TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

FOR

City of Tampa – Wastewater Department (Howard F. Curren AWT Plant)

Hillsborough County

Air Construction Permit

Application Number

0570373-019-AC and 0570373-018-AV

Environmental Protection Commission of

Hillsborough County

Tampa, FL

July 5, 2011

I. Project Description

A. Applicant: Ralph Metcalf II, P.E.
Director
City of Tampa – Wastewater Department
306 East Jackson Street
Tampa, FL 33602

B. Engineer: Tom T. John, P.E.
Tom T. John, P.E., Inc.
405 N. Reo Street STE 255
Tampa, FL 33609

P.E. No.: 33157

C. Project and Location:

Attached are DRAFT Permit Nos. 0570373-019-AC and 0570373-018-AV to include the five existing digester gas fired generator engines (0.5 MW each) as regulated emission units in the Title V permit. This Air Construction permit is being issued concurrently with the renewal Title V operating permit for the wastewater treatment facility. These permits are being co-issued since the digester generator engines are existing emission units, and are now being included in the facility's permit due to the applicability of 40 CFR 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE). Permit No. 0570373-018-AV incorporates Permit No. 0570373-019-AC.

The project has been assigned NEDS Source Classification Code Nos. 2-03-007-02, Internal Combustion Engines, Digester Gas, Reciprocating: POTW Digester Gas. The Standard Industrial Code for the project is No. 4952, Sewer Systems. The project is located at 2700 Maritime Boulevard, Tampa, FL 33605. UTM Coordinates of the location are 17-364.00 E and 3089.50 N.

D. Process and Controls:

The regulated emissions units at this wastewater treatment plant consist of two sludge dryer trains, five sludge storage silos, two truck loading stations with three truck loading spouts, four emergency diesel generators, two natural gas fired generators, five digester gas fired generator engines, and a methanol storage tank. The sludge drying facility consists of two identical sludge dryer trains (No. 2 and No. 3) operating in parallel with separate but identical process and control equipment. The sludge stream from wastewater treatment is chemically treated then mechanically pressed with belt filter presses to raise the solids content from approximately 1-2% to around 20%. The sludge cake then moves via conveyor over belt scales to a wet storage bin. The sludge then goes to a pug mill where the

water content is lowered further by mixing it with dry, recycled sludge from a recycle bin. From the pugmill, the sludge is fed into a natural gas fired rotary dryer, a settling chamber, and a Sweco screen for sizing. Oversized sludge particles go to a crusher and then to the recycle bin. Undersized sludge is sent directly to the recycle bin. The properly sized sludge is conveyed to the four sludge storage silos (Silo Nos. 2, 3, 4, and 5). From the four storage silos, the sludge is either loaded onto trucks at one of two loading stations (Station Nos. 1 and 2), directed to a fifth storage silo (Silo No. 6) with a dedicated loading spout, sent to the recycle bin, or routed back to the four main storage silos.

Particulate matter emissions from each sludge drying train are controlled with a cyclone and a venturi scrubber that includes a cyclonic separator. Volatile organic compound emissions are controlled with a natural gas fired regenerative thermal oxidizer operating in series with the particulate control devices. Emissions from each storage silo and truck loading station are controlled with fabric filters. Odors from the sludge drying building are controlled by two spray mist scrubbers which use a sodium hypochlorite and water solution. One scrubber operates at a time with the other serving as a back-up.

Electricity for the facility is normally supplied by Tampa Electric Company and the five digester gas generators (0.5 MW each). However, two natural gas fired generators can be used as standby emergency power as well as supplemental generation that will be dispatched to the grid for Tampa Electric Company. These generators have been identified as Engine Nos. 1 and 2. These emission units are two identical Waukesha 16V-AT27GL engines, 4 stroke, spark ignition, each rated at 4,073 bhp, fired exclusively on natural gas, each coupled to a nominal 2.9 MW electrical generator. The maximum heat input rate is 27.2 MMBTU/hr (HHV) based on natural gas heating value of 1025 Btu/cf. In addition, this facility has four diesel fired emergency generators on-site. The emergency generator engines are four Caterpillar 3516 DITA engines, 4 stroke compression ignition, rated at 2,847 bhp, and are fired on No. 2 diesel fuel at a maximum rate of 130.6 gallons/hr. The five digester gas generator engines are five Waukesha VHP-L7042 GU engines, 4 stroke spark ignition, rated at 670.5 bhp, fired exclusively on digester gas. The digester gas fired generators do not currently have any add-on controls. The maximum heat input rate is 5.6 MMBtu/hr based on a digester gas heating value of 621 Btu/cf and a fuel flow rate of 9,000 cf/hr.

An alternate method of operation of Sludge Dryer Train Nos. 2 and 3 is the heat recovery mode. This mode utilizes the waste heat in the exhaust gases from Engine Nos. 1 and 2 to offset the heat normally generated by firing natural gas in a combustion chamber for the dryers. The exhaust gas from Engine 1 can only feed Sludge Dryer Train No. 3 and Engine 2 can only feed Sludge Dryer Train No. 2. Even though a different heat source is used in the heat recovery mode, the flow rate through each rotary dryer is the same as that under normal operations. Additional heat can be added to handle the varying moisture content of the sludge by the combustion of natural gas in the existing combustion chamber.

Methanol is used as a feedstock for the biological denitrification stage of the wastewater

treatment process. The methanol is delivered on a daily to weekly basis by truck or railcar to a fixed roof storage tank with a volume of approximately 95,000 gallons. Methanol is considered a VOC and HAP, and emissions are generated by evaporative losses (breathing and working losses) through the venting of displaced air through the "J" neck vent located on the roof of the tank. Emissions are also generated from evaporation of methanol in the denitrification stage and from the fugitive losses of handling methanol through the piping, valves, flanges etc. VOC and HAP emissions, which includes methanol, will be controlled by limiting the product throughput and submerged filling pursuant to Rule 62-296.320, F.A.C., General Pollutant Emission Limiting Standards.

CAM does apply to the control systems (cyclones, scrubbers, oxidizers) for Sludge Dryer Train Nos. 2 and 3 for VOC and PM. This sludge drying facility is subject to 40 CFR 61, Subpart E - National Emission Standard for Mercury and Rule 62-296.700, F.A.C. (PM-RACT). The engines at the facility are subject to 40 CFR 63 Subpart ZZZZ, and are not subject to 40 CFR 60 Subpart IIII nor Subpart JJJJ due to the date of construction of the engines.

Based on the Title V Air Operation Permit Renewal application received November 12, 2010, this facility is not a major source of hazardous air pollutants (HAPs). The PTE for NOx, CO, PM, SO_2, VOC, and HAPS are 196.9, 209.8, 63.4, 2.5, 67.0, and 18.1 tons per year, respectively.

E. Application Information:

Received on: November 12, 2010 (Title V) and April 12, 2011 (RAI Response)
Information Requested: December 22, 2010
Application Complete: April 12, 2011

II. Rule Applicability

This project is subject to the preconstruction review requirements of Chapter 403, Florida Statutes, Chapters, 62-204, 62-210, 62-212, 62-296, and 62-297, Florida Administrative Code (F.A.C.) and Chapter 1-3 of the Rules of the Environmental Protection Commission of Hillsborough County.

This project is not subject to the requirements of Rule 62-212.400, Prevention of Significant Deterioration, F.A.C. or Rule 62-212.500, New Source Review for Nonattainment Areas, F.A.C., since this project is minor by state definition.

This project is subject to the requirements of Rule 62-212.300, General Preconstruction Review Requirements, F.A.C., since it is a source of air pollution requiring a permit under this rule.

This project is subject to the requirements of Rule 62-213, Operation Permits for Major Sources of Air Pollution, F.A.C., since the facility is a Title V Major Source by state definition.

This project is subject to the requirements of Rule 62-296.320, General Pollutant Emission Limiting Standards, F.A.C., since the project is a source of particulate matter, VOC, and a potential source of odors.

This project is not subject to the requirements of Rule 62-296.401 through 62-296.417, Specific Emission Limiting and Performance Standards, F.A.C., since there is no applicable source specific category in this rule.

This project is not subject to the requirements of Rule 62-296.500, Reasonably Available Control Technology for VOC and NOX Emitting Facilities, F.A.C., since there is no applicable source specific category in this rule.

This project is not subject to the requirements of Rule 62-296.600, Reasonably Available Control Technology - Lead, F.A.C., since there is no applicable source category.

This project is not subject to the requirements of Rule 62-296.700, Reasonably Available Control Technology Particulate Matter, F.A.C., since there is no applicable source specific category in this rule.

This project is subject to the requirements of Rule 62-204.800, Federal Regulations Adopted by Reference, F.A.C., since the digester generators are subject to 40 CFR 63 Subpart ZZZZ, (National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE)).

This project is subject to the requirements of Chapter 84-446, Laws of Florida and Chapter

1-3, Rules of the Environmental Protection Commission of Hillsborough County.

III. Summary of Emissions

EU 020 – Five Digester Generator Engines

Regulated Pollutants	Actual Emissions* ton/yr	Potential Emissions** ton/yr	Emissions Increase ton/yr	Allowable Emissions
NO_x	31.3	54.1	22.8	n/a
CO	52.7	91.1	38.4	n/a
SO_2	0.008	0.01	0.002	n/a
VOC	0.42	0.72	0.3	n/a
PM	0.13	0.23	0.1	n/a
HAPS	0.46	0.79	0.3	n/a

*Actual Emissions based on average hours of operation for 2010 (5,062 hrs), AP-42 Table 3.2-3. emission factors, and a heat content for digester gas of 621 Btu/ft^3.

** Potential Emissions based on 8,760 hrs/yr, AP-42 Table 3.2-3. emission factors, and a heat content for digester gas of 621 Btu/ft^3.

Inventory of Title III pollutants is estimated to be less than 10 TPY individually and less than 25 TPY collectively.

IV. Conclusions:

The emission limits proposed by the applicant will meet all of the requirements of Chapters 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C., and Chapter 1-3, Rules of the Commission.

The General and Specific Conditions listed in the proposed permit (attached) will assure compliance with all the applicable requirements of Chapters 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

V. Proposed Agency Action:

Pursuant to Section 403.087, Florida Statutes and Rule 62-4.070, Florida Administrative Code the Environmental Protection Commission of Hillsborough County hereby gives notice of its intent to issue a permit to construct ("after-the-fact") the aforementioned air pollution source in accordance with the draft permit and its conditions as stipulated (see attached).

ENVIRONMENTAL PROTECTION COMMISSION OF
HILLSBOROUGH COUNTY, as Delegated by

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF PERMIT

Ralph Metcalf II, P.E.
Director
City of Tampa – Wastewater Department
306 East Jackson Street
Tampa, FL 33602

Dear Mr. Metcalf: Re: Hillsborough County - AP

Enclosed is Permit Number No. 0570373-019-AC to incorporate the newly regulated five (5) digester gas fired generator engines at the Howard F. Curren Advanced Wastewater Treatment Plant, issued pursuant to Section 403.087, Florida Statutes. This permit is being co-issued with Title V Renewal Permit No. 0570373-018-AV.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the EPC in the Legal Department at 3629 Queen Palm Drive, Tampa, FL 33619; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the clerk of the EPC.

Executed in Tampa, Florida.

Sincerely,

Richard D. Garrity, Ph.D.
Executive Director

cc: Florida Department of Environmental Protection, Southwest District (via e-mail)
Tom T. John, P.E, Tom T. John, P.E., Inc.

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on _____ to the listed persons.

Clerk Stamp
FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated clerk, receipt of which is hereby acknowledged.

_____ _____
clerk Date

PERMITTEE:	PERMIT/CERTIFICATION
Ralph Metcalf II, P.E.	Permit No.: 0570373-019-AC
City of Tampa – Wastewater Department	County: Hillsborough
306 East Jackson Street	Expiration Date: July 5, 2012
Tampa, FL 33602	Project: Digester Gas Generator Engines

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 62-204, 62-210, 62-212, 62-296, 62-297, and 62-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the EPC and made a part hereof and specifically described as follows:

For the incorporation of the five (5) existing digester gas fired generator reciprocating internal combustion engines (RICE) as regulated emission units under 40 CFR 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary RICE. The regulated emissions units at this wastewater treatment plant consist of two sludge dryer trains, building fugitive emissions, five sludge storage silos, two truck loading stations with three truck loading spouts, four emergency diesel generators, two natural gas fired generators, five digester gas fired generators, and a methanol storage tank. The only emission unit affected by this permit is the five (5) existing digester gas fired generator reciprocating internal combustion engines (EU020).

Sludge generated in the wastewater treatment process is fermented in the heated sludge digester tanks. Anaerobic bacteria aid in the sludge decomposition process for a period of time until all harmful microorganisms contained in the sludge are destroyed. The sludge decomposition process generates digester gas (a mixture of approximately 60% methane, 30% CO_2, nitrogen, and other impurities) which is fed to the five 0.5 MW digester gas fired generator RICE, which generate a portion of the electricity required to run the wastewater treatment plant. The five digester generators are not equipped with add-on controls, so the emissions are vented directly to the atmosphere. The engines are five Waukesha VHP-L7042 GU engines, 4 stroke spark ignition, rated at 670.5 bhp, fired exclusively on digester gas. The maximum total heat input rate is 5.6 MMBtu/hr based on a digester gas heating value of 621 Btu/cf and a fuel flow rate of 9,000 cf/hr.

This emission unit is not subject to 40 CFR 60, Subpart IIII or JJJJ since the engines were constructed in between 1984 and 1987. Emissions are controlled by operation and maintenance practices and minimizing emissions during startup, shutdown, and malfunction.

Location: 2700 Maritime Boulevard, Tampa

UTM: 17-364.00E 3089.50N. NEDS NO: 0373

EU ID No.: 020 - Five Digester Generator Engines

Replaces Permit No.: N/A

References Permit No.: N/A

SPECIFIC CONDITIONS:

1. A part of this permit is the attached General Conditions. [Rule 62-4.160, F.A.C.]

2. All applicable rules of the Environmental Protection Commission of Hillsborough County including design discharge limitations specified in the application shall be adhered to. The permit holder may also need to comply with county, municipal, federal, or other state regulations prior to construction. [Rule 62-4.070(7), F.A.C.]

3. Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other requirements of Chapters 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C., or any other requirements under federal, state, or local law. [Rule 62-210.300, F.A.C.]

4. The permittee shall not cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]

5. When the Environmental Protection Commission of Hillsborough County (EPC) after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable requirement or permit condition is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the EPC. For the purpose of confirming compliance with the emission limitations in this permit, the EPC may require the use of EPA Method 9 or other approved methods, as deemed necessary.
[Rules 62-297.310(7)(b) and 62-4.070(3), F.A.C.]

6. The permittee shall provide timely notification to the Environmental Protection Commission of Hillsborough County prior to implementing any changes that may result in a modification to this permit pursuant to Rule 62-210.200, F.A.C., Modification. The changes do not include normal maintenance, but may include, and are not limited to, the following, and may also require prior authorization before implementation: [Rules 62-210.300 and 62-4.070(3), F.A.C.]

A) Alteration or replacement of any equipment* or major component of such equipment.
B) Installation or addition of any equipment* which is a source of air pollution.

*Not applicable to routine maintenance, repair, or replacement of component parts of an air emissions unit.

7. If the permittee wishes to transfer this permit to another owner, an "Application for Transfer of Permit" (DEP Form 62-210.900(7)) shall be submitted, in duplicate, to the Environmental Protection Commission of Hillsborough County within 30 days after the sale or legal transfer of the permitted facility. [Rule 62-4.120, F.A.C.]

SPECIFIC CONDITIONS:

8. The use of property, facilities, equipment, processes, products, or compounds, or the commission of paint overspraying or any other act, that causes or materially contributes to a public nuisance is prohibited.
[Hillsborough County Environmental Protection Act, Section 16, Chapter 84-446, Laws of Florida, as Amended.]

9. Hours of Operation. This emissions unit is allowed to operate continuously, i.e., 8,760 hours/year.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

10. Fuels. The digester generators shall be fired exclusively on digester gas.
[Rule 62-4.070(3), F.A.C. and Rule 62-210.200, F.A.C., Definitions - (PTE)]

11. The total fuel usage from the combined operation of the five digester generators shall not exceed 78.8 MMCF of digester gas per any consecutive twelve (12) month period. The maximum heat input rate shall not exceed 5.6 MMBtu/hr.
[Rule 62-210.200, F.A.C., Definitions - (PTE)]

12. [Reserved]

13. In order to establish the facility as a non-Title V source for Hazardous Air Pollutants (HAP), the HAP, as defined in Rule 62-210.200, F.A.C., emissions shall be less than 10 tons in any 12 consecutive month period for any individual HAP, and less than 25 tons in any 12 consecutive month period for any combination of HAPs.
[Rule 62-210.200, F.A.C., Definitions-Potential to Emit (PTE), Major Source of Air Pollution]

14. Visible emissions shall not be greater than or equal to 20% opacity.
[Rule 62-296.320(4)(b)1., F.A.C.]

Test Methods and Procedures

15. The permittee shall have an initial formal compliance test conducted for opacity on each digester generator engine within 60 days of issuance of this permit.
[Rule 62-297.310(7)(a)4., F.A.C.]

16. Visible emissions compliance testing shall be performed using EPA Method 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297.401, F.A.C. The minimum requirements for stack sampling facilities, source sampling and reporting, shall be in accordance with Rule 62-297.310, F.A.C. and 40 CFR 60, Appendix A. [Rule 62-297.310, F.A.C.]

SPECIFIC CONDITIONS:

17. Testing of emissions shall be conducted with the source operating at capacity. Capacity is defined as 90-100% of the rated capacity of 5.6 MMBtu/hr. If it is impracticable to test at capacity, then the source may be tested at less than capacity; in this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Environmental Protection Commission of Hillsborough County. Failure to submit the input rates, load levels, monitored parameters, and actual operating conditions may invalidate the test.
[Rule 62-297.310(2), F.A.C.]

18. The required minimum period of observation for the EPA Method 9 compliance tests shall be thirty (30) minutes. The opacity test observation period shall include the period during which the emissions unit is operating at capacity as defined in Specific Condition No. 17.

[Rule 62-297.310(4)(a), F.A.C.]

Monitoring, Recordkeeping, and Reporting Requirements

19. The permittee shall maintain monthly records and 12-month rolling totals of the hours of operation and the digester gas fuel usage for the digester generators.
[Rule 62-213.440(1)(b)1.b., F.A.C.]

20. The following inspections and maintenance shall be conducted on the schedule specified:

(a) Every 1,440 hours of operation or annually, whichever comes first:
  (1) Change engine oil and filter.
  (2) Replace engine intake air filter.
  (3) Inspect spark plugs and replace as necessary.
  (4) Inspect all hoses and belts and replace as necessary.
(b) Annually
  (1) Drain and flush engine coolant and refill with fresh coolant.
  (2) Test all engine shut-down devices.
  (3) Load test engine and generator.
(c) Records of inspections and maintenance shall be kept on-site for a minimum of five (5) years for inspection by the Environmental Protection Commission of Hillsborough County or approved State or Federal agency upon request.

[40 CFR 63.6603, Rule 62-4.160(14)(b), F.A.C., and Rule 62-4.070(3), F.A.C.]

21. At all times the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent

SPECIFIC CONDITIONS:

with the manufacturer's emission-related operation and maintenance instructions and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if the levels required have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
[40 CFR 63.6605 and 63.6640]

22. The permittee shall keep the following records:

(a) A copy of each notification and report that was submitted, including all documentation supporting any Initial Notification or Notification of Compliance Status, according to the requirement in §63.10(b)(2)(xiv).

(b) Records of the occurrence and duration of each malfunction of operation (i.e., process equipment).

(c) Records of performance tests and performance evaluations as required in §63.10(b)(2)(viii).

(d) Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

[40 CFR 63.6655]

23. Federal 40 CFR 63 NESHAP Subpart ZZZZ Requirements – In addition to the conditions in this permit, the existing stationary engines in EU ID No. 020 are required to comply with all the applicable requirements of NESHAP 40 CFR 63 Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE)), which is attached to this permit. The compliance date for EU 020 is October 19, 2013.
[40 CFR 63 Subpart ZZZZ, Rule 62-204.800, F.A.C., and Rule 62-4.070(3), F.A.C.]

24. The permittee must submit to the Environmental Protection Commission of Hillsborough County each calendar year, a completed DEP Form 62-210.900(5), "Annual Operating Report (AOR) for Air Pollutant Emitting Facility", for the preceding calendar year. The AOR shall be submitted by April 1st of the following year. [Rule 62-210.370(3), F.A.C.]

SPECIFIC CONDITIONS:

ENVIRONMENTAL PROTECTION COMMISSION
OF HILLSBOROUGH COUNTY

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Richard D. Garrity, Ph.D.
Executive Director

-- ATTACH TITLE V PERMIT NO. 0570373-018-AV HERE --