FINAL DETERMINATION

Air Construction Permit
Okeechobee Landfill, Inc. – Landfill Gas to Energy Project

DEP File No. 0930104-014-AC (PSD-FL-382)

PERMITTEE

Okeechobee Landfill, Inc. (OLI)
(a Waste Management Company)
c/o Waste Management, Inc. of Florida
1000 Parkwood Circle SE, Suite 700
Atlanta, Georgia 30339

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Bureau of Air Regulation, Special Projects Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

DEP File No. 0930104-014-AC (PSD-FL-382)
Okeechobee Landfill
Landfill Gas to Energy Project
Okeechobee County

The Okeechobee Landfill (OL) is located in Okeechobee County at 10800 NE 128th Street near Okeechobee, Florida. The project is the construction of a landfill gas to energy (LFGTE) plant at the existing Okeechobee Landfill.

The near-term project involves the construction and installation of the following equipment for a LFGTE plant: a landfill gas desulfurization plant (GDP) to remove hydrogen sulfide (H_2S) in the landfill gas (LFG); one LFG-fueled 15 megawatt (MW) Solar Titan 130 combustion turbine-electrical generator (CTG); three LFG-fueled 3.5 MW Solar Centaur 40 CTG; and five backup open flares.

The project required a review under the rules for the Prevention of Significant Deterioration (PSD) of Air Quality and determinations of Best Available Control Technology (BACT) for particulate matter (PM, PM_{10}) nitrogen oxides (NO_X); carbon monoxide (CO), sulfur dioxide (SO_2) and visible emissions (VE).

The application, Draft Permit, the Technical Evaluation and Preliminary Determination (TEPD), key correspondence and comments regarding this draft permit are available at the following web link:

www.dep.state.fl.us/Air/emission/construction/okeechobee.htm

NOTICES AND PUBLICATION

On February 1, 2010, the Permitting Authority gave Written Notice of its Intent to Issue an Air Permit (Written Notice) to OLI for the described project and provided a copy to EPA Region 4. OLI was directed in the Written Notice as follows:

> *"The Public Notice shall be published one time only* ***as soon as possible*** *in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at the address or phone number listed above. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication* ***may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.****"*

OLI did not file (or request an extension of time to file) a petition for an administrative hearing and did not publish the Public Notice. On February 22, 2010 Golder Associates (Golder) submitted informal comments on behalf of OLI prior to commencement of the 30-day time period during which the Department accepts written comments following publication of the Public Notice.

On March 12, 2010 the EPA Region 4 Office (EPA) sent a letter to the Department regarding another pending project for the Highlands Ethanol Facility (HEF). The key point was that the HEF permit (and presumably the OLI permit) should be issued by April 12, 2010 or additional ambient air impact modeling analyses would be required.

On March 14, 2010 the Department advised OLI of EPA's letter regarding the HEF. The Department (rather than OLI) arranged and paid for publication of the Public Notice as soon as possible in the legal advertisement section of The Okeechobee News; a newspaper of general circulation in the area affected by this project. The notice was published on March 19, 2010.

EPA COMMENTS ON THE DRAFT PERMIT

On April 9, 2010 the Department received comments by electronic mail from EPA Region 4 pursuant to the notice published by the Department. The following summarizes the comments and the Department's response.

1. EPA Comment 1: "On January 22, 2010, EPA signed into law a new National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO_2). The new standard is a 1-hour standard set at the level of 100 parts per billion (ppb). The effective date of the new NAAQS will be April 12, 2010. If the final PSD permit has not been issued by the time the new NAAQS is effective, the Division will need to include the appropriate air quality analysis before a final PSD permit is issued."

   Department response: The draft permit for this project was issued on February 1, 2010 and the application was submitted (initially incomplete) on July 28, 2006 pursuant to an enforcement action. The applicant did not publish the Public Notice of Intent to Issue so the Department published the notice to finalize the project.

   The Department received and reviewed EPA and OLI comments regarding this project by April 9, 2010. However, final action on the permit was not possible until April 19, 2010 to allow completion of the 30-day time period to receive public comment.

   The original modeling and technical submittals (e.g. BACT proposals) were performed by Shaw Environmental and Infrastructure, Inc. (Shaw). The most recent modeling submittal by Shaw was provided on October 28, 2008. OLI subsequently hired Golder to continue work on the BACT and permitting issues. Additional modeling was not conducted to demonstrate compliance with the 1-hour NO_2 standard of 189 micrograms per cubic meter ($\mu g/m^3$) and would be difficult to perform in a rigorous manner at this time.

   However, it is possible to use the results from the 1-hour CO modeling and scale the results to estimate the estimate 1-hour NO_2 concentrations from the project and then to adjust the results with an appropriate background concentration. The 1-hour CO projection in the following table was given in Table 21 of the TEPD document that was distributed with the draft permit package.

   Modeling was performed in a very conservative manner for 1-hour CO assuming construction of the long-term project (not authorized by this permit). This assumed construction and operation of 16 CTG all emitting at the higher half-load operating rate of 1,151 pounds per hour (lb/hr) for a project designed to handle 32,400 standard cubic feet per minute (scfm) of LFG.

Pollutant	Averaging Time	Landfill Gas Flow (scfm)	Emission Rate (lb/hr)	Max Predicted Impact ($\mu g/m^3$)	Significant Impact Level ($\mu g/m^3$)	Baseline Concentrations ($\mu g/m^3$)	AAQS ($\mu g/m^3$)	Significant Impact?
CO	1-Hour	32,400	1,151	1450 @32,400	2000	~2300	40,000	NO
NO_2	1-Hour	13,500	78.2	~99 @13,500	None	~83	189	Unknown

This permit will authorize construction of a project that will handle only 13,500 scfm. Emissions of NO_X (reported as NO_2) will be highest during full load operation at 78.2 lb/hr. By scaling emissions for the smaller, near-term project and the much lower (than CO) emission rate, a 1-hour value on the order of 99 μg NO_2/dry standard cubic meter (dscm) is estimated by the department as the project contribution (excluding background) compared with the new NAAQS of 189 μg NO_2/dscm.

An analogous argument can be made based on the SO_2 modeling performed by the applicant, which will lead to similar results for NO_2 as obtained by CO modeling route.

The Department reviewed the most recent NO_2 data measured at the two nearest NO_2 monitoring stations and summarized it in the following table.

Pollutant	Location	Averaging Period	Ambient Concentration ($\mu g/m^3$)	
			Year	2nd Highest Value
NO_2	West Palm Beach, Lantana	1-hour	2009	83
			2008	87
	Average of two years	1-hour	2008-2009	85

In contrast to the rural setting of the OL, the nearest operating NO_2 station at Lantana Road in West Palm Beach is nearer to sources of NO_X such as major highways and power plants and airport operations.

Comparison with the standard is normally made in the following manner. The highest 1-hour reading is recorded each day during a period of three years (2007-2009). The value for each year that exceeds 98% of all highest 1-hour daily recordings is identified and then the average of those three numbers is reported as the 1-hour compliance value and compared with the standard of 189 $\mu g/m^3$.

Because the Lantana station has operated only for two years, the Department used a more conservative approach by identifying the value that exceeds all but one of the highest 1-hour daily recording (basically 99.5 rather than a 98% criterion) within each year and then reported the average of 85 $\mu g/m^3$ for comparison with the standard of 189 $\mu g/m^3$.

By adding the estimated project impact of 99 μg NO_2/m^3 to the background value of 85 μg NO_2/m^3, the total is 184 $\mu g/m^3$ and is less than the value of the new standard.

2. <u>EPA Comment 2</u>: "According to the Statement of Basis, the applicant intended to rely on the PM_{10} Surrogate Policy to satisfy the applicable $PM_{2.5}$ requirements. However, the applicant did not address the appropriateness of the PM_{10} BACT determination as a substitute for a BACT analysis of $PM_{2.5}$ emissions. Additionally, the relevance of the modeling analysis presented by the applicant to the demonstration of the appropriateness of the $PM_{2.5}$ Surrogate Policy for $PM_{2.5}$ NAAQS compliance purposes is not clearly stated.

   "The applicant should either demonstrate that EPA's PM_{10} Surrogate Policy is appropriate for this project and explain the current technical difficulties that make $PM_{2.5}$ NAAQS compliance modeling infeasible, or perform a $PM_{2.5}$ NAAQS compliance analysis following accepted procedures that include representative ambient background concentrations. To this end, we have developed guidance for

performing an acceptable $PM_{2.5}$ analysis which we are making available for use by states and PSD permit applicants."

The guidance memo is available at: EPA PM2.5 Memorandum

Department response: The Department discussed $PM_{2.5}$ on Page 27 of the TEPD document as follows:

"Siloxanes and sulfur compounds such as H_2S provide the opportunity for fine PM ($PM_{2.5}$) formation. Desulfurization of the LFG will reduce the possibility of $PM_{2.5}$ formation in the environment. Siloxanes not only contribute to $PM/PM_{10}/PM_{2.5}$, they also limit the ability to use catalyst for NO_X and CO and to use the more efficient recuperative CTG.

Efficient combustion will minimize PM/PM_{10} emissions, while SO_2 and NO_X control will minimize $PM_{2.5}$ emissions."

In the case of $PM_{2.5}$, the Department relies on precursors and surrogates. The rationale is as follows:

On September 16, 1997, EPA revised the NAAQS for particulate matter, which includes a new NAAQS for $PM_{2.5}$. Florida implemented an ambient monitoring program for $PM_{2.5}$. As EPA mentioned in its guidance dated October 23, 1997, there are significant technical difficulties with respect to $PM_{2.5}$ monitoring, emissions estimation and modeling.

The EPA guidance recommended the use of PM_{10} as a surrogate for $PM_{2.5}$ in meeting New Source Review (NSR) requirements under the Clean Air Act, including the permit programs for PSD. Meeting these measures in the interim will serve as a surrogate approach for reducing $PM_{2.5}$ emissions and protecting air quality.

Florida is in the process of revising its State Implementation Plan to address the new $PM_{2.5}$, NAAQS, PSD significant emissions rates and ambient air quality impact thresholds for modeling analyses as required by EPA for approved states by 2011. Until state regulations support PSD preconstruction review for $PM_{2.5}$ emissions, the Department will generally rely on PM_{10} emission limits and $PM_{2.5}$ precursor limits (e.g., sulfuric acid mist (SAM), SO_2, volatile organic compounds (VOC), ammonia (NH_3), and NO_X). This approach is **more robust** than previous EPA guidance memoranda.

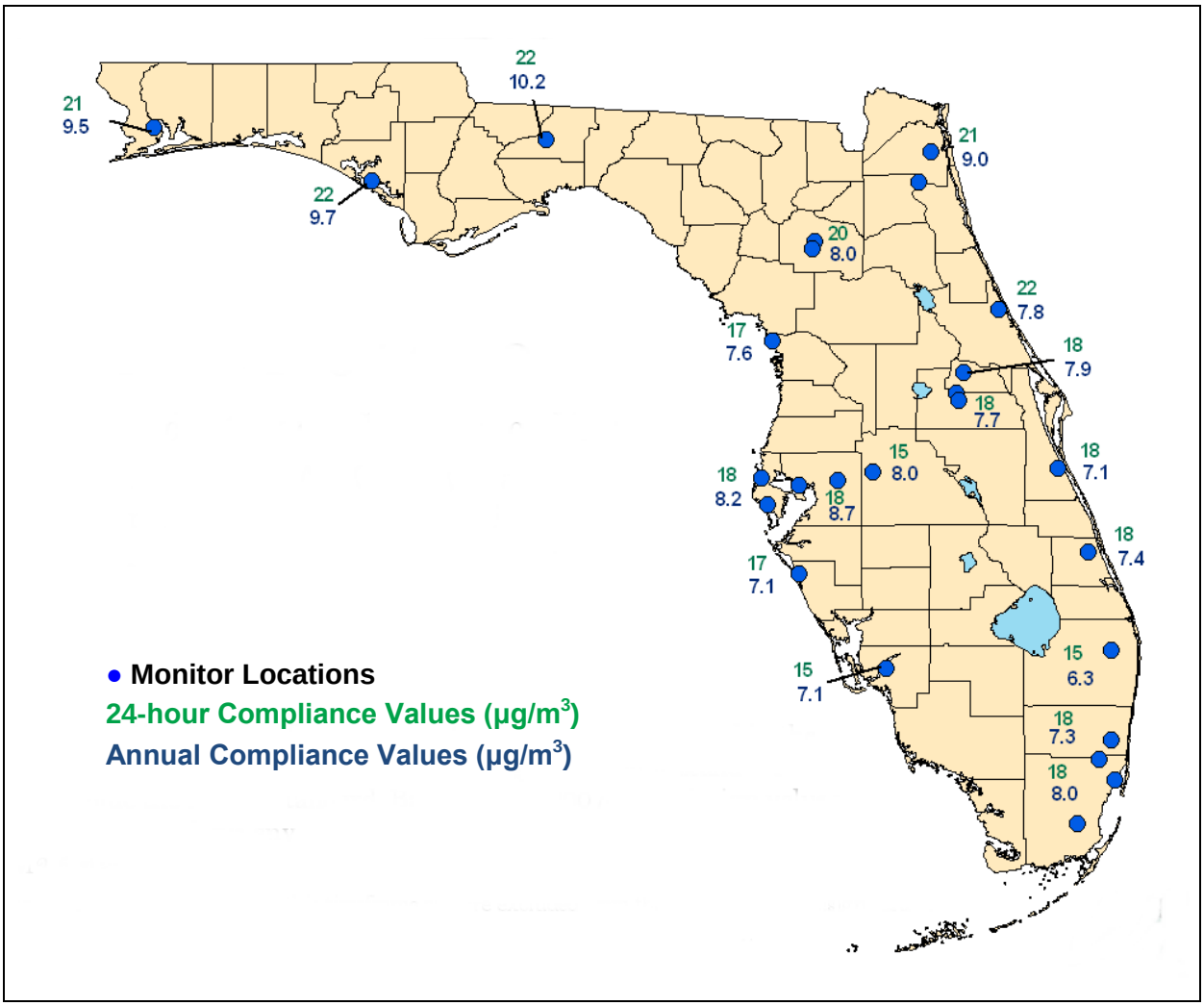
For the OLI project, BACT determinations were conducted for PM/PM_{10}, NO_X, CO, SO_2 and VE.

The Department has made a significant investment in $PM_{2.5}$ ambient monitoring and the network provides excellent coverage throughout the state. The figure below is a display of the 24-hour and annual compliance values for $PM_{2.5}$ throughout Florida for the period 2007-2009.

There are no regulatory $PM_{2.5}$ monitors in Okeechobee County. However, the compliance values at the nearest counties where monitors are located are less than or equal to 18 and 8 $\mu g/m^3$ for the 24-hour and annual standards, respectively.

OLI performed PM_{10} modeling but not $PM_{2.5}$ modeling. The 24-hour and annual PM_{10} projections in the following table were given in Table 21 of the TEPD document for the full development (32,400 scfm) case.

Pollutant	Averaging Time	Max Predicted Project Impact ($\mu g/m^3$)	Significant Impact Level ($\mu g/m^3$)	Baseline Concentrations ($\mu g/m^3$)	AAQS ($\mu g/m^3$)	Significant Impact?
PM_{10}	Annual	1	1	~19	50	YES
	24-Hour	7	5	~79	150	YES



Florida $PM_{2.5}$ Compliance Values

The following table includes estimates of the total $PM_{2.5}$ impacts based on the sum of the project PM_{10} impacts (from a long-term 32,400 scfm project rather than a near-term 13,500 scfm project) and the highest compliance values measured at nearest counties.

$PM_{2.5}$ Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact ($\mu g/m^3$)	Background [2007–2009] ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
$PM_{2.5}$	24-hour	7	18	25	35
	Annual	1	8	9	15

The Department notes that the procedure used is overly conservative since none of the $PM_{2.5}$ monitors strategically placed near other rural areas and also the more industrialized areas of the state actually measure values as great as those predicted above.

OLI **COMMENTS ON THE DRAFT PERMIT**

On March 30, 2010 the Department received formal comments by electronic mail from Golder on behalf of OLI pursuant to the notice published by the Department. The comments can be viewed at:

www.dep.state.fl.us/Air/emission/construction/okeechobee/L033010_505.pdf

The following summarizes the comments and provides the Department's responses.

1. Conditions II.7 and III.A.1 (OLI comments Nos. 1 and 3): OLI states that if OLI does not accept the permit, or accepts the permit but never implements (constructs) the project, it will not be obligated to install the GDP. OLI requests that the deadline to install the GDP be revised from December 31, 2011 to June 30, 2012.

   Department response: OLI is required to implement the GDP project pursuant to the rules cited in the TEPD document and draft permit and was provided the opportunity to petition the permit or request a public hearing. The Department will entertain a revision of the installation deadline through a permit modification application with appropriate documentation of the GDP project schedule and milestones.

2. Section III.A, Emission Unit Description (OLI comment No. 2): According to OLI, the closure date of the Berman Landfill and the opening date of the Clay Farm landfill are no longer correct, are subject to revision at any time and OLI suggests these statements be deleted.

   Department response: The description is not a permit condition and the permit treats the Berman and Clay phases as a single landfill within a single facility. No change is required. However, the Department will entertain a revision of the description through an anticipated permit modification application with appropriate replacement language.

3. Conditions III.A 5 and 10 and III.B.6 (OLI Comments 6, 9 and 13): OLI requests a permit provision allowing at least 2 weeks downtime per year for the GDP during which time untreated LFG may be combusted in the flares. OLI objects to the H_2S limit of 200 parts per million by volume (ppmv) as BACT.

   Department response: No support was provided by OLI for a greater H_2S limit and the Department will not change its case-by-case BACT determination. Supplier brochures indicated that values even less than 200 ppmv can be achieved and suggest such values have been achieved at the Waste Management (WM) Central Disposal Sanitary Landfill (CDSL) in Pompano Beach, Florida. The Department will entertain a revision to address the requested 2-week down time for maintenance through the anticipated permit modification application with appropriate analysis of the SO_2 impacts and comparison with the NAAQS.

4. Condition III.A.8 (OLI Comment 7): According to OLI, the requirement for a H_2S continuous emissions monitoring system (CEMS) is very costly (estimated at $40,000-$60,000), places undue burden on the permittee, and is not justified technically. OLI requests the option of daily GDP H_2S monitoring (in lieu of the H_2S-CEMS) such as practiced at the WM CDSL, for purposes of estimating and tracking H_2S and SO_2 emissions.

   Department response: No details regarding the alternative sampling and testing methods were provided. The Department will entertain alternative daily sampling through the anticipated permit modification application for cases when the H_2S CEMS is not available. OLI will need to provide a proposal with details regarding the alternative methodology and procedures for promptly returning the H_2S CEMS to reliable operation.

5. Condition III.A.9 (OLI Comment 8): OLI agrees with the monthly H_2S record keeping requirements but requests that reports be submitted on a quarterly or semi-annual basis.

Department response: The Department will entertain the requested change through the anticipated permit modification application.

6. Condition III.A.2 (OLI Comments 4 and 5): OLI believes that a 3 year requirement to expand the LFGCS goes far beyond what is required by 40 CFR 60, Subpart WWW and requests that the requirement be changed to 5 years to be consistent with Subpart WWW. OLI states that odor is not a PSD pollutant and should not be subject to BACT or any other stricter rule than what is required under the 40 CFR Subpart WWW requirements.

   Department response: The Department described sufficient rule authority in the TEPD and the permit to require earlier expansion of the LFGCS than otherwise required by 40 CFR 60, Subpart WWW. According to Table 9 of the TEPD, it also appears that volatile organic compounds (VOC) emissions in 1996 were on the order of 374 tons per year (TPY) suggesting that PSD was triggered by that time. Early expansion of the LFGCS controls VOC, non-methane organic compounds (NMOC), H_2S and total reduced sulfur (TRS) that are all PSD pollutants and at the very least insure that PSD is not triggered (or further triggered).

   The Department will not change the condition, but will entertain a request to exclude BACT as part of the rationale for early expansion of the LFGCS through the anticipated permit modification application with better documentation of historical emissions.

7. Condition III.B.1 (OLI Comment 10): OLI requests that the last portion of the first sentence "to backup the combustion turbine generators (CTG) that will combust the LFG to generate electrical power" be removed and to delete the requirement to use continuous pilot flames in the flares. Rather than requiring the use of continuous pilots, OLI prefers to have automatic startup/shutdown sequences which include the starting of the pilot flame.

   Department response: BACT requires enclosed combustion devices which in this case means CTG. If open flares were not backup control devices, then the Department would have required enclosed flares (also enclosed combustion devices).

   The Department will not change the present description of the open flares as backup devices to the CTG. The Department will entertain a request through the anticipated permit modification application to provide for startup/shutdown operation sequences that include starting of the pilot flame.

8. Condition III.B.3 (OLI Comment 11): OLI does not consider it necessary to submit a flare shutdown plan detailing the schedule of how the existing flares will be shutdown as the new flares are constructed. OLI notes that it may wish to replace (rather than constantly repair) some older flares prior to the GDP being operational. Previous conditions which required the GDP to be installed prior to combustion of any LFG in the new flares or CTG will have to be revised as well to reflect this change.

   Department response: The Department will not change the requirement to submit a flare shutdown plan. The Department will entertain a request through the anticipated permit modification application to clarify the manner by which open flares (including flares to replace the existing enclosed flares), which are constructed before the CTG and the GDP, can be used as the primary combustion devices until the CTG and GDP are constructed and begin operation.

9. Condition III.B.5 (OLI Comment 12): Remove the statement "the (open) flares may only be operated when the CTG are unavailable due to maintenance or malfunction or when LFG flow rate is insufficient to support operation of a CTG." According to OLI, if they decide to not construct the CTGs, the collected (and cleaned) LFG would still need to be flared and NO_X and CO emission rates are less when the LFG is combusted in the flares versus the CTG.

Department response: The Department's BACT determination was predicated on the construction of CTG with open flares as backup. If CTG will not be built, then OLI will need to submit another permit application with a complete BACT proposal. The Department would review such an application as though construction had not yet commenced on any of the new flares or replacement flares authorized by the present permit.

10. Condition III.B.10, 11, 13 and 14 (OLI Comments 14, 15, 16 and 17): OLI requests that monitoring of flame temperature be removed because it is not feasible to measure on an open flare. OLI request removal of the requirement to perform a visual inspection of the flares on a daily basis. OLI requests that the monthly inspection and monitoring requirements and the quarterly maintenance requirements be removed from the condition. OLI request deletion of the requirement that "an on-site flare alarm or an auto dialer shall be maintained in working order at all times that …."

    Department response: The OLI statement provides further rationale for requiring enclosed flares. Some method of providing reasonable assurance is necessary to ensure ongoing compliance with the 98% NMOC control requirement or 20 ppmvd NMOC limit. The Department will entertain a request through the anticipated permit modification application of alternatives to the present temperature monitoring requirement.

11. Conditions III.B.15 and 19 (OLI Comments 18 and 21): Insert "stack" before "tests" in the requirements to notify and submit reports to the Compliance Authority.

    Department response: The Department will entertain a request through the anticipated permit modification application to add "stack" before the words "tests" in the two referenced permit conditions. Condition 19 will be correctly renumbered from III.B.19 to III.B.20.

12. Condition III.B.16 (OLI Comment 19): OLI requests removal of the words "methods for minimizing excess emissions" from the requirement regarding Work Practice that "The training shall include good operating practices as well as methods for minimizing excess emissions".

    Department response: The Department will entertain a request through the anticipated permit modification application to modify this permit condition language. The Test Methods Condition III.B.16 will be correctly numbered as Condition III.B.17.

13. Condition III.B.18 (OLI Comment 20): OLI requests that the permit reference the startup, shutdown and maintenance plan required by 40 CFR Chapter 63, Subpart AAAA instead of the permit requirement to maintain "a written log the duration of each flare event and the reason for flaring".

    Department response: The Department will entertain a request through the anticipated permit modification application to make the requested change. The permit condition will be correctly renumbered from III.B.18 to III.B.19.

14. Conditions III.C.3, 9, 12 and 17 and III.D.3, 9, 12 and 17 (OLI Comments 23, 25-27 and 29-32): OLI does not believe NO_X CEMS are required for the CTG that will be installed for this project on the basis of 40 CFR 60, Subpart KKKK.

    Department response: The NO_X-CEMS are required by the BACT determination if not by the requirements of 40 CFR 60, Subpart KKKK. Also, it is advisable to install the NO_X-CEMS given the analysis conducted in response to EPA Comment No. 1 relating to the implementation of the new 1-hour NO_2 NAAQS.

15. Condition III.C.1. and III.D.1 (OLI Comments 22 and 28): Remove the words "an inlet air filtration system; one automated CTG control system; and one CTG stack" from the conditions "The permittee shall install, tune, operate and maintain a simple cycle CTG consisting of: one 15 MW LFG-fueled Solar T-130 CTG; an inlet air filtration system; one automated CTG control system; and one CTG stack". A similar comment was made regarding the 3.5 MW LFG-fueled Solar C-40 CTG.

    Department response: The description is accurate even though OLI believes the terms "LFG-fueled Solar T-130 CTG" and "LFG-fueled Solar C-40 CTG" encompass all of the referenced equipment. No change is necessary.

16. Condition III.C.5 (OLI Comment 24): OLI requests use of the term "design heat input" for the Solar T-130 (as used for the Solar C-40) instead of "maximum heat input".

    Department response: The Department will entertain a request through the anticipated permit modification application to revise the maximum heat input for the Solar T-130 but not to switch to a design heat input condition.

CONCLUSION

The final action of the Department is to issue the permit without any changes except to correct the numeration for certain conditions as described.