(Adopted April 5, 1985)(Amended April 10, 1998)
(Amended March 17, 2000)(Amended April 1, 2011)

RULE 1150.1. CONTROL OF GASEOUS EMISSIONS FROM MUNICIPAL SOLID WASTE LANDFILLS

(a) Purpose

The purpose of this rule is to reduce non-methane organic compounds (NMOC), volatile organic compound (VOC) and toxic air contaminant (TAC) emissions from Municipal Solid Waste (MSW) landfills to prevent public nuisance and possible detriment to public health caused by exposure to such emissions. This rule also reduces methane emissions, a greenhouse gas.

(b) Applicability

This rule is applicable to any owner or operator of an active or inactive MSW landfill.

(c) Definitions

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

(1) ACTIVE COLLECTION SYSTEM as defined by 40 CFR 60.751 means a gas collection system that uses gas mover equipment.

(2) ACTIVE MSW LANDFILL means a Municipal Solid Waste landfill that has received solid waste on or after November 8, 1987.

(3) BACKGROUND means the local ambient concentration of total organic compounds (TOC) measured as methane determined by holding the instrument probe approximately 5 to 6 feet above the landfill surface.

(4) CLOSED MSW LANDFILL means a Municipal Solid Waste landfill that has ceased accepting solid waste for disposal and was conducted in accordance with all applicable federal, state and local statutes, regulations, and ordinances in effect at the time of closure.

(5) COMPONENT LEAK means the concentration of methane measured one half an inch or less from a component source that exceeds 500 parts per million by volume (ppmv), other than non-repeatable, momentary readings.

(6) COMPONENT means any equipment that is part of the gas collection system or gas control system and that contains landfill gas including, but

not limited to, wells, pipes, flanges, fittings, valves, flame arresters, knock-out drums, sampling pots, blowers, compressors, or connectors.

(7) CONSTRUCTION AND DEMOLITION WASTE means waste building materials, packing and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial building and other structures.

(8) CONTINUOUS OPERATION means that the gas collection and gas control systems are operated continuously, the existing gas collection wells are operating under vacuum while maintaining landfill gas flow, and the collected landfill gas is processed by a gas control system 24 hours per day.

(9) DESTRUCTION EFFICIENCY means a measure of the ability of a gas control device to combust, transform, or otherwise prevent emissions of methane from entering the atmosphere.

(10) ENCLOSED COMBUSTOR means an enclosed flare, steam generating boiler, internal combustion engine or gas turbine.

(11) ENERGY RECOVERY DEVICE means any combustion device that uses landfill gas to recover energy in the form of steam or electricity including, but not limited to gas turbines, internal combustion engines, boilers, and boiler-to-steam turbine systems.

(12) EXECUTIVE OFFICER means the Executive Officer or designee of the South Coast Air Quality Management District

(13) GAS COLLECTION SYSTEM means any system that employs various gas collection wells and connected piping and mechanical blowers, fans, pumps or compressors to create a pressure gradient and actively extract landfill gases.

(14) GAS CONTROL DEVICE means any device used to dispose of or treat collected landfill gas including, but not limited to, enclosed flares, open flares, internal combustion engines, boilers and boiler-to-steam systems, process heaters, fuel cells, and gas turbines.

(15) GAS CONTROL SYSTEM means any system that disposes of or treats collected landfill gas by one or more of the following means: combustion, gas treatment for subsequent sale, or sale for processing offsite, including for transportation fuel and injection into natural gas pipelines.

(16) INACTIVE MSW LANDFILL means a Municipal Solid Waste landfill that has not accepted solid waste after November 8, 1987 and

subsequently no further solid waste disposal activity has been conducted within the disposal facility.

(17) LANDFILL GAS means any untreated, raw gas derived through a natural process from the decomposition of organic waste deposited in a MSW landfill from the evolution of volatile species in the waste, or from chemical reactions of substances in the waste.

(18) LANDFILL SURFACE means the area of the landfill under which decomposable solid waste has been placed, excluding the working face.

(19) MUNICIPAL SOLID WASTE or MSW LANDFILL means an entire disposal facility in a contiguous geographical space where solid waste is placed in or on land. An MSW landfill may be active, inactive or closed.

(20) NON-DECOMPOSABLE SOLID WASTE means materials that do not degrade biologically to form landfill gases. Examples include, but are not limited to, earth, rock, concrete, asphalt, paving fragments, clay products, inert slag, asbestos-containing waste, and demolition material containing minor amounts (less than 10 percent by volume) of wood and metals. Materials that do not meet this definition are considered decomposable solid waste.

(21) NON-REPEATABLE MOMENTARY READINGS means indications of the presence of methane, total organic compounds, or toxic air contaminants, which persist for less than five seconds and do not recur when the sampling probe of a portable gas detector is placed in the same location.

(22) OPERATOR means the person:

(A) Operating the MSW landfill, or

(B) Operating the MSW landfill gas collection or gas control system.

(23) OWNER means the person holding title to the property.

(24) PASSIVE COLLECTION SYSTEM means a gas collection system that solely uses positive pressure within the landfill to move the gas rather than using gas mover equipment, or uses the natural pressure gradient established between the encapsulated waste and the atmosphere to move the gas through the collection system.

(25) PERIMETER means the outer boundary of the entire waste disposal property.

(26) PROFESSIONAL ENGINEER means an engineer holding a valid certificate issued by the State of California Board of Registration for

Professional Engineers and Land Surveyors or a state offering reciprocity with California.

(27) SOLID WASTE means all decomposable and non-decomposable solid, semisolid and liquid wastes including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, manure, vegetable or animal solid and semisolid waste. Solid waste also includes any material meeting the definition of solid waste in 40 CFR 60.751 (as last amended by 64 Fed. Reg. 9262, Feb. 24, 1999), as incorporated by reference herein.

(28) SUBSURFACE GAS MIGRATION means underground landfill gases that are detected at any point on the perimeter, pursuant to California Code of Regulation Title 27, section 20921.

(29) TOXIC AIR CONTAMINANT (TAC) means an air contaminant which has been identified as a hazardous air pollutant pursuant to Section 7412 of Title 42 of the United States Code; or has been identified as a TAC by the Air Resources Board pursuant to Health and Safety Code Section 39655 through 39662, or which may cause or contribute to an increase in mortality or an increase in serious illness, or potential hazard to human health.

(30) WASTE IN PLACE means the total amount of solid waste placed in an MSW landfill, estimated in tons. The refuse density is assumed to be 1,300 pounds per cubic yard and the decomposable fraction is assumed to be 70 percent by weight.

(31) WELL RAISING means a MSW landfill activity where an existing gas collection well is temporarily disconnected from a vacuum source; and the non-perforated pipe attached to the well is extended vertically to allow the addition of a new layer of solid waste or the final cover or is extended horizontally to allow extension of an existing layer of solid waste or cover material. The extended pipe is then reconnected to vacuum source in order to continue collecting gases from that well.

(32) WORKING FACE means that open area where solid waste is deposited daily and compacted with landfill equipment.

(d) Active Landfill Design and Operation Requirements

The MSW landfill owner or operator shall comply with the provisions of paragraphs (d)(1) through (d)(20):

(1) If a valid Permit to Construct or Permit to Operate for the gas collection and gas control systems that meets the requirements of subparagraphs (d)(1)(A) through (d)(1)(C) has not been issued by the District, the owner or operator shall submit a site-specific gas collection and gas control systems design plan. The design plan shall be prepared by a Professional Engineer and submitted to the Executive Officer with applications for Permits to Construct or Permits to Operate for the gas collection and gas control systems. The Executive Officer shall review the gas collection and gas control systems design and either approve it, disapprove it, or request that additional information be submitted. An approved design plan may be revised and submitted for review and approval by the Executive Officer. Revisions shall be prepared by a Professional Engineer.

(A) The gas collection and gas control systems shall be designed to handle the maximum expected gas flow rate from the entire area of the MSW landfill that requires control, to minimize migration of subsurface gas to comply with paragraph (d)(10), and to collect gas at an extraction rate to comply with paragraphs (d)(11) and (d)(12). For the purposes of calculating the maximum expected gas generation flow rate from the landfill, the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, Chapter 3 (IPCC Model), using landfill gas capture factor of 75 percent shall be used. Any other method used to determine the maximum gas generation flow rate, must be submitted in writing and approved by the Executive Officer, prior to use.

(B) If a valid Permit to Construct or Permit to Operate has not been issued by the District for the gas collection and gas control systems, the gas collection and gas control systems design plan shall either conform with specifications for active collection systems in 40 CFR, Part 60, Section 60.759 or include a demonstration to the Executive Officer's satisfaction of the sufficiency of the alternative provisions describing the design and operation of the gas collection and gas control systems, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. Alternatives to this rule shall be submitted as specified in subdivision (i).

(C) The design plan shall provide for the control of collected MSW landfill emissions through the use of gas collection and gas control systems meeting the applicable requirements in clauses (d)(1)(C)(i), (d)(1)(C)(ii), (d)(1)(C)(iii), and (d)(1)(C)(iv), or provide for the collection and subsequent sale of collected MSW landfill emissions as specified in clause (d)(1)(C)(v).

(i) Route all collected landfill gas to a gas control system designed to be operated continuously to reduce methane by at least 99 percent by weight and reduce NMOC by at least 98 percent by weight or reduce the outlet NMOC concentration to less than 20 parts per million by volume (ppmv), dry basis as hexane at 3 percent oxygen. The required reduction efficiency or ppmv shall be established by an initial source test, required under 40 CFR, Part 60, Section 60.8 and annually thereafter using the test methods specified in paragraph (j)(1). The annual source test shall be conducted no later than 45 days after the anniversary date of the initial source test.

(ii) If an enclosed flare is used as the gas control device, the following requirements shall be met:

(I) The enclosed flare shall achieve a methane destruction efficiency of at least 99 percent by weight.

(II) The enclosed flare shall be equipped with an automatic damper, an automatic shutdown device, a flame arrestor, and a continuous recording temperature sensor.

(III) During restart or startup, an enclosed flare shall have sufficient flow of propane or commercial natural gas to the burners to prevent unburned collected methane from being emitted to the atmosphere.

(IV) The enclosed flare shall be operated within the parameter ranges established during the initial or the most recent source test. The operating

parameters to be monitored are specified in paragraph (e)(7).

(iii) If an open flare is used as the gas control device, the following requirements shall be met:

(I) An open flare installed and operated prior to August 1, 2008 may operate until January 1, 2018.

(II) Operation of an open flare on or after January 1, 2018 may be allowed if the owner or operator can demonstrate to the Executive Officer that the landfill gas heat input capacity is less than 3.0 MMBtu/hr and is insufficient to support the continuous operation of an enclosed flare or other gas control device.

(III) The owner or operator seeking to temporarily operate an open flare during the maintenance or repair of a gas control system or while waiting for the installation on an enclosed flare or to offset gas mitigation issues must submit a written request to the Executive Officer and operate an open flare only after approval.

(iv) If a gas control device is an enclosed combustor other than a flare and is used as a gas control device, the following requirements shall be met:

(I) The gas control device shall achieve a methane destruction efficiency of at least 99 percent by weight. Lean burn combustion engines shall reduce the outlet methane concentration to less than 3,000 ppmv, dry basis, corrected to 15 percent oxygen.

(II) If a boiler or process heater is used as the gas control device, the landfill gas stream shall be introduced into the flame zone. Where the landfill gas is the primary fuel for the boiler or process heater, introduction of the landfill gas stream into the flame zone is not required.

(III) The gas control device shall be operated within the operating parameter ranges established during the

initial or most recent compliant source test. The operating parameters to be monitored are specified in paragraph (e)(7).

(v) Route the collection gas to a treatment system that processes the collection gas for subsequent sale or use. All emissions from any atmospheric vent from the gas treatment system shall be subject to requirements of clause (d)(1)(C)(i).

(2) New and Active MSW Landfills shall install and operate the gas collection and gas control systems no later than 18 months after the submittal of the design plan.

(3) Any owner or operator of existing gas collection and gas control systems who modifies those systems to meet the requirements of this rule shall submit for approval to the Executive Officer an amendment of the existing design plan to include any necessary updates or addenda. Design plan amendments shall be prepared by a professional engineer.

(4) The owner or operator of a closed or inactive landfill shall install and operate the gas collection and gas control systems no later than 30 months after the approval of the design plan.

(5) The owner or operator of an active MSW Landfill shall identify in their design plan the areas of the landfill that are closed or inactive.

(6) Any area of the landfill that contains asbestos-containing waste or non-decomposable solid waste may be excluded from collection provided that the owner or operator submits documentation to the Executive Officer regarding the nature of the material, and the date of its deposit in the area. This documentation may be included as part of the design plan.

(7) The design plan shall include a description of potential mitigation measures to be used to prevent the release of methane or other pollutants into the atmosphere during the installation or preparation of wells, piping, or other related components during repairs or the temporary shutdown of the gas collection system components; or to be used when solid waste is excavated and moved.

(8) The gas collection device and gas control systems shall be operated, maintained and expanded in accordance with the procedures and schedules set forth in the approved design plan.

(9) If the District has not issued prior written approval for subsurface refuse boundary sampling probes, the owner or operator shall design and install subsurface refuse boundary sampling probes as specified in Section 1.1 Attachment A, to determine whether landfill gas migration exists. Installation of the refuse boundary probes shall be no later than 18 months after the submittal of the gas collection and gas control systems design plan as specified in paragraph (d)(1).

(10) Operate the gas collection system to prevent the concentration of TOC measured as methane from exceeding five percent by volume in the subsurface refuse boundary sampling probes constructed for the purposes of detecting lateral migration of landfill gas away from the waste mass, as determined from collected samples.

(11) Operate the gas collection system to prevent the concentration of TOC measured as methane from exceeding 25 ppmv as determined by integrated samples taken on numbered 50,000 square foot landfill grids.

(12) Operate the gas collection system to prevent the concentration of TOC measured as methane from exceeding 500 ppmv above background as determined by instantaneous monitoring at any location on the landfill, except at the outlet of any gas control device.

(13) Operate the gas collection and gas control systems so that there are no leaks that exceed 500 ppmv TOC measured as methane at any component under positive pressure. Any component leak exceeding 500 ppmv must be tagged and repaired within 10 calendar days from the time of the first exceedance.

(14) Operate the gas collection and gas control systems at all times for landfills with an Active Collection System. In the event the gas collection or gas control systems are inoperable, the active collection systems shall be shut down and all valves in the gas collection and gas control systems contributing to venting of the gas to the atmosphere shall be closed no later than one hour after such breakdown or no later than one hour after the time the owner or operator knew or reasonably should have known of its occurrence.

(15) Operate the gas collection and gas control systems until all the exemption criteria under subdivision (k) have been met and the reports specified in subparagraph (f)(2)(D) have been submitted to the Executive Officer.

(16) Operate all Wellheads so the gauge pressure is under a constant vacuum (negative pressure), except under the following conditions:

(A) During wellhead raising: When a new fill is being added or compacted in the immediate vicinity around the well and once installed, while a gas collection well extension is sealed or capped until the raised well is reconnected to vacuum source.

(B) During repair and temporary shutdown of the gas collection system due to a catastrophic event, such as an earthquake, or to extinguish landfill fires; and as a result of these events, during repair efforts to connect new landfill gas collection system components to the existing gas collection system, and to do required permitted component connection for the gas collection system, and to perform permitted construction activities provided the following requirements are met:

(i) Any new gas collection system components required to maintain compliance with this subparagraph must be included in the most recent Design Plan pursuant to paragraph (d)(3).

(ii) Methane and other landfill gas emissions are minimized during shutdown pursuant to subdivision (d).

(17) Design, install, and operate a wind speed and direction monitoring system with a continuous recorder of the requirements in subparagraphs (d)(17)(A) and (d)(17)(B), at a site which is representative of the wind speed and direction in the areas being sampled. The wind velocity shall be recorded throughout the sampling period. The wind direction transmitter shall be oriented to true north using a compass.

(A) For wind speed use a 3 cup assembly, with a range of 0 to 50 miles per hour, with a threshold of 0.75 mile per hour or less.

(B) For wind direction, use a vane with a range of 0 to 540 degrees azimuth, with a threshold of plus-minus 2 degrees.

(18) Comply with the requirements of Section 21140 – Final Cover, of California Code of Regulations Title 27, Subchapter 5 – Closure and Post-Closure Maintenance, upon closure of a MSW landfill unit, incorporated herein as Attachment B.

(19) Comply with the requirement of Section 20200 – State Water Resources Conservation Board (SWRCB) Applicability and Classification Criteria of

California Code of Regulations Title 27, Article 2 – SWRCB, Waste Classification and Management, with respect to the disposal of liquids and semi-solid waste at Class III landfills, incorporated herein as Attachment C.

(20) Comply with the requirements of National Emissions Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subpart AAAA, as applicable.

(e) Active Landfill Sampling and Monitoring Requirements

The MSW landfill owner or operator shall comply with the provisions of paragraphs (e)(1) through (e)(7), after installation of the landfill gas control system:

(1) Monitor and collect samples for analysis as specified in Section 1.0, Attachment A, to determine the concentrations of TOC and TAC each month from the subsurface refuse boundary sampling probes, to assure continued compliance. Any measurement of 5 percent TOC by volume or greater shall be recorded as an exceedance and the actions specified in subparagraphs (e)(1)(A) through (e)(1)(C) shall be taken.

(A) The probe shall be identified and the location recorded as specified in Section 1.6, Attachment A.

(B) Adjustments to the vacuum of adjacent wells to increase the gas collection in the vicinity of the probe with the exceedance, shall be made and the probe resampled no later than 10 calendar days after detecting the exceedance.

(C) If the resampling of the probe shows a second exceedance, additional corrective action shall be taken and the probe shall be resampled again no later than 10 calendar days after the second exceedance. If the resampling shows a third exceedance, it is a violation unless the owner or operator determines that a new or replacement gas collection well is needed. The owner or operator must install and operate the new or replacement well no later than 45 days after detecting the third exceedance.

(2) Collect monthly integrated samples for analysis as specified in Section 2.0, Attachment A, to determine the concentrations of TOC and TAC from the landfill surface, and to assure continued compliance. Any reading of

25 ppmv or greater shall be recorded as an exceedance and the actions specified in subparagraphs (e)(2)(A) through (e)(2)(C) shall be taken.

(A) The grid shall be identified and the location recorded as specified in Section 2.8, Attachment A.

(B) If the sample shows an exceedance, the gas collection equipment and the landfill cover shall be serviced to ensure the exceedance is repaired. If adjustments to the vacuum of adjacent wells are made to increase the gas collection in the vicinity of the grid with the exceedance resample the grid no later than 10 calendar days after detecting the exceedance. If measurable precipitation occurs within the 10 calendar days, all resamples and analysis shall comply with Section 2.2.2, Attachment A.

(C) If the resample of the grid shows a second exceedance, additional corrective action shall be taken and the grid shall be resampled again no later than 10 calendar days after the second exceedance. If the resample shows a third exceedance, it is a violation unless the owner or operator determines that a new or replacement gas collection well is needed. The owner or operator must install and operate the new or replacement well no later than 45 days after detecting the third exceedance.

(3) Instantaneous surface monitoring as specified in Section 3.0, Attachment A, shall be conducted to determine the concentration of TOC each calendar quarter, to assure continued compliance. Any reading of 500 ppmv TOC or greater other than non-repeatable momentary readings, shall be recorded as an exceedance and the actions specified in subparagraphs (e)(3)(A) through (e)(3)(C) shall be taken. Any closed or inactive MSW landfill that meets the definitions in (c)(4) or (c)(16) and has no observed monitoring readings that exceed 500 ppmv for the last four consecutive quarterly monitoring periods may, upon approval of the Executive Officer, monitor annually. Any reading of 500 ppmv TOC or more detected during the annual monitoring or an SCAQMD compliance inspection that cannot be remediated within 10 days shall result in a return to quarterly monitoring for the landfill.

(A) The location of each exceedance shall be clearly marked and identified on a topographic map of the MSW landfill or identified

by using a global positioning system and the location recorded as specified in Section 3.4, Attachment A.

(B) Corrective action must be taken by the owner or the operator, including, but not limited to one or more of the following: cover maintenance or repair, or well vacuum adjustments. The location shall be remonitored no later than 10 calendar days after detecting the exceedance.

(C) If the remonitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be remonitored again no later than 10 days after the second exceedance. If the remonitoring shows a third exceedance, it is a violation unless the owner or operator determines that a new or replacement gas collection well is needed. The owner or operator must install and operate the new or replacement well no later than 45 days after detecting the third exceedance.

(4) Wellheads shall each be monitored monthly to determine the gauge pressure. If there is any positive pressure reading, other than as provided in subparagraphs (d)(16)(A) and (d)(16)(B), the owner or operator shall take the following actions:

(A) Initiate corrective action within 5 calendar days of the positive pressure measurement.

(B) If the problem cannot be corrected within 15 days of the first positive pressure measurement, the owner or operator must initiate further action, including but not limited to, any necessary expansion of the gas collection system to mitigate any positive pressure readings.

(C) All corrective actions, including any expansion of the gas collection and gas control systems, must be completed and any new wells must be in operation within 120 days of the date of the first positive pressure measurement.

(D) Determination of gauge pressure must be determined using a hand-held manometer, magnahelic gauge or other pressure measuring device approved by the Executive Officer. The device must be calibrated and operated in accordance with the manufacturer's specifications.

(5) Collect a monthly landfill gas sample for analysis as specified in Section 4.0, Attachment A, to determine the concentrations of TOC and TAC from the main gas collection header line entering any gas control systems.

(6) Collect monthly ambient air samples for analysis as specified in Section 5.0, Attachment A, to determine the concentrations of TOC and TAC from the landfill property boundary.

(7) Monitor the gas collection and gas control systems equipment specified under subparagraphs (e)(7)(A), (e)(7)(B) and (e)(7)(C) in order to comply with subparagraph (d)(1)(C).

(A) For enclosed combustors and enclosed flares, the following equipment must be installed, calibrated, maintained, and operated according to the manufacturer's specifications:

(i) A temperature monitoring device equipped with a continuous recorder and having an accuracy of plus-minus 1 percent of the temperature being measured expressed in degrees Celsius or Fahrenheit. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity greater than 44 megawatts.

(ii) At least one gas flow rate measuring device that shall record the flow to the gas control device(s) at least every 15 minutes.

(B) For open flares and other non-combustion systems, demonstrate compliance with subparagraph (d)(1)(C) by providing information satisfactory to the Executive Officer describing the operation of the gas control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. Alternatives to this rule shall be submitted as specified in subdivision (i). The Executive Officer may specify additional appropriate monitoring procedures.

(C) All components containing landfill gas that are under positive pressure shall be monitored for leaks on a quarterly basis. Any component leak must first be tagged and then repaired within 10 calendar days. Component leak testing at MSW landfills having landfill gas-to-energy facilities may conduct testing for leaks prior to scheduled maintenance or during planned outage periods.

(f) Active Landfill Recordkeeping and Reporting Requirements

The MSW landfill owner or operator shall keep all records on paper, electronic or in other suitable data formats approved by the Executive Officer, kept up-to-date, readily accessible and maintained for at least a period of 5 years. Such records shall be made available to the Executive Officer upon request. Records older than 2 years may be maintained off-site, if they are retrievable no later than 4 hours after request.

(1) The records required in subparagraphs (f)(1)(A) through (f)(1)(L) shall be maintained and be accessible by the facility.

(A) For the life of the gas control system, as measured during the initial source test or compliance determination:

(i) The gas control device vendor specifications.

(ii) The maximum expected gas generation flow rate as calculated pursuant to subparagraph (d)(1)(A).

(iii) When demonstrating compliance with subparagraph (d)(1)(C) through the use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity greater than 44 megawatts:

(I) The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the source test.

(II) The reduction of NMOC and the reduction of methane determined as specified in clause (d)(1)(C)(i) achieved by the gas control device.

(iv) When demonstrating compliance with subclause (d)(1)(C)(i) through the use of a boiler or process heater of any size: a description of the location at which the collected gas vent stream is introduced into the boiler or process heater and is established during the initial or most recent source test.

(v) When demonstrating compliance with subparagraph (d)(1)(A) though the use of a non-enclosed combustion device, the owner or operator shall maintain records of measurement from the initial source test and from each annual performance test as specified in 40 CFR 60.18. If the combustion device is an open flare, the owner or

operator shall maintain records of the flare flame monitoring and records of all periods of operation during which the pilot flame of the flare is absent.

(B) The data required to be recorded under Section 1.6, Attachment A, for subsurface refuse boundary sampling probes and all remedial actions taken for exceedances of the 5 percent TOC standard required in paragraph (d)(10) and all actions taken and recorded to comply with Title 27 sec. 20937 (a)(2)(B)(i) through (a)(2)(B)(iv).

(C) The data required to be recorded under Section 2.8, Attachment A, for integrated samples and all remedial actions taken for exceedances of the 25 ppmv TOC standard required in paragraph (d)(11).

(D) The data required to be recorded under Section 3.4, Attachment A, for instantaneous monitoring and all remedial actions taken for exceedances of the 500 ppmv TOC standard required in paragraph (d)(12). Instantaneous monitoring exceedances from 200 to 499 ppmv shall also be recorded but remedial action is not required.

(E) The data required to be recorded under Section 4.5, Attachment A, for landfill gas samples collected from the main gas collection header line entering the gas treatment and/or gas control systems.

(F) The data required to be recorded under Section 5.7, Attachment A, from ambient air collected at the landfill property boundary.

(G) A description and the duration of all periods when the gas collection or gas control system was not operating for a period exceeding one hour and the length of time the system was not operating.

(H) During construction that requires exposing solid waste material to the atmosphere, the following records are required:

(i) A description of actions taken, the affected area of the MSW Landfill, the reason the actions are required and a list of the landfill gas collection system components affected by actions;

(ii) Construction start and finish dates, projected equipment installation dates, and projected shut down times for individual gas collection system components; and

(iii) A description of the mitigation measures taken to minimize methane emissions and other potential air quality impacts during the construction period.

(I) All records pertaining to solid waste acceptance, solid waste acceptance rate, and the current amount of waste in place.

(J) All records pertaining to non-degradable waste acceptance, including the nature, location, amount, and the deposition for any landfill area excluded from the gas collection system.

(K) All records of positive wellhead gauge pressure measurements, the date of the measurements, the well identification number, and the corrective action taken.

(L) Continuous records of the equipment operating parameters specified to be monitored under paragraph (e)(7) as well as records for periods of operation during which the parameter boundaries established during the most recent source test are exceeded.

(i) The following constitute exceedances that shall be recorded:

(I) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3-hour periods of operation during which the average combustion temperature was more than 28° C (82° F) below the average combustion temperature during the most recent source test at which compliance with subparagraph (d)(1)(C) was determined.

(II) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under clause (f)(1)(A)(iv).

(ii) Records of the indication of flow to the gas control device specified in clause (e)(7)(A)(ii).

(iii) Each owner or operator who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with subparagraph (d)(1)(C) shall keep records of all periods of operation of the boiler or process

heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other State, local, Tribal, or Federal regulatory requirements.)

(2) The reports required in subparagraphs (f)(2)(A) through (f)(2)(D) shall be submitted to the Executive Officer.

(A) The initial source test report no later than 180 days after start-up and each succeeding complete annual source test report no later than 45 days after the anniversary date of the initial source test, for all gas control systems required in subparagraph (d)(1)(C).

(B) A report no later than 45 days after the last day of each calendar quarter with the information required in clauses (f)(2)(B)(i) and (f)(2)(B)(ii).

(i) All exceedances of the emission standards required in paragraphs (d)(10), (d)(11) and (d)(12) in the format required under Sections 1.6, 2.8 and 3.4, Attachment A. All exceedances resampled/remonitored and each corrective action required under paragraphs (e)(1), (e)(2) and (e)(3). If there are no exceedances, submit a letter stating there were no exceedances for that quarter.

(ii) All TAC analyses required in paragraphs (e)(1) through (e)(6).

(C) Any owner or operator of a MSW landfill which has ceased accepting waste shall submit a closure report to the Executive Officer no later than 30 days after waste acceptance cessation. The report should include the last day solid waste was accepted, the projected date of closure for the MSW Landfill, and the estimated amount of waste-in-place. The Executive Officer may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR, Part 258, Section 258.60 or the applicable federal, state and local statutes, regulations, and ordinances in effect at the time of closure. If a closure report has been submitted to the Executive Officer, no additional wastes shall be placed into the landfill without filing a notification of modification as described under 40 CFR, Part 60, Section 60.7(a)(4).

(D) Any owner or operator of a MSW landfill which has ceased operation of a gas collection or gas control system shall submit a decommissioning report to the Executive Officer 30 days prior to well capping, removal or cessation of operation of the collection, treatment or control equipment. The decommissioning report shall contain all of the items as specified in clauses (f)(2)(D)(i) through (f)(2)(D)(iii):

(i) A copy of the closure report submitted in accordance with subparagraph (f)(2)(C).

(ii) A copy of the initial source test report demonstrating that the gas collection and gas control systems have been installed for a minimum of 15 years.

(iii) All records needed to verify that the landfill meets the exemption criteria under subdivision (k).

(3) An Annual Report shall be submitted by any owner or operator subject to the requirements of this rule. The Annual Report shall cover the period of January 1 through December 31 of each year. Each Annual Report shall be submitted by March 15 of the following year to the District. The Annual Report shall contain the following:

(A) MSW Landfill name, owner and operator, address, solid waste information system (SWIS) identification number, landfill status (active, closed, inactive) and estimated waste-in–place in tons;

(B) Total volume of landfill gas collected (reported in standard cubic feet);

(C) Average composition of the landfill gas collected over the reporting period (reported in percent methane and percent carbon dioxide by volume);

(D) Gas control device type, year of installation, rating, fuel type, and total amount of landfill gas combusted in each gas control device;

(E) The date that the gas collection and gas control systems were installed and in full operation;

(F) The percent methane destruction efficiency of each gas control device;

(G) Type and amount of supplemental fuels burned with the landfill gas in each device;

(H) Total volume of landfill gas shipped off-site, the composition of the landfill gas collected (reported in percent methane and percent carbon dioxide by volume), and the recipient of the gas;

(I) Most recent topographic map of the site showing the areas with final cover and a geomembrane, and areas with final cover without a geomembrane, with corresponding percentages over the landfill surface; and

(J) The records required by paragraph (f)(1) except for records required by subparagraphs (f)(1)(B), (f)(1)(E) and (f)(1)(F).

(4) Any report or information required in paragraph (f)(2) or (f)(3) must be certified by a responsible official that the statements and information in the report are true, accurate, and complete.

(g) Active Landfill Compliance Schedule

The MSW landfill owner or operator shall comply with the active landfill requirements of this rule or an approved Rule 1150.1 Compliance Plan as specified in subdivision (i). An MSW landfill owner or operator that requires one or more alternatives to comply with this rule due to the April 1, 2011 rule amendment, shall submit a request for such alternatives as specified in subdivision (i) by May 6, 2011 that demonstrates compliance no later than July 1, 2011, and shall comply with any previously approved Rule 1150.1 Compliance Plan until July 1, 2011 or until the owner or operator has received an approved revised Rule 1150.1 Compliance Plan. On and after July 1, 2011, the MSW landfill owner or operator shall operate pursuant to an approved Rule 1150.1 Compliance Plan or, if plan approval is pending, the revised Rule 1150.1 Compliance Plan submitted on or before May 6, 2011.

(h) Inactive Landfill Requirements

The MSW landfill owner or operator shall comply with either the applicable requirements in paragraphs (h)(1) and (h)(2) or submit alternatives to this rule as specified in subdivision (i).

(1) Inactive landfills that have a landfill gas collection system shall meet all of the active landfill requirements. For those inactive landfills without a gas collection system and determined to need one, meet all of the active landfill requirements, except the gas collection and gas control systems

design plan. Applications for permits shall be submitted no later than one year after notification by the Executive Officer.

(2) Inactive landfills without a gas collection system:

(A) Upon discovery of TOC measured as methane exceeding 200 ppmv at any location on the landfill surface, apply mitigation measures such as compaction, additional cover, and/or watering to reduce the emissions to less than 200 ppmv. The procedure used for measurement of TOC shall meet the requirements of Section 3.0, Attachment A.

(B) Submit the following data and/or meet the required action in paragraph (h)(1):

(i) No later than 30 days after the receipt of a request, submit to the Executive Officer a screening questionnaire pursuant to California Air Resources Board Health and Safety Code (H & S) 41805.5.

(ii) No later than 90 days after the date of a second request, submit to the Executive Officer a solid waste air quality assessment test (SWAT) report pursuant to H & S 41805.5, to determine whether or not a landfill gas collection and gas control systems and/or a subsurface refuse boundary probe sampling system shall be required to be installed.

(iii) If additional time is needed to provide the information required in clauses (h)(2)(B)(i) and (h)(2)(B)(ii), a written request for an extension may be submitted in writing to the Executive Officer, indicating the amount of time that is needed to obtain such information. Such a request for an extension may be submitted to the Executive Officer no later than 30 days after the receipt of the Executive Officer's requests as specified in clauses (h)(2)(B)(i) and (h)(2)(B)(ii).

(iv) Upon notification by the Executive Officer that a landfill gas collection and gas control systems and/or a subsurface refuse boundary probe sampling system shall be required, comply with paragraph (h)(1).

(i) Alternatives

The owner or operator of a MSW landfill may request alternatives to the compliance requirements, monitoring requirements, test methods, and test procedures of this rule. All requests for alternatives to the requirements of this rule shall be submitted to the Executive Officer in a Rule 1150.1 Compliance Plan. The Executive Officer shall review the Rule 1150.1 Compliance Plan and either approve it, disapprove it, or request that additional information be submitted. Unless a determination is made by the Executive Officer that the Rule 1150.1 Compliance Plan will provide equivalent levels of emission control and enforceability, as would compliance with the requirements of this rule, the Executive Officer will deny the plan. Criteria that the Executive Officer may use to evaluate requests for alternatives include, but are not limited to: compliance history, documentation, containment of the landfill gas flow rate measured methane concentrations for individual gas collection wells or components, permits, component testing and surface monitoring results, gas collection and gas control systems operations, maintenance and inspection records, and historical meteorological data. Requests for alternatives may include, but are not limited to, the following:

(1) Semi-continuous operation of the gas collection and gas control systems due to insufficient landfill gas flow rates.

(2) Additional time for leak repairs for landfills having consistent issues related to the procurement and delivery of necessary parts to complete the repairs.

(3) Alternative wind speed requirements for landfills consistently having wind speed in excess of the limit specified in Sec.2.2.1 of Attachment A.

(j) Test Methods

(1) Methods of Analysis

(A) Either U.S. EPA Reference Method 25 or U.S. EPA Reference Method 18 (inlet only), 40 CFR, Part 60, Appendix A, SCAQMD Method 25.1 or SCAQMD Method 25.3 shall be used to determine the efficiency of the gas control system in reducing NMOC. If using Method 18, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). The equation in subparagraph (j)(1)(B) shall be used to calculate efficiency.

(B) U.S. EPA Reference Method 25, 40 CFR, Part 60, Appendix A, SCAQMD Method 25.1, or SCAQMD Method 25.3 shall be used to determine the efficiency of the gas control system in reducing the outlet NMOC concentration to less than 20 ppmv, dry basis as hexane at 3 percent oxygen. The following equation shall be used to calculate efficiency:

$$\text{Control Efficiency (\%)} = \frac{(\text{NMOC}_{\text{in}} - \text{NMOC}_{\text{out}})}{(\text{NMOC}_{\text{in}})} \times 100\%$$

where,

NMOC_{in} = mass of NMOC entering control device

NMOC_{out} = mass of NMOC exiting control device

(C) Either U.S. EPA Reference Method 25, U.S. EPA Reference Method 18, 40 CFR, Part 60, Appendix A, SCAQMD Method 25.1, SCAQMD Method 25.3, ASTM Method D1945, or ASTM Method D1946 shall be used to determine the efficiency of the gas control system in reducing methane. The equation in subparagraph (j)(1)(D) shall be used to calculate efficiency.

(D) U.S. EPA Reference Method 25, U.S. EPA Reference Method 18, 40 CFR, Part 60, Appendix A, SCAQMD Method 25.1, SCAQMD Method 25.3, ASTM Method D1945, or ASTM Method D1946 shall be used to determine the efficiency of the gas control system in reducing the outlet methane concentration to less than 20 ppmv, dry basis as hexane at 3 percent oxygen. The following equation shall be used to calculate efficiency:

$$\text{Control Efficiency (\%)} = \frac{(\text{Methane}_{\text{in}} - \text{Methane}_{\text{out}})}{(\text{Methane}_{\text{in}})} \times 100\%$$

where,

$\text{Methane}_{\text{in}}$ = mass of Methane entering control device

$\text{Methane}_{\text{out}}$ = mass of Methane exiting control device

(2) Equivalent Test Methods

Any other method demonstrated to be equivalent and approved in writing by the Executive Officers of the District, the California Air Resources Board (CARB), and the Regional Administrator of the United States

Environmental Protection Agency (U.S. EPA), Region IX, or their designees, may be used to determine compliance with this rule.

(3) Approval for Conducting Test and Analysis

The owner or operator shall use a test laboratory approved under the SCAQMD Laboratory Approval Program for source test methods cited in subdivision (j). If there is no approved laboratory, then approval of the testing procedures used by the laboratory shall be granted by the Executive Officer on a case-by-case basis based on SCAQMD protocols and procedures. In addition, when more than one source test method or set of source test methods are specified for any testing, the application of these source test methods to a specific set of test conditions is subject to approval by the Executive Officer.

(4) Violation of Test Methods

A violation established by any one of the specific source test methods or set of source test methods shall constitute a violation of this rule.

(k) Exemptions

An MSW landfill may be temporarily exempt from all or any portion of the requirements of this rule if the owner or operator can demonstrate to the Executive Officer that the MSW landfill emissions meet the requirements of paragraphs (k)(1) through (k)(5), temporary exemptions may be independently determined by the Executive Officer, if the MSW landfill emissions meet the requirements of paragraphs (k)(1) through (k)(5). MSW landfills issued temporary exemption letters by the Executive Officer shall remain exempt, subject to periodic review, provided:

(1) The MSW landfill complies with the requirements of paragraphs (d)(10), (d)(11) and (d)(12).

(2) The MSW landfill emits less than 55 tons per year of NMOC as specified in 40 CFR, Part 60, Section 60.752(b) or, for a closed landfill, as specified in 40 CFR, Part 60, Section 60.752(b)(2)(v)(C).

(3) The MSW landfill constitutes a less than significant health risk. In making this determination the Executive Officer shall consider the listed factors in subparagraphs (k)(3)(A) through (k)(3)(G). Where not specified, in evaluating the cancer risks and hazard indices, the Executive Officer shall be guided by the definitions in District Rule 1401 - New

Source Review of Carcinogenic Air Contaminants, and Rule 1402 - Control of Toxic Air Contaminants from Existing Sources.

(A) The proximity to, and any adverse impacts on, residences, schools, hospitals or other locations or structures which have children, or elderly or sick persons.

(B) The emission migration beyond the landfill property boundary.

(C) The complaint history.

(D) The age and closure date.

(E) The amount and type of waste deposited.

(F) That the emissions of carcinogenic air contaminants, specified in Tables 1 & 2, Attachment A, from the landfill will not result in a maximum individual cancer risk greater than one in one million (1×10^{-6}) at any receptor location.

(G) That the emissions of TAC, specified in Tables 1 & 2, Attachment A, from the landfill will not result in a total acute or chronic Hazard Index of greater than 1.

(4) The MSW landfill is in compliance with District Nuisance Rule 402.

(5) The MSW landfill does not generate sufficient gas to support a gas control system. In making this determination, the Executive Officer shall apply the requirements of subparagraphs (k)(5)(A) and (k)(5)(B), and shall only consider temporary exemptions from the requirements of subdivision (d).

(A) If the MSW landfill is closed or inactive and has a landfill gas heat input capacity equal to or greater than 3.0 MMBtu/hr, the owner or operator must demonstrate to the satisfaction of the Executive Officer that after four consecutive quarterly instantaneous monitoring periods there are no surface methane leaks exceeding 200 ppmv, and submit a waste-in-place report and all instantaneous surface monitoring records from the previous year to the Executive Officer.

(B) If the MSW landfill is active and has 450,000 tons of waste-in-place or greater and a landfill gas heat input capacity greater than or equal to 3.0 MMBTU/hr, the owner or the operator must demonstrate to the satisfaction of the Executive Officer that after four consecutive quarterly instantaneous monitoring periods there

are no surface methane leaks exceeding 200 ppmv and re-calculate the heat capacity annually.

Such a temporary exemption shall be reviewed periodically by the Executive Officer, to consider the land use surrounding the landfill and gaseous emissions, and the impact on the public. Depending upon the results of the review, the Executive Officer may extend or terminate the exemption.

(l) Loss of Exemption

If an MSW landfill should have its temporary exemption terminated, the owner or operator shall comply with the active landfill requirements of this rule.

(m) The amendments to this rule adopted April 1, 2011 implementing the State Air Resources Board Landfill Rule Cal. Code Regs. Tit. 17 §95460 et seq. shall not become effective until the State Air Resources Board Executive Officer or designee provides a letter to the District stating that the enforcement of these requirements shall be in lieu of the State Air Resources Board rule, which shall not be enforced within the District.

ATTACHMENT A

1.0 SUBSURFACE REFUSE BOUNDARY SAMPLING PROBES
Paragraphs (d)(9) and (e)(1) Requirements of Rule 1150.1

1.1 Subsurface Probe Design and Installation

Landfills which are subject to Rule 1150.1 must install and maintain a subsurface refuse boundary probe sampling system of adequate design to determine if gas migration exists for the ultimate purpose of preventing surface emissions. CalRecycle also requires the installation of refuse boundary probes for purposes of detecting and ultimately preventing subsurface migration of landfill gas past the permitted property boundary of the landfill/disposal site as well as the prevention of the accumulation of landfill gas in on-site structures. It is the District's intent that the subsurface refuse boundary probes required by paragraph (d)(9) of Rule 1150.1 be designed and installed in such a manner as to comply with the requirements of CalRecycle (whenever possible) and Sections 1.1.1 through 1.1.4.

1.1.1 The probes shall be installed within the landfill property line and outside the refuse disposal area.

1.1.2 Wherever accessible, the probes shall be located no further than 100 feet from the refuse boundary.

1.1.3 The spacing between probes shall be based on the adjacent land use no further than 1320 feet (1/4 mile) from the refuse boundary and shall be determined as follows:

LAND USE	SPACING
Residential/Commercial	100 feet
Public Access	500 feet
Undeveloped Open Space, (No Public Access)	650 feet
Landfill with Liners	1000 feet

1.1.4 Each probe shall be capped, sealed, have a sampling valve and be of multiple-depth design for which the depth shall be determined based on the depth of refuse no further than 500 feet from the probe as follows:

First Depth	10 feet below surface.
Second Depth	25% of refuse depth or 25 feet below surface, whichever is deeper.

Third Depth	50% of refuse depth or 50 feet below surface, whichever is deeper.
Fourth Depth	75% of refuse depth or 75 feet below surface, whichever is deeper.

Second, third, or fourth depth probes may be deleted if the required depth of such probe is deeper than the depth of the refuse.

1.2 Number of Samples

All refuse boundary gas probes at each depth shall be monitored monthly for TOC measured as methane using a portable flame ionization detector (FID) meeting the requirements of Section 3.2 and with a tube connected to the probe sampling valve. In addition, samples shall be taken as specified in Section 1.2.1 or 1.2.2 to determine the concentration of both TOC and TAC. The Executive Officer may require additional probes to be sampled upon written request.

1.2.1 If the TOC concentration measured with the FID does not exceed 5% by volume in any of the probes, collect one bag sample from one probe with the highest concentration, or

1.2.2 If the TOC concentration measured with the FID for any of the probes exceeds 5% by volume, collect one bag sample per probe from the probes with the highest concentrations above 5% by volume, from at least five probes.

1.3 Subsurface Refuse Boundary Probe Sampling Procedure

1.3.1 Prior to collecting gas samples, evacuate the probe (the probes must be sealed during evacuation) until the TOC concentration remains constant for at least 30 seconds.

1.3.2 The constant TOC concentration shall be measured using an FID that meets the requirements in Section 3.2.

1.3.3 Collect approximately a 10-liter gas sample in a Tedlar (DuPont trade name for polyvinyl) bag or equivalent container over a continuous ten-minute period using the evacuated container sampling procedure described in Section 7.1.1 of EPA Method 18 or direct pump sampling procedure described in Section 7.1.2 of EPA Method 18. The container shall be LIGHT-SEALED.

1.4 Subsurface Refuse Boundary Probe Analytical Procedures

All samples collected shall be analyzed no later than 72 hours after collection for TOC using U.S. EPA Method 25, 40 CFR, Part 60, Appendix A analysis or a portable FID that meets the requirements in Section 3.2 and for the TAC specified in Table 1 and upon written request, Table II, using U.S. EPA Compendium Method TO-14.

1.5 Chain of Custody (Required for samples sent to the lab)

A custody sheet shall accompany the bag samples. Each time a bag changes hands, it shall be logged on the custody sheet with the time of custody transfer recorded. Laboratory personnel shall record the condition of the sample (full, three-fourths full, one-half full, one-fourth full, or empty). An example of a custody sheet is shown in Figure 4.

1.6 Recording the Results

1.6.1 Record the volume concentration of TOC measured as methane for each individually identified refuse boundary probe (at each depth) and the volume concentration of TAC for selected probes on a quality control sheet as shown in Figure 3. Include a topographic map drawn to scale with the location of both the refuse boundary probes and the gas collection system clearly marked and identified.

1.6.2 Maintain and submit the results as specified in subdivision (f) of Rule 1150.1.

2.0 INTEGRATED LANDFILL SURFACE SAMPLING
Paragraph (d)(11) and (e)(2) Requirements of Rule 1150.1

2.1 Number of Samples

The number of samples collected will depend on the area of the landfill surface. The entire landfill disposal area shall be divided into individually identified 50,000 square foot grids. One monthly sample shall be collected from each grid for analysis. Any area that the Executive Officer deems inaccessible or dangerous for a technician to enter may be excluded from the sampling grids monitored by the landfill owner or operator. To exclude an area from monitoring, the landfill owner or operator shall file a written request with the Executive Officer. Such a request shall include an explanation of the requested exclusion and photographs of the area. The Executive Officer shall notify the landfill owner or operator in

writing of the decision. Any exclusion granted shall apply only to the monitoring requirement. The 25 ppmv limit specified in paragraph (d)(11) of Rule 1150.1 applies to all areas.

2.2 Integrated Surface Sampling Conditions

2.2.1. The average wind speed during this sampling procedure shall be five miles per hour or less. Surface sampling shall be terminated when the average wind speed exceeds five miles per hour or the instantaneous wind speed exceeds ten miles per hour. Average wind speed is determined on a 15-minute average.

2.2.2. Surface sampling shall be conducted when the landfill is dry. The landfill is considered dry when there has been no measurable precipitation for the preceding 72 hours prior to sampling. Most major newspapers report the amount of precipitation that has fallen in a 24-hour period throughout the Southern California area. Select the nearest reporting station that represents the landfill location or provide for measurable precipitation collection at the MSW landfill wind monitoring station.

2.3 Integrated Surface Sampler Equipment Description

An integrated surface sampler is a portable self-contained unit with its own internal power source. The integrated sampler consists of a stainless steel collection probe, a rotameter, a pump, and a 10-liter Tedlar bag enclosed in a LIGHT-SEALED CONTAINER to prevent photochemical reactions from occurring during sampling and transportation. The physical layout of the sampler is shown in Figure 1.

An alternate integrated surface sampler may be used, provided that the landfill owner or operator can show an equivalency with the sampler specifications in Section 2.4 and shown in Figure 1. All alternatives shall be submitted as specified in subdivision (i) of Rule 1150.1.

2.4 Integrated Surface Sampler Equipment Specifications

2.4.1 Power: Batteries or any other power source.

2.4.2 Pump: The diaphragm shall be made of non-lubricated Viton (Dupont trade name for co-polymer of hexafluoropropylene and vinylidene fluoride) rubber.

2.4.3 Bag: One 10-liter Tedlar bag with a valve. The Tedlar bag shall be contained in a LIGHT-SEALED CONTAINER. The valve shall be leak free and constructed of aluminum, stainless steel, or non-reactive plastic with a Viton or Buna-N (butadiene acrylonitrile co-polymer) o-ring seal.

2.4.4 Rotameter: The rotameter shall be made of borosilicate glass or other non-reactive material and have a flow range of approximately 0-to-1 liter per minute. The scale shall be in milliliters or an equivalent unit. The graduations shall be spaced to facilitate accurate flow readings.

2.4.5 Air Flow Control Orifice: Needle valve in the rotameter.

2.4.6 Funnel: 316 stainless steel.

2.4.7 Fittings, Tubing and Connectors: 316 stainless steel or Teflon.

2.5 Integrated Surface Sampling Procedure

2.5.1 An integrated surface sampler as described in Section 2.4 shall be used to collect a surface sample approximately 8-to-10 liters from each grid.

2.5.2 During sampling, the probe shall be placed 0-to-3 inches above the landfill surface.

2.5.3 The sampler shall be set at a flow rate of approximately 333 cubic centimeters per minute

2.5.4 Walk through a course of approximately 2,600 linear feet over a continuous 25-minute period. Figure 2 shows a walk pattern for the 50,000 square foot grid.

2.6 Integrated Surface Sample Analytical Procedures

All samples collected shall be analyzed no later than 72 hours after collection for TOC using U.S. EPA Method 25, 40 CFR, Part 60, Appendix A analysis or a portable FID that meets the requirements in Section 3.2. In addition, the samples specified in Section 2.6.1 or 2.6.2 must be analyzed no later than 72 hours after collection for the TAC specified in Table 1 and upon written request, Table II, using U.S. EPA Compendium Method TO-14.

2.6.1 Ten percent of all samples which have a concentration of TOC greater than 25 ppmv as methane, or

2.6.2 Two samples if all samples are 25 ppmv or less of TOC or two samples if there are less than 20 samples above 25 ppmv.

The Executive Officer may require more samples to be tested for TAC if he determines there is a potential nuisance or public health problem.

2.7 Chain of Custody (Required for samples sent to the lab)

A custody sheet shall accompany the bag samples. Each time a bag changes hands, it shall be logged on the custody sheet with the time of custody transfer recorded. Laboratory personnel shall record the condition of the sample (full, three-fourths full, one-half full, one-fourth full, or empty). An example of a custody sheet is shown in Figure 4.

2.8 Recording the Results

2.8.1 Record the volume concentration of both TOC measured as methane for each grid and the volume concentration for the required TAC on a quality control sheet as shown in Figure 3. Include a topographic map drawn to scale with the location of the grids and the gas collection system clearly marked and identified.

2.8.2 Record the wind speed during the sampling period using the wind speed and direction monitoring system required in paragraph (d)(17) of Rule 1150.1.

2.8.3 Maintain and submit the results as specified in subdivision (f) of Rule 1150.1.

3.0 INSTANTANEOUS LANDFILL SURFACE MONITORING

Paragraphs (d)(12) and (e)(3) Requirements of Rule 1150.1

3.1 Monitoring Area

The entire landfill disposal area shall be monitored once each calendar quarter. Any area of the landfill that the Executive Officer deems as inaccessible or dangerous for a technician to enter may be excluded from the area to be monitored by the landfill owner or operator. To exclude an area from monitoring, the landfill owner or operator shall file a petition with the Executive Officer. Such a request shall include an explanation of why the area should be excluded and photographs of the area. Any excluded area granted shall only apply to the monitoring requirement. The 500 ppmv limit specified in paragraph (d)(12) of Rule 1150.1 applies to all areas.

3.2 Equipment Description and Specifications

A portable FID shall be used to instantaneously measure the concentration of TOC measured as methane at any location on the landfill. The FID shall meet the

specifications listed in Sections 3.2.1 through 3.2.4 and shall be kept in good operating condition.

3.2.1 The portable analyzer shall meet the instrument specifications provided in Section 3 of U.S. EPA Method 21, except that:

3.2.1.1 "Methane" shall replace all references to VOC.

3.2.1.2 A response time of 15 seconds or shorter shall be used instead of 30 seconds.

3.2.1.3 A precision of 3% or better shall be used instead of 10%.

In addition the instrument shall meet the specifications in Sections 3.2.1.4 through 3.2.1.6.

3.2.1.4 A minimum detectable limit of 5 ppmv (or lower).

3.2.1.5 A flame-out indicator, audible and visual.

3.2.1.6 Operate at an ambient temperature of 0 - 50° C.

3.2.2 The calibration gas shall be methane, diluted to a nominal concentration of 10,000 ppmv in air for subsurface refuse boundary probe monitoring and sample analysis to comply with paragraph (e)(1) of Rule 1150.1, 25 ppmv in air for integrated sample analyses to comply with paragraph (e)(2) of Rule 1150.1 and 500 ppmv in air for instantaneous monitoring to comply with paragraph (e)(3) of Rule 1150.1.

3.2.3 To meet the performance evaluation requirements in Section 3.1.3 of U.S. EPA Method 21, the instrument evaluation procedures of Section 4.4 of U.S. EPA Method 21 shall be used.

3.2.4 The calibration procedures provided in Section 4.2 of U.S. EPA Method 21 shall be followed at the beginning of each day before commencing a surface monitoring survey.

3.3 Monitoring Procedures

3.3.1 The owner or operator shall monitor the landfill disposal area for TOC measured as methane using the described portable equipment.

3.3.2 The sampling probe shall be placed at a distance of 0-3 inches above any location of the landfill to take the readings.

3.3.3 At a minimum, an individually identified 50,000 square foot grid shall be used and a walk pattern similar to that illustrated in Figure 2 shall be implemented including areas where visual observations indicate elevated

concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover.

3.4 Recording the Results

3.4.1 Record the location and concentration of TOC measured as methane for any instantaneous reading of 200 ppmv or greater on a topographic map of the landfill, drawn to scale with the location of both the grids and the gas collection system clearly marked and identified.

3.4.2 Maintain and submit the results as specified in subdivision (f) of Rule 1150.1.

4.0 LANDFILL GAS SAMPLE FROM GAS COLLECTION SYSTEM Paragraph (e)(5) Requirement of Rule 1150.1

4.1 Number of Samples

Collect one monthly sample of landfill gas for analysis from the main gas collection header line entering the gas treatment and/or gas control system(s).

4.2 Sampling Procedure

Collect approximately a 10-liter sample in a Tedlar bag or equivalent container over a continuous ten-minute period.

4.3 Analytical Procedures

Samples collected shall be analyzed no later than 72 hours after collection for TOC using U.S. EPA Method 25, 40 CFR, Part 60, Appendix A analysis and for the TAC specified in Table 1 and upon written request, Table II, using U.S. EPA Compendium Method TO-14.

4.4 Chain of Custody (Required for samples sent to the lab)

A custody sheet shall accompany the bag samples. Each time a bag changes hands, it shall be logged on the custody sheet with the time of custody transfer recorded. Laboratory personnel shall record the condition of the sample (full, three-fourths full, one-half full, one-fourth full, or empty). An example of a custody sheet is shown in Figure 4.

4.5 Recording the Results

4.5.1 Record the volume concentration of both TOC measured as methane and the volume concentration for the required TAC on a quality control sheet as shown in Figure 3. Include a topographic map drawn to scale with the

location of the gas collection and gas control systems clearly marked and identified.

4.5.2 Maintain and submit the results as specified in subdivision (f) of Rule 1150.1.

5.0 AMBIENT AIR SAMPLES AT THE LANDFILL PROPERTY BOUNDARY

Paragraph (e)(6) Requirement of Rule 1150.1

5.1 Number of Samples

Monthly ambient air samples shall be collected for analysis at the landfill property boundary from both an upwind and downwind sampler sited to provide good meteorological exposure to the predominant offshore (drainage land breeze) and onshore (sea breeze) wind flow patterns. The upwind and downwind samples shall be collected simultaneously over two 12 hour periods beginning between 9:00 a.m. and 10:00 a.m., and 9:00 p.m. and 10:00 p.m. on the same day or different days.

5.2 Ambient Air Sampling Conditions

Ambient air sampling shall be conducted on days when stable (offshore drainage) and unstable (onshore sea breeze) meteorological conditions are representative for the season. Preferable sampling conditions are characterized by the following meteorological conditions:

5.2.1 Clear cool nights with wind speeds of two miles per hour or less, and

5.2.2 Onshore sea breezes with wind speeds ten miles per hour or less.

No sampling will be conducted if the following adverse meteorological conditions exist:

5.2.3 Rain,

5.2.4 Average wind speeds greater than 15 miles per hour for any 30-minute period, or

5.2.5 Instantaneous wind speeds greater than 25 miles per hour.

Continuously recorded on-site wind speed and direction measurements required in paragraph (d)(17) of Rule 1150.1 will characterize the micrometeorology of the site and serve to verify that the meteorological criteria have been met during sampling.

5.3 Ambient Air Sampler Equipment Description

An ambient air sampling unit consists of a 10-liter Tedlar bag, a DC-operated pump, stainless steel capillary tubing to control the sample rate to the bag, a bypass valve to control the sample flow rate (and minimize back pressure on the pump), a Rotameter for flow indication to aid in setting the flow, a 24-hour clock timer to shut off the sampler at the end of the 24-hour sampling period, and associated tubing and connections (made of stainless steel, Teflon, or borosilicate glass to minimize contamination and reactivity). The physical layout of the sampler is shown in Figure 5.

An alternate ambient air sampler may be used, provided that the landfill owner or operator can show an equivalency with the sampler specifications in Section 5.3 and shown in Figure 5. All alternatives shall be submitted as specified in subdivision (i) of Rule 1150.1.

5.4 Ambient Air Sampler Equipment Specifications

The equipment used when conducting air samples at any landfill property boundary shall meet the following specifications:

5.4.1 Power: one 12V DC marine battery. The marine battery provides 12V DC to the pump and the clock.

5.4.2 Pump: one 12V DC pump. The diaphragm shall be made of non-lubricated Viton rubber. The maximum pump unloaded flow rate shall be 4.5 liters per minute.

5.4.3 Bag: One 10-liter Tedlar bag with a valve. The Tedlar bag shall be enclosed in a LIGHT-SEALED CONTAINER. The valve is a push-pull type constructed of aluminum and stainless steel, with a Viton or Buna-N (butadiene acrylonitrile co-polymer) o-ring seal.

5.4.4 Rotameter: made of borosilicate glass and has a flow range of 3-to-50 cubic centimeters per minute. The scale is in millimeters (mm) with major graduations (labeled) every 5 mm and minor graduations every 1 mm.

5.4.5 Air flow control orifice: 316 stainless steel capillary tubing.

5.4.6 Bypass valve.

5.4.7 Fittings, tubing, and connectors: 315 stainless steel or Teflon.

5.4.8 Clock timer with an accuracy of better than 1%.

5.5 Ambient Air Sample Analytical Procedures

Samples collected must be analyzed no later than 72 hours after collection for TOC using U.S. EPA Method 25, 40 CFR, Part 60, Appendix A analysis or a portable FID that meets the requirements in Section 3.2 and for the TAC specified in Table 1 and upon written request, Table II, using U.S. EPA Compendium Method TO-14.

5.6 Chain of Custody (Required for samples sent to the lab)

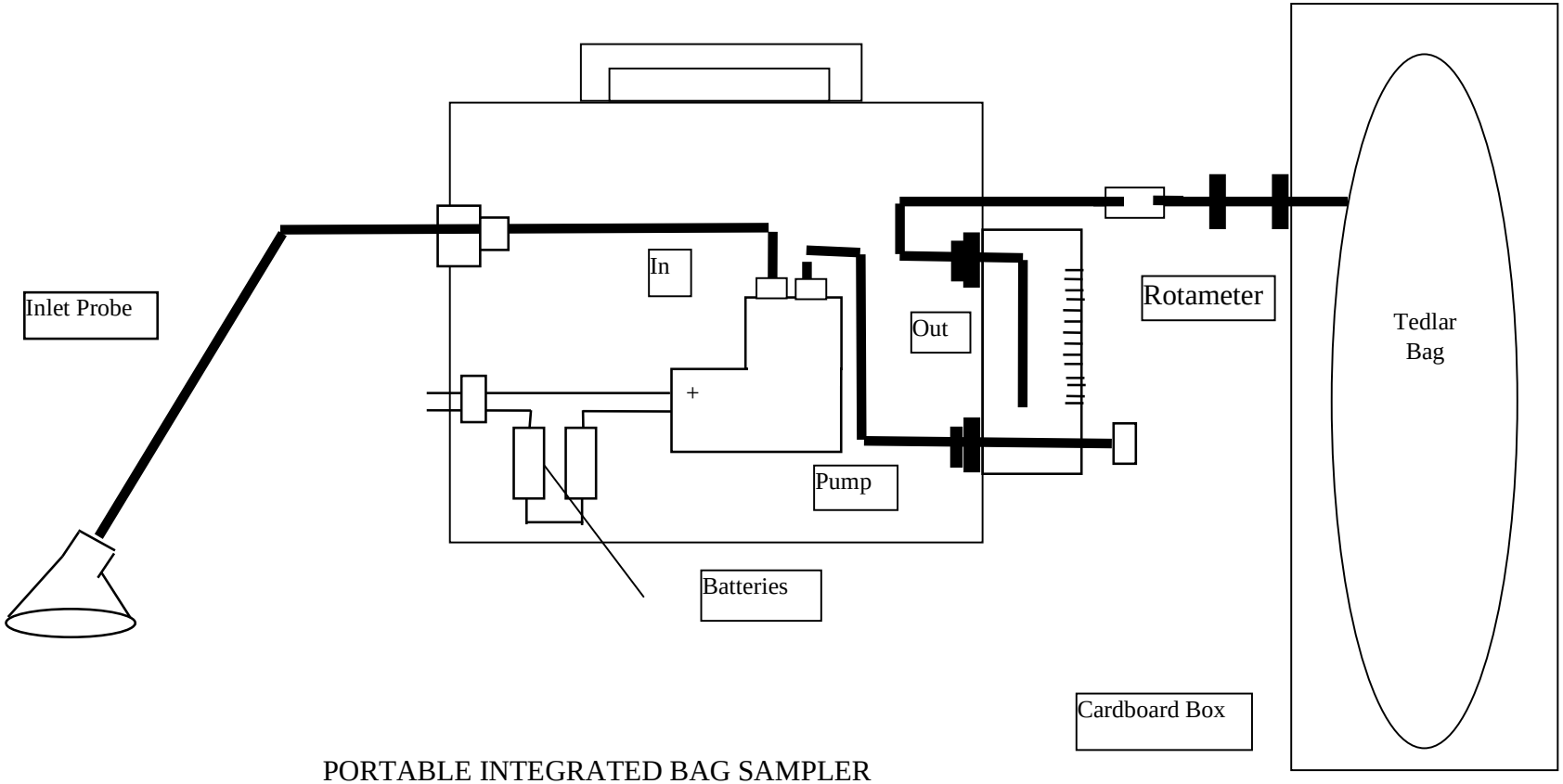
A custody sheet shall accompany the bag samples. Each time a bag changes hands, it shall be logged on the custody sheet with the time of custody transfer recorded. Laboratory personnel shall record the condition of the sample (full, three-fourths full, one-half full, one-fourth full, or empty). An example of a custody sheet is shown in Figure 4.

5.7 Recording the Results

5.7.1 Record the volume concentration of TOC measured as methane and the volume concentration of TAC for each sample on a quality control sheet as shown in Figure 3. Include a topographic map drawn to scale with the location of both the upwind and downwind samplers and the gas collection and gas control systems clearly marked and identified.

5.7.2 Record the wind speed and direction during the 24-hour sampling period using the wind speed and direction monitoring system required in paragraph (d)(17) of Rule 1150.1.

5.7.3 Maintain and submit the results as specified in subdivision (f) of Rule 1150.1.



PORTABLE INTEGRATED BAG SAMPLER
Physical Layout

Figure 1

Typical Landfill Walk Pattern
for a 50,000 Square Foot Grid

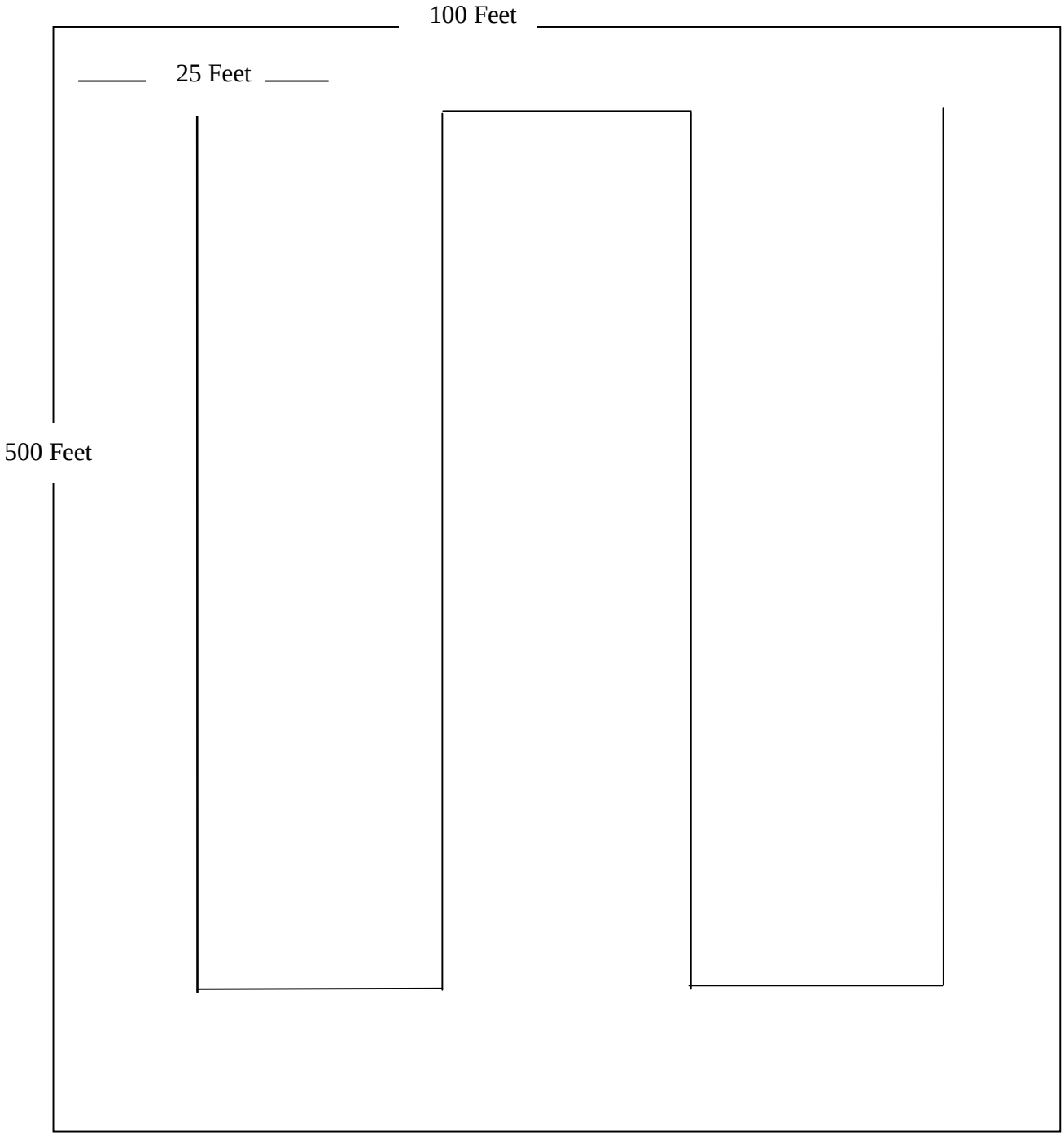


Figure 2

TYPICAL QUALITY CONTROL SHEET

- Prior to use, the Tedlar bag system shall be leak checked, evacuated and filled with purified nitrogen three times to flush out the old sample.
- All samples must be kept in LIGHT-SEALED CONTAINERS to avoid photochemical reactions.

OPERATION					BAG SAMPLES				COMMENTS
Grid or probe #	Date	Wind Speed	Time On	Time Off	I.D.#	Valve Open	Rotameter Reading	Pump (On/Off)	
Signature:									

Figure 3

BAG SAMPLE CUSTODY FORM

Project _____ Date: _____

Bag (I.D. #)									
Condition Received in Lab*									

Bags Prepared By: _____ Time: _____
Date: _____
Bags Taken Out By: _____ Time: _____
Bags Taken to Lab By _____
Bags Received In Lab By: _____ Time _____

* F = 1/2 full to full, 0 = Overfull (Bulging), L = 1/4 to 1/2 full,
E = Less than 1/4 full but contains some sample, N = No sample at all.

Figure 4

Rule 1150.1 (Cont.)
(Attachment A Continued)

(Amended April 1, 2011)

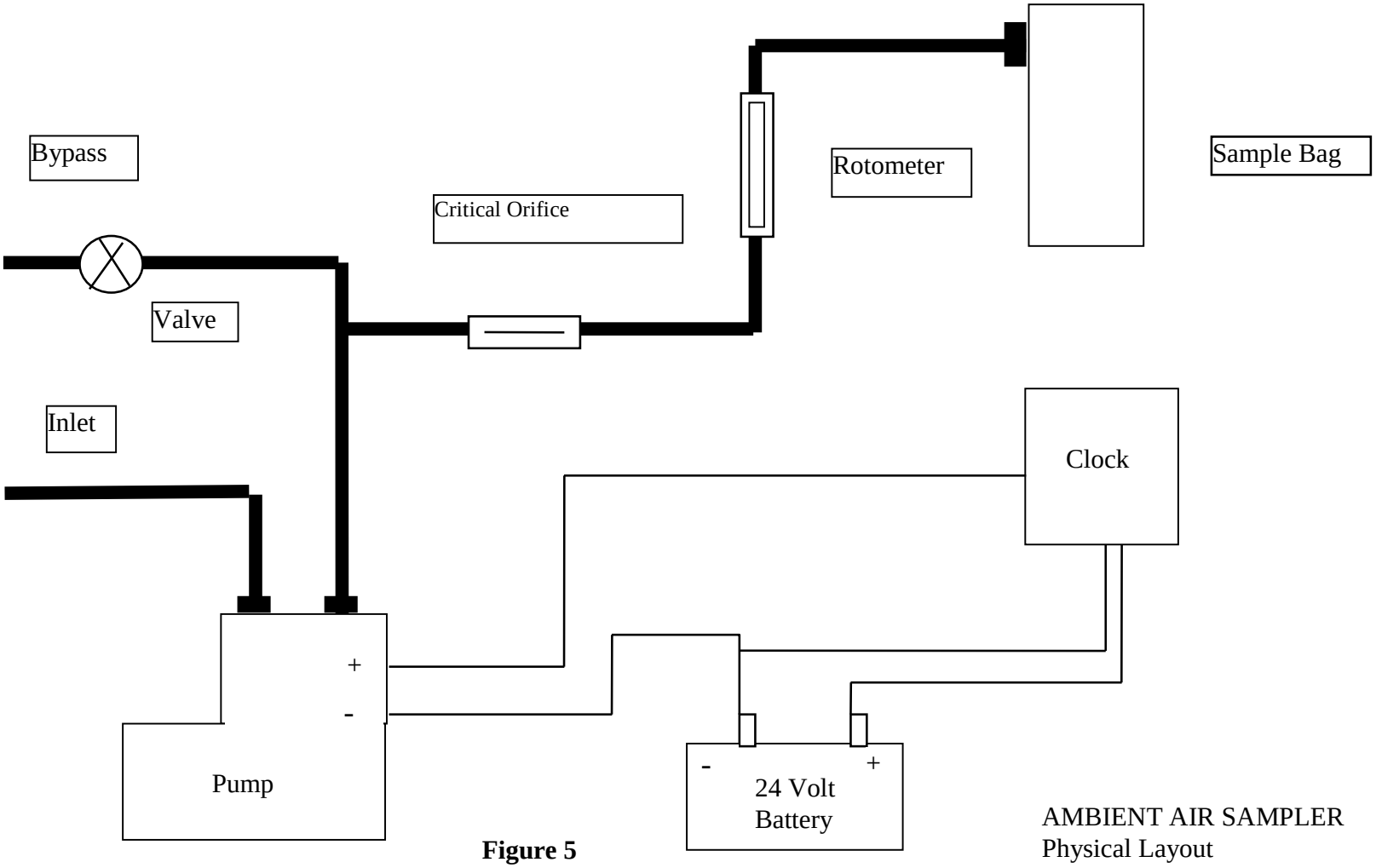


Figure 5

AMBIENT AIR SAMPLER
Physical Layout

TABLE 1 - CARCINOGENIC AND TOXIC AIR CONTAMINANTS
(Core Group)
Paragraph (e)(2), Subparagraphs (k)(3)(F) and (k)(3)(G) Requirements of Rule 1150.1

1.	Benzene	C_6H_6
2.	Benzyl Chloride	$C_6H_5H_2C1$
3.	Chlorobenzene	C_6H_5C1
4.	1,2 Dibromoethane (Ethylene Dibromide)	$BrCH_2CH_2Br$
5.	Dichlorobenzene	$C_6H_4C1_2$
6.	1,1 Dichloroethane (Ethylidene Chloride)	CH_3CHC1_2
7.	1,2 Dichloroethane (Ethylene Dichloride)	$C1H_2H_2C1$
8.	1,1 Dichloroethene (Vinylidene Chloride)	$CH_2 : CC1_2$
9.	Dichloromethane (Methylene Chloride)	CH_2C1_2
10.	Hydrogen Sulfide	H_2S
11.	Tetrachloroethylene (Perchloroethylene)	$C1_2C : CC1_2$
12.	Tetrachloromethane (Carbon Tetrachloride)	$CC1_4$
13.	Toluene	$C_6H_5CH_3$
14.	1,1,1 Trichloroethane (Methyl Chloroform)	CH_3CC1_3
15.	Trichloroethylene	$CHC1 : CC1_2$
16.	Trichloromethane (Chloroform)	$CHC1_3$
17.	Vinyl Chloride	$CH_2 : CHC1$
18.	Xylene	$C_6H_4(CH_3)_2$

TABLE 2 - CARCINOGENIC AND TOXIC AIR CONTAMINANTS
(Supplemental Group)
Paragraph (e)(2), Subparagraphs (k)(3)(F) and (k)(3)(G) Requirements of Rule 1150.1

1.	Acetaldehyde	CH3CHO
2.	Acrolein	CH2CHCHO
3.	Acrylonitrile	H2C : CHCN
4.	Allyl Chloride	H2C : CHCH2C1
5.	Bromomethane (Methyl Bromide)	CH3Br
6.	Chlorinated Phenols	
7.	Chloroprene	H2C : CHCC1 : CH2
8.	Cresol	CH3C6H4OH
9.	Dialkyl Nitrosamines	
10.	1,4 - Dioxane	OCH2CH2OCH2CH2
11.	Epichlorohydrin	CH2OCHCH2C1
12.	Ethylene Oxide	CH2CH2O
13.	Formaldehyde	HCHO
14.	Hexachlorocyclopentadiene	C5C16
15.	Nitrobenzene	C6H5NO2
16.	Phenol	C6H5OH
17.	Phosgene	COC12
18.	Polychlorinated Dibenzo-P-Dioxin	
19.	Polychlorinated Dibenzo Furan	
20.	Polychlorinated Biphenols	
21.	Polynuclear Aromatic Hydrocarbons	
22.	Propylene Oxide	CH2-CH-CH3
23.	Tetrahydrothiophene	CH2CH2CH2CH2S
24.	Thiophene	CHCHCHCHS

Attachment B

TITLE 27. Environmental Protection

Division 2. Solid Waste

Subdivision 1. Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid

Chapter 3. Criteria for All Waste Management Units, Facilities, and Disposal Sites

Subchapter S. Closure and Post-Closure Maintenance

Article 2. Closure and Post-Closure Maintenance Standards for Disposal Sites and Landfills

§21140. Section CIWMB -- Final Cover. (Tl4:§17773)

(a) The final cover shall function with minimum maintenance and provide waste containment to protect public health and safety by controlling at a minimum, vectors, fire, odor, litter and landfill gas migration. The final cover shall also be compatible with postclosure land use.

(b) In proposing a final cover design meeting the requirements under §21090, the owner or operator shall assure that the proposal meets the requirements of this section. Alternative final cover designs shall meet the performance requirements of ¶(a) and for MSWLF units, 40 CFR 258.60(b); shall be approved by the enforcement agency for aspects of ¶(a).

(c) The EA may require additional thickness, quality, and type of final cover depending on, but not limited to the following:

(1) a need to control landfill gas emissions and fires;

(2) the future reuse of the site; and

(3) provide access to all areas of the site as needed for inspection of monitoring and control facilities, etc.

NOTE

Authority cited: Sections 40502 and 43020, Public Resources Code; and Section 66796.22 (d), Government Code. Reference: Sections 43021 and 43103, Public Resources Code; and Section 66796.22(d), Government Code.

HISTORY

1. New section filed 6-18-97; operative 7-18-97 (Register 97, No. 25).

Attachment C

TITLE 27. Environmental Protection

Division 2. Solid Waste

Subdivision 1. Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid

Chapter 3. Criteria for All Waste Management Units, Facilities, and Disposal Sites

Subchapter 2. Siting and Design

Article 2. SWRCB -- Waste Classification and Management

§20200. SWRCB -- Applicability and Classification Criteria. (CI5: §2520)

(a) Concept--This article contains a waste classification system which applies to solid wastes that cannot be discharged directly or indirectly to waters of the state and which therefore must be discharged to waste management units (Units) for treatment, storage, or disposal in accordance with the requirements of this division. Wastes which can be discharged directly or indirectly *(e.g., by percolation)* to waters of the state under effluent or concentration limits that implement applicable water quality control plans *(e.g., municipal or industrial effluent or process wastewater)* are not subject to the SWRCB-promulgated provisions of this division. This waste classification system shall provide the basis for determining which wastes may be discharged at each class of Unit. Waste classifications are based on an assessment of the potential risk of water quality degradation associated with each category of waste.

(1) The waste classifications in this article shall determine where the waste can be discharged unless the waste does not consist of or contain municipal solid waste (MSW) and the discharger establishes to the satisfaction of the RWQCB that a particular waste constituent or combination of constituents presents a lower risk of water quality degradation than indicated by classification according to this article.

(2) Discharges of wastes identified in §20210 or §20220 of this article shall be permitted only at Units which have been approved and classified by the RWQCB in accordance with the criteria established in Article 3 of this subchapter, and for which WDRs have been prescribed or waived pursuant to Article 4, Subchapter 3, Chapter 4 of this subdivision (§21710 et seq.). Table 2.1 (of this article) presents a summary of discharge options for each waste category.

(b) Dedicated Units/Cells For Certain Wastes--The following wastes shall be discharged only at dedicated Units [or dedicated landfill cells *(e.g., ash monofill cell*)] which are designed and constructed to contain such wastes:

(1) wastes which cause corrosion or decay, or otherwise reduce or impair the integrity of containment structures;

(2) wastes which, if mixed or commingled with other wastes can produce a violent reaction (including heat, pressure, fire or explosion), can produce toxic byproducts, or can produce any reaction product(s) which:

(A) requires a higher level of containment;

(B) is a restricted waste; or

(C) impairs the integrity of containment structures.

(c) Waste Characterization--Dischargers shall be responsible for accurate characterization of wastes, including determinations of whether or not wastes will be

compatible with containment features and other wastes at a Unit under ¶(b), and whether or not wastes are required to be managed as hazardous wastes under Chapter 11 of Division 4.5 of Title 22 of this code.

(d) Management of Liquids at Landfills and Waste Piles--The following requirements apply to discharges of liquids at Class II waste piles and at Class II and Class III landfills, except as otherwise required for MSW landfills by more-stringent state and federal requirements under SWRCB Resolution No. 93-62 section 2908 of Title 23 of this Code (see 40CFR258.28) *[Note: see also definitions of "leachate" and "landfill gas condensate"* in §20164*]:*

(1) [Reserved.];

(2) wastes containing free liquids shall not be discharged to a Class II waste pile. Any waste that contains liquid in excess of the moisture-holding capacity of the waste in the Class II landfill, or which contains liquid in excess of the moisture-holding capacity as a result of waste management operations, compaction, or settlement shall only be discharged to a surface impoundment or to another Unit with containment features equivalent to a surface impoundment; and

(3) liquids or semi-solid waste (i.e., waste containing less than 50 percent solids, by weight), other than dewatered sewage or water treatment sludge as described in §20220(c), shall not be discharged to Class III landfills. Exceptions may be granted by the RWQCB if the discharger can demonstrate that such discharge will not exceed the moisture-holding capacity of the landfill, either initially or as a result of waste management operations, compaction, or settlement, so long as such discharge is not otherwise prohibited by applicable state or federal requirements.