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June 5, 2014

VIA EMAIL

Mr. Anthony M. Bucco, Esq.
Murphy McKeon P.C. Counsellors-At-Law
Riverdale South
51 Route 23 South, P.O. Box 70
Riverdale, New Jersey 07457

Re: Review of Stack Test Reports
Fenimore Landfill Site
Hydrogen Sulfide (H₂S) Odors
Mountain Road, Roxbury Township, NJ
MC Project No. 13000078A

Dear Mr. Bucco:

Maser Consulting P.A. (Maser Consulting) has reviewed the stack test reports for the gas treatment system in operation at the Fenimore Landfill. The following are reports received from NJDEP in response to the April 9, 2014 OPRA request (copies attached):

- “Informational Stack Test Report for a Thermal Oxidizer and Temporary Scrubber Stack at the Fenimore Landfill in Roxbury Township, NJ” (testing on October 11 & 13, 2013) prepared by Arcadis U.S., Inc. dated April 16, 2014
- “Informational Stack Test Report for a Thermal Oxidizer and Permanent Scrubber Stack at the Fenimore Landfill in Roxbury Township, NJ” (testing on November 12, 2013) prepared by Arcadis U.S., Inc. dated April 16, 2014
- “Informational Stack Test Report for a Thermal Oxidizer and Permanent Scrubber Stack at the Fenimore Landfill in Roxbury Township, NJ” (testing on December 5, 2013) prepared by Arcadis U.S., Inc. dated April 22, 2014

Background

Maser Consulting has reviewed the October 11 and 13, 2013 stack tests that were performed during the preliminary period of operation of the temporary treatment system and has determined that the information provided would not be reflective of the final landfill gas treatment system conditions. Therefore, Maser Consulting focused on review of the November and December 2013 stack testing data.



The Arcadis U.S. report for the November 12, 2013 testing states that “since the goal of this test program was to establish baseline emissions from the scrubber, there are no known Emission Limits and none are included in this report”. The report further states “since this was not an NJDEP Compliance Stack Test, no protocol was prepared”. Note that the NJDEP did not apply for or issue an air permit for the Fenimore Landfill treatment system. The NJDEP has indicated that an air permit is not required because the work is being done under an emergency order.

The Arcadis U.S. report for the December 5, 2013 testing states that “[t]here are no known Emission Limits for this source so none are included in this report. The NJDEP manages this site so a pre-test meeting was conducted on November 22nd with representatives from the NJDEP Bureau of Technical Services. During that meeting, test methods and sample location logistics were discussed to help prepare a Stack Test Protocol for this test program. The Protocol and follow-up correspondence are included in Appendix E [of the report]. U.S. EPA Test Methods were followed as closely as stack conditions (and safety conditions) would allow; they are summarized in Table 1 [of the report].”

In lieu of this lack of permit-based emissions limits, Maser Consulting compared results of these two stack test reports with an air permit issued by NJDEP to the Warren County District Landfill (WCDL) Landfill Gas System (NJDEP Program Interest ID 85517) dated November 20, 2013 (copy enclosed). The WC Landfill Energy, LLC (WCLE) is a Landfill Gas-to-Energy (LFGTE) project at the WCDL. The WCLE facility is comprised of two reciprocating internal combustion engines, which burn only landfill gas that has been collected and controlled via a network of 54 gas extraction wells and piping owned and operated by the WCDL. The WCDL air permit requires an initial stack test and repeated stack test every five (5) years thereafter. The permit contains requirements for the following:

- Distance from stack to nearest property line
- Stack height above ground
- Equivalent flue diameter at stack exit
- Stack gas discharge temperature
- Volume of gas discharged at stack conditions
- Opacity
- Annual combustion process adjustment
- Stack test protocol for total suspended particulates (TSP); volatile organic compounds (VOCs); sulfur dioxide (SO₂); oxides of nitrogen (NO_x); carbon monoxide (CO); VOC/non-methane organic compounds (NMOC) destruction efficiency or VOC/NMOC concentration in ppmv and opacity
- Landfill total gas flow
- H₂S in fuel
- TSP
- Total VOCs



- Total NO_x
- CO
- Vinyl chloride
- SO₂ (In common)
- PM-10
- VOC control efficiency
- Oxygen (O₂) (In common)

Conclusions

In common between the Fenimore Landfill stack tests and the WCDL permit limits were SO₂ and O₂. Following is a comparison:

1. SO₂: The highest SO₂ stack test value measured (0.0340 pounds per hour) from the Fenimore Landfill treatment system which was less than the WCDL Landfill Gas System permit limit of less than 2.3 pounds per hour. Using the same SO₂ stack test value, and assuming continuous operation of the Fenimore Landfill treatment system, 0.15 tons per year would be emitted versus the WCDL Landfill Gas System permit limit of less than 18.31 tons per year.
2. O₂: The lowest O₂ stack test value from the Fenimore Landfill treatment system was 13.43 percent, versus the WCDL Landfill Gas System permit limit of greater than 6 percent.

Analysis of the November 12, 2013 Fenimore Landfill Stack Test data appears to reveal that the H₂S concentration and H₂S emission rate in the detection limit calculation is higher than reported for the H₂S concentration and emission rate reported at the stack. One would not expect to measure H₂S below the detection limit. This unusual result only occurred in one test and must be further investigated. Maser Consulting has asked the NJDEP for clarification of this issue, and they have agreed to look into this matter and will report back to the Township as soon as possible. In terms of H₂S concentrations, there is a no H₂S value for the WCDL air permit.

Under the heading "Stack Conditions – Permanent Scrubber Outlet" for the Fenimore Landfill, the standard flow rate is reported as 1,020 & 1,070 standard cubic feet per minute (scfm) for the November 2013 tests, and 490 & 500 scfm for the December 2013 tests. This may be the result of operational variables in the treatment system due to daily varying H₂S concentrations in the extracted landfill gas. Maser Consulting has asked the NJDEP for clarification of this issue and they have agreed to look into this matter and report back to the Township as soon as possible.

Recommendations

We recommend that a stack test be performed upon completion and full operation of the nine (9) previously and twenty-one (21) newly installed landfill gas extraction wells to evaluate and measure air emissions and performance under full operational conditions. This is consistent with



the WCDL permit requirement that a stack test be conducted upon initial start-up and once every five (5) years thereafter. Because no emissions limits exist, we recommend that the stack test be conducted in accordance with the procedures and protocols of the WCDL air permit.

We recommend that a continuous emissions analyzer be installed on the permanent scrubber. The analyzer would record influent and effluent concentrations of parameters similar to those required in the WCDL air permit, and can be used to measure destruction removal efficiency and optimize system performance.

I look forward to continuing my assistance to the Township of Roxbury in the pursuit of the protection of the environment and human health with respect to the on-going Fenimore Landfill operation and off-site H₂S odor control.

Thank you for this opportunity and I look forward to working with you.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in black ink, appearing to read 'R. Zelle', is written over a horizontal line.

Robert L. Zelle, P.G., LSRP
Senior Principal
Director of Environmental Services

RLZ/dfb/dw

Cc: Donald F. Bowman, C.H.M.M.

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