

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

P022252789

FACILITY: C&C Energy LLC		SRN / ID: P0222
LOCATION: 19401 15 MILE RD, MARSHALL		DISTRICT: Kalamazoo
CITY: MARSHALL		COUNTY: CALHOUN
CONTACT: Mike Cleeney , Plant Operator		ACTIVITY DATE: 03/11/2020
STAFF: Matthew Deskins	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced Scheduled Inspection		
RESOLVED COMPLAINTS:		

On March 11, 2020 AQD staff (Matt Deskins) went to conduct a scheduled unannounced inspection of the C&C Energy (formerly Gas Recovery Systems) facility located in Marshall, Calhoun County. C&C Energy is a landfill gas to energy facility that leases property from the C&C Expanded Sanitary Landfill and is a separate entity. C&C Energy currently has been permitted for and installed three Waukesha stationary spark ignited internal combustion engines and one Solar turbine. The processes involved at C&C Energy revolves around the disposal of municipal solid waste (household and industrial non-hazardous waste) at C&C Landfill. Over time, the waste will decompose within the landfill, which produces a gas primarily made up of methane and carbon dioxide that C&C Landfill sells to C&C Energy under a contract. The landfill gas also contains a small percentage of non-methane organic compounds, which can consist of various organic hazardous air pollutants (HAPs), greenhouse gases, and volatile organic compounds. The landfill gas is collected by an active collection system (under vacuum) through a network of wells and piping that is owned and operated by C&C Landfill, but is routed to the internal combustion engines and turbine owned and operated by C&C Energy. Once routed to the engines and/or turbine, the landfill gas is combusted and the energy created is transferred to generators. The generators produce electricity that is purchased by the utility company that services the area and is transmitted to their power lines for distribution. If for any reason both the engines and turbine are not in operation, the landfill gas is routed to an open flare owned by C&C Landfill for combustion. The open flare may also be ran at times in conjunction with the engines and turbine to keep a certain amount of vacuum on the well field.

C&C Energy had historically been included as Section 2 of C&C Landfill's Renewable Operating Permit (ROP). However, in 2011/2012, both the landfill and C&C Energy requested that they both be issued separate ROPs which the AQD has allowed at other facilities. The AQD approved the request. However, the AQD still considers them to be one stationary source with landfill for permitting and regulatory purposes because at the present time, C&C Energy is totally dependent on the landfill gas supplied by C&C Landfill to run their engines and turbine. The SRN for C&C Landfill remains N2896 and C&C Energy was assigned the SRN P0222.

The current ROP for C&C Energy is MI-ROP-P0222-2018 and it contains conditions pertaining to the landfill gas treatment system, internal combustion engines, turbine, and an emergency generator.

Currently, the turbine is subject to 40 CFR Part 60 Subpart KKKK (NSPS for Stationary Combustion Turbines) and 40 CFR Part 63 Subpart YYYY (NESHAP for Stationary Combustion Turbines). The emergency generator is subject to 40 CFR Part 63 Subpart ZZZZ (NESHAP for Reciprocating Internal Combustion Engines (See NOTE below for further information on these regulations). The landfill gas treatment system is currently subject to the requirements of 40 CFR Part 60 Subpart WWW (NSPS for MSW Landfills) and 40 CFR Part 63 Subpart AAAA (NESHAP for MSW Landfills). The treatment system will eventually be subject to 40 CFR Part 60 Subpart XXX. NSPS Subpart XXX is a new NSPS that applies to MSW landfills (eventually it's supposed to replace NSPS WWW) and its applicability is based on the date of the most recent construction permit issued to the landfill. C&C Landfill was issued a new construction permit to expand their waste disposal area on April 16, 2018. Compliance timelines with the regulation don't start until the landfill actually commences construction on the approved expansion which they did on March 15 2019. Ultimately, the landfill and energy plant will have to be in compliance with the requirements of the NSPS XXX within 30 months of the March 15, 2019 effective date which would be approximately September 15, 2021. The facility was/is also subject to the Cosent Order Nos. AQD No. 4-2012 and AQD No. 17-2015. Both orders were to be in effect for 5 years. Staff had reminded the facility after the previous inspection in 2018 that they could request termination of CO No. 4-2012. According to file information, they did submit a termination request dated July 17, 2018; however, an AQD approval letter could not be located in our files and MACES indicated it hadn't been terminated either. Staff later followed up with Jason Wolf of the AQD Enforcement Unit regarding it and he pointed

staff to a folder on the T: drive that contained the letter approving the termination request. Staff then printed it off to have put in the facility file. Staff will also let the facility know that CO No. 17-2015 can be terminated after May 21, 2020. The purpose of staff's inspection was to determine C&C Energy's compliance status with their ROP, the Consent Order(s), the federal air regulations previously mentioned, and any other state and/or federal air regulation that may be applicable.

HISTORIC NOTE: When C&C Energy received the permit for their turbine in 2006, it allowed emissions of hydrochloric acid of 8.3 tons. When that is combined with the hydrochloric acid emission limit of 7.9 tons for their internal combustion engines permit that was issued in 1997, it totaled 16.2 tons, thus making them a major source of HAPs which in turn made them subject to 40 CFR Part 63 Subpart YYYYY with regards to the turbine. This issue was discovered in 2011 while reviewing their ROP Renewal Application and drafting the ROP renewal. C&C Energy could not opt-out of any past maximum achievable control technology standards because of the USEPA's "Once In Always In" policy. The AQD sent C&C Energy a violation notice regarding this and proceeded with enforcement proceedings because of the situation. C&C Energy ultimately agreed to enter into a consent order with the AQD (Consent Order No. 4-2012) which had been in effect for 5 years and was terminated on August 13, 2018. The consent order compliance program had stated that C&C Energy will comply with their ROP as well as 40 CFR Part 63 Subpart YYYYY. Lastly, the emergency generator at the facility is subject to the Maximum Achievable Control Technology Standards for Reciprocating Internal Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ, and the internal combustion engines would be if any modification, reconstruction, or construction as defined in the General Provisions of 40 CFR Part 63, Subpart A, occurs at the facility. The internal combustion engines could also be Subject to 40 CFR Part 60 Subpart JJJJ should they be replaced by newer engines (the applicability of this regulation is dependent on the manufacturer date of the engine(s)).

AQD staff arrived at C&C Energy at approximately 2:05 p.m. after having inspected the landfill and having lunch. Staff proceeded into the control room/office area of the plant and noticed Kiel Clenney (Plant Operator) and then Mike Clenney (Plant Operator) in the office and staff greeted them. Staff then signed in and stated the purpose of the visit. Kiel then asked staff for their business card and he proceeded to follow the corporate procedures that they do for when they have visitors to the plant. One of the procedures was to let someone in management know that staff was present. Kiel ended up having to contact Suparna Chakladar (Vice President of Fortistar that owns C&C Energy) because their previous environmental manager (Andrew Zalenski) was no longer with the company. Kiel was told by Suparna that she or Mike Langfelder would e-mail any records that staff needed to see. Staff pointed out to Kiel that in the past it was usually just the emission records that staff needed to have e-mailed to them. After Kiel was finished on the phone with Suparna, staff asked Kiel and Mike if Carlos Wilson was still the Site Manager. Kiel said that he wasn't although he is still with the company. Staff then sat down and asked them some general questions about the facility. The following is a summary of that discussion followed by the various permit conditions and their compliance status with them.

According to Mike and Kiel, the facility still has three Waukesha ICEs and the Solar Turbine. He said that all the engine and turbine production data still gets recorded on the computer and is sent to headquarters where Suparna and/or their Environmental Manger (now Mike Langfelder) keeps track of the records. Staff later had Kiel e-mail Mike that staff needed to see the emission records for the engines and turbine. Staff then asked what equipment was currently operating and Mike said that two of the engines and the turbine were. He said that they were having a lot of issues with the engines. He said that typically they have all three engines running at approximately 70% load and the turbine at full load. When only two engines are running like they had currently, they are typically being operating at 90% load. Also, the open flare owned by the landfill was not running and is typically only used for back purposes or if vacuum on the wellfield gets below a certain level.

Staff then asked if any of the equipment had been rebuilt or replaced since staff's last inspection in 2018. Mike said that Engine #1 had been replaced by a re-built one. He said that Engines #2 and #3 as well as the turbine were still the same. Staff then asked when Engine #1 was swapped out and Kiel looked at their records and they indicated it happened in October of 2019. Staff then mentioned to them that although the engines and/or turbine can be replaced as part of a routine maintenance program under an AQD permit exemption, certain regulations such as the NSPS JJJJ could apply to the engines

depending on if they were manufactured after July 1, 2008. Staff then asked if they knew the serial number and date of manufacture of the engine. According to their records and Kraft Power, who does their engine re-builds, the Serial Number was C-12054/2 with a manufacture date of 6-30-96. The same information for engines #2 and engines #3 was as follows: Engine #2: Serial No. C-10812/7 with a manufacture date of 4-29-93 and Engine #3: Serial No. C-10622/6 with a manufacture date of 8-31-92. According to Mike, Waukesha doesn't manufacture the type of engine that they use at the plant anymore and haven't done so for years, so all the replacement engines are going to be older re-builds. Staff noted that the engines definitely didn't look new and staff had been told previously that Fortistar has not purchased any new engines after 2006, so all engines that are being swapped out are being replaced by rebuilt ones from other locations. Staff then mentioned that they also have to keep in mind that if the capital costs to replace any of the engines and/or turbine were more than 50% of the cost to purchase new ones, it would require a permit to install application. To date, that has not been the case however and information provided to staff after previous inspections has indicated costs well below 50% for either the engines or turbine. An example of this was when the turbine had been replaced in 2017 and the following is what was provided to staff by Suparna after the inspection in 2018:

Turbine: Serial No. OHE17-C7532. Turbine replacement cost \$491,947.72 and the cost for a new turbine skid in 2017 when it was replaced would've been \$2,783,800.00.

Staff then checked some of the current plant readings and the following is what staff noted:

Landfill Gas Quality: Methane – 50.1%, Carbon Dioxide – 34.1%, Oxygen 2.7%, and Balance Gas – 13.1%.

Engine and Turbine landfill gas consumption and electrical output:

Engine #1 – Not in Operation
 Engine #2 – 366 scfm and 910 kilowatts
 Engine #3 – 355 scfm and 875 kilowatts
 Turbine – 1,463 scfm and 2,813 kilowatts

Staff then went over the various Emission Units contained in the ROP and the following is what staff noted:

Conditions of MI-ROP-P0222-2018

EUTREATMENTSYS: Appears to be in COMPLIANCE

The treatment systems appear to be set-up as required to meet the NSPS WWW requirements which means it removes particulate matter, removes moisture, and compresses the landfill gas prior to combustion. It appears that they are operating the treatment systems anytime landfill gas is routed to the internal combustion engines and turbine. It also appears that C&C Energy personnel are keeping up to date records of engine and treatment system maintenance (They have a binder with all the information as well as maintaining it on their computer). They also still have a computer program reminds them of upcoming maintenance as well. They are submitting the SSM Reports and the ROP Certifications as required.

EU-EMERGEN#1: Appears to be in COMPLIANCE

The only conditions contained in the ROP for the emergency generator are from the NESHAP ZZZZ (RICE MACT), which the AQD is not delegated to enforce at Area Sources of HAPs, and the only requirements from the regulation for existing ones are as follows:

(1) If you own or operate an emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed prior to June 12, 2006, you must operate the engine according to the conditions described in paragraphs (f)(2)(i) through (iii) of this section. If you do not operate the engine according to the requirements in paragraphs (f)(2)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

- (i) There is no time limit on the use of emergency stationary RICE in emergency situations.
- (ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance.
- (iii) You may operate your emergency stationary RICE for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

According to Mike, they only run it periodically for maintenance checks and fortunately haven't had to run it for any other reasons in a long time. Mike said that it was manufactured by Kohler and it has a Detroit Diesel engine in it. They keep track of engine hours before and after it has been run and they are recording that information on a computer spreadsheet. Staff looked at the spreadsheet from 2019 and noted it had only run for about an hour the whole year.

EUTURBINE: Appears to be in COMPLIANCE

The turbine is subject to the NSPS 40 CFR Part 60 Subpart KKKK for the Standards of Performance for Stationary Combustion Turbines. The main components of this NSPS deal with NOx and SOx. Under the ROP and the NSPS, the facility is required to test VOC, CO, NOx, HCL, and SOx emissions from the turbine. NOx (since they don't have a CEMs) and SOx are tested annually to show compliance with the emission limits. As has been mentioned in previous inspection reports, the facility had originally failed the first several tests up until the EPA realized they erred when they didn't take into account the higher sulfur content of and lower btu ratings of some biofuels. The EPA amended the NSPS to allow turbines fired on biofuels to have SOx emission up to 0.15 lbs/mmBtu. The amendment took effect on May 19, 2009 and C&C Energy has since been in compliance with the limit. Also, the turbine is subject to 40 CFR Part 63 Subpart YYYY which had been explained earlier. On the same day as the on-site inspection, staff received by e-mail the emission records from Eric Kataja (Senior Environmental Analyst for Fortistar). The following are the emission limits for the turbine and what staff noted:

Total VOCs: 2.5 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 0.13 tons for the 12-month rolling time period ending December 2019.

CO Limit: 89 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 9.66 tons for the 12-month rolling time period ending December 2019.

NOx Limit: 26 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 21.26 tons for the 12-month rolling time period ending December 2019.

NOx Limit: 96 ppm @ 15% O2 or 5.5 lbs per megawatt hour based on annual stack testing (in this case). Appears to be in COMPLIANCE. Prior stack testing had indicated compliance with the limit.

HCL Limit: 8.3 tons per year based on the initial stack test. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 0.30 tons for the 12-month rolling time period ending December 2019. The initial stack test data from 2007 indicates average emissions at of 0.04 lbs per hour.

SOx Limit: NSPS KKKK amended limit of 0.15 lbs per mmBtu based on annual stack testing (in this case). Appears to be in COMPLIANCE. In 2019, the sulfur testing on the turbine used an ASTM Method to demonstrate compliance with the limit. The results indicated potential sulfur emissions at 0.10 lb/MMBtu. Normally in the past, they would do stack testing for NOx and SO2 emissions concurrently. However, the last stack test indicated NOx emissions were 75% or lower than the permitted limit, so they

could go to every 2 years for NOx testing. So that's why they did the ASTM Method for sulfur for this year at least.

The turbine also has a sulfur fuel analysis condition as required by NSPS KKKK. They have been doing the periodic monitoring (monthly) with a Draeger Tube which is allowed under an ASTM for Gaseous Fuel Monitoring mentioned in NSPS KKKK and referenced in 60.17. Records reviewed by staff showed all sulfur results were below 300 ppm.

The height and diameter of the stack appear to meet the requirements. The turbine was operating during staff's inspection and was consuming approximately 1,463 scfm.

TURBINE COMPLIANCE WITH NESHAP YYYY:

Appears to be in COMPLIANCE. The following lists the requirements of YYYY as they apply to turbines firing landfill gas as fuel. The semi-annual/annual ROP and Start-Up, Shutdown, and Malfunction (SSM) reports that are already submitted appear to contain the required information below except for the amount of landfill gas consumed for the reporting period (although that is reported in their annual MAERs Report). Also, we know the facility only combusts landfill gas at the present time. Lastly, the facility constantly monitors, records, and keeps record of fuel consumption.

(2) A stationary combustion turbine which burns landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified municipal solid waste (MSW) is used to generate 10 percent or more of the gross heat input on an annual basis does not have to meet the requirements of this subpart except for:

(i) The initial notification requirements of §63.6145(d); and

(ii) Additional monitoring and reporting requirements as provided in § 63.6125(c) and 63.6150.

§ 63.6125 What are my monitor installation, operation, and maintenance requirements?

(c) If you are operating a stationary combustion turbine which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified MSW is used to generate 10 percent or more of the gross heat input on an annual basis, you must monitor and record your fuel usage daily with separate fuel meters to measure the volumetric flow rate of each fuel. In addition, you must operate your turbine in a manner which minimizes HAP emissions.

§ 63.6145 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), 63.8(f)(4), and 63.9(b) and (h) that apply to you by the dates specified.

(c) As specified in §63.9(b), if you start up your new or reconstructed stationary combustion turbine on or after March 5, 2004, you must submit an Initial Notification not later than 120 calendar days after you become subject to this subpart.

§ 63.6150 What reports must I submit and when?

(c) If you are operating as a stationary combustion turbine which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified MSW is used to generate 10 percent or more of the gross heat input on an annual basis, you must submit an annual report according to Table 6 of this subpart by the date specified unless the Administrator has approved a different schedule, according to the information described in paragraphs (d)(1) through (5) of this section. You must report the data specified in (c)(1) through (c)(3) of this section.

(1) Fuel flow rate of each fuel and the heating values that were used in your calculations. You must also demonstrate that the percentage of heat input provided by landfill gas, digester gas, or gasified MSW is equivalent to 10 percent or more of the total fuel consumption on an annual basis.

(2) The operating limits provided in your federally enforceable permit, and any deviations from these limits.

(3) Any problems or errors suspected with the meters.

(d) Dates of submittal for the annual report are provided in (d)(1) through (d)(5) of this section.

(1) The first annual report must cover the period beginning on the compliance date specified in §63.6095 and ending on December 31.

(2) The first annual report must be postmarked or delivered no later than January 31.

(3) Each subsequent annual report must cover the annual reporting period from January 1 through December 31.

(4) Each subsequent annual report must be postmarked or delivered no later than January 31.

(5) For each stationary combustion turbine that is subject to permitting regulations pursuant to 40 CFR part 70 or 71, and if the permitting authority has established the date for submitting annual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (d)(1) through (4) of this section.

§ 63.6155 What records must I keep?

(b) If you are operating a stationary combustion turbine which fires landfill gas, digester gas or gasified MSW equivalent to 10 percent or more of the gross heat input on an annual basis, or if you are operating a lean premix gas-fired stationary combustion turbine or a diffusion flame gas-fired stationary combustion turbine as defined by this subpart, and you use any quantity of distillate oil to fire any new or existing stationary combustion turbine which is located at the same major source, you must keep the records of your daily fuel usage monitors.

FGICENGINES: Appears to be in COMPLIANCE

As mentioned earlier, staff was told that Engine #1 was replaced with an identical rebuilt one in October 2019. Staff had been told during this inspection and the previous one in 2018 that Engine #2 was replaced by a rebuilt engine in June 2018. Engine #3 was replaced with a rebuilt engine in April 2018. These replacements which could be done under the AQD Rule 336.1285(a)(vi) permit exemption. However, these three engines would now be subject to Subpart ZZZZ since they were modified, reconstructed, or constructed; but as mentioned previously, there isn't much in the way of requirements except that the combustion of landfill gas/digester gas is greater than or equal to 10% of their gross annual heat input. In this case, the facility only combusts landfill gas in the engines. Their annual MAERS submittal could suffice for this reporting requirement because it includes how much fuel (landfill gas) was combusted. These engines could also be subject to the NSPS JJJJ if they were manufactured before July 1, 2008. As mentioned previously, information that has been provided to staff indicates they all were manufactured well before this date.

The engines stack heights (minimum of 27 feet) and diameters (maximum of 14 inches) appear to be in compliance with the ROP requirements. As mentioned earlier, only two engines were running during staff's inspection and they were operating at about 90% load. The horsepower output for each engine doesn't appear to exceed the 1478 Hp ROP limit. The facility is continuously recording landfill gas consumption for all internal combustion engines, the kilowatt output of each engine, and the hours of operation of each one as required.

The following is what staff noted with regards to emissions for the engines:

NOx Limit: 2.93 # per hour, 1.07 tons per month, and 0.90 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the pounds per hour limit according to their last stack test in September of 2014 at 2.28 lbs per hour. As for the tons per month, staff reviewed records for the 12-month time period ending December 2019 and the highest monthly emissions noted were 0.63 tons for engine #1 in May 2019. Previous testing has also shown them in compliance with the grams per horsepower hour. They will have to test again at least 180 days prior to the expiration date of the current ROP.

CO Limit: 7.33 # per hour, 2.68 tons per month, and 2.30 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the pounds per hour limit according to their last stack test in January of 2015 at 6.25 lbs per hour. As for the tons per month, staff reviewed records for the 12-month time period ending December 2019 and the highest monthly emissions noted were 1.72 tons for engine #1 in May 2019. Previous testing has also shown them in compliance with the grams per horsepower hour. They will have to test again at least 180 days prior to the expiration date of the current ROP.

VOC Limit: 0.81 # per hour, 0.30 tons per month, and 0.25 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the pounds per hour limit according to their last stack test in October of 2015 at 0.32 lbs per hour. As for the tons per month, staff reviewed records for the 12-month time period ending December 2019 and the highest monthly emissions noted were 0.09 tons during several months in 2019 for engine #1. Previous testing has also shown them in compliance with the grams per horsepower hour. They will have to test again at least 180 days prior to the expiration date of the current ROP.

HCL Limit: 0.60 # per hour and 0.22 tons per month per engine. Appears to be in COMPLIANCE. The last performance test in October 2013 for Engines #1 and #3 show the emissions at 0.04 pounds per hour. The last test for engine #2 in September 2014 showed its emissions at 0.03 pounds per hour. As for the tons per month, staff reviewed records for the 12-month time period ending December 2019 and the highest monthly emissions noted were 0.04 tons for Engine #1. They will have to test again at least 180 days prior to the expiration date of the current ROP.

INSPECTION CONCLUSION: C&C Energy appears to be in COMPLIANCE with ROP No. MI-ROP-P0222-2018, Consent Order No. 17-2015, as well as all other pertinent federal regulations cited in this inspection report at the present time.

NOTE: As mentioned earlier, Consent Order No. 17-2015 had an effective date of May 21, 2015 and was to be in effect for 5 years. The facility can request that it be terminated after May 21, 2020 of this year. Also, the new NSPS Subpart XXX that applies to C&C Landfill also applies to them as well and the requirements of the regulation only appear to affect the conditions contained in the emission unit "EUTREATMENTSYS". From looking at the various timelines, it would appear that they would have until September 15, 2021 to come into compliance with the regulation's requirements. Staff made Suparna, Mike Langfelder, and Eric Kataja aware of that by e-mail on March 12, 2020 (See Attached E-Mail).

NAME Matt Deak

DATE 3-12-20

SUPERVISOR R/L 3/16/20