<u>PROPOSED AMENDED</u> RULE 1133.3 EMISSION REDUCTIONS FROM GREENWASTE-COMPOSTING OPERATIONS

(a) Purpose

The purpose of this rule is to reduce fugitive emissions of volatile organic compounds (VOC) and ammonia from occurring during greenwaste cComposting Θ perations.

(b) Applicability

This rule applies to the <u>owners and</u> operators of <u>all new and existing greenwaste</u> <u>eComposting oOperations not subject to Rule 1133.2 – Emission Reductions from Co-</u> <u>composting Operations.</u>that produce active or finished compost from greenwaste by itself or greenwaste in combination with manure or foodwaste, unless otherwise exempted under subdivision (g) of this rule.

(c) Definitions

For the purposes of this rule, the following definitions shall apply:

- (1) ACTIVE COMPOST means material that is in the process of being rapidly decomposed and is biologically unstable. Active compost is generating temperatures of at least 122 degrees Fahrenheit during decomposition. Active compost includes, but is not limited to, pathogen-reduced mulch.
- (1)(2) ACTIVE PHASE is the portion of the composting process characterized by rapid decomposition and biological instability, generating temperatures of at least 122 degrees Fahrenheit (50 degrees Celsius). The Active Phase includes the Pathogen Reduction Process.means the phase of the greenwaste composting process that begins when organic waste materials are mixed together for composting and lasts a minimum of 22 days under controlled conditions or until the compost has a Solvita Maturity Index of five or greater measured pursuant to subparagraph (e)(4)(A).
- (2) AERATION SYSTEM is a system where air is forced through Organic Waste Material being composted, through the use of fans or blowers.
- (3) AGRICULTURAL OPERATION is as defined in Rule 102 Definition of Terms.
- (4)(3) BACKYARD COMPOSTING <u>ismeans</u> composting conducted by a household including, but not limited to, single family residences, condominiums, duplexes, or apartment buildings.
- (5)(4) BASELINE EMISSION FACTORS <u>aremean</u> the uncontrolled emission factors for <u>greenwaste cC</u>omposting <u>oO</u>perations for VOC and ammonia, <u>respectively</u>.

- (6) BIOSOLIDS are the solid wastes produced by wastewater treatment or reclamation plants by operations within the boundaries of the wastewater and sludge treatment plant.
- (7)(5) COMMUNITY COMPOSTING <u>ismeans</u> composting conducted by a residential neighborhood association using feedstock generated within the residential neighborhood to produce compost for the neighborhood's use.
- (6) COMPOSTING means a process in which solid organic waste materials are decomposed in the presence of oxygen through the action of bacteria and other microorganisms.
- (8)(7) COMPOST OVERS <u>aremean</u> the oversized-woody materials that do not decompose in a typical composting cycle and are screened out of <u>#Finished Compostproduct</u> at the end of composting. <u>Compost Overs have completed the Pathogen Reduction</u> <u>Process.Compost overs have been through the pathogen reduction process outlined</u> in Title 14, Section 17868.3 of the California Code of Regulations.
- (9) COMPOSTING OPERATION is an operation where solid Organic Waste Material is decomposed in the presence of oxygen through the action of bacteria and other microorganisms.
- (10)(8) CURING PHASE ismeans the portionphase of the greenwaste composting process that begins immediately after the end of the <u>aA</u>ctive <u>pP</u>hase of composting and <u>characterized by slower decomposition until reaching biological stability.</u>lasts a minimum of 40 days or until the compost has a Solvita Maturity Index of seven or the product respiration rate is below ten milligrams of oxygen consumed per gram of volatile solids per day as measured by direct respirometry, pursuant to subparagraph (e)(4)(B).
- (11) DIGESTATE is the solid waste produced by anaerobic digestors from the decomposition of Organic Waste Material. The solid waste from anaerobic digestors at wastewater treatment or reclamation plants by operations within the boundaries of the wastewater and sludge treatment plant are Biosolids.
- (9) EXISTING GREENWASTE COMPOSTING OPERATIONS mean all greenwaste composting operations that have begun operations on or before July 8, 2011.
- (12)(10) FINISHED COMPOST <u>ismeans</u> a humus-like material and/or compost overs that results from the controlled biological decomposition of <u>oO</u>rganic wWaste mMaterials and is biologically stable. Both the <u>aA</u>ctive <u>Phase</u> and <u>eC</u>uring <u>pP</u>hases of the greenwaste composting are required to achieve this product.
- (13)(11) FOODWASTE <u>ismeans</u> any <u>pre- or post-consumer</u> food scraps collected from the food service industry, grocery stores, or residential food scrap collection.

Foodwaste also includes <u>Foodwastefood scraps</u> that <u>isare</u> chipped and ground. <u>Food</u> <u>scraps</u> co-collected with curbside Greenwaste collection are considered <u>Greenwaste</u>.

- (14)(12) GREENWASTE <u>ismeans</u> any <u>organic</u>-waste <u>material</u>-generated from gardening, agriculture, or landscaping activities including, <u>but not limited to</u>, grass clippings, leaves, tree and shrub trimmings, and plant remains. <u>Food scraps cocollected with curbside Greenwaste collection are considered Greenwaste</u>. Large wood materials, such as tree trimmings, branches, tree trunks, stumps, and limbs exceeding two (2) inches in any dimension may be considered Woodwaste instead of Greenwaste if free from leaves, berries, pine needles, and other non-woody <u>materials</u>.
- (13) GREENWASTE COMPOSTING means composting of greenwaste by itself or a mixture with foodwaste, or with up to 20 percent manure, per pile volume basis.
- (15) MANURE is the solid waste and soiled bedding produced by livestock operations from the keeping of domesticated animals including cattle, calves, horses, sheep, goats, swine, rabbits, chicken, turkeys, or ducks.
- (14) NEW GREENWASTE COMPOSTING OPERATIONS mean greenwaste composting operations that have not started operations as of July 8, 2011.
- (16)(15) NURSERY COMPOSTING <u>ismeans</u> composting conducted at a nursery to produce compost for on-site use <u>at a facility where seedlings</u>, young plants, and trees are grown for sale or distribution.
- (16) ORGANIC WASTE means any organic waste material that includes foodwaste, greenwaste, woodwaste, or manure, or a mixture thereof.
- (17) ORGANIC WASTE MATERIAL is any waste material that may be used as feedstock to produce Finished Compost, Compost Overs, or intermediate material. Organic Waste Material includes Greenwaste, both curbside and non-curbside, Woodwaste, Foodwaste, Biosolids, Digestate, and Manure.
- (17) OPERATOR means any person that operates a greenwaste composting operation.
- (18) OVERALL CONTROL EFFICIENCY is the effectiveness, expressed in percent, of an emission control system or mitigation measure to eliminate, reduce or control the issuance of a specific air contaminant.
- (19) PATHOGEN REDUCTION PROCESS is the process outlined in Title 14, Section 17868.3 of the California Code of Regulations.
- (20)(18) PILE <u>ismeans</u> <u>Organic Wastecompostable</u> <u>mM</u>aterial that is heaped together.

- (21)(19) RECREATIONAL FACILITY COMPOSTING <u>ismeans</u> composting conducted at parks, arboretums, and other recreational facilities using feedstock generated on-site to produce compost for on-site use.
- (22) SCHOOL COMPOSTING is composting conducted at a public or private learning facility to produce compost for the primary purpose of education.
- (20) SOLVITA MATURITY INDEX means an index that defines the stage where compost exhibits resistance to further decomposition, as tested by the Solvita Maturity Test®.
- (21) START-UP means the first day of active greenwaste composting operations at the facility.
- (23)(22) THROUGHPUT <u>ismeans</u> the mass of <u>Organic Waste Materialmanure</u>, foodwaste, or greenwaste in tons per <u>calendar</u> year as received by the <u>Composting</u> <u>Operation</u>facility and processed through composting, excluding recycled materials.
- (23) TMECC means Test Methods for the Examination of Composting and Compost published by the US Composting Council Research and Education Foundation.
- (24) WOODWASTE <u>ismeans</u> lumber, and the woody material portion of mixed demolition and construction wastes. <u>Large wood materials, such as tree trimmings,</u> <u>branches, tree trunks, stumps, and limbs exceeding two (2) inches in any dimension</u> <u>may be considered Woodwaste instead of Greenwaste if free from leaves, berries,</u> <u>pine needles, and other non-woody materials.</u>Woodwaste also includes large wood materials of curbside greenwaste or mixed greenwaste that is screened or unscreened, such as tree trimmings, branches, tree trunks, stumps, and limbs exceeding two inches in any dimension.
- (25) WINDROW COMPOSTING is the process in which Organic Waste Material is placed in elongated Piles and are mechanically turned on a periodic basis.
- (d) Requirements
 - (1) <u>Effective July 8, 2011, tThe owner or operator of a greenwaste cComposting</u> oOperations shall-comply with the following requirements:
 - (A) Chip or grind, as necessary, and use <u>Organic Waste Materialgreenwaste</u> for on-site composting as allowed by the Local Enforcement Agency.
 - (B) Use <u>fF</u>oodwaste for on-site composting within 48 hours of receipt or cover <u>fF</u>oodwaste with <u>screened or unscreened fF</u>inished <u>eC</u>ompost <u>or Compost</u> <u>Overs</u> until used, unless otherwise required by the Local Enforcement Agency.
 - (C) Conduct the Active Phase:

(2)

- (i) For Composting Operations processing more than 5,000 tons of Foodwaste per calendar year, for all Piles containing more than ten (10) percent Foodwaste, by weight, by using an Aeration System that is vented to an emission control system in accordance with paragraph (d)(3).
- (ii) For all other Piles and all other Composting Operations, either by Windrow Composting in accordance with paragraph (d)(2) or by using an Aeration System vented to an emission control system in accordance with paragraph (d)(3).
- (D) Conduct the Active Phase until meeting at least one of the following criteria:
 - (i) For a minimum of 22 consecutive calendar days, beginning when Organic Waste Material is mixed together for composting.
 - (ii) The Active Phase Pile has a Solvita Maturity Index of five (5) or greater as measured by the Solvita Maturity Test in accordance with subparagraph (e)(4)(A).
- (E) Conduct the Curing Phase until meeting at least one of the following criteria:
 - (i) For a minimum of 40 consecutive calendar days after the end of the Active Phase.
 - (ii) The Curing Phase Pile has a Solvita Maturity Index of seven (7) or greater as measured by the Solvita Maturity Test in accordance with subparagraph (e)(4)(A).
 - (iii) The Curing Phase Pile respiration rate is below ten (10) milligrams of oxygen consumed per gram of volatile solids per day as measured by direct respirometry in accordance with subparagraph (e)(4)(B).
- <u>Windrow Composting Best Management Practices</u>
 <u>Effective upon start-up for new greenwaste composting operations and effective</u>
 <u>November 8, 2011 for existing greenwaste composting operations, t</u><u>The owner or</u>
 operator of <u>a greenwaste c</u><u>C</u>omposting <u>operations conducting the Active Phase of</u>
 <u>composting by Windrow Composting shall</u><u>processing greenwaste only or up to 20</u>
 <u>percent manure, by volume, or up to 5,000 tons per year of foodwaste throughput</u>
 <u>shall comply with the following requirements</u>:
 - (A) Cover each <u>aActive pPhase pPile</u> with <u>screened or unscreened fF</u>inished <u>eCompost or Compost Overs</u> within <u>24twenty four</u> hours of initial <u>pPile</u> formation such that the top <u>of the cover</u> is at least six <u>(6)</u> inches thick<u>.and</u>

the pile shall not be turned for the first seven days of the active phase of composting, unless subparagraph (d)(2)(D) applies.

- (B) <u>Within six (6) hours before turning Ffor at least the first 15 fifteen days after initial Active Phase pPile formation for the active phase period of composting, within six hours before turning, apply water or other liquid approved by the Executive Officer as necessary to the surface area of each aActive pPhase pPile untilsuch that the top one-half of the Active Phase pPile is sufficiently wet toat a depth of at least three (3) inches. Alternatively, the operator may apply water during turning using a windrow turner which is equipped with water spraying technology during the entire windrow turning process.</u>
 - (i) For the purpose of this subparagraph, "wet" The owner or operator shall be determined if an Active Phase Pile is sufficiently wet by <u>themeans of a squeeze ball test pursuant to clause (d)(2)(B)(ii)</u> or an alternative approved by the Executive Officer, California Air Resources Board (CARB), or and the United States Environmental Protection Agency (U.S. EPA).
 - (ii) Squeeze Ball Test

<u>The owner or operator The ball test shall takebe conducted by taking</u> a sample of the compostable-material while wearing a protective glove from the top <u>one-half</u> of the <u>Active Phase pPile, at least three</u> (3) inches below the outer surface. The <u>owner or operator</u> <u>shallmaterial should be</u> squeezed <u>the sample</u> into a ball using hand pressure and wearing a protective glove. An Active Phase Pile is <u>sufficiently wet if the sample</u>There should be at least enough water to forms a ball when compressed, but the ball may break when tapped.

- (iii) If the ball crumbles upon release of the hand pressure, the owner or operator shall apply additional approved liquidwater to the <u>Active</u> <u>Phase Pilewindrow</u> prior to turning until the <u>Active Phase Pile is</u> <u>sufficiently wetmaterial passes the ball test</u>.
- (iv)(C) If a rain event occurs prior to watering the pile within six (6) hours before turning an Active Phase Pile and the Active Phase pPile is <u>sufficiently</u> wet to a depth of three inches, the <u>owner or</u> operator may turn the <u>Active Phase pPile</u> without adding additional <u>approved</u> <u>liquid</u>water. If the top half of the <u>Active Phase pP</u>ile is <u>not</u>

<u>sufficiently wetdry to the three inch depth</u>, <u>the owner or operator</u> <u>shall</u> apply additional <u>approved liquidwater</u> to the <u>Active Phase</u> <u>pPile</u> pursuant to <u>clause</u><u>subparagraph</u> (d)(2)(B)(<u>iii</u>) <u>before turning</u>.

- (C)(D) In lieu of complying with the requirement of subparagraph (d)(2)(B), the owner or operator may turn Active Phase Piles using a windrow turner equipped with liquid spraying technology that applies approved liquid during the entire turning process. If the pile needs to be turned within the first seven days for managing temperature or pathogen reduction pursuant to Title 14 Division 7, Chapter 3.1, Section 17868.3 of the California Code of Regulations, the operator does not need to re-apply the screened or unscreened finished compost cover and shall apply water pursuant to subparagraph (d)(2)(B) for the first fifteen days of the active phase.
- (D)(E) The <u>owner or</u> operator may implement an alternate mitigation measure that will be based on a test protocol approved by the Executive Officer, <u>CARBCalifornia Air Resources Board</u>, <u>orand the U.S. EPAUnited States</u> <u>Environmental Protection Agency and that <u>eitherdemonstrates:</u></u>
 - (1) Meets Overall Control Efficiency emission reductions by of at least 40 percent, by weight, for VOC and emissions and meets Overall Control Efficiency of reductions by at least 20 percent, by weight, for ammonia emissions; or for combined screened or unscreened finished compost cover and water application.
 - (2) Does not exceed 2.97 lbs VOC emissions per one (1) ton of Throughput and does not exceed 0.57 lbs ammonia emissions per one (1) ton of Throughput.
- (3) <u>Aeration System Vented to Emission Control System</u> <u>Effective July 8, 2011, tThe owner or operator of a greenwaste cComposting</u> oOperations processing greater than 5,000 tons per year of foodwaste throughput conducting the Active Phase of composting using an Aeration System vented to an <u>emission control system</u> shall comply with the following requirements, for the purpose of regulatory compliance:
 - (A) <u>Use Any active phase of composting containing more than 10 percent</u> foodwaste, by weight, shall be conducted using an emission control <u>system</u>device designed and operated <u>that either:</u>
 - (i) <u>Meetswith an oO</u>verall system c<u>C</u>ontrol e<u>E</u>fficiency of at least 80 percent, by weight, each-for VOC emissions and meets Overall

Control Efficiency of at least 80 percent, by weight, for ammonia emissions, as compared to either:-

- (I) Inlet emission rates for VOC and ammonia, respectively, to the emission control system;
- (II) Baseline Emission Factors of 4.25 pounds of VOC per ton of Throughput and 0.46 pounds of ammonia per ton of Throughput, respectively; or
- (III) Operation-specific Baseline Emission Factors for VOC and ammonia, respectively, if submitted by the owner or operator and approved by the Executive Officer to represent the uncontrolled emission factors of the Active Phase of the Composting Operation; or
- (ii) Does not exceed 0.85 lbs VOC emissions per ton of Throughput and does not exceed 0.092 lbs ammonia emissions per ton of Throughput.
- (B) Demonstrate compliance with subparagraph (d)(3)(A), as applicable, by source testing in accordance with paragraph (e)(1):
 (i) Within one (1) year of startup of the emission control system; and

(i) Every three (3) years thereafter.

- (C) Install, operate, and maintain the emission control system in accordance with the manufacturer's operation and maintenance manual or other similar written materials supplied by the manufacturer or distributor to ensure that the emission control system remains in proper operating condition.
- (B) The operator may implement a control alternative if the alternative is approved by the Executive Officer, California Air Resources Board, and the United States Environmental Protection Agency, to achieve VOC and ammonia reductions that are greater than or equal to the reductions required pursuant to subparagraph (d)(3)(A).
- (C) For new greenwaste composting operations that intend to compost greater than 5,000 tons per year of foodwaste throughput, a permit shall be obtained for an emission control device, as specified in subparagraph (d)(3)(A) or (d)(3)(B), prior to construction.

The annual throughput calculation may exclude any non-putrescible materials, including, but not limited to paper, woody, other low-water, high cellulose materials, and non-compostable contaminants and green waste that are separated

either before or after composting and shipped off site for disposal provided they are quantified and appropriate records are maintained for.

- (4) No later than October 10, 2011, for existing greenwaste composting operations that, as of July 8, 2011, process or plan to process greater than 5,000 tons per year of foodwaste throughput, the operator shall file a permit application for an emission control device and fully implement the emission control device in accordance with subparagraphs (d)(3)(A) or (d)(3)(B) within six months upon approval of the permit application.
- (5) The overall control efficiency required in subparagraph (d)(3)(A) shall be demonstrated by a source test within three months after implementation of the emission control device, or within nine months of permit approval, whichever occurs sooner, and every three years thereafter. For the purpose of this rule, the baseline emission factors to be used shall be 4.25 pounds of VOC per ton of throughput and 0.46 pounds of ammonia per ton of throughput for the active phase of composting only. The Executive Officer may approve the use of alternate baseline emission factors, if the operator demonstrates through the approved source test that alternate baseline emission factors are representative of uncontrolled operations for that facility
- (6) All emission control devices shall be installed, operated, and maintained in accordance with the manufacturer's operation and maintenance manual or other similar written materials supplied by the manufacturer or distributor of such equipment to ensure that the system remains in proper operating conditions. Such documentation shall be made available to the Executive Officer upon request.
- (7) All records, including application of screened or unscreened finished compost and water, operation and maintenance of an emission control device, and source tests, shall be kept and maintained at the facility pursuant to subdivision (f).
- (e) Test Methods and Protocol
 - (1) <u>Source Testing</u>For a greenwaste composting operation subject to paragraphs (d)(3) through (d)(5), the operator shall conduct all required source and laboratory tests in accordance with an Executive Officer approved test protocol developed in accordance with the guidelines provided in Attachment A of this rule. The owner or operator of a Composting Operation required to perform source testing shall:

- (A) Prior to conducting source testing to demonstrate compliance, submit a source test protocol for approval to the Executive Officer in accordance with the guidelines provided in Attachment A;
- (B) Submit an updated or new source test protocol if there are any changes to the emission control system or if the Executive Officer requests an updated or new source test protocol;
- (C) Conduct source testing pursuant to the valid source test protocol approved by the Executive Officer; and
- (D) Submit the source test report to the Executive Officer within 60 days of completing all sampling for source testing.
- (2) For a greenwaste composting operation subject to paragraphs (d)(3) through (d)(5), <u>*</u>The <u>owner or operator of the Composting Operation shall use a District approved</u> laboratory <u>approved by the Executive Officer for all required testing.</u> in accordance with the Attachment A of this rule.
- (3) The following methods shall be used to determine compliance with this rule:
 - (A) <u>South Coast</u> SCAQMD Method 207.1 Determination of Ammonia Emissions from Stationary Sources.
 - (B) <u>South Coast</u> SCAQMD Method 25.3 Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources.
 - (C) <u>South Coast SCAQMD</u> Method 1.1 Sample and Velocity Traverses for Stationary Sources.
 - (D) <u>South Coast</u> <u>SCAQMD</u> Method 1.2 Sample and Velocity <u>Traverse</u> for Stationary Sources with Small Stacks and Ducts.
 - (E) <u>South Coast SCAQMD Method 2.1 Determination of Stack Gas Velocity</u> and Volumetric Flow Rate (S-Type Pitot Tube).
 - (F) <u>South Coast SCAQMD Method 2.2 Direct Measurement of Gas Volume</u> through Pipes and Small Ducts.
 - (G) <u>South Coast SCAQMD</u> Method 2.3 Determination of Gas Velocity and Volumetric Flow Rate from Small Stacks or Ducts.
 - (H) <u>South Coast SCAQMD Method 4.1 Determination of Moisture Content</u> in Stack Gases.
- (4) Triplicate samples shall be taken for the following test methods:
 - (A) <u>Test Methods for the Examination of Composting and Compost (TMECC)</u>
 05.08-E Solvita Maturity Index (April 7, 2002) or its successor.

- (B) TMECC 05.08-A Specific Oxygen Uptake Rate (April 7, 2002) or its successor.
- (f) Recordkeeping

The owner or operator of a Composting Operation shall:

- (1) Maintain the following records, as applicable:
 - (A) A copy of the annual Composting Operation report submitted in accordance with subdivision (g);
 - (B) Records of dates and amounts of composting conducted;
 - (C) Application of Finished Compost, Compost Overs, and approved liquids, in accordance with paragraph (d)(2);
 - (D) Source test reports, in accordance with subparagraph (g)(1)(D);
 - (E) Operation and maintenance of any emission control device, in accordance with paragraph (d)(3); and
 - (F) Manufacturer's operation and maintenance manual or similar, in accordance with paragraph (d)(3).
- (2) Maintain records for the prior five (5) years of operation, with the most recent two (2) years retained on-site, which shall be immediately available upon request by the Executive Officer. The remaining three (3) years of records shall be made available to the Executive Officer within one (1) week of request.

Records shall be kept in a format approved by the Executive Officer. All operational records and information recorded pursuant to the provisions of this rule shall be maintained for the prior five years of operation, with the most recent two years retained at the facility, which shall be immediately available upon request by the Executive Officer. The remaining three years of records shall be made available to the Executive Officer within one week of request.

(g) Reporting

The owner or operator of a Composting Operation shall submit to the Executive Officer annually, no later than July 1st of each calendar year, a report summarizing the Composting Operation of the previous calendar year in a format approved by the Executive Officer.

- (h)(g) Exemptions
 - (1) Composting facilities subject to Rule 1133.2 Emission Reductions from Co-Composting Operations, are exempt from the provisions of this rule.

- (2) If the operator of any greenwaste composting operation installs an emission control device, in accordance with paragraphs (d)(3) through (d)(6), the provisions of paragraph (d)(2) do not apply.
- (1)(3) The owner or operator of any of Tthe following types of Composting facilities and oOperations shall beare exempt from the provisions of subdivisions (d) through (g)requirements of this rule, provided that the Composting oOperation is not subject to the Local Enforcement Agency Notification or Permit regulations pursuant to Title 14 Division 7, Chapter 3.1, Section 17857.1 of the California Code of Regulations:
 - (A) Community <u>eC</u>omposting.;
 - (B) Nursery <u>eC</u>omposting.;
 - (C) Backyard <u>eC</u>omposting<u>.</u>; and
 - (D) Recreational $f\underline{F}$ acility \underline{eC} omposting.
 - (E) School Composting.
 - (F) Agricultural Operation.
- (2) The owner or operator of a Composting Operation with a Throughput of less than
 <u>100 tons per calendar year shall be exempt from the provisions of subdivisions (d),</u>
 (e), and (g), provided the owner or operator records and maintains records in
 <u>accordance with subdivision (f).</u>

ATTACHMENT A

GUIDELINES FOR THE DEVELOPMENT OF SOURCE TEST PROTOCOLS FOR VOC AND AMMONIA EMISSIONS FROM GREENWASTE COMPOSTING OPERATIONS

Source test protocols are to consist of testing plans to measure VOC and ammonia emissions due to the composting process. When used for determining the <u>emission</u> control <u>systemdevice</u> <u>Overall</u> <u>Control eEfficiency requirement specified for new and existing facilities</u>, the measurements shall consist of lb/hr measurements at the inlet and exhaust of the <u>emission</u> control <u>systemdevice</u> and are subject to the applicable requirements that follow. When used for determining the <u>oO</u>verall <u>Controlemission</u> <u>Efficiency reduction</u> requirements as compared to the <u>bBaseline eEmissions</u> <u>are to be reported as % reductions for the <u>aActive pPhase composting</u> in terms of pounds of emissions per ton of <u>tThroughput</u> (total raw material as received) and are subject to the applicable requirements that follow. The following are general requirements for all testing as well as specific requirements for the rule sections for each facility-specific protocol which must be prepared by the source test contractor and approved by the <u>South Coast SC</u>AQMD prior to testing.</u>

1. Alternative Test Methods

The reference test methods for ammonia, VOC, and flow rate cited in this guideline shall be used to determine compliance with this rule. Alternative test methods may be used if they are determined to be equivalent and approved in writing by the Executive Officer, the California Air Resources Board, and the U.S. Environmental Protection Agency. For the source test protocols, as defined as the manner in which the reference test methods are employed to obtain a measurement of the emissions, alternatives to the procedures cited in <u>thesethis</u> guidelines may be used if they are determined to be equivalent and approved in writing by the Executive Officer.

2. LAP Requirements

The sampling, analysis, and reporting shall be conducted by a laboratory/source test firm that has been approved under the <u>South Coast SCAQMD</u> Laboratory Approval Program (LAP) for the cited <u>South Coast SCAQMD</u> reference test methods, where LAP approval is available. For <u>South Coast SCAQMD</u> reference test methods for which no LAP program is available, the LAP approval requirement shall become effective one (1) year after the date that the LAP program becomes available for that <u>South Coast SCAQMD</u> reference test method.

3. Operating Conditions

The testing must be conducted under representative operating conditions with respect to seasonal conditions, compost composition, process \underline{t} Throughput, processing of the materials, and \underline{pP} ile geometries. The following operating parameters shall be recorded during testing and reported with the test results:

- a) A thorough description of the composting process and process diagram of each processing area and including residence times in each of the composting process areas.
- b) Process \underline{t} Throughput as determined by facility's billing scales or other calibrated measuring device that represents the tons of the material as received that is present at the facility during the time of the testing. When using the <u>South Coast AQMDDistrict</u> Baseline Emission Factors, the process \underline{t} Throughput is to include all of the raw \underline{o} Organic <u>Waste</u> <u>mM</u>aterials that are composted excluding material that is recycled from previous similar processing. Several \underline{t} Throughputs may be necessary if applicable to the different processing areas or \underline{pP} ile ages.
- c) Compost composition (percent and type of <u>Organic Waste mMaterials i.e. mManure,</u> <u>gG</u>reenwaste, <u>fF</u>oodwaste, etc...).
- d) Age of all <u>pP</u>iles that were tested and all <u>pP</u>iles present at the facility during testing.
- e) Detailed dimensions of all <u>pP</u>iles or the biofilter so that a surface area for each <u>pP</u>ile type can be calculated.
- f) A description of the biofilter system, including a process diagram and type of biofilter media.
- g) Age of the biofilter media.
- h) A thorough description of the humidification and moisture maintenance system for the biofilter.
- i) Identification of peripheral monitoring equipment, such as moisture or temperature sensors, and data from them during testing.
 - 4. Ammonia Sampling

<u>South Coast</u> SCAQMD Method 207.1 shall be used to obtain the ammonia samples from each source of emissions to be tested. When sampling from a flux chamber, a sample line of minimal length should be connected to a midget sampling train consisting of; two (2) midget impingers each filled with 15 mLl of 0.1N Ssulfuric Aacid, an empty bubbler, and a bubbler filled with tared silica gel. The samples shall be analyzed for ammonium content as ammonia by ion chromatography or ion selective electrode.

5. *VOC Sampling*

Duplicate integrated gas samples shall be taken from each source of emissions to be tested using <u>South Coast SC</u>AQMD Method 25.3. The Method 25.3 apparatus should be connected to sample directly inside the flux chamber or duct as applicable. Compost emissions are considered as water soluble sources where the 50 ppm applicability limit of Method 25.3 does not apply.

6. Specific Requirements for Testing Greenwaste-Composting Operations Control Equipment Performance

For surface types of emissions, such as with open faced biofilter exhausts, the exhaust emission rate shall be determined as in the following Section (8).

For a control device inlet or exhaust that is vented through a testable duct, the gas velocity within the duct shall be measured according to <u>South Coast</u> <u>SC</u>AQMD Methods 1.1, 2.1, and 3.1. The

flow rate shall also be corrected to dry standard conditions using the moisture content as determined by <u>South Coast</u> SCAQMD Method 4.1. This flow rate may then be used to determine mass emission rates.

The <u>oO</u>verall <u>Control</u>destruction <u>eEfficiency</u> is calculated as follows:

$$\underline{OCEODE} = 100 x (1 - (E / I))$$
(Equation 1)

Where:

OCEODE =Overall Control DestructionEfficiency (%)E =Total Exhaust Emission Rate (lb/hr)I =Total Inlet Emission Rate to Control Device (lb/hr)

7. Specific Requirements for Existing Greenwaste-Composting Operations (Baseline Emission Factors)and New Greenwaste Composting Operations (Overall Emissions Reduction)

A proposed measurement from the <u>aActive Phasegreenwaste composting process</u>, including but not limited to surface emissions of all <u>pP</u>iles where the materials are composted, and outlets (vents or surfaces) of control devices must be included in the protocol. If the emissions are vented to atmosphere from a vent stack such as from an otherwise uncontrolled aerated static <u>pP</u>ile or other vent to atmosphere, then the stack concentration, determined using methods specified in Sections (4) and (5) and flow rate measurements as specified in the previous Section (6) are required. From all surface types of emissions such as from compost <u>pP</u>iles and biofilter surfaces, the procedure for measuring surface emissions as in Section (8) is required. A measurement for fugitive emissions from aerated static <u>pP</u>ile surfaces must also be included.

Each type of <u>pP</u>ile must be tested. If the facility includes several identical <u>pP</u>iles, then only the largest <u>pP</u>ile need be tested. If the facility has more than three (3) different age <u>pP</u>iles that are otherwise identical in processing and composition, then at a minimum three (3) ages can be tested including newer, older, and middle aged <u>pP</u>iles. In any case, the surface area of all <u>pP</u>iles at the facility must be included in the determination of <u>pP</u>ile dimensions as recorded in Section (3).

If the facility elects to use an alternative to the <u>South Coast AQMD</u> District's <u>bB</u> aseline <u>eE</u> missions <u>4</u> factors, then a separate test must be conducted to establish this baseline on the uncontrolled composting operation (e.g., windrow method) with the same compost mix. Following the source test to determine an alternative <u>bB</u> aseline <u>Emission Factors</u>, facilities would have the option to use the <u>South Coast AQMD</u> District's <u>bB</u> aseline <u>eE</u> missions <u>4F</u> actors or the alternative <u>bB</u> aseline <u>eE</u> missions <u>4F</u> actors or the alternative <u>bB</u> aseline <u>eE</u> missions <u>4F</u> actors.

Overall Control EfficiencyReduction of emissions shall be calculated as follows:

$$\underline{OCE} \% Reduction = 100 x (1 - (TE / B))$$
(Equation 2)

Where: <u>OCE</u> = Overall Control Efficiency (%)

- TE = Total Active and Curing-Phase Emissions (lb/ton <u>+T</u>hroughput)
- B = <u>South Coast AQMD</u>District Baseline Emissions Factors or Alternative Baseline Emissions Factors if Tested (lb/ton &Throughput)
 - 8. Procedure for Measuring Surface Emissions

The procedure for measuring surface emissions such as the compost \underline{pP} ile and biofilter surfaces that cannot be tested by conventional methods through a stack or duct, is a modified form of the procedures found in the US Environmental Protection Agency's (U.S. EPA) Measurement of Gaseous Emission Rates from Land Surfaces Using an Emission Isolation Flux Chamber User's Guide (U.S. EPA Guide). The modifications to the procedures in the U.S. EPA Guide areis specified in the following requirements.

The flux chamber encompasses a fixed surface area of 1.4 ft^2 and contains a sweep air system to obtain a homogeneous air sample by employing a mixing fan and sweep gas (10% <u>heliumHe</u> in air at 5 liters/min recommended). The sweep gas must contain a non-<u>-</u>reactive and non-present tracer such as the aforementioned 10% helium so that a correction for the contribution of the surface flow rate can be calculated.

A minimum of ten (10) sample locations or a sufficient number at each <u>pP</u>ile/surface tested must be obtained in order to achieve a representative sample of the surface emissions. These locations can be composited for each <u>pP</u>ile/surface to reduce testing costs. For example, for one hour sampling, ten (10) random positions on the <u>pP</u>ile should be tested for <u>six (6)</u> minutes each. Alternatively, a lesser number of sample locations may be sampled provided that an evaluation of spatial variation demonstrates that the number of sample locations is sufficient.

The emissions must be reported in units of $lb/hr-ft^2$, lb/hr and lb/ton of $\pm Throughput$. The following calculations shall apply to the test results:

		Surface Flow Correction Factor = C_t / C_s	(Equation 3)
$C_t = C_s =$	Where	Concentration of Tracer in Sweep Gas Concentration of Sweep Gas in Flux Chamber Sample	
		Corrected Flux Chamber Results $(lb/hr-ft^2) = UFC \times SFCF$	(Equation 4)
UFC = SFCF =	Where =	: Uncorrected Flux Chamber Results (lb/hr-ft ²) Surface Flow Correction Factor	
		<i>lb/hr = lb/hr-ft² x Total Compost Surface Area in Category</i>	(Equation 5)
		<i>lb/ton t<u>T</u>hroughput = <i>lb/hr</i> x (24 <i>hr/day</i>) / <i>PT</i></i>	(Equation 6)

Where:

PT = Process Throughput (total ton/day as received)

Total Emissions (lb/ton
$$\underline{tT}$$
 hroughput) = $\sum P$ (Equation 7)

Where:

 $\mathbf{P} =$

Active <u>Phase</u>and curing sources of the Facility Compost Emissions (lb/ton <u>*t*</u>hroughput)

For a facility where not every age of \underline{pP} ile was tested, the surface areas from each \underline{pP} ile in the facility must be included and sorted into appropriate age and emissions categories from those that were measured.