



**GOVERNMENT OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY AREA**



Air Quality Area

**STATEMENT OF BASIS – TITLE V PERMIT
MUNICIPALITY OF CAROLINA LANDFILL
PFE-TV-4953-16-1001-2292**

The Puerto Rico Environmental Quality Board (EQB) is issuing a Title V permit pursuant to 40 Code of Federal Regulations (CFR) Part 70 and Part VI of the Regulations for the Control of Atmospheric Pollution (RCAP) for the Municipality of Carolina Landfill (MCL). The facility is located at PR 874 North End, Hoyo Mulas Ward in Carolina, Puerto Rico. EQB received a Title V permit application on December 3, 2000. On October 25, 2001 the initial application was amended. In a letter to Municipality of Carolina Landfill, dated May 1, 2002, the Air Quality Area acknowledged that the application was complete.

The Municipality of Carolina Landfill is a municipal solid waste landfill that is operating since 1973, estimating to reach maximum capacity in 2011. Landfill Technologies Corp., administers the Municipal Sanitary Landfill System (SLS). The MCL accepts solid waste in an average of 6 days per week. The landfill operates Monday to Friday from 6:30 am to 4:30 pm, and Saturdays from 7:00 a.m. to 2:00 p.m. (312 days per year). Solid wastes are deposited in the landfill, are compacted and covered with earth at the end of the day. The landfill gas (LFG) generated by the facility is collected in a landfill gas collection system. Collected landfill gas is currently routed to a enclosed flare (CD-1) as control.

The Landfill is subject to applicable requirements listed in Part VII - Emission Guidelines for Municipal Sanitary Landfill System of the Regulation for Control of Atmospheric Pollution (RCAP). Because the landfill design capacity is greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters, MCL is required to have a Title V permit. Also the landfill is required to install and operate a gas collection control system because the emissions for non-methane organic compounds (NMOC) exceed 50 megagrams (Mg) per year.

Emission Units and Control Device Identification

The Emission Unit and Control Device Identification section lists the significant emission units, associated control equipment and fuel type. This section is a general overview of the facility. The emission units and control equipments are the following:

EU-01: Municipal Sanitary Landfill System. The landfill accepts only non-hazardous municipal solid waste. Has a maximum design capacity of 3.86×10^6 Mg. The annual average refuse acceptance rate is 130,000 ton/yr. Control equipment: An enclosed flare (CD-01)

CD-01: Landfill Active Gas Collection and Control System. Collected landfill gas is currently routed to a enclosed flare (CD-1), with a capacity of 1,500 scfm and a heat input of 90 MM Btu/hr. The fuel used is propane at a rate of 0.014 lb/hr. The fuel has a maximum content of sulfur of 1 x

10⁻⁶ % per weight. The initial performance test for **MCL**'s enclosed flare performed on September 26, 2006 demonstrating NMOC destruction efficiency over 98%.

EU-02: Road Activities. Consist in the hauling of waste from the property gate to the open face of the landfill designated for waste deposit. The hauling of wastes in non-asphalted roads results in fugitive dust emissions. Control equipment: aspersion with water.

EU-03: Emergency Electric Generator. Consist of a reciprocating internal combustion engine of 42 hp. Control equipment: none.

The landfill also includes equipment that is deemed insignificant, such as the air compressors, storage tanks, and water pumps.

The emissions described on the following table represent the facility permissible emissions at the moment of the permit application and will be used only for payment purposes. According to Rule 610(a) of the RCAP, when **MCL** applies for a modification, administrative change or minor modification to its Title V permit, the source will pay only those charges related with any emission increase (if any) per tonnage, based on the change and not based on the total fees paid previously according to Rule 610(a) of the RCAP.

Pollutants	Permissible Emissions (tons/year)
PM ₁₀	16.59
SO ₂	5.67
NO _x	6.0
CO	74.70
NMOC including VOC	9.02
VOC	12.15
HAP's	15.75

According to EQB's resolution RI-06-02¹, for the annual certification the emission calculations shall be based on **MCL** actual emissions; although calculations based on the facility permissible emissions will be accepted. If **MCL** decides to realize the calculations based on permissible emissions, **MCL** shall pay the same charge per ton as the facilities that decide to do the calculations based on actual emissions. Also, according to EQB's resolution R-04-04-1², to determine the modification and renovations fees, **MCL** shall calculate the permissible emissions with the k, Lo, and C_{NMOC} factors established on Rule 704(a) of the RCAP or the specific values of k and C_{NMOC} as determined by Rule 704(c) and (d) of the RCAP.

¹ EQB Resolution Payment procedure of Title V operation fees and charges for Title V renewal permits (Procedimiento de Pago de los cargos de operación de Título V y Cargos por renovación de permiso Título V) issued on March 20, 2006.

² EQB Resolution for Annual Calculation of gas emissions to the atmosphere for Sanitary Landfills. (Consulta a la Junta de Gobierno sobre el cálculo anual de las emisiones de gases a la atmosfera para Rellenos Sanitarios) issued on February 27, 2004.

The Tier 1 default values of k, Lo, and C_{NMOC} in the NSPS and EG (Part VII of the RCAP) overstate the NMOC emissions rates for landfills, and are intended to be used to indicate the need to install a collection and control system. The Environmental Protection Agency (EPA) document Compilation of Air Pollution Emission Factors (AP-42) provides emission estimation procedures and default values that were used to determine the source permissible emissions. As established by EPA, AP-42 and the associated Landfill Gas Emissions Model contain the accepted and approved emission factors and the best methods currently available for estimating landfill gas emissions. These factors are used also to determine if the source is a major source. Having an uncontrolled emission rate greater than 50 megagrams per year (Mg/yr) of NMOC does not make a landfill a major source of Hazardous Air Pollutants (HAP). The 50 Mg/yr NMOC emission rate is not used to determine whether a landfill is a major source for HAP emissions.

The following table summarizes the applicability³ of Municipality of Carolina Landfill with regards to the principal air pollution regulatory programs:

Regulatory Program		Applicability
RCAP	Part VII	YES
Title V	(40 CFR Part 70 and Part VI of RCAP)	YES
NSPS	(40 CFR Part 60 subpart WWW)	NO
NSPS	(40 CFR Part 60 subpart Cc)	NO
PSD	(40 CFR Part 52)	NO
NESHAP	(40 CFR Part 61)	NO
NESHAP	(MACT – 40 CFR Part 63 subpart AAAA)	YES
NESHAP	(MACT – 40 CFR Part 63 Subpart ZZZZ)	YES

Emission Guidelines (EG) and Compliance Schedule for Municipal Sanitary Landfill System established under Part VII of the RCAP (it is the EPA approved and effective state plan that implements Title 40 Code of Federal Regulations (40 CFR) part 60, subpart Cc.)

It is subject to Part VII of the RCAP because MCL commenced construction before May 30, 1991 and has a design capacity greater than or equal to 2.5 million Mg or m³. Facilities that are subject to this part must submit annual emission reports and must install controls if emissions of NMOC are greater than or equal to 50 Mg per year. The facility used Tier 1 calculations to determine the NMOC emissions potential, the NMOC emissions were greater than 50 Mg/year, the facility submitted a collection and control design and installed a collection and control system. Also this part requires to effectively capture the gas generated, minimize off-site migration of subsurface gas, and route the collected gas to the enclosed flare (CD-1) that shall be operated to reduce NMOC by 98% by weight.

³ Is important to mention that not all of the permit conditions need to be explained in this document, because the legal and factual bases for the conditions are self-evident as stated in the Title V Operating Permit. This means, that all the applicable requirements are cited in the Title V permit with a reference to the requirement. For example: if the restriction came from a construction permit, the condition will cite the construction permit number, if it came from the regulation it will cite the RCAP specific rule, and if the restriction came from a federal standard, the condition will cite the federal standard or regulation. If the restriction came from the emissions calculation and a cumulative increase, the condition will establish that. Also, state only requirements are clearly identified.

National Emission Standards for Hazardous Air Pollutants (NESHAP): Municipal Solid Waste Landfills - 40 CFR, Part 63, Subpart AAAA

The National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (40 CFR Part 63 Subpart AAAA) applies to area sources that are subject to Part VII of the RCAP (have design capacities of 2.5 million Mg and 2.5 million m³ or more, **and** estimated uncontrolled NMOC emissions of 50 megagrams per year (Mg/yr) or more). For area source landfills that meet these applicability criteria, the control technologies chosen from EPA are the same as Part VII of the RCAP, so the MACT does not impose additional control requirements.

For determining whether a landfill must apply controls and demonstrate control performance, Part VII of the RCAP relies on the surrogate of landfill gas measured as NMOC, rather than HAP. NMOC is an appropriate surrogate for HAP because all HAP are contained in the NMOC portion of landfill gas. Control of NMOC to meet the Part VII of the RCAP requirements ensures destruction of organic HAP.

The only additional requirement that the NESHAP impose to the SLS are some additional compliance determination and reporting requirements that are necessary under section 112 general provisions of the Clean Air Act. These include startup, shutdown, and malfunction (SSM) provisions, use of continuous parameter monitoring data to determine compliance with the operating condition requirements, and reporting of deviations every 6 months as opposed to every year. The monitoring instruments, frequency of monitoring and required records of monitoring data are not different from the EG (Part VII of the RCAP).

The NESHAP makes references to specific requirements of the New Source Performance Standards (NSPS) - Standards of Performance for Municipal Solid Waste Landfills under 40 CFR part 60 subpart WWW. Those requirements are equivalent to the requirements under the Emission Guidelines in Part VII of the RCAP. The permit includes footnotes that establish the equivalence. Those references to the NSPS do not mean that the landfill is subject to the NSPS. The landfill will be subject to the NSPS once is modified or reconstructed.

National Emission Standards for Hazardous Air Pollutants (NESHAP): Reciprocating Internal Combustion Engine - 40 CFR, Part 63, Subpart ZZZZ

The emergency electric generator (EU-03) shall comply with the requirements of the 40 CFR Part 63 Subpart ZZZZ (RICE) by May 3, 2013. This includes Emission limitations, Monitoring, installation, collection, operation and maintenance requirements, Continuous compliance, Recordkeeping, Reporting and General Provisions requirements.

Non Applicable Requirements

The following requirements are not applicable to MCL:

- Emission Guidelines and Compliance Times for Municipal Sanitary Landfill System under 40 CFR Part 60 Subpart Cc. This subpart is only applicable to the Administrators of air quality programs, EQB in this case, that submitted a State plan (approved as Part VII of the RCAP) that implements the emission guidelines contained in this subpart.

- Standards of Performance for Municipal Solid Waste Landfills that commenced construction, reconstruction or modification after May 30, 1991 under 40 CFR part 60 subpart WWW. This subpart is not applicable because the landfill is operating since 1973, and was not reconstructed or modified after May 30, 1991.

The reporting frequency for compliance certification for this source shall be annual. Unless specifically designated otherwise, all terms and conditions of the Title V Operating Permit, including any provisions designed to limit the source's potential to emit, are enforceable by EPA, and citizens, under the Federal Clean Air Act. Those terms and conditions which are designated as state-only enforceable, as indicated by the permit, are enforceable only by EQB.

EQB found that this Title V Operating Permit satisfies the requirements of Part VI of the RCAP.