



www.compostquality.ca

# SUMMARY OF ANALYSIS REPORT

To: City of Edmonton  
13111 Meridian Street  
Edmonton, Alberta T6S 1G9

CQA Member#: 06-3000

Attention: Jenn Chiang

Sample I.D.: 18HORT02

Report#: C18073-10032  
C18073-70028

Sample Date:  
Reported Date: 2018-3-23

Compost to be Manufacture in: Alberta  
Feedstock: *Municipal Biosolids, Woodchips*

## CQA COMPOST QUALITY & VALUE TESTING PARAMETERS REPORT

SAMPLE ID	RECOMMENDED END USE/MARKET
18HORT02	Category B
Regulatory	See Appendix I
Product Quality	See Appendix II
Product Value/ Soil Suitability*	See Appendix III (Soil, Enviro, Manure Compost)

The Compost Quality Alliance (CQA) is a voluntary quality monitoring program established by the Compost Council of Canada and the compost producers utilizing recognized standardized testing methodologies and uniform operating protocols to provide customer assurance in compost selection its use, and proper end-use utilization.

All analysis of this compost product was conducted and provided by A&L Canada Laboratories Inc. for the Compost Quality Alliance (CQA).

Haifeng Song, Senior Chemist

Ian McLachlin, Vice-President



A&L Canada Laboratories Inc.  
London, Ontario Canada  
(519) 457-2575

A proud member of



\*PLEASE NOTE: Major Nutrients under the Fertilizer Act and Regulations (CFIA)

Please see Appendix III for nutrient content (of impact to claims and labelling if used in declarations).

Compost is classified in Schedule II as a supplement, and as such nutrient guarantees are not mandatory. However, if any claims are made regarding nutritional value of the product, such as for composted manure, the product would then be classified as a supplement and a fertilizer, and the label would have to include the guarantees for the major nutrients. The guarantees for the major nutrients include the minimum amounts of Total Nitrogen (N), Available Phosphoric Acid (P2O5) and Soluble Potash K2O. Source: T-4-120 - Regulation of Compost under the Fertilizers Act and Regulations. <http://www.inspection.gc.ca/plants/fertilizers/trade-memoranda/t-4-120/eng/1307910204607/1307910352783>



Appendix I



CCME Guidelines 2005 & CFIA Fertilizer Act & Regulations:

Alberta, Manitoba, New Brunswick, Nova Scotia, Newfoundland, Prince Edward Island & Territories

A. Maximum Concentrations for Trace Metals in Compost:

Trace Elements	Test Results (ug/g)	Category A	Category B
		Maximum Concentration within Product (mg/kg dry weight)	
Arsenic (As)	6.78	13	75
Cadmium (Cd)	3.25	3	20
Chromium (Cr)	119.10	210	**
Cobalt (Co)	4.98	34	150
Copper (Cu)	328.95	400	**
Lead (Pb)	45.35	150	500
Mercury (Hg)	0.96	0.8	5
Molybdenum (Mo)	8.70	5	20
Nickel (Ni)	30.11	62	180
Selenium (Se)	2.72	2	14
Zinc (Zn)	455.25	700	1850

\*\* Upper limits are not established in the Trade Memorandum.

B. Foreign Matter in Compost:

Test Results		Category A	Category B
<b>Foreign Matter</b>		Contains no more than 1 piece of foreign matter >25mm/500ml	Contains no more than 2 pieces of foreign matter > 25mm/500mL
Pieces >25mm/500mL	0		
<b>Sharp Foreign Matter</b>		No sharp foreign matter >3mm per 500ml	No more than 3 pieces of sharp matter < 12.5mm/500mL  Note: This compost shall not be used in pastures, parks, or residential
Pieces > 3mm/500mL	0		
Pieces > 12.5mm/500mL	0		

C. Maturity/Stability:

Method	Test Results	Required Limits
CO <sub>2</sub> Respiration Rate CO <sub>2</sub> Respiration Rate	1.70	≤ 4 mg of carbon in the form of carbon dioxide per gram of organic matter per day
O <sub>2</sub> Uptake Respiration Rate O <sub>2</sub> Uptake Respiration Rate		≤ 400 mg oxygen/kg of volatile solids (or organic matter)/hour

D. Pathogens:

Pathogen	Test Results	Required Limits
Fecal Coliform (MPN/g dry)	<3	<1000 MPN/g of total solids calculated on a dry weight basis
Salmonella (P-A/25g(ml))	NEGATIVE	<3 MPN/4g total solids calculated on a dry weight basis

The following references are from the CCME guidelines (PN1340), October 2005

\*BDL = Below Detectable Limits

E. CFIA

Parameter	Test Results
Total Organic Matter (%)	45.33%
Moisture (%)	36.92%

All analysis conducted and prepared by:

A L Canada Laboratories

2136 Jetstream Rd London, Ontario N5V 3P5 (519) 457-2575



## Appendix II Finished Compost Quality



Parameter	Test Results
pH	5.4
Carbon to Nitrogen Ratio	12:1
Particle Size/Texture (inch)+	1/4 Inch
Soluble Salts (ms/cm)	6.8
Sodium Base Saturation (%Na)	2.53%
<b>Major Nutrients</b>	
Available Potassium (%K)	5.68%
Available Magnesium (%Mg)	24.74%
Available Calcium (%Ca)	61.99%

+ Majority of sample passes through this sieve size

### Reference Compost Quality Parameters for CQA

Use	pH	C:N	Moisture	Particle Size	Soluble Salts	%Na
Remediation	5.8-8.5	10-40	NA	<2 in	<20	<3%
Soil Amendment	5.8-8.5	10-30	NA	<1/2 in	<6	<2%
Landscaping	5.8-8.5	12-22	<50%	<1/2 in	<5	<2%
Planting Media	5.5-7.8	12-22	<50%	<1/2 in	<4	<2%
Turf Establishment & Topdressing	5.5-7.8	12-22	<50%	<3/8 in	<3	<1%
Greenhouse Seeding	6-7	12-22	<25%	<1/4 in	<2	<0.5%
Greenhouse Establishment	6-7	12-22	<30%	<1/2 in	2-3.5	<0.5%
Field Nursery	5.8-8	10-30	<50%	<1/2 in	<3.5	<1%
Agricultural Soil Amendments	6-8	10-30	<50%	<1/2 in	<20	<1%
Potting Soil	5.5-7.2	12-22	<50%	<1/4 in	<2	<1%

These are examples of some of the many end uses suitable for compost

Unrestricted Use: Category A - Compost that can be used in any application, such as agricultural lands, residential gardens, horticultural operations, the nursery industry, and other businesses. Category A criteria for trace elements are achievable using best source separated MSW feedstock, municipal biosolids, pulp and paper mill biosolids, or manure.

Restricted Use: Category B - Compost that has a restricted use because of the presence of sharp foreign matter or higher trace element content. Category B compost may require additional control when deemed necessary by a province or territory.

Note: For a compost to meet the unrestricted use category, it must meet the unrestricted (Category A) requirements for all trace elements and sharp foreign matter. If the compost fails one criterion of the guideline for unrestricted use but meets the criteria for restricted (Category B) use, then it is classified as a Category B product. Products that do not meet the criteria for either Category A or B must be used or disposed of appropriately.



**Appendix III**  
**Compost Agricultural Product Value**  
on as is basis



Agricultural End-Use	Analysis Result	Unit	Quantity in lbs/Ton
<b>Physical Parameters</b>			
Dry Matter	63.08%	%	
pH	5.4		
Bulk Density	550	kg/m3	
C:N Ratio	12:1		
<b>Fertilizer Equivalent Minerals</b>			
Nitrogen Total	2.10%	%	42.0
Ammonium Nitrogen	989.69	ppm	1.98
Total Phosphate (P as P2O5)	2.44%	%	48.8
Total Potash (K as K2O)	0.30%	%	6.0
Calcium	1.88%	%	37.6
Magnesium	0.35%	%	7.0
Sulfur	4276.82	ppm	8.6

The Compost Quality Assurance program goes beyond the provincial requirements to establish full value and appropriate end-use. The Compost Report and Compost End-use table in Appendix II, has 10 different compost application uses from soil remediation, through to potting soil blends. Of note are available soluble salt limits and the percent available sodium for sensitive plants. Appendix III, lists the primary agricultural use parameters and quantitative nutrient content that reflects this compost samples agricultural end-use, and application value. This value includes macro and micro nutrients, soil building properties such as the addition of organic matter, increasing moisture holding capacity, and the soils slow release nutrients. These parameters improve beneficial soil health components soil structure and stability.

The results of our testing on this sample indicates that this product is a fine textured, mature compost (100%+ 1/4 in.), with rich mineral properties, which would meet criteria for agricultural soil amendment, blending and topdressing end-uses purposes. The C:N ratio 12:1 from Appendix II, on the soil suitability report indicates a low C:N ratio and indicating good nitrogen availability. The low C:N ratio in conjunction with the higher total nitrogen content listed in Appendix III indicates early high available nitrogen levels, and should be considered for crop planning.

The proportion of available sodium (% Na), which if used in too heavy a proportion could cause some problems with sensitive species. The sodium levels of this compost sample though high, is suitable for agricultural broadcast field applications and are made to improve the organic matter level and major nutrients phosphorus, potassium and magnesium levels. The compost is also rich in available calcium, sulfur, and iron, which make it ideal for soil enriching, and amendment. We recommend blending this material at a minimum of 2-3 parts soil blended to each part of this compost to dilute the sodium concentration.

Major Nutrients - Compost is classified in Schedule II (CFIA Fertilizer Act & Regulations) as a supplement, and as such, nutrient guarantees are not mandatory. However, if any claims are made regarding nutritional value of the product, such as for composted manure, the product would then be classified as a supplement and a fertilizer, and label would have to include the guarantees for the major nutrients. The guarantees for the major nutrients include the minimum amounts of Total Nitrogen (N), Available Phosphoric Acid (P2O5) and Soluble Potash (K2O).

Report Number: C18073-10032  
 Account Number: 00896

# A & L Canada Laboratories Inc.

2136 Jetstream Road, London, Ontario, N5V 3P5  
 Telephone: (519) 457-2575 Fax: (519) 457-2664



C18073-10032



To: CITY OF EDMONTON  
 13111 MERIDIAN STREET  
 SITE 310  
 EDMONTON, AB T6S 1G9  
 Attn: JENN CHIANG  
 780-496-5668

For: 18HORT02

P.O. Number: D930953

Reported Date:  
 Printed Date: Mar 23, 2018

## COMPOST REPORT

Page: 1 / 1

Sample Number	Lab Number	pH	Lime Index	Available Organic Matter %	Phosphorus P ppm	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm
18HORT02	25934	5.4	5.7	40.8	4440	1578	2142	8828

Sulfur S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Sodium Na ppm	Nitrate-N NO3-N ppm	Soluble Salt ms/cm	Nitrogen (Total) (%)	Moisture %
2838	127.4	57	238	9.1	5.6	414	2608	6.8	2.10	

### INTERPRETATION

CEC		Percent Base Saturation				Proportional Equivalents (meq)				Cation Ratio		C/N Ratio
meq/100g	% BS	% K	% Mg	% Ca	% Na	K	Mg	Ca	Na	Mg/K	Ca/Mg	
71.2	94.9	5.68	24.74	61.99	2.53	4.05	17.62	44.14	1.80	4:1	3:1	
Optimum Range:		3 - 5	8 - 20	60 - 80		0.5 - 1.3				7:1	5:1	

### CQA

\* Results reported on a dry weight basis.

**The results of this report relate to the sample submitted and analyzed.**

\* Crop yield is influenced by a number of factors in addition to soil fertility.

**No guarantee or warranty concerning crop performance is made by A & L.**

A&L Canada Laboratories Inc. is accredited by the Standards Council of Canada for specific tests as listed on www.scc.ca and by the Canadian Association for Laboratory Accreditation as listed on www.cala.ca  
 Additional information available upon request

Results Authorized By:

Ian McLachlin, Vice President

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REPORT NUMBER: C18073-10032  
ACCOUNT NUMBER: 00896

## REPORT OF ANALYSIS

TO: CITY OF EDMONTON  
13111 MERIDIAN STREET  
SITE 310  
EDMONTON, AB T6S 1G9  
CANADA

RE: 18HORT02

CQA1800152

DATE RECEIVED: 2018-03-14  
DATE REPORTED: 2018-03-23  
PAGE: 1 / 1  
P.O. NUMBER: D930953

Attn: JENN CHIANG

LAB NO.	SAMPLE ID	ANALYSIS	RESULT	UNIT	METHOD
25934	18HORT02	Nitrogen (Total)	2.1	%	TMECC.04.02-D



C18073-10032

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C18073-70028

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TO: CITY OF EDMONTON  
13111 MERIDIAN STREET  
SITE 310  
EDMONTON, AB T6S 1G9  
Canada

FOR: 18-HORT-02

ATTN: Jenn Chiang

Phone: 780-496-5403  
Fax: 780-496-5668

## CERTIFICATE OF ANALYSIS

PAGE: 1 / 4

PROJECT NO:

PO#: D930953  
LAB NUMBER: 737052  
SAMPLE ID: 18-HORT-02

SAMPLE MATRIX: COMPOST  
DATE SAMPLED: 2018-03-06  
DATE RECEIVED: 2018-03-14  
DATE REPORTED: 2018-03-22  
DATE PRINTED: 2018-03-23

PARAMETER	Result	UNIT	DETECTION LIMIT	METHOD REFERENCE
Arsenic	6.78	ug/g	1.00	EPA 3050/6010 (mod) *
Cadmium	3.25	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)*
Cobalt	4.98	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)
Chromium	119.10	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)*
Copper	328.95	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)
Mercury	0.96	ug/g	0.10	EPA 7471 *
Molybdenum	8.7	ug/g	1.0	TMECC.04.06; EPA 3050/6010(mod)*
Nickel	30.11	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)
Lead	45.35	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)
Selenium	2.72	ug/g	1.00	EPA 3050/6010 (mod) *
Zinc	455.25	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)

\* - accredited test

BDL - Below detectable levels

The results of this report relate to the sample submitted and analyzed.



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DATE RECEIVED:2018-03-14  
DATE REPORTED:2018-03-22  
DATE PRINTED:2018-03-23

PARAMETER	Result	UNIT	DETECTION LIMIT	METHOD REFERENCE
E. coli	6	MPN/g dry	3	TMECC 07.01
Salmonella spp.	NEGATIVE	P-A/ 25.0g(ml)	1 CFU	MFLP-75 *
Fecal Coliform	<3	MPN/g dry	3	TMECC 07.01
Total sharps > 2.8 mm*	0	pieces/500ml		TMECC 03.08
Total sharps > 12.5 mm	0	pieces/500ml		TMECC 03.08
Total FM > 2.8 mm*	BDL*	%	0.01	TMECC 03.08
Total FM > 25 mm	0	pieces/500ml		TMECC 03.08
Total plastics > 2.8 mm*	BDL*	%	0.01	TMECC 03.08
Total Organic Matter	45.33	%	0.01	LOI@550C
Moisture	36.92	%	0.10	TMECC.03.09-A
C : N Ratio	12 : 1			TMECC.05.02-A
Sieve 2 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1/2 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 3/8 Inch (% Passing)	100.00	%	0.01	ASTMD422
Sieve 1/4 Inch (% Passing)	99.80	%	0.10	ASTMD422
Compost Stability Index	8	---		TMECC.05.08-B
Respiration-mgCO <sub>2</sub> -C/g OM/day	1.70	mgCO <sub>2</sub> -C/ gOM/day	0.01	TMECC.05.08-B
Respiration - mgCO <sub>2</sub> -C/g TS/day	0.90	mgCO <sub>2</sub> -C/ gTS/day	0.01	TMECC.05.08-B

Maturity Index: 8 - Inactive, highly matured compost, very well aged, possibly over-aged, like soil; no limitations for usage.

\* - accredited test

BDL - Below detectable levels

The results of this report relate to the sample submitted and analyzed.



C18073-70028

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Haifeng Song, Ph.D., C.Chem. Lab Director



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DATE RECEIVED: 2018-03-14  
DATE REPORTED: 2018-03-22  
DATE PRINTED: 2018-03-23

PARAMETER	Result Dry Weight	Result As Received	UNIT	DETECTION LIMIT	METHOD REFERENCE
Total Solids (as received)		63.08	%	0.10	Gravimetric
<b>Nitrogen &amp; Carbon</b>					
Total Organic Carbon	28.4400	28.44	%	0.10	Combustion
Total Organic Carbon	28.44	17.94	%	0.10	Combustion
NO3/NO2-N	2511.6	1584.3	ug/g	1.0	Automated Colormetric
Nitrogen (Insoluble)	1.84	1.16	%	0.10	Combustion
TKN	2.07	1.31	%	0.01	TMECC.04.02-A
Nitrogen (Total)	2.33	1.47	%	0.10	TMECC.04.02-D
Ammonia (NH3/NH4-N)	1568.94	989.69	ug/g	.01	Colourimetric
<b>Metals</b>					
Potassium	4009.50	2529.19	ug/g	5.00	TMECC.04.06
Total Potassium (as K2O)	0.48	0.30	%	0.05	ICP
Phosphorus	16900.00	10660.52	ug/g	5.00	TMECC.04.06 *
Total Phosphorus (as P2O5)	3.87	2.44	%	0.05	ICP
Aluminum	7535.00	4753.08	ug/g	5.00	TMECC.04.06 *
Boron	26.14	16.49	ug/g	1.00	TMECC.04.06
Calcium	2.98	1.88	%	0.01	TMECC.04.06
Iron	13115.00	8272.94	ug/g	5.00	TMECC.04.06 *
Magnesium	0.56	0.35	%	0.01	TMECC.04.06
Manganese	355.95	224.53	ug/g	1.00	TMECC.04.06
Sodium	0.12	0.08	%	0.01	TMECC.04.05 *
Sulphur	6780.00	4276.82	ug/g	5.00	TMECC.04.06 *
<b>Additional Parameters</b>					
Bulk Density (as Recieved)		550	kg/m3	10	Gravimetric
Phosphorus (Available P2O5)	3.54	2.23	%	0.05	TMECC.04.14
Potassium (Soluble K2O)	0.36	0.23	%	0.05	TMECC.04.14
Conductivity (@ 25 deg C)		6.25	ms/cm	0.02	Conductivity Meter

\* - accredited test

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