





(Source: Innovex.ca)

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Sourcing Local Compost & Soils for Stormwater Projects

CSWD Mission

To reduce and manage the solid waste generated within Chittenden County in an environmentally sound, efficient, effective, and economical manner.







We process ~15,000 tons of organics annually including:

- ~6,000 tons food residuals
- ~6,000 tons leaf & yard debris









Static aerated piles

Temperatures up to 160°F







Lots of Compost!







Universal Recycling Law TIMELINE

2014

- Transfer stations must accept recyclables.
- Food scrap generators of 10% terro/year (2 tone/week) must divert. material to any certified facility within 20 miles.

2015

- Statewide unit based pricing taken effect, requiring residential trashcharges to based on votome or weight
- Recyclobies are bounsed from the landfill.
- Transfer stations/bag-drop Liadions must accept leaf and yard debris. seasonally (April 1 - December 15)
- Harders must offer residential recycling collection at no separate charge.
- Public buildings must provide recycling containers alongside all trach. containers in public spaces (exception for restrictus).
- Food scrap generators of 52 tors/year (I tors/week) must divert material to any cartified facility within 20 miles

JULY 1 2016

- Leaf, yard, and clear wood debris are benned from the landfill
- Food scrap generators of 26 tom/year (L/2 ton/syeek) must divert. material to any certified incitity within 20 miles.

2017

- Transfer stations/flag-drop Haufers must accept food scraps.
- Food surap generators of 18 ions/year (1/3 ton/yeek) must diturn meterial so any certified facility within 20 miles.

JULY 1

- Food scraps are hunned from the landfill
- Hanken must offer lood scrap collection.



Benefits of Compost



- ★ Supports healthy plant growth
- ★ Creates soil structure, resists compaction
- ★ Provides stormwater infiltration
- **★** Prevents erosion
- ★ Filters pollutants
- ★ Reduces need for landscape chemicals
- ★ Reduces need for watering



★ REDUCED COSTS!

Possible Barriers to Compost Usage



QUALITY CONTROL



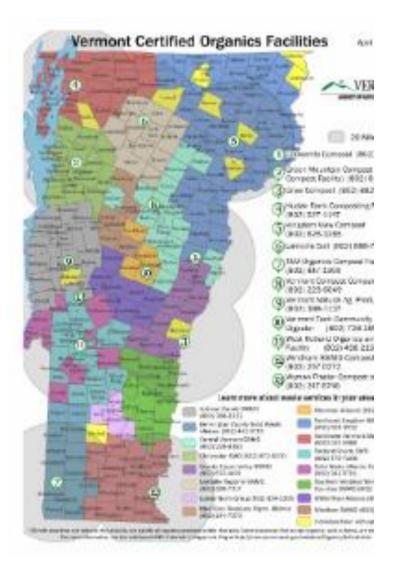
UPFRONT COST



LACK OF EXPERIENCE / KNOWLEDGE



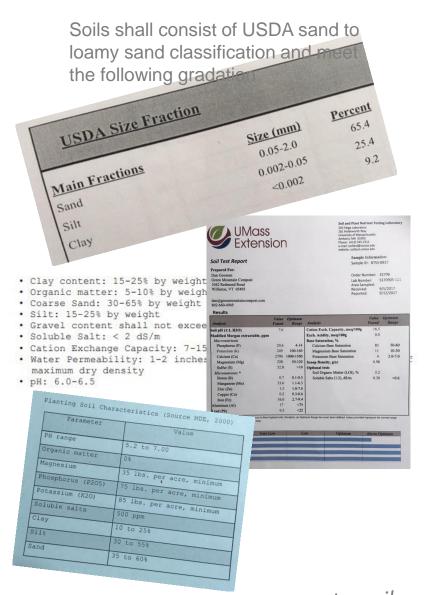
VAGUE SPECIFICATIONS



Challenges:

- Location trucking costs
- Timing





The "available phosphorus" for the soil must be less than 0.2% phosphorus.

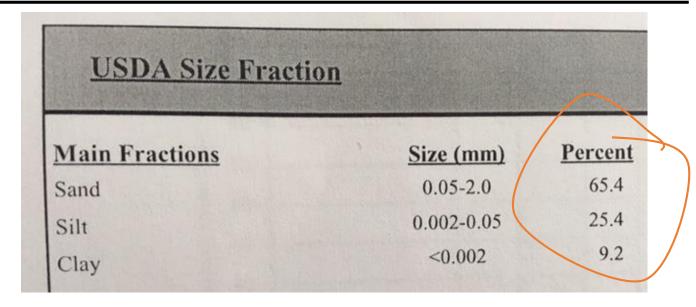
Challenges:

- What's spec'd vs. what's available
- Confusion around terminology, lab testing methods, and context

What's specified vs. what's locally available

From 2017 VT Stormwater Manual 4.3.1.4 "Biorention Treatment"

Soils shall consist of USDA sand to loamy sand classification and meet the following gradation: sand 85-88%, silt 8-12%, clay 0-2%, and organic matter in the form of compost 3-5%.



3/1/19 Particle Size Analysis of GMC Landscape Blend



From 2017 VT Stormwater Manual 4.3.1.4 "Biorention Treatment"

The designer shall identify on the plan sheet that a soil phosphorus test using the Morgan Method, or approved equivalent, is required for practices with underdrains, to ensure that bioretention soil media will not leach phosphorus. The "available phosphorus" for the soil must be less than 0.2% phosphorus.

PHOSPHORUS



Soil Test Report

Prepared For:

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Results

	Value Optimum Value Optimum				
Analysis	Found	Range	Analysis	Found	Range
Soil pH (1:1, H2O)	7.6		Cation Exch. Capacity, meq/100g	16.5	
Modified Morgan extractable, ppm			Exch. Acidity, meq/100g	0.0	
Macronutrients			Base Saturation, %		
Phosphorus (P)	20.6	4-14	Calcium Base Saturation	85	50-80
Potassium (K)	249	100-160	Magnesium Base Saturation	11	10-30
Calcium (Ca)	2790	1000-1500	Potassium Base Saturation	4	2.0-7.0
Magnesium (Mg)	228	50-120	Scoop Density, g/cc	0.98	
Sulfur (S)	32.8	>10	Optional tests		
Micronutrients *			Soil Organic Matter (LOI), %	5.2	
Boron (B)	0.7	0.1-0.5	Soluble Salts (1:2), dS/m	0.30	< 0.6
Manganese (Mn)	33.6	1.1-6.3			
Zinc (Zn)	1.5	1.0-7.6			
Copper (Cu)	0.2	0.3-0.6			
Iron (Fe)	16.0	2.7-9.4			
Aluminum (Al)	17	<75			
Lead (Pb)	0.5	<22			

Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P): Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

Soil and Plant Nutrient Testing Laboratory

203 Paige Laboratory 161 Holdsworth Way University of Massachusetts Amherst, MA 01003 Phone: (413) 545-2311 e-mail: soiltest@umass.edu website: soiltest.umass.edu

Sample Information:

Sample ID: BTS3-0917

Order Number: 32706

Lab Number: \$170905-121

Area Sampled:

9/5/2017

Received: 9/12/2017 Reported:

Results			
Analysis	Value Found	Optimum Range	
Soil pH (1:1, H2O)	7.6		
Modified Morgan extractable, ppm			
Macronutrients			
Phosphorus (P)	20.6	4-14	

From bid packet for 2018 local city government bid project:

What's specified vs. what's locally available

"Horticultural Soil"

- . Clay content: 15-25% by weight
- Organic matter: 5-10% by weight
- . Coarse Sand: 30-65% by weight
- Silt: 15-25% by weight
- . Gravel content shall not exceed 10% by weight
- Soluble Salt: < 2 dS/m
- · Cation Exchange Capacity: 7-15
- Water Permeability: 1-2 inches per hour when compacted to 85% of maximum dry density
- pH: 6.0-6.5

"Bioretention Soil"



Parameter	Value
PH range	5.2 to 7.00
Organic matter	0%
Magnesium	35 lbs. per acre, minimum
Phosphorus (P205)	75 lbs. per acre, minimum
Potassium (K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25%
Silt	30 to 55%
Sand	35 to 60%

Planting Soil Characteristics (Source MDE, 2000)



Questions?