

Appendix E Geotechnical Report

November 23, 2018

Mr. Derek Ross
Colchester Containers

171 Chain Lake Drive
Halifax, NS B3B 1S3

Subject: Professional Services –
Geotechnical Investigation, Asbestos Waste Disposal Cell
Colchester Containers, Middle Musquodoboit, Nova Scotia
O/Ref.: P-0011963-0-00-200

Dear Mr. Ross,

At your request, Englobe has completed a geotechnical investigation for a proposed asbestos waste disposal cell(s) at the Colchester Containers property in Middle Musquodoboit, Nova Scotia. The purpose of the investigation was to assess the subsurface conditions on the property to support further site selection and design of the asbestos waste disposal cell.

1 SITE DESCRIPTION

The property currently operates as a C&D disposal facility. The Site is approximately 75 acres, which is largely forested and accessed by a logging road entering the Site from the south off Highway 289. The property contains the existing C&D Facility which consists of one active disposal cell on the north side of the property and a weigh scale on the gated access road in the centre of the property.

Based on the local topographic contours, the Site slopes in a radial pattern to the north, west, east and south. The Stewiacke River is located south of the subject property on the opposite side of Highway 289, Rutherford Creek is located farther to the east of the Site and Bear Brook is located farther to the west of the site.

Surficial geology, as determined by available mapping, consists of Stoney Till Plains and Drumlins derived from local bedrock sources. Specifically, the site is underlain by Hants Till, which consists of a reddish brown silty-sand matrix. Bedrock, as determined from available mapping, consists of both the Windsor Group and the Horton Group, divided by the Brentwood-Graham Hill Fault. The northern portions of the site are underlain by the Horton Bluff and Cheverie Formations (Horton Group), which consist of sandstone, conglomeratic sandstone and minor shale. The southern portion of the site is underlain by the Green Oaks Formation (Windsor Group), which consists of reddish brown siltstone and fine-grained sandstone, with intercalated marine limestone and dolostone.

2 INVESTIGATIVE PROCEDURE

The initial fieldwork for the investigation was carried out in December 2016, with the advancement of three boreholes and installation of two monitor wells to identify preliminary subsurface conditions and baseline groundwater quality. In March 2018, 11 test pits were completed at various locations across the site to determine the general subsurface conditions, and generally locate the asbestos containment cell. An additional three test pits were carried out in July 2018 at the proposed location of the asbestos cell. The test locations are provided on Figure 1, attached.

All boreholes were advanced through the overburden using solid stem augers. Standard Penetration Testing (SPT) and select soil sampling were performed in the overburden using a 50-mm outer diameter (OD) split-spoon sampler. Encountered geological conditions were logged. The wells consisted of 50-mm OD polyvinyl chloride (PVC) threaded Schedule 40 casing and 20 slot screen. The screened intervals were positioned to intersect the groundwater table and the annular space around the screen was filled with clean silica sand. Each installation was sealed with two bentonite plugs, a minimum thickness of 0.6 metre above the sand pack and within 0.6 metres of the ground surface to prevent migration of the surface flow into the well. The wells were capped with J-plugs and aboveground steel protectors. Test pits were excavated with a tracked excavator, to refusal on bedrock, or to the practical extent of reach of the machine.

Samples from the boreholes and test pit programs were submitted for routine laboratory index testing including moisture content, grain size analysis and hydraulic conductivity.

The monitor wells were developed using an electric three-stage portable Waterra pump, and groundwater levels were measured using a *Solinst* water level indicator. The wells were purged and groundwater samples collected using dedicated plastic bailers. The results of the groundwater sampling are provided under separate cover. Given the low permeable nature of the insitu Till and that the deeper groundwater appeared to be affected by artesian conditions, groundwater observations at the test pits were made through open hole observations over the period of several days.

3 SUBSURFACE CONDITIONS

The subsurface conditions encountered at the boreholes and test pit locations were similar and typically consisted of rootmat/topsoil overlying glacial Till. The glacial Till consisted of clay with some silt and gravel, trace sand and occasional cobbles and boulders. The Till was reddish-brown in colour, moist and in a stiff to dense state of relative density. At select locations, sand and gravel seams, and bedrock was encountered.

Table 1 on the following page summarizes the findings of the investigation. A detailed summary of encountered geologic conditions is provided in the borehole/monitor well logs attached. An explanation of terms and symbols used in the logs is also attached. It should be noted that the stratigraphic boundaries on the borehole/monitor well Logs typically represent a transition of one soil type to another and do not necessarily indicate an exact plane of geologic change. Subsurface conditions may vary between and beyond the test locations.

Table 1: Summary of Subsurface Conditions

LOCATION	DEPTH OF ROOTMAT/TOPSOIL (METERS)	DEPTH OF TILL (METERS)	DEPTH OF DISCONTINUITY (THICKNESS) (METERS)	BEDROCK DEPTH (METERS)	GROUNDWATER DEPTH (METERS)
BH1	0.3	>9.2	-	-	-
MW1	-	>11.3	2.7 (2.0) – gypsum boulder	-	0.13
MW2	0.25	4.6	-	4.6	4.73
TP1	0.25	> 1.8	-	-	-
TP2	0.45	> 2.4	-	-	-
TP3	0.45	> 3.7	1.8 (1.5) - Sand	-	-
TP4	0.45	> 4.6	-	-	Slight inflow at 3.7
TP5	0.30	2.4	2.4 (> 3.7) - Gravel	-	Slight inflow at 3.7
TP6	0.60	>3.0	-	-	-
TP7	0.60	>3.0	-	-	-
TP8	0.45	3.4	3.4 (> 4.6) - Gravel	-	-
TP9	0.60	>3.0	-	-	-
TP10	0.60	2.4	-	2.4	-
TP11	0.60	>3.0	-	-	-

Given the very shallow measured ground water level in MW1 and the absence of groundwater observations during drilling, we suspect that the actual groundwater level is much deeper within the native Till, and the confining environment of the native Till has led to groundwater conditions that are close to artesian (i.e. a very shallow potentiometric surface) in MW1. At MW2, there appears to be less confining action of the native Till, leading to stabilized groundwater levels near the bedrock surface.

In the test pits, groundwater was typically not encountered, or consisted of slight inflow at the base of the test pit.

4 LABORATORY ANALYSIS

Grain size analyses was completed on three samples of the till. The grain size results show 18 to 24 percent gravel, 33 to 38 percent sand, and a fines content from 40 to 44 percent. The Sieve Analysis Report is included.

A flex wall permeability analysis was completed on one undisturbed sample, which showed a permeability of 1.8×10^{-8} cm/s. The permeability report is included.

5 RECOMMENDATIONS

Based on the results of the investigation discussed herein, we recommend that the asbestos waste cell be placed in the vicinity of test pits TP4 and TP5. The design depth of the cell(s) will be constrained by the groundwater observed at TP4 and TP5, as well as the sand and gravel seams observed at TP5 and TP8 and bedrock at TP10. From field observations and laboratory testing, the onsite glacial till meets the required specification of 1×10^{-5} cm/sec for use as a low permeable liner.

During cell preparation, we recommend field confirmation geotechnical inspection and testing be conducted. Following mass excavation to design grades, the exposed subgrade should be proof-rolled with a large vibratory drum roller to recompact the surface of the liner following excavation. For design, we recommend that the interior embankments have side slopes not exceeding 2:1 (horizontal to vertical). Flatter slopes may be necessary to facilitate equipment access for liner preparation. For exterior or exposed embankments we would recommend side slopes not exceeding 3:1 (horizontal to vertical). The final proposed design should be reviewed for overall stability for construction on sloped terrain greater than 3:1 (horizontal to vertical).

Confirmatory inspection should verify that the cell floor and side walls are constructed to the engineered design and to the design depths. This will include on-site inspection to verify a minimum of 1 metre of clay is present at the cell base, compaction testing and quality control testing of the clay (grain size and hydraulic conductivity). An as-built report, including all testing, should be prepared for each cell.

6 CLOSING

The insitu soils in the central area of the site typically have a low permeability characteristic. Available laboratory test results suggests that the site soils in an undisturbed condition have a coefficient of permeability of 1.8×10^{-8} cm/s; which is below the specified permeability of 1.0×10^{-5} cm/sec. We expect that after cell preparation, in situ permeability would be less than 5×10^{-7} cm/sec.

The test pit investigation has been undertaken in the area of the new asbestos cell and test pits have been terminated approximately 2 to 3 metres below anticipated cell elevations. At the test pits low permeable soil has been encountered, however isolated sand seams of higher permeability are possible within the glacial soils. If these soils are encountered during the construction of the cell they should be removed and replaced

We trust the enclosed to your satisfaction. If, however, additional information should be required, please contact us.

Yours very truly,

Englobe Corp.

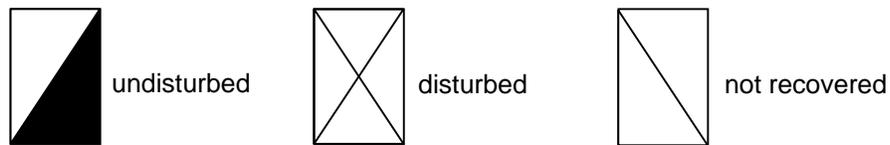


Glenn Graham, P.Eng.
Project Manager, Geotechnical Engineering

Encl.

SOIL SAMPLES

CONDITION – This column graphically indicates the depth and condition of the sample:



TYPE – The type of sample is indicated in this column as follows:

- A auger sample
- B block sample
- C rock core, or frozen soil core
- D drive sample
- G grab sample
- SS split spoon
- P Pitcher tube sample
- U tube sample (usually thin-walled)
- W wash or air return sample
- O other (see report text)

PENETRATION RESISTANCE – Unless otherwise noted this column refers to the number of blows (N) of a 140 pound (63.5 kg) hammer freely dropping 30 inches (0.76 m) required to drive a 2 inch (50.8 mm) O.D. open-end sampler 0.5 feet (0.15 m) to 1.5 feet (0.45 m) into the soil, or until 100 blows have been applied, in which case, the penetration is stated. This is the standard penetration test referred to in ASTM D 1586.

OTHER TESTS

In this column are tabulated results of other laboratory tests as indicated by the following symbols:

*C	Consolidation test
Fines	Percentage by weight smaller than #200 sieve
D _R	Relative density (formerly specific gravity)
k	Permeability coefficient
*MA	Mechanical grain size analysis and hydrometer test (if appropriate)
pp	Pocket penetrometer strength
*q	Triaxial compression test
q _U	Unconfined compressive strength
*SB	Shearbox test
SO ₄	Concentration of water-soluble sulphate
*ST	Swelling test
TV	Torvane shear strength
VS	Vane Shear Strength (undisturbed-remolded)
ε _f	Unit strain at failure
γ	Unit weight of soil or rock
γ _d	Dry unit weight of soil or rock
ρ	Density of soil or rock
ρ _d	Dry density of soil or rock

* The results of these tests usually are reported separately

SYMBOLS AND TERMS USED ON THE BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Behavioural properties (i.e. plasticity, permeability) take precedence over particle gradation in describing soils.

Terminology describing soil structure:

Desiccated	- having visible signs of weathering by oxidation of clay minerals, shrinkage cracks etc.
Fissured	- having cracks, and hence a blocky structure
Varved	- composed of regular alternating layers of silt and clay
Stratified	- composed of alternating layers or different soil types, e.g. silt and sand or silt and clay
Well Graded	- having wide range in grain sizes and substantial amounts of all intermediate particle sizes
Uniformly Graded	- predominantly of one grain size.

Terminology used for describing soil strata based upon the proportion of individual particle size present:

Trace, or occasional	Less than 10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. silt and sand)	35-50%

The standard terminology to describe cohesionless soils includes the relative density, as determined by laboratory test or by the Standard Penetration Test 'N' - value: the number of blows of 140 pound (64 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (305 mm) into the soil.

Relative Density	'N' Value	Relative Density %
Very loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression test, or occasionally by standard penetration tests.

Consistency	Undrained Shear Strength		'N' Value
	Kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25-0.5	12.5-25	2-4
Firm	0.5-1.0	25-50	4-8
Stiff	1.0-2.0	50-100	8-15
Very Stiff	2.0-4.0	100-200	15-30
Hard	>4.0	>200	>30

SOIL CLASSIFICATION SYSTEM (MODIFIED U.S.C.)

MAJOR DIVISION		GROUP SYMBOL	GRAPHIC SYMBOL	COLOR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
HIGHLY ORGANIC SOILS		Pt		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE	
COARSE-GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS MORE THAN HALF COARSE FRACTION LARGER THAN NO. 4 SIEVE SIZE	GW		RED	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
		GP		RED	POORLY-GRADED GRAVELS, AND GRAVEL-SAND MIXTURES, <5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS	
		GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW 'A' LINE OR $I_p < 4$	
		GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE 'A' LINE OR $I_p > 7$	
	SANDS MORE THAN HALF COARSE FRACTION SMALLER THAN NO. 4 SIEVE SIZE	SW		RED	WELL-GRADED SANDS, GRAVELLY SANDS, <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
		SP		RED	POORLY-GRADED SANDS, OR GRAVELLY SANDS, <5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS	
		SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW 'A' LINE OR $I_p < 4$	
		SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE 'A' LINE OR $I_p > 7$	
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES NO. 200 SIEVE SIZE)	SILTS BELOW 'A' LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$
			MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$
	CLAYS ABOVE 'A' LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$
			CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY SILTY CLAYS	$W_L > 30, < 50$
			CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$
	ORGANIC SILTS & ORGANIC CLAYS BELOW 'A' LINE ON PLASTICITY CHART		OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$
			OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$



FILL



TILL

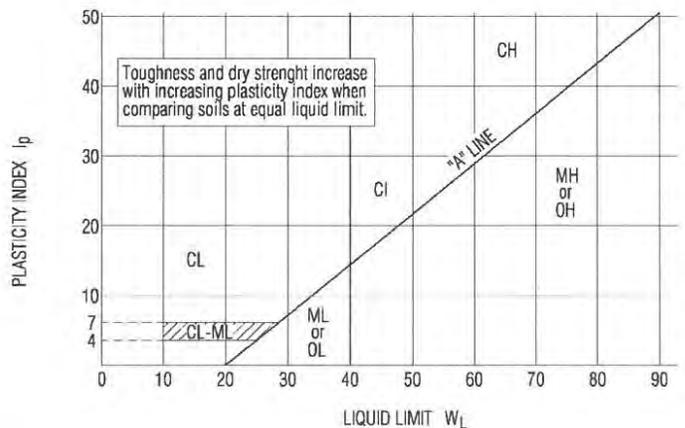


BEDROCK

- All sieve sizes mentioned on this chart are U.S. Standard, ASTM E11.
- Boundary classifications possessing characteristics of two groups are given combined group symbols eg GW-GC is a well-graded gravel-sand mixture with clay binder between 5% and 12%.
- Soil fractions and limiting textural boundaries are in accordance with the Unified Soil Classification System, except that an inorganic clay of medium plasticity (CI) is recognized.
- The following adjectives may be employed to define percentage ranges by weight of minor components:

and	50 - 36%
gravelly, sandy, silty, clayey, ect.	35 - 21%
some	20 - 11%
trace	10 - 1%

PLASTICITY CHART



Englobe



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO.P-0011963-0-00-200	TEST PIT 1	
WC %		wp-	w-●	wl-	SOIL DESCRIPTION		SOIL SAMPLE
10	20	30	40	50	COND.		POCKET PENE.
DEPTH				DATUM		BACKHOE TYPE	
ft m				SURFACE ELEVATION		Excavator	
MODIFIED USCS				ROOTMAT/TOPSOIL		OTHER TESTS	
SOIL SYMBOL				TILL: Sandy clay, some gravel, reddish brown, firm to stiff, moist			
1							
2							
3							
4							
5							
6				END OF TEST PIT AT 1.8 m IN TILL			
7				Test pit dry upon completion			
8							
9							
10							
11							
12							
13							
14							
15							
16							
5							



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 2	
WC %		DEPTH	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE
wp- w-● wl-	10 20 30 40 50	ft m			DATUM	COND.	TYPE
					SURFACE ELEVATION		POCKET PENE.
					ROOTMAT/TOPSOIL		BACKHOE TYPE
					TILL: Sandy clay, some gravel, reddish brown, firm to stiff, moist		Excavator
					END OF TEST PIT AT 2.4 m IN TILL		OTHER TESTS
					Test pit dry upon completion		
		1					
		2					
		3	1				
		4					
		5					
		6					
		7	2				
		8					
		9					
		10	3				
		11					
		12					
		13	4				
		14					
		15					
		16	5				



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 3		
WC %		DEPTH	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	COND.					TYPE	POCKET PENE.	
10 20 30 40 50	ft m							Excavator
								OTHER TESTS
DATUM								
SURFACE ELEVATION								
ROOTMAT/TOPSOIL								
1								
TILL: Sandy clay, some gravel, reddish brown, firm to stiff, moist								
2								
3		1						
4								
5								
SAND: Sand and gravel, some silt, compact, grey, moist - Trace sandy clay throughout								
6		2						
7								
8								
9								
10		3						
TILL: Sandy clay, some gravel, reddish brown, firm to stiff, moist								
11								
END OF TEST PIT AT 3.7 m IN TILL								
Test pit dry upon completion								
13		4						
14								
15								
16		5						



TEST PIT LOG

PROJECT

Proposed Abbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. ACA		DATE OF INVEST. 4/7/18	JOB NO. P-0011960-0-01-201	TEST PIT TP4		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Track mounted excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
		1			ROOTMAT/TOPSOIL			
		2			TILL: Clay, some gravel, some sand, occasional cobbles, reddish brown, firm to stiff, moist			
		3						
		4				SH		
		5						
		6						
		7						
		8						
		9						
		10						
		11				G		
		12						
		13						
		14						
		15			END OF TEST PIT AT 4.6 m			
		16			Slight groundwater flow at 3.7 m			



TEST PIT LOG

PROJECT

Proposed Absestos Cell, Colchester Containers
Middle Stewiake, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 4/7/18	JOB NO. P-0011960-0-01-201	TEST PIT TP5		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Track mounted excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
					ROOTMAT/TOPSOIL			
		1			TILL: Clay, some gravel, some sand, occasional cobbles, reddish brown, firm to stiff, moist			
		2						
		3						
		4						
		5						
		6						
		7				X	G	
		8			GRAVEL: Gravel, some sand, some cobbles, grey, compact to dense, moist to wet			
		9						
		10						
		11					X	G
		12			END OF TEST PIT AT 3.7 m			
		13			Slight groundwater flow at 3.7 m			
		14						
		15						
		16						



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 6		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
		1			ROOTMAT/TOPSOIL			
		2			TILL: Sandy clay, some gravel, trace cobbles, reddish brown, firm to stiff, moist			
		3						
		4						
		5						
		6						
		7	1					
		8						
		9						
		10	3		END OF TEST PIT AT 3.0 m IN TILL			
		11			Test pit dry upon completion			
		12						
		13	4					
		14						
		15						
		16	5					



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 7		
WC %		DEPTH	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	COND.					TYPE	POCKET PENE.	
10 20 30 40 50	ft m							Excavator
					DATUM			OTHER TESTS
					SURFACE ELEVATION			
					ROOTMAT/TOPSOIL			
					TILL: Sandy clay, some gravel, trace cobbles, reddish brown, firm to stiff, moist			
					END OF TEST PIT AT 3.0 m IN TILL			
					Test pit dry upon completion			



TEST PIT LOG

PROJECT

Proposed Abbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 4/7/18	JOB NO. P-0011960-0-01-201	TEST PIT TP8		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Track mounted excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
		1			ROOTMAT/TOPSOIL			
		2			TILL: Clay, some gravel, some sand, occasional cobbles, reddish brown, firm to stiff, moist			
		3						
		4				SH		
		5						
		6						
		7						
		8						
		9						
		10						
		11						
		12						
		13						
		14						
		15						
		16						
					END OF TEST PIT AT 4.6 m			

GW

GRAVEL: Gravel, some sand, some
cobbles, grey, compact to dense,
moist to wet

G



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 9		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
		1			ROOTMAT/TOPSOIL			
		2			TILL: Sandy clay, some gravel, trace cobbles, trace boulders (nominal size 450 mm), reddish brown, firm to stiff, moist			
		3						
		4						
		5						
		6						
		7	1					
		8						
		9						
		10	2					
		11			END OF TEST PIT AT 3.0 m IN TILL Test pit dry upon completion			
		12						
		13						
		14	3					
		15						
		16	4					
		17						
		18						
		19						
		20	5					



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 10		
WC %		DEPTH		SOIL DESCRIPTION		SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	10 20 30 40 50	ft	m	DATUM		COND.	TYPE	POCKET PENE.
				SURFACE ELEVATION				
				ROOTMAT/TOPSOIL				
		1						
		2		TILL: Sandy clay, some gravel, trace cobbles, reddish brown, firm to stiff, moist				
		3	1					
		4		TILL: Clay and sand, olive brown, stiff, moist				
		5						
		6	2					
		7						
		8		SLATE: Grey slate deposit				
		9						
		10	3	END OF TEST PIT AT 3.0 m IN SLATE Deposit				
		11		Test pit dry upon completion				
		12						
		13	4					
		14						
		15						
		16	5					



TEST PIT LOG

PROJECT

Proposed Asbestos Cell, Colchester Containers
Middle Stewiacke, Nova Scotia

LOGGED/DWN. GG		CKD. AC		DATE OF INVEST. 2/3/18	JOB NO. P-0011963-0-00-200	TEST PIT 11		
WC %		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE		BACKHOE TYPE
wp- w-● wl-	DATUM				COND.	TYPE	POCKET PENE.	Excavator
10 20 30 40 50					SURFACE ELEVATION			OTHER TESTS
		1			ROOTMAT/TOPSOIL			
		2			TILL: Sandy clay, some gravel, trace cobbles, trace boulders (nominal size 450 mm), reddish brown, firm to stiff, moist			
		3						
		4						
		5						
		6						
		7	1					
		8						
		9						
		10	3		END OF TEST PIT AT 3.0 m IN TILL			
		11			Test pit dry upon completion			
		12						
		13	4					
		14						
		15						
		16	5					



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/22/16		JOB P-0011963		HOLE NO. BH1	
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE
WC %	wp- □				w- ●	wl- △	DATUM	COND.	TYPE
10	20	30	40	50	SURFACE ELEVATION				OTHER TESTS
					TOPSOIL.				
		1			TILL: Clay, some silt and gravel, trace sand, stiff, moist, reddish-brown.				
		2							
		3	1						
		4							
		5							
		6	2						
		7			trace gravel, occasional boulders.				
		8							
		9							
		10	3						
		11							
		12							
		13	4						
		14							
		15							
		16	5						
		17							
		18							
		19							
		20	6						



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/22/16		JOB P-0011963		HOLE NO. BH1	
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE
WC %	wp- □ w- ● wl- △				DATUM	COND.	TYPE	PENE. RESIST.	CME 45 Trackmount
10	20 30 40 50				SURFACE ELEVATION				OTHER TESTS
		22							
		23	7						
		24							
		25							
		26	8						
		27							
		28							
		29							
		30	9						
		31			End of borehole at 9.2 m in TILL.				
		32			Groundwater not observed during the advancement of the borehole.				
		33	10						
		34							
		35							
		36	11						
		37							
		38							
		39	12						
		40							
		41							



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/21/16		JOB P-0011963		HOLE NO. MW1		
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE	
WC %	wp- □ w- ● wl- △				DATUM	COND.	TYPE	PENE. RESIST.	CME 45 Trackmount	
10	20 30 40 50				SURFACE ELEVATION				Well Details	Other Tests
		1			FILL (Re-worked till): Sandy clay, trace gravel, occasional cobbles, very soft to stiff, moist, reddish-brown.		SS	N=4		
		2								
		3	1				SS	N=11		
		4								
		5					SS	N=11		
		6	2							
		7					SS	N=17		
		8								
		9								
		10	3		BOULDERS: Gypsum.		SS	N=24		
		11								
		12					SS	N=44		
		13	4							
		14								
		15					SS	N=104 / 17"		
		16	5		TILL: Clay, some sand, trace gravel, very stiff to hard, moist to wet, reddish-brown.		SS	N=50 / 4"		
		17								
		18								
		19					SS	N=80 / 9"		
		20	6							
							SS	N=97 /		



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/21/16		JOB P-0011963		HOLE NO. MW1		
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE	
WC %	wp- □ w- ● wl- △				DATUM	COND.	TYPE	PENE. RESIST.	CME 45 Trackmount	
10	20 30 40 50				SURFACE ELEVATION			15"	Well Details	Other Tests
		22								
		23	7							
		24								
		25								
		26	8							
		27								
		28								
		29								
		30	9							
		31								
		32								
		33	10							
		34								
		35								
		36	11							
		37								
		38			End of borehole at 11.3 m in TILL. Groundwater observed at 0.13 m on May 18, 2017.					
		39	12							
		40								
		41								



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/22/16		JOB P-0011963		HOLE NO. MW2			
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE		
WC % wp- □ w- ● wl- △ 10 20 30 40 50					DATUM		COND.	TYPE	PENE. RESIST.	CME 45 Trackmount	
		SURFACE ELEVATION				Well Details				Other Tests	
		1			TOPSOIL.						
		2			TILL: Sandy clay, some silt, gravel and boulders, stiff to dense, moist to wet, reddish-brown.						
		3	1								
		4									
		5									
		6	2								
		7									
		8									
		9									
		10	3								
		11									
		12									
		13	4								
		14									
		15			BEDROCK: Gypsum.						
		16	5								
		17									
		18									
		19									
		20	6								



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/22/16		JOB P-0011963		HOLE NO. MW2		
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE	
WC %	wp- □ w- ● wl- △				DATUM	COND.	TYPE	PENE. RESIST.	CME 45 Trackmount	
10	20 30 40 50				SURFACE ELEVATION				Well Details	Other Tests
		22								
		23	7							
		24								
		25								
		26	8							
		27								
		28								
		29								
		30	9							
		31								
		32								
		33	10							
		34								
		35								
		36	11							
		37								
		38								
		39	12							
		40								
		41								



BOREHOLE LOG

PROJECT
 Environmental Investigation
 Colchester Containers Parcel CC, Hwy.289 Middle Stewiacke, NS

LOGGED/DWN. DM		CKD. AC		DATE OF INVEST. 12/22/16		JOB P-0011963		HOLE NO. MW2		
CASING RESISTANCE blows/300mm		DEPTH ft m	MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION		SOIL SAMPLE		DRILL TYPE	
WC %	wp- □ w- ● wl- △				DATUM	COND.	TYPE	PENE. RESIST.	CME 45 Trackmount	
10	20 30 40 50				SURFACE ELEVATION				Well Details	Other Tests
		13								
		43								
		44								
		45								
		46	14							
		47								
		48								
		49	15							
		50								
		51			End of borehole at 15.3 m in BEDROCK.					
		52			Groundwater observed at 4.73 m on May 18, 2017.					
		53	16							
		54								
		55								
		56	17							
		57								
		58								
		59	18							
		60								
		61								
		62	19							

Sample Information

Sample ID	TP 8
Sample Type	Clay Till
Date Sampled	N/A
Date Tested	23-Jul-18

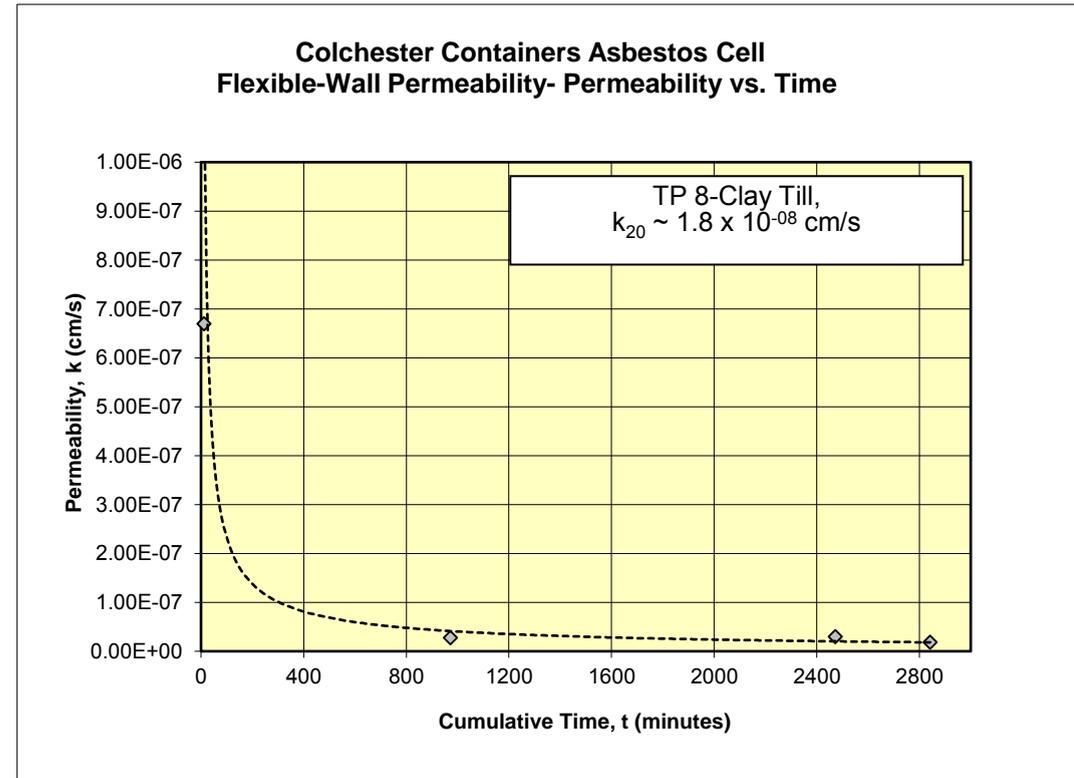
Tested Diameter (cm)	6.92
Cross-Sectional Area (cm ²)	37.61
Tested Length (cm)	10.50
Wet Weight (g)	
Initial Bulk Density (kg/m ³)	
Initial Moisture Content (% of dry wt.)	
Final Moisture Content (% of dry wt.)	
Dry Density (kg/m ³)	

Test Information

Total Back Pressure (psi)	70
Effective Consolidation Stress (psi)	1.5
Hydraulic Gradient	20.1

Hydraulic Conductivity (cm/s)	1.8 E-08
-------------------------------	----------

Notes



97 TROOP AVE., DARTMOUTH, N.S. B3B 2A7 - TEL (902) 468-6486 FAX 468-4919

Client:
J. Ross and Sons Ltd.
171 Chain Lake Drive
Halifax, NS
B3S 1B3

Our Project No: P-0011963-0-01-201

Client Contract No.:

Client PO.:

CC:

Attn: Norman Ross
PHONE (902) 450-5633

FAX:

Project: Colcheser Containers

Source: 10'

Sample No: TP 1

Location:

Date Sampled:

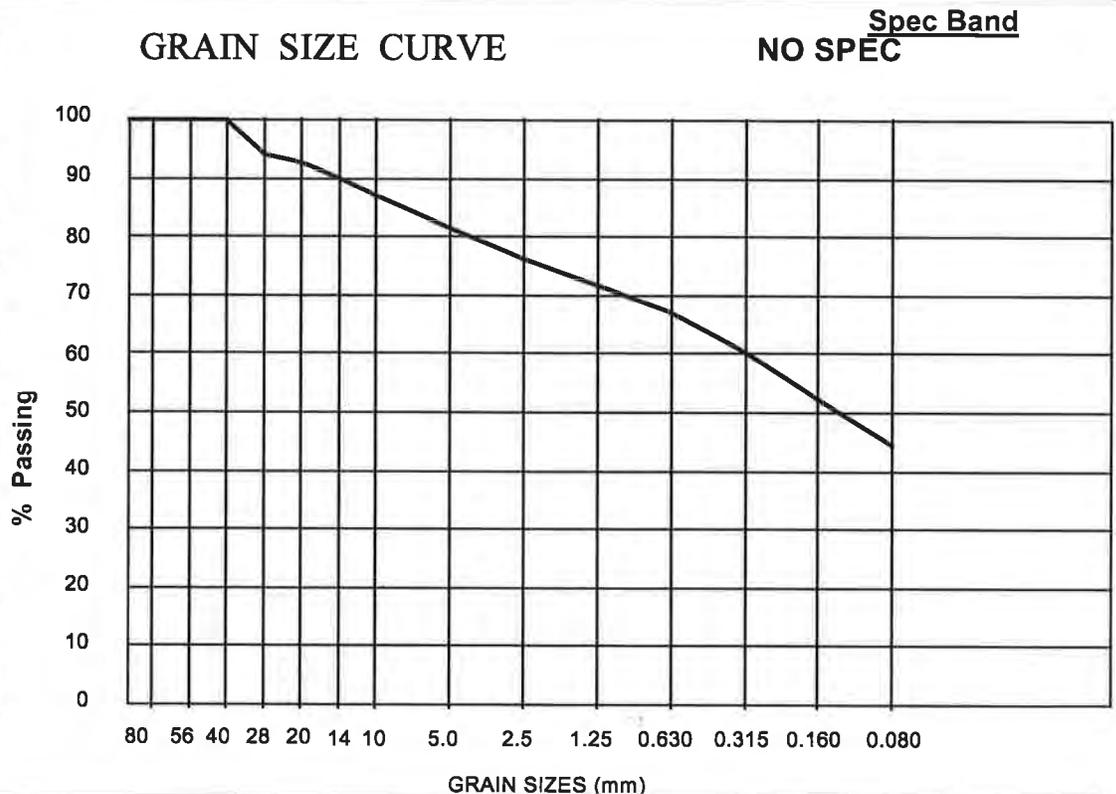
Sampled by:

Date Received:

Date Tested: 20-Jul-18

PHYSICAL PROPERTY TESTS					
Soil Type		Liquid Limit	26	Flat and Elongated Particles, %	
Gravel, %	18	Plastic Limit	18	Coarse Spec. Gravity	
Sand, %	38	Plasticity Index	8	Fractured Faces, %	
Silt and Clay, %	44	Coarse Absorption, %		Petrographic No.	
Moisture Cont., %	11.5	Fine Absorption, %		Max. Dry Density, (kg/m3)	
Abrasion Loss, %		Micro Deval Loss, %		Optimum Moisture, %	

Sieve Size (mm)	Percent Passing	Spec. Band
112		
80		
56		
40	100	
28	94	
20	93	
14	90	
10	87	
5.0	82	
2.5	76	
1.25	72	
0.630	67	
0.315	61	
0.160	53	
0.080	44.4	



Comments:

Record No: 11200

Englobe Tech: BM

PER *AK*



CERTIFIED LABORATORY
FOR TESTING CONCRETE

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on request.

project manager Aven Cole

97 TROOP AVE., DARTMOUTH, N.S. B3B 2A7 - TEL (902) 468-6486 FAX 468-4919

Client: J. Ross and Sons Ltd.
171 Chain Lake Drive
Halifax, NS
B3S 1B3

Our Project No: P-0011963-0-01-201

Client Contract No.:

Client PO.:

CC:

Attn: Norman Ross

PHONE (902) 450-5633 **FAX:**

Project: Colcheser Containers

Source: 10'

Sample No: TP 4 **Date Sampled:**

Location:

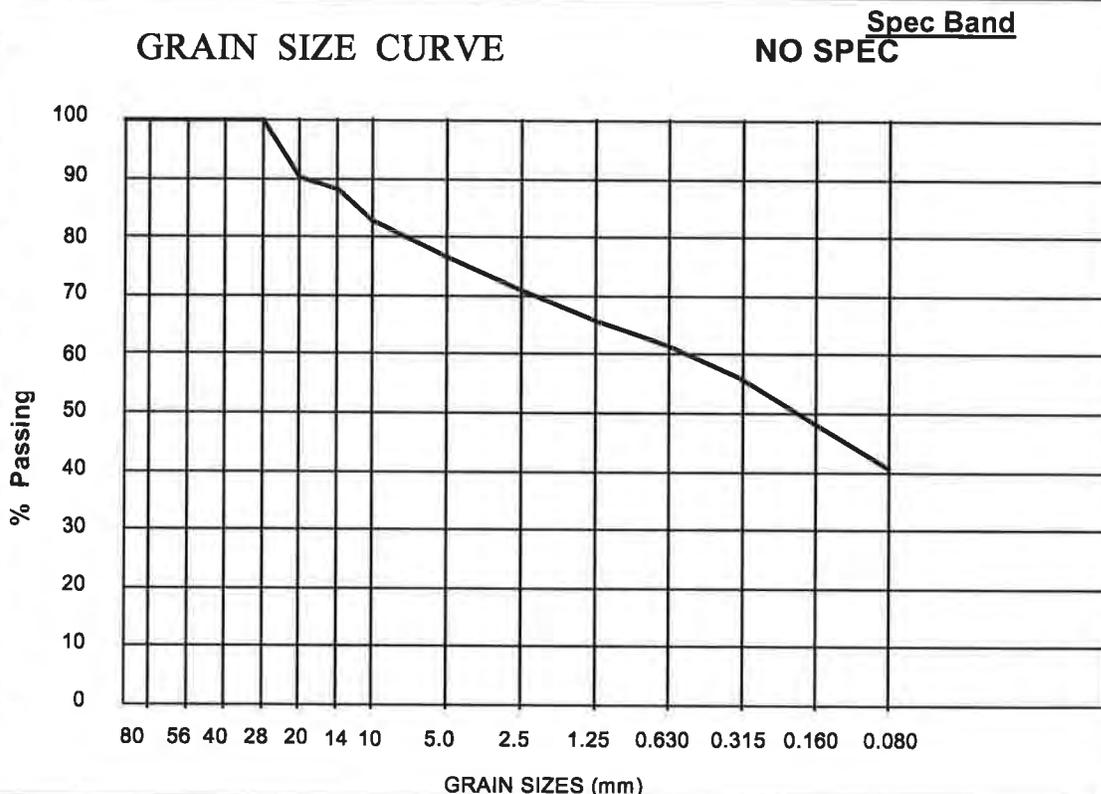
Sampled by:

Date Received:

Date Tested: 20-Jul-18

PHYSICAL PROPERTY TESTS					
Soil Type		Liquid Limit	19	Flat and Elongated Particles, %	
Gravel, %	23	Plastic Limit	15	Coarse Spec. Gravity	
Sand, %	37	Plasticity Index	4	Fractured Faces, %	
Silt and Clay, %	40	Coarse Absorption, %		Petrographic No.	
Moisture Cont., %	9.5	Fine Absorption, %		Max. Dry Density, (kg/m3)	
Abrasion Loss, %		Micro Deval Loss, %		Optimum Moisture, %	

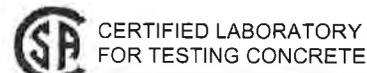
Sieve Size (mm)	Percent Passing	Spec. Band
112		
80		
56		
40		
28	100	
20	90	
14	88	
10	83	
5.0	77	
2.5	71	
1.25	66	
0.630	61	
0.315	56	
0.160	48	
0.080	40.5	



Comments:

Record No: 11201 Englobe Tech: BM

PER *AGG*



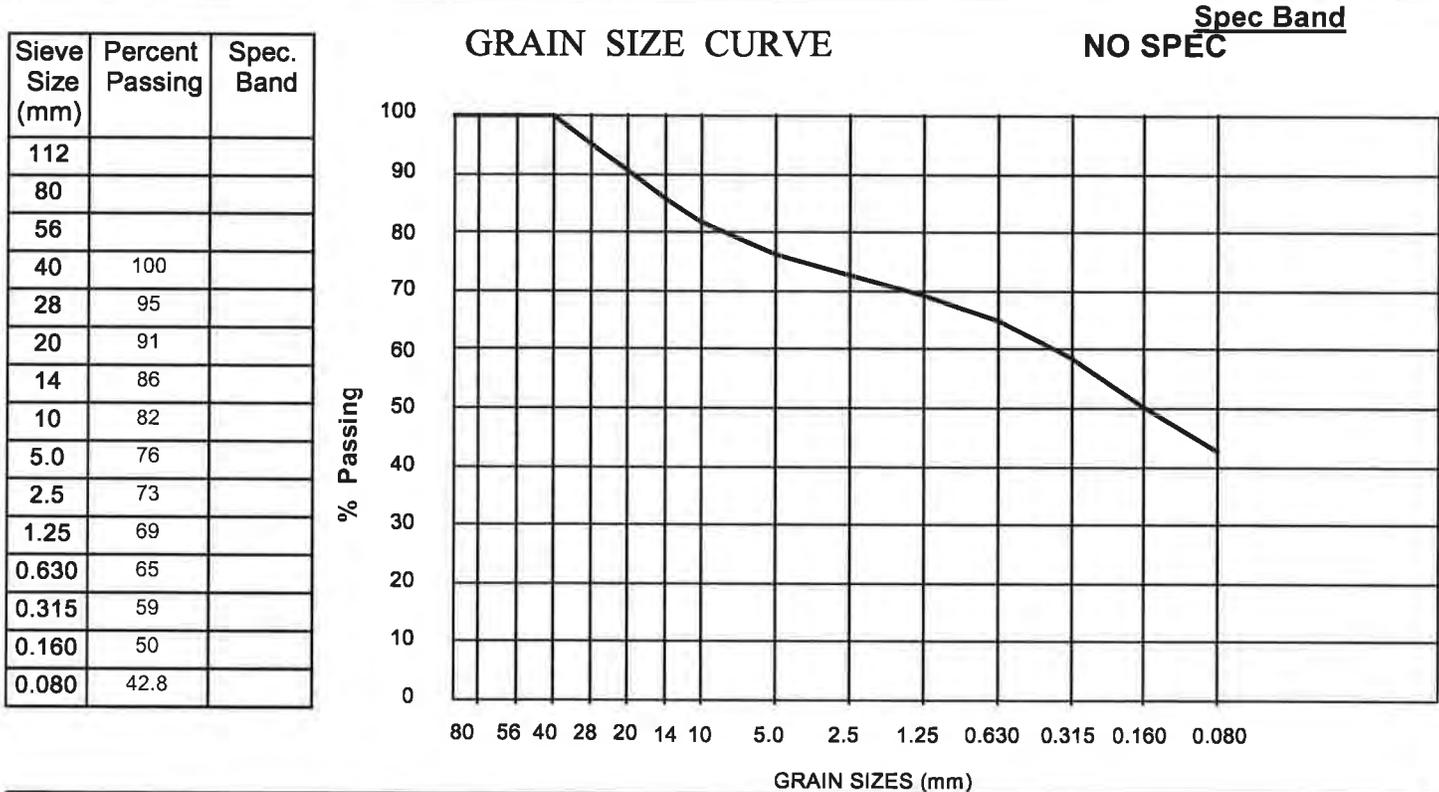
Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on request.

project manager Aven Cole

97 TROOP AVE., DARTMOUTH, N.S. B3B 2A7 - TEL (902) 468-6486 FAX 468-4919

<p>Client: J. Ross and Sons Ltd. 171 Chain Lake Drive Halifax, NS B3S 1B3</p> <p>Attn: Norman Ross PHONE (902) 450-5633 FAX:</p> <p>Project: Colcheser Containers Source: 6' Sample No: TP 5 Location:</p>	<p>Our Project No: P-0011963-0-01-201</p> <p>Client Contract No.: Client PO.: CC:</p> <p>Sampled by: Date Received: Date Tested: 20-Jul-18</p>
---	---

PHYSICAL PROPERTY TESTS					
Soil Type		Liquid Limit	25	Flat and Elongated Particles, %	
Gravel, %	24	Plastic Limit	19	Coarse Spec. Gravity	
Sand, %	33	Plasticity Index	6	Fractured Faces, %	
Silt and Clay, %	43	Coarse Absorption, %		Petrographic No.	
Moisture Cont., %	17.8	Fine Absorption, %		Max. Dry Density, (kg/m3)	
Abrasion Loss, %		Micro Deval Loss, %		Optimum Moisture, %	



Comments:

Record No: 11202 Englobe Tech: BM

PER *ACB*



Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on request.

project manager Aven Cole

Appendix F Operations Manual and Contingency Plan



7 Cummane Street
Truro, Nova Scotia
P.O. Box 841, B2N 5G6
Ph: 902-673-2808
Fx: 902-893-9420

Operations Manual

Colchester Containers C&D Waste and Asbestos Waste Disposal Facility

**Highway 289
Middle Stewiacke, NS**

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Appendices

- Appendix A List of Acceptable Materials
- Appendix B Water Quality Monitoring Parameters
- Appendix C Contingency Plan

1 Introduction

Colchester Containers Limited has held a Nova Scotia Environment (NSE) *Approval* to construct, operate, and reclaim a construction and demolition (C&D) waste disposal site since 1997. The C&D site currently consists of one active C&D disposal cell, several inactive C&D disposal cells, and a weigh scale on the gated access road in the centre of the property. Colchester Containers Limited proposes to continue C&D operations at the site and expand to include a second containment cell at the Facility which may accept asbestos waste for disposal.

The employee's responsibility shall be to familiarize themselves with the operations components of the site, so that their actions will conform to the requirements of any *Approvals* from NSE, the C&D Debris Disposal Site Guidelines, and the *Asbestos Waste Management Regulations* to ensure the safe and acceptable operations of the site.

A copy of the most recent NSE *Approval* will be kept on site at all times.

1.1 Site Description

The site is located on the north side of Highway 289, in Middle Stewiacke, Colchester County, NS. Various parts of the site have been logged, or have been used as C&D cells, which have subsequently been capped and rehabilitated (now covered with low shrubs and herbaceous plants).

The northern part of the site remains an active C&D disposal cell. The central portion of the site, south of the access road will be used as an Asbestos Waste disposal cell.

1.2 C&D Waste Cell Construction

The current active C&D waste cell is a natural topographic low, that has more than 1m of site native clay, which satisfies the NSE C&D Debris Disposal Site Guidelines for permeability, i.e. 1×10^{-5} cm/sec, and is more than 1 m above the groundwater table.

Future C&D waste cells will be either situated in other natural topographic low areas (with conditions that satisfy the NSE C&D Debris Disposal Site Guidelines) to take advantage of the natural landscape or will consist of engineered cells with a constructed clay base and berms. NSE will be notified of any new C&D cells, in accordance with Terms and Conditions of the *Approval*.

Surface water is controlled through surface ditching and settling ponds. As new C&D waste cells are required, surface water control measures will be updated as required.

1.3 Asbestos Waste Cell Construction

The Asbestos Waste disposal cell(s) will be constructed in the center of the site, south of the access road. The waste cell(s) will have a liner constructed of clay that has a minimum permeability of 1×10^{-5} cm/sec and a minimum thickness of 1 m. The waste cell(s) will be more than 1 m above the water table and bedrock. Construction of the Asbestos Waste

disposal cell(s) will be phased, and only the current operational cell will be active. Grubbing and disturbance of future cells will be limited to areas needed for access and operations. Grubbing for the next phase(s) will occur shortly before the areas are required. NSE will be notified when Asbestos Waste cell(s) have reached capacity, and new cells are commenced, in accordance with Terms and Conditions of the *Approval*.

Surface water will be controlled through surface ditching with check dams. As future Asbestos Waste disposal cells are required, surface water control measures will be updated as required.

2 Facility Operations

2.1 Site Access

The site is accessed via a gated road off Highway 289. A scale and scale house are situated along the access road. All vehicles delivering waste to the site will be weighed prior to gaining access to the site.

2.2 Signage

Signage on the gated access road displays the company name and phone number and indicates that the site is used for C&D and Asbestos Waste disposal.

Speed and traffic control signs are posted on the access road. Violations will not be tolerated and may result in denied future access to the facility.

No hunting and no trespassing signs are posted to prevent access of unauthorized persons.

2.3 Operating Hours

The site is operated for disposal of C&D and Asbestos waste for Colchester Container projects and is generally open between 8am and 5pm, weekdays except statutory holidays. All other C&D and Asbestos waste disposal will be by appointment during operating hours.

The gate on the access road remains locked when the site is not in operation.

2.4 Contact Information

All correspondence and questions concerning the operation of the facility should be directed to:

Colchester Containers Ltd.
Mr. Derek Ross
171 Chain Lake Drive, Halifax, NS, B2S 1B3
(902) 830-1133

All delivery appointments and questions concerning material acceptance and operating hours should be directed to:

Colchester Containers Ltd.
Mr. Jim Muise
7 Cummane Street, Truro, NS, B2N 5G6
(902) 890-6370

3 Waste Handling Operations

3.1 C&D Waste Operations

3.1.1 Receiving C&D Waste

If the delivery is to occur outside the site operating hours, the generator of the C&D waste or the carrier must notify the person responsible for receiving C&D Waste at the site to schedule the delivery prior to transportation. All vehicles delivering C&D waste must stop at the scale to be weighed and have the contents of the load inspected. The site supervisor will be appropriately trained to identify unacceptable materials. Any materials not accepted at the site, according to the acceptable materials list (Appendix A), identified in the preliminary inspection will result in rejection of the load.

If unacceptable wastes are not found during the preliminary inspection, the load is directed to the operational waste cell(s) for disposal.

If unacceptable wastes are found following disposal, they will be removed and returned to the waste generator for appropriate disposal. For unacceptable wastes that are suspected to be hazardous, the Hazardous Waste Contingency Plan will be followed.

3.1.2 Placement of C&D Waste

The C&D disposal cells are operated as a continuous dump. Received C&D waste is placed directly from trucks onto the edge of the prepared waste cell(s) for sorting and is then placed in the waste cell(s) using a bulldozer or excavator. The C&D waste is covered, on a weekly basis, with pre-approved, stockpiled, clay using a bulldozer or excavator.

Once an individual waste cell has been filled, it is capped with clay, graded, and re-vegetated with species native to the area.

3.1.3 C&D Waste Disposal Records

Records of all C&D waste received at the site will be maintained and will include:

- ▶ Quantity, type, source (origin), and carrier of C&D waste received;
- ▶ Quantity and type of recyclables removed;
- ▶ Quantity of residual material disposed in the C&D cell;
- ▶ Quantity and type of material forwarded to a municipal landfill and the landfill location;
- ▶ Quantity and type of waste dangerous goods removed and the final disposal site;
- ▶ Complete records of inspections, maintenance, repairs;
- ▶ Details of any incidents or spills at the Facility;
- ▶ Any registered complaints and measures taken to resolve the complaints; and

- ▶ Any other information requested by the Department.

3.1.4 C&D Waste Environmental Concerns

3rd party laboratory testing will be required for materials that may contain lead-based paint; a minimum of 3 samples are required and the average total lead concentration must not exceed 1000 mg/kg. If the average total lead concentration exceeds 1000 mg/kg, leachate testing (CGSB-164-GP-IMP or equivalent) is required and must be less than 5 mg/L for acceptance.

3rd party laboratory testing will be required for materials that may contain asbestos. Any material that is defined as Asbestos Waste will not be accepted in the C&D Waste cell.

3.2 Asbestos Waste Operations

3.2.1 Receiving Asbestos Waste

Prior to transportation, the generator of the asbestos waste or the carrier must notify the person responsible for receiving Asbestos Waste at the site and confirm that the receiver agrees to accept the Asbestos Waste. Asbestos Waste will arrive at the site in vehicles that contain only the Asbestos Waste and only Asbestos Waste that has been processed and packaged in accordance with the NSE *Asbestos Waste Management Regulations* will be accepted.

All Asbestos Waste received at the site must be covered by a shipping document as described in the *Transportation of Dangerous Goods Act (Canada)*. All vehicles will stop at the scale to be weighed, have the contents of the load inspected, and to submit the shipping document. A copy of the shipping document to be used by Colchester Container staff is provided in Appendix B.

The site supervisor will be appropriately trained to identify unacceptable shipments. Shipments that do not conform with the NSE *Asbestos Waste Management Regulations* (including required safety equipment) will be rejected.

3.2.2 Placement of Asbestos Waste

Once the vehicles have been weighed and inspected, the Asbestos Waste materials will immediately be placed in an engineered clay cell(s), situated at least 1 m above the groundwater table. There will be no handling of the asbestos waste; it will be placed in the cell(s) in the same manner as it is received (sealed bags).

All Asbestos Waste will be buried, with cover material having a depth of not less than 25 centimeters (cm), within 24 hours of receipt at the site. A daily inspection will be conducted on days that Asbestos Waste is accepted. Upon abandonment or discontinued use of the Asbestos Waste disposal cell, final soil cover of 125 cm (minimum) will be placed.

Regular monthly inspections of the Asbestos Waste disposal cell(s) will be carried out.

3.2.3 Asbestos Waste Disposal Records

Records of all asbestos waste received at the site will be maintained and will include:

- ▶ Quantity, type, source (origin), and carrier of Asbestos Waste received;

- ▶ Receipt/burial date and confirmation of cover thickness; and
- ▶ Burial location within the Asbestos Waste disposal cell.

3.2.4 Asbestos Safety Considerations

The facility will have on hand at all times:

- ▶ shovel;
- ▶ broom;
- ▶ personal respiratory equipment;
- ▶ protective clothing adequate to protect staff present at the facility from any harmful effects which asbestos waste may have on human life or health; and
- ▶ a supply of wetting agent (water in portable sprayer) and plastic bags sufficient to enable any required repackaging of damaged Asbestos Waste.

In accordance with the *Asbestos Waste Management* Regulations, all employees that handle or store Asbestos Waste, supervise the disposal of Asbestos Waste, or operate equipment to bury Asbestos Waste will wear protective clothing and personal respiratory equipment at all times.

Care will be taken during handling of Asbestos Waste to ensure that no asbestos fibres or asbestos dust become airborne.

No transport, storage, or handling of Asbestos Waste will occur unless every package or container used to transport or store the asbestos waste is free of any puncture, tear or leak. Any damaged or punctured Asbestos Waste packages or containers will be immediately repaired, replaced or repackaged. In the event of a release of asbestos containing material, the procedure outlined in the Contingency Plan will be followed.

All employees involved in the handling, storing, or disposal of asbestos waste will attend asbestos awareness training.

4 Environmental Management

4.1 Dust Control

To minimize the impacts from site operations, water and/or other approved dust suppressants will be used to reduce and manage dust levels. Oil or calcium chloride will not be used for dust suppression. Access roads will be maintained and upgraded as required and vehicle speed on access roads will be controlled. Re-vegetation of exposed areas will take place as soon as practical.

Particulate monitoring will be conducted on an “as required” basis through high volume sampling when requested by NSE.

4.2 Noise Control

Operations at the project site will be limited to the daylight working hours (M to F, 8am to 5pm) and all equipment will be operated with standard noise suppression exhaust systems and kept in good repair.

Sound levels at the property boundaries will comply with the NSE *Approval*.

Noise monitoring will be conducted on an “as required” basis when requested by NSE.

4.3 Erosion and Sediment Control

A site-specific ESC has been developed in accordance with practices outlined in the latest version of the NSE Erosion and Sedimentation Control Handbook for Construction Sites. This ESC will be adjusted, as required, throughout the duration of site operations. Stockpiled soils will be stored in an area with ESC measures to prevent mobilization of sediment laden surface water. All ESC devices will be maintained, as required, to minimize sediment build-up. Progressive reclamation practices will be used to minimize and stabilize disturbed areas.

4.4 Storm Water Management

A site-specific stormwater management plan has been developed and includes use of control devices (ditches and small settling ponds) to manage surface water on the site. Buffer zones will be maintained around all waste cell(s) and the surface water management plan will be used to prevent clean site water from collecting in the cell(s). Surface water that enters operations areas (through precipitation events) will be handled in accordance with the Storm Water Management Plan and Erosion and Sediment Control Plan.

4.5 Water Quality Monitoring

The surface water quality monitoring program currently consists of three locations that are monitored semi-annually as part of the NSE *Approval*; all three are located in Bear Brook, although the Approval specifies Putnam Brook. The samples are for the parameters listed in Column 4 (Appendix B).

As required by the *Approval*, additional surface water and/or groundwater sampling locations will be incorporated into the water quality monitoring program.

4.6 Litter Control

Site vegetation acts as a barrier to keep litter contained within the site and site personnel will collect litter around the site and on access roads as necessary.

Appendix A List of Acceptable Materials

Material which Do Not Require Approved C&D Site for Disposal	Material which Do Require Approved C&D Site for Disposal	Material which Can Not Be Accepted at C&D Site for Disposal- Must be Recycled or Disposed at an Approved Facility
rock	Creosote timbers	materials banned from disposal in order that they be reused or recycled
aggregate	pressure treated wood	caulking tubes
soil	laminated wood	paint cans (full or empty)
bricks	plywood	other adhesive containers
mortar	built-up glued wood sections	white goods- washers, dryers, water heaters, stoves, furnaces, fridges etc.
concrete (free of reinforced steel)	particle or chip board	furniture
asphalt pavement	painted wood	mattresses
porcelain / ceramic material	sawdust / wood chips	curtains and other textiles
trees	gypsum board	air handling units
brush	metals	fuel tanks_
limbs	plastic / vinyl building materials	large electrical components- capacitors, transformers, switching gear, motor control centres
stumps	insulation- fiberglass, styrofoam and other	waste dangerous goods
root balls	shingles- asphalt and other	
organic mat	build up roofing	
milled woods free of adhesives, coatings or preservatives	carpeting	
	vinyl flooring and linoleum	
	ceiling tiles	
	wiring	
	nails	
	metal joiners, frames and structural components	
	light fixtures	
	piping	

Appendix B Asbestos Waste Shipping Document

SHIPPING DOCUMENT

Consignor Name (SHIPPER) Address:	Consignor Name (DESTINATION) Address:
--------------------------------------	--

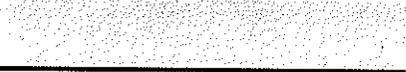
DATE	Point of Origin:
NAME OF CARRIER	
TRANSPORT UNIT#	

REGULATED DANGEROUS GOODS

24-HOUR NUMBER	(Only if Applicable) ERAP reference #: ERAP telephone number:
----------------	--

UN number	Shipping name (if applicable Technical Name)	Primary Class	Subsidiary Class	Packing Group	Toxic by inhalation (SP 23)	Total Quantity (kgs)	Number of packages requiring labels
2590	WHITE ASBESTOS WASTE	9		III			

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the *Transportation of Dangerous Goods Regulations*.



 Shipper's name (please print)

MANIFEST #
PO#

Appendix C Water Quality Monitoring Parameters

Schedule 1

Groundwater, Leachate and Surface Water monitoring Parameters

Parameter				
Parameter Group	Column 1 Comprehensive Groundwater and Leachate	Column 2 Indicators Groundwater and Leachate	Column 3 Comprehensive Surface Water	Column 4 Indicators Surface Water
Inorganics	Alkalinity	Alkalinity	Alkalinity	Alkalinity
	Ammonia		Ammonia	Ammonia
	Arsenic		Arsenic	
	Barium		Barium	
	Boron		Boron	
	Cadmium	Cadmium	Cadmium	
	Calcium	Calcium		
	Chloride	Chloride	Chloride	Chloride
	Chromium		Chromium	
	Conductivity	Conductivity	Conductivity	Conductivity
	Copper		Copper	
	Iron		Iron	
	Lead		Lead	
	Magnesium			
Manganese				

Parameter

Parameter Group	Column 1 Comprehensive Groundwater and Leachate	Column 2 Indicators Groundwater and Leachate	Column 3 Comprehensive Surface Water	Column 4 Indicators Surface Water
	Mercury		Mercury	
	Nitrate	Nitrate	Nitrate	Nitrate
	Nitrite		Nitrite	Nitrite
	Total Kjeldahl Nitrogen		Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen
	pH	pH	pH	pH
	Total Phosphorus		Total Phosphorus	Total Phosphorus
	Potassium	Potassium		
	Sodium	Sodium		
	Suspended Solids	Suspended Solids	Suspended Solids	Suspended Solids
	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids
	Sulphate	Sulphate	Sulphate	Sulphate
	Zinc		Zinc	
Volatile Organics				
	Benzene			
	1,4 Dichlorobezene			
	Dichloromethane		Dichloromethane	
	Toluene		Toluene	
	Vinyl Chloride			

Parameter

Parameter Group	Column 1 Comprehensive Groundwater and Leachate	Column 2 Indicators Groundwater and Leachate	Column 3 Comprehensive Surface Water	Column 4 Indicators Surface Water
Other Organics				
	Chemical Oxygen Demand	Chemical Oxygen Demand	Biological Oxygen Demand (BOD ₅)	Chemical Oxygen Demand
	Dissolved Organic Carbon	Dissolved Organic Carbon	Dissolved Organic Carbon	Phenol
	Phenol		Phenol	
Field Parameters				
			Temperature	Temperature
	pH	pH	pH	pH
	Conductivity	Conductivity	Conductivity	Conductivity
			Dissolved Oxygen	Dissolved Oxygen
			Flow	Flow

Appendix D Contingency Plan



7 Cummane Street
Truro, Nova Scotia
P.O. Box 841, B2N 5G6
Ph: 902-673-2808
Fx: 902-893-9420

Contingency Plan

Colchester Containers C&D Waste and Asbestos Waste Disposal Facility

**Highway 289
Middle Stewiacke, NS**

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Appendices

- Appendix A Site Plan
- Appendix B List of Acceptable Materials
- Appendix C Contact List

1 Introduction

This plan has been prepared by Englobe Corp. (Englobe) on behalf of Colchester Containers Limited (CCL) for use at their Construction and Demolition (C&D) Waste and Asbestos Waste disposal facility in Middle Stewiacke, Nova Scotia (NS). CCL is committed to operating in a way that provides a safe and healthy workplace and protects the environment.

The purpose of this contingency plan is to identify potential hazards at the site and develop response plans to deal with hazards as they arise. The scenarios presented here are not meant to be a comprehensive list of hazards that may arise at the site but do address those incidents that have a reasonable probability of occurring.

This Contingency Plan has been developed to conform with the Nova Scotia Environment (NSE) Contingency Planning Guidelines. The contingency plan is considered a living document that is to be updated and revised based on situations that arise at the site.

1.1 Policy Statement

The NSE Contingency Planning Guidelines states that under the Environment Act:

The Minister may direct a person responsible for dangerous goods or waste dangerous goods to prepare and submit to the Minister a written contingency plan respecting the handling of dangerous goods or waste dangerous goods.

This Plan has been prepared to reflect and confirm CCL's commitment to protecting the environment and applies to all employees, contractors, consultants, and agents performing work on behalf of CCL. To satisfy the policy, CCL will:

1. Be accountable for any adverse environmental effects due to environmental emergencies resulting from its activities;
2. Comply with all applicable municipal, provincial, and federal legislation;
3. Ensure effective response to environmental emergencies through the conduct of regular training of its employees;
4. Promote open communication with employees and the public on environmental emergency matters;
5. Utilize appropriate and cost-effective environmental technologies to minimize any detrimental effects on the environment as a result of environmental emergencies caused by its activities;
6. Ensure that approved environmental emergency response and clean-up procedures will be followed;
7. Ensure that appropriate materials and equipment will be available for use in environmental emergency response and clean-up. Spill materials must not be wasted or used for any purpose other than spill clean-up. Spill clean-up debris must be properly disposed of according to established clean-up procedures; and
8. Records of all environmental emergency incidents will be maintained.

1.2 Key Objectives

Environmental protection is of prime importance during operations at CCL’s waste disposal facility. This Contingency Plan identifies the various aspects of operations that have the potential to impact the environment, and the best work practices to be employed to ensure environmental protection.

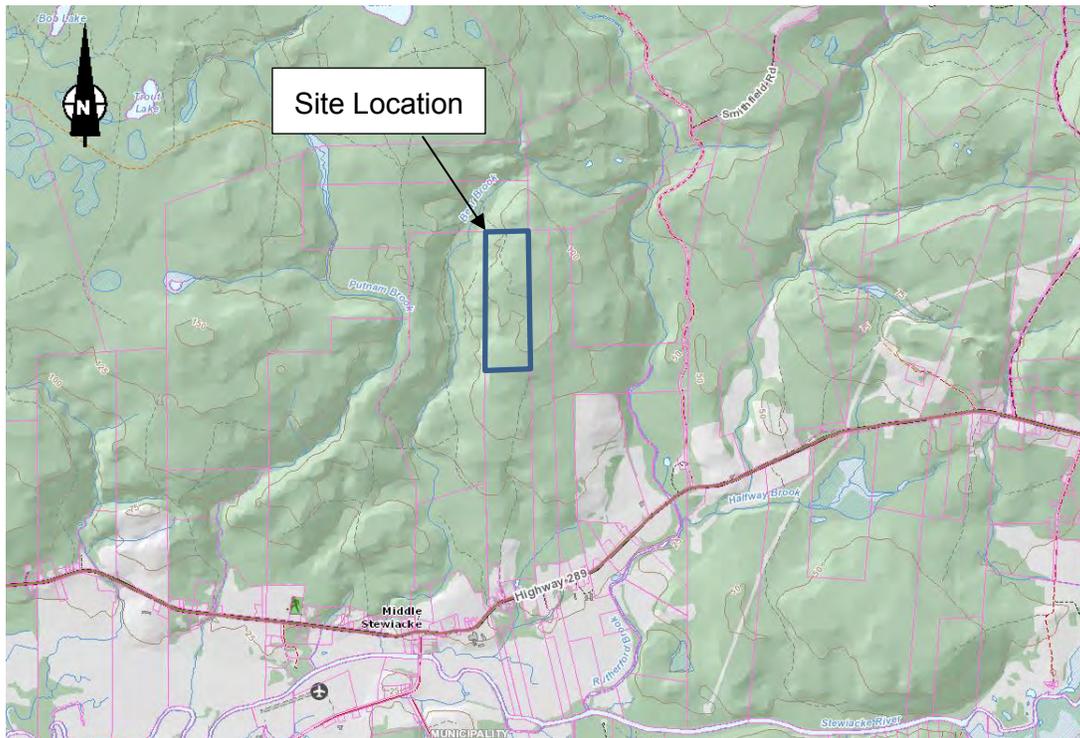
The purpose of the Plan is to provide a guide for the safe and efficient response to environmental emergencies. It applies to all activities which could result in an environmental emergency, and has the following specific objectives:

1. To ensure that the protection of human health and safety is of paramount importance in any environmental emergency response actions undertaken;
2. To establish an effective alerting and reporting procedure in the event of an environmental emergency on the property;
3. To identify expertise and resources which can and should be mobilized in the event of an environmental emergency; and
4. To specify roles and responsibilities.

1.3 Location

This contingency plan will be operated at the CCL waste disposal facility located on the north side of Highway 289 in Middle Stewiacke, NS and identified by Property Identification Number 20436325. A site location plan is provided in Figure 1-1. A site operations plan is provided in Appendix A.

Figure 1-1 Site Location Map, Parcel CC Highway 289, Middle Stewiacke, NS



1.4 Activities

The CCL waste disposal facility accepts C&D waste and asbestos waste generated by the construction industry in the local area and surrounding counties. These wastes are disposed of in clay lined waste cells. Various parts of the site have been logged, or have been used as C&D cells, which have subsequently been capped and rehabilitated (now covered with low shrubs and herbaceous plants). The northern part of the site remains an active C&D disposal cell. The asbestos waste disposal cell(s) will be constructed, in a phased approach, near the center of the site on the south side of the access road.

2 Planning

2.1 Environmental Protection

CCL will comply with all applicable legislation including, but not limited to:

- ▶ Nova Scotia Environment Act and Regulations
- ▶ Canadian Environmental Act and Regulations
- ▶ Canadian Transportation of Dangerous Goods Act

CCL will obtain copies of all required permits or approvals, in accordance with the Activity Designation Regulations made under the Nova Scotia Environment Act and comply with all conditions specified in said permits and approvals.

Due to the site location and nature of operations, there is potential for encounters between site equipment, personnel and wildlife. There will be no deposition of food or other wastes that may attract birds and wildlife to the site. Operations personnel will be trained to recognize and avoid migratory birds that may occupy the site and made aware of possible interactions with wildlife.

There will be no fires and no burning of rubbish. Fire extinguishers will be maintained onsite. If a fire is encountered or an explosion occurs, the procedures detailed below will be followed:

- ▶ Guard against the effects of the explosion and check for potential of subsequent explosion before entering area;
- ▶ Check immediate area for injured individuals;
- ▶ Notify Response Team Leader, Fire Department, and other first responders as required;
- ▶ If a fire is small, use on-site emergency equipment as immediate action to contain or extinguish fire with certainty;
- ▶ Take direction from the fire department personnel; and
- ▶ Notify appropriate provincial departments as required (NSE, Labour, etc.).

Other than those activities included in the NSE *Approval*, there will be no burying of rubbish or waste materials on-site. There will be no disposal of solid waste, liquid waste or volatile materials, such as mineral spirits, oils or paint thinners on, or in the ground, in waterways, or in waste disposal cells.

Site specific erosion and sediment control measures will be enacted throughout the life of the project. Erosion and sediment control devices may include, but not be limited to, siltation fences, sedimentation ponds, diversion ditches, check dams, and sedimentation blankets or suitable (equivalent result) alternatives. These devices will control the diversion, run-off and disposal of drainage water in a manner that prevents unacceptable concentrations of suspended solids or contaminants from entering waterways.

CCL will prevent dust generated by wind, construction equipment traffic, and operations. Dust control shall be maintained through best work practices including, but not limited to:

- ▶ Use water and/or other approved dust suppressants to reduce and manage dust levels. Oil, calcium chloride, magnesium chloride, or other chemical dust suppressants will not be used for dust suppression;
- ▶ Maintain and upgrade access roads as required;
- ▶ Control vehicle speed on the site to control dust;
- ▶ Maintain the equipment in good working condition;
- ▶ Use properly sized and maintained equipment; idling of equipment and vehicles will be kept to a minimum;
- ▶ Re-vegetate exposed areas as soon as practical; and
- ▶ Post a sign indicating proponent contact information in case of concern or complaint.

CCL will prevent other types of pollution through:

- ▶ Best work practices; and
- ▶ Contingency planning.

Best work practices include, but are not limited to:

- ▶ Restricting site access to authorized, trained and safety-oriented personnel;
- ▶ Supplying appropriate personal protective equipment to personnel;
- ▶ Maintaining all equipment in good working order;
- ▶ Maintaining chemical and petroleum storage in well ventilated, clearly labeled storage areas in accordance with applicable Federal and Provincial standards and codes of practice; and
- ▶ Identifying and properly planning for other types of potential contamination such as acidified runoff from sulphide bearing rock and subsurface chemical contaminants such as petroleum hydrocarbons, ammonia gas, etc.

2.2 Contingency Planning

Environmental Contingency Planning consists of identifying potential hazards and preparing a response plan to deal with hazards as they arise.

2.2.1 Hazard Assessment

Hazardous products which can reasonably be expected to be present at the site include:

- ▶ Petroleum, oil and lubricants (POL) associated with site machinery/equipment;

- ▶ Asbestos waste brought to the site for disposal; and
- ▶ Hazardous wastes and products brought to the site through the C&D stream, but not accepted for disposal.

Typical types of emergencies that could occur at the facility include:

- ▶ Spillage or leakage of POLs;
- ▶ Release of friable asbestos containing materials;
- ▶ Accidents

2.2.1.1 Spills or Leaks of POLs

POL present on the site includes diesel fuel used to refuel site equipment and other POLs used in maintenance of site equipment.

Due to the requirement to use fuel and lubricant containing equipment at the facility, there is potential for spills to occur on land or in stormwater or ESC measures that eventually discharge to a freshwater system. Spills on land can be controlled with quick response by hand or heavy excavation equipment by excavating contaminated solids (soils) from the ground and placing it in controlled storage (e.g. sealable drum) for appropriate off-site disposal. Spills in surface water can be more difficult to control and, as such, their prevention is very important.

To prevent spills:

- ▶ Equipment should be maintained in good working order. Regular inspections should be made of machinery hydraulic systems, with all leaks repaired immediately upon detection.
- ▶ No equipment maintenance or service involving POLs shall take place within 30m of surface water, stormwater or ESC measures.
- ▶ No equipment fuelling shall take place within 30m of surface water, stormwater or ESC measures.
- ▶ Fuelling and lubrication shall take place in a designated area a minimum of 30m from surface water, stormwater or ESC measures.
- ▶ Waste chemicals and lubricants shall be retained in a tank or closed container for eventual off-site recycling or disposal. Waste solvents and oils should be stored separately.
- ▶ Oily and greasy rags or other waste materials prone to combustion shall be stored in a closed receptacle and removed from the site regularly for appropriate disposal.

To mitigate spills:

- ▶ A supply of hand excavation equipment (shovels, picks, etc.) and a spill containment kit (absorbent pads, booms and materials, buckets, tarpaulins, an empty drum) shall be maintained on-site at all times.
- ▶ Personnel shall be trained in the use of the various spill containment materials.

2.2.1.2 Release of Friable Asbestos

Asbestos waste received at the site must be packaged in accordance with the NSE *Asbestos Waste Management Regulations*, must be accompanied by a shipping document as outlined in the *Transportation of Dangerous Goods Act (Canada)*, and must be transported in vehicles carrying only asbestos waste. If these conditions are not met, the shipment will be rejected.

The facility will have on hand at all times:

- ▶ Shovel;
- ▶ Broom;
- ▶ Personal respiratory equipment;
- ▶ Protective clothing adequate to protect staff present at the facility from any harmful effects which asbestos waste may have on human life or health; and
- ▶ A supply of wetting agent (water in portable sprayer) and plastic bags sufficient to enable any required repackaging of damaged Asbestos Waste.

All employees that handle or store Asbestos Waste, supervise the disposal of Asbestos Waste, or operate equipment to bury Asbestos Waste will wear protective clothing and personal respiratory equipment at all times.

In the event that asbestos waste packaging is damaged either upon receipt or during site activities, the packaging or containers will be immediately repaired, replaced or repackaged. All employees involved in the handling, storing, or disposal of asbestos waste will attend asbestos awareness training that will include procedures for the safe handling and repackaging of damaged packages. Repackaging procedures will include:

- ▶ Spray asbestos material with water, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion. In the event that there is insufficient water on site, arrange for a water truck to bring additional water to the site;
- ▶ Pack material in sealable plastic bags 0.15 mm minimum thick, and seal plastic bag;
- ▶ Place sealed bag inside a second plastic bag (0.15 mm minimum thick) and seal second bag;
- ▶ Clean up all spilled asbestos material, dust and waste using wet mopping and dispose in double sealed bags (0.15mm minimum thick); and
- ▶ Place all disposal PPE in double sealed bags (0.15mm minimum thick).

The site is surrounded by uninhabited woods which provide a wide buffer zone for settling of asbestos fibres or asbestos dust prior to reaching the surrounding properties.

2.2.1.3 Other Hazardous Waste

Materials not accepted for C&D waste disposal (See list of accepted materials, Appendix B), could be present in loads of C&D waste delivered to the site. Site personnel are trained in the identification of materials not accepted for C&D waste. When identified in preliminary screening, these loads will be rejected. No industrial waste or municipal solid waste will be accepted.

If discovered after unloading, the materials will be segregated and handled as outlined below.

- ▶ If unacceptable non-hazardous materials are encountered, they will be segregated, as appropriate, into streams (i.e. MSW, recyclables, etc.) for off-site disposal;
- ▶ If C&D materials are suspected of containing lead-based paint or asbestos, 3rd party laboratory testing will be required. If these materials are identified upon inspection and no results are available, the material will either be segregated (for later return to generator) or the shipment rejected;
- ▶ If hazardous materials are encountered during C&D placement (such as PCBs, lead, asbestos, oil storage tanks, etc.), these materials will be segregated and stored in accordance with NSE *Dangerous Goods Management Regulations*, and disposed at an approved facility; and
- ▶ Records (material, quantity, etc.) will be kept for reporting purposes.

2.2.1.4 Accidents

All operators will be qualified to use machinery at the facility to prevent equipment accidents.

Medical emergencies may take the form of a work-related injury or a medical condition. In the event of such an emergency, the work in the affected area will stop. The emergency response/treatment personnel and the nearest supervisor will converge at the area and employees not involved in the response will move to a safe location. The incident will be evaluated by the emergency personnel, who will implement the necessary action.

In case of a serious accident, determine the severity of injury and whether individual can be moved to safety, if in imminent danger. In accordance with CCL's health and safety procedures, a qualified person will administer first-aid if necessary and emergency services will be contacted through 911. CCL's Site Superintendent will be contacted. Transportation to the nearest hospital will be arranged if necessary. The route to medical care is established to ensure that any injured person can receive medical care as quickly as possible.

First aid kits will be maintained onsite. Any accidents or injuries will be reported in accordance with CCL's Health and Safety Plan and all required provincial legislation.

2.3 Resources

CCL has construction equipment that is used in its operations. This equipment can be used to clean up spills and detain surface water. Spill kits and oil absorbents are also kept on site.

Fire extinguishers and first aid kits are kept on-site at all times.

CCL has an experienced workforce that is able to respond to most emergencies that can reasonably be expected to occur on site. Employees are familiar with the processes at the facility, have been trained in accordance with the Health and Safety program, and have received asbestos awareness training.

Englobe is CCL's environmental consultant and is available to organize and manage remedial efforts once a response plan has been initiated.

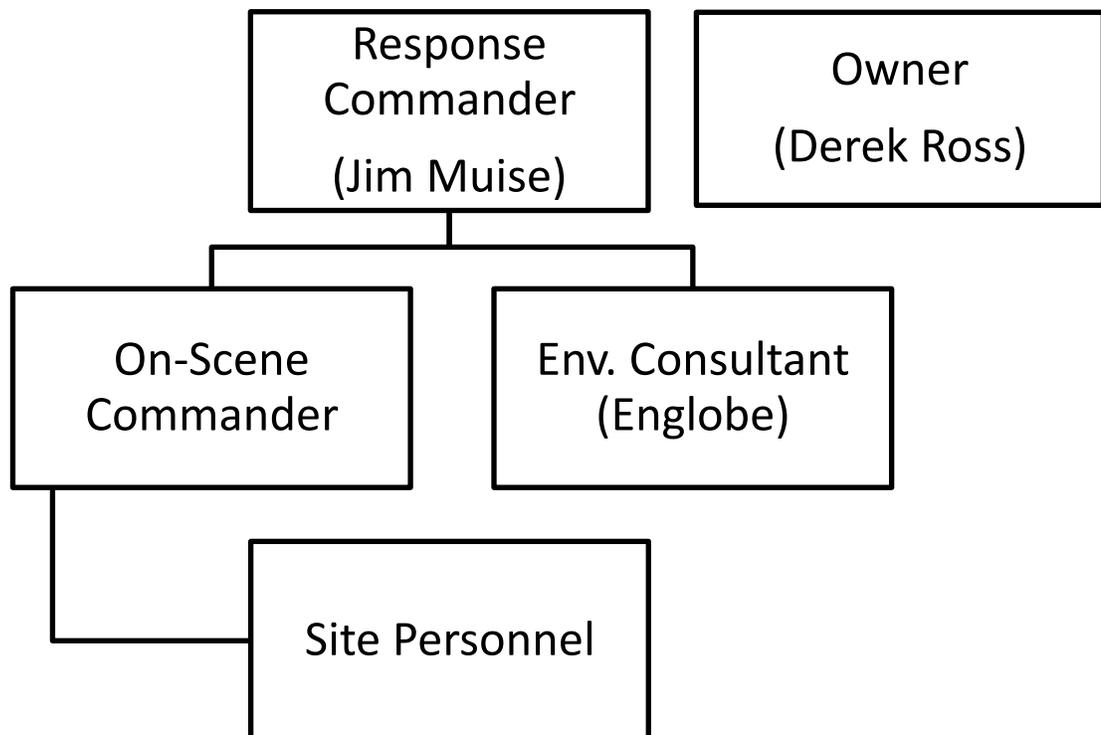
2.4 Roles and Responsibilities

In the event of an environmental emergency at the facility, the first person on scene is the initial link in the response organization. This person should immediately contact Jim Muise (Response Commander) and report the incident. If it is safe to do so, the person should approach the area and determine if initial actions can be taken to stop the source of the emergency. If the source can be stopped, the person should take appropriate actions to do so and then wait for directions from the Response Commander. An initial assessment of every emergency situation will be conducted by the Response Commander, who will decide how the Plan must be implemented.

CCL will provide the planning, the basis for training, and administration necessary for effective and efficient response to an environmental emergency. This section describes the functions and responsibilities of the key elements of the response organization, namely:

- ▶ The Response Commander – the person in charge of the emergency response with authority over response operations at the site;
- ▶ The spill/release cleanup team – those personnel who will respond to the spill/release under the direction of the Response Commander; and
- ▶ Emergency Response Services – external services including fire, police, etc.

The members of CCL's Environmental Response Organization are identified in the organizational chart below, and their respective responsibilities are described in the following table.



TITLE	SPECIFIC RESPONSIBILITIES
Owner	<ul style="list-style-type: none"> • Define priorities • Allocate resources • Evaluate performance, outcomes and effectiveness
Response Commander	<ul style="list-style-type: none"> • Receive initial reports and conduct initial assessment • Assume on-site command, or delegate responsibility • Notify First Responders (if necessary) of details of emergency • Notify Environmental Consultant • Ensure that environmental regulatory agencies are notified via the 1-800-565-1633 reporting number • Liaise with regulatory agencies, as required • Prepare response report (if required) • Maintain the Contingency Plan
On-Scene Commander	<ul style="list-style-type: none"> • Direct spill response operations • Evaluate spill situation and determine appropriate Incident Specific Procedures • Ensure the Contingency Plan is well known to all appropriate personnel • Coordinate access to the spill/release site and provide security • Organize response crews • Monitor work crews for signs of stress and/or fatigue • Monitor on-site safety conditions and identifies hazards • Coordinate emergency medical care when required • Take all necessary action to stabilize spill/release and prevent migration of contaminants • Arrange for collection of any required samples
Environmental Consultant	<ul style="list-style-type: none"> • Report to Response Commander • Provide advice on the design and implementation of the site work plan • Advise on potential environmental impacts and appropriate mitigation measures
Site personnel	<ul style="list-style-type: none"> • Safely complete the onsite tasks • Comply with all personnel safety requirements • Notify On-Scene Commander of any onsite hazards, problems, or concerns • Immediately report details of emergency to Response Commander • Assess if initial actions can be taken to stop the source of the spill/release • Carry out appropriate actions to stop spill/release, if safe to do so

In the event of an emergency, the emergency response command center would be established at the facility's scale and Derek Ross (owner) would act as public relations spokesperson for the company. CCL will liaise with all regulatory and emergency responders,

and in conjunction with regulatory bodies, identify any affected members of the general public. Media updates may be required and, if so, will be regularly prepared by the spokesperson noted above, and may include information regarding:

- ▶ The type of product spilled/released;
- ▶ Volume of product spilled/released;
- ▶ Areas affected and the degree of impact (i.e. soil contamination, vegetation damage, impact on drinking water resources, etc.);
- ▶ Response activities underway;
- ▶ Anticipated time to conclude response activities; and
- ▶ Where the public can obtain additional information.

2.5 Implementation and Operation

2.5.1 Activation and Notification

These general procedures would be completed in any environmental emergency, in the order they are presented. It must be recognized, however, that for some minor events, some of these steps may be combined or even omitted. These actions, with the exception of discovery and notification, would all be undertaken on the advice of the On-Scene Commander.

In the case of accidental release or spill, the site personnel will contact the Response Commander. In the event that the Response Commander is not available, the most senior site personnel will contact the owner. The Response Commander will report the spill/release to the Environmental Emergencies Reporting System operated within the Province.

All activation procedures are operational 24 hours per day. All employees will be instructed regarding procedures to follow in the event of an accident of spill/release. Employees will immediately contact ambulance, fire, or police in the case of personnel injury, fire, or other such emergency. A list of emergency contact numbers is attached in Appendix C.

2.5.2 Response Procedure

Upon discovery of a spill/release the Response Commander must be notified.

If it is safe to do so, approach the area from upwind and determine if initial actions can be taken to stop the source of the spill/release. It is also necessary at this time to secure the area so that unauthorized personnel and equipment are kept out of the contaminated zone. In the case of released asbestos containing materials, any person in the vicinity of the released materials must wear protective clothing and personal respiratory equipment.

Information on the hazards of the material spilled/released should be determined. This would include estimating volumes spilled/released; the potential for fire, health and/or environmental damage; assessing the anticipated movement of the spill/release and assessing weather conditions.

Under the direction of the On-Scene Commander, undertake measures to contain the hazard, by confining the spread of the material spilled/released and preventing its egress into any avenue by which the spill could leave the site or enter the soil, surface water and/or groundwater.

Recover any pooled or deposited product and remove all visibly contaminated soil and debris.

2.5.3 Rehabilitation and Disposal

Clean up of spills/releases would be undertaken by either internal resources or licensed and insured external contractors. Disposal of spilled product and contaminated soil/water would occur at a site approved by NSE. Disposal of released asbestos containing materials would take place on-site, after repackaging or repair of original packaging, in an asbestos waste disposal cell.

Site restoration would include removal or treatment of impacted soil or water under the supervision of an environmental consultant that is a recognized by NSE as a Site Professional. A report will be provided to the Response Commander, following the reporting procedure requirements established in the NSE *Contingency Planning Guidelines*.

2.6 Administration

2.6.1 Training

To ensure a positive, competent response to environmental emergencies, appropriate training of personnel who will be involved in environmental emergency response is essential. Every employee identified in the plan will be trained in the policy and procedures for responding to environmental emergencies at the facility. In addition, they will be thoroughly trained and/or qualified in their respective roles as identified in the plan.

The training will be provided:

- ▶ For new employees during their orientation period (this will involve only the fundamentals of the emergency response regime or more detailed and specific training, depending upon the duties of the employee);
- ▶ For existing employees whose duties change;
- ▶ When new emergency equipment or materials are obtained;
- ▶ When emergency procedures are updated and/or revised; and
- ▶ When the results of an emergency exercise indicate a need for change and improvement.

2.6.2 Exercises

Desktop testing will be conducted on an annual basis in conjunction with routine safety training activities. The training will test the Contingency Plan to evaluate:

- ▶ The practicality of the plan with respect to structure and organization;
- ▶ The adequacy of emergency personnel response and training;
- ▶ The effectiveness of emergency response equipment; and
- ▶ Improvements needed to the plan.

Records will be kept indicating the date of testing and any external groups involved.

2.7 Updates

The Plan will be kept current through regular review (annually – to coincide with exercises). The Revision and Publication Register will be updated with each revision.

Appendix A Site Plan

Appendix B List of Acceptable Materials

Material which Do Not Require Approved C&D Site for Disposal	Material which Do Require Approved C&D Site for Disposal	Material which Can Not Be Accepted at C&D Site for Disposal- Must be Recycled or Disposed at an Approved Facility
rock	Creosote timbers	materials banned from disposal in order that they be reused or recycled
aggregate	pressure treated wood	caulking tubes
soil	laminated wood	paint cans (full or empty)
bricks	plywood	other adhesive containers
mortar	built-up glued wood sections	white goods- washers, dryers, water heaters, stoves, furnaces, fridges etc.
concrete (free of reinforced steel)	particle or chip board	furniture
asphalt pavement	painted wood	mattresses
porcelain / ceramic material	sawdust / wood chips	curtains and other textiles
trees	gypsum board	air handling units
brush	metals	fuel tanks_
limbs	plastic / vinyl building materials	large electrical components- capacitors, transformers, switching gear, motor control centres
stumps	insulation- fiberglass, styrofoam and other	waste dangerous goods
root balls	shingles- asphalt and other	
organic mat	build up roofing	
milled woods free of adhesives, coatings or preservatives	carpeting	
	vinyl flooring and linoleum	
	ceiling tiles	
	wiring	
	nails	
	metal joiners, frames and structural components	
	light fixtures	
	piping	

Appendix C Contact List

COLCHESTER CONTAINERS LIMITED
LIST OF EMERGENCY RESPONSE CONTACTS
March 2019

COMPANY/AGENCY	LOCATION / CONTACT	PHONE NUMBER(S)
OWNER REPRESENTATIVE	Derek Ross	Work: 902-479-0344 Cell: 902-830-1133
RESPONSE COMMANDER (EMERGENCY RESPONSE)	Jim Muise	Work: 902-893-9429 Cell: 902-890-6370
ENVIRONMENTAL EMERGENCIES REPORTING CENTRE		1-800-565-1633
EMERGENCY MEASURES ORGANIZATION (24 HOURS)		1-902-424-5620
DEPARTMENT OF LABOUR (24 HOURS)		1-800-952-2687 (1-800-9LABOUR)
ENVIRONMENTAL EMERGENCIES		1-800-565-1633
FORESTRY – FOREST, FIRE, & GAME INFRACTIONS		1-800-565-2224
FIRE	Town of Stewiacke	911
AMBULANCE	Truro	911
POLICE/RCMP	Truro	911
HOSPITALS		
Middle Musquodoboit:	Musquodoboit Valley Memorial Hospital	902-384-2220
Truro:	Colchester East Hants Health Centre	902-893-4321
POISON CONTROL	IWK Regional Poison Centre	1-800-565-8161 (within NS)
POWER COMPANY	Nova Scotia Power Corp.	902-428-6230
TERRAPURE ENVIRONMENTAL (DARTMOUTH)		902-481-8008
CLEANEARTH TECHNOLOGIES (ENFIELD)		902-835-9095
ENVIROSOIL		902-835-3381
CONSTRUCTION SAFETY NOVA SCOTIA		902-468-6696 1-800-971-3888
ENVIRONMENTAL CONSULTANT	Englobe (Aven Cole)	902-468-6486