



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

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Lieutenant Governor

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Secretary

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Commissioner

Date Stamped March 21, 2012

Mr. Richard Mottolo
Northeast Environmental Processing, LLC
28 Water Street
Lawrence, MA 01841

Re: **LAWRENCE** - Metropolitan Boston/
Northeast Region
310 CMR 7.02 - Non-Major
Comprehensive Plan Application
Transmittal No. X241163
Application No. MBR-11-IND-024
FINAL APPROVAL

Dear Mr. Mottolo:

The Metropolitan Boston/Northeast Regional Office of the Massachusetts Department of Environmental Protection (MassDEP), Bureau of Waste Prevention, has completed its technical review of your non-major Comprehensive Plan Application (“Application”) for your existing fat, oil, and grease processing facility located at 28 and 30 Water Street in Lawrence, Massachusetts. The plan application was received by this Office on December 13, 2011 and bears the seal and signature of Mr. David M. Cotter, Massachusetts P.E. No. 49068. It concerns the proposed installation and operation of a centrifuge and a solids collection bin for a new separation process at your existing facility. In addition to the original Application, MassDEP received supplemental information on February 16, 2012 from Capaccio Environmental Engineering, Inc.

MassDEP has determined that your Application is administratively and technically complete and that the subject equipment is in conformance with current air pollution control engineering practice, and hereby grants **Final Approval** for said proposed equipment, as submitted, subject to the conditions listed below.

Please review the entire 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 Approval will constitute a violation of the Regulations and can result in the revocation of the Approval.

1. **BACKGROUND AND DESCRIPTION OF FACILITY**

Northeast Environmental Processing, LLC (“NEP”) operates a facility at 28 and 30 Water Street in Lawrence, Massachusetts (“Facility”) which provides grease-trap maintenance services to commercial food processors and commissaries. Food residuals and fat, oil, and grease solids (“FOG”) collected by NEP are processed to remove excess water in order to produce a secondary product that is useful in the generation of bio-fuels, for blending with other organic wastes for use as soil amendment, and/or co-digestion with other bio-solids from traditional wastewater treatment plants for energy recovery. This Application as well as the previous application, Transmittal No. X232996, were submitted for MassDEP approval of an existing control system to abate Facility emissions of odorous compounds. This Application also requests the installation of a new solids separation process involving a centrifuge at the Facility.

FOG is received at the NEP facility seven days per week at an enclosed unloading station. Tanker trucks unload this material by gravity through a screen into two (2) 500 gallon grit chambers (EU1). Gross solids are removed from the grit chambers by an inclined screw conveyor (EU2) and deposited in a two cubic yard dumpster (EU3). Solids from this dumpster are disposed of as solid waste.

Screened and de-gritted FOG flows by gravity to a 1,000 gallon transfer sump (EU4). FOG is pumped from the transfer sump to one of five aboveground cold decant tanks (collectively EU5a, EU5b, EU5c, EU5d, EU5e) situated outside the building. The headspaces of the decant tanks are vented through an activated carbon filter system (PCD1) comprised of two (2) 55-gallon drums in series to control odors and two (2) bio-filter systems (PCD3 and PCD4) in parallel.

After approximately one day of residence time in EU5a, EU5b, EU5c, EU5d, or EU5e, the separated liquid is pumped through a rotary screen (EU15) to a 1,500 gallon pH tank (EU6) where hydrated lime slurry is added to raise the pH to 6.5 standard units. Solids collected in EU15 are accumulated in a 300 gallon tank (EU16).

After pH adjustment the separated liquid flows to a cavitation air flotation (CAF) tank (EU8). Polymer is added and coagulated solids are skimmed from the surface. The solids are accumulated in a separated solids holding tank (EU7) along with solids from EU15. Pretreated wastewater flows out of EU8 into two (2) 500 gallon final clarifiers (EU9 and EU10) for final settling. Wastewater flows out of EU9 through an outflow channel (EU11) to the Greater Lawrence Sanitary District (GLSD) sanitary sewer system in accordance with industrial wastewater discharge permit number 403-45. Flow and pH are continuously monitored and recorded by NEP.

The decanted FOG mixture from EU5a, EU5b, EU5c, EU5d, and EU5e is sent to an existing holding tank (EU7) where the materials are mixed before further separation via the new centrifuge. Following this process, the mixture will be pre-heated in Reactor Tank 1 (EU12) before it will be sent to Reactor Tank 2 (EU13) for further heating. After the mixture is heated, it will be sent to the new separation process (a centrifuge) to remove fine solids from the mixture. The separated solids will be collected in a new processed solids collection bin (EU18). EU18 will be totally enclosed and the potential nuisance odors from this emission unit will be sent to the existing bio-filters, (PCD3 and PCD4) for abatement. The liquid exiting the new separation process will be sent via hard piping to a new heated storage tank (EU19). (Note: EU19 was previously in existence at the facility, but it was always empty and never used for any process.) EU19 will act as a clarifier to remove water and allow the FOG to rise to the top of the tank. The water from EU19 will be sent to the head works of the wastewater treatment system, while the FOG will be pumped to a shipment truck for customer delivery. Odorous emissions from EU19 will also be controlled by PCD3 and PCD4.

NEP operates an exhaust ventilation system that collects and controls odorous emissions from the Facility. The process air is vented through one of two Carbtrol GC-3B1000 activated carbon odor control systems (PCD1 and PCD2) and then through two (2) bio-filter systems (PCD3 and PCD4). PCD1 and PCD2 each consist of two 55 gallon drums in series that contain Carbtrol CV-CAT vapor phase catalytic carbon, or equivalent.

PCD1 collects process air from the vents located on EU5a, EU5b, EU5c, EU5d, EU5e, EU7, EU12, EU13, and EU15. PCD2 collects air from EU8, EU9, EU10, a second vent on EU5d, and EU17. The activated carbon in PCD1 and PCD2 is expected to last approximately six months. PCD1 and PCD2 are mounted on separate skids.

Each activated carbon system is equipped with an exhaust blower that draws air down into the center of each drum and through the surrounding activated carbon prior to exhausting the combined airstream from both odor control systems through a central exhaust duct. The combined exhaust flow rate is approximately 1,400 standard cubic feet per minute (scfm). The exhaust duct terminates in a manifold that distributes the exhaust equally through the two bio-filter systems, PCD3 and PCD4, which perform a final odor polishing step, as well as remedies the previous horizontal stack design that existed at the Facility.

PCD3 and PCD4 each consist of a thirty cubic yard roll-off container retro-fitted with air distribution piping. The air distribution piping was arranged along the bottom of the roll-off, and subsequently packed with wood chips. To maintain the moisture content necessary for maximum odor control, each bio-filter is be equipped with a standard lawn sprinkler that is operated daily by a timer. Excess moisture is collected in a tray underneath each bio-filter and the accumulated water is pumped into the building and directed to the headworks of the wastewater treatment system.

PCD3 and PCD4 were designed and constructed to meet the accepted engineering practice of a minimum empty-bed contact time (EBCT) of 45 seconds which would limit the maximum air flow allowed per bio-filter to be approximately 1,225 scfm. To ensure proper operation of PCD3 and PCD4, a single booster blower with a rating to handle up to 2,000 scfm at 10 inches of static water pressure was installed. This blower distributes air to each of the bio-filters via a non-dampened distribution duct.

The static pressure drop through PCD3 and PCD4 varies throughout the life of the filters. Initially, when the wood chips are new and loosely packed, the pressure drop will be negligible. After 18 to 24 months, the chips will have begun to decompose and will gradually become more closely packed as they settle under their own weight. The maximum expected static pressure drop through the filters at the end of the media life is expected to be approximately 10 inches of water pressure.

The final odor control system (PCD5) consists of two existing charcoal filters located on the roof of the building: one filter controls the process air from EU11 and the other controls the exhaust from the bathroom vents. EU11 sends the wastewater flow from the clarifiers to GLSD. These filters will be replaced on a regular maintenance schedule of every six months, unless odors are detected, in which case the filters will be replaced as required.

2. EMISSION UNIT IDENTIFICATION

The following emission units listed in Table 1 below are subject to and governed by this Approval:

EMISSION UNIT (EU#)	DESCRIPTION OF EMISSION UNIT	EU DESIGN CAPACITY	POLLUTION CONTROL DEVICE (PCD#)
EU1	two (2) grit chambers	500 gallons each	• PCD2 followed by PCD3 and PCD4
EU2	inclined screw conveyor	400 gallons per minute	
EU3	waste solids dumpster	2 cubic yards	
EU4	transfer sump	1,000 gallons	
EU5a	cold aboveground decant tank (Tank No. 2)	6,000 gallons	• PCD1 followed by PCD3 and PCD4
EU5b	cold aboveground decant tank (Tank No. 3)	13,800 gallons	

EU5c	cold aboveground decant tank (Tank No. 4)	13,800 gallons	• PCD1 followed by PCD3 and PCD4
EU5d	cold aboveground decant tank (Tank No. 5)	13,800 gallons	• PCD1 and PCD2, followed by PCD3 and PCD4
EU5e	cold aboveground decant tank (Tank No. 6)	21,000 gallons	• PCD1 followed by PCD3 and PCD4
EU6	pH adjustment tank	1,500 gallons	• None
EU7	separated solids holding tank (Tank No. 1)	6,000 gallons	• PCD1 followed by PCD3 and PCD4
EU8	cavitation air flotation (CAF) tank	1,600 gallons	• PCD2 followed by PCD3 and PCD4
EU9	final clarifier	500 gallons	
EU10	final clarifier	500 gallons	
EU11	vent outflow channel	125 gallons per minute	• PCD5
EU12	reactor 1	1,800 gallons	• PCD1 followed by PCD3 and PCD4
EU13	reactor 2	1,800 gallons	• PCD1 followed by PCD3 and PCD4
EU15	rotary screen	Interchangeable mesh screens with slot sizes ranging from 0.01 inches to 0.04 inches	
EU16	rotary solids tank	300 gallons	
EU17	filter press	15 ft ³ to 18 ft ³ expandable with 800 mm filter plates	• PCD2 followed by PCD3 and PCD4
EU18	new processed solids collection bin	15 to 30 cubic yard roll-off container	• PCD3 and PCD4
EU19	new heated storage tank/clarifier	4,700 gallons	

Table 1 Key:

= Number

ft³ = cubic feet

mm = millimeter

3. APPLICABLE REQUIREMENTS

A. EMISSION LIMITS AND RESTRICTIONS

1. NEP shall operate PCD1, PCD2, PCD3, PCD4, and PCD5 24 hours a day, 365 days a year to ensure that a negative pressure is maintained within the building and that nuisance odors shall not exit the Facility uncontrolled.
2. All external doors to the Facility shall be kept closed when not in use. The overhead door to the truck unloading area shall be closed as soon as a truck enters the Facility.
3. The doors connecting the truck unloading area to the process areas shall be kept closed, except when in use.
4. A minimum of four (4) 55 gallon drums of fresh, activated carbon shall be maintained on-site for rapid replacement of spent activated carbon as required to maintain proper odor control at the Facility.
5. PCD3 and PCD4 shall be wetted on a daily basis, by lawn sprinklers on timers to ensure that the medium is properly moist to the point of near saturation. Maintaining uniform moisture levels throughout each bio-filter is essential. Ensure that the surface irrigation systems are providing complete coverage over the each bio-filter's surface. Drip irrigation systems shall be checked to ensure that moisture is added evenly. The irrigation systems may be turned off during periods of high ambient moisture (during prolonged rainy periods, for example), if the media is deemed to be properly saturated based on physical inspection of the media.
6. The activated carbon in PCD1 and PCD2 shall be inspected and replaced based on the odor sampling conducted each day that the Facility is manned (See Tables 2 and 3 below.). At a minimum, the activated carbon in PCD1 and PCD2 shall be replaced semi-annually.
7. The activated carbon filter (PCD5) associated with EU11 and the bathroom vent shall be replaced on a regular maintenance schedule of every six months, unless odors are detected earlier, in which case the filter shall be inspected and replaced as required.
8. Sound impacts from the subject Facility shall not exceed 10 dB (A) above background at the property line and shall not cause a puretone condition as defined in the Division of Air Quality Control Noise Policy No. 90-001.

B. COMPLIANCE DEMONSTRATION

NEP shall comply with the monitoring/testing, record keeping, and reporting requirements as contained in Tables 2, 3, and 4 below:

Table 2	
PCD#	MONITORING/TESTING REQUIREMENTS
PCD1 PCD2	1) A NEP operator shall sniff test the exhaust stream leaving PCD1 and PCD2 on a daily basis whenever the Facility is manned. If odors are detected, corrective action must be initiated immediately.
PCD3 PCD4	2) A NEP operator shall inspect the ventilation system blowers and the irrigation system for PCD3 and PCD4 on a daily basis whenever the Facility is manned. In addition, the operator shall check the blower for excessive vibration or noise and monitor the pressure and air flow through the blowers.
	3) A NEP operator shall make observations around PCD3 and PCD4 in the early morning to check for unusual odors that may indicate leaks.
	4) A NEP operator shall monitor PCD3 and PCD4 on a daily basis to check the surface of the media for dry spots or other irregular surface conditions that may indicate short-circuiting or poor air distribution.
PCD3 PCD4	5) A NEP operator shall perform a check on all bio-filter media at least once per week, using a pitch fork to dig down into the media and check moisture 6 inches to one foot below the surface. During periods of freezing when the automated saturation system is off, an NEP operator shall perform daily checks on all bio-filter media, using a pitch fork to dig down into the media and check moisture 6 inches to one foot below the surface, and shall add supplemental water as necessary using a hose.
	6) A NEP operator shall inspect daily the water addition system to see that all valves are open, hoses and the irrigation system are in good working order, that there are no leaks in hoses, and that the surface irrigation system is providing coverage across the entire surface of both bio-filters.
	7) A NEP operator shall perform a monthly inspection of all bio-filter media at various depths to check the moisture content, as well as to check the irrigation system and the drainage system for each bio-filter.
	8) NEP shall have the bio-filter vendor or other such qualified professional conduct a quarterly evaluation of the condition of the media, measuring both for moisture content and pH. In addition the bio-filter vendor or other such qualified professional shall evaluate the air flow through each bio-filter as well as check the irrigation systems and the drainage systems for proper operation during these quarterly inspections.
PCD5	9) A NEP operator shall inspect these filters whenever odors are detected outside of the Facility.

Table 3	
PCD#	RECORD KEEPING REQUIREMENTS
PCD1 PCD2	1) A NEP operator shall record the daily sniff test results of PCD1 and PCD2. Records shall include notations of days when the Facility is not manned.
PCD3 PCD4	2) A NEP operator shall record the daily inspection results of the ventilation system blowers and the irrigation system for the two bio-filters. The operator shall record the pressure and flow at the blower on a form supplied by the bio-filter vendor.
	3) A NEP operator shall record whether there are any unusual odors around the bio-filters.
	4) A NEP operator shall record observations made around the bio-filters in the early morning to check for unusual odors that may indicate leaks.
	5) A NEP operator shall record the results of the daily, weekly, and monthly media inspections and record reasons for adding water, if required.

Table 3	
PCD#	RECORD KEEPING REQUIREMENTS
PCD3 PCD4	6) A NEP operator shall record any changes that are made to the timer settings and the reasons for making the changes as well as recording any issues that are found with the water addition system.
	7) NEP shall maintain on-site records of its daily, weekly, and monthly inspections on the two bio-filter systems.
	8) NEP shall maintain on-site records of the quarterly inspections performed by the bio-filter vendor or another such qualified professional.
PCD1 PCD2 PCD3 PCD4	9) NEP shall maintain an environmental log, or equivalent record keeping system, which will contain a listing of when carbon and bio-filter media was purchased, replaced, and disposed of, as well as the condition of the carbon and bio-filter systems. In addition, the log shall contain entries for any received odor complaints, the operating procedures being conducted at the time, the meteorological conditions (e.g. wind direction, weather) at the time and, if the odor is determined to be from NEP operations, the cause of the odor and the corrective action that was taken.
PCD5	10) NEP shall maintain on-site records of the dates when the charcoal filters associated with EU11 have been replaced as well as all inspections of these filters.
Facility-wide	11) NEP shall maintain on-site the Standard Operating and Maintenance Procedures (SOMP) for each emission unit (EU) and pollution control device (PCD).
	12) All records shall be maintained on-site for a minimum of three (3) years and made available to MassDEP personnel upon request.

Table 4	
PCD#	REPORTING REQUIREMENTS
Facility-wide	1) NEP shall notify MassDEP's NERO by telephone, fax, or email as soon as possible, but in any case no later than one business day, and subsequently in writing within seven days, after the occurrence of any upsets or malfunctions of an emission unit or pollution control device which results in an excess emission to the air and/or a condition of air pollution.
	2) The above notifications and reports shall be made to: Department of Environmental Protection/Bureau of Waste Prevention 205B Lowell Street Wilmington, Massachusetts 01887 Attn: BWP Permit Chief Phone: 978-694-3200 Fax: 978-694-3499

4. SPECIAL TERMS AND CONDITIONS

- a) This Plan Approval shall supercede the Final Plan Approval dated April 28, 2011 for Application No. MB-11-IND-007 (Transmittal No. X23996) in its entirety.

- b) Within thirty (30) days of receipt of this Approval, NEP shall provide visible signage on each emission unit (EU) identifying its designated EU number, as listed on Table 1 of this Approval.
- c) The facility 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.
- d) This Final 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.
- e) This Approval does not negate the responsibility of the facility 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.
- f) 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.
- g) 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 at a later time.

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).

- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.
- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

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 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.

7. 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 issuance of 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 Approval, please contact Mr. Mun Wong by telephone at (978) 694-3200, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Mun S. Wong
Environmental Engineer

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

James E. Belsky
Permit Chief
Bureau of Waste Prevention

JEB/EMW/mw/Northeast Environmental Processing/X241163 NEP

cc: Board of Health, City Hall, Room 309, Lawrence, MA 01840
Fire Headquarters, 65 Lowell Street, Lawrence, MA 01840
MassDEP/Boston - Yi. Tian (E-Copy)
MassDEP/NERO - M. Wong, M. Altobelli, M. Persky
Capaccio Environmental Engineering, Inc., 293 Boston Post Road, Marlborough, MA 01752
ATTN: Mr. David Cotter