREAS the Corporation of the Village of L'Orignal deems it expedient to retain the services of a garbage collector on a permanent basis.

AND WHEREAS for purposes of certainty the Corporation of the Village of L'Orignal desires to set out the agreement being reached.

NOW WITNESSETH THAT:

1. Victor Seguin of the Village of L'Orignal is hereby retained as garbage collector pursuant to the terms of the letter which he has addressed to Council and which has been accepted by Council and which letter is hereto attached.

2. The position shall be given to the said Victor Seguin to the pleasure of Council and the said Victor Seguin may be dismissed upon fifteen days written notice.

3. For the purpose of accepting the offer communicated to Council, the Reeve and the Clerk are hereby directed to execute on behalf of the Corporation the acceptance of the offer which has been made.

Done and passed in open Council after a First, second and third reading this 10 day of March 1969.

A. R. LeCorre
Reeve

André Bénard
Clerk.

L'Orignal, Ontario.

His Worship Mayor J.L.C. LeCours,
Village of L'Orignal,
L'Orignal, Ontario.

Dear Sir:

I, the undersigned Victor Seguin, wish to advise you and members of Council that I would be prepared to continue the task of garbage collection for the Village of L'Orignal at a remuneration of $5,000.00 per year, payable twice a month on the 1st and 15th of the month commencing on the 1st day of January 1969, for a period of two years.

It is understood, of course, and agreed that garbage collection would take place once a week provided that the ratepayers who wish to avail themselves of that service will leave their garbage in solid containers as close as possibel to the public way but preferably on their own private driveway and I would be prepared to pick up the garbage on Wednesday on King and Longueuil Streets to the easterly limit of the Village of L'Orignal and on Thursday for the balance of the Village.

I would also include in garbage collection the municipal Park during the summer and include all the properties within the Corporation limits whether these properties are assessed or not such as the separate schools and the Counties' buildings.

I, trust, Sir, that, if Council is willing to retain my services on the basis set out above, the Council will return a copy of this letter to me with the acceptance of Council thereon.

Victor Seguin

Victor Seguin

We, the undersigned, on behalf of the Corporation of the Village of L'Orignal, hereby accept the above offer, and your employment will continue to the pleasure of Council providing, however, that you submit to Council before commencing the said work, a policy of liability insurance with respect to your vehicle and a sufficient evidence that you have paid the Workmen's Compensation Board respecting your employees.

J.L.C. LeCours

Reeve

André Brunard

Clerk.

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NUMBER 805

A BY-LAW TO APPOINT A GARBAGE COLLECTOR,

WHEREAS the Corporation of the Village of L'Orignal deems it expedient to retain the services of a garbage collector on a permanent basis.

AND WHEREAS for purposes of certainty the Corporation of the Village of L'Orignal desires to set out the agreement being reached.

NOW WITNESSETH THAT:

1. Edgar Jolicoeur of the Village of L'Orignal is hereby retained as garbage collector pursuant to the terms of the letter which he has addressed to Council and which has been accepted by Council and which letter is hereto attached.

2. The position shall be given to the said Edgar Jolicoeur to the pleasure of Council and the said Edgar Jolicoeur may be dismissed upon fifteen days written notice.

3. For the purpose of accepting the offer communicated to Council, the Reeve and the Clerk are hereby directed to execute on behalf of the Corporation the acceptance of the offer which has been made.

4. By-Law Number 778 is hereby repealed.

Done and passed in open Council after a first, second and third reading this 5th day of APRIL, 1971.

Reeve

André Bénard
Clerk

L'Orignal, Ontario.

His Worship Mayor Rene Bertrand,
Village of L'Orignal,
L'Orignal, Ontario.

Dear Sir:

I, the undersigned Edgar Jolicoeur, wish to advise you and the members of Council that I am prepared to do the task of garbage collection for the Village of L'Orignal at a remuneration of $6,000.00 per year. It is understood however that I am to be paid on the 1st and 15th days of each and every month commencing on the 1st day of March 1971. This offer if accepted shall be binding upon both parties and may be cancelled by the Corporation of the Village of L'Orignal at any time upon the giving of fifteen (15) days notice and by me upon the giving of fifteen (15) days notice but only after the 28th day of February 1973.

I hereby covenant and agree to collect the garbage once a week provided that the ratepayers who wish to avail themselves of that service will leave their garbage in solid containers as close as possible to the public highway, but preferably on their own private driveways and I would be prepared to pick up the garbage as follows:

a) On Wednesday - King and Longueuil Streets to the easterly limits of the Village;

b) On Thursday - the balance of the Village

I would also include in the garbage collection the Municipal Park, during the summer season, and all the properties within the corporation limits whether these properties are assessed or not such as the Separate School and the Counties' Buildings.

I trust, Sir, that, if Council is willing to retain my services on the basis set out above, the Council will return a copy of this letter to me with the acceptance of Council thereon.

E. Edgar Jolicoeur
Edgar Jolicoeur

We, the undersigned, on behalf of the Corporation of the Village of L'Orignal, hereby accept the above offer and your employment will continue to the pleasure of the Council providing, however, that you submit to Council before commencing the said work, a policy of liability insurance with respect to your vehicle and a sufficient evidence that you will or have paid the Workmen's Compensation Board respecting your employees.

Mayor

André Bénard
Clerk

THE CORPORATION OF THE VILLAGE OF L'ORIGNAL

BY-LAW NUMBER 840

A BY-LAW TO APPOINT A GARBAGE COLLECTOR,

WHEREAS the Corporation of the Village of L'Orignal deems it expedient to retain the services of a garbage collector on a permanent basis.

AND WHEREAS for the purposes of certainty the Corporation of the Village of L'Orignal desires to set out the agreement being reached.

NOW WITNESSETH THAT:

1. Edgar Jolicoeur of the Village of L'Orignal is hereby retained as garbage collector pursuant to the terms of the letter which he has addressed to Council and which has been accepted by Council and which letter is hereto attached.

2. The position shall be given to the said Edgar Jolicoeur to the pleasure of Council and the said Edgar Jolicoeur may be dismissed upon fifteen days written notice.

3. For the purpose of accepting the offer communicated to Council, the Reeve and the Clerk are hereby directed to execute on behalf of the Corporation the acceptance of the offer which has been made.

4. By-Law Number 805 is hereby repealed..

Done and passed in open Council after a first, second and third reading this 13th day of March , 1973.

Reeve.

Clerk.

L'Orignal, Ontario.

His Worship Mayor René Bertrand,
Village of L'Orignal,
L'Orignal, Ontario.

Dear Sir:

I, the undersigned Edgar Jolicoeur, wish to advise you and the members of Council that I am prepared to do the task of garbage collection for the Village of L'Orignal at a remuneration of $7,250.00 per year. It is understood however that I am to be paid on the 1st and 15th days of each and every month commencing on the 1st day of March 1973. This offer if accepted shall be binding upon both parties and may be cancelled by the Corporation of the Village of L'Orignal at any time upon the giving of fifteen (15) days notice and by me upon the giving of fifteen (15) days notice but only after the 28th day of February 1975.

I hereby covenant and agree to collect the garbage once a week provided that the ratepayers who wish to avail themselves of that service will leave their garbage in solid containers as close as possible to the public highway, but preferably on their own private driveways and I would be prepared to pick up the garbage as follows:

a) On Wednesday - King and Longueuil Street to the easterly limits of the Village;

b) On Thursday - the balance of the Village.

I would also include in the garbage collection the Municipal Park, during the summer season, and all the properties within the corporation limits whether these properties are assessed or not such as the Separate School and the Counties' Building.

I trust, Sir, that, if Council is willing to retain my services on the basis set out above, the Council will return a copy of this letter to me with the acceptance of Council thereon.

Edgar Jolicoeur
Edgar Jolicoeur

We, the undersigned, on behalf of the Corporation of the Village of L'Orignal, hereby accept the above offer and your employment will continue to the pleasure of the Council providing, however, that you submit to Council before commencing the said work, a policy of liability insurance with respect to your vehicle and a sufficient evidence that you will or have paid the Workmen's Compensation Board respecting your employees.

Mayor

André Bénard

Drawing

Borehole Location Plan