DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B718960022

FACILITY: GOODALE ENTERPRISES WAYLAND FACILITY		SRN / ID: B7189
LOCATION: S TENTH ST, WAYLAND		DISTRICT: Kalamazoo
CITY: WAYLAND		COUNTY: ALLEGAN
CONTACT: Todd Huey , General Manager		ACTIVITY DATE: 08/25/2021
STAFF: Cody Yazzie	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Announced Inspection		
RESOLVED COMPLAINTS:		

On August 25, 2021 Air Quality Division (AQD) staff (Cody Yazzie) arrived at SEC 17, T3N, R11W, Wayland Michigan at 10:00 AM to conduct an announced air quality inspection of Goodale Enterprises, LLC (hereafter Goodale). Staff made initial contact with Todd Huey, Goodale, General Manager, and stated the purpose of the visit. Mr. Huey is the environmental contact and met staff at a near by gas station to escort Staff to the facility as Staff was having trouble finding the location based on the SEC 17, T3N, R11W address.

This facility is a flare for excess gas comes from a crude oil well. The flare is operated 24-hours per day, but typically there is no one onsite while the unit is in operation. Goodale is located in a field off of 131st street just south of Wayland. When traveling north on 10th Street a right should be made on to 131st street. This road will turn into a dirt road that turns north. The flare is located on the portion of dirt road that turns north. There is rusted buildings from what used to be the sweeting facility. Mr. Huey indicated that if staff were to show up unannounced there would likely be no employee on site as the site is mainly operated remotely. Mr. Huey inidcated it would take Goodale around 20 minutes to have an employee on site once Staff arrive as the facility has offices located in Grand Rapids.

The facility was shut down in March of 2020 during due to the price of oil dropping from the COVID-19 pandemic. This price drop in oil caused the facility to shut in the well and not extract any oil during this time. The facility experienced a fire on November 25, 2020 while the wells were still shut in. The fire occurred within the tank vents supply line to EUDIRECTFLARE. It was discussed that no component of the flare would be replaced including the burner. The facility upgraded and replaced the safety components of the system leading from the tank vents up to the flare. Due to the flare its self not appearing to need any modification or replacement and the permitted portion in PTI No. 38-08C being EUDIRECTFLARE it does not appear the facility needed to apply for a PTI modification to make the upgrades described by the facility.

Goodale was last inspected by the AQD on April 14, 2016 and appeared to be in Compliance at that time with PTI No. 38-80C Staff asked, and Mr. Huey stated that the facility does not have any emergency generators, boilers, or cold cleaners.

Mr. Huey gave staff a tour of the facility. Required personal protective equipment are steel toe boots and safety glasses. Staff observations and review of records provided during and following the inspection are summarized below:

EUSWEETENING:

The facility does not operate the sweetening portion of the plant it has been indicated in previous reports that the sweetening operation has not operated since 1993.

EUDIRECTFLARE:

This emission unit is a tall, shielded flare that is utilized for the direct flaring of produced sour gas. PTI 35-80C has emission and material limits that require recordkeeping by the facility to show compliance with these limits. In addition to these recordkeeping requirements the facility also has monitoring and equipment requirements to comply with.

The facility is recording daily sour gas usage through EUDIRECTFLARE. The facility uses the daily throughput usage and the concentration of H2S in parts per million volume (ppmv) to calculate the emissions of H2S. The facility multiples the H2S concentration by the sour gas usage in standard cubic feet(SCF) to get the volume of H2S through the flare in SCF. The facility then multiples by the density (lb/cf) of H2S to calculate the mass of the H2S emissions that went through the flare that day. The facility appears to be assuming that 99% of the H2S emission get converted to SO2 emissions through the combustion of the flare. The 1% that is not assumed to be converted is assumed to be H2S emissions from the flare. The 1% of daily H2S emissions that are calculated to emit through EUDIRECTFLARE are then divided by 24 to calculate the flares H2S lb/hour emissions since it is operated 24-hours a day. The 99% conversion of H2S emission to SO2 emissions appears to be what the facility has historically used as a conversion rate.

The facility uses the 99% of H2S emission that weren't accounted for in previous calculation to calculate SO2 emissions and being converted. The facility also uses the stochiometric mole ratios of H2S and SO2 to make this calculation. The calculation is done as shown below.

Mass H2S (lb H2S/day) * (1 lbmol H2S/32 lb H2S)*(1 lbmol SO2/1 lbmol H2S)*(64 lb SO2/1 lbmol SO2)*(1 day/24 hour)

The facility appears to be calculating emissions for SO2 and H2S correctly.

EUDIRECTFLARE has two SO2 emission limits and a Hydrogen sulfide limit. The Special Condition 1.1a emission limit is a 12-month rolling emission limit. The facility is currently keeping monthly SO2 emission records from EUDIRECTFLARE. It was calculated that from January 2018 through March 2020 the largest 12-month rolling SO2 emission was 7.46 tons per year and it occurred in August of 2018. This is well below the permit limit of 17.5 tons per year.

The second SO2 emission limit is a pounds per hour (pph) limit. The facility is limited to 4.0 pph on a 24-hour average. Based on the records provided the facility has not calculated above a 2.14 pph SO2 emission on a 24-hour average. This occurred in February 2016. This is well below the permit limit. The facility appears to typically average around 1.6 pph of SO2 emissions on a 24-hour average. The facility also has a H2S pph emission limit. The facility records around 0.01 lbs/hr H2S emission. This is well below the 0.11 pph limit in the permit.

The facility does have a material throughput limit that restricts the amount sour gas that can be directed through the flare. The facility is limited to no more than 115,000 Standard cubic feet per day of sour gas. The records provided by the facility showed that the facility would typically average around 45 MCF of sour gas per day. The facility appeared to never exceed the 115,000 SCF limit required by the permit for the records reviewed.

the facility is required to use the Draeger stain tube method to determine the hydrogen sulfide concertation of the sour gas. In addition to the monthly Draeger stain tube method test Goodale is also required to determine the hydrogen sulfide concentration of the sour gas using gas chromatography by a certified laboratory. Staff was provided with the monthly Draeger stain tube method results for every month from January 2018 through March 2020. This is up until the facility shut down. The facility uses these concentrations to convert and calculate H2S emissions. Goodale also provided a certified analysis of the H2S concentration from a gas samples taken 5/6/2019 and 8/30/2021. The facility did not preform a certified analysis for 2020 due to the wells being shut in and the flare not operating.

Special condition 1.3 requires that the facility EUDIRECTFLARE to automatically shut-in within one second if the pilot flame of EUDIRECTFLARE is extinguished. The condition also requires that the operator be notified of the malfunction and the operator shall reestablish the pilot flame within two hours. Mr. Huey explained that the pilot flame must maintain a minimum temperature, or an alarm is sent to 5 different workers starting with himself. The alarm is designed to continuously notify the workers until the malfunction has been addressed.

Special condition 1.4 requires the facility to install, maintain and calibrate a device to continuously monitor and record the volumetric flow rate of the sour gas. The facility recently installed a brand-new metering device. Staff was provided with calibration reports for this device from 8/6/2021. Mr. Huey indicated that the facility plans to calibrate this device yearly.

FGFACILITY:

This flexible group requires the facility to track facility wide emission for SO2 emissions of all permitted, exempt, and grandfathered emission units. The facility has a 89.0 TPY SO2 emission limit that is required to be calculated on a 12-month rolling time period. With the facility only having EUDIRCTFLARE as an emission source for the facility. The SO2 emissions calculated for the EUDIRCTFLARE are the same emissions for FGFACILITY. It was calculated that from January 2018 through March 2020 the largest 12-month rolling SO2 emission was 7.46 tons per year, and it occurred in August of 2018. This is well below the 89.0 TPY SO2 limit.

At the time of the inspection and based on a review of records obtained during or following the inspection, the facility appears to be in compliance with PTI No. 38-08C. Staff stated to Mr. Huey that a report of the inspection would be sent to the facility for their records. Staff concluded the inspection at 10:45 AM.-CJY

NAME Cody Yaugi DATE 9/27/21 SUPERVISOR BAL 9/27/21