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Lab # 2725845 **Report of Analysis** Report Number: 17-283-4045

Account: 9027	KARLA WELDING LINCOLN SOLID WASTE OPERATIONS 5101 N 48TH ST LINCOLN NE 68504
Date Sampled:	2017-09-25
Date Received:	2017-09-26
Sample ID:	FALL 2016 COMPOSITE

Robert Ferris
Account Manager
402-829-9871

SAMPLE ANALYSIS

		Analysis (as rec'd)	Analysis (dry weight)	Total content, lbs per ton (as rec'd)
NUTRIENTS				
Nitrogen				
Total Nitrogen	%	1.45	2.47	29.0
Organic Nitrogen	%	1.43	2.44	28.6
Ammonium Nitrogen	%	0.001	0.002	----
Nitrate Nitrogen	%	0.02	0.03	0.4
Major and Secondary Nutrients				
Phosphorus	%	0.25	0.43	5.0
Phosphorus as P2O5	%	0.57	0.97	11.4
Potassium	%	1.08	1.84	21.6
Potassium as K2O	%	1.30	2.22	26.0
Sulfur	%	0.18	0.31	3.6
Calcium	%	2.29	3.91	45.8
Magnesium	%	0.34	0.58	6.8
Sodium	%	0.040	0.068	0.8
Micronutrients				
Iron	ppm	4680	7986	9.4
Manganese	ppm	202	345	0.4
Boron	ppm	< 100	----	----
OTHER PROPERTIES				
Moisture	%	41.40		
Total Solids	%	58.60		1172.0
Organic Matter	%	27.90	47.61	558.0
Ash	%	30.70	52.39	614.0
Total Carbon	%	15.06	25.70	
Chloride	%	0.22	0.38	
pH		7.9		
Conductivity 1:5 (Soluble Salts)	mS/cm	4.68		

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Lab # 2725845 **Biological & Physical Properties** Report Number: 17-283-4045

Account: 9027	KARLA WELDING LINCOLN SOLID WASTE OPERATIONS 5101 N 48TH ST LINCOLN NE 68504
Date Sampled:	2017-09-25
Date Received:	2017-09-26
Sample ID:	FALL 2016 COMPOSITE

Robert Ferris
Client Service Representative
402-829-9871

SAMPLE ANALYSIS

	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method
Biological Properties					
Germination	80		%	1	TMECC 05.05A
Germination Vigor	100		%	1	TMECC 05.05A
CO_2 OM Evolution	0.22		$mgCO_2$-C/gOM/day	0.01	TMECC 05.08B
CO_2 Solids Evolution	0.26		$mgCO_2$-C/gTS/day	0.01	TMECC 05.08B
Fecal Coliform		1	mpn/g	0.2	EPA 1681
Salmonella		< 0.01	mpn/4g	0.01	EPA 1682
Stability Rating	Stable		N/A	N/A	TMECC 05.08B
Physical Properties					
Bulk Density (Loose)	1180		lbs/cu yard	1	WT/VOL
Bulk Density (Packed)	1533		lbs/cu yard	1	WT/VOL
Film Plastics	n.d.		%	0.25	Microscopic
Glass Fragments	0.1		%	0.25	Microscopic
Hard Plastics	n.d.		%	0.25	Microscopic
Metal Fragment	n.d.		%	0.25	Microscopic
Sharps	absent		---	---	Microscopic
Max. Particle Length		2.0	inches	N/A	TMECC Sieve
Sieve % Passing 3"		100	%	0.01	TMECC Sieve
Sieve % Passing 2"		100	%	0.01	TMECC Sieve
Sieve % Passing 1.5"		100	%	0.01	TMECC Sieve
Sieve % Passing 1"		100	%	0.01	TMECC Sieve
Sieve % Passing 3/4"		100	%	0.01	TMECC Sieve
Sieve % Passing 5/8"		100	%	0.01	TMECC Sieve
Sieve % Passing 3/8"		100	%	0.01	TMECC Sieve
Sieve % Passing 1/4"		99	%	0.01	TMECC Sieve

Compost Results Interpretations

Page 1

Report #:	17-283-4045
DATE RECEIVED:	2017-09-26

Organic Matter %

27.90 As Received

47.61 Dry Weight

Greater than 20% indicates a desirable range for compost on a dry weight basis.

Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.

C/N Ratio

10.4:1

20-30 indicates an ideal range for the initial compost process.

10-20 indicates an ideal range for a finished compost.

All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.

Moisture %

41.40

<35% = Indicates overly dry compost

>55% = Indicates overly wet compost

Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.

Compost Results Interpretations

Page 2

Report #:	17-283-4045
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Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5
4.7

Conductivity Level	**Interpretation**
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations

Page 3

Report #: 17-283-4045

DATE RECEIVED: 2017-09-26

pH Value

7.9

0 to 14 scale with 6 to 8 as normal pH levels for compost

A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)

>10

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART

salt injury possible	*use on soils with excellent drainage characteristics, good water quality and low salts*				*you may use on soils with poor drainage, poor water quality, or high salts*					*for all soils*
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

5.67 Average Nutrient Content Dry Weight <2 = Low, >5 = High

1.5-0.5-1.5 Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

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LINCOLN SOLID WASTE OPERATIONS
KARLA WELDING
5101 N 48TH ST
LINCOLN NE 68504

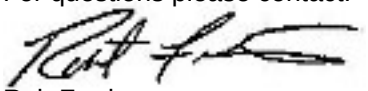
REPORT OF ANALYSIS

For: (9027) LINCOLN SOLID WASTE OPERATIONS
SAMPLE ANALYSIS

Analysis	Level Found As Received	Level Found Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Sample ID: **FALL 2016 COMPOSITE**	Lab Number: **2725845**		Date Sampled: **2017-09-25 0730**				
Cadmium (total)	0.65	1.11	mg/kg	0.50	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Chromium (total)	20.8	35.5	mg/kg	1.00	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Mercury (total)	n.d.	n.d.	mg/kg	0.05	EPA 7471	ccm2-2017/10/02	bab2-2017/10/09
Lead (total)	14.9	25.4	mg/kg	5.0	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Molybdenum (total)	1.1	1.9	mg/kg	1.0	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Nickel (total)	6.0	10.2	mg/kg	1.0	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Zinc (total)	73.2	124.9	mg/kg	2.0	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Copper (total)	24.0	41.0	mg/kg	1	EPA 6010	ras7-2017/09/28	bab2-2017/10/09
Arsenic (total)	3.28	5.60	mg/kg	0.5	EPA 6020	cjm4-2017/10/09	bab2-2017/10/09

EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.
n.d. = not detected , ppm = parts per million, ppm = mg/kg

For questions please contact:



Rob Ferris
Account Manager
rferris@midwestlabs.com (402)829-9871

CHAIN OF CUSTODY FORM

2725845-845 Samples: 1 Page: 1/1
Lora L Mikels 2017 09 26 11:40

CHAIN OF CUSTODY RECORD: YES ☑ NO ☐

ACCOUNT NUMBER

PURCHASE ORDER NUMBER 79179

Midwest Laboratories

CHAIN OF CUSTODY FORM

9/25/17

REPORT & BILL TO		IDENTIFICATION	COPY TO	
Name	Karla Welding	City of Lincoln	Name	
Address	~~2400 Theresa St~~ 5101 N 48th	Solid Waste Operations	Address	
City, State	Lincoln Ne	Phone (402) 441-7867	City, State	
Zip	68504 ~~68521~~ Account #		Zip	Phone/Fax

PROJECT #

PROJECT NAME

COMPANY City of Lincoln

SAMPLER Steve Groesser

Sample I.D.	DATE	TIME	comp	grab	LOCATION	No. of Containers	Proper Preservation (Y/N)	* MATRIX	TESTS REQUESTED: Routine Test	Contract Lab A	Seed Germ	C:N Ratio	CEC, SAR, EC, OM, NO3	TKN, Alk, ITS, Cl, NH3	Metals	REMARKS
Fall 2016	9-25-17	7:30am	~~X~~	✓	Bluff Road Landfill	1	N	OT	☑	☑	☑	☑	☑	☑	☑	*Fecal Coliform
Composite									☐	☐	☐	☐	☐	☐	☐	and any other
					2725845				☐	☐	☐	☐	☐	☐	☐	STA tests
									☐	☐	☐	☐	☐	☐	☐	available
									☐	☐	☐	☐	☐	☐	☐	

Relinquished By:	Date/Time	Received By:	Relinquished By:	Date/Time	Received By:
Steve Groesser	9-25-17 10am	9/26 1130			
Relinquished By:	Date/Time	Received By:	Remarks:		

Distribution: Original accompanies shipment; copy to Coordinator Field Files

***Matrix Code:** SO - Soil, WA - Water, SL - Sludge, OT - Other

Temperature On Arrival 18.6°C

Preserved In Field: Yes ☐ No ☐