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Lab # 8722496	Repor	t of Analys	sis	Report Numb	per: 20-051-4112
Account:	DOUG BULLOCK	<			
27791	CITY OF RICHLA	AND		1/1	
	PO BOX 190			1000	tes
	RICHLAND WAS	99352		Robe	ert Ferris
				Accour	nt Manager
Date Sampled:	2020-02-06			402-8	329-9871
Date Received:	2020-02-07			City of Richland	Compost Facility
Sample ID:	FC Row ASP-8			STA Compost	
					Total content,
			Analysis	Analysis	lbs per ton
			(as rec'd)	(dry weight)	(as rec'd)
NUTRIENTS					
Nitrogen					
Total Nitroge		%	1.80	2.50	36.0
Organic Nitr	_ <del></del>	%	1.50	2.08	29.9
Ammonium		%	0.304	0.423	6.1
Nitrate Nitro	gen	%	< 0.01		
Major and Coop	andam Mistrianta				
	ondary Nutrients	0/	0.45	0.00	
Phosphorus		%	0.45	0.63	9.0
Phosphorus	as P205	%	1.03	1.43	20.6
Potassium	- 1/00	%	0.92	1.28	18.4
Potassium a	is K2U	%	1.11	1.54	22.2
Sulfur		%	0.29	0.40	5.8
Calcium		%	1.65	2.30	33.0
Magnesium		%	0.40	0.56	8.0 1.2
Sodium		70	0.060	0.083	1.2
Micronutrients					
Iron		ppm	9130	12705	18.3
Manganese		ppm	180	250	0.4
Boron		ppm	< 100		
		• •			
OTHER PROPERTIES					
Moisture		%	28.14		
Total Solids		%	71.86		1437.2
Organic	Matter	%	36.10	50.24	722.0
Ash		%	35.10	48.84	702.0
Total Carbo	n	%	19.01	26.45	
Chloride		%	0.20	0.28	
рН			6.9		
Conductivity	1:5 (Soluble Salts)	mS/cm	6.96		



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Lab # 8722496	Biolo	ogical & Pl	hysical Pro	perties	Report Num	ber: 20-051-4112
Account:	DOUG I	BULLOCK				
27791	CITY OI	F RICHLAN	D		1/11	Fess
	PO BOX	X 190			1000	, –
	RICHLA	ND WA 993	352		Rob	ert Ferris
					Client Service	ce Representative
Date Sampled:	2020-02	2-06			402-	829-9871
Date Received:	2020-02	2-07			City of Richland	d Compost Facility
Sample ID:	FC Row	ASP-8			STA Compost	
		Analysis	Analysis			
		(as rec'd)	(dry weight)	Units	Detection Limit	Method
Biological Properties						
Germination		85		%	1	TMECC 05.05A
Germination Vig		60		%	1	TMECC 05.05A
CO <sub>2</sub> OM Evolution	on	0.82		mgCO <sub>2</sub> -C/gON	M/day 0.01	TMECC 05.08B
CO <sub>2</sub> Solids Evol	ution	1.04		mgCO <sub>2</sub> -C/gTS		TMECC 05.08B
Fecal Coliform			38	mpn/g	0.2	EPA 1681
Stability Rating		Stable		N/A	N/A	TMECC 05.08B
Physical Properties						
Bulk Density (Lo	nose)	927		lbs/cu yard	1	WT/VOL
Bulk Density (Pa	•	1264		lbs/cu yard	1	WT/VOL
Film Plastics	zoncu)	n.d.		%	0.25	Microscopic
Glass Fragment	· S	n.d.		%	0.25	Microscopic
Hard Plastics		n.d.		%	0.25	Microscopic
Metal Fragment		n.d.		%	0.25	Microscopic
Sharps		Absent				Microscopic
Max. Particle Le	ngth		4.5	inches	N/A	TMECC Sieve
Sieve % Passing			100	%	0.01	TMECC Sieve
Sieve % Passing	g 2"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 1.5"		100	%	0.01	TMECC Sieve
Sieve % Passin	g 1"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 3/4"		100	%	0.01	TMECC Sieve
Sieve % Passin	g 5/8"		100	%	0.01	TMECC Sieve
Sieve % Passing	g 3/8"		100	%	0.01	TMECC Sieve
Sieve % Passin	g 1/4"		97	%	0.01	TMECC Sieve

# Compost Results Interpretations

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Report #:
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20-051-4112 2020-02-07

## Organic Matter %

36.10 As Received 50.24 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

10.6:1

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 %

28.14

<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

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Report #: DATE RECEIVED: 20-051-4112 2020-02-07

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	
7.0	
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

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Report #:
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pH Value

6.9

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.

				AC	G INDEX CHA	RT				
salt injury possible			t drainage cha lity and low sa		you		ils with poor d ality, or high s		water	for all soils
1	2	3	4	5	6	7	8	9	10	> 10

Nutrients (N+P205+K20)

5.48 Average Nutrient Content Dry Weight

<2 = Low, >5 = High

2-1-1 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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20-051-4112

Feb 20, 2020 Feb 07, 2020



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ISSUE DATE **Feb 20, 2020** 

13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 www.midwestlabs.com

For: (27791) CITY OF RICHLAND

**PO BOX 190** 

**RICHLAND WA 99352** 

CITY OF RICHLAND

**DOUG BULLOCK** 

# REPORT OF ANALYSIS

STA Compost City of Richland Compost Facility

Analysis	Level Found As Received Dry V	ound Dry Weight	Units	Reporting Limit	Method	Analyst- Date	Verified- Date
Sample ID: FC Row ASP-8	Lab Number: <b>8722496</b>	Date Sampled: 2020-02-06 0930	ed: <b>2020-02</b>	-06 0930			
Cadmium (total)	n.d.	0.64	mg/kg	0.50	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Chromium (total)	12.9	17.9	mg/kg	1.00	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Mercury (total)	0.06	0.09	mg/kg	0.05	EPA 7471	pjd8-2020/02/11	trh1-2020/02/12
Lead (total)	14.2	19.7	mg/kg	5.0	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Molybdenum (total)	4.8	6.7	mg/kg	1.0	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Nickel (total)	25.9	36.1	mg/kg	1.0	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Selenium (total)	n.d.	n.d.	mg/kg	10.0	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Zinc (total)	194.3	270.4	mg/kg	2.0	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Copper (total)	101	140	mg/kg	_	EPA 6010	ery3-2020/02/11	trh1-2020/02/12
Arsenic (total)	3.48	4.84	mg/kg	0.5	EPA 6020	ras7-2020/02/12	trh1-2020/02/12

EPA 1681 holding time of < 24 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. 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:

Account Manager

rferris@midwestlabs.com (402)829-9871. The result(s) issued on this report only reflect the analysis of the sample(s) submitted.

Rob Ferris





# OFFICIAL Seal of Testing Assurance Compost Sample Chain of Custody Form

STA Laboratory: Address:	Midwest Laboratori 13611 "B" St.	es Tel: (401) FAX: (401) Email:	334 - 1710 334 - 9131		LABORA	TORY USE O		Storage Lo		Storage	Shelf
City, State Zip code:	Onaha Nebrasta 6	8144-3693			Sample Co	ondition:				······································	
	•	•			Tempera	ature:	Malodor: _	Ma	olsture:		
Client/Reporting Company:	City of Richland Steve Brewer A.o. Box 190	Tel: (509)	943 - 748	<b>,</b>	Sample T	ype: O POINT	o col	MPOSITE	O STRATIF	IED O	INTERVAL
Contact Name:	Steve Brewer	FAX: (509)	943 - 734	-a	P.0	. Number:					
Billing Address:	B. a. Rex 190	Email: SARE	WERQ CI								
	MS # 27 Richland Wa 9935	วิจัง	chland, WA.	us	USCC	Member: O YE	S ON	)			
City, State Zip code:	Richland, Wa 9935	7				OF ANALYSIS. RE					
Send Results to:	Steve Brewer	•			tests requir	State DOT Tests (in: red for regulated sam	oicate State nies. etc.).	); A. B, C → Sp NOTE! <i>STA</i> :	lecity other tests analytical result	in fields A t is via the ST	mrough G. (e.g., FA Compost
City, State Zip code:	P.O. BOX 190 MS# 37	Richland W	A 99353		Technical L	Data Sheet and this C	hain of Cu	stody form are	submitted to S	FA program	management.
Name or Source of	of Sample(s): City of Rich	Mond Con	word Facil	1	A		В		C		
Name of Person(s), Sample	of Sample(s): City of Rich Collector(s): K	DONG.	811/100	<b>'C</b>							
Client Sample ID and	1. List Feedstocks	Collection	Sample		posting	Shipping	lno	licate Comn	ost Analysis		B USE ONLY
Special Instructions	2. Check all that apply 3. List % by volume, (Optional)	Date/Time	Matrix		lion Type	Temperature			*identify state		ob Number &   ample Status
	S. List % by volume. (Optional)  S. Green waste Carcass	Date: 12-6-20	Compost •	<del> </del>			1	<b>@</b>		3'	ampie Status
FC.	Manure Fish Waste	1	Feedstock O	1	Vindrow ● atic pile O	Amblent O				•	ı
ROW	Food Grease, Fats	Time: 0930	Mulch O	1	-Vessel O	Wet ice ■				87224	196
A 8P-8	X Biosolids	_	0	] "	0		<u> </u>		,[□]/,	U:	
/1 tg / - 0	MSW	Initials: DB			0	Dry Ice O					
18 a	Wood										
	ABORATORY AND SPECIFY THE REC			BMITTING	I REGULAT	ED COMPOST S	AMPLES (				
	IC FEEDSTOCK AND OPERATIONAL DE			T4 41CCDCD	TO DETTO	MOCOOTAND THE	· acidana	(1) E	ASH Y	- OR	-
YOUR VOLUNTEERED INFOR	MATION PROVIDES USCC STANDARDS AN	D PRACTICES COMMITT	EE WITH GRUTIAL DA	IA NEEDED	IOBELLER	UNDERSTAND THE	COMPOS	IING PROCE	SS AND COMP	OST END U	SES,
PLEA	SE NO SALA	ONELL	A								
			ANNO MANGESTA TO MINES AT ITS SECURITIES THE MESTING		anna manun man man	NAME AND DESCRIPTION OF PARTIES AND ADDRESS OF THE PARTIES AND ADDRESS OF T					
Releasing	2 11 1	Date Ti	ne !Rec	eivina					Date	7	Time
Signature 1	a Bullet	2-6-20	<i>1300</i> s	ignature 1							
Releasing Signature 2	,	Date Ti	me : Rec	eiving ignature 2			·		Date	ï	Time
Releasing Signature 3		Date Ti		eiving ignature 3					Date	7	Time
Releasing		Date Ti	<del></del>	eiving			· · · · · ·	· · · · · · · · · · · · · · · · · ·	Date	7	Time
Signature 4		PGIG 11		ignature 4					Little	'	TRIIG

# Regulatory





This sheet **MUST** be filled out before samples can be processed. To ensure that holding times are met, it is your responsibility that a completed form comes attached to the Chain of Custody. Samples must be received on ice.

Yes N	No		
RICHA	CAND, WAVEL	, 	
US COMP	POSTENG CO	DUNCIL	
Drinking Water For human consumption, 30 hr hold time	Ground Water	Wastewater	COMPOST
Soilid Waste	Hazardous Waste	UST	
Storm Water	Process Water	Livestock	
	Drinking Water For human consumption, 30 hr hold time  Soilid Waste	PZCHZAND WACH  US COMPOUTZNG CO  Drinking Water Ground Water For human consumption, 30 hr hold time  Soilid Waste Hazardous Waste	PZCHZAND, WACH.  US COMPOCTZNG COUNCZZ  Drinking Water Ground Water Wastewater For human consumption, 30 hr hold time  Soilid Waste Hazardous Waste UST

SEE REVERSE SIDE FOR SAMPLING INSTRUCTIONS

RC FORM 14-3 Effective 01.30.19

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# Sample Acceptance Checklist Document Number: RC CHKLIST 001 Revision No.: 4

Effective Date: 1/31/2019

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Lab Number:							
Thermometer Used:   Therm Fisher IR 14			1	Coole	er I	ntact:	≯Yes □ No
			]	Recei	ived	on Ice:	∱Yes □ No
Sample Temperature (°C): 8,9			J	Land	l De	livered:	☐ Yes ÞoNo
Date & Initials of person accepting samples:	2	7/20		احر			
	- <del></del> -	.122	1			-	Comments
Chain of Custody present?	\$	Yes		No		N/A	
Sample ID(s):		Yes		No		N/A	
Sample Location(s):	₽	Yes		No		N/A	
Client contact:	` ₩	Yes		No		N/A	
Analysis Requested:	QÍ	Yes		No		N/A	
Date & Time of collection:	B	Yes		No		N/A	
Sampler name on COC?	M	Yes		No		N/A	****
Chain of custody relinquished with signature?	A	Yes		No		N/A	
Chain of custody complete?	- / <u>-</u>	Yes		No		N/A	
Sample labels match COC?	7	Yes		No		N/A	
Written in indelible ink?	Ŋ	Yes		No		N/A	
Labels indicate proper preservation?	129	Yes		No		N/A	
Samples arrived within hold time?	<u>-</u>	Yes		No		N/A	
Samples arrived within correct temperature?		Yes		No		N/A	
Sufficient volume?	9	Yes		No		N/A	
Appropriate containers used?	7	Yes		No		N/A	
Filtered volume received for dissolved tests?		Yes		No	(Z)	N/A	<del></del>
Headspace in VOA vials?		Yes		No	[A	N/A	
Trip Blank present?		Yes	<u> </u>	No		N/A	
Client Notification/Resolution: Date/1	ime C	ontac	ted:		, <del></del>		
Person Contacted:		Co	ntac	ted F	Ву: _		
Comments/Resolution:							