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

B287658185

FACILITY: Michigan Sugar Company, Croswell Factory		SRN / ID: B2876
LOCATION: 159 S Howard Ave, CROSWELL		DISTRICT: Bay City
CITY: CROSWELL		COUNTY: SANILAC
CONTACT: Steve Smock , Environmental Manager		ACTIVITY DATE: 12/09/2020
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Facility Inspection		
RESOLVED COMPLAINTS:		

Ben Witkopp of the Michigan Department of Environment Great Lakes and Energy - Air Quality Division (AQD) conducted an inspection of the Michigan Sugar facility located at 159 S. Howard Ave in Croswell Michigan. The facility is covered by renewable operating permit (ROP) MI-ROP-B2876-2019. Steve Smock - Corporate Environmental Engineer was the company representative.

The facility extracts sugar produced by sugar beets. The primary product is granulated sugar. Other products produced at the facility consist of beet pulp (pressed, as well as dried and pelletized) sold as animal feed and spent lime which is sold for use as soil enhancement.

The plant operations are truly seasonal with the production time called campaigns. Campaigns may start in mid to late August but typically ramp up in September and run through February and possibly March. The juice campaign continues after the beet slicing is done and usually lasts for another month or so. Packaging operations are run on an as needed basis and can occur at any point in the year.

Process steam is provided by two boilers. The Riley boiler is natural gas fired and was relocated from the company's Carrolton site. It is also known as boiler 4. The boiler is equipped with a continuous emissions monitoring system (CEMS) for NOx and O2. The Murray boiler is capable of burning fuel oil or natural gas though fuel oil has not been used. It is also known as boiler 3. The Riley boiler underwent stack testing for NOx this day.

Though a variety of records are required by the conditions in the ROP a concerted effort was made to check the records of the pulp dryer operation due to the problems with them in the past. The company has a demand for pressed pulp due to the number of large scale dairy operations in the area. However, pressed pulp begins deteriorating and can not be stored for very long. If the pressed pulp isn't needed it is routed to the pulp dryer and the material can eventually be pelletized. The records for the day were checked in the operators room and pressure drops across the multiclones were found to be 3-4 inches which is well within acceptable range. Past records were kept in the office of the plant chemist. They too were acceptable and typically in the 2-4 inch range. It should be noted that as the result of past problems a couple of changes occurred. Engineering testing revealed the use of flue gas recirculation basically had no effect on emissions. Secondly, the pulp dryer operation received an outside engineering evaluation resulting in automation of controls. This addition smoothed overall operation and particularly so when pressed pulp loads varied during startups and shutdown. The records clearly showed the positive impact of these changes.

The Riley boiler was producing steam at the rate of about 107,000 pounds per hr. The factory slice rate was about 158 tons per hour. The previous campaign (2019-2020) records for the Riley boiler had a high gas usage of 686 MMCF on a 12 month rolling time period. There is no limit directly specified. There are several emission limits on a 12 month rolling time period. The NOx limit is 86.24 tpy while records showed 29.83. The limit for PM is 1.46 tpy. Records revealed 2.96. PM10 is limited to 5.84 tpy and the records had 2.96 tpy emitted. GHGs as CO2e have a limit of 92,428 tpy. Records showed the emission of 41,302 tpy.

The Riley boiler PM records would indicate a violation. However, the emission factor for PM 10 was used in the calculation. Using the factor presented in the permit for PM results in 0.65 tpy which is well below the permit limit. The company was informed of this. However, that raised a series of questions as the factor presented in the permit did not seem to align with AP42 factors. When the

factors presented as footnotes were compared to AP 42 factors even more questions were raised. The AQD permit section was contacted as was the former permit engineer who wrote the pti permit (21-15B). One thing is clearly needed, that being the delineation of the term "PM" when it is used as a limit. This has implications particularly when stack testing is involved in a permit in addition to the obvious record keeping requirements. In this specific case, permits indicated PM meant "filterable" as opposed to "total." Part one of AQD rules does define "particulate matter" as filterable through reference to part ten rules. The factor used in the permit was for "filterable." However, it appears the footnote uses an incorrect factor for PM10 which, if found to be true, would also require a change in the limit. The PM 10 factor listed in the permit is actually the factor for PM total. At this point the various topics are still under consideration and correction may be needed.

CEMS downtime issues for the Riley boiler were present and were addressed through a violation notice issued by the AQD technical programs unit (TPU).

Due to the stack testing on the Riley boiler, the Murray boiler was operating at an extremely low rate at the time. The Murray boiler has a requirement to track fuel use which then correlates to NOx. The natural gas limit is 372 MMCF. Records showed only 92.994 MMCF for the most recent campaign.

The lime kilns have a limit of 0.8% sulfur by weight in the fuel used. The kilns can use either coke or anthracite coal. Anthracite was used in the latest campaign. Records, in the form of a spread sheet provided by the Reading Anthracite Company showed the sulfur content was always slightly less than 0.7% sulfur. The kilns have a usage limit of 5,000 tons of coke and anthracite. The latest campaign did not use coke and anthracite usage was only 2,611 tons.

FGsugar consists of the dryer, cooler and transport. Each has a PM and PM 10 limit. Records for the latest campaign indicated the dryer had 5.87 tons PM and 5.28 tons PM10 while the limits were 29.57 and 26.61 tons respectively. The cooler had 0.57 tons PM and 0.51 tons PM10 versus the limits of 2.76 and 2.48 tons respectively. Lastly, the transport had emissions of 0.68 tons PM and 0.615 tons PM10. The limits are 1.18 tons and 1.06 tons respectively. It should be noted, as of the current campaign, the sugar cooler no longer uses air to cool. Improvements to FGsugar are being made between campaigns. The cooler now uses a liquid to solid plate means to perform cooling which has eliminated air (and emissions) from the cooler. Ventilation pickup points were added outside of the cooler but realistically would they would best fit under the sugar transport category. The items in FGsugar would typically be exempt but had to be included in the 21-15 pti series due to netting when the Riley boiler was being brought to the site.

Lastly, the existing ROP is being contested. At this point, two subjects are under particular scrutiny. The subject of visible emissions requirements is under consideration as well as boiler MACT requirements. As such, requirements in the ROP involving these topics were not part of the inspection focus.

NAME B. Withopp DATE 6-3-21 SUPERVISOR Chris Hare