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

B719259919

FACILITY: VERSO QUINNESEC, LLC		**SRN / ID:** B7192
LOCATION: W-6791 US HIGHWAY 2, QUINNESEC		**DISTRICT:** Marquette
CITY: QUINNESEC		**COUNTY:** DICKINSON
CONTACT: PAULA LAFLEUR , ENVIRONMENTAL ENGINEER (12/2017)		**ACTIVITY DATE:** 09/01/2021
STAFF: Michael Conklin	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Targeted Inspection for FY 21.		
RESOLVED COMPLAINTS:		

Facility: Verso Quinnesec, LLC – Quinnesec Mill (B7192)

Location: W-6791 US Highway 2, Quinnesec, Dickinson County, Michigan 49876

Contact: Paula LaFleur, Environmental Engineer, 906-779-3494

Regulatory Authority

Under the Authority of Section 5526 of Part 55 of NREPA, the Department of Environment, Great Lakes, and Energy may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.

Facility Description

The Verso Corporation Quinnesec Mill (Verso Quinnesec) is a bleached Kraft pulp and paper mill located in Quinnesec, Dickinson County, MI. The mill is approximately 2.6 kilometers south and east of Quinnesec, MI, with the surrounding area being rural and consisting of rolling terrain. Dickinson County is currently designated by the EPA as attainment/unclassified for all criteria pollutants. Verso Quinnesec produces hardwood pulp and graphic papers from hardwood logs through a variety of process operations. Existing operations include a woodyard, Kraft pulping process, chemical recovery process, a biomass (hog fuel) boiler, a natural gas (package) boiler, a pulp dryer, a coated paper machine, and a wastewater treatment plant.

The Quinnesec mill was built in 1981 by Champion International Corporation. Champion International was purchased by International Paper Company (IP) in 1999. Verso Paper subsequently purchased the Mill from IP in 2006. The Mill initially underwent PSD permitting in 1981 and has undergone other PSD modifications since that date. The 1981 PSD permitting project established the minor source baseline date for SO2 and PM10. The Mill's Recovery Furnace was constructed in 1985 by Babcock and Wilcox. A 1989 PSD modification, which was permitted in 1993, to the Recovery Furnace established the minor source baseline date for nitrogen dioxide (NO2). During the past 10 years, the Mill has been issued Permit-to-Install (PTI) permits for minor NSR permitting projects at the Mill.

Process Description

The Kraft pulping process uses chemicals to dissolve the lignin in wood fibers to create wood pulp. The pulp is washed and bleached and then processed on a paper machine or pulp dryer. The chemicals that are used to cook the wood are recovered through other Kraft processes.

Verso Quinnesec obtains wood chips from two sources to create pulp. Wood chips are generated from logs that are chipped on site and the mill also purchases wood chips, which are delivered via trucks to the mill. The wood chips are transferred from an open storage area to a continuous digester system where steam and white cooking liquor (sodium hydroxide – NaOH and sodium sulfide – Na2S) are added to dissolve the wood lignin and produce pulp. This cooking process breaks the bonds that link the lignin (the "glue") and cellulose (the "fibers") in the wood. The digester pulp is washed, and the spent cooking liquor (black liquor) is recovered.

Subsequent process operations remove knots, clean, wash, and screen the pulp. There are two stages of knotters that remove knots from the pulp stream. After the knotters, brownstock washers clean the pulp by removing spent cooking chemicals and wood residue. Further cleaning, screening, and oxygen delignification (O2 delignification system) are performed prior to the pulp being sent to the bleach plant. At the bleach plant the pulp is whitened to various brightness levels. Chlorine dioxide and peroxide are used to whiten the pulp. After the pulp is bleached, it is sent to high density storage tanks where it can be drawn off to either the pulp dryer or paper machine. The white slush pulp is either dried in the pulp dryer and sold as market pulp or converted to paper on the paper machine and sold.

The pulp dryer and paper machine produce marketable pulp and paper products. The paper machine takes pulp from the high-density storage tanks and mixes the manufactured pulp with purchased pulp, supplemental chemicals, and additives. At the front end of the Paper Machine, the pulp is formed on a thin, moving wire mesh. As the wire mesh moves through the paper machine, water is removed from the pulp via vacuum and dryer sections of the paper machine. Paper is formed as the water is removed. After the dryer section, the paper is coated on both sides and smoothed using calenders. The paper is then wound on reels that are cut into smaller rolls and then shipped offsite via truck or railcars.

The pulp dryer is utilized to dewater, press, and dry pulp from the high-density storage tanks. After the pulp dryer, the pulp is cut into sheets and baled for shipment. Other than pH adjustment of the pulp, there are no additives or coating utilized. The chemicals that are used to cook the pulp (white liquor) are recovered in a series of processes involving different emissions units.

The spent cooking liquor from the digester, which is referred to as weak black liquor, is pumped to evaporators where the black liquor is concentrated to heavy black liquor. The heavy black liquor is fired in the recovery furnace where the organic portion of the black liquor is readily combusted, and the inorganic portion accumulates as smelt in the bottom of the recovery furnace. The smelt is drained off to the smelt dissolving tank and mixed with weak wash to form green liquor. The green liquor is pumped to the causticizing area where it is first clarified. After the clarifier, the green liquor is pumped to the slaker where lime (CaO) is added to produce calcium hydroxide (CaOH, or slaked lime) slurry. The slaked lime slurry passes through a series of causticizers where the green liquor is converted to white liquor, and lime mud (calcium carbonate – CaCO3) is generated as a by-product. The lime mud is washed and screened and then eventually sent to the lime kiln. The lime kiln converts the lime mud back to lime. The reclaimed lime is used in the slaking process and the white liquor is sent to the digester to cook wood chips.

In addition to the pulp and paper processing equipment at Verso Quinnesec, the mill creates its own power and steam through the recovery furnace and two boilers. The recovery furnace produces a significant amount of steam that is used throughout the mill. Verso Quinnesec also operates a waste fuel boiler and a package boiler that also supply steam. The waste fuel boiler fires wood waste (i.e., hogged fuel), coal, and natural gas. The package boiler fires natural gas.

The wastewater treatment plant removes organic material and solids from the process wastewater generated by the mill. The treatment system includes a primary settling basin, a cooling tower, aeration basins, and secondary settling basins. Sludge from the wastewater treatment plant is reused as a soil amendment for farm fields and land reclamation or landfilled.

The mill collects concentrated vent gases (CVG) and dilute vent gases (DVG) from several emissions units to control organic hazardous air pollutants (HAPs). The CVGs are equivalent to low volume high concentration (LVHC) gases and the DVGs are equivalent to high volume low concentration (HVLC) gases. A closed vent system is used to collect CVGs from the chip bin and other components of the digester system as well as from the evaporator, hotwell system, and the condensate stripper. A closed vent system is also used to collect the DVGs from the brownstock washer and the O2 delignification system as well as several process storage tanks.

Emissions Reporting

Verso Quinnesec is required to report its annual emissions through the Michigan Air Emissions Reporting System (MAERS). The following table lists stationary source emission information as reported to MAERS for the year 2020.

Pollutant	Amount (lbs)

CO	1421695.72
NOx	2201202.84
PM10, Filterable	268786.91
PM10, Primary	8615.71
PM2.5, Filterable	156237.48
PM2.5, Primary	6182.10
SO2	433043.60
VOC	137051.05

Compliance History

There have been no violations at the facility since the last inspection that occurred in 2018.

Regulatory Analysis

Verso Quinnesec is a major stationary source as defined by the federal operating permit program (40 CFR Part 70) and the federal new source review (NSR) program (40 CFR Part 52). In addition, Verso Quinnesec is also subject to the Michigan Title V Renewable Operating Permit (ROP) regulations, Permit-to-Install/New Source Review (PTI/NSR) regulations, and Prevention of Significant Deterioration (PSD) Michigan Air Pollution Control Rules. The Verso Quinnesec Mill currently operates under Renewable Operating Permit (ROP) No. MI-ROP-B7192-2020. Verso Quinnesec is also subject to NSPS and MACT federal regulations.

Inspection

An on-site inspection was performed on 09/01/2021 as part of the second full compliance evaluation for MI-ROP-B7192-2020. The following emission units and flexible groups were evaluated as part of this inspection: EU0101-1 Chip Screening Operations, EU0102-1 Chip Production Operations, EU0106-1 Air Density Separator, EU0610-1 ClO2 Generating plant, EU1121 -1 Waste Fuel Boiler, EU1122-1 Package Boiler, EU1128-1 Purchased Fuel Hogging operations, EUCOOLTWR-1 Cooling Tower, EU1227-1 Q41 Paper Machine, EU1228-1 Finished Paper Trimming,

FGSOLIDFUEL-1, FGQ41STARCH-1, FGCIRICEMACT-1, FGSIRICEMACT-1, FGNSPSSSIICE-1, and FGWFBMOD-1.

EU0101-1 Chip Screening Operations

This emission unit includes the chip screening operations. Chips are screened to remove fines and overs (chips too large for pulping). Overs are conveyed to the chipper for re-processing. Emissions are controlled by baghouse #221.

Emission/Material Limits

The chip screening operations have PM emission limits and a visible emissions (VE) limit of 0%. Compliance with these limits is demonstrated through performing weekly non-certified visual opacity observations and continuously monitoring the pressure drop of the baghouse. The pressure drop indicator range is 0.1 to 4.0 inches water column.

Process/Operational Restrictions

During the inspection, the baghouse for chip screening was operating and no visible emissions from the stack were observed. The baghouse differential pressure gauge was reading 2.4 in WC. Proper indicator of performance for the baghouse is 0.1 to 4.0 in WC.

Design/Equipment Parameters

A gauge for the baghouse differential pressure was observed in place and appeared to be operating correctly.

Monitoring/Recordkeeping

Verso is required to track monthly throughput of the wood yard. A spreadsheet was provided that notes the dry tons chipped, wet tons chipped, 12-month rolling dry chipped tons, the tons to the digester, purchased hog fuel monthly, and 12-month rolling purchased hog fuel. For example, records provided show 148,247 wet tons were chipped.

Records were also provided that show the differential pressure being recorded once per shift. The records show the baghouse differential pressure recorded was within the indicator range of proper operation.

Reporting

A review of the first semiannual compliance and CAM report for 2021 notes there were no deviations reported from the chip screening operations.

EU0102-1 Chip Production Operations

This emission unit is part of the chip production operations. Roundwood is chipped in a rotary disc system and conveyed to screening operations or chip pile. Emissions are controlled by baghouse #212.

Emission/Material Limits

The chip production operations have PM emission limits and visible emissions (VE) limit of 5% opacity. Compliance with these limits is demonstrated through performing weekly non-certified visual opacity observations and continuously monitoring the pressure drop of the baghouse. The indicator range is 0.5 to 4.0 inches water column.

Process/Operational Restrictions

During the inspection, the baghouse for chip production was operating and no visible emissions from the stack were observed. The baghouse differential pressure gauge was reading 2.8 in WC. Proper indicator of performance for the baghouse is 0.5 to 4.0 in WC.

Design/Equipment Parameters

A gauge for the baghouse differential pressure was observed in place and appeared to be operating correctly.

Monitoring/Recordkeeping

Verso is required to track monthly throughput of the wood yard. A spreadsheet was provided that notes the dry tons chipped, wet tons chipped, 12-month rolling dry chipped tons, the tons to the digester, purchased hog fuel monthly, and 12-month rolling purchased hog fuel. For example, records provided show 148,247 wet tons were chipped.

Records were also provided that show the differential pressure being recorded once per shift. The records show the baghouse differential pressure recorded was within the indicator range of proper operation.

Reporting

A review of the first semiannual compliance and CAM report for 2021 notes there was one deviation reported for the chipper. There was a total of nine days where the baghouse differential pressure was outside of the CAM limit of 0.5 – 4.0 inches WC (actual readings ranged from 4.9 – 6.7 inches WC). Corrective actions included increasing the bag purge cycles and the bags were changed out during the May 2021 outage. There were no visible emissions observed from the baghouse during operator rounds on these days of exceedance.

EU0106-1 Air Density Separator

The air density separator process separates wood chips used in the process from reject materials and conveys the chips to the storage pile or screening system. Emissions are controlled by a cyclone.

Emission/Material Limits

The Air Density Separator has PM emission limits and a visible emission (VE) limit of 0% opacity. Compliance with these limits is demonstrated through performing weekly non-certified visual opacity observations.

Monitoring/Recordkeeping

Records were provided that note visible emission checks from the cyclone. From the records reviewed, no visible emissions were noted.

Reporting

A review of the first semiannual compliance report for 2021 notes there were no deviations reported from the Air Density Separator.

EU0610-1 ClO2 Generating Plant

This emission unit composes of operations and equipment used to make chlorine dioxide (ClO2). Three

chlorine dioxide storage tanks, with chilled water scrubbers, chlorine dioxide adsorption tower, salt cake slurry tank, generator dump tank, barometric condenser, salt cake filter, seal tank, sample chamber sewer, hereinafter "chlorine dioxide generator". Emissions are controlled by scrubbers.

Emission/Material Limits

The ClO2 Generating Plant contains emission limits of chlorine and chlorine dioxide. Compliance with these emission limits is demonstrated through monitoring and recording of scrubber liquid flow rate.

Process/Operational Restrictions

The white liquor scrubber and chilled water scrubbers were operational during the inspection and appeared to be operating properly. No leaks in the inlet pipes were detected. Verso can continuously monitor the white liquor scrubber operational parameters. At the time of the inspection, the scrubber pH was 12.850 and the flow was 80 gpm.

Monitoring/Recordkeeping

The facility is required to monitor and record the flow of the scrubber liquid to the white liquor scrubber on a continuous basis. Example records of continuous monitoring and recording were provided for the dates 8/5 of 2020 and 2021. The scrubber flow rate is recorded every hour for each day. The average flow rate for 08/05/2020 was 76.5 gpm and for 08/05/2021, the average flow rate was 61.8 gpm.

Reporting

A review of the first semiannual compliance report for 2021 notes there were no deviations reported from the ClO2 Generating Plant.

EU1121-1 Waste Fuel Boiler

The Babcock & Wilcox waste fuel boiler has a nominal rated heat input capacity of 660 MMBtu/hr and was installed in 1981. It is a combination fuel boiler capable of burning wood refuse, coal and natural gas to produce steam which will be used to supply the steam turbines at the mill. The Waste Fuel Boiler is also an incineration device for DVGs and/or CVGs. Particulate emissions are controlled by a multicyclone collector and electrostatic precipitator (ESP), while gaseous pollutants are controlled by over-fired air (OFA).

Boiler MACT: Existing source; designed to burn solid fuel; stokers/sloped grate/others designed to burn wet biomass fuel.

Emission/Material Limits

The Waste Fuel Boiler contains emission limits for CO, PM, NOx, SO2, TGNMO measured as total methane, Mercury, HCl, and VE. Compliance with these emission limits is demonstrated through performance testing, continuous emission monitoring (CEMS), continuous opacity monitoring system (COMS), recordkeeping, and reporting.

The waste fuel boiler contains material limits of maximum sulfur content of the coal shall not exceed one percent sulfur by weight, calculated on 12,000 BTUs per pound and based on a 10-day rolling average. Also, the waste fuel boiler is only allowed to burn fuels as allowed in the unit designated to burn biomass/bio-based solid subcategory definition in 40 CFR 63.7575.

Process/Operational Restrictions

At the time of the inspection, the waste fuel boiler was in operation. The boiler operating parameters are continuously monitored from the boiler control room at the facility. At 8:32 AM CST, the operating system was showing a steam flow rate of 297.3 KPPH and the O2 trim at 5.73%. The boiler was firing only waste wood material at the time of the inspection. The bark feed rate was at 63%. DVGs were being fired in the waste fuel boiler. The DVGs booster fan was reading 65% load and the flow rate was 8.9 KSCFM. Natural gas and coal were not being fired in the boiler. The most recent MACT DDDDD performance test, on 05/05/2020, established the maximum 30-day rolling average steam flow rate of 420 KPPH and the minimum hourly O2 trim setpoint of 4%.

The waste fuel boiler is required to have a 5-year performance tune-up according to 40 CFR 63.7540(a)(12), since it's an existing boiler with an oxygen trim system. The 5-year tune-up must be conducted no more than 61 months after the previous tune-up. The purpose of the tune-ups are to optimize the flame pattern, optimize total CO emissions, and inspect the system controlling the air-to-fuel ratio to ensure calibration and proper function. The Most recent inspection was performed on 10/5/2020 – 10/8/2020, with optimization on 4/22/2020. The prior inspection was performed on 10/6/2015 – 10/7/2015. The CO emissions measured before optimization on 4/22/2020 were 297.5 lb/hr and after were 210.5 lb/hr. The boiler steam rates during before and after tune-up were 378.8 KPPH and 381.9 KPPH. The fuel being fired was 90% wood and 10% coal at the time of CO measurements. The tune-up verified the boiler is capable of meeting emissions at 4.0% trim O2 set-point.

Design/Equipment Parameters

The waste fuel boiler contains a device to monitor the coal flow. There are five coal slingers that are measured in percent load.

Testing/Sampling

Records were provided of the most recent coal analysis that was performed on 3/10/2020 by ALS Environmental. Two samples were taken on 2/17/2020 and analyzed on 03/10/2020 for heating value, moisture, ash, total sulfur, chlorine, and mercury. From the analysis, the total sulfur weight percent for sample 1 was 0.70% and 0.83% for sample 2.

The AQD has not requested verification of CO, PM, and TGNMO emission rates to compare against the state promulgated emission limits for these pollutants.

Records were provided that show Verso analyzes and records the monthly heating value, in Btu per pound, of the wet wood refuse on a calendar month basis.

Verso has chosen to demonstrate compliance with each applicable heat input-based emission limit in Table 2 of MACT DDDDD through performance testing. If the performance tests for a given pollutant for at least 2 consecutive years show the emissions are at or below 75 percent of the emission limit for the pollutant, and if there are no changes in the operation of the Waste Fuel Boiler or air pollution control equipment that could increase emissions, Verso may choose to conduct performance tests every third year. Each such performance test must be conducted no more than 37 months after the previous performance test. Initial performance testing for the MACT DDDDD heat input-based emission limits was conducted in 2016 with subsequent testing in 2017. Following the 2017 test, and the emission factors from testing being less than 75% of the limits, the next test was performed in 2020. The 2020 test results are summarized in the table below.

Parameter	Emission Rate	Emission Limit	% of Emission Limit
FPM lb/MMBtu	5.80E-03	3.70E-02	16%
HCl lb/MMBtu	5.10E-03	2.20E-02	23%
Hg lb/MMBtu	9.70E-7	5.70E-06	17%
CO ppmv @ 3% O2	314	1500	21%

The operating parameters established through the most recent performance test (2020) are a maximum 30-day rolling average steam flow rate of 420 KPPH and minimum hourly O2 trim setpoint of 4%.

Monitoring/Recordkeeping

Compliance with the NOx and SO2 emission rates is verified using a CEMS located downstream of the ESP. The following table outlines the data from the CEMS observed during the inspection. No coal or CVGs were being fired in the boiler at the time of the inspection.

Pollutant	Last Logged Ave
NOx lb/MMBtu 1-hr	0.17
NOx lb/MMBtu 3-hour	0.17
SO2 lb/MMBtu 1-hour	0.1
SO2 lb/MMBtu Coal in 3-hour	0.0
NOx lb/hr 1-hour	78.5
SO2 lb/hr No CVGs 1-hour	33.1
SO2 lb/hr with CVGs 1-hr	0.0

The three continuous performance monitoring system (CPMS) parameters monitored include operating load (steam flow), O2 content (O2 trim set), and opacity (COMS). The waste fuel boiler contains a continuous opacity monitoring system (COMS) to measure opacity. Continuous compliance is demonstrated by maintaining the daily block average opacity at or below 10%. During the inspection, the COMS data showed the 24-hour average opacity from the waste fuel boiler to be 3.8%.

Verso monitors and records the amount of wet wood refuse used in the waste fuel boiler on a monthly basis. A spreadsheet was provided for the period 2019 through 2021 that notes the amount of purchased hog fuel, self-generated hog fuel, and total hog fuel used in the waste fuel boiler. For example, 33,667.9 tons of hog fuel was used in the boiler during June 2021.

The coal feeder conveyor system rate is continuously monitored and recorded in the mill's PI Process Book system. A screenshot of the coal feeder conveyor system rate monitoring system was provided for the period 01/01/2020 through 09/3/2021.

Verso has a site-specific monitoring plan (Rev. November 2015) that outlines the installation, performance, operation and maintenance, quality control, and recordkeeping and reporting procedures related to the waste fuel boiler CMS.

The facility is required to keep records of all monitoring data and calculated averages for applicable operating limits, such as opacity and operating load, to show compliance with each emission limit that applies. Records were provided of the daily average opacity from the waste fuel boiler for the period 01/01/2020 through 08/31/2021. The records show the daily average opacity staying below 10%. Records were also provided of the 30-day rolling average steam flow in KPPH for the period 01/01/2020 through 08/31/2021. The records show the 30-day rolling average steam flow to stay below 420 KPPH. Records were provided that note the average monthly O2 trim %. The records show the monthly average O2 trim % is above 4%.

Verso keeps track of the types of fuel and amounts used in the waste fuel boiler on a monthly basis. A spreadsheet was provided for the period 01/01/2019 through 07/31/2021 that shows the days of operation for each month, fuel usage, fuel heat input, chlorine and mercury fuel input, steam produced, O2 trim percent, and average monthly pph NOx from the CEMS. As an example, for March 2021, the waste fuel boiler operated a total of 31 days, burned 0 tons of coal, 41,326 tons of wood, and 2704 MCF of natural gas. The total heat input from use of these fuels was 348,632 MMBtu. The chlorine and mercury inputs are calculated using equations 7 and 8 from 40 CFR 63.7530 and from testing conducted on the fuels for chlorine and mercury contents. For March 2021, the total chlorine input was 1.82E-02 lb/MMBtu and the total mercury input was 1.00E-06 lb/MMBtu. Steam production for March 2021 was 245,689 Klb, average O2 trim was 6.55%, and average NOx from CEMS was 133.4 pph. No non-hazardous secondary materials are combusted in EU1121, only hogged fuel (bark/wood), natural gas, and cola are used as fuel.

Reporting

A review of the first semiannual compliance and deviation report for 2021 shows no deviations reported for EU1121. No CAM exceedances were reported for opacity. There were 12 monitor downtime incidents reported for EU1121. All incidents were less than 45 minutes and returned to service.

In addition to ROP compliance/deviation and CAM reports, Verso submits MACT DDDDD semiannual compliance reports for the waste fuel boiler. The MACT DDDDD compliance report provides the total fuel use, performance test summary, recordkeeping for startup/shutdown

fuels, along with a deviation and malfunction report. For the period 01/01/2021 through 06/30/2021, the boiler burned 205,510 tons of wood, 178 tons of coal, and 54,730 KSCF of natural gas. Testing for the CO, PM, HCl, Hg heat input limits last occurred on 05/05/2020 and all emission rates were less than 75% of the emission limits. No deviations, monitoring deviations, or malfunctions occurred during this reporting period.

EU1122-1 Package Boiler

The package boiler was installed in 1989 and has a nominal rated heat input capacity of 419 MMBtu/hr. The package boiler is designed to combust natural gas and is equipped with an oxygen trim system to maintain excess air at the desired level in the boiler. The package boiler operates at minimum load conditions except during outages of other boilers. The boiler is an existing source with respect to MACT DDDDD and it meets the criteria of the unit designed to burn gas I subcategory. As such, the package boiler is not subject to emission limits or operating limits under MACT DDDDD.

Emission/Material Limits

The package boiler contains emission limits for CO, NOx, and VOC. Compliance with these emission limits is demonstrated through CEMS, COMS, and emission rate calculations. Only pipeline quality natural gas is fired in the package boiler.

Process/Operational Restrictions

At the time of the inspection, the package boiler was not in operation.

The package boiler is required to have a 5-year performance tune-up according to 40 CFR 63.7540 (a)(12), since it's an existing boiler with an oxygen trim system. The 5-year tune-up must be conducted no more than 61 months after the previous tune-up. The purpose of the tune-ups are to optimize the flame pattern, optimize total CO emissions, and inspect the system controlling the air-to-fuel ratio to ensure calibration and proper function. The O2 trim setpoint is established during the tune-up for the package boiler, whereas for the waste fuel boiler, its established through performance testing. The most recent inspection was performed on 4/5/2020 – 4/14/2020, with optimization on 4/24/2020. The prior inspection was performed on 8/17/2015 – 8/18/2015. The CO emissions measured before optimization 0 lb/hr and after were 0 lb/hr. There were essentially zero CO emissions from the package boiler during the before and after tuning measurements. This is typical for the package boiler as it usually operates under low load and steam flow according to Ms. LaFleur. The boiler steam rates during before and after tune-up were 49.97 KPPH and 49.07 KPPH. The fuel being fired was 100% natural gas at the time of CO measurements. The tune-up verified the boiler is capable of meeting emissions at 8.06% O2 trim.

Monitoring/Recordkeeping

NOx and CO emission rates are continuously monitored using a CEMS. The data from the CEMS was not able to be gathered during the inspection since the package boiler was not operating.

Records were provided of monthly VOC emission rate calculations for the period 01/01/2019 through 08/31/2021. The VOC emissions are based on the amount of natural gas burned and using an emission factor of 5.5 lb/MMCF VOC from AP-42. As of 09/01/2021, the 12-month rolling VOC emissions is 0.643 tons from the package boiler.

Reporting

A review of the first semiannual compliance report for 2021 notes there were no deviations reported from the Package Boiler.

EU1128-1 Purchased Fuel Hogging Operations

Delivery systems for purchased hog fuel (wood refuse), which is screened and transferred to the hog fuel storage pile, then to the waste fuel boiler (EU1121-1). The new delivery system will have three (3) open air drop points that include the truck dumper, screen operation bypass, and transfer building bypass. PM emissions are controlled by baghouse #162.

Emission/Material Limits

The purchased fuel hogging operations contains emission limits of PM, PM10, PM2.5, and VE. Compliance with these emission limits is demonstrated through weekly non-certified visible emission checks and monitoring pressure drop across the baghouse. This emission unit also contains a material throughput limit of 512,000 tpy of purchased wet wood refuse. Compliance with this material limit is demonstrated through monthly and 12-month rolling recordkeeping of the wet wood refuse processed.

Process/Operational Restrictions

At the time of the inspection, the baghouse for the purchased fuel hogging operations was in operation. No visible emissions were observed and the differential pressure was reading 0.5 in WC.

Design/Equipment Parameters

The baghouse has a Magnehelic gauge installed to monitor the differential pressure.

Monitoring/Recordkeeping

Verso is required to record weekly non-certified visual opacity observations as an indicator of proper operation for the baghouse. The facility is also required to monitor and record the pressure drop across the baghouse. Records were provided for 2020 and 2021 that notes the pressure drop recorded for each day of operation and if visible emissions were observed. The records reviewed show the baghouse differential pressure stays within 0 – 10 in WC and no visible emissions detected.

Verso also maintains monthly and 12-month rolling records of the amount of purchased hog fuel. For example, during July 2021, the facility purchased 17,358.4 tons and the 12-month rolling as of 08/01/2021 was 163,120.9 tons.

Reporting

A review of the first semiannual compliance and CAM reports for 2021 notes there were no deviations reported from EU1128-1.

EUCOOLTWR-1 Cooling Tower

Mechanical induced draft cooling tower equipped with high efficiency drift eliminators.

Monitoring/Recordkeeping

PM emission calculations were provided for 2020 and 2021. The total PM emissions from the cooling tower for 2020 were 0.065 tons and for 2021, 0.043 tons.

EU1227-1 Q41 Paper Machine

This emission unit includes the Q41 Paper Machine where pulp is combined with supplemental chemicals and additives to make various grades of paper.

Emission/Material Limits

The paper machine contains a VOC emission limit. Compliance with this emission limit is demonstrated through the monitoring and recording of the daily paper machine production rate and coating application rate.

Monitoring/Recordkeeping

The facility tracks paper production from the paper machine in tons per day. For 2020, the average paper production per day was 1,113 tons. For 2021, the average paper production per day was 1,318 tons. Verso also tracks the daily coating application rate for the paper machine. An example record was provided for June 5, 2021, the shows a total of 226,808 gallons from coater #1 and 238,954 gallons from coater #2.

EU1228-1 Finished Paper Trimming

Paper rolls on the calendars and rereelers are trimmed to meet customer specifications. PM emissions are controlled by two cyclones and two baghouses.

Emission/Material Limits

EU1228-1 contains PM-10 and VE limits. Compliance with these limits is demonstrated through performing and recording weekly non-certified opacity observations.

Monitoring/Recordkeeping

Verso is required to record weekly non-certified visible opacity observations as an indicator of proper operations for the baghouses. The facility performs weekly checks at a minimum and sometimes daily. During the inspection, the baghouses were checked for visible emissions. No visible emissions were observed. The cyclones and baghouses appeared to be operating properly.

FGSOLIDFUEL-1 Solid Fuel Processing and Transfer

This flexible group addresses coal and hogged fuel processing and transfer. The emission units include EU1125-1 Coal Crusher/Unloading and Handling, EU1127-1 Fuel Hogging Operations, and EU1137-1 Hogged Fuel/Coal Transfer.

Emission/Material Limits

Each emission unit in the flexible group is subject to PM and VE emission limits. Compliance with these emission limits is demonstrated through non-certified visible emission checks and the monitoring and recording of the differential pressure of the baghouses.

Process/Operational Restrictions

It was observed during the inspection that EU1125-1, EU1127-1, and EU1137-1 were all equipped with a baghouse. Only EU1127-1 was in operation at the time of the inspection. No visible emissions were observed.

Design/Equipment Parameters

Each baghouse is equipped with a device to monitor the differential pressure.

Monitoring/Recordkeeping

Verso is required to record weekly, non-certified opacity observations and record once per day the differential pressure across each baghouse when in operation. Records were provided for 2020 and 2021 that notes the differential pressure recordings and if visible emissions were detected. From the records reviewed the baghouses appear to be operating within their normal indicator range and no visible emissions have been detected.

Reporting

A review of the first semiannual compliance and CAM reports for 2021 notes there was one deviation reported for EU1137 in FGSOLIDFUEL. During the period of 2/1/17 through 2/17/21, the differential pressure for the coal-hogged fuel transfer baghouse was outside of the 0.1 to 4.0 in WC indicator range. A specific cause was not determined but it is believed cold temperatures were the primary cause of the high dp readings. The dp values eventually came back in line. There were no visible emissions observed from the baghouse during operator rounds on these days.

<u>FGQ41STARCH-1 Starch Handling</u>

Starch is unloaded, stored and transferred for use on the paper machine. Three baghouses are used to control emissions.

Emission/Material Limits

FGQ41STARCH-1 contains PM and VE emission limits for each of the baghouses. Compliance with these emission limits is demonstrated through performing weekly non-certified visible opacity observations as indicator of proper operations.

Process/Operational Restrictions

At the time of the inspection, the baghouses were in operation and no visible emissions were observed.

Monitoring/Recordkeeping

The facility maintains records of weekly non-certified opacity observations. These records were reviewed during the inspection.

Reporting

A review of the first semiannual compliance and CAM reports for 2021 notes there were no deviations reported for FGQ41StARCH-1

FGCIRICEMACT-1

40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at a major source of HAP emissions, existing emergency, compression ignition (CI) RICE less than 500 brake HP. This flexible group includes EU22CI001-1 (fire pump engine).

Monitoring/Recordkeeping

Verso is required to keep records of the maintenance conducted on the fire pump engine and the total number of operating hours. A spreadsheet was provided that notes each time the fire pump engine was operated for the period 01/01/2020 through 08/30/2021. The reason for operation is also provided. For 2020, the fire pump engine operated a total of 38 hours for maintenance and readiness testing. For 2021 to-date, the engine has operated a total of 21.8 hours for readiness testing. The fur pump engine has a total of 335 hours on it.

A maintenance checklist was provided for 2020 and 2021 that notes major service and inspections performed on the fire pump engine. The 2020 maintenance record is dated for 10/19/20. The maintenance record provides a checklist for the inspection and maintenance performed on the fuel system, cooling system, intake and exhaust system, lubrication system, and overall operational status. The 2020 record notes the engine oil was not changed, but the 2021 record, dated notes the oil and oil filter were changed.

FGSIRICEMACT-1

40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at a major source of HAP

emissions, existing spark ignition RICE less than or equal to 100 brake HP. This flexible group includes EU09SI001-1 (Lime Mud Storage Tank Auxiliary Gas Engine), EU09SI002-1 (Lime Kiln Auxiliary Gas Engine), EU23SI001-1 (Admin Computer Room Backup Generator).

Monitoring/Recordkeeping

Verso is required to keep records of the maintenance conducted on EU09SI001-1, EU09SI002-1, and EU23SI001-1, along with the total number of operating hours. A spreadsheet was provided that notes each time the engines were operated for the period 01/01/2020 through 08/30/2021. The reason for operation is also provided.

EU09SI001-1 operated for a total of 1.1 hours during 2020 and 0.7 hours during 2021. Preventative maintenance worksheets were provided for the dates 1/11/2021, 5/18/2021, and 5/4/2021. The worksheets note the lubrication system, hydraulic systems, and general operation were inspected and parts replaced as needed, including checking engine oil and filter.

EU09SI002-1 operated for a total of 406.7 hours during 2020 and 110.4 hours during 2021. Preventative maintenance worksheets were provided for the dates 1/12/2021 and 5/19/2021. The worksheets note the lubrication system, hydraulic systems, and general operation were inspected and parts replaced as needed, including checking engine oil and filter.

EU23SI001-1 operated for a total of 12.4 hours in 2020 and 15.6 hours for 2021 to-date. Reasons for operation were for maintenance and readiness testing. The last oil service was performed on 06/18/2021. Preventative maintenance worksheets were provided for the dates 03/08/2021 and 06/21/2021.

FGNSPSSSIICE-1

This flexible group contains requirements of the New Source Performance Standards (NSPS) for Stationary Spark Ignition Internal Combustion Engines (SI-ICE), 40 CFR Part 60, Subpart JJJJ, emergency SI ICE greater than 25 HP manufactured on or after 1/1/2009. EU12SSI001-1 (41 Computer Room Backup Generator) — USEPA certified to 40 CFR 1048, natural gas emergency engine 176 HP; engine manufacture date: 4/15/2010; installation date: 12/15/2011.

Monitoring/Recordkeeping

EU12SSI001 is an EPA certified engine (Certificate Number GNX-LSI-10-03). A spreadsheet was provided that notes the date, reason for operation, hour meter reading, and hours of operation on each date. For 2020, the engine operated a total of 12.9 hours, and for 2021, a total of 8 hours.

Reasons for operation were for maintenance and readiness testing. An oil service was completed on 12/21/2020 for the engine. Verso performs annual oil changes on the engine. Preventative maintenance records were provided for the dates 03/08/2021 and 06/21/2021. The maintenance worksheets show the engine is being properly inspected and maintained.

FGWFBMOD-1

Emission units affected by the NSR reform rules for using baseline actual emissions and future projected actual emissions to provide a determination of project-related emissions increases for the modified and affected emission units. Emission units included in this flexible group are EU1121-8, EU1128-1, and EUCOOLTWR-1.

Monitoring/Recordkeeping

Verso is required to keep records of the annual emissions of NOx, SO2, PM, PM10, PM2.5, CO, VOC, and H2SO4 from FGWFBMOD-1 in tons per calendar year. A spreadsheet was provided that notes the annual emissions from FGWFBMOD-1 and the difference between the baseline actual emissions (BAE) and actual emissions. For 2019 and 2020, the actual emissions for all pollutants were less than BAE.

2019 TPY	WFB	PFH	Cool Twr	Total	PSD Allowable	Difference
NOx	414.1802			414.18025	632.10	-217.92
SO2	165.6488			165.64882	315.70	-150.05
CO	363.9853			363.98528	1381.58	-1017.59
PM	8.213453	0.19	0.0462	8.4496527	46.00	-37.55
PM10	17.13	0.19	0.0462	17.364747	64.10	-46.74
PM2.5	16.38	0.19	0.0462	16.620431	56.92	-40.30
VOC	5.1			5.1035418	53.22	-48.12
H2SO4	8.282			8.2824409	28.40	-20.12

2020 TPY	WFB	PFH	Cool Twr	Total	PSD Allowable	Difference
NOx	409.21			409.21	632.10	-222.89
SO2	162.11			162.10942	315.70	-153.59
CO	338.63			338.63	1381.58	-1042.95
PM	8.37	0.018	0.064529993	8.45253	46.00	-37.55
PM10	6.44	0.018	0.064529993	6.52253	64.10	-57.58
PM2.5	5.76	0.018	0.064529993	5.84253	56.92	-51.08
VOC	0			0.435	53.22	-52.79
H2SO4	8.105			8.1054708	28.40	-20.29

Compliance

Based on the inspection performed and records reviewed, Verso appears to be in compliance with MI-ROP-B7192-2020.

NAME Michael Collin DATE 9-22-21 SUPERVISOR EDL