

# Use of Washington State Compost ....Example from California's SB 1383 and Lessons Learned

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9/16/21

Zero Waste Washington



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## Topics

- ▶ Environmental and practical importance
- ▶ Applications and products
- ▶ Jurisdiction responsibilities and efforts
- ▶ Industry responsibilities and efforts



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# Improved Plant Establishment and Growth



Create Healthy Soils... climate resilient soils

Also assists in reducing on-going inputs, reduce plant loss during establishment



# Reducing On-going Costs through Compost / Mulch Usage

## High Application Rates for Landscaping – Nutrient \$\$ Savings

Yard Trimmings Compost Nutrient Content of 0.67 - 0.25 - 0.33 (wet wt basis)

	Total Nutrients in 2.3 t / 1,000 ft <sup>2</sup>	1 <sup>st</sup> Year % Release	1 <sup>st</sup> Year Nutrient / 1,000 ft <sup>2</sup> **	Value of Nutrients / Ton	Value of Nutrients in 2.3 t	Value of Nutrients in 2.3 t / 1,000 ft <sup>2</sup>
Nitrogen	30.8	25%	7.71***	13.4 lbs/t x \$1.50/lb. N value = \$20.10/t	\$46.23	\$1.06
Phosphorus (P <sub>2</sub> O <sub>5</sub> )	11.5	20%	2.3	5 lbs/t x \$0.70/lb. P value = \$3.50/t	\$8.05	\$0.185
Potassium (K <sub>2</sub> O)	15.2	70%	10.63	6.6 lbs/t x \$0.75/lb. K value = \$4.95/t	\$11.39	\$0.26
				Total nutrient value / ton = \$28.55/t	\$65.67	\$1.50

## High Application Rates for Landscaping – Water \$\$ Savings

Turf & Garden Area Example – 1,000 SF area, incorporating compost into 6" depth

Length (ft.)	Width (ft.)	Depth (ft.)	Volume of Soil Treated (CF)	
50	20	0.5	500	
Volume of Soil Treated (CF)	Est. % OM Added*	Added WHC (Gal)	Water Saved (Gal)	
500	2.5	0.375	469	
	1.5' app. rate of compost			
Water Saved (Gal)	Cost of Water (Gal)	Annual Water Savings	Number of years (amortized)	5 Year Water Savings
469	\$0.05	\$23.44	5	\$117.19



# Storm Water Management and Erosion Control



Source: University of Washington trials on glacial till soil. Reduce runoff by up to 50%



Must continue to protect water and soil (and existing organic matter)

Western WA stormwater issues



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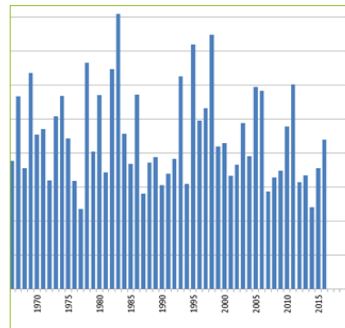
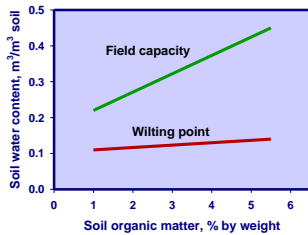
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# Drought Response / Resilience



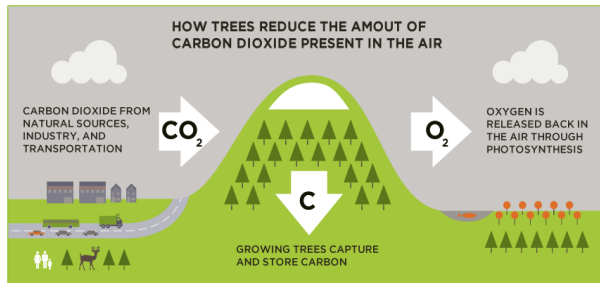
- ▶ Eastern Washington - water saving tool
- ▶ Drought Response / Resilience - CA MWEL0 Ordinance

- Applies to projects with 500 sf of "landscape area"
- Apply 4CY of compost and 9CY of mulch / 1,000 SF
- Projects must meet a water budget, calculated based on plant water needs and efficiency of irrigation
- Require local, recycled compost and mulch to be used



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# Carbon Sequestration

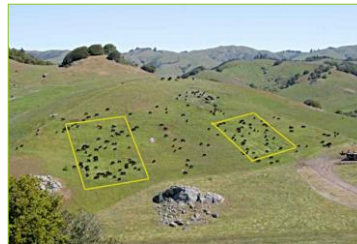


The process that removes CO<sub>2</sub> from atmospheric circulation is photosynthesis...  
Christine Jones, Soil Ecologist

Key and inexpensive means to beneficially impacting climate change

## California's Healthy Soils Initiative

State movement, and great opportunity in California



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# Compost Application

## Soil Incorporant

- Ag crop establishment
- Garden bed preparation
- Nursery production
- Reclamation/remediation
- Roadside Vegetation
- Turf establishment

## Surface Applied

- Erosion control media
- Fruit / nut trees
- Garden bed / tree mulch
- Lawn conversion (sheet mulching)
- Turf topdressing

## Growing Media Component

- Backfill mixes (tree and shrub plantings)
- Container/potting substrates
- Golf course (e.g., tee, green, divot mixes)
- Landscape (e.g., rooftop, raised planters)
- Manufactured topsoil

*Lots of applications - Staple of landscape (lawn/garden), extensively used in agriculture and environmental applications*



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# Various In-house Applications Exist



Desired characteristics are based on application (and soil and plant requirements / characteristics)



# ...but Not All are Obvious ...



Bioretention mulch



# Mulches



*(Bark mulch is not usually considered to be a recycled product)*

Are huge water savings

Require use of recycled content products

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# Land Management, Park, Roadside Uses for Mulch-Type Products



Weed suppression



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## Seattle and Other Cities



### Media Requirements

- Bioretention soil shall consist of two parts fine compost (approximately 35 to 40 percent) by volume meeting the requirements of Section 9-14.4(9), and
- Three parts Mineral Aggregate (approximately 60 to 65 percent), by volume meeting the requirements of Section 9-03.2(2).
- The mixture shall be well blended to produce a homogeneous mix

**MULCH FOR BIORETENTION FACILITIES**  
3” of Aged mulch or composted mulch.

Like in California, several specs already exist which require products that meet the SB 1383 purchasing requirement



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## Consider Application Methods



Staffing and equipment requirements



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# Successful and Expanded Usage



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## Start with an Internal Audit

- ▶ What's being specified and utilized? Why?
  - Which processes and products which can be replaced (by compost, mulch, compost-based systems?)
  
- ▶ Processes and Products - *better understand them*
  - Landscape construction and maintenance practices
  - Turf and sports turf management practices
  - Storm water and erosion control requirements and practices
  - Related environmental practices and requirements
    - Reclamation / Renovation opportunities
  - Food, local ag and other educational programs, etc.

Consider ALL departments

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## Review and Modify Internal BMP's

- ▶ Gather related specification and BMP documents
  - Construction and maintenance practices
  - Parks, roads, landscape, erosion control, storm water management
- ▶ Review / Evaluate existing methods
  - Inspect sites and projects, as necessary
  - Evaluate effectiveness of current methods - need improvement anyway
- ▶ Talk to staff and management
  - Consider existing requirements and budgets
  - Will additional staffing or equipment be required?
- ▶ Modify related documents
- ▶ Educate (Sell) the staff



*Will budget assistance be necessary?*

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## Review and Modify External Specifications (Standard Documents)

- ▶ Gather and review standard specifications used in bid documents (project completed through external contractors)
  - Obtain technical assistance to modify specifications
  - Require or give preference to ReScape and related requirements
- ▶ Create a list of the jurisdictions qualified contractors and specifiers (landscape architects & engineers) *Update annually?*
  - They will require education to assure usage follow through
  - They will have to require the same for their contractors
- ▶ May need to create list of allowable suppliers (and products)
- ▶ Consider legal bid document requirements (and address)
  - Require the implementation of an environmental preferable purchasing (EPP), *or a tougher one?*



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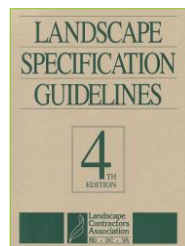
# Modification of BMP's and Specifications



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## Modifying Specifications & BMPs

- ▶ Modification of municipal standards of practice, requiring recycled products and related techniques (green techniques)
- ▶ Develop / implement environmentally preferable purchasing practices
- ▶ Educate City departments, encourage (require) usage, dispel misconceptions regarding product usage
- ▶ Modify related specification and BMP documents for both internal usage and usage through contractors on city funded projects (need enforcement)



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## Modifying Specifications & BMPs

- ▶ Historically, focusing on landscape sustainability, soil and water protection and conservation

### INITIATIVES

- Reducing irrigation
- Require 5% organic matter in project soils (and increase soil depth)
- Improving storm water management / capture through green infrastructure (e.g., Soils For Salmon program)
- Enforce erosion control regulation - protecting surface waters
- Soil carbon sequestration through compost application (e.g., Marin Carbon Project)
- Meeting city climate change goals
- Community gardens / in-city agriculture
- Require usage on public lands rented / leased (e.g., farmland)<sup>21</sup>

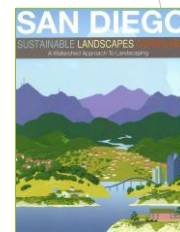
*Not a comprehensive list*



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## Modifying Specifications

- ▶ Compost placed in government (and private) specifications
  - General landscaping - pushed for many years
    - ▶ Want to achieve 'approved equal' status, or simply replace (e.g., peat)
  - Erosion/sediment control and storm water mgt - *was the breakthrough*
    - ▶ NPDES Phase II was enacted, regulations helped!
  - Topsoil manufacturing - lack of 'good' topsoil
    - ▶ **NEWER EFFORT** - Fix soil or require minimum 5% OM content for imported soils (public and private projects)
    - ▶ **NEWEST EFFORT** - Expand volume of soil required (6" to 12", improves plant establishment/growth & storm water management)
- ▶ Important to get qualified technical assistance
  - Must understand typical and creative applications for compost
  - Must be able to develop numerical product standards, as well as educate staff, specifiers and contractors



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## Specifications are Available

### Specification

#### Planting Bed Establishment with Compost

Section \_\_\_\_\_,

##### Description:

This work shall consist of incorporating compost within the root zone in order to improve soil quality and plant growth. This specification applies to all types of plantings including; trees, shrubs, vines, ground covers, and herbaceous plants.

##### Materials:

Compost shall be a well decomposed, stable, weed free organic matter source. It shall be derived from: agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; source-separated or mixed solid waste. The product shall contain no substances toxic to plants and shall be reasonably free (< 0.50% by dry weight) of man-made foreign matter. The compost will possess no objectionable odors and shall not resemble the raw material from which it was derived. For acid loving plants, only use a compost that has not received the addition of liming agents or ash by-products.

##### Construction Requirements:

- Compost shall be uniformly applied over the planting area at an average rate of 2 to 2 inches.
- Incorporate uniformly to a depth of 6 to 8 inches using a rotary tillage or appropriate equipment. Lower compost application rates may be necessary for salt sensitive crops or where composts possessing higher salt levels are used.
- Pre-plant fertilizer and pH adjusting agents (e.g., lime and sulfur) may be applied in conjunction with compost incorporation, as necessary.

##### Product Parameters:

Parameters <sup>1,6</sup>	Reported as (units of measure)	General Range
pH <sup>1</sup>	pH units	6.0 - 8.5
Soluble Salt Concentration <sup>2</sup> (electrical conductivity)	dS/m (mmhos/cm)	Maximum 10
Moisture Content	%, wet weight basis	30 - 60
Organic Matter Content	%, dry weight basis	30 - 65
Particle Size	% passing a selected mesh size, dry weight basis	98% pass through 3/4" screen or smaller
Stability <sup>3</sup>		
Carbon Dioxide Evolution Rate	mg CO <sub>2</sub> -C per g OM per day	< 4
Maturity <sup>3</sup> (Bioassay)		
Seed Emergence and Seeding Vigor	%, relative to positive control	Minimum 80%
	%, relative to positive control	Minimum 80%
Physical Contaminants (inerts)	%, dry weight basis	< 0.50 (<25% film plastic)
Chemical Contaminants <sup>4</sup>	mg/kg (ppm)	Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels
Biological Contaminants <sup>5</sup>		
Select Pathogens		
Fecal Coliform Bacteria, or Salmonella	MPN per gram per dry weight MPN per 4 grams per dry weight	Meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) levels

Good spec examples exist, but will need to be modified based on the application

## Qualifying Manufacturers / Suppliers

- ▶ Will have to be licensed solid waste management facilities
- ▶ Depending on the application, may have to be Listed or certified through other programs
- ▶ Creating supplier lists may be required
- ▶ Perhaps regionally logo system could be implemented



Compost Parameters	Reported as
pH	N/A
Soluble salts	dS/m (mmhos/cm)
Primary plant nutrients	%, as-is (wet) & dry weight basis
Nitrogen	Total N
Phosphorus	P <sub>2</sub> O <sub>5</sub>
Potassium	K <sub>2</sub> O
Calcium	Ca
Magnesium	Mg
Moisture content	%, wet weight basis
Organic matter content	%, dry weight basis
Particle size	Screen size passing through
Stability (respirometry)	mg CO <sub>2</sub> -C/g OM per day
Maturity (Bioassay)	
-Percent emergence	% (average)
-Relative seedling vigor	% (average)
Select Pathogens	
Trace metals	

## Funding

- ▶ Staff and contractor education
- ▶ Specification and BMP review and modification
- ▶ Increased staffing for land management department or budget for hiring contractors
- ▶ Increase enforcement staffing
- ▶ Application equipment

Expanding municipal usage requires  
'buy in' from the top down



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## External / Industry



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### STA Certified Compost Participants

Use Compost » Find Compost  
More in this Section...

This list/map is updated on a daily basis.

Participants are required to give customers their STA Certified Compost test results upon request.

Select a state <<

- Alabama
- Alaska
- Arizona
- Arkansas
- California


### Create Websites that House Supplier information or Place 'Logo' on existing websites


USCC Website  
[www.compostingcouncil.org](http://www.compostingcouncil.org)

#### Z-Best Products

2 STA Products  
980 State Hwy 25  
Gilroy, CA 95020  
Contact: Scotty Pitsch  
T: 408-313-0444  
F: 408-846-1573  
Email

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### Lawn to Garden Website

[www.lawntogarden.org/marketplace](http://www.lawntogarden.org/marketplace)

Offers search function  
List manufacturers and distributors


**Materials**

- Compost
- Mulch
- Cardboard
- Irrigation
- Plants
- Bioremediation Soil Mix
- Compost Socks

**Store Type**     **Delivery?**


- Free              No
- Retail             Yes
- Wholesale

Discount Available



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### 1383 Eligible Procurement Products




**Landscape Compost**

Landscape Compost is produced from recycled food waste. Landscape Compost particle size is 3/4" minus and weighs around 1,000 lbs per cubic yard. This product is ideal for:

- New large-scale landscape installation projects
- Amending soil in parks, gardens and various landscapes
- Green Stormwater Infrastructure projects

**\$8.50/tn Plus Delivery**




**Landscape Compost Blend**

Landscape Compost Blend is produced from recycled food waste and yard waste. Landscape Compost Blend particle size is 3/8" minus and weighs around 800 lbs per cubic yard. This product is ideal for:

- Amending soil in parks, gardens and various landscapes
- Residential giveaways
- Green Stormwater Infrastructure projects

**\$17/tn Plus Delivery**




**Landscape Compost Blend-Medium**

Landscape Compost Blend-Medium is produced from food scraps and wood shavings. Landscape Compost Blend-Medium particle size is 2" minus and weighs around 750 lbs per cubic yard. This product is ideal for:

- Use on slopes to reduce erosion
- Use as a compost mulch for ground cover
- Green Stormwater Infrastructure projects

**\$25/tn Plus Delivery**

### Composters Will Have to Assist Jurisdictions



**zanker**  
landscape materials


#### INVOICE # 1

Date: Jul 30, 2021  
Payment Terms: 1  
Due Date: Jul 30, 2021  
**Balance Due: \$154,000.00**

Item	Quantity	Yards	SB1383 Credits/Tons	Rate	Amount
Natural Mulch	6,000	1,000	\$18.00		\$108,000.00
Z-Best Organic Compost	400	232	\$30.00		\$16,000.00
ZZ Topsoil	1,000	131	\$30.00		\$30,000.00
<b>Total:</b>					<b>\$154,000.00</b>

Notes:  
Total SB1383 Credits: 1,063 Tons

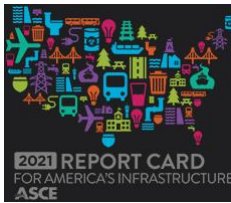
Creating paper trail and track jurisdiction usage



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## Assist and Obtain Assistance from Related Industry Trade Organizations



Assure verified products are purchased, specified and used

Educate about purchase requirements (*like SFS, in CA - MWEL0*)



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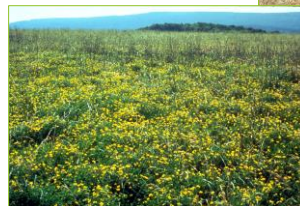
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## Who can use Compost / Mulch when a Jurisdiction Cannot Use the Required Volume?

- ▶ Give-aways to public - will probably not move much volume, and can interfere with companies that resell these products already
- ▶ Agriculture - private vs. public land
  - Don't want to interfere with existing markets
- ▶ Reclamation - cure societal and industrial scars



Much still to figure out here !



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## Meeting Product Usage Requirements

- ▶ Implementation will take effort and time (devil is in the detail)
  - Jurisdiction must start planning early, rushing leads to mistakes
  - Can affect budget / staffing, logistics / tracking (mechanisms)
- ▶ Jurisdictions have to consider how they will meet the requirements, and decide if they need help doing so
  - Planning and/or implementation
- ▶ Jurisdictions must consider other usage options, if (when) they cannot use the required volumes on an annual basis
- ▶ Starting Point... audit internal uses, reviewing specs/BMP's (attitudes), modify specs, create quality control and tracking systems, educate (involve) staff and contactors



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## QUESTIONS ?

**Ron Alexander**  
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 Apex, NC – [www.alexassoc.net](http://www.alexassoc.net)  
 Ron@alexassoc.net  
 919-367-8350 o, 919-349-0460 m

### Major services include:

- Organic Recycled Product Market Research, Assessments and Development
- Organic Recycled Product Sales, Marketing and End Use Education/Training
- Product Development, Labeling and Registration
- Project Development Services (and Feedstock Acquisition)
- Production Facility and Marketing Program Audits
- North American Composting / Organics Recycling Industry Market Research
- Plus Other Services

Thank you to the Washington State Workgroup on Organics Management to Reduce Methane and Combat Climate Change

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