

Biotreatment Soil Media

Specification Verification Checklist

This checklist is intended to supply municipal staff, contractors, designers and others with an easy-to-read summary of the information needed to verify that the biotreatment soil media being provided by the soil media supplier meets the soil media specification in the Bay Area Stormwater Management Agencies Association (BASMAA) “Specification of Soils for Biotreatment or Bioretention Facilities” dated April 18, 2016. The checklist should be provided to the soil media supplier by the municipality or contractor before the soil media has been ordered to allow for sufficient time to compile the information and time to review the completed checklist before delivery of the soil media to the job site.

Use of this checklist is not required by the MRP and is intended only for assistance in reviewing submittals. Additionally or alternatively, the one page Supplier Certification Statement, developed by the stormwater programs listed below, can be requested from the Supplier to guarantee that the product meets the specification.

The Certification Statement, a list of soil media suppliers, the BASMAA specification and other materials are available at the following websites:

- Santa Clara Valley Urban Runoff Pollution Prevention Program:
www.scvurppp.org/newdev/
- San Mateo Countywide Water Pollution Prevention Program:
www.flowstobay.org/preventing-stormwater-pollution/with-new-redevelopment/c-3-regulated-projects/
- Alameda Countywide Clean Water Program:
www.cleanwaterprogram.org/businesses/development.html

If a municipality chooses to use the checklist, the following five items are required to be submitted by the soil media Supplier to the requesting municipality or contractor:

- **Sample of the Biotreatment Soil Media**
A minimum 1-gallon bag of soil media.
- **Attachment A – Supplier Analysis of the Biotreatment Soil Media**
To be completed by the soil media supplier staff providing the soil media.
- **Attachment B – Lab Analysis of Sand Component of the Biotreatment Soil Media**
To be completed by the laboratory staff conducting the analysis of the sand.
- **Attachment C – Lab Analysis of Compost Component of the Biotreatment Soil Media**
To be completed by the laboratory staff conducting the analysis of the compost. Compost analysis of a sample collected (in accordance with the Seal of Testing Assurance [STA] sample collection protocol) shall be completed within the last 120 days. Analysis must be completed by a laboratory enrolled in the US Composting Council’s (USCC) Compost Analysis Proficiency (CAP) program, and shall use the Test Methods for the Examination of Composting and Compost (TMECC).
- **Attachment D – Supplier Analysis of Compost Component of the Biotreatment Soil Media**
To be completed by the compost supplier staff providing the compost component of the soil media.

Attachment A

Supplier Analysis of Biotreatment Soil Media

The table below shall be completed by the biotreatment soil media supplier staff.

Date:		Name of Person Filling Out This Form:		
(All lab tests must be done within the last 120 days)				
Title:		Signature:		
Phone:		Email:		
Company Name:		City:		
Street Address:		Zip:		
I certify that the provided biotreatment soil media meets the requirements of the BASMAA 2016 specification.		<input type="checkbox"/> Yes (Pass)		
		<input type="checkbox"/> No (Fail)		
Describe the equipment and methods used to mix the compost and sand components of the biotreatment soil media.				
Material	Standard Percent (by volume)	Actual Media %	Pass	Fail
Sand	60% - 70%		<input type="checkbox"/>	<input type="checkbox"/>
Compost	30% - 40%		<input type="checkbox"/>	<input type="checkbox"/>
Does the soil media have a permeability of at least 5 inches per hour? ¹			<input type="checkbox"/> Yes (Pass)	
			<input type="checkbox"/> No (Fail)	
Will the soil media support vigorous plant growth?			<input type="checkbox"/> Yes (Pass)	
			<input type="checkbox"/> No (Fail)	

¹Soil media permeability testing is only required for alternative biotreatment soil media. Soil permeability tests must be conducted on a minimum of two samples using constant head permeability in accordance with ASTM D2434 with a 6-inch mold and vacuum saturation.

Attachment B

Lab Analysis of Sand Component of Biotreatment Soil Media

The table below shall be completed by the laboratory staff conducting the sand analysis.

Name of Person Filling Out This Form:					Signature:					
Title:					Date:					
Phone:					Email:					
Company:					City:					
Street Address:					Zip:					
Qualifications & relevant certifications (ASTM, CTM or approved equivalent certifications):										
Is sand free of wood, waste, coating (such as clay, stone dust, carbonate, etc.), or any other deleterious material?					<input type="checkbox"/> Yes (Pass)					
					<input type="checkbox"/> No (Fail)					
Is all aggregate passing the No. 200 sieve non-plastic?					<input type="checkbox"/> Yes (Pass)					
					<input type="checkbox"/> No (Fail)					
Particle size analysis shall be conducted in accordance with ASTM D 422 (Standard Test Method for Particle Size Analysis of Soils) or CTM 202. Other equivalent methods acceptable only if approved.										
Sieve Size	Standard Percent Passing (% by weight)				Testing Results (%)				Pass	Fail
3/8 inch	100%								<input type="checkbox"/>	<input type="checkbox"/>
No. 4	90% - 100%								<input type="checkbox"/>	<input type="checkbox"/>
No. 8	70% - 100%								<input type="checkbox"/>	<input type="checkbox"/>
No. 16	40% - 95%								<input type="checkbox"/>	<input type="checkbox"/>
No. 30	15% - 70%								<input type="checkbox"/>	<input type="checkbox"/>
No. 40 or 50	5% - 55%								<input type="checkbox"/>	<input type="checkbox"/>
No. 100	0% - 15%								<input type="checkbox"/>	<input type="checkbox"/>
No. 200	0% - 5%								<input type="checkbox"/>	<input type="checkbox"/>

Attachment C

Lab Analysis of Compost Component of Biotreatment Soil Media

The table below shall be completed by the laboratory staff conducting the compost analysis.

Name of Person Filling Out This Form:	Signature:
Title:	Date:
Phone:	Email:
Company:	City:
Street Address:	Zip:
Qualifications & relevant certifications: (USCC, ASTM or approved equivalent certification)	

Specification	Standard	Testing Results	Pass	Fail
Organic Matter Content	35% - 75% (by dry weight)	%	<input type="checkbox"/>	<input type="checkbox"/>
Carbon-to-Nitrogen Ratio	15:1 to 25:1 (C:N)	C:N	<input type="checkbox"/>	<input type="checkbox"/>
Salinity	< 6.0 mm hos/cm	mm hos/cm	<input type="checkbox"/>	<input type="checkbox"/>
pH	6.2 - 8.2	pH	<input type="checkbox"/>	<input type="checkbox"/>
Bulk Density	500 – 1100 dry lbs / yd ³	dry lbs / yd ³	<input type="checkbox"/>	<input type="checkbox"/>
Moisture Content	30%-55% (of dry solids)	%	<input type="checkbox"/>	<input type="checkbox"/>
Percent inert ingredients (incl. plastic, glass, paper)	< 1% (by weight or volume)	%	<input type="checkbox"/>	<input type="checkbox"/>

Provide the results of at least one of the following analyses to indicate compost stability:

Specification	Standard	Testing Results	Pass	Fail
Oxygen Test	< 1.3 O ₂ /unit TS/hr	O ₂ /unit TS/hr	<input type="checkbox"/>	<input type="checkbox"/>
Specific Oxygen Test	< 1.5 O ₂ /unit BVS/hr	O ₂ /unit BVS/hr	<input type="checkbox"/>	<input type="checkbox"/>
Respiration Test	< 8mg CO ₂ -C/g OM/day	mgCO ₂ -C/g OM/day	<input type="checkbox"/>	<input type="checkbox"/>
Dewar test	< 20 °C Temp. rise e.	°C Temp. rise e.	<input type="checkbox"/>	<input type="checkbox"/>
Solvita® Index value	> 5 Index value	Index value	<input type="checkbox"/>	<input type="checkbox"/>

Provide the results of <u>at least one</u> of the following analyses to indicate compost toxicity:					
Specification	Standard	Testing Results		Pass	Fail
Ratio (NH₄⁺-N: NO₃⁻-N)	< 3		NH ₄ ⁺ -N: NO ₃ ⁻ -N	<input type="checkbox"/>	<input type="checkbox"/>
Ammonium	< 500 ppm, dry basis		ppm, dry basis	<input type="checkbox"/>	<input type="checkbox"/>
Seed Germination	> 80% of control		% of control	<input type="checkbox"/>	<input type="checkbox"/>
Plant Trials	> 80% of control		% of control	<input type="checkbox"/>	<input type="checkbox"/>
Solvita® Index value	= 5 Index value		Index value	<input type="checkbox"/>	<input type="checkbox"/>
Provide the analysis of the nutrient content of the compost, including the following:					
Specification	Standard	Testing Results		Pass	Fail
Boron (total B)	< 80 ppm		ppm	<input type="checkbox"/>	<input type="checkbox"/>
Nitrogen (total N)	> 0.9% preferred		%		
Phosphorus (as P₂O₅)	<i>[not specified]</i>		%		
Potassium (as K₂O)	<i>[not specified]</i>		%		
Calcium (Ca)	<i>[not specified]</i>		%		
Sodium (Na)	<i>[not specified]</i>		%		
Magnesium (Mg)	<i>[not specified]</i>		%		
Sulfur (S)	<i>[not specified]</i>		ppm		
Provide the results of <u>at least one</u> of the following select pathogens:					
Specification	Standard	Testing Results		Pass	Fail
Salmonella	< 3 MPN/4 grams TS		MPN/4 grams TS	<input type="checkbox"/>	<input type="checkbox"/>
Coliform Bacteria	< 10,000 MPN/gram		MPN/gram	<input type="checkbox"/>	<input type="checkbox"/>
Does the product meet US EPA, 40CFR 503 regulations regarding trace contaminants metals (Lead, Mercury, etc.)?				<input type="checkbox"/> Yes (Pass)	
				<input type="checkbox"/> No (Fail)	
Particle size analysis shall be conducted in accordance with ASTM D 422 (Standard Test Method for Particle Size Analysis of Soils)-washing not required. Equivalent methods acceptable if approved.					
Sieve Size	Standard Percent Passing (by weight)	Testing Results (%)		Pass	Fail
1 inch	99% - 100%			<input type="checkbox"/>	<input type="checkbox"/>
½ inch	90% - 100%			<input type="checkbox"/>	<input type="checkbox"/>
¼ inch	40% - 90%			<input type="checkbox"/>	<input type="checkbox"/>
No. 200	1% - 10%			<input type="checkbox"/>	<input type="checkbox"/>

Attachment D

Supplier Analysis of Compost Component of Biotreatment Soil Media

The table below shall be completed by the compost supplier providing the compost for the media.

Name of Company:		Date of Delivery:	
Qualifications & relevant certifications: (USCC, ASTM or approved equivalent certifications)		Date of the Compost Lab Analysis Report: (Must be dated within 120 days prior to delivery)	
Name of Person Filling Out This Form:		Date:	
Signature:		Street Address:	
Email address:		City:	
Phone:		Zip:	
Feedstock materials have been specified and include only the following: Landscape/yard trimmings, grass clippings, food scraps, or agricultural crop residues?			<input type="checkbox"/> Yes (Pass)
			<input type="checkbox"/> No (Fail)
Compost has a dark brown color and a soil-like odor, does not exhibit a sour or putrid smell, does not contain recognizable grass or leaves, and is not hot (120°F) upon delivery or rewetting?			<input type="checkbox"/> Yes (Pass)
			<input type="checkbox"/> No (Fail)
The compost has gone through the process to further reduce pathogens (PFRP)? For example, turned windrows must reach a minimum temperature of 55°C for 15 days with at least 5 turnings during that period.			<input type="checkbox"/> Yes (Pass)
			<input type="checkbox"/> No (Fail)