

<b>RIPUC Use Only</b>	
Date Application Received:	___/___/___
Date Review Completed:	___/___/___
Date Commission Action:	___/___/___
Date Commission Approved:	___/___/___

GIS Certification #: _____
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**RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM**

**The Standard Application Form  
Required of all Applicants for Certification of Eligibility of Renewable Energy Resource  
(Version 6 – January 21, 2008)**

**STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION  
Pursuant to the Renewable Energy Act  
Section 39-26-1 et. seq. of the General Laws of Rhode Island**

2008 OCT -7 AM 10:10  
 (PUC/RES/ED)

**NOTICE:**  
When completing this Renewable Energy Resources Eligibility Form and any applicable Appendices, please refer to the State of Rhode Island and Providence Plantations Public Utilities Commission Rules and Regulations Governing the Implementation of a Renewable Energy Standard (RES Regulations, Effective Date: January 1, 2006), and the associated RES Certification Filing Methodology Guide. All applicable regulations, procedures and guidelines are available on the Commission's web site: [www.ripuc.org/utilityinfo/res.html](http://www.ripuc.org/utilityinfo/res.html). Also, all filings must be in conformance with the Commission's Rules of Practice and Procedure, in particular, Rule 1.5, or its successor regulation, entitled "Formal Requirements as to Filings."

- Please complete the Renewable Energy Resources Eligibility Form and Appendices using a typewriter or black ink.
- Please submit one original and three copies of the completed Application Form, applicable Appendices and all supporting documentation to the Commission at the following address:  
 Rhode Island Public Utilities Commission  
 89 Jefferson Blvd  
 Warwick, RI 02888  
 Attn: Renewable Energy Resources Eligibility

In addition to the paper copies, electronic/email submittals are required under Commission regulations. Such electronic submittals should be sent to: Luly E. Massaro, Commission Clerk at [lmassaro@puc.state.ri.us](mailto:lmassaro@puc.state.ri.us)

- In addition to filing with the Commission, Applicants are required to send, electronically or electronically and in paper format, a copy of the completed Application including all attachments and supporting documentation, to the Division of Public Utilities and Carriers and to all interested parties. A list of interested parties can be obtained from the Commission's website at [www.ripuc.org/utilityinfo/res.html](http://www.ripuc.org/utilityinfo/res.html).
- Keep a copy of the completed Application for your records.
- The Commission will notify the Authorized Representative if the Application is incomplete.
- Pursuant to Section 6.0 of the RES Regulations, the Commission shall provide a thirty (30) day period for public comment following posting of any administratively complete Application.
- Please note that all information submitted on or attached to the Application is considered to be a public record unless the Commission agrees to deem some portion of the application confidential after consideration under section 1.2(g) of the Commission's Rules of Practice and Procedure.
- In accordance with Section 6.2 of the RES Regulations, the Commission will provide prospective reviews for Applicants seeking a preliminary determination as to whether a facility would be eligible prior to the formal certification process described in Section 6.1 of the RES Regulations. Please note that space is provided on the Form for applicant to designate the type of review being requested.
- Questions related to this Renewable Energy Resources Eligibility Form should be submitted in writing, preferably via email and directed to: Luly E. Massaro, Commission Clerk at [RES@puc.state.ri.us](mailto:RES@puc.state.ri.us)

**SECTION I: Identification Information**

1.1 Name of Generation Unit (sufficient for full and unique identification):

QUARRY ENERGY PROJECT

1.2 Type of Certification being requested (check one):

Standard Certification       Prospective Certification (Declaratory Judgment)

1.3 This Application includes: (Check all that apply)<sup>1</sup>

- APPENDIX A: Authorized Representative Certification for Individual Owner or Operator
- APPENDIX B: Authorized Representative Certification for Non-Corporate Entities Other Than Individuals
- APPENDIX C: Existing Renewable Energy Resources
- APPENDIX D: Special Provisions for Aggregators of Customer-sited or Off-grid Generation Facilities
- APPENDIX E: Special Provisions for a Generation Unit Located in a Control Area Adjacent to NEPOOL
- APPENDIX F: Fuel Source Plan for Eligible Biomass Fuels

1.4 Primary Contact Person name and title: WALLACE D. LONG, VICE PRESIDENT / SECRETARY

1.5 Primary Contact Person address and contact information:

Address: 68 DOVER RD.  
MILLIS, MA 02054

Phone: 508 494 3539 Fax: 508 376 4104  
Email: wlong22@comcast.net

1.6 Backup Contact Person name and title: DONALD TRUDEAU, PRESIDENT

1.7 Backup Contact Person address and contact information:

Address: 15 CURTIS CIRCLE  
WEYMOUTH, MA 02189

Phone: 617 480 4140 Fax: \_\_\_\_\_  
Email: dtrudeau@bestship.com

<sup>1</sup> Please note that all Applicants are required to complete the Renewable Energy Resources Eligibility Standard Application Form and all of the Appendices that apply to the Generation Unit or Owner or Operator that is the subject of this Form. Please omit Appendices that do not apply.

1.8 Name and Title of Authorized Representative (i.e., the individual responsible for certifying the accuracy of all information contained in this form and associated appendices, and whose signature will appear on the application):

WALLACE D. LONG, VICE PRESIDENT / SECRETARY

Appendix A or B (as appropriate) completed and attached?  Yes  No  N/A

1.9 Authorized Representative address and contact information:

Address: 68 DOVER RD.

MILLIS, MA 02054

Phone: 508 494 3539

Fax: 508 376 4104

Email: WLONG22@COMCAST.NET

1.10 Owner name and title: WALLACE D. LONG, VICE PRESIDENT / SECRETARY

1.11 Owner address and contact information:

Address: 68 DOVER RD.

MILLIS, MA 02054

Phone: 508 494 3539

Fax: 508 376 4104

Email: WLONG22@COMCAST.NET

1.12 Owner business organization type (check one):

Individual

Partnership

Corporation

Other: \_\_\_\_\_

1.13 Operator name and title: WALLACE D. LONG, VICE PRESIDENT / SECRETARY

1.14 Operator address and contact information:

Address: 68 DOVER RD.

MILLIS, MA 02054

Phone: 508 494 3539

Fax: 508 376 4104

Email: WLONG22@COMCAST.NET

1.15 Operator business organization type (check one):

Individual

Partnership

Corporation

Other: \_\_\_\_\_

**SECTION II: Generation Unit Information, Fuels, Energy Resources and Technologies**

2.1 ISO-NE Generation Unit Asset Identification Number or NEPOOL GIS Identification Number (either or both as applicable): IN PROCESS (NOT YET COMMERCIAL)

2.2 Generation Unit Nameplate Capacity: .6 MW

2.3 Maximum Demonstrated Capacity: .6 MW

2.4 Please indicate which of the following Eligible Renewable Energy Resources are used by the Generation Unit: (Check ALL that apply) – *per RES Regulations Section 5.0*

- Direct solar radiation
- The wind
- Movement of or the latent heat of the ocean
- The heat of the earth
- Small hydro facilities
- Biomass facilities using Eligible Biomass Fuels and maintaining compliance with all aspects of current air permits; Eligible Biomass Fuels may be co-fired with fossil fuels, provided that only the renewable energy fraction of production from multi-fuel facilities shall be considered eligible.
- Biomass facilities using unlisted biomass fuel
- Biomass facilities, multi-fueled or using fossil fuel co-firing
- Fuel cells using a renewable resource referenced in this section

2.5 If the box checked in Section 2.4 above is “Small hydro facilities”, please certify that the facility’s aggregate capacity does not exceed 30 MW. – *per RES Regulations Section 3.31*

- ← check this box to certify that the above statement is true
- N/A or other (please explain) \_\_\_\_\_

2.6 If the box checked in Section 2.4 above is “Small hydro facilities”, please certify that the facility does not involve any new impoundment or diversion of water with an average salinity of twenty (20) parts per thousand or less. – *per RES Regulations Section 3.31*

- ← check this box to certify that the above statement is true
- N/A or other (please explain) \_\_\_\_\_

2.7 If you checked one of the Biomass facilities boxes in Section 2.1 above, please respond to the following:

A. Please specify the fuel or fuels used or to be used in the Unit: LFG

B. Please complete and attach Appendix F, Eligible Biomass Fuel Source Plan.  
Appendix F completed and attached?  Yes  No  N/A

2.8 Has the Generation Unit been certified as a Renewable Energy Resource for eligibility in another state's renewable portfolio standard?

Yes  No If yes, please attach a copy of that state's certifying order.

Copy of State's certifying order attached?  Yes  No  N/A

*CURRENTLY BEING CERTIFIED IN CT, MA AND RI.*

**SECTION III: Commercial Operation Date**

Please provide documentation to support all claims and responses to the following questions:

3.1 Date Generation Unit first entered Commercial Operation: \_\_\_/\_\_\_/\_\_\_ at the site. *EXPECTED COD 11/30/08*

3.2 Is there an Existing Renewable Energy Resource located at the site of Generation Unit?

Yes

No

3.3 If the date entered in response to question 3.1 is earlier than December 31, 1997 or if you checked "Yes" in response to question 3.2 above, please complete Appendix C.

Appendix C completed and attached?  Yes  No  N/A

3.4 Was all or any part of the Generation Unit used on or before December 31, 1997 to generate electricity at any other site?

Yes

No

3.5 If you checked "Yes" to question 3.4 above, please specify the power production equipment used and the address where such power production equipment produced electricity (attach more detail if the space provided is not sufficient):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION IV: Metering**

4.1 Please indicate how the Generation Unit's electrical energy output is verified (check all that apply):

ISO-NE Market Settlement System

Self-reported to the NEPOOL GIS Administrator

Other (please specify below and see Appendix D: Eligibility for Aggregations):

Appendix D completed and attached?

Yes  No  N/A

**SECTION V: Location**

5.1 Please check one of the following that apply to the Generation Unit:

- Grid Connected Generation
- Off-Grid Generation (not connected to a utility transmission or distribution system)
- Customer Sited Generation (interconnected on the end-use customer side of the retail electricity meter in such a manner that it displaces all or part of the metered consumption of the end-use customer)

5.2 Generation Unit address: QUARRY HILLS DRIVE  
QUINCY, MA 20169

5.3 Please provide the Generation Unit's geographic location information:

- A. Universal Transverse Mercator Coordinates:  $X = 330908.73481115$  *ZONE 19*  
 $Y = 4679051.49327064$
- B. Longitude/Latitude: -71.049581 42.24535

5.4 The Generation Unit located: (please check the appropriate box)

- In the NEPOOL control area
- In a control area adjacent to the NEPOOL control area
- In a control area other than NEPOOL which is not adjacent to the NEPOOL control area ← *If you checked this box, then the generator does not qualify for the RI RES – therefore, please do not complete/submit this form.*

5.5 If you checked “In a control area adjacent to the NEPOOL control area” in Section 5.4 above, please complete Appendix E.

Appendix E completed and attached?  Yes  No  N/A

**SECTION VI: Certification**

6.1 Please attach documentation, using one of the applicable forms below, demonstrating the authority of the Authorized Representative indicated in Section 1.8 to certify and submit this Application.

**Corporations**

If the Owner or Operator is a corporation, the Authorized Representative shall provide **either**:

(a) Evidence of a board of directors vote granting authority to the Authorized Representative to execute the Renewable Energy Resources Eligibility Form, **or**

(b) A certification from the Corporate Clerk or Secretary of the Corporation that the Authorized Representative is authorized to execute the Renewable Energy Resources Eligibility Form or is otherwise authorized to legally bind the corporation in like matters.

Evidence of Board Vote provided?  Yes  No  N/A

Corporate Certification provided?  Yes  No  N/A

**Individuals**

If the Owner or Operator is an individual, that individual shall complete and attach APPENDIX A, or a similar form of certification from the Owner or Operator, duly notarized, that certifies that the Authorized Representative has authority to execute the Renewable Energy Resources Eligibility Form.

Appendix A completed and attached?  Yes  No  N/A

**Non-Corporate Entities**

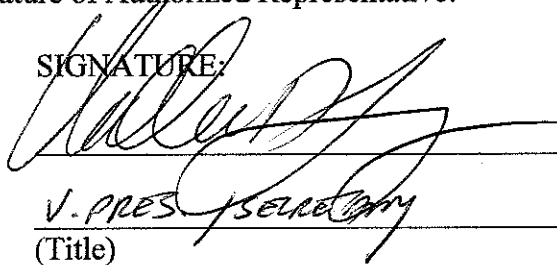
(Proprietorships, Partnerships, Cooperatives, etc.) If the Owner or Operator is not an individual or a corporation, it shall complete and attach APPENDIX B or execute a resolution indicating that the Authorized Representative named in Section 1.8 has authority to execute the Renewable Energy Resources Eligibility Form or to otherwise legally bind the non-corporate entity in like matters.

Appendix B completed and attached?  Yes  No  N/A

6.2 Authorized Representative Certification and Signature:

I hereby certify, under pains and penalties of perjury, that I have personally examined and am familiar with the information submitted herein and based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties, both civil and criminal, for submitting false information, including possible fines and punishment. My signature below certifies all information submitted on this Renewable Energy Resources Eligibility Form. The Renewable Energy Resources Eligibility Form includes the Standard Application Form and all required Appendices and attachments. I acknowledge that the Generation Unit is obligated to and will notify the Commission promptly in the event of a change in a generator's eligibility status (including, without limitation, the status of the air permits) and that when and if, in the Commission's opinion, after due consideration, there is a material change in the characteristics of a Generation Unit or its fuel stream that could alter its eligibility, such Generation Unit must be re-certified in accordance with Section 9.0 of the RES Regulations. I further acknowledge that the Generation Unit is obligated to and will file such quarterly or other reports as required by the Regulations and the Commission in its certification order. I understand that the Generation Unit will be immediately de-certified if it fails to file such reports.

Signature of Authorized Representative:

SIGNATURE:  \_\_\_\_\_ DATE: 10-2-08

V. PRES. SECRETARY  
(Title)



**APPENDIX F**  
**Eligible Biomass Fuel Source Plan**  
**(Required of all Applicants Proposing to Use An Eligible Biomass Fuel)**

**STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION**  
**Part of Application for Certificate of Eligibility**  
**RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM**  
**Pursuant to the Renewable Energy Act**  
**Section 39-26-1 et. sq. of the General Laws of Rhode Island**

**Note to Applicants:** Please refer to the RES Certification Filing Methodology Guide posted on the Commission's web site ([www.ripuc.org/utilityinfo/res.html](http://www.ripuc.org/utilityinfo/res.html)) for information, templates and suggestions regarding the types and levels of detail appropriate for responses to specific application items requested below. Also, please see Section 6.9 of the RES Regulations for additional details on specific requirements.

The phrase "Eligible Biomass Fuel" (per RES Regulations Section 3.6) means fuel sources including brush, stumps, lumber ends and trimmings, wood pallets, bark, wood chips, shavings, slash, yard trimmings, site clearing waste, wood packaging, and other clean wood that is not mixed with other unsorted solid wastes<sup>5</sup>; agricultural waste, food and vegetative material; energy crops; landfill methane<sup>6</sup> or biogas<sup>7</sup>, provided that such gas is collected and conveyed directly to the Generation Unit without use of facilities used as common carriers of natural gas; or neat biodiesel and other neat liquid fuels that are derived from such fuel sources.

In determining if an Eligible Biomass Generation Unit shall be certified, the Commission will consider if the fuel source plan can reasonably be expected to ensure that only Eligible Biomass Fuels will be used, and in the case of co-firing ensure that only that proportion of generation attributable to an Eligible Biomass Fuel be eligible. Certification will not be granted to those Generation Units with fuel source plans the Commission deems inadequate for these purposes.

This Appendix must be attached to the front of Applicant's Fuel Source Plan required for Generating Units proposing to use an Eligible Biomass Fuel (per Section 6.9 of RES Regulations).

<sup>5</sup> Generation Units using wood sources other than those listed above may make application, as part of the required fuel source plan described in Section 6.9 of the RES Regulations, for the Commission to approve a particular wood source as "clean wood." The burden will be on the applicant to demonstrate that the wood source is at least as clean as those listed in the legislation. Wood sources containing resins, glues, laminates, paints, preservatives, or other treatments that would combust or off-gas, or mixed with any other material that would burn, melt, or create other residue aside from wood ash, will not be approved as clean wood.

<sup>6</sup> Landfill gas, which is an Eligible Biomass Fuel, means only that gas recovered from inside a landfill and resulting from the natural decomposition of waste, and that would otherwise be vented or flared as part of the landfill's normal operation if not used as a fuel source.

<sup>7</sup> Gas resulting from the anaerobic digestion of sewage or manure is considered to be a type of biogas, and therefore an Eligible Biomass Fuel that has been fully separated from the waste stream.

F.1 The attached Fuel Source Plan includes a detailed description of the type of Eligible Biomass Fuel to be used at the Generation Unit.

Detailed description attached?  Yes  No  N/A

Comments: \_\_\_\_\_  
\_\_\_\_\_

F.2 If the proposed fuel is “other clean wood,” the Fuel Source Plan should include any further substantiation to demonstrate why the fuel source should be considered as clean as those clean wood sources listed in the legislation.

Further substantiation attached?  Yes  No  N/A

Comments: \_\_\_\_\_  
\_\_\_\_\_

F.3 In the case of co-firing with ineligible fuels, the Fuel Source Plan must include a description of (a) how such co-firing will occur; (b) how the relative amounts of Eligible Biomass Fuel and ineligible fuel will be measured; and (c) how the eligible portion of generation output will be calculated. Such calculations shall be based on the energy content of all of the proposed fuels used.

Description attached?  Yes  No  N/A

Comments: \_\_\_\_\_  
\_\_\_\_\_

F.4 The Fuel Source Plan must provide a description of what measures will be taken to ensure that only the Eligible Biomass Fuel are used, examples of which may include: standard operating protocols or procedures that will be implemented at the Generation Unit, contracts with fuel suppliers, testing or sampling regimes.

Description provided?  Yes  No  N/A

Comments: \_\_\_\_\_  
\_\_\_\_\_

F.5 Please include in the Fuel Source Plan an acknowledgement that the fuels stored at or brought to the Generation Unit will only be either Eligible Biomass Fuels or fossil fuels used for co-firing and that Biomass Fuels not deemed eligible will not be allowed at the premises of the certified Generation Unit. And please check the following box to certify that this statement is true.

← check this box to certify that the above statement is true

N/A or other (please explain) \_\_\_\_\_  
\_\_\_\_\_

F.6 If the proposed fuel includes recycled wood waste, please submit documentation that such fuel meets the definition of Eligible Biomass Fuel and also meets material separation, storage, or handling standards acceptable to the Commission and furthermore consistent with the RES Regulations.

Documentation attached?  Yes  No  N/A  
Comments: \_\_\_\_\_

F.7 Please certify that you will file all reports and other information necessary to enable the Commission to verify the on-going eligibility of the renewable energy generators pursuant to Section 6.3 of the RES Regulations.

← check this box to certify that the above statement is true  
 N/A or other (please explain) \_\_\_\_\_

F.8 Please attach a copy of the Generation Unit's Valid Air Permit or equivalent authorization.

Valid Air Permit or equivalent attached?  Yes  No  N/A  
Comments: \_\_\_\_\_

F.9 Effective date of Valid Air Permit or equivalent authorization:

06107107

F.10 State or jurisdiction issuing Valid Air Permit or equivalent authorization:

MA

# **QUARRY ENERGY CORPORATION**

*A Renewable Power Generator — Weymouth, Massachusetts*

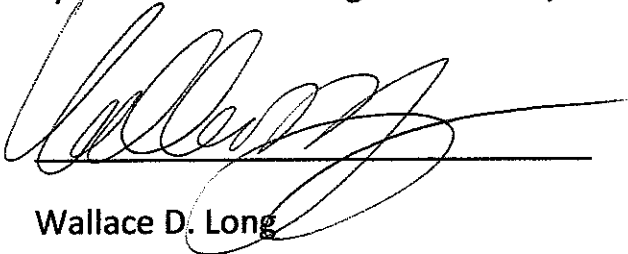
October 2, 2008

Fuel Source Plan – Quarry Energy Project  
Part of an Application for Certification  
Renewable Energy Resources Eligibility Form – Appendix F

The only type of Eligible Biomass Fuel to be used at the generation unit is methane created by the bacterial breakdown of encapsulated municipal solid waste from the closed and capped City of Quincy landfill in Quincy, Massachusetts (now also the site of the Granite Links Golfcourse).

This methane is collected under vacuum through a series of underground pipes located in and around the landfill and terminates at the site of the generation unit and a candle flare. The candle flare is used to destroy the methane whenever the amount of gas extracted from the collection system exceeds the gas that can be used as fuel for the generation unit or when the generation unit is unavailable.

The energy project located at Quincy, Massachusetts will use as its sole fuel source landfill gas from the contiguous landfill. No other fuel source or type of fuel will be used to produce energy from the project. No other potential fuel source will be allowed at the site. The gas piping configuration and testing protocols would not allow for other types of fuels to be injected into the fuel system without being immediately noticed.



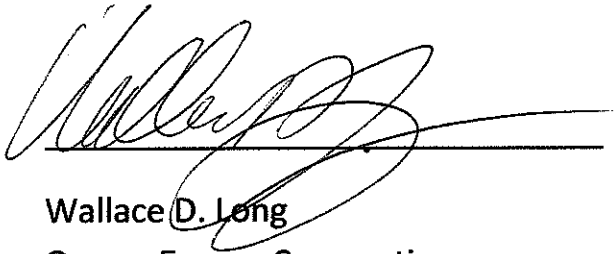
Wallace D. Long  
Quarry Energy Corporation

# **QUARRY ENERGY CORPORATION**

*A Renewable Power Generator — Weymouth, Massachusetts*

October 2, 2008

I hereby certify that Wallace D. Long, Vice President and Secretary of the Quarry Energy Corporation, a Massachusetts Corporation, is authorized to execute a Rhode Island Renewable Energy Resources Eligibility Form on behalf of the corporation and is otherwise authorized to legally bind the corporation in like matters.

A handwritten signature in black ink, appearing to read 'Wallace D. Long', is written over a solid horizontal line. The signature is stylized and cursive.

Wallace D. Long  
Quarry Energy Corporation



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
NORTHEAST REGIONAL OFFICE

205B Lowell Street, Wilmington, MA 01887 • (978) 694-3200

DEVAL L. PATRICK  
Governor

TIMOTHY P. MURRAY  
Lieutenant Governor

IAN A. BOWLES  
Secretary

ARLEEN O'DONNELL  
Commissioner

JUN 07 2007

Mr. Wallace D. Long  
Quarry Energy Corporation  
15 Curtis Circle  
Weymouth, MA 02189

RE: QUINCY - Metropolitan  
Boston/Northeast Region  
310 CMR 7.02 NON-MAJOR  
COMPREHENSIVE PLAN APPLICATION  
Transmittal No. W071781  
Application No. MBR-06-COM-002  
CONDITIONAL APPROVAL

Dear Mr. Long:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Bureau of Waste Prevention, (MassDEP) has completed its technical review of the non-major comprehensive plan application (nmCPA) listed above. This application concerns the installation and operation of a landfill gas (LFG) to energy facility at the Quincy Landfill in Quincy, Massachusetts. The submitted application bears the seal and signature of Mr. Thomas C. Couture, Massachusetts P.E. No. 27553.

MassDEP has determined that your application is administratively and technically complete and that the application, specifications, and Standard Operating and Maintenance Procedures for the proposed equipment are in conformance with current air pollution control engineering practices, and hereby grants **Conditional Approval** for said application, as submitted, subject to the conditions listed below.

Please review the entire Conditional Approval carefully, as it stipulates the particular conditions with which the facility owner/operator must comply in order for the facility to be operated in compliance with the Regulations. Failure to comply with this Conditional Approval will constitute a violation of the Regulations and can result in the revocation of the Conditional Approval.

## A. BACKGROUND AND EQUIPMENT DESCRIPTION

Quarry Energy Corporation (QEC) proposes to install and operate a new Guasco Model No. SFGLD480 engine/generator set, or equivalent, to produce 600 kilowatts (kw) of electric power from the combustion of the LFG at the Quincy Landfill (i.e. facility). MassDEP has determined that LFG to energy projects have an overall environmental benefit, because of their ability to use and destroy, through the production of electricity by internal combustion engines, otherwise uncontrolled LFGs, including methane, a potent greenhouse gas, volatile organic compounds, and other emissions. In support of this determination, MassDEP entered into a Memorandum of Understanding with the United States Environmental Protection Agency (EPA) and the Massachusetts Division of Energy Resources, the purpose of which is to promote LFG to energy projects in Massachusetts. As such, MassDEP promulgated a Policy (COM-96.001) effective on August 29, 1996, relating to the permitting of LFG to energy projects, which establishes BACT for said projects. The proposed Project meets the criteria of this Policy and is consistent with other recent LFG to energy projects permitted in Massachusetts.

The existing Atlantic Energy Model No. 700SI standard utility flare with a maximum LFG firing rate of 700 standard cubic feet per minute (scfm) will be maintained and utilized to combust the LFG from the facility whenever the proposed engine/generator set is down for maintenance. The top of the open flare is 16 feet above ground level and has an inside exit diameter of 6 inches. The blower for this flare delivers a maximum estimated capacity of 620 scfm of LFG. MassDEP issued Conditional Approval (Application No. MBR-01-IND-017, Transmittal No. W019511) to Quarry Hills Association, Inc. for the existing LFG flare on June 28, 2001.

The LFG collection system consists of a network of vertical and horizontal wells or pipes buried within the landfill and connected to a common header to deliver LFG to the LFG conditioning system. The LFG conditioning system consists of: a) a blower to apply vacuum to the LFG collection system; and, b) a knockout tank to promote condensation of moisture to prepare the LFG for combustion in the candlestick flare. Condensate that is collected in the knockout tank is drained to the leachate collection system and subsequently treated.

The proposed LFG to energy system will be located below the clubhouse of the golf course. The nearest residential dwellings are located on Holliston Street, approximately 300 feet away to the east of the landfill. A noise analysis was performed by Cavanaugh & Tocci to measure the lowest existing background levels and evaluate proposed future sound level impacts at the closest property line and residential area. The results of the noise analysis predicted compliance with MassDEP noise impact criteria; however, once the subject engine/generator set has been installed and is operating, actual noise measurements will be taken at the closest property line to demonstrate compliance. In addition, Air Quality Dispersion Modeling for the relevant air pollutants emitted from the proposed engine was performed by Tighe & Bond. The modeling conservatively estimates the total cumulative maximum ambient air quality impact of the proposed engine operating alone, as well as the existing flare operating alone, at maximum capacity. The results of the modeling indicate compliance with the Massachusetts and National Ambient Air Quality Standards.

## B. OPERATIONAL LIMITATIONS

- 1) LFG shall be the only fuel of use in proposed LFG engine. QEC shall operate the LFG flare and stationary reciprocating internal combustion engine systems at all times while LFG is being fed to these systems. The LFG flare and stationary reciprocating internal combustion engine systems shall be equipped and operated with electronic interlocks such that bypass and emissions of uncombusted LFG is minimized should either system become inoperable for whatever reason.
- 2) The design volume of LFG fed to the LFG engine is 210 scfm, based on a maximum fuel heat input rate of 6.3 million British thermal units per hour (MMBtu/hr) and a LFG fuel containing approximately 50 percent methane by volume and having a heat content of approximately 500 British thermal units (Btu) per standard cubic foot (scf), higher heating value (HHV) basis. As such, this engine shall be restricted to a maximum fuel heat energy input of 4,687.2 MMBtu per month and 55,188 MMBtu per twelve-month rolling period, based on engine operation of 8760 hours per year.
- 3) The exhaust gases from the exhaust stack of the LFG engine shall exit vertically and shall not be impeded by any stack exit rain protection device. The exhaust stack of the engine shall have an exit diameter of 8 inches, which will provide a maximum stack gas exit velocity of 84.1 feet per second at a maximum stack gas exit temperature of 800 degrees Fahrenheit. The opening of the exhaust stack shall be situated a minimum of 15.5 feet above ground.
- 4) The LFG engine and its generator shall be located in an acoustical enclosure to be of metal panel construction with a perforated sound absorptive finish on the inside and:
  - a.) the acoustical panel system including panel joints shall have a sound transmission class (STC) rating of not less than 50;
  - b.) the acoustical panel system shall have sound absorption coefficients not less than 90% of the values shown for Koch 6 inch thick panel in Appendix B of the subject nmCPA;
  - c.) the enclosure doors shall have a minimum STC rating of 50 and shall be kept closed at all times that the subject equipment is in operation;
  - d.) the exterior barriers at the intake and discharge shown in Figure 3 of the April 5, 2007 letter from Cavanaugh Tocci Associates, Inc., are to be sound absorptive metal panels of the required thickness for structural purposes and having a minimum noise reduction coefficient (NRC) of not less than 0.9 and an STC rating of not less than 25;
  - e.) the exterior barriers of the concept in Figure 3 of the aforementioned April 5, 2007 letter, shall have a roof constructed of the same sound absorptive metal panels as detailed above; and
  - f.) QEC shall construct a noise barrier wall along the side facing Stella Maris. The wall shall extend 8 feet beyond the generator enclosure, be 10 feet high, and be positioned 10 feet from the enclosure. The barrier shall have a minimum STC rating of 25, and its side facing the enclosure must be sound absorptive.



5) The minimum required dynamic insertion losses (DILs) shall be provided by 7-foot long type RD-MV-F2 duct silencers manufactured by Vibro-Acoustics, or equivalent, and shall be installed inside the generator enclosure on the air intake and discharge louvers. The silencer cross sectional area is to be as required to provide acceptable low airflow static pressure loss. The connection between the discharge duct silencer and the engine radiator must be provided with a canvas flex connect that is slack and bridging a clearance between the silencer and radiator collars that is 1.5 to 2.5 inches wide.

6) The engine exhaust silencer shall be a GT Exhaust Systems Model 201-7100 series, or equivalent that shall provide the same or higher noise reduction at an acceptable back pressure. This exhaust silencer shall be located within the engine enclosure.

7) QEC shall comply with all of the other noise suppression recommendations as listed in the April 5, 2007 letter from Cavanaugh Tocci Associates, Inc. to Tighe & Bond – Inc. Consulting Engineers to ensure compliance with noise sound levels no more than a maximum of 6 dBA above ambient background noise levels at all of its property lines and shall not cause a “pure tone” condition. A post construction noise survey on the installed engine (with the actual noise suppression equipment) while it is in operation shall be conducted to demonstrate compliance with these requirements within 90 days of installation of the proposed engine.

8) QEC shall properly operate the subject flare at all times when LFG is routed to it. The maximum volume of LFG fed to the existing LFG flare system shall not exceed 620 standard cubic feet per minute (scfm). The candlestick LFG flare shall automatically maintain a minimum operating combustion temperature of 1600 degrees Fahrenheit at all times while combusting LFG. QEC shall operate this candlestick LFG flare at a higher temperature setpoint such that compliance with the minimum operating combustion temperature of 1600 degrees Fahrenheit is maintained. This minimum temperature requirement shall apply at all times except during periods of start-up or shutdown. Periods of start-up or shutdown shall not last longer than one (1) hour. Should the LFG flare’s operating combustion temperature fall below the minimum required operating combustion temperature for more than fifteen (15) minutes, the flare’s control system shall immediately trip the LFG blower and isolation valve to discontinue feeding of LFG. QEC may operate the flare at a lower minimum operating combustion temperature, provided that QEC performs compliance testing at that lower temperature and demonstrates compliance with maximum allowable emission limits for the LFG flare as stated in Table 2 below. During compliance testing, the flare operating combustion temperature limitation is not applicable.

9) A 24-hour temperature recorder shall be installed to document the flare's operating temperature. Under this operating condition, the flare shall comply with a minimum destruction and removal efficiency of 98 percent by weight for non-methane organic compounds (NMOC) in the LFG.

10) The LFG flare shall be equipped with a pilot flame thermocouple and recorder to provide a record on-site that documents the presence of a flame, and must provide detail sufficient to document date and clock time. This thermocouple shall be connected to a timing device with an electrical interconnect to the blower power supply that will shut the blower off in the event of a "flame out" condition exceeding a 10-minute period.

11) That a properly trained operator shall inspect the LFG flare for proper operation at least monthly.

### C. EMISSION LIMITATIONS

1) The maximum allowable emission limits of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), particulate matter less than 10 microns in aerodynamic diameter (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and non-methane organic compounds (NMOC) as hexane from the subject LFG engine in grams per brake horsepower-hour (g/bhp-hr), pounds per hour (lbs/hr), pounds per million British Thermal Units (lbs/MMBtu), and tons per rolling twelve month period are contained in Table I below:

Table I. Maximum Allowable Emission Limits from LFG engine

Pollutant	g/bhp-hr	lbs/hr <sup>(a)</sup>	lbs/MMBtu <sup>(b)</sup>	Tons per Rolling 12 Month Period <sup>(c)</sup>
NO <sub>x</sub>	0.5	2.82	0.45	12.4
CO	385 ppm	0.35	0.06	1.5
PM <sub>10</sub>	N/A	0.3	0.05	1.4
SO <sub>2</sub>	N/A	0.08	0.02	0.4
NMOC (as hexane)	N/A	0.05	0.01	0.2

(a) Based on a maximum of 1.2 brake horsepower (bhp) for the engine.

(b) Based on a maximum fuel heat input rate of 6.3 MMBtu/hr for the engine combusting a LFG fuel containing approximately 50 percent methane by volume and having a heat content of approximately 500 British thermal units (Btu) per standard cubic foot (scf), higher heating value (HHV) basis.

(c) Based on 8760 hours of operation per rolling 12 month period.

ppm = parts per million

Emission limits in Table I apply at all times except during periods of start-up or shutdown. Start-ups or shutdowns shall not last longer than one (1) hour. Emission limits in Table I expressed in g/bhp-hr, lbs/hr, and lbs/MMBtu shall be based on a one-hour averaging time. Emissions testing shall be performed in accordance with the test methods and procedures contained in 40 CFR 60 Subpart WWW, Section 60.754, as applicable, and 40 CFR 60 Appendix A, or other methods acceptable to MassDEP.

2) Visible emission limits for the LFG Engine shall be as follows, exclusive of uncombined water vapor, with the exception of 5 minutes for start-up:

Opacity	< 5 percent, except 5 to < 10 percent for $\leq 2$ minutes during any one hour
Smoke	310 CMR 7.06(1)(a)

3) The maximum allowable emission limits of (NO<sub>x</sub>), (CO), (PM<sub>10</sub>), (SO<sub>2</sub>), and (NMOC) as hexane from the existing LFG flare in lbs/hr, lbs/MMBtu, and tons per rolling twelve month period are contained in Table II below:

Table II. Maximum Allowable Emission Limits from the Existing LFG Flare

Pollutant	lbs/hr	lbs/MMBtu	Tons per Rolling 12 Month Period <sup>(a)</sup>
NO <sub>x</sub>	0.26	0.04	1.1
CO	4.73	0.75	20.7
PM	0.11	0.02	0.5
SO <sub>2</sub>	0.08	0.02	0.4
NMOC (as hexane)	0.05	0.01	0.2

(a) Based on 8760 hours of operation per rolling 12 month period.

Emission limits in Table II apply at all times except during periods of start-up or shutdown. Periods of start-up or shutdown shall not last longer than one (1) hour. Emission limits in Table II expressed in lbs/hr and lbs/MMBtu shall be based on a one-hour averaging time. Emission testing shall be performed in accordance with the test methods and procedures contained in 40 CFR 60 Subpart WWW, Section 60.754, as applicable, and 40 CFR 60 Appendix A, or other methods acceptable to MassDEP.

4) QEC shall operate the existing LFG flare such that NMOC emissions are reduced by 98 percent by weight, or the outlet NMOC concentration is reduced to 20 parts per million as hexane by volume, dry basis at 3 percent oxygen, or less. The reduction efficiency or parts per million by volume shall be established by performance testing using the test methods specified in 40 CFR 60 Subpart WWW, Section 60.754, or other methods acceptable to MassDEP.

5) The LFG flare shall be operated with no visible emissions greater than five (5) percent opacity except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours. 40 CFR Part 60, Appendix A, Method 22 shall be used to determine compliance with the visible emission limit.

6) QEC shall take necessary precautions to insure that the facility complies with all of the Operational Limitations contained in Section B above and complies with MassDEP's noise guidelines (MassDEP Noise Policy 90-001) and that the facility does not cause a condition of air pollution (noise) as per 310 CMR 7.10. MassDEP Noise Policy 90-001 limits increases over the existing  $L_{90}$  ambient background level to 10 decibels, A-weighted (dBA). The  $L_{90}$  level represents the sound level exceeded 90 percent of the time and is used by MassDEP for the regulation of noise emissions. Additionally, "pure tone" sounds, defined as any octave band level which exceeds the levels in adjacent octave bands by 3 dBA or more, are also prohibited. QEC shall ensure that the facility complies with said Policy at both the property line and the nearest inhabited residence.

7) The facility emission rates for hazardous air pollutants (HAPs) shall be less than 10 tons per consecutive twelve month period of any single HAP, and less than 25 tons per consecutive twelve month period in the aggregate for all HAPs.

The facility emission rates for HAPs shall be calculated using the equations for calculating controlled emissions in Section 2.4 of the U.S. EPA's Compilation of Air Pollution Emission Factors, Volume 1: Stationary Point and Area Sources, AP-42, Fifth Edition, Office of Air Quality Planning and Standards, Research Triangle Park, NC, November 1998 (<http://www.epa.gov/ttn/chief/ap42>). The default values for landfill gas constituents as provided in Table 2.4-1 and the typical control efficiencies of landfill gas flares as provided in Table 2.4-3 shall be used in calculating the controlled emission. The latest edition (6<sup>th</sup>, 7<sup>th</sup>, etc.) of the above referenced document shall be used when available for calculation of HAPs.

#### D. SPECIAL CONDITIONS

1) QEC shall operate the LFG collection/conditioning system, enclosed flare, and LFG to energy system consistent with its Standard Operating and Maintenance Procedures (SOMP) and the parameters that were established during the last Emissions Compliance Testing (stack testing), while allowing for normal operational variations. Updated versions of the SOMP shall be submitted to MassDEP within fifteen (15) days of said revision(s). MassDEP must approve of significant changes to the SOMP prior to the change becoming effective. The updated SOMP shall supersede prior versions of the SOMP.

- 2) QEC shall notify MassDEP, in writing, attention Permit Chief, Bureau of Waste Prevention, when the construction of the LFG to energy system has been completed and the equipment is ready for continuous operation. In addition, this notification shall include information on actual equipment type, make and model, and maximum input/output power for the proposed engine and all noise suppression equipment actually installed thereupon. This written notification shall be submitted to MassDEP by no later than five (5) business days after the completed installation and start-up of the subject equipment.
- 3) QEC shall conduct Emissions Compliance Testing (stack testing) of the proposed LFG engine in order to verify compliance with the emission limitations in Table I. The compliance testing shall be conducted on the engine within ninety (90) days of commencement of continuous operation of the engine and every five years thereafter. The stack testing procedures must follow United States Environmental Protection Agency (EPA) and MassDEP methods and guidelines. The facility shall be constructed to accommodate the emission testing requirements contained in 40 CFR Part 60, Appendix A. The two outlet sampling ports (90 degrees apart from each other) for the engine must be located at a minimum of one duct diameter upstream and two duct diameters downstream of any flow disturbance. A NO<sub>x</sub>/CO/VOC optimization/minimization program shall be employed on the installed engine. VOC emissions shall be presumed to be equivalent to NMOC (as hexane) emissions. In addition, QEC shall have Cavanaugh & Tocci conduct noise level readings within 90 days of installation of the proposed engine while it is in operation to ensure compliance with the predicted noise modeling results as well as no "pure tone" conditions from the operation of the subject engine. A written report of the noise results shall be submitted to MassDEP within sixty (60) days of completion of the noise testing.
- 4) Emissions Compliance Testing shall be conducted in the presence of a representative of MassDEP when MassDEP deems such as necessary. For all required Emissions Compliance Testing (stack testing), QEC shall: (a) submit a written test protocol to MassDEP for review and MassDEP approval, unless testing is requested by EPA, at least thirty (30) days prior to the anticipated date of testing; and, (b) include in the test protocol, at a minimum, a description of sampling point locations, sampling equipment, sampling and analytical procedures, and the operating conditions for the required Emissions Compliance Testing; and, (c) submit the Emissions Compliance Testing Results Report for review and MassDEP approval within sixty (60) days of the completion of the Emissions Compliance Testing. QEC shall maintain on site the test results of all Emissions Compliance Testing (stack testing) performed on the subject engine.
- 5) QEC shall install and operate LFG flow monitors that continuously measure, separately, the volumes, in standard cubic feet per minute, of LFG fed to the existing LFG flare and the LFG engine. QEC shall install and operate LFG flow recorders that record, separately, 15-minute block averages of the LFG flow volumes, in standard cubic feet per minute, fed to the LFG flare and the LFG engine. In addition, records shall be maintained on-site of the volume, in standard cubic feet, of LFG combusted in the flare and/or the engine per month and per twelve-month rolling period.

- 6) QEC shall operate a combustion temperature indicator that continuously measures the candlestick LFG flare's operating combustion temperature. QEC shall operate a combustion temperature recorder that records 1-minute block averages of the candlestick LFG flare's operating combustion temperature.
- 7) Monitoring equipment or emissions monitoring systems installed for the purpose of documenting compliance with this Approval shall be installed, calibrated, maintained, and operated by QEC in sufficient manner to ensure continuous and accurate operation at all times.
- 8) QEC shall keep records on-site of all inspection and maintenance activities for the existing LFG flare and the proposed LFG engine. QEC personnel shall inspect and maintain the flare and engine in accordance with each manufacturer's recommendations and each emission unit's SOMP, and shall inspect said equipment for proper operation at least on a daily basis.
- 9) Quarry Hills shall maintain operating records on-site for the LFG engine which shall include date and daily hours of operation, total hours operated per month and twelve month rolling period, fuel energy heat input in MMBtu per month and twelve month rolling period, and continuous power production in kilowatts (kw).
- 10) QEC shall maintain adequate up-to-date records on-site to demonstrate compliance with the emission limits as stated in Section C of this Approval. At a minimum, the information shall include the calculated LFG flare and/or LFG engine emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, SO<sub>2</sub>, and NMOC for the month as well as the prior 11 months. An example of a format that is acceptable to MassDEP is the On-Site Record Keeping Form, which can be downloaded at <http://www.mass.gov/dep/air/approvals/reshome.htm>.
- 11) QEC shall maintain records of all monitoring data and supporting information required by this Approval on site for five (5) years. Said records shall include continuous records of the monitored operating parameters specified in this Approval. All records shall be made available to representatives of MassDEP or EPA upon request.
- 12) QEC shall maintain records of all malfunctions of the LFG flare and LFG to energy systems, and shall provide notice and supporting documentation to MassDEP under the following circumstances and within the timelines established herein:
  - a) QEC shall notify MassDEP by fax, no later than the next business day, should the LFG flare system's and/or LFG to energy system's operation malfunction and the LFG flow is interrupted for more than one hour for whatever reason. This written notification shall indicate the date and time of malfunction or interruption, the duration of interruption, anticipated date and time when the system's operation at the facility will resume, and all steps that have been taken or will be taken to prevent said occurrence from recurring. QEC shall notify MassDEP by fax (978-694-3499) when the LFG flare and/or LFG to energy system's operation has resumed at the facility within one business day thereof.

- b) QEC shall submit, in writing, an Exceedance Report to MassDEP should the facility exceed any limitation/restriction established within this Approval. Said Exceedance Report shall be submitted within seven (7) days of determination of the exceedance of the limitation/restriction. The Exceedance Report shall include identification, duration, and reason for the exceedance, and the remedial action plan to prevent future exceedances.
- 13) QEC shall submit an annual report summarizing the calculated LFG flare and LFG engine emissions of NO<sub>x</sub>, CO, PM, PM<sub>10</sub>, SO<sub>2</sub>, and NMOC to MassDEP, NERO, attention BWP Permit Chief, by the thirtieth (30<sup>th</sup>) day of January following each annual period. An electronic version of the Report Form can be downloaded at <http://www.mass.gov/dep/air/approvals/reshome.htm>.
- 14) QEC shall provide MassDEP with a monitoring schedule indicating the maintenance and inspection of the engine and flare to ensure that they continue to operate properly. The monitoring schedule shall be submitted to MassDEP by no later than ninety (90) days after the installation of the LFG engine.
- 15) All records shall be kept on-site for five (5) years and shall be made available to MassDEP personnel upon request.

#### **E. GENERAL CONDITIONS**

- 1) That should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the LFG collection/conditioning system, enclosed flare, and LFG to energy system, then appropriate steps shall immediately be taken by QEC to abate said nuisance condition(s).
- 2) That QEC shall accurately report to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The facility shall note any minor changes, which did not require Plan Approval (under 310 CMR 7.02, 7.03, etc.) therein.
- 3) That a copy of this Approval letter and the Standard Operating and Maintenance Procedures (SOMP) for the LFG collection/conditioning system, the LFG flare, and the LFG to energy system shall be maintained on site, at all times, and is accessible at or near the subject equipment.
- 4) That QEC shall allow MassDEP personnel access to the site, buildings, and all pertinent records at all reasonable times for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.

- 5) QEC shall maintain an *Environmental Logbook*, or equivalent record keeping system, which shall document all actions associated with environmental issues and overall emissions changes at the facility. The facility shall record information such as the results of federal, state, or local environmental inspections; maintenance or corrective actions related to pollution control equipment; and measures taken to lower overall emissions to the environment (air, solvent waste, etc.). This Logbook, or equivalent record keeping system, shall be made available to MassDEP personnel upon request.
- 6) This Approval consists of the application materials and this Approval letter. If conflicting information is found between these two documents, then the requirements of the Approval letter shall take precedence over the documentation in the application materials.
- 7) Please be advised that this Approval does not negate the responsibility of QEC to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this Approval imply compliance with this or any other applicable federal, state, or local regulations now or in the future.
- 8) This Approval may be suspended, modified, or revoked by MassDEP if, at any time, MassDEP determines that QEC is violating any condition or part of this Approval.
- 9) MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and Regulation 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions" which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.
- 10) Failure to comply with any of the above stated conditions will constitute a violation of the "Regulations", and can result in the revocation of the Approval granted herein and/or other appropriate enforcement action as provided by law. MassDEP may also revoke this Approval if the construction work is not begun within two years from the date of issuance of this Approval, or if the construction work is suspended for one year or more.

#### **F. APPEAL PROCESS**

This Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date you received this Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Approval is not consistent with applicable laws and regulations.



The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

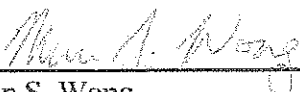
Commonwealth of Massachusetts  
Department of Environmental Protection (MassDEP)  
P.O. Box 4062  
Boston, MA 02211


This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this matter, please do not hesitate to contact Mr. Mun Wong at the Metropolitan Boston/Northeast Region, 205B Lowell Street, Wilmington, Massachusetts 02108.

Very truly yours,

  
\_\_\_\_\_  
Mun S. Wong  
Environmental Engineer  
Bureau of Waste Prevention

  
\_\_\_\_\_  
James E. Belsky  
Permit Chief  
Bureau of Waste Prevention

JEB/Emw/mw  
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cc: Board of Health, 1305 Hancock Street, Quincy, MA 02169  
Fire Headquarters, 26 Quincy Avenue, Quincy, MA 02169  
DEP, Boston, Yi. Tian (e-copy)  
DEP/NERO ATTN: Mr. Tom Parks, Ms. Mary Persky, Mr. Mun Wong  
Tighe & Bond, Inc., 53 Southampton Road, Westfield, MA 01085 ATTN: Mr. Russell Fleury