

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2**

In the Matter of:

Arroyo Municipal Solid Waste Landfill
Arroyo, Puerto Rico.

Municipality of Arroyo, Puerto Rico,
Respondent.

Proceeding Under Section 7003 of the Solid
Waste Disposal Act, as amended.

ADMINISTRATIVE ORDER
ON CONSENT
Docket No.: RCRA-02-2016-7303

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I. JURISDICTION

1. This Administrative Order (the "Order") is issued on consent to the Municipality of Arroyo, Puerto Rico ("the Municipality" or "Arroyo," or "Respondent").
2. The Arroyo Municipal Solid Waste Landfill (the "Landfill") is located off State Road PR-755 KM 1.0, in the Municipality of Arroyo in the Commonwealth of Puerto Rico.
3. The Municipality is the owner and operator of the Landfill.
4. The Order is issued by the United States Environmental Protection Agency ("EPA") pursuant to the authorities vested in the Administrator of EPA by Section 7003 of the Solid

Waste Disposal Act, as amended by various laws including the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. § 6901 et seq. (collectively hereinafter referred to as "RCRA" or "the Act"), which authorities have been duly delegated to the Regional Administrator of EPA, Region 2.

5. Notice of this Order has been provided to the Commonwealth of Puerto Rico, pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973.

II. PARTIES BOUND

6. This Order shall apply to and be binding upon the Municipality and each and every agent of the Municipality. The Municipality shall supply any person or entity that is working on or will work on any issue directly related to the Landfill and that is under the direct or indirect control of the Municipality (including but not limited to any contractor or independent agent retained to perform work on issues related to the Landfill) with a complete copy of the Order. The Municipality shall nonetheless be responsible for ensuring that its contractors, subcontractors and agents comply with the requirements of this Order and perform work in accordance with this Order.

7. The obligations of the Municipality under this Order shall be binding on any successor, whether such successor is created by merger, expansion or otherwise, pursuant to the laws of the Commonwealth of Puerto Rico.

III. EPA'S FINDINGS OF FACT AND CONCLUSIONS OF LAW

Statutory and Regulatory Background

8. Section 7003(a) of RCRA, 42 U.S.C. § 6973(a) states in pertinent part that: "upon receipt of evidence that the past or present handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment, the Administrator may ... issue such orders as may be necessary to protect public health and the environment."

9. Section 4004 (a) of RCRA, 42 U.S.C. § 6944 states, in pertinent part, that the "... Administrator shall promulgate regulations containing criteria for determining which facilities shall be classified as sanitary landfills and which shall be classified as open dumps. . . ."

10. Section 1004 of RCRA, 42 U.S.C. § 6903 defines the term "open dump" to mean any facility or site where solid waste is disposed of which does not meet all the criteria for being classified as a sanitary landfill under Section 4004 and which is not a facility for disposal of hazardous waste.

11. The federal regulations promulgated at 40 CFR Part 258, entitled Criteria for Municipal Solid Waste Landfills, "establish minimum national criteria ... for all municipal solid waste landfill units. . . ." 40 CFR § 258.1.

12. The Landfill is a "municipal solid waste landfill unit," as that term is defined at 40 CFR § 258.2.

13. Pursuant to 40 CFR § 258.1(h), municipal solid waste landfill units which fail to meet the criteria set forth in Part 258 constitute open dumps.
14. Section 4005(a) of RCRA, 42 U.S.C. § 6945(a) states, in pertinent part: ". . . any solid waste management practice or disposal of solid waste or hazardous waste which constitutes the open dumping of solid waste or hazardous waste is prohibited."
15. The Landfill constitutes an "existing landfill" as that term is defined in 40 CFR § 258.2. Existing municipal solid waste landfill units are subject to many of the requirements set forth in 40 CFR Part 258.
16. Pursuant to 40 CFR § 258.1, municipal solid waste landfills in operation as of 1994 that continued to accept solid waste for disposal, may not laterally expand unless the expansion cell or area meets certain design criteria as set forth in 40 CFR § 258.40, including installation of an impermeable liner membrane and a leachate control system, which acting together, are designed to minimize uncontrolled leachate releases from the Landfill.
17. The Landfill is also subject to the Non-Hazardous Solid Waste Management Regulations of Puerto Rico, administered by the Puerto Rico Environmental Quality Board ("EQB").
18. The Landfill is not authorized by EPA to accept or dispose of "hazardous waste," as that term is defined in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5), and in 40 CFR § 261.3.

Owner and Operator

19. The Municipality has been the "owner" of the Landfill since at least 1977, as that term is defined in 40 CFR § 258.2. The Municipality has contributed and continues to contribute to the handling and disposal of solid waste at the Landfill in its capacity as owner.
20. The Municipality is the "operator" of the Landfill as that term is defined in 40 CFR § 258.2. The Municipality has contributed and continues to contribute to the handling and disposal of solid waste at the Landfill in its capacity as operator.

Respondent is a Person

21. Respondent is a "person" as that term is defined in Section 1004(15) of the Act, 42 U.S.C. § 6903(15).

Geographic and Geological Background

22. The Municipality of Arroyo is located along the southern coast of Puerto Rico and bordered by the Caribbean Sea, Guayama, and Patillas. Arroyo is approximately 59.6 square kilometers in size and has a population of about 19,575 people.
23. The Landfill has two waste cells, comprising an inactive cell with an area of approximately 8.5 acres and an active cell with an area of approximately 8.6 acres. The Municipality has informed EPA that it is undertaking a topographical and other survey work with respect to the landfill and adjacent area. The work is expected to be completed on or

before October 31, 2016 and the data obtained through this work will be utilized in connection with work activities under this Order.

24. The Landfill is located in a region that has an annual average rainfall of 57.51 inches per year as reported by the National Oceanic and Atmospheric Agency (“NOAA”).

25. The Landfill is located over a volcanic rock formation composed of non-pillowed lava flows, volcanic breccia, sandstone, minor limestone, conglomerate, siltstone, and volcanic tuff.

26. A fault line runs along the southern border of the Landfill property, separating the lava flow bedrock from the plutonic complex consisting of quartz diorite and local porphyritic quartz dacite.

27. The Landfill is located in a seismic impact zone. According to the “Documentation for 2003 USGS Seismic Hazard Maps for Puerto Rico and the U.S. Virgin Islands” published by the United States Geological Survey, (“USGS”), the Landfill is located in an area with a ten percent probability that the maximum horizontal acceleration in lithified earth material in a period of 250 years, expressed as a percentage of the earth’s gravitational pull (g), is 0.13g. According to Subtitle D, the maximum requirement is 0.10g.

Environmental Risk Factors

- Location Within an Extreme Weather Zone

28. The USGS has ranked the U.S. coastal areas by the number of hurricanes expected to occur during a 100-year period based on historical data. Puerto Rico was classified at the most extreme category of risk, with more than 60 hurricanes/100 years.

- Impacts to Surface and Ground Waters

29. All stormwater runoff from the Landfill drains into a local unnamed stream.

30. Leachate from the Landfill may drain into the South Coast Aquifer System, one of three principal aquifers in Puerto Rico according to the USGS.

31. The USGS notes that the South Coast aquifer supplies about one-half of the total public water supply and irrigation needs of the south coast of Puerto Rico.

32. Four Puerto Rico Aqueduct and Sewer Authority drinking water wells are located within a one-mile radius of the landfill. Five other water wells used for non-drinking purposes are located within a one-mile radius of the landfill, according to USGS information. Three residences are located within two hundred meters of the Landfill.

- Other Location Risk Factors

33. The Landfill is located approximately 2.23 mile from the former Patillas Airport, which the Municipality reports is no longer active.

34. Aircraft-wildlife strikes are the second leading causes of aviation-related fatalities. Landfills attract hazardous wildlife and are, therefore, normally incompatible with airports as determined by the Federal Aviation Administration ("FAA") and other federal agencies.

35. Under 40 CFR §258.10, Airport Safety, EPA requires any operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal. Owners or operators of lateral expansions of existing municipal solid waste landfill ("MSWLF") units that are located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any airport runway end used only by piston-type aircraft, must demonstrate that such units are not hazards to aircraft.

36. No demonstration was made by the Municipality to show that that the expanded Landfill was not a hazard to aircraft. The Municipality has indicated the Patillas Airport is closed.

Landfill Background and Regulatory History

37. According to facility representatives, the Landfill receives an average of 400 cubic yards per day of solid waste, from the Municipalities of Arroyo and Patillas. According to a Waste Characterization Study prepared for the Puerto Rico Solid Waste Management Authority ("SWMA") in 2003, the landfill received 536 tons of waste per week.

38. SWMA determined in its November, 2004 Progress Report, "the active portion of the landfill within the property boundary will reach capacity within approximately two years [June 2006]."

39. According to the November, 2004 SWMA Report, the operations permit for the operation of the Landfill expired on May 13, 2003.

40. The SWMA Report also noted that a construction permit for a lateral expansion of the Landfill expired in May 13, 1999 and construction of the cell was not completed by that date.

41. According to the EQB MSWLF Semiannual Report July-December 2001, construction of a new cell began without EQB approval. EQB identified deficiencies and ordered construction to stop. However, construction continued, according to information available to EPA. In its November 2004 progress report, SWMA reported that the Landfill had expanded beyond its northern boundary by approximately 195 square meters.

42. A May 7, 2013 EQB Notice of Violation to Arroyo cited the Landfill for operating a non-hazardous solid waste facility without a permit.

43. SWMA determined in its 2004 Progress Report that three concrete leachate tanks, measuring approximately 10 feet x 10 feet x 5 feet, were installed at the toe of the slope of the south landfill area. Leachate was collected in partially perforated pipes located at the toe of the slope of the south landfill area, and flowed by gravity into the concrete tanks. The collected leachate was periodically pumped out of the tanks and hauled to an off-site treatment facility. However, at the time of EPA Inspections in September and December 2014 respectively the leachate system was not operable. Untreated leachate which migrates from the Landfill contains hazardous constituents, which can pose an environmental and human health risk.

44. EQB's May 7, 2013 Notice of Violation to Arroyo stated that waste was not covered daily with at least six inches of cover for as long as four weeks at a time. Arroyo was also cited for pallet storage on an old tire pile, which represents an environmental hazard if the tire pile burns, and for not having a functional leachate collection system. EQB noted leachate contamination of surface water and that leachate releases occurred to neighboring property. There was no EQB operating permit for the Landfill, and no permit for the septic tank system.

45. EQB also issued Arroyo a Notice of Violation on April 28, 2014. Arroyo was again cited for pallet storage on an old tire pile, not having a functional leachate collection system, no EQB operating permit, no permit for the septic tank system, and no operating plan, no weighing scale for incoming waste, no dust and wind-blown trash controls, no communication equipment or fire control equipment.

46. EQB informed EPA on September 16, 2014 of the following: an underground fire burned for three years in late 1990's in the old cell; the new landfill cell was built in 1999, the liner in the new cell was not placed on clay (as required), the liner and leachate system were not maintained, the new cell footprint expanded well past the liner, and the liner was not anchored.

Landfill Inspections, Findings and Environmental Impact

47. EQB inspected the Landfill on June 20, 2013. According to EQB, during that inspection the following were observed: the impacted area totaled 23.6 cuerdas, surface water bodies were impacted, no stormwater controls were in place, green waste and inactive areas were not maintained. EQB also found that there was a lack of daily cover, leachate contamination of surface water, and no gas or groundwater monitoring.

48. Authorized representatives of EPA inspected the Landfill on or about December 14, 2005 (the "2005 Inspection"), and on or about September 16, 2014 (the "September 2014 Inspection") and December 2, 2014 (the "December 2014 Inspection," collectively the "2014 Inspections"). During the 2005 and 2014 Inspections, EPA obtained information, concerning the Landfill and its waste disposal practices. EPA also obtained information concerning the landfill from SWMA and EQB.

49. The Landfill did not have daily cover as required by 40 CFR § 258.21 during the 2005 and 2014 EPA Inspections. Daily cover is required to reduce the incidence of birds feeding at the landfill and the resultant risk of aircraft-bird strikes, control disease vectors, fires, leachate generation, odors, blowing litter, and scavenging.
50. During its 2005 and 2014 Inspections, EPA observed that the Landfill lacked adequate stormwater runoff controls. These controls are required by 40 CFR § 258.26. The Landfill also had no treatment system for stormwater. A stormwater basin was unlined and of limited capacity.
51. Uncontrolled surface water run-off can flow onto and infiltrate and percolate into surface soils, potentially adversely impacting soil and/or groundwater. Uncontrolled run-off is more likely to occur in instances where, as at the Landfill, there is substantial rainfall and steep surface gradients with poor or no landfill cover.
52. Pursuant to 40 CFR § 258.1, MSWLF facilities in operation as of 1994 that continue to accept solid waste for disposal, may not laterally expand unless the expansion cell or area meets certain design criteria as set forth in 40 CFR § 258.40, including installation of an impermeable liner membrane and a leachate control system, which acting together, prevent uncontrolled leachate releases from the MSWLF.
53. The Landfill does not have a properly installed impermeable liner. Such liners, which are required for "new municipal solid waste landfill units" and "lateral expansions" as those terms are defined in 40 CFR § 258.2, minimize the possibility that liquids, including leachate, can percolate and seep through a landfill, infiltrate the subsurface, and contaminate soil and groundwater.
54. Leachate is a "liquid that has passed through or emerged from solid waste and contains soluble, suspended or miscible materials removed from such waste." 40 CFR § 258.2. Landfill leachate may be contaminated with hazardous constituents such as toxic chemicals, heavy metals, and complex organic compounds. Leachate can also contain microbial pathogens.
55. Increased volumes of leachate are generated by and released from landfills that do not have requisite engineering controls in place such as surface water run-on controls, impermeable liners and leachate collection systems. The Landfill's failure to have these controls increases the likelihood that the aquifer beneath the Landfill can become contaminated by operations at the Landfill.
56. Municipal solid waste may contain microorganisms that can cause disease in humans and animals. These pathogenic microorganisms include enteric bacteria, fungi, viruses, and human and animal parasites. Pathogenic bacteria and viruses, originating with soiled diapers,

animal waste, and other sources, may survive conditions within sanitary landfills, and may be leached to ground or surface water.

57. During the 2005 Inspection, personnel representing the Municipality described the leachate collection system which was operable at that time. A tanker truck was observed pumping out leachate tanks.

58. During the 2014 Inspections, EPA observed leachate flowing into unlined stormwater channels.

59. During the 2014 EPA Inspections, no leachate collection tanks were visible. The Municipality's representatives and EQB inspectors confirmed that no leachate collection system was operational.

60. An adequate groundwater monitoring system is necessary to determine if contaminants are being released into groundwater and are migrating away from the Landfill. Groundwater contaminated by landfill operations could contain hazardous constituents such as toxic chemicals, heavy metals, and organic compounds.

61. No groundwater monitoring wells have been installed at or adjacent to the Landfill. As of December 2014, no groundwater monitoring program exists at the Landfill.

62. Landfill gas is generated during the natural process of anaerobic decomposition of refuse contained in a landfill. Landfill gas is predominantly methane and carbon dioxide, and small amounts of non-methane organic compounds ("NMOCs") such as ethane, toluene and benzene. NMOCs are a collection of toxic pollutants, which when released into the atmosphere can lead to adverse effects. Methane gas is odorless and highly combustible. The accumulation of methane gas within a landfill can potentially cause fires and/or explosions.

63. Subsurface migration is the underground movement of landfill gas from landfills to other areas within or outside the landfill property. Most subsurface migration occurs at older, unlined landfills because there is minimal barrier for lateral migration of landfill gas. It is possible for landfill gas to travel underground, accumulate in enclosed structures, and ignite. Incidences of subsurface migration have caused fires and explosions both within and outside landfills.

64. Carbon dioxide and methane are greenhouse gases that can contribute to climate change, and NMOCs contribute to ozone formation. Methane is of particular concern because it is extremely effective in trapping heat in the atmosphere.

65. During the December 2014 Inspection, bubbling, apparently of landfill gas, was observed in leachate at the Landfill.

66. As of the December 2014 Inspection, the Landfill did not have an operational explosive gases control system. A methane monitoring system is required at 40 CFR § 258.23.
67. The Landfill does not have adequate public access control to the Landfill as required at 40 CFR § 258.25. Failure to adequately control public access increases the likelihood of individuals entering the Landfill and the potential for injury and unobserved waste disposal, thereby potentially jeopardizing human health and the environment.
68. Pursuant to 40 CFR § 258.14, new MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the Director of an approved State/Tribe that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.
69. Pursuant to 40 CFR §§ 258.1 and 258.15, lateral expansions of MSWLF Facilities in operation since 1994 that are located in unstable areas must demonstrate that special engineering measures have been incorporated into the expansion design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted. EPA does not believe that such a demonstration has been made.
70. During the 2005 and 2014 Inspections, some of the Landfill's surfaces had steep slopes that were likely to be unstable.
71. Landfill side slopes exceeding a 3:1 ratio, the sound engineering practice standard, (that is, 3 horizontal feet for every vertical foot) represent a potential for unstable slopes. EPA observed steep slopes exceeding 3:1 during the 2005 and 2014 Inspections. EPA measured slopes at 2.2:1 during the 2014 Inspection.

The Municipality's Recycling Program

72. The Municipality presently conducts limited recycling.
73. An improved recycling program would reduce the amount of waste from the Municipality that has to be disposed of at this or another Landfill.

Conclusion

74. The lack of proper operational controls at the Landfill, including lack of stormwater run-off controls, lack of leachate collection, lack of impermeable liners, lack of groundwater monitoring, lack of explosive gases control, lack of daily cover on a consistent basis, and lack of adequate access controls at the Landfill all contribute to Respondent's handling and disposal of solid waste in a manner that may present an imminent and substantial endangerment to human health and the environment.

75. The improper operation of the Landfill over a principal aquifer and the resultant risk of contamination of the aquifer, as well as the release of stormwater runoff from the Landfill to surface water, contributes to Respondent's handling and disposal of solid waste in a manner that may present an imminent and substantial endangerment to human health and the environment.

IV. DETERMINATION

76. Based on the foregoing EPA's FINDINGS OF FACT AND CONCLUSIONS OF LAW and the full Administrative Record, the Regional Administrator of EPA Region 2, upon receipt of evidence and information that the past and present handling and disposal of solid wastes at the Landfill may present an imminent and substantial endangerment to human health and/or the environment, and that the Municipality as the owner and operator of the disposal facility has contributed to such handling and disposal, has determined that the issuance of this Order is necessary to protect public health and the environment.

V. ORDER AND WORK REQUIREMENTS

77. IT IS HEREBY ORDERED that the Municipality shall perform the actions required by this Order and comply with its provisions. The Municipality shall fully cooperate with EPA representatives in carrying out the provisions of this Order. The Appendices attached to this Order are part of this Order and are incorporated by reference into it.

78. All submissions of documents to EPA by the Municipality pursuant to this Order shall be in English (unless a Spanish-only submission is approved by EPA). Portions of such documents that are intended to direct and execute work and other operations at the Landfill shall be prepared in both English and Spanish. Documents shall be submitted to EPA electronically in an accessible form that incorporates necessary signatures. Reasonable extensions of deadlines for required translations will be granted by EPA upon request by the Municipality.

79. Appendix 1: *Maps*, contains location maps and a photograph of the Landfill for information purposes. On or before the effective date of this Order, the Municipality shall comply with Appendix 2: *Operational and Other Requirements*, including: incoming load inspections and prohibitions, posting of Order notice, adequate Landfill security, daily cover, operator oversight, single active face, and reporting.

80. The Municipality shall comply with the Facility-wide Safety and Health Program provisions set forth in Appendix 3: *Training Programs*.

81. The Municipality shall comply with Appendix 4: *Waste Extent Determination*.

82. The Municipality shall incorporate the Revised Waste Disposal Perimeter in the approved Solid Waste Delineation Report into any required Landfill system designs and plans, including those for closure. The area within the Revised Waste Disposal Perimeter will constitute the "Existing Landfill" for purposes of work under this Order.

83. The Municipality shall comply with the Ground Water Monitoring and Intermediate Cover provisions set forth in Appendix 5: *Additional Landfill Requirements*.
84. The Municipality shall comply with Appendix 6: *Landfill Closure and Post Closure Plans*.
85. When EPA determines in its sole discretion that it is necessary to invoke the procedures in this subparagraph in order to achieve the development and implementation of approvable Closure and Post-Closure Plans, it will notify the Municipality in writing setting forth a final date for the Municipality's submission of acceptable Plan(s) to EPA. The written notice will specify the corrections, amendments and/or changes that the Municipality needs to make to previously submitted Plan(s) to achieve EPA approval, and the reasons why such corrections, amendments and/or changes are necessary. The notification letter will carry the caption: FINAL NOTICE OF DEFICIENCIES across the top of the page and will specify the date by which the Plan(s), signed by the professional engineer and approved by the Municipality, must be submitted to EPA. If the professional engineer believes in his/her best professional judgment that certain proposed corrections, amendments and/or changes described in the FINAL NOTICE OF DEFICIENCIES cannot or should not be complied with, the Municipality may provide notice to EPA that the matter is subject to the Dispute Resolution provisions set forth herein. After a decision on any matter or matters submitted for dispute resolution, EPA will, if necessary, submit a SECOND FINAL NOTICE OF DEFICIENCIES letter specifying the date by which the Plan(s) must be resubmitted to EPA. Thereafter, EPA will promptly notify the Municipality in writing of its final approval or non-approval of the Closure and/or Post Closure Plans. The Municipality's failure to submit acceptable Closure and/or Post Closure Plans by the date specified in the FINAL NOTIFICATION OF DEFICIENCIES, or in the event of a dispute resolution, by the date specified in the SECOND FINAL NOTIFICATION OF DEFICIENCIES, shall constitute the Municipality's failure to comply with a requirement of this Order, and the Municipality shall be subject to stipulated penalties for such failure.
86. The Municipality shall permanently cease receiving waste for disposal at the Landfill on or before June 30, 2019 unless a later date is approved in an approved Closure Plan or other writing by EPA.
87. The Municipality shall secure the Landfill against unauthorized waste disposal when it ceases receiving waste for disposal.
88. No later than thirty (30) calendar days before the date the Municipality is required to cease to receive waste for disposal, the Municipality shall give written notice to the Municipality of Patillas and to any carters serving customers of Arroyo specifying the date after which waste from such carters may no longer be deposited at the Landfill. This notification shall be made earlier if contractual arrangements for waste disposal require more advance notification to carters. The Municipality shall submit to EPA copies of all such notices.
89. The Municipality shall, within thirty (30) calendar days of the date when cessation of waste receipt is required, provide, apply, and thereafter maintain Intermediate Cover,

consistent with the Intermediate Cover provisions set forth in Appendix 5: *Additional Landfill Requirements*, throughout the Existing Landfill until final closure of the Landfill.

90. The Municipality shall comply with Appendix 7: *Landfill Gas Control*.
91. The Municipality shall comply with Appendix 8: *Improved Recycling Program*.
92. The Municipality shall comply with Appendix 9: *Zika Virus and Mosquito Control*.
93. The Municipality shall comply with Appendix 10: *Annual RCRA Reports*.

VI. FINANCIAL ASSURANCE

94. The Municipality, shall maintain financial assurance consistent with 40 CFR Part 258, Subpart G describing how the Municipality intends to finance closure and post-closure care requirements of this Order.

95. In the event that corrective measures are required at the Landfill , the Municipality shall comply with the financial assurance requirements for corrective action set forth in 40 CFR § 258.73. The Municipality shall thereafter provide documentation of its maintenance of the required financial assurance for corrective action in the annual RCRA reports submitted pursuant to this Order as set forth in Appendix 10: *Annual RCRA Reports*.

VII. CERTIFICATIONS

96. Wherever this Order (including all appendices) requires that a "Certification" be submitted to accompany written reports or documents, the following Certification shall be submitted, and shall be dated and signed by an authorized senior official of the Municipality:

"I certify under penalty of law that this document [Identify Document] and all attachments being submitted were prepared under my direction or supervision in order to ensure that qualified personnel properly gathered, evaluated and prepared this submission. Based on my review of the documents, data and other information available at the time of this certification, including my inquiry of the person or persons who prepared the submission, the information contained in this submission is to the best of my knowledge, true, accurate and complete. I am aware that there are significant potential penalties for knowingly submitting false information."

VIII. RETENTION AND AVAILABILITY OF RECORDS

97. The Municipality shall maintain records pertaining to the operations of the Landfill and the recycling program and shall make such records available to EPA and its representatives for inspection upon request. The Municipality shall also maintain records pertaining to the work being performed pursuant to this Order, including the Recycling Program, and shall make such records available to EPA and its representatives for inspection upon request. Each record relating to closure shall be maintained for a period of at least five (5) years from the date that permanent closure of the Landfill is completed. Post-closure records shall be retained until two years after the completion of post-closure or for a period of at least five (5) years from the date the record is created, whichever period is longer. Records relating to the Recycling Program

shall be maintained for a period of at least ten years from the effective date of this Order, and shall be maintained at the Arroyo City Hall. The Municipality shall also ensure the availability to the public of key documents related to work being performed under this Order.

IX. PROJECT COORDINATORS

98. On or before the effective date of this Order, EPA and the Municipality each shall designate a Project Coordinator ("PC") and the name of at least one alternate who may function in the absence of the designated Project Coordinator. The Project Coordinators shall be responsible for overseeing implementation of this Order. EPA and the Municipality shall each have the right to change the PC and shall inform the other parties should such change occur. The EPA has designated Ms. Meghan La Reau as Project Coordinator and Mr. Leonard Grossman as Alternate Project Coordinator. Unless approved by EPA, counsel for the Municipality may not serve as a PC.

99. All communications between the Municipality and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed to and through the respective Project Coordinators.

X. NOTICES

100. For purposes of this Order, all written communications, notices or submissions required by this Order shall be directed to a person specified by each party. EPA and the Municipality, with written advance notice, shall each have the right to change the person(s) who are to receive documents. The EPA has designated the EPA Project Coordinator as recipient, at the following address:

Meghan La Reau
U.S. Environmental Protection Agency, Region 2
RCRA Compliance Branch
290 Broadway, 21st Floor
New York, New York 10007-1866

101. By no later than fifteen (15) calendar days after the effective date of this Order, the Municipality shall designate a person or persons to receive such written communications, notices or response to submissions required by this Order and shall provide a mailing address for such person(s).

XI. EMERGENCY PROVISIONS/CORRECTIVE ACTION

102. In the event the Municipality identifies a current or immediate threat to human health or the environment at the Landfill, the Municipality shall immediately upon becoming aware of it, notify EPA orally and in writing within twenty four (24) hours summarizing the immediacy and magnitude of the potential threat to human health or the environment. The Municipality shall thereafter submit to EPA for approval, as soon as possible, a plan to mitigate this threat. EPA will approve or modify this plan, and the Municipality shall implement this plan as

approved or modified by EPA. In the case of an extreme emergency, the Municipality may act as it deems appropriate at its own risk.

103. In the event the Municipality identifies the need for corrective action due to conditions at the Landfill, or off-site, caused by contamination released from the Landfill, other than those conditions identified in Section III herein or identified by groundwater monitoring carried out pursuant to the Post-Closure Plan, the Municipality shall notify EPA within fifteen (15) calendar days of such identification. After review of available information, EPA may, after consultation with the Municipality, require the Municipality to prepare and implement a corrective action assessment and/or corrective action remedy. The corrective action assessment and/or corrective action remedy shall be implemented subject to EPA oversight.

104. If EPA determines that activities in compliance or non-compliance with this Order have caused or may cause a release of a hazardous waste or hazardous constituent, or may pose a threat to human health or the environment, EPA may direct the Municipality, as it deems appropriate, to stop further implementation of this Order, or a portion of this Order, for such period of time as EPA determines may be needed to abate any such release or threat, and/or to undertake any action which EPA determines to be necessary.

105. If EPA determines the need for corrective action due to conditions at the Landfill, or off-site, caused by contamination released from the Landfill, EPA will notify the Municipality and may, after consultation with the Municipality, require the Municipality to prepare and implement a corrective action assessment and/or corrective action remedy. The corrective action assessment and/or corrective action remedy shall be implemented subject to EPA oversight.

XII. RESERVATION OF RIGHTS

106. EPA expressly reserves, without limitation, all of its statutory and regulatory powers, authorities, rights, remedies and defenses, both legal and equitable, including the right to seek injunctive relief, cost recovery, monetary penalties, or punitive damages. EPA may exercise its authority under federal law to undertake removal or remedial actions.

107. This Order shall not be construed as a covenant not to sue, or as a release, waiver or limitation of any claim, rights, remedies, defenses, powers and or authorities which EPA has under RCRA, or any other statutory, regulatory or common law authority of the United States.

108. This Order shall not limit or otherwise preclude EPA from taking any additional legal action against the Municipality should EPA determine that any such additional legal action is necessary or warranted.

109. This Order shall not limit or otherwise preclude the Municipality from taking legal actions, which may be otherwise brought, against any other person(s) for indemnification, contribution, or such other relief it may deem appropriate; provided, however that EPA is not a

party in such actions. Third party actions initiated by or against the Municipality shall not alter the obligations in this Order and shall not toll deadlines in this Order.

110. Notwithstanding compliance with the terms of this Order, the Municipality is not released for the costs of any response actions taken by EPA. EPA reserves the right to seek reimbursement from the Municipality for any costs incurred by the United States.

XIII. STIPULATED PENALTIES

111. Unless the Municipality is excused under the "Force Majeure and Excusable Delay" provision of the Order, the Municipality shall pay a stipulated penalty for failure to comply with any requirement, term, or condition set forth in or required by this Order. The stipulated penalty for each non-complying act is as follows:

- a. For major requirements, terms, or conditions, including the failure to:
 - i. Comply with the Experienced On-site Operator requirements set forth in Paragraph 8 of Appendix 2: *Operational and Other Requirements*;
 - ii. Comply with the Waste Delineation requirements set forth in Appendix 4: *Waste Extent Determination*;
 - iii. Comply with the Groundwater Monitoring requirements set forth in Paragraph 5 of Appendix 5, *Additional Landfill Requirements*;
 - iv. Comply with the requirements set forth in Paragraphs 86 through 89, relating to ceasing receipt of waste at the Landfill;
 - v. Comply with the Closure and Post Closure Plan requirements set forth in Paragraph 84 and Appendix 6: *Landfill Closure and Post Closure Plans*;
 - vi. Comply with the Recycling Program requirements set forth in Appendix 8: *Improved Recycling Program*; and
 - vii. Comply with the Financial Assurance requirements set forth in Paragraphs 94-95 and Appendix 9: *Zika Virus and Mosquito Control*.
 - viii. Comply with Paragraph 93 and Appendix 10: *Annual RCRA Reports*.

The stipulated penalty for each act of non-compliance is as follows:

<u>Period of Failure to Comply</u>	<u>Penalty for Non-compliance per Day</u>
1 st through 60 th day	\$200
61 st through 120 th day	\$500
121 st through 180 th day	\$1,000
181 st day and thereafter	\$3,000

- b. For failure to comply with any other requirement, term, or condition set forth in or required by the Consent Order, the stipulated penalty for each act of non-compliance is as follows:

<u>Period of Failure to Comply</u>	<u>Penalty for Non-compliance per Day</u>
1 st through 60 th day	\$100
61 st through 180 th day	\$200
181 th day and thereafter	\$500

- c. Stipulated penalties shall be paid by cashier's or certified check, payable to the Treasurer, United States of America, and mailed to the:

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

- d. Said payment(s) shall be identified as **Arroyo Municipal Solid Waste Landfill, Arroyo, Puerto Rico** and must reference **Docket No. RCRA-02-2016-7303**

112. All stipulated penalties begin to accrue on the day each act of noncompliance with any requirement, term, or condition set forth in or required by this Order first takes place. Said stipulated penalties shall continue to accrue through, and including, the day on which any failure to comply with such requirement, term, or condition is remedied. Nothing herein shall preclude, or is intended to preclude, the simultaneous accrual of separate stipulated penalties for each separate act of noncompliance with this Order. Penalties shall accrue regardless of whether EPA has notified the Municipality of the act or acts of non-compliance, but need only be paid upon demand.

113. After receipt of a demand from EPA for stipulated penalties pursuant to this Section of the Order, the Municipality may within thirty (30) calendar days of such demand, provide EPA with a written explanation of why it believes the stipulated penalties are not appropriate for the act(s) of non-compliance cited by EPA. If the Municipality elects not to file such explanation, the stipulated penalties shall be paid within sixty (60) calendar days after receipt of the penalty demand.

114. The Director of the Division of Enforcement and Compliance Assistance may, in his or her sole discretion, reduce or eliminate such stipulated penalties based on the Municipality's written explanation as specified immediately above. If the Municipality makes a submittal as specified above, and the Division Director does not eliminate the stipulated penalties, then EPA will again notify the Municipality in writing that the original or reduced stipulated penalties must be paid by the Municipality. The Municipality shall pay the stipulated penalties as set

forth in EPA's notice pursuant to this sub-section within sixty (60) calendar days of its receipt of the notice.

115. At any time (including when EPA makes its initial demand for stipulated penalties) prior to the Municipality's payment of stipulated penalties, the Director of the Division of Enforcement and Compliance Assistance may, for good cause as independently determined by him or her, reduce or eliminate the stipulated penalties that are demanded or otherwise due. If the amount of stipulated penalties EPA decides to demand is different from what has previously been communicated to the Municipality, EPA will notify the Municipality of the change.

116. Except as provided above, all penalties owed to EPA under this Section XIII. STIPULATED PENALTIES, shall be due and owing within sixty (60) calendar days after receipt of the penalty demand. Interest shall also accrue on any amount not paid when due at the rate established by the Secretary of the Treasury pursuant to 31 U.S.C. § 3717.

117. If the Municipality fails to pay stipulated penalties as required under this Order, EPA may refer this matter to the U. S. Department of the Treasury or the Department of Justice for collection under applicable law. Nothing in this section, however, limits, or shall be construed as limiting, any rights or remedies available to EPA to enforce this Order and to seek compliance with the terms and conditions of this Order or any other applicable law or regulation.

XIV. NON-RELEASE OF OTHER CLAIMS AND PARTIES/COOPERATION WITH THIRD PARTIES

118. Nothing in this Order shall constitute, or be construed to constitute, a release from any claim, cause of action or demand in law or equity brought by EPA against any person, firm, partnership, or corporation for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituent, hazardous substance, solid waste, hazardous waste, pollutant, or contaminant found at, taken to, taken from, or emanating from the Landfill.

119. In carrying out its responsibilities under this Order, the Municipality, upon notification from EPA, shall use its best efforts to cooperate with any third party which may, in the future, be issued a unilateral or consent order relating to the Landfill ("additional Respondent(s)"). The Municipality shall keep all such third parties fully informed of its activities pursuant to the Order's requirements and shall, unless otherwise agreed to by the parties, provide copies to such parties of all correspondence and submissions to EPA under the Order.

XV. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

120. The Municipality shall indemnify, save and hold harmless the United States Government, its agencies, departments, agents, and/or employees, from any and all claims or causes of action arising from or on account of acts or omissions of the Municipality or its agents, independent contractors, receivers, trustees, subcontractors or successors and/or assigns in carrying out activities required by this Order. This indemnification shall not be

construed as in any way affecting or limiting the rights or obligations of the Municipality or the United States under their various contracts or statutes.

XVI. OTHER APPLICABLE LAWS

121. Nothing herein shall relieve the Municipality of its obligations to undertake all actions required by this Order in accordance with local, Commonwealth and federal laws and regulations. The Municipality shall obtain all permits or approvals necessary to perform the work required by this Order.

XVII. SEVERABILITY

122. If any provision or authority of this Order or the application of this Order to any party or circumstance is found to be invalid, or is temporarily stayed, the remainder of this Order shall remain in force and shall not be affected thereby.

XVIII. FORCE MAJEURE AND EXCUSABLE DELAY

123. The Municipality shall perform all the requirements of this Order within the time limits set forth, approved, or established herein, unless the performance is prevented or delayed solely by events which constitute a *force majeure*. A *force majeure* is defined as any event arising from causes not reasonably foreseeable and beyond the control of the Municipality which could not be overcome by due diligence and which delays or prevents performance by a date required by this Order. Such events do not include unanticipated or increased costs of performance, changed economic circumstances, normal precipitation events, or failure to obtain federal, Commonwealth, or local permits. Nothing in this Section XVIII. bars the Municipality from seeking a scheduling modification pursuant to "XXI. MODIFICATION," herein.

124. The Municipality shall notify in writing the EPA Project Coordinator within ten (10) calendar days after becoming aware of any event, which it knows or should know, constitutes a *force majeure*. Such notice shall detail the estimated length of delay, including necessary demobilization and remobilization, its causes, measures taken or to be taken to minimize the delay, and an estimated timetable for implementation of these measures. The Municipality shall adopt all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this section shall constitute a waiver of the Municipality's right to assert a *force majeure* and may be grounds for EPA to deny the Municipality an extension of time for performance.

125. After receiving notice from the Municipality that it is invoking the force majeure provisions of this Order, EPA will respond in writing indicating either EPA's agreement that the event constitutes a force majeure or its disagreement and the reasons therefore.

126. If the Parties agree that a *force majeure* has occurred, the time for performance may be extended, upon EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through written amendment to this Order, or modifying the schedule in a previously approved plan. Such an extension or modification will not alter the schedule for performance or completion of any other tasks required by this Order unless EPA determines that the delayed task is a prerequisite or necessary requirement for other specified tasks and the schedule is specifically altered in accordance with XXI. MODIFICATION, herein.

127. In the event the parties cannot agree that any delay or failure has been or will be caused by a *force majeure*, or if there is no agreement on the length of the extension, the dispute will be resolved in accordance with the Dispute Resolution provisions contained in this Order.

XIX. ON-SITE AND OFF-SITE ACCESS

128. The Municipality consents to and agrees to grant access to EPA and other federal agency and EQB representatives, including authorized employees, agents, contractors, subcontractors, or consultants to enter and freely move about the Landfill for, but not limited to, the following purpose(s): observing conditions and/or activities at the Landfill, including work performed pursuant to this Order, interviewing personnel, conducting sampling or monitoring, taking photographs and verifying information or data that has been submitted.

129. The Municipality consents to and agrees to make available to EPA and its representatives for inspection, copying, or photographing, all records, files, photographs, documents, or any other writing, including monitoring and sampling data that pertain to any work undertaken pursuant to this Order.

130. To the extent that work required by this Order must be performed on property not owned or controlled by the Municipality, the Municipality shall use best efforts to obtain "Site Access Agreements" to perform such work within thirty (30) calendar days of the date the Municipality become aware or should be aware of the need to perform such work. Any such access agreement shall provide for reasonable access by EPA. In the event that Site Access Agreements are not obtained within the thirty (30) day period, the Municipality shall notify EPA, in writing, documenting its best efforts to obtain such agreements.

131. Nothing in this Order shall be construed to limit or otherwise affect EPA's right of access and entry pursuant to any applicable laws and regulations.

132. Nothing in this Order shall be construed to limit or otherwise affect the Municipality's liabilities and obligations to perform corrective action, including corrective action beyond the Landfill property boundary, notwithstanding the lack of access. EPA may determine that additional on-site measures must be taken to address releases beyond the Landfill boundary if access to off-site areas cannot be obtained.

XX. NO FINAL AGENCY ACTION

133. Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, Region 2, or any authorized representative of EPA, shall constitute final agency action giving rise to any rights of judicial review prior to EPA's initiation of a judicial action for a violation of this Order, which may include an action for penalties, an action to compel the Municipality's compliance with the terms and conditions of this Order, or such other relief as may be available at law.

134. In any action brought by EPA for a violation of this Order, the Municipality shall bear the burden of proving that EPA's action was arbitrary and/or capricious and not in accordance with law, or this Order. In any such action, EPA shall bear the burden of proving that the Municipality has violated a term or terms of this Order.

XXI. MODIFICATION

135. This Order may be amended by the Municipality and EPA. Such amendment(s) shall be in writing, shall first be signed by the Municipality, and shall have as its effective date the date on which it is signed by the EPA Regional Administrator.

136. Notwithstanding the above, EPA's and the Municipality's Project Coordinators may agree to changes in the scheduling of events. Any such changes shall be requested in writing by the Municipality and must be approved in writing by the EPA PC. Delays in obtaining required permits despite good faith, diligent efforts by the Municipality to obtain them, will be grounds for extensions of deadlines for work requiring such permits.

137. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Municipality will be construed as an amendment or modification to this Order.

XXII. TRANSFER OF OBLIGATIONS

138. The Municipality shall give notice, and a copy, of this Order to any successor in interest prior to any transfer of ownership or responsibility for the Landfill. The Municipality shall give notice to EPA at least sixty (60) calendar days prior to any such transfer. No such transfer shall in any way alter, extinguish or otherwise affect the Municipality's responsibility to meet all the terms and obligations of this Order. The Municipality may, however, transfer the responsibility for unperformed obligations imposed by this Order to a new owner/operator of the Landfill, provided there is a demonstration made to EPA's satisfaction that the new owner/operator is capable of undertaking these obligations and has expressly agreed to do so in writing, provided further that EPA has given its approval in writing to any such transfer of obligations, and provided finally that this Order has been modified to reflect the transfer and make the new

owner responsible for future performance of obligations under the Order. Any stipulated penalties which may have accrued pursuant to the terms of this Order shall remain the responsibility of the Municipality (against whom the penalties accrued) unless EPA consents in writing to the transfer of said liability to the successor. The Order Modification reflecting the transfer of obligations to a successor party or parties may, if appropriate, establish modified schedules for continuing obligations under the Order.

XXIII. DISPUTE RESOLUTION

139. The parties shall use their best efforts to informally and in good faith resolve all disputes and differences of opinion, which may arise concerning provisions of this Order.

Notwithstanding the foregoing, if the Municipality disagrees, in whole or in part, with any disapproval or modification or other decision or directive made by EPA pursuant to this Order, the Municipality shall notify EPA in writing of such disagreements and their basis or bases within twenty (20) calendar days of receipt of EPA's disapproval, modification, decision or directive. The notice shall set forth the specific points of the dispute, the position the Municipality maintains, the basis or bases for the Municipality's position, and any matters the Municipality considers necessary for EPA's review. EPA may unilaterally refuse to review any dispute brought by the Municipality under this provision if the Municipality fails to fully set forth the basis or bases of its position and/or fails to provide materials which are necessary for EPA's determination. EPA may, but is not obliged, to request that the Municipality submit additional information regarding any points concerning any dispute brought by the Municipality. EPA will determine which of its officials will have responsibility for a decision concerning a dispute. EPA shall provide to the Municipality its decision in writing on the pending dispute, which decision shall be binding. The parties may continue to confer and to use informal efforts to resolve the dispute during the period that EPA's final determination is pending. Notwithstanding the above, the Municipality may not invoke the dispute resolution procedures for the deadline for ceasing receiving solid waste for disposal at the Facility as established in an approved Closure Plan (or the deadline set forth in or established pursuant to Paragraph 87 of the Order in the event there is no approved Closure Plan), nor may the Municipality invoke the dispute resolution procedures concerning which EPA official is designated by EPA as the official to make a determination concerning the dispute.

140. EPA's decision on any dispute shall be incorporated into and become an enforceable part of this Order, and shall no longer be subject to dispute pursuant to this Order. The Municipality shall proceed in accordance with EPA's decision regarding the matter in dispute. If the Municipality does not actually perform the work in accordance with EPA's decision, EPA reserves the right in its sole discretion to conduct the work itself, and seek reimbursement from the Municipality, seek enforcement of this Order, seek stipulated penalties, and/or seek any other appropriate relief. Any disputes arising under this Order, and EPA's decisions concerning such disputes, are not subject to judicial review until such time as EPA seeks judicial enforcement of this Order.

141. The existence of a dispute as defined herein, and EPA's consideration of such matters as are placed into dispute, shall excuse, toll or suspend during the pendency of the dispute resolution process any compliance obligation which is demonstrably dependent on the matters in dispute, and EPA shall not seek to impose a penalty for non-compliance with the obligation for the period of time during which the obligation was excused, tolled or suspended, regardless of the final decision on the dispute. No compliance obligation shall be excused, tolled or suspended, unless the Municipality's dispute is in good faith and the Municipality exercises due diligence to resolve the dispute.

XXIV. TERMINATION

142. This Order and all of its terms and provisions shall remain in effect until all of the activities called for by the Order are completed and the Municipality is so notified in writing by the EPA. Such notice shall be signed by the Regional Administrator, EPA Region 2. The Municipality may request that EPA Region 2 provide the Municipality with such notice, and shall supply EPA with such information, including certifications, as EPA may specify.

XXV. ENFORCEMENT

143. The failure of the Municipality to comply with any provision of this Order may be considered a violation of this Order. Such violation may give rise to an enforcement action pursuant to Section 7003(b) of the Act, 42 U.S.C. § 6973(b), as amended. 40 C.F.R. Part 19.

144. Nothing herein shall preclude EPA from taking any additional enforcement actions, and/or such other actions as it may deem necessary for the abatement or prevention of an imminent threat to public health or the environment arising from conditions at the Landfill. Nor shall EPA be precluded from taking any such other enforcement actions under the Act or other laws as EPA may deem necessary based on additional information about conditions at the Landfill.

XXVI. COOPERATION AND POTENTIAL ASSIGNMENT OF RESPONSIBILITIES

145. The Municipality shall use its best efforts to cooperate with any additional Respondent(s) that may be ordered to carry out legal obligations relating to the Facility. In the event that one or more additional parties are issued an Order to carry out legal obligations relating to the Facility, EPA reserves its right to assign some of the specific tasks set forth in this Order to any additional Respondent(s) that is ordered in the future to carry out legal obligations relating to the Facility.

XXVII. GENERAL PROVISIONS

146. Nothing in this Order constitutes a satisfaction or release from liability with respect to any conditions or claims arising as a result of past, current or future operation, ownership or use of the Landfill by the Municipality, its agents, officials, successors or assigns.

147. Nothing in this Order affects any right, claim, interest, defense or cause of action of EPA with respect to the Municipality or any third parties.

XXVIII. CONSENT/AUTHORITY TO SIGN

148. The Municipality consents to and agrees not to contest EPA's jurisdiction to issue this Order. In addition, whether brought in an administrative or judicial proceeding, the Municipality consents to and agrees not to contest EPA's jurisdiction to enforce or compel compliance with any term of this Order. The Municipality neither admits nor denies the EPA's Findings of Fact and Conclusions of Law stated herein. The Municipality enters into this Order in good faith, and the execution of this Order is not intended and shall not be construed as an admission relating to any violations of any law or regulations or an assumption of liability beyond that expressly stated herein.

149. Finding this Order to be accurate and reasonable, the Municipality consents to its issuance and its terms, and agrees to undertake the actions required by the terms and conditions of this Order. The Municipality consents to the issuance of this Order, as an Order, pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973, and explicitly waives any rights it may have to request a hearing on this matter.

150. The Municipality agrees to undertake the actions required by the terms and conditions of this Order, consents to and will not contest EPA's jurisdiction to issue or, if necessary, enforce this Order, agrees to waive any defense concerning the validity of this Order, or any particular provision contained in the Order, and will not contest the terms of this Order.

151. The Municipality's signatory to this Order certifies that he or she is fully authorized to sign this Order.

XXIX. EFFECTIVE DATE

152. The effective date of this Order shall be fifteen (15) calendar days after the date the Order is signed by the Regional Administrator, EPA Region 2.

The Municipality of Arroyo, Puerto Rico

By: 

Name: Eric Bachier Roman
(PRINT)

Title: Mayor

Date: September 2, 2016

Administrative Order on Consent
Arroyo Municipal Landfill
Arroyo, Puerto Rico
Docket No. RCRA 02-2016-7303

It is so Ordered:

Judith A. Enck

Date: 9.19.16

Judith A. Enck
Regional Administrator
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

APPENDICES

Appendix 1: Maps

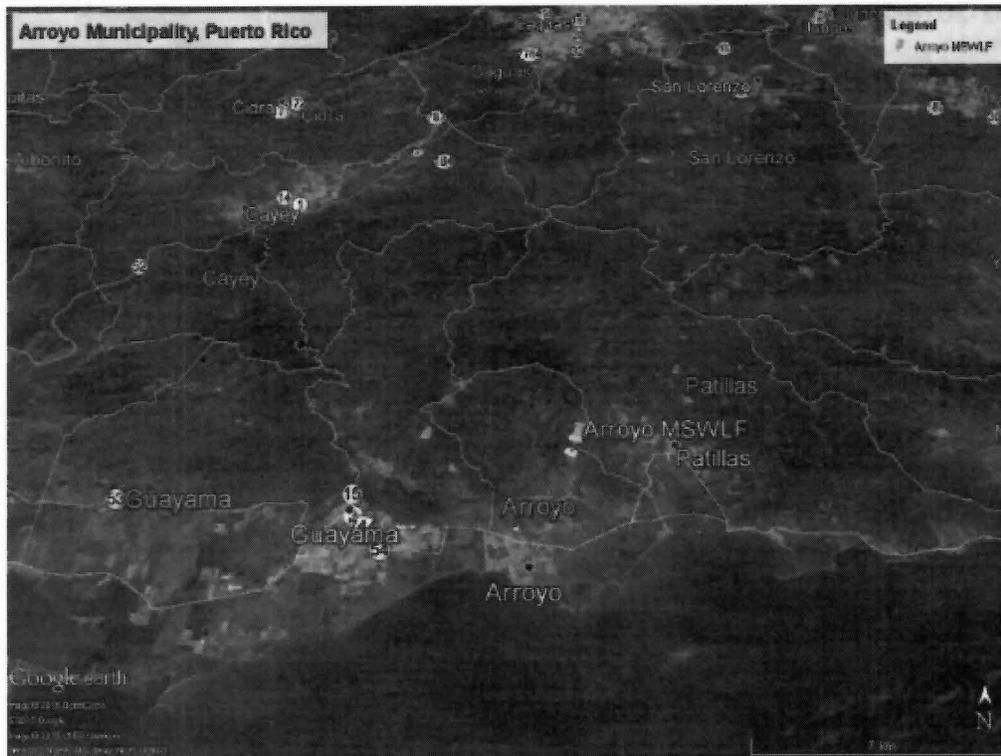


Figure 1: Arroyo Municipality, Puerto Rico

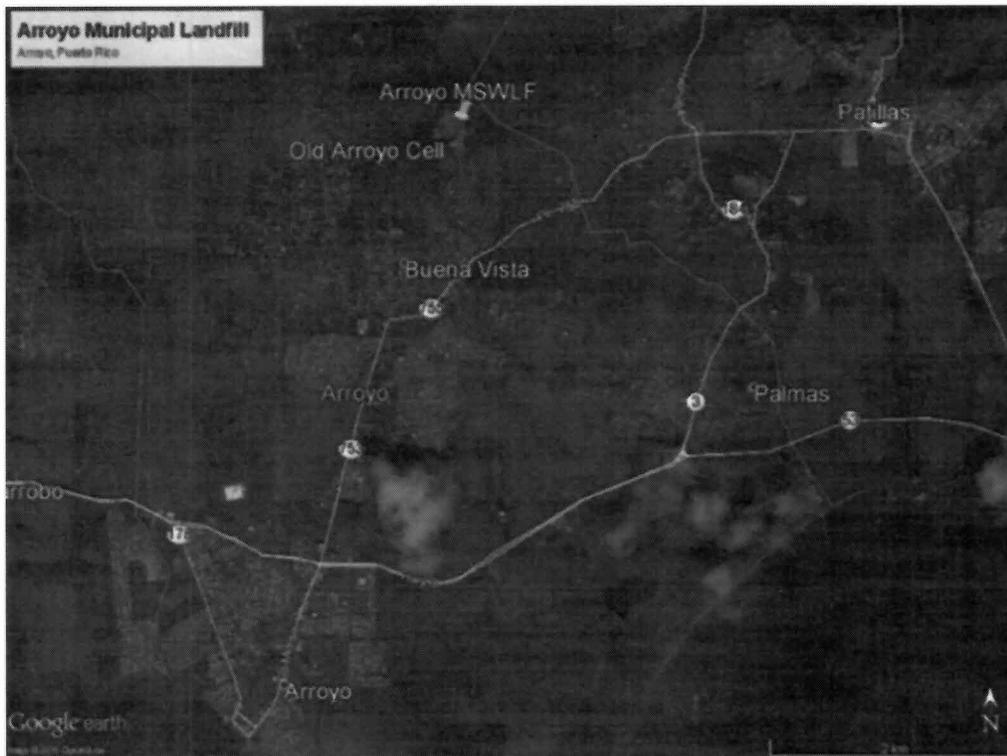


Figure 2: Arroyo Landfill Location

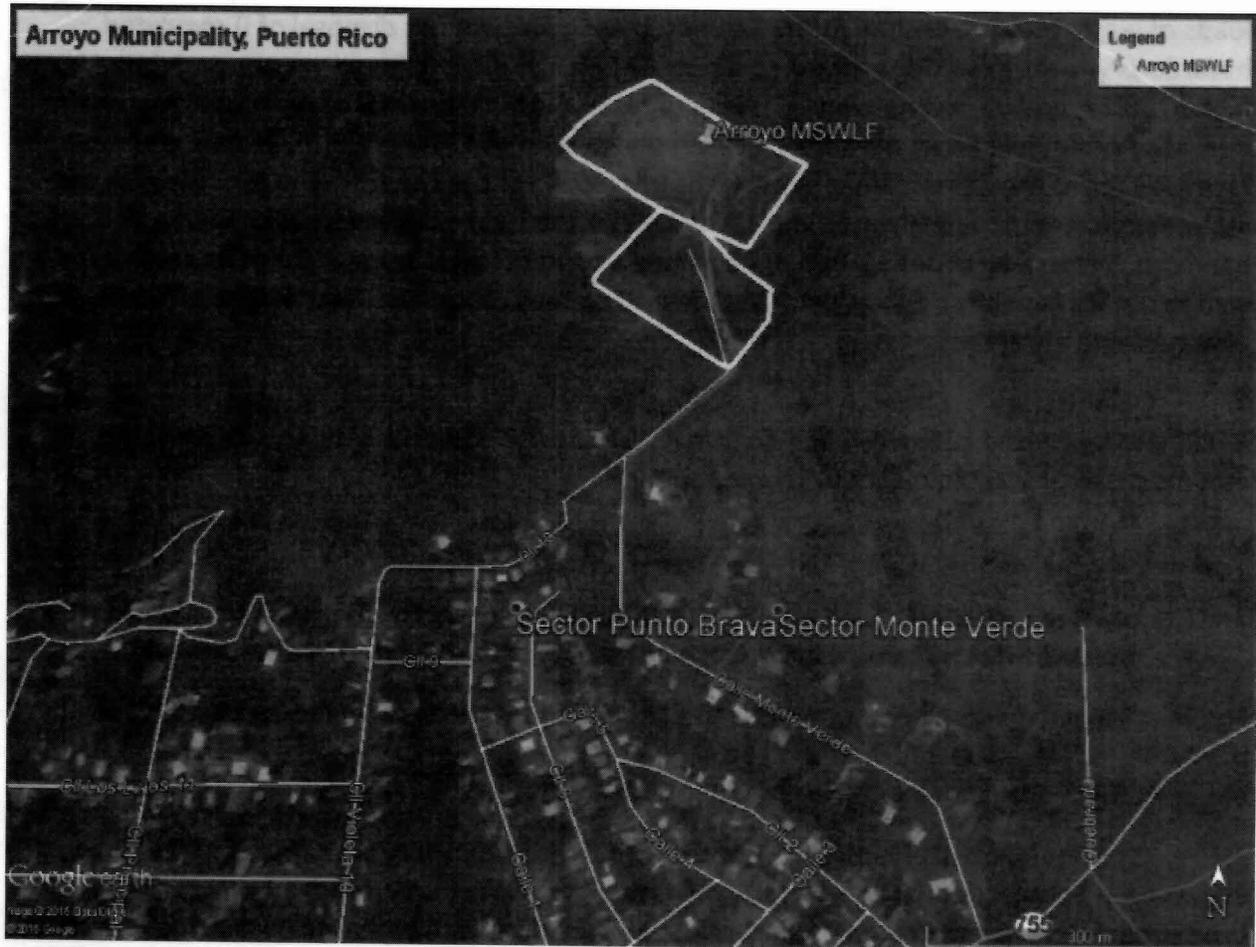


Figure 3: Arroyo Landfill Approximate Location

Appendix 2: Operational Requirements

1. On or before the effective date of this Order, Arroyo shall randomly inspect incoming loads of waste to be deposited at the Landfill so as to prevent the disposal of i) regulated hazardous wastes and PCBs prohibited under 40 CFR § 258.20; ii) liquid wastes prohibited by 40 CFR § 258.28; and iii) "White Goods," scrap tires, or any bulk disposal of recyclable material, bulk ash (except in a lined, permitted cell compliant with 40 CFR Part 258), or bulk green waste (as those terms are defined in Appendix 8 of this Order) at the Landfill. The Municipality shall maintain a log of incoming waste loads. The log shall contain the delivery date, name of the hauler or carter, a brief description of each load's contents and an estimate of its volume, as well as details (similar to those just listed) regarding the receipt and rejection of any loads with unacceptable materials.
2. On or before the effective date of this Order, the Municipality shall cause the following NOTICE to be posted in Spanish and English at the Landfill entrance in large lettering on a mounted sign at least four feet by five feet in size:

NOTICE

THIS LANDFILL IS SUBJECT TO A UNITED STATES ENVIRONMENTAL PROTECTION AGENCY ADMINISTRATIVE ORDER ON CONSENT WITH THE MUNICIPALITY OF ARROYO

The Municipality shall confirm in writing to EPA, within seven (7) calendar days of posting, that the Notice has been posted, and shall send EPA one or more photographs of the Notice sign, either in digital form or clearly developed.

3. On or before the effective date of this Order, the Municipality shall undertake best efforts to maintain adequate security at the Landfill to restrict unauthorized access to the Landfill so as to prevent scavenging, trespass, and unauthorized waste disposal. Such security measures shall include maintenance of existing fencing and ensuring that entrance gate(s) is locked during non-business hours, when the Landfill is otherwise not operating, and when the Landfill does not have someone controlling the entrance or inspecting incoming loads.
4. If either EPA or the Municipality determine that the security measures implemented are insufficient, the Municipality shall develop and implement a plan for additional steps to ensure that unauthorized access to the Landfill is prevented ("Enhanced Security Plan"). Such additional measures may include additional security personnel, installation and maintenance of an additional gate(s), and fencing. If the Municipality, rather than EPA, determines that the security measures implemented are insufficient, the Municipality shall notify EPA of the security issues within one week of such determination. Upon request by EPA, the Municipality shall submit, for review and approval, the Enhanced Security Plan. Unless otherwise indicated by EPA, the Municipality shall carry out the provisions of the Enhanced Security Plan within thirty (30) calendar days of either notification by EPA or the Municipality's own determination of such need.
5. On or before the effective date of this Order, the Municipality shall cover disposed solid waste with six inches of earthen material, and/or an acceptable alternative daily cover, at the

end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging. Daily cover must be maintained except for days in which severe weather condition makes it impossible to maintain daily cover.

6. On or before the effective date of this Order, the Municipality shall commence installation of the following Stormwater Provisional Measures:¹

- a. Minimize stormwater run-on with a temporary dike or channel system;
- b. Minimize the area of exposed working face;
- c. Manage runoff to reduce pollutant discharge through use of vegetative buffer strips, sediment traps/ponds, and diversion berms;
- d. Employ erosion control techniques such as mulching and matting, temporary check dams, filter fences, and straw bales;
- e. Regularly inspect and maintain such Provisional Measures.

7. The Stormwater Provisional Measures must be substantially installed and operational within thirty (30) calendar days of the effective date of this Order, or by such other later deadline as is approved by EPA in writing, and thereafter maintained until supplemented or replaced under an EPA-approved Stormwater Pollution Prevention Plan.

8. Upon the effective date of this Order, an on-site operator must be present at the Landfill during all times of operation. The on-site operator must have at least one year of experience in operating a solid waste landfill.

9. Starting on or before the effective date of this Order, the Supervisor of Landfill Operations shall biweekly report to EPA on Landfill compliance or statement of and reason for non-compliance and progress toward closure until EPA indicates it no longer requires such reports. Unless otherwise agreed to by EPA, such reports shall be short electronic mail messages and include Landfill photos (*e.g.*, on-site, end of the week reporting utilizing a "smart" cellular phone to send electronic mail messages and attached photos).

10. The Municipality shall also submit a written report to EPA within ninety (90) calendar days of the effective date of this Order, or by such other later deadline as is approved by EPA in writing, documenting compliance with the above, Appendix 2: *Operational Landfill Requirements*. The report shall be accompanied by the certification set forth in Section VII. CERTIFICATIONS of this Order. This report shall be in addition to the information required in Appendix 10: Annual RCRA Reports.

¹ Some examples of provisional measures taken elsewhere are found at the following websites: [http://water.epa.gov/polwaste/npdes/stormwater/upload/sector I landfills.pdf](http://water.epa.gov/polwaste/npdes/stormwater/upload/sector%20I%20landfills.pdf) and <http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>

Appendix 3: Training Programs

- Safety & Health Program

1. Within ninety (90) calendar days of the effective date of this Order, the Municipality shall develop, enforce, and maintain a facility-wide Safety and Health Program. This Program must comply with applicable Commonwealth and Federal Occupational Safety & Health Administration (“OSHA”) regulations. The following requirements must be addressed within the facility-wide Safety & Health Program (regulatory references are to Federal OSHA regulations and are believed to be correct):

a. Management Commitment to Safety and Health

- Provide employees with sanitary and safe working conditions [29 CFR § 1926.20(a)].
- Assign safety and health responsibilities [29 CFR § 1926.20(b)].
- Give safety and health designees authority to correct hazards [29 CFR § 1926.32(f)].
- Ensure employees that they may voice safety and health concerns without fear of reprisal [29 CFR § 1903.11(d)].
- Inform employees of hazards [29 CFR § 1926.21(b), 29 CFR § 1910.1020, 29 CFR § 1910.1200, 29 CFR § 1926 Subpart Z].
- Coordinate hazard communication with other employers on-site [29 CFR § 1926.59, 29 CFR § 1926.65, 29 CFR § 1926.652].
- Post the OSHA State or Federal Poster [29 CFR § 1903.2(a)].

b. Hazard Identification and Determination

- Evaluate operations, procedures, facilities, and equipment to identify hazards [29 CFR § 1926.20(a), 29 CFR § 1926.21(b), 29 CFR § 1926 Subpart O, 29 CFR § 1926.400 (b), 29 CFR § 1926.416].
- Monitor exposure levels [29 CFR § 1926.55, 29 CFR § 1926.62, 29 CFR § 1926 Subpart Z, 29 CFR § 1926.1101].
- Ensure regular safety and health inspections [29 CFR § 1926.20(b)(2)].
- Conduct accident investigations [29 CFR § 1904.4, 29 CFR § 1926.20(b)].
- Determine if engineering or administrative controls or personnel protective equipment are to be used [29 CFR § 1926.20(f), 29 CFR § 1926 Subpart E].

c. Hazard Elimination and Control

- i. Ensure machines and tools are in safe working order and in compliance with relevant standards [29 CFR § 1926.20(b)(3), 29 CFR § 1926 Subpart O].
 - ii. Institute engineering and work practice controls to eliminate health hazards [29 CFR § 1926.55, 29 CFR § 1926 Subpart E, 29 CFR § 1926 Subpart Z].
 - iii. Perform housekeeping to remove hazards posed by scrap and debris in work areas [29 CFR § 1926.25, 29 CFR § 1926.152(c)(5)].
 - iv. Provide appropriate personal protective equipment when other controls are infeasible [29 CFR § 1926.28(a), 29 CFR § 1926 Subpart E].
 - v. Guarantee safe means of egress [29 CFR § 1926.34]
- d. Emergency Response Planning
- i. Develop emergency response plans [29 CFR § 1926.35, 29 CFR § 1926.65(q)].
 - ii. Develop fire prevention and protection programs [29 CFR § 1926.24, 29 CFR § 1926 Subpart F].
- e. First Aid and Medical
- i. Provide medical services, first aid treatment, and supplies [29 CFR § 1926.50(a), 29 CFR § 1926.103, 29 CFR § 1926.50(c), 29 CFR § 1926.50(d), 29 CFR § 1926 Subpart Z].
 - ii. Ensure availability of emergency rescue for injured employees [29 CFR § 1926.50(e), 29 CFR § 1926.106(a), 29 CFR § 1926.21(b)(6)].
 - iii. Post emergency numbers for physicians, hospitals, or ambulances [29 CFR § 1926.50(f)].
- f. Training
- i. Train employees to recognize hazards [29 CFR § 1926.21(b)(2), 29 CFR § 1926.65, 29 CFR § 1926.302(e)]
 - ii. Train workers to recognize and avoid unsafe conditions [29 CFR § 1926.21(b)(2), 29 CFR § 1926.65, 29 CFR § 1926.454].
 - iii. Provide training on safe work practices and applicable standards [29 CFR § 1926.21(b)].
 - iv. Provide training on safe operation of equipment and machinery [29 CFR § 1926.20(b)(4), 29 CFR § 1926.302(e)].
 - v. Provide training on identification of confined and enclosed space hazards (if applicable to the Landfill) [29 CFR § 1926.21].

- Operator Training Program

2. Upon the effective date of this Order, an on-site operator must be present at the Landfill during all times of operation (including closure activities). The on-site operator must have at least one year of experience in operating a solid waste landfill.
3. Within one hundred and eighty (180) calendar days of the effective date of this Order, in the event waste placement operations are ongoing, the on-site operator(s) shall have completed Solid Waste Association of North America ("SWANA") Landfill Operations Basics training or an equivalent education program approved in advance by EPA. Such training must be maintained annually and must include:
 - a. The basics of landfill gas, stormwater, and leachate management and groundwater monitoring;
 - b. Equipment selection, waste inspections and prohibitions, security measures, cell construction, daily cover, and litter and dust management; and
 - c. The fundamentals of accident prevention.
4. Within one hundred and eighty (180) calendar days of the effective date of this Order, the management of the Landfill will be supervised by an individual who is:
 - a. Properly trained in the operation of landfills and the implementation of design and operational plans;
 - b. Properly trained in the operation of landfill gas collection and treatment systems (before such systems are operational at the landfill);
 - c. Properly trained in the implementation of closure and post-closure plans (before such implementation commences); and
 - d. A certified supervisor of landfill operations ("SOLO"). The SOLO certification shall be the SWANA Certified Manager of Landfill Operations or an equivalent course of study, independently-proctored exam, and certification program approved in advance by EPA. SOLO or equivalent, EPA approved certifications must be maintained.

Appendix 4: Waste Extent Determination

1. On or before March 1, 2017, the Municipality shall develop and implement a Solid Waste Delineation Plan ("Delineation Plan"). The Delineation Plan shall determine the full (*i.e.*, total, complete and comprehensive) extent of solid waste disposal or otherwise approved extent (in all past and current disposal areas). The Municipality shall use its best efforts to obtain past permitting information so that the Delineation Plan can include to the extent possible a clear delineation of the area that has been permitted by EQB for solid waste disposal and include any supporting documentation, such as the Municipality's EQB permit. Unless otherwise agreed to by EPA, the Delineation Plan shall be designed so that the waste extent determination will comprise two distinct areas:
 - a. Waste Area. The Delineation Plan shall determine (including in areas where the waste extent is obscured by foliage, topography, or otherwise) the actual extent of bulk waste disposal along the entire perimeter of the Landfill, through the use of soil borings, trenching, noninvasive geophysical exploration (e.g., ground-penetrating radar and electromagnetic conductivity surveys), or other EPA approved methods. The line delineating the actual extent is hereafter referred to as the "Revised Waste Disposal Perimeter." "Bulk Waste," as used in this Appendix, shall mean the contiguous or mostly contiguous solid waste disposed anywhere in the Landfill area to a depth of 6 inches or more. The Municipality shall physically delineate the entire Revised Waste Disposal Perimeter by installing a series/system of highly visible markers. The Municipality shall thereafter ensure that the landfill slope base and any engineering controls that may be present such as stormwater channels and leachate interception systems are accessible for inspection;
 - b. Peripheral Disposal Areas. The Delineation Plan shall determine, to the extent practicable, considering accessibility and safety, and taking into account private property access considerations (governed by Section XIX. ON-SITE AND OFF-SITE ACCESS), the location of peripheral solid waste areas (if present), including but not limited to scrap metal, located within 50 meters beyond the Revised Waste Disposal Perimeter (or other, reasonable, alternative distance approved by EPA);
2. Upon request by EPA, the Municipality shall submit, for review and approval, the Delineation Plan.
3. In implementing the Delineation Plan, the Municipality shall comply with the following requirements:
 - a. Any scrapped vehicles, tanks, drums, and any other vessels potentially containing fluids shall be identified; and
 - b. The location and characteristics of the peripheral disposal areas shall be documented and included in the facility records (and reported to EPA in the Solid Waste Delineation Report).

3. On or before May 31, 2017, after completion of the work required under the Solid Waste Delineation Plan, the Municipality shall submit to EPA, for review and approval, a Solid Waste Delineation Report that shall document the results of the waste extent determination and shall include an implementation schedule for follow up work. The follow up work under the implementation schedule shall, unless otherwise approved by EPA, take no more than ninety (90) days to perform, and shall include the following:
- a. Establish with the best available field information the Revised Waste Disposal Perimeter, which shall be used for work conducted pursuant to this Order and for all relevant future construction, maintenance, and planning activities, including closure.
 - b. To the extent not previously achieved, permanent physical demarcation of the Revised Waste Disposal Perimeter through a system of substantial engineering constructs such as roadway, labeled concrete post systems, and/or perimeter fencing. Access to this new permanent perimeter for inspection and repairs of the landfill slope (via vehicular or pedestrian access) and any engineering constructs such as stormwater channels and leachate interception systems, shall be maintained.
 - c. Identification and removal, for appropriate management, scrapped vehicles, drums, tanks, and any other vessels potentially containing fluids, and any other waste material representing a significant, ongoing risk of releases, located beyond the Revised Waste Disposal Perimeter. The activities required herein under this subparagraph shall be implemented only upon EPA approval and, if so requested by EPA, under EPA's or an EPA representative's oversight. Except as noted above, the Municipality is not required by this Order to recover solid waste previously disposed beyond the Revised Waste Disposal Perimeter.
4. The Municipality shall incorporate the Revised Waste Disposal Perimeter into any required Landfill system designs and plan that it, or its representative prepares.

Appendix 5: Additional Landfill Requirements

- Intermediate Cover

1. Except as noted below, within ninety (90) calendar days of the effective date of this Order, the Municipality shall complete application of Intermediate Cover on all areas of the Landfill where waste is not being deposited on a regular basis. Any intermediate cover shall be maintained until a Final Cover is installed.
2. For purposes of this Order, Intermediate Cover is defined as a waste cover, more durable than daily cover, consisting of at least twelve (12) inches of compacted soil (or other approved alternative cover material) with appropriate storm water erosion controls (*e.g.*, vegetated cover, temporary chutes, channels, berms, and/or swales). Intermediate cover can include existing daily cover to the extent it is compacted soil and consistent with the requirements for intermediate cover. An Intermediate Cover is intended to further limit precipitation infiltration and to control disease vectors, fires, odors, blowing litter and scavengers until active disposal operations are resumed in the affected area or as a preliminary closure step prior to the installation of a final landfill cover.
3. Inactive portions of the existing landfill with substantial vegetative cover need not be disturbed if no waste is exposed and the Municipality determines that the existing, substantial vegetative cover offers equivalent or greater erosion controls and provides limits to precipitation infiltration, disease vectors, fires, odors, blowing litter, and scavengers.
4. The Municipality may request that EPA approve installation of an alternative form of Intermediate Cover that will provide equivalent protection.

- Groundwater Monitoring

5. On or before September 30, 2017, the Municipality shall submit to EPA for review and approval a Groundwater Monitoring Plan for the Landfill. EPA will determine whether the plan, if fully implemented will detect contamination, above background levels, in the uppermost aquifer. Furthermore:
 - a. If EPA determines that the Groundwater Monitoring Plan and its proposed implementation are insufficient to detect contamination, above background levels, in the uppermost aquifer, the Municipality shall, within ninety (90) calendar days of being notified of such determination, submit to EPA, for review and approval, a revised Groundwater Monitoring Plan and implementation schedule that will be sufficient to detect such contamination.
 - b. Upon notification of approval by EPA and, if appropriate, by EQB also, the Municipality shall implement the approved Groundwater Monitoring Plan.
6. Upon implementation of the approved Groundwater Monitoring Plan, the Municipality shall provide to EPA, in the *Annual RCRA Report* (Appendix 10), the preceding year's analytical results with supporting documents (such as quality assurance/quality control), and any other relevant information requested by EPA. information obtained through groundwater

monitoring, or otherwise, indicates that measures and procedures are necessary to conduct a corrective action assessment and/or a corrective action remedy, as those terms are described in 40 CFR §§ 258.56, 258.57, and 258.58, the Municipality shall undertake such measures or procedures as approved by EPA and, if appropriate, by EQB also.

Appendix 6: Closure and Post-Closure Plans Requirements

- Professional Engineer

1. The Municipality, to the extent it has not already done so, shall retain the services of a professional engineer, experienced in landfill design and licensed by the Commonwealth of Puerto Rico or permitted to practice engineering in Puerto Rico, to prepare final Closure and Post-Closure Plans and implementation schedules for the Landfill as set forth below.

- Ceasing Waste Disposal

2. The Municipality shall permanently cease receiving waste for disposal at the Landfill on or before June 30, 2019, unless a later date is approved in writing by EPA either directly or through the approved Closure Plan.

- Plan Preparation and Submittals

3. The Closure and Post-Closure Plans shall be submitted to EPA for review no later than September 30, 2017, unless EPA approves a later date in writing. An earlier submission date may be required by EPA prior to approval of any request to modify the aforementioned cease waste disposal date. EPA will notify the Municipality in writing of EPA's approval or non-approval of the Plans. In the event of non-approval of either the Closure or Post-Closure Plans, EPA will specify deficiencies in the Plan(s) in writing and outline necessary revisions or modifications. Thereafter, the Municipality shall within thirty (30) calendar days of receipt of EPA's notice of non-approval of the Plan(s), modify/revise the Plan(s) and resubmit the Plan(s) to EPA for final review. This process shall be repeated in the event of EPA's non-approval of the resubmitted Plan(s), but if the repeated process does not produce acceptable revised Plan(s), EPA may in its discretion determine that it is necessary to invoke the procedures in the Final Notice of Deficiencies section of this Order. Throughout the process, EPA and the Municipality shall confer as necessary and appropriate in order to clarify and resolve any outstanding issues. EPA will notify the Municipality in writing of its final approval or non-approval of each of the Closure and Post-Closure Plans.

4. The Municipality shall submit the Closure and Post-Closure Plans to EQB for its review and comments prior to or simultaneously with their submittal to EPA and shall diligently pursue any required approvals from EQB for such Plans.

5. The Closure Plan implementation schedule shall provide for the completion of final closure of the Landfill by June 30, 2021, unless a later date is agreed upon in writing by EPA.

- Landfill Closure and Post Closure Plan Elements

6. The Landfill Closure and Post Closure Plans shall, at a minimum meet the closure and post-closure criteria set forth at 40 CFR §§ 258.60 and 258.61 (except as otherwise allowed or required below) and shall:

- a. Incorporate a Stormwater Control Plan for the Landfill, equipment maintenance, and other operations areas of the Facility that will comply with or include the following:

- (1) Meet the criteria set forth at 40 CFR § 258.26 (run-on/run-off control systems), which requires owners and operators of municipal solid waste landfill units to design, construct and maintain a run-on control system to prevent storm water run-on flow onto the Landfill during the peak discharge from a 25-year storm; and
 - (2) Meet the criteria set forth at 40 CFR § 258.26, which requires owners and operators of municipal solid waste landfill units to design, construct and maintain a run-off control system of the landfill to collect and control at least the water volume resulting from a 24-hour, 25-year storm;
- b. Incorporate the Revised Waste Disposal Perimeter, as established through the work performed pursuant to Appendix 4, herein;
 - c. Provide for the sustainable management and disposal of leachate seepage and leachate seepage contaminated storm water, and include enhanced measures for collection/interception;
 - d. Incorporate a closure cap design that provides substantial reductions in rainwater infiltration into the waste mass and in leachate generation. Reductions must be documented either through field studies or other method approved by EPA. Proposed closure cap designs may include, with EPA approval, evapotranspirative caps and other, appropriate, alternative designs; and
 - e. The Closure and Post Closure Plans shall incorporate the design and installation of the following, when applicable:
 - (1) A landfill gas collection and control system for reducing methane and NMOC emissions from the Landfill if required under the Landfill Regulations referenced in paragraph 1 of Appendix 7, Landfill Gas Control; or
 - (2) A landfill gas to energy system, if deemed viable by the Municipality (see paragraph 2, Appendix 7, Landfill Gas Control);
 - (3) A limited landfill gas control system (LFG System) referenced in paragraph 3 of Appendix 7, Landfill Gas Control; and,
 - (4) A photovoltaic power generation system, if deemed viable by the Municipality. The Municipality agrees to, and upon EPA request, consult with and supply status reports to EPA on this matter. Upon request, and as EPA resources allow, EPA will provide technical assistance to the Municipality with planning any photovoltaic power generation system. Final determination on the technical and economic viability of the photovoltaic power generation system, after consultation with EPA, will be made by the Municipality.

7. The Closure and Post Closure Plans shall meet the following landfill slope stabilization requirements:
- a. Limit all landfill slopes to 3:1 or shallower (unless steeper slopes are approved by EPA);
 - b. Conduct a stability assessment in order to avoid or prevent a destabilizing event (e.g., earthquake, landslide, hurricane) from impairing the structural integrity of the landfill slopes (and other component systems);
 - c. The landfill stability assessment shall be prepared by a licensed, professional geotechnical engineer legally able to practice in the Commonwealth of Puerto Rico;
 - d. Such a stability assessment must include:
 - (1) An evaluation of subsurface conditions;
 - (2) An analysis of slope stability; and
 - (3) An examination of related design needs;²
 - e. Slopes shall be designed or stabilized to have a minimum 1.5 safety factor on critical cross-sections against failure and yield accelerations for steady state/static conditions and a minimum 1.15 safety factor for seismic conditions; and
 - f. Slope stability monitoring, such as installed inclinometers and observation wells, shall be incorporated in any slope steeper than 3:1.
- Closure and Post Closure Plan Implementation

8. The Municipality shall operate the Landfill prior to closure in accordance with the approved Closure Plan. Within ninety (90) calendar days of EPA approval of any Closure Plan or revised Closure Plan, the Municipality shall submit to EPA a certification that the Landfill is being operated in accordance with the approved Closure Plan. Such certification shall thereafter be submitted to EPA on an annual basis, as part of the *Annual RCRA Reports* (Appendix 10 of this Order), as long as the Landfill continues to operate.

9. The Municipality shall implement the Closure Plan, in accordance with the approved provisions and the timetables in this Order and the implementation schedule in the approved Closure Plan.

10. The Municipality shall begin closure work in accordance with the implementation schedule in the approved Closure Plan, or within twenty (20) calendar days of any required EQB approval, whichever comes later.

² See: <http://www.epa.gov/osw/nonhaz/municipal/landfill/techman/subpartb.pdf> EPA Solid Waste Disposal Facility Criteria, EPA530-R-93-017. Subpart B: Location Criteria.

11. The Municipality shall notify EPA in writing within thirty (30) calendar days after completion of the Closure Plan work, and shall certify that the work has been performed in accordance with the provisions of the approved Closure Plan, its associated plans and specifications, and any permits or other forms of prior approval the Municipality obtained in connection with the Closure work. The notification shall be signed by a professional engineer. A senior official of the Municipality shall also certify that the work has been completed. After the closure of the Landfill, the Municipality shall have a notation made in the Land Register Property Registry indicating that the Landfill property was used as a "Sistemas de Relleno Sanitario" (municipal solid waste landfill). The Municipality must then notify EPA and EQB that the notation has been recorded and that a copy thereof has been included in the record of operations.

12. The Municipality shall carry out the provisions of the Post-Closure Plan. If monitoring discloses that repairs or alterations must be made to the landfill cap, the methane monitoring system, the gas control system, the groundwater monitoring system, or any other component, the Municipality shall timely make such repairs.

13. The Municipality annually shall submit a report to EPA that describes post-closure activities during the preceding year as specified in Appendix 10: *Annual RCRA Reports*.

Appendix 7: Landfill Gas Control

1. The Municipality shall meet the following requirements regarding Gas Collection and Control Systems ("GCCS"):

- a. On or before March 1, 2017, Respondents shall, to the extent not already performed, submit to EPA a design capacity report for the current calendar year which meets the substantive requirements of the New Source Performance Standards ("NSPS") for municipal solid waste landfills, 40 C.F.R. Part 60, Subpart WWW ("NSPS Subpart WWW") and/or the Puerto Rico Regulations for the Control of Atmospheric Pollution ("PRRCAP"), Part VII, Rule 701 et seq. ("Puerto Rico 111(d) Plan"), collectively hereinafter called the Landfill Regulations.
- b. The report shall be sent to:

Robert Buettner
Branch Chief
Air Compliance Branch
290 Broadway, 21st Floor
NY, NY 10007-1866

2. To the extent technically and economically viable, Respondent agrees to recover gas from the Landfill and either market it for energy recovery or directly use it to generate electrical power for market. Any energy recovery must be coordinated with the GCCS or other gas system to be installed by Respondent at the Landfill. Respondent shall maintain compliance with applicable regulations governing the GCCS in connection with any energy recovery system. Respondent agrees to periodically, and upon EPA's request, consult with and supply status reports to EPA on this matter. Upon request, and as EPA resources allow, EPA may provide technical assistance to Respondent with planning landfill gas to energy systems. Final determination on the technical and economic viability of landfill gas to energy systems (i.e. the recovery, marketing and use of landfill gas), after due consultation with EPA, will be made by Respondent in its sole discretion.

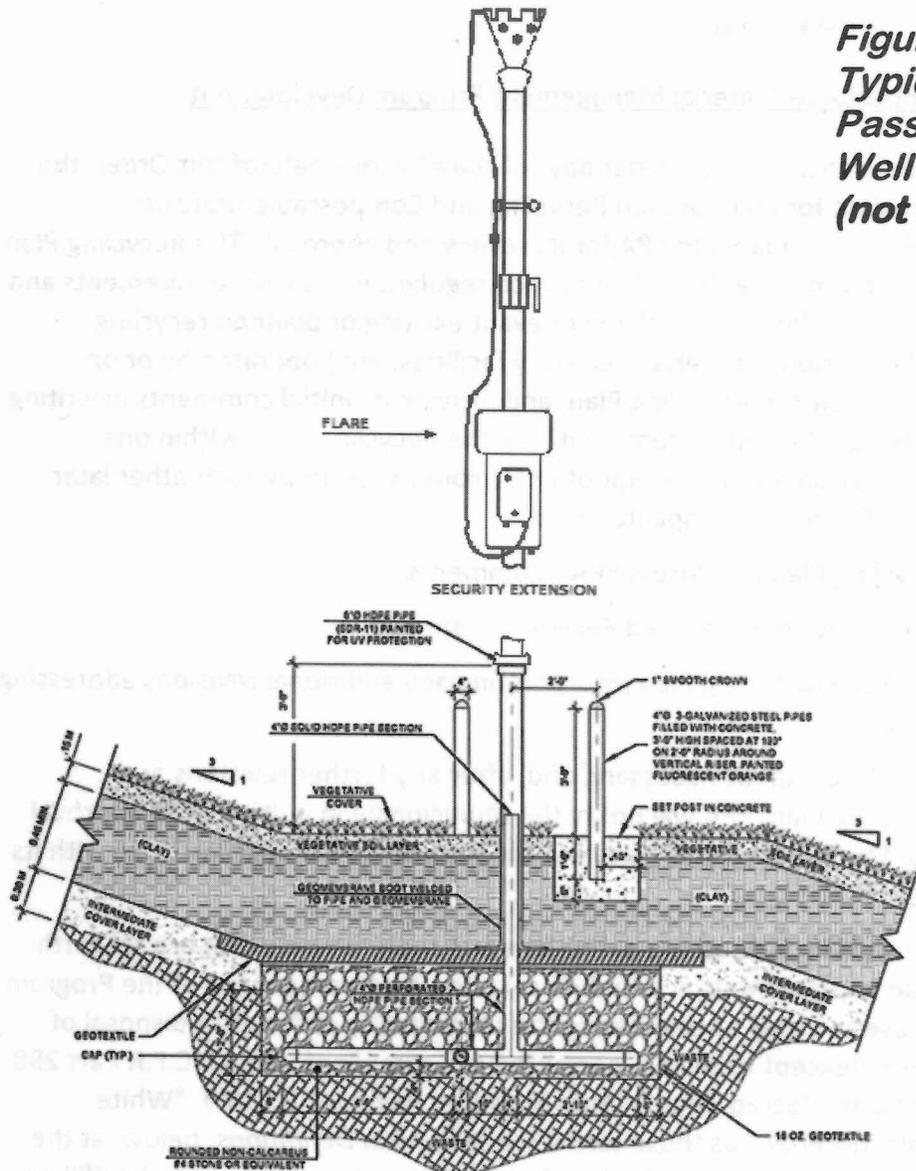
3. If a GCCS is determined not to be required at the Landfill under the Landfill Regulations, the Municipality shall plan, design, install, and operate a limited landfill gas control system ("LFG System") to provide for significant reductions in methane and NMOC emissions, as follows:

- a. The LFG System shall consist of a series of passive gas wells and, where appropriate, flares installed as part of the closure cap;³
- b. The LFG System shall meet or exceed flare operation standards specified at 40 C.F.R. § 60.18 (except for 40 C.F.R. § 60.18 (f)(2));

³An example of an acceptable flare system would be suitable solar-powered, continuous-ignition, passive flares.

- c. LFG System flares shall be maintained and operated for at least five (5) years;
- d. Passive gas wells shall be spaced at least one per acre throughout the landfill;
- e. Flares shall be installed on at least 50% of the passive gas wells in a pattern designed to maximize LFG capture and treatment;
- f. Protection of the LFG System shall be incorporated into the Landfill security program or any Enhanced Security Plan;
- g. Gas wells and flares shall be designed and constructed consistent with Figure 5, below, or other design acceptable to EPA; and
- h. The Municipality shall submit plans for the LFG System to EPA for review and approval. These plans are to be part of the Closure and Post-Closure Plans as specified in Appendix 6: *Closure and Post-Closure Plans Requirements*. EPA's review, comments on, and, if acceptable, approval of a proposed LFG System will be done as part of the general review process for the submitted Closure and Post-Closure Plans.

**Figure 4:
Typical
Passive Gas
Well
(not to scale)**



Appendix 8: Improved Recycling Program

- Recycling and Compostable Material Management Program Development

1. Within one hundred eighty (180) calendar days of the effective date of this Order, the Municipality shall submit a plan for an improved Recycling and Compostable Material Management Program ("Recycling Plan") to EPA for its review and approval. The Recycling Plan shall be consistent with all Commonwealth of Puerto Rico regulations and/or requirements and shall incorporate and/or provide for the use of any relevant existing or planned recycling infrastructure (e.g., transfer stations, materials recovery facilities, etc.) operated by or on behalf of Arroyo. EPA will review the Recycling Plan, and provide its initial comments in writing to the Municipality. Following EPA's initial comment's on the Recycling Plan, within one hundred twenty (120) calendar days of its receipt of EPA's comments, or by such other later deadline as is approved by EPA, the Municipality shall:

- a. Revise the Recycling Plan to address EPA's comments;
- b. Seek public comment on the revised Recycling Plan; and
- c. Resubmit to EPA the Recycling Plan incorporating any additional revisions addressing public comment.

EPA and the Municipality will consult as necessary, and, after any further revisions are incorporated into the Recycling Plan, EPA will notify the Municipality in writing of its approval of the Recycling Plan. The Municipality shall carry out the Recycling Plan in accordance with its implementation schedules.

2. The Recycling Plan shall include all the definitions and requirements that are set forth below, and shall include an implementation schedule covering each component of the Program. The Recycling Plan shall have the goal of eliminating the Municipality of Arroyo's disposal of "Recyclable Material," "Ash" (except in a lined, permitted cell compliant with 40 C.F.R Part 258 or other applicable regulations), "Scrap Tires," "Auto Shredder Residue" ("ASR"), "White Goods," and "Compostable Material," as those terms are defined in *Definitions*, below, at the municipal solid waste landfill located in the Municipality or at any other solid waste landfill or incinerator. The Recycling Plan shall also have the goal of eliminating these materials in bulk loads of waste brought to the Landfill by any other customers.

3. The Municipality shall designate and retain a Qualified Municipal Recycling Manager who shall have the responsibility of implementing the approved Recycling Plan and submitting all required reports. This municipal officer must maintain the *Manager of Recycling Systems* (or equivalent) certification or must acquire it according to a time schedule approved by EPA. This certification requirement is subject to the reasonable availability of Spanish language training in Puerto Rico. The Municipality may substitute a combination of relevant professional experience and continuing training for the certification requirements for employees or officers employed by the Municipality as of the effective date of this Order. EPA recognizes that certain Municipal employees may have been completed the initial training requirement prior to June 4, 2015.

4. The Recycling Plan shall include the following:

- a. An educational and community outreach program, including community workshops, to educate the community regarding recycling and composting, their benefits, and guidelines for household and/or commercial implementation. Outreach must be extended to households, schools, municipal and other government facilities, small businesses, hospital and clinics, farms, and other establishments within the Municipality that generate solid waste. The Recycling Plan must provide for outreach to be conducted on at least an annual basis.
- b. The development and implementation of a Collection Plan so that Recyclable Material, bulk Ash, Scrap Tires, ASR, White Goods, Agricultural Waste and Yard Waste⁴ generated in locations throughout the Municipality are placed in bins or other suitable receptacles for collection, on a regularly scheduled basis, in order to be transported to approved/permitted locations for proper disposition. The Municipality may collect and transport these materials itself and/or enter into agreements with licensed haulers to do so.
- c. The Recycling Plan shall cover residences, apartment buildings, schools, hospitals, small businesses, including "hotels," and governmental establishments (hereafter, "covered entities"), and shall contain provisions to ensure that collection bins, or other suitable receptacles, are utilized by the covered entities for the curbside collection of Recyclable Material and Compostable Material.
- d. The Recycling Plan shall provide for curbside collection or EPA approved equivalent means of collection for residences (including apartment buildings), small businesses, schools, hospitals, and governmental establishments.
- e. A program to recycle Recyclable Material, Scrap Tires, ASR and White Goods collected in the Municipality, or agreements with a MRF(s), or other facility(ies), to process these collected materials. All facilities processing these materials must have any permits/authorizations required by the Commonwealth for recycling.
- f. A pilot program for composting material. The pilot Composting Program shall increase the use of Compostable Materials to create compost in residences, government and/or businesses; and/or necessitate the bulk collection of Compostable Materials for composting by the Municipality or by other entities that have entered into an agreement with the Municipality to collect and/or compost the Compostable Material pursuant to the program. The pilot Composting Program must include a plan and schedule for addressing priorities, benchmarks, logistics, priority uses for composted material, areas of potential improvement, and/or expansion of the pilot composting program.

⁴ Agricultural and Yard Wastes are Compostable Materials subject to the pilot program for composting materials referenced in Section 4.f. below. However, because Agricultural and Yard Wastes can be collected immediately, they may be collected and managed under either the: Recycling Plan as referenced in Section 4.b.; or the pilot and approved composting programs referenced in Sections 4.f., 17. & 18. In no instance, however, shall agricultural and/or yard waste be discarded in the Landfill..

9. Within one hundred twenty (120) days after EPA approval of the Recycling Plan or by such other date as is approved by EPA, the Municipality shall start the implementation of the Recycling Plan.

10. The Municipality shall implement its inspection program of incoming loads at the Landfill designed to keep Scrap Tires, ASR, White Goods, Bulk Recyclable Material, Bulk Ash, and Bulk Compostable Materials from being disposed of at the Landfill (except as otherwise allowed within this Order).

11. Within 120 days of EPA's approval of the Recycling Plan, and on an annual basis thereafter, the Municipality shall implement its educational and outreach program concerning recycling and composting.

- Recycling Plan Reports

12. The Municipality shall submit biannual reports to EPA, on or before August 15 and February 15 of each year, summarizing the efforts undertaken during the prior six months to implement the requirements of the Recycling Plan. The first such report shall be submitted on or before February 15, 2017. The Municipality may submit supplemental reports to EPA to inform EPA of any information concerning market conditions, Commonwealth regulations, or other factors that may affect the Recycling Plan.

13. The biannual reports must include, without limitation, the following information for the prior six month period:

- a. The number of households serviced with Curbside Collection;
- b. The number and type of other locations serviced with Curbside Collection;
- c. The tons of waste material generated in the Municipality that were recycled under the Recycling Plan, including a breakdown of the amount of Recyclable and Compostable Materials obtained using Curbside Collection; The tons of waste material generated in the Municipality that were sent to the Landfill or other solid waste landfills or incinerators for disposal;
- d. The Recycling Rate of the Municipality, including the results of a community survey to measure Recycling participation rates;
- e. The material quality, quantity, and percentage composition of each type of Recyclable and Compostable Material collected under the Recycling Plan;
- f. To the extent the Municipality contracts with MRFs, the amount charged by MRFs to take Recycled Materials; and
- g. The status of the Pilot Composting Program (*see Improvement/Expansion of the Pilot Composting Program, below*).

14. The August 15 biannual reports must include, without limitation, the following additional information for the prior twelve month period:

- a. A municipal waste characterization, with respect to Recyclable Material and Compostable Material to determine material quality, quantity, and percentage composition in order to assist in identifying potential markets; and
 - b. An expanded Composting Report (see *Improvement/Expansion of the Pilot Composting Program*, below).
15. In any of the biannual or supplemental reports, the Municipality may submit to EPA, for review and approval, proposed changes to the Recycling Plan based on the information obtained during operation of the Recycling Plan prior to the submission of the report, in order to improve the efficiency of the recovery efforts or to vary the quantity, quality, and diversity of Recyclable Material collected. Such reports may include a request to temporarily exempt certain materials from the list of Recyclable Material based on market conditions.
16. After three years of implementing an approved Recycling Plan, the Municipality may submit to EPA a written request for relief from the mandatory requirements of Appendix 8: *Recycling Program*. Such a request shall not be unreasonably denied by EPA if the Municipality has made good faith efforts to fully implement the Recycling Plan.
- Improvement/Expansion of the Pilot Composting Program
17. In the August 15, 2017, Biannual Report, and annually thereafter, for the duration of the Recycling Plan, the Municipality shall submit to EPA:
- a. A report describing the results of its pilot Composting Program (as required in ¶13.g. and 14.b., above); and
 - b. For EPA's review and approval, a plan addressing areas of potential improvement and/or any expansion of the pilot Composting Program. Consideration of additional waste streams or locations must be made based on local conditions, success of any current program, the rapidly expanding experience of other programs throughout Puerto Rico and the rest of the U.S., and the breadth of research being conducted regarding municipal composting.
18. The Municipality shall begin implementation of a revised municipal composting program within 60 days of EPA's approval of the revised program.
- Definitions
19. The following definitions apply to recycling and composting conducted under this Order. To the extent, however, applicable regulations promulgated by the Commonwealth define these terms to include a wider range of materials, those materials are hereby incorporated by reference into the definitions below.
- a. "Agricultural Waste" shall mean plant waste generated by residential sources, commercial sources and/or from agricultural activities including, but not limited to, bean, nut and grain hulls and chaff, sugar cane bagasse, orchard pruning, and coffee bean hulls and ground.

- b. "Ash" shall mean the residue matter that remains after burning and includes, but is not limited to, such residues produced by manufacturing, energy production, burning coal and other commercial processes.
- c. "Auto Shredder Residue" or "ASR" shall mean the residues, after removal of metals, from the shredding of automobiles and major household appliances. ASR consists of glass, fiber, rubber, automobile liquids, plastics, residual metal (nonferrous), and dirt.
- d. "Bulk" shall mean an agglomeration of waste consisting of predominantly the same material. Bulk disposal does not mean the disposal of a given waste material within a mixed, residential wastestream. Examples of bulk disposal of a given waste material include: (1) a clear, plastic bag containing mixed plastic; (2) 55-gallon drums of incinerator ash; and (3) a pickup truck bed of yard waste. .
- e. "Compostable Material" shall mean Agricultural Waste, Yard Waste, food waste, and other biodegradable material not otherwise included in the definition of Recyclable Material.
- f. "Composting" shall mean the controlled biological aerobic decomposition of organic material that is sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth in that it has the unique ability to improve the chemical, physical, and biological characteristics of soils or growing media.
- g. "Curbside Collection" shall mean regular collection of Recyclable and/or Compostable Material directly from households and other establishments.
- h. "Hotel" shall mean all hotels, motels, bed and breakfast inns, casino hotels, and all other traveler accommodations (*e.g.*, NAICS Codes 721110, 721191, 721120, and 721199).
- i. "Material Recovery Facility" or "MRF" shall mean a permitted facility where Recyclable Material is sorted into specific categories and processed, or transported to processors, for re-manufacturing (*i.e.*, making the recycled material into new products).
- j. "Qualified Municipal Recycling Manager" shall mean one or more individuals who are certified as a *Manager of Recycling Systems* by the Solid Waste Association of North America ("SWANA") or after an equivalent course of study, independently-proctored exam, and certification program.
- k. "Recyclable Material" shall mean glass, paper, cardboard, metals, plastics, electronics, batteries, and other material that may be identified by EPA (after discussion with the Municipality) as economically recyclable in Puerto Rico.
- l. "Recycling" shall mean the separation, collection, processing, and sale or distribution of Recyclable Material as a precursor to making the recycled material into new products.

- m. "Recycling Rate" shall be 100% multiplied by the tons of waste generated in the Municipality that were recycled divided by the total tons of waste material generated in the Municipality.
- n. "Scrap Tires" shall mean motor vehicle, truck or heavy equipment tires that are discarded.
- o. "Yard Waste" shall mean vegetation waste, such as grass, bushes, shrubs, trees and associated clippings, generated by residential and/or commercial sources through the maintenance of private or public lands.
- p. "White Goods" shall mean refrigerators, stoves, washers, dryers, sinks or other such objects that are discarded.

Appendix 9: Zika Virus & Mosquito Control

Mosquito Control at Landfills

1. As of the Effective Date, the Municipality shall, in response to the increased risk to human health presented by the *Aedes* species mosquito and the Zika virus, provide EPA and EQB with a Disease Vector Control Plan, or an updated version of an existing Plan, for the landfill facility property, including integrated pest management (IPM) procedures to remove mosquito habitats and prevent mosquito exposures and the provisions specified in the *Disease Vector Control Plan* section below.⁵
2. The Disease Vector Control Plan must, at a minimum, address and include measures, as set forth below, to reduce the potential for mosquito breeding in all standing waters on the property, including those impacted by stormwater run on and run off, leachate seepage, surface ponding on and around the landfill, access and egress roadway drainage, sedimentation ponds, conveyance channels and ditches, and exposed waste rainwater catchment issues (*e.g.*, scrap tires). Implementation shall commence as of the Effective Date of the Order.
3. The Disease Vector Control Plan must include the posting of signs in locations at the landfill frequented by employees, contractors, and visitors, which provide mosquito control and bite protection information. Under the Federal regulations for solid waste landfills, 40 C.F.R. Part 258, owners or operators of all municipal solid waste landfill (MSWLF) units must prevent or control on-site populations of disease vectors (*e.g.*, mosquitoes) using techniques appropriate for the protection of human health and the environment. The development, implementation and/or improvement of existing facility disease vector control plans will assist landfill owners and operators in controlling *Aedes* species (*A. aegypti* and *A. albopictus*) mosquitoes. The best mosquito control program is an integrated program that includes the elimination of breeding areas, routine larviciding in those breeding areas that cannot be eliminated, and adulticiding only when necessary. Traditional spraying or fogging of pesticides, such as Malathion, may, on occasion, represent a direct risk to human and environmental health.⁶

***Aedes* Mosquito Facts**

- *Aedes* species prefer to bite people, and live indoors and outdoors near people. They are aggressive daytime biters. They can also bite at night.
- These mosquitoes use natural and artificial water-holding containers (*e.g.*, plastic covers, bowls, used tires, bottle caps) to lay their eggs. After hatching, larvae grow and develop into pupae and subsequently into a terrestrial, flying adult mosquito.
- About three days after feeding on blood, these mosquitoes lay their eggs over a period of several days. These eggs are resistant to desiccation and can survive for periods of six

⁵ EQB contact: Nilda del Mar Sánchez Santiago, Director, Land Pollution Control, 787-767-8181, ext. 3574, or NildaSanchez@jca.pr.gov

⁶ <http://www.epa.gov/mosquitocontrol/controlling-adult-mosquitoes>

or more months. When rain floods the eggs with water, the larvae hatch. Generally larvae feed upon small aquatic organisms, algae and particles of plant and animal material in water-filled containers. The entire immature or aquatic cycle (*i.e.*, from egg to larva to pupa to adult) can occur in as little as 7-8 days. The life span for adult mosquitoes is around three weeks.

Disease Vector Control Plan

The Disease Vector Control Plan must, at a minimum, address the potential for mosquito breeding in all standing waters on the property, including those impacted by stormwater run on and run off, leachate seepage, surface ponding on and around the landfill, access and egress roadway drainage, sedimentation ponds, conveyance channels and ditches, and exposed waste rainwater catchment issues (*e.g.*, scrap tires). The Plan must include each of the following elements:

1. **Daily Cover.** As required in Appendix 2 of this Order, owners or operators must cover disposed solid waste with 6 inches of earthen material, or an approved alternative daily cover, at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging. Frequent applications of cover will also serve to limit on-site bird, rodent, dog, and other potential mosquito-borne disease vectors and mosquito food (blood) supplies. Daily cover must be graded and compacted to minimize ponding, a source of standing/stagnant water. Frequent placement of soil cover will also eliminate exposed solid waste, such as discarded containers, that can serve as mosquito breeding grounds.
2. **Reduction of Standing/Stagnant Water.** Stormwater and leachate drainage chutes and channels should be regularly inspected and maintained to insure proper grading and surfacing as to prevent local ponding. Unneeded drainage ditches should be filled in. Exposed tires, scrap metal piles, and scrapped vehicles (junkers) should be reduced or eliminated as both may retain significant amounts of rainwater (consistent with requirements established within this Order).⁷ Covering with tarps, storing indoors, or shredding are options as is direct application of larvicides and adulticides (pesticides). Stormwater detention ponds should be engineered or reengineered to fully drain and remain dry after storm events and a larvicide program may be needed.
3. **Worker Protection.** Landfill workers (and contractors and visitors) may be exposed to mosquito vector-borne diseases. The Disease Vector Control Plan must include the posting of signs in locations at the landfill frequented by employees, contractors, and visitors, which provide mosquito control and bite protection information (see *Mosquito Control & Protection Information for Posting*, below). Owners or operators must supply workers with mosquito repellents that should be consistent with the U.S. Center for Disease Control and Prevention, Mosquito Bite Prevention guidelines (also see *Mosquito Control & Protection Information for Posting*, below).

⁷ Please contact the EPA Project Coordinator regarding any potential conflict with or other issue regarding Order Stormwater Plan requirements.

4. Larvicide Program. There are areas at most solid waste landfills, such as stormwater detention ponds, where mosquitoes breed that cannot or should not be eliminated or altered. Mosquitoes breeding in permanent water areas or temporary floodwater areas can be controlled by using biological larvicides. Larvicides can effectively control mosquito larvae when applied as needed without killing the natural predators of mosquitoes. Permanent water areas generally harbor many species of fish and insects that feed on mosquito larvae. Liquid larvicide products are applied directly to water using backpack sprayers and truck or aircraft-mounted sprayers. Tablet, pellet, granular, and briquette formulations of larvicides are also applied by mosquito controllers to breeding areas (See Reference 2, *EPA: Larvicides for Mosquito Control*). The Disease Vector Control Plan must include a Larvicide Program. Larvicides for landfill consideration include the following:

a. Bacterial Larvicides. Mosquito larvae that are exposed to the *Bacillus* species have trouble digesting food they eat after the exposure. The larvae then die of starvation. Bacterial larvicides routinely employed for mosquito control include:

- i. *Bacillus thuringiensis israelensis* (Bti) is a naturally occurring soil bacterium registered for control of mosquito larvae. Bti was first registered by EPA as an insecticide in 1983. There are 25 *Bti* products registered for use in the United States. Aquabac, Teknar, Vectobac, and LarvX are examples of common trade names for the mosquito control products.
- ii. *Bacillus sphaericus* (Bs) is a naturally occurring bacterium that is found throughout the world. Bs was initially registered by EPA in 1991 for use against various kinds of mosquito larvae. VectoLex CG and WDG are registered *B. sphaericus* products, and are effective for approximately one to four weeks after application.

b. Water Surface Films.

- i. Monomolecular films are chemicals that spread a thin film on the surface of the water that makes it difficult for mosquito larvae, pupae and emerging adults to attach to the water's surface, causing them to drown. Films may remain active for typically 10-14 days on standing water, and have been used in the United States in floodwaters, brackish waters, and ponds. They may be used along with other mosquito control measures. They are also known under the trade names Arosurf MSF and Agnique MMF.
- ii. Oils, like films, are used to form a coating on top of water to drown larvae, pupae and emerging adult mosquitoes. They are specially derived from petroleum distillates and have been used for many years in the U.S. to kill aphids on crops and orchard trees, and to control mosquitoes. They may be used along with other mosquito control measures. Trade names

for oils used in mosquito control are Bonide, BVA2, and Golden Bear-1111 (GB-1111).

Note, under Commonwealth regulations, owners and operators need to keep an onsite record of all pesticide applications (larvicides, surface films, adulticides, etc.) at the landfill for a period of at least two years. Please contact the Puerto Rico Department of Agriculture for more information on larvicide vendors and larvicide application requirements.⁸ You may also wish to contact the Puerto Rico Pest Control Association.⁹

Other Mosquito Disease Vector Controls

1. Mosquito Surveillance Program. In addition to the above four required Disease Vector Control Plan elements, EPA recommends that landfill owners and operators consider incorporating a Mosquito Surveillance Program. Mosquito surveillance is a key component of a complete Disease Vector Control Plan. The goal of mosquito-based surveillance is to quantify human risk by determining local vector presence and abundance. Reference 1, below, addresses, among other elements, the detailed development of Mosquito Surveillance Program.
2. Adulticides. Pesticide targeting the mosquito adult stage are employed to combat an outbreak of mosquito-borne disease or a very heavy, nuisance infestation of mosquitoes. Adulticide may also be useful where larvicide cannot be effectively applied, such as unstacked tire piles. The development of such a program is beyond the scope of this Appendix. Please contact the Puerto Rico Department of Agriculture for more information on adulticide programs.⁸
3. In addition, the Puerto Rico Department of Natural and Environmental Resources (DNER) has designated the Puerto Rican harlequin butterfly (mariposa arlequin de Puerto Rico) as Critically Endangered (candidate species for listing under the Federal Endangered Species Act). As the application of adulticides may impact this species, the Municipality should contact the Caribbean Field Office of the U.S. Fish & Wildlife Service prior to applying adulticides along the boundary of the Landfill.¹⁰

References

1. http://msdh.ms.gov/msdhsite/_static/resources/800.pdf

Setting Up a Mosquito Control Program, Jerome Goddard, Ph.D., Medical Entomologist, Bureau of General Environmental Services, Mississippi State Department of Health, Updated June 2003.

2. <http://www.cmmcp.org/larvfs.pdf>

⁸ Puerto Rico Department of Agriculture contact:

Juan C. Muñoz Ruiz, Agronomist, 787-796-1735 ext. 276, jcmunoz@agricultura.pr.gov

⁹ Puerto Rico Pest Control Association, 787-764-1869, www.pestworldpr.com/

Francisco San Miguel, President

¹⁰ U. S. Fish & Wildlife contact: Carlos Pacheco, U.S.FWS, Caribbean Field Office, 787 851 7297 x221.

Larvicides for Mosquito Control, United States Environmental Protection Agency, Prevention, Pesticides and Toxic substances, May 2000, 735-F-00-002.

Mosquito Control & Protection Information for Posting

1. U.S. Center for Disease Control and Prevention, Zika Virus Fact Sheets:
 - a. http://www.cdc.gov/zika/pdfs/control_mosquitoes_chikv_denv_zika.pdf
 - b. http://www.cdc.gov/zika/pdfs/control_mosquitoes_chikv_denv_zika_spanish.pdf
2. U.S. Center for Disease Control and Prevention, Mosquito Bite Prevention Poster:
 - a. http://www.cdc.gov/chikungunya/pdfs/fs_mosquito_bite_prevention_us.pdf
 - b. http://www.cdc.gov/chikungunya/pdfs/factsheet_mosquito_bite_prevention_us_spanish.pdf
3. La Autoridad de Desperdicios Sólidos (ADS), Zika Virus Fact Sheets/Posters:
 - a. <http://www.ads.pr.gov/files/2016/02/Virus-Zika-Final.pdf>

Detailed Aedes species Surveillance & Control Guidance

1. Surveillance and Control of *Aedes aegypti* and *Aedes albopictus* in the United States
U.S. Centers for Disease Control and Prevention

- <http://www.cdc.gov/chikungunya/resources/vector-control.html>

Guidance for *Aedes aegypti* and *Aedes albopictus* surveillance and control in response to the risk of introduction of dengue, chikungunya, Zika, and yellow fever viruses in the United States and its territories. This document is intended for state and local public health officials and vector control specialists.

2. Arboviral Disease Weekly Reports
Puerto Rico Department of Health

- <http://www.salud.gov.pr/Estadisticas-Registros-y-Publicaciones/Pages/Informe-Arboviral.aspx>

The Puerto Rico Department of Health collects the latest information on arthropod-borne viruses (e.g., mosquito-borne dengue, chikungunya and Zika). It includes cases reported to the respective surveillance systems and is published every Friday.

Appendix 10: Annual RCRA Reports

1. On or before August 15 of each year, starting in 2017, the Municipality shall submit to EPA an Annual RCRA Report, including a certification pursuant to the requirements of Section VII (CERTIFICATIONS). At a minimum, the Annual RCRA Report shall, to the extent applicable to the status of the Landfill at that time, include:
 - a. Documentation of compliance or statement of and reason for non-compliance with the *Operational Requirements* set forth in Appendix 2 of this Order.
 - b. Documentation of compliance or statement of and reason for non-compliance with the approved Closure Plan, including:
 - i. Detailed updated information on elevations and grading/slopes for the Landfill; and
 - ii. A report on the status of implementation of the Closure Plan (upon request from EPA, the Municipality shall also submit quarterly reports to EPA on the implementation status).
 - c. Permits and Approvals: A listing of all necessary permits and approvals required and a description of the status of each (including any anticipated, filed, pending, and finalized/approved).
 - d. Groundwater and Gas Monitoring: Preceding year's analytical results with supporting documents (such as quality assurance/quality control, and other information requested by EPA) from any groundwater and methane monitoring.
 - e. Post Closure: A description of post-closure activities during the preceding calendar year, including the status of the permanent landfill cap, Landfill Gas System, operating and maintenance activities, and other relevant information, including any repairs or alterations.
 - f. Financial Assurance: the Municipality shall submit to EPA documentation of compliance or statement of and reason for non-compliance with the financial assurance requirements for closure and post-closure, and, if applicable, compliance with the financial assurance requirements for any required corrective action.
 - g. Recycling: The Municipality shall separately submit biannual Recycling reports to EPA as set forth in Appendix 8, *Improved Recycling Program*.