

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

A088463854

<b>FACILITY:</b> Billerud Escanaba LLC	<b>SRN / ID:</b> A0884
<b>LOCATION:</b> 7100 COUNTY 426 M.5 ROAD, ESCANABA	<b>DISTRICT:</b> Marquette
<b>CITY:</b> ESCANABA	<b>COUNTY:</b> DELTA
<b>CONTACT:</b> Adam Becker , Environmental Engineer	<b>ACTIVITY DATE:</b> 06/14/2022
<b>STAFF:</b> Michael Conklin	<b>COMPLIANCE STATUS:</b> Compliance
<b>SUBJECT:</b> Targeted inspection for FY 22.	<b>SOURCE CLASS:</b> MAJOR
<b>RESOLVED COMPLAINTS:</b>	

**Facility: Verso Escanaba LLC (A0884)**

**Location: 7100 County Road 426, Escanaba, MI 49829**

**Contact: Adam Becker, Environmental Engineer, 906-233-2929**

### 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

Verso Escanaba LLC (Verso) is a pulp and paper mill located in Escanaba, Delta County, MI. Verso began operating in 1911 as a paper mill under Escanaba Pulp and Paper Company. The mill encompasses 2000 acres with a Kraft pulp mill, refiner mechanical pulp (RMP) mill, three paper machines, a pulp dryer, three off-machine blade coaters, six supercalenders, and six winders. Verso is approximately 6.6 miles north and west of Escanaba, MI, with the surrounding area being rural and consisting of flat terrain. Delta County is currently designated by the EPA as attainment/unclassified for all criteria pollutants. Verso produces graphic papers from hardwood and softwood logs through a variety of process operations. Existing operations include a woodyard, Kraft pulping process, refiner mechanical pulping process, chemical recovery process, pulp drying, paper machines with coaters, power boilers, and a wastewater treatment plant.

### 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. In the RMP mill, hardwood chips are treated with hot caustic and the soft chips are then macerated mechanically using refiners to produce unbleached pulp.

Verso 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. In the Kraft mill, wood chips are transferred from an open storage area to one of eight batch digesters where steam and white cooking liquor (sodium hydroxide – NaOH and sodium sulfide – Na<sub>2</sub>S) are added to dissolve the wood lignin and produce pulp. This cooking process breaks the bonds that link the lignin (“glue”) and cellulose (“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, screen, and bleach the pulp. After the knotters, brownstock washers clean the pulp by removing spent cooking chemicals and wood residue. Further cleaning, screening, and oxygen delignification (O<sub>2</sub> 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 machines and sold.

The pulp dryer and paper machines produce marketable pulp and paper products. The paper machines take 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 calendars. The paper is then wound on reels that are cut into smaller rolls and then shipped offsite via truck or railcars.

Excess Kraft pulp is formed and dried on a pulp dryer for future use during pulp mill outages or for sale to external customers. The pulp dryer is utilized to dewater, press, and dry pulp from the high-density storage tanks. Other than pH adjustment of the pulp, there are no additives or coating utilized.

The spent cooking liquor (weak black liquor) from the digesters 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 – CaCO<sub>3</sub>) 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 digesters to cook wood chips.

In addition to the processing equipment at Verso, the mill creates its own power through steam driven turbines. Steam is produced by four boilers along with the Recovery Furnace. The Recovery Furnace produces a significant amount of steam that is used throughout the mill.

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 also collects concentrated vent gases (CVG), low volume high concentration (LVHC) gases and high volume low concentration (HVLC) gases, from several emissions units to control organic hazardous air pollutants (HAPs). The HVLC gases are burned in the recovery furnace and the LVHC gases are burned in the Thermal Oxidizer (EUOC33) or the Lime Kiln (EULK15) as a backup incineration device.

#### Emissions Reporting

Verso 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 2021.

Pollutant	Amount (tons)
CO	2056
NOx	1364
PM10, Filterable	133
PM10, Primary	11

PM2.5, Filterable	96
PM2.5, Primary	10
SO2	610
VOC	152

### Compliance History

A violation notice was issued on 10/25/2019 for exceeding the MACT DDDDD HCl limit on Boiler 11 (EU11B68) during the 8/21/2019 stack test. Boiler 11 was retested on 6/15/2020 - 6/16/2020, however, the test results were not acceptable due to discrepancies noticed in the contractor's field data and the final test report. Testing was also being conducted on the Thermal Oxidizer to verify the methanol emission standards, the Beach Plant scrubbers to verify compliance with the chlorine emission standards and Boiler 8 and 11 CEMS RATA's. As a result, AQD was not able to accept any of the testing conducted by the contractor for the period 6/13/2020 – 6/18/2020. A violation notice was issued on 9/14/2020 for these events. Boiler 11 was retested during 9/29/2020 – 10/1/2020. TPU approved test results from 12/1/2020. Boiler 11 and Boiler 8 CEMS RATA was performed on 10/20/20 – 10/23/20. Testing for chlorine emissions from the two bleaching system scrubbers and methanol emissions from the thermal oxidizer were also conducted on 10/20/20 – 10/23/20. On 5/17/2021, AQD No. 2021-11 was effective. Boiler #11 was retested again on 8/17/2021 with emission rates passing and test results acceptable. This test fulfilled the second test requirement from AQD No. 2021-11. The fuel analysis and compliance status with MACT DDDDD was received on 10/27/2021.

### Regulatory Analysis

Verso is considered a major stationary source for all criteria pollutants and hazardous air pollutants (HAPs). Verso currently operates under Renewable Operating Permit (ROP) No. MI-ROP-B7192-2021a.

Verso is also subject to NSPS and MACT federal regulations as outlined in the Staff Report for MI-ROP-B7192-2021a.

### Inspection

An on-site inspection was performed on 06/14/2022 to verify compliance with MI-ROP-A0884-2021a. AQD staff (Michael Conklin and Lauren Luce) arrived on-site and met with Adam Becker,

Environmental Engineer, and Charles Detiege, Environmental Manager. The inspection began by Mr. Becker providing an overview of the facility and its current operations. Next, a tour of the targeted emission units for inspection occurred. Emission units evaluated for compliance as part of this inspection include the following: EU7B17 – Boiler 7, EU8B13 – Boiler 8, EUCS14 – Chip Thickness Screening, EU2PD40 – Pulp Dryer, EUCOND – Condensate Collection and Treatment, EURF15 – Chemical Recovery Furnace, EUST15 Smelt Dissolving Tank, EUS29 – Causticizing System, EUPB – Paint Spray Booth, FG9B03 – Boiler 9 System, FGSB14 – Chip Surge Bins, FGRMP – RMP System, and FGLK29 – Lime Kiln System.

#### **EU7B17 – Boiler 7**

The Boiler 7 (EU7B17) is a Riley boiler rated for 150,000 pounds of steam per hour (approximately 22 MMBtu/hr heat input) that provides steam for mill processes. Boiler 7 burns natural gas and fuel oil. No add-on air pollution control equipment is utilized.

#### ***SC II.2, VI.1***

Boiler 7 was not operating at the time of the inspection. This boiler is currently in idled status and primarily fires natural gas when operating. Example fuel oil records were provided that note the date received, fuel oil grade, source of fuel oil and supplier, and gallons received, along with the fuel oil sulfur and BTU content. The determination of the sulfur content is carried using ASTM D4292. For example, on 1/3/2021, 5,605 gallons were received from Kiesel Co. with a percent sulfur as received of 0.1910.

#### **EU8B13 – Boiler 8**

Boiler 8 is a Combustion Engineering boiler rated for 450,000 pounds of steam per hour (approximately 594 MMBtu/hr heat input) that provides steam for mill processes and steam turbine-generator sets for producing electricity. A flue gas recirculation system is installed on Boiler 8. The Boiler 8 burns natural gas and fuel oil.

#### ***SC I.1-3, II.1, VI.1, VI.2, VI.4, VI.6(c)***

At the time of the inspection, Boiler 8 was not operating. This emission unit contains NO<sub>x</sub> emission limits that are averaged over the ozone control season. Compliance is demonstrated using CEMS. Example records of fuel oil analysis for Boiler 8 were provided that note the dates 8/3/2020 and 06/23/2021. The analysis provides the sulfur content and BTU content for the shipment. For the 2020 record, the sulfur percentage was 0.258 and the BTU content was 160,828 BTU/gal. For the 2021 record, the sulfur percentage was 0.4159 and the BTU content was 160,238 BTU/gal. Sulfur content was determined using ASTM D4294. Verso also tracks the date received, fuel oil grade, source of fuel oil and supplier, and gallons received.

During the period of 5/1/2020 through 9/30/2020, Boiler 8 only burned natural gas and had a total heat input of 847,436 MMBtu/hr. The actual emission rate for the ozone season was 0.137 lb/MMBtu of NO<sub>x</sub>, which is under the 0.20 lb/MMBtu limit. For the period of 5/1/2021 through 9/30/2021, Boiler 8 only burned natural gas and had a total heat input of 683,684 MMBtu/hr. The actual emission rate for the ozone season was 0.148 lb/MMBtu of NO<sub>x</sub>, which is under the 0.20 lb/MMBtu limit. The facility keeps records of CEMS data, stack test results, fuel usage, heat input, quality assurance activities, and major maintenance activities for Boiler 8.

#### **EUCS14 – Chip Thickness Screening**

The Chip Thickness Screening System (EUCS14) includes #1 Chip Reclaim Surge Bin, #2 Chip Reclaim Surge Bin, Air Density Separator #1A, Air Density Separator #1B, Air Density Separator #2A, Air Density Separator #2B. The surge bins and air density separators utilize cyclones for PM control.

#### ***SC III.1, V.1-3, VI.1, IX.1***

During the inspection, EUCS14 was in operation with all cyclones. Feed rates to the East Truck Reclaim (softwood) were 139 tph and 29 tph to the West Truck Reclaim (hardwood). No visible emissions were observed from any of the cyclones. Example records were provided for the dates 8/18/2020 and 4/13/2021 that note the point, time, and inspection result.

Testing was last conducted on EUCS14 during 6/7/2022 through 06/09/2022. Results from this performance test have not been submitted yet. Prior to the June 2022 test, testing was last conducted in June 2017. The averaged measured value for PM was 0.00219 gr/dscf and 1.29 pph. Measured emission rates were in compliance with the emission limits of 0.00750 gr/dscf and 5.58 pph.

All ductwork and cyclones inspected appeared to be well maintained and operating in a satisfactory manner.

#### ***EU2PD40 – Pulp Dryer***

The #2 Pulp Dryer System (EU2PD40) is comprised of a pulp make down system and a pulp dryer.

#### ***SC VI.1***

At the time of the inspection, the pulp dryer was not in operation. A review of the 2020 MAERS report shows the pulp dryer did not operate. Verso is currently not selling any pulp and is using all pulp produced to create paper.

#### **EUCOND – Condensate Collection and Treatment**

The Condensate Collection and Treatment System (EUCOND) is a grouping of equipment used to collect and treat kraft pulping process condensates, and which are subject to the Standards For Kraft Pulping Process Condensates 40 CFR 63.446. The regulated equipment systems are identified in 40 CFR 63.446(b). Foul condensates are collected at the stripper column feed tank. Foul condensate treatment consists of pre-treatment through a steam stripper and final treatment at the brownstock washers. The Condensate Collection and Treatment System is a closed collection system.

A review of the 2021 annual compliance report shows there were no deviations reported from Condensate Collection and Treatment system.

#### **EU0815-1 Chemical Recovery Furnace**

Black liquor solids (BLS) from the evaporator system are combusted in the chemical recovery furnace where steam is generated to support mill processes and process chemicals are recovered in molten smelt and salt cake. The heavy black liquor is pumped through a direct steam heater to the recovery furnace. In the recovery furnace, the sulfur and sodium inorganic chemicals and organic content comprising the BLS are recovered and combusted respectively. The organic portion of the liquor burns releasing heat for steam generation. The inorganic portion of the liquor is recovered to be used to regenerate cooking liquor for the continuous digester. The inorganics accumulate on the furnace floor (char bed) and are drained off as a molten smelt into a dissolving tank where they are mixed with weak wash to form green liquor. The green liquor is then pumped to the recausticizing area. The combustion gases are pulled upwards through the recovery furnace by an induced draft (ID) fan. Heat is removed from the combustion gases in two superheaters, a generating section, and two economizers. The combustion gases then pass to an ESP where particulate matter is removed. From the ESP, the combustion gases flow to the stack. The recovery furnace is equipped with natural gas burners for supplemental firing and can also fire vent gases (containing TRS compounds) from pulping process.

The #10 Recovery Furnace burns black liquor, natural gas, #6 fuel oil, and used oil. Also, the #10 Recovery Furnace receives and incinerates gases from enclosures and closed-vent systems and is used to incinerate High Volume Low Concentration (HVLC) non-condensable gases from the Digester System, Brownstock System, Evaporator System, and Chemical Recovery Furnace System. The air handling system has been modified.

### ***Emission/Material Limits***

The recovery furnace has emission limits of Arsenic, Cadmium, CO, Chromium, HAP Metals measured as PM, NO<sub>x</sub>, PM, Polychlorinated Biphenyls, SO<sub>2</sub>, TRS, and Visible Emissions. Compliance with these emission limits is demonstrated through performance tests, continuous opacity monitoring (COM), and continuous emission monitoring (CEM).

The recovery furnace also contains materials limits for used oil that shall not exceed the parameters outlined in SC II.1-2 and for the used oil not to exceed 15% of the total feed rate of fuel oil blend, as stated in SC II.3.

### ***Process/Operational Restrictions***

During the inspection, the Recovery Furnace was operating. At 11:43 AM, the BLS firing rate was 341 gpm and 3.95 MMlb/day. All fields of the ESP were active.

SC III.1 and 2 requires the operating load of the Recovery Furnace to be reduced to 77,600 pounds of BLS per hour if any two electric fields of the ESP are out of service. Verso is aware of this requirement and reduces the BLS firing rate when there is an exceedance from the CEMS, COMS, or a malfunction with the ESP. For example, on 10/08/2021, there was an exceedance of the 5 ppm TRS limit on a 12-hour average. The operator reduced the firing rate and the liquor temperature in an effort to build a bed in the furnace and reduce in-flight combustion which results in high TRS. During this event, the BLS firing rate was reduced to 3.4 MMlb/day.

### ***Testing/Sampling***

Performance testing for SO<sub>2</sub>, NO<sub>x</sub>, CO, and PM last occurred during the week of 3/21/2022. Testing was conducted to demonstrate compliance with PTI No. 184-16a and MI-ROP-A0884-2021. Test results indicate the Recovery Furnace passed all respected emission limits for SO<sub>2</sub>, NO<sub>x</sub>, CO, and PM. However, Verso did not test against the CO limits with 8-hour averaging periods (SC I.5 and 6). The AQD informed Verso they would be required to test for the length of the averaging time going forward. Verso requested an extension to test against the 8-hour average limits. A 6-month extension was granted on 3/14/2022 for either testing against the current 8-hour averaging limits or submitting a PTI application to change the averaging times and/or the emission limits. Verso is currently preparing to submit a PTI application to reduce the averaging time of these emission limits.

The Recovery Furnace no longer burns fuel oil blended with used oil, thus no testing for TACs has occurred in the last five years.

### ***Monitoring/Recordkeeping***

Verso continuously monitors and records the oxygen content, opacity, and TRS emissions (ppmd @ 8% O<sub>2</sub> and pph) with CEMS and COMS. At 11:43 AM, during the inspection, the CEMS was reporting 0.77 ppmd @ 8% oxygen and 1.11 pph for the last logged 12-hour average TRS emission rates.

The recovery furnace uses a continuous opacity monitor (COM) system to measure opacity as an indicator of the proper operation of the ESP. The recovery furnace has a visible emission limit of 20% opacity except for one 6-minute average per hour of not more than 27%. Opacity is determined at the exhaust of the recovery furnace in the stack. During the inspection, the instantaneous opacity from the COMS was showing 1.05% opacity, the 6-minute average last recorded was 1.14% opacity, and the last logged 1-hour average was 1.89% opacity.

Verso continuously monitors and records the BLS feed rate and ESP voltage across each field. The amount of fuel flow into the recovery furnace is monitored and recorded continuously from the control system. Example records were provided for the dates 3/18/2020 and 10/20/2021 that note the voltage (KV) of each field in the ESP during each hour of operation.

Used oil is no longer fired in the Recovery Furnace and sold off-site to a third party.

### ***Stack/Vent Restrictions***

A rangefinder was utilized during the inspection to measure the stack height of the Recovery Furnace. The stack measured 290 feet from eye level, which meets the minimum height of 284 feet.

### **EU0816-1 Smelt Dissolving Tank**

Inorganics from the chemical recovery furnace and precipitator are mixed with weak wash to form green liquor. The green liquor is then pumped to the causticizing area where it is first clarified before moving to the Slaker where lime is added to produce calcium hydroxide slurry. Air pollution control equipment includes a wet scrubber and mist eliminator for PM control.

### ***Emission/Material Limits***

The smelt dissolving tank contains emission limits of HAP metals measured as PM, PM, and total reduced sulfur (TRS). Compliance with these emission limits is demonstrated through performance tests.

### ***Testing/Sampling***

The Smelt Dissolving Tank is required to test for PM and TRS emission rates every five years. Testing for the PM and TRS state limits last occurred on 5/25/2018. The test results indicate all emission rates were below the emission limits. Testing against the MACT II PM limit last occurred between September 30<sup>th</sup> – October 1<sup>st</sup>, 2020. The average PM emission rate from the MACT II test was 0.089 lb/ton BLS with a minimum scrubber flow rate at 88 gpm on a 3-hr block average.

### ***Monitoring/Recordkeeping***

Verso operates and maintains a continuous monitoring system to measure fan run status and scrubbing liquid flow rate at least once every successive 15-minute period. The minimum scrubber liquid flow rate established from the 2020 MACT II test is 88 gpm on a 3-hour block average. During the inspection, at 11:56 AM, the Smelt Dissolving tank scrubber liquid flow rate was 121.7 gpm.

### ***Stack/Vent Restrictions***

The minimum stack height for SV15007S is 288 ft. During the inspection, a stack height of 287 ft was measured with a rangefinder at eye-level.

### **EUS29 – Reausticizing System**

The Reausticizing System has one emission unit: Lime Slaker (EUS29). In the slaker, calcium oxide from the Lime Kiln System (FGLK29) reacts with green liquor from the Smelt Dissolving tank (EUST15) to produce white liquor and lime mud. The reaction is carried out in the slaker and causticizers. The mixture is separated in two white liquor clarifiers. White liquor is used in the digesters as a cooking chemical. Lime mud is washed, dewatered and oxidized in the Lime Kiln System to regenerate calcium oxide for the slaking process. A wet scrubber is used to control PM emissions.

### ***Emission Limits***

The Reausticizing System has a PM emission limit with compliance demonstrated through testing every five years.

### ***Design/Equipment Parameters***

The slacker scrubber is equipped with a continuous monitoring system for water flow rate.

### ***Testing/Sampling***

The Lime Slacker scrubber was last tested on 10/22/2020 for PM emissions. The average PM emission rate from the scrubber was 0.0452 lb/1000 lb of exhaust gas, which shows compliance with the 0.10 lb/1000 lb of exhaust gas limit.

### ***Monitoring/Recordkeeping***

The scrubber liquid flow rate is continuously monitored and recorded. During the inspection, at 12:13 PM, the instantaneous flow rate was 158.7 gpm and the last logged 3-hr block average was 160 gpm.

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### **EUPB – Paint Spray Booth**

This emission unit is a spray booth for maintenance purposes. Dry exhaust filters are utilized to control particulates.

### ***Material Limits***

The Paint Spray booth contains a material limit of 200 gallons of coating as applied, minus water, per month. Compliance is demonstrated through keeping monthly records of the amount of coating used.

### ***Monitoring/Recordkeeping***

Records were provided for 2020 and 2021 of coating usage. For 2020, the facility used 21.5 gallons and for 2021, 9.4 gallons.

At the time of the inspection, the paint booth was not in operation.

### **FG9B03 – Boiler 9 System**

The Boiler 9 System (FG9B03) has two emission units, the Boiler 9 and Wood Residue Surge Bin (EUSB03). Boiler 9 (EU9B03) is a Babcock & Wilcox boiler rated for 250,000 pounds of steam per hour (approximately 360 million BTU per hour heat input) that provides steam for mill processes and steam turbine-generators for producing electricity. The Boiler 9 burns primarily wood residue, but may also burn natural gas, and paper cores. Control equipment for Boiler 9 includes

multiclones and two wet scrubbers (North and South) for PM control. The Wood Residue Surge Bin is controlled by a cyclone dust collector.

### *Emission Limits*

Boiler 9 contains emission limits of NOx and PM with compliance demonstrated through stack testing and the monitoring of control equipment operating parameters.

### *Process/Operational Restrictions*

Boiler 9 is required to be operated with the multiclone and wet scrubbers. During the inspection, at 12:05 PM, the steam load was 190.5 kpph, the north scrubber dp was 8.51 "WC, the south scrubber dp was 6.30 "WC, the north scrubber liquid flow rate was 1465.3 gpm, and the south scrubber liquid flow rate was 1501.3 gpm.

### *Design/Equipment Parameters*

Boiler 9 is equipped with monitoring devices for the pressure drop and liquid flow rate on each scrubber.

### *Testing/Sampling*

Testing on Boiler 9 last occurred during the week of July 22, 2019. The test was performed to show compliance with the state PM limits and the MACT DDDDD limits. The average measured PM emission rate was 0.20 lb/MMBtu and the CO emission rate was 719 ppm @ 3% O2. The emission rates passed the respective limits of 0.44 lb PM/MMBtu and 3500 ppm CO @3% O2. The 2016 ROP allowed the boiler MACT testing to be used in showing compliance with the state limits since the MACT requirements are more stringent.

### *Monitoring/Recordkeeping*

Verso keeps the quantities and respective BTU content of natural gas, wood residue, and paper cores burned in Boiler 9. The scrubber liquid flow rate and pressure drop are continuously monitored and recorded. During the inspection, the dp for the scrubbers were above 3.00 "WC and the liquid flow rates were above 900 gpm, both of these parameters are on a 3-hour average.

The facility keeps records of monitoring data, monitor performance, and corrective actions taken. Stack test results, daily records of fuel usage, heat input, and data used to determine heat content are maintained. For example, on 2/17/2020, Boiler 9 operated for 24 hours and burned 4601 MMBtu of gas and 174 MMBtu of bark.

### ***Reporting***

A review of the 2021 annual compliance report shows no deviations were reported for Boiler 9.

### ***Stack/Vent Restriction(s)***

Stack height measurements were taken during the inspection with a rangefinder. Both north and south stacks of Boiler 9 measured 288 ft from eye level with the rangefinder.

### **FGSB14- Chip Surge Bins**

The Chip Surge Bin System (FGSB14) has two emission units: #1 Chip Surge Bin (EU1SB14) and #2 Chip Surge Bin (EU2SB14). These emission units utilize cyclones for pneumatic transfer of chips.

### ***Emissions Limits***

The Chip Surge Bins have a PM emission limit of 0.10 lb / 1000 lbs of exhaust gases, measured at operating conditions. Compliance is demonstrated through visible emission checks of the cyclone exhausts.

### ***Monitoring/Recordkeeping***

Verso is required to inspect and record observations of emissions from the cyclone exhausts while the process is operating. The inspections are to occur on a weekly basis. Example records were provided for 8/18/2020 and 4/12/2021. No visible emissions were noted on the inspection records. During the inspection, the chip surge bins were operating and no visible emissions were observed from the cyclone exhaust.

### ***Reporting***

A review of the 2021 annual compliance report shows no deviations were reported for the Chip Surge Bins.

### **FGRMP – RMP System**

The Refiner Mechanical Pulping System (FGRMP) has three emission units: the Chip Silo (EUCS61), the Chip Surge Bin (EUSB61), and Refiner Mechanical Pulping (EURMP61). The Chip Silo and Chip Surge Bin are controlled by cyclones.

### ***Emissions Limits***

The RMP System has a PM emission limit of 0.10 lb / 1000 lbs of exhaust gases, measured at operating conditions. Compliance is demonstrated through visible emission checks of the cyclone exhausts.

### ***Process/Operational Restrictions***

The RMP System is restricted to not process more than 113,150 tons of RMP per year as determined on a 12-month rolling time period basis. At the time of the inspection, the RMP system was processing 280 air dried tons per day. No visible emissions were observed from the RMP System.

### ***Monitoring/Recordkeeping***

Verso is required to inspect and record observations of emissions from the cyclone exhausts while the process is operating. The inspections are to occur on a weekly basis. Example records were provided for 8/16/2020 and 4/11/2021. No visible emissions were noted on the inspection records.

The facility is also required to monitor and record the amount of RMP produced monthly and on a 12-month rolling basis. Verso provided a spreadsheet that notes the total tons produced for each month and the 12-month rolling sum. As of December 2021, the 12-month rolling was 57,898 tons. A review of 2021 and 2020, the 12-month rolling stays below 70,000 tons.

### **FGLK29 – Lime Kiln System**

The Lime Kiln System (FGLK29) includes the Lime Kiln (EULK29) and two Lime Storage Bins (EULKI29), one for hot lime storage, one for purchased lime storage. The Lime Kiln System processes lime mud from the Reausticizing System to regenerate calcium oxide. Evaporator condensate is used for lime mud washing. Filtrate from lime mud washing, known as weak wash, is used in the Bleaching System and the Chemical Recovery Furnace System as an air scrubbing medium. Lime mud is mixed, washed, and fed to the Lime Kiln where it is converted to calcium oxide. Calcium oxide is conveyed by bucket elevator to the lime storage bin. From the storage bins, calcium oxide is utilized in the Reausticizing Process. The Lime Kiln is fired with natural gas and/or fuel oil. The Lime Kiln acts as a backup incineration device for the Thermal Oxidizer System.

A scrubber and mist eliminator are used to control PM emissions from the Lime Kiln. A baghouse dust collector is used to control PM emissions from the Lime Storage Bins.

### *Emission Limits*

The Lime Kiln has emission limits of HAP Metals measured as PM, PM, SO<sub>2</sub>, and TRS emission limits. Compliance is demonstrated through stack testing, proper operation of the control equipment, and CEMS.

### *Process/Operational Restrictions*

During the inspection, the venturi scrubber and mist eliminator were operating properly with no visible emissions observed from the stack.

### *Testing/Sampling*

The Lime Kiln was last tested for compliance with SC I.1 on 10/1/2020. The average emission rate was 0.063 gr/dscf @ 10% O<sub>2</sub>, which is in compliance with SC I.1. Results were not reported out in lb/1000 lbs of exhaust gases to show compliance with SC I.2 because at the time of the test, the 2016 ROP was effective and did not require testing to show compliance with this emission limit. Future PM tests on the Lime Kiln will require emission rates to be reported in lb/1000 lbs exhaust gas in addition to gr/dscf @ 10% O<sub>2</sub>.

### *Monitoring/Recordkeeping*

Using CEMS, Verso continuously monitors and records the TRS concentration from EULK29. At 12:11 PM during the inspection, the TRS emissions were 4.12 ppmvd @ 8% O<sub>2</sub> and the last logged 12-hour average was 4.75 ppmvd @ 8% O<sub>2</sub>. The scrubber pressure drop and liquid flow are also continuously monitored and recorded for EULK29. The pressure drop across the scrubber was showing 14.5 "WC and the liquid flow rate was 599.3 gpm.

The pressure drop across the Lime Storage Bins baghouse is also continuously monitored and recorded. During the inspection, the baghouse pressure drop was reading 1.4 "WC. All operating parameters of control equipment were within the required ranges.

### *Reporting*

Reports for compliance/deviations, CAM exceedances/excursions, and monitor downtimes are reported semiannually and annually. For 2021, the Lime Kiln scrubber differential pressure

dropped below 13.6 "WC for 3 hours. Dates, reasons, and corrective actions for Lime Kiln excursions were documented in the semiannual MACT II reports.

**Compliance**

Based on the inspection performed and records reviewed, Verso Escanaba appears to be in compliance with MI-ROP-A0884-2021a and all other applicable state and federal air quality regulations.

NAME *Michael Kaplan*

DATE 9/30/2022

SUPERVISOR *Michael Kaplan*