NEENAH PAPER

Munising Mill
501 East Munising Avenue
Munising, MI 49862

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www.neenah.com

August 25, 2017
Project No. 171496

Ms. Sydney Bruestle
Air Quality Division
Michigan Department of Environmental Quality
1504 West Washington Street
Marquette, MI 49855

Re: Response to Notice of Violation dated August 4, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Dear Ms. Bruestle:

This letter is in response to the MDEQ Notice of Violation (NV) dated August 4, 2017. The NV suggests that Neenah Paper Michigan, Inc. is a major source of HAPs, which would subject the facility to additional air quality requirements. The air quality application and PTI No. 108-16 describe requirements for demonstrating that Neenah is *not* a major source of HAPs; these requirements have been met. The specific allegations associated with Neenah's major source status are outlined as follows:

Process Description	Rule/Permit Condition Violated	Comments
Hydrochloric acid (HCl) emissions from EU-05 coal fired boiler currently covered under MI-ROP-B1470-2013a	*Source Wide Condition I.1 Each individual HAP emission must be below 9 tons per year (12 month rolling time period)*	*The Facility reported annual HCl emissions of 9.2 tons per year in the 2016 MAERS submittal.*
HCl emissions from EU-05 coal fired boiler currently covered under MI-ROP-B1470-2013a	*Source Wide Condition I.1 Each individual HAP emission must be below 9 tons per year (12 month rolling time period)*	*Stack test results show an HCl emission rate of 2.41 lb/hr. The facility operated 8,520 hours in 2016. Using the emission factor from the stack test actual HCl emissions for 2016 are 10.3 tons per year. This makes Neenah Paper a major source of HAPs.*
HCl emissions from the EU-05 coal fired boiler currently covered under MI-ROP-B1470-2013a	*40 CFR Part 63 Subpart JJJJJJ National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial and Institutional Boilers*	*Exceeded area source HAP limit of less than 10 tons per year*

As requested, this letter provides information regarding the above citations including: the date the alleged violations occurred; an explanation of the causes and duration of the alleged violations; whether the violations are ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the violations, if any; the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

It should be noted that the emission calculations and spray dry absorber (SDA) installation were discussed at length with the MDEQ-AQD in meetings on April 26, 2016, May 25, 2016, in the application submittal for PTI No. 108-16. Copies of the meeting agenda and materials, as well as the application associated with PTI No. 108-16 are included in Attachment 1.

First, PTI No. 108-16 (FGFACILITY Condition 1 – Emission Limits) specifically states that record keeping to demonstrate compliance with the 9 tpy limit begins on February 1, 2016:

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Each Individual HAP	Less than 9 tpy*	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)
2. Aggregate HAPs	Less than 22.5 tpy*	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)
* Beginning on February 1, 2016, and continuing for the first 12 calendar months, this limit applies to the cumulative total HAP emissions. Thereafter, the limit shall become a 12-month rolling limit.					

The MDEQ-AQD did not request data from January 2017 prior to the issuance of the NV; therefore, it was not possible for the MDEQ-AQD to fully evaluate compliance with the 12-month rolling limit. Data tables containing 12-month rolling totals ending January 31, 2017 through July 31, 2017, are included as Attachment 2; it should be noted that no 12-month total exceeds 9 tpy; therefore, no violation of this permit condition has taken place and the record should be corrected to indicate the correct 12-month rolling totals. An example emission calculation is also included, along with information regarding the source of the emission factors. Rolling 12-month totals for the first six months of this year are summarized below:

12-Month Period Ending	Total HCl Emissions (tons/12 months)
January 31, 2017	8.9
February 28, 2017	8.5
March 31, 2017	8.0
April 30, 2017	8.0
May 31, 2017	7.3
June 30, 2017	7.5
July 31, 2017	7.6

During our August 16, 2017 meeting, the MDEQ-AQD also suggested that only test data collected during the November 2016 testing event could be used in estimating emissions. This is not the case. Last summer, other test data was used to estimate emissions, as discussed during meetings with the MDEQ-AQD on April 24 and May 25, 2016. Due to installation of the new SDA last year, we conducted numerous tests using third party testing companies and USEPA Reference Test Methods. While the MDEQ was not present for all of the tests that were performed, these tests were openly discussed with the MDEQ and emissions data was reviewed during both onsite and offsite meetings. Attachment 3 contains a summary of test data used in estimating emissions and electronic copies of the test reports.

Second, emissions are not typically calculated for combustion equipment by multiplying the operating hours by the emission rate measured during a stack test. As we noted in the meeting on August 16, 2017, during the stack test the boiler was operating close to its maximum steam production which is at least 30% higher than the average steam production. In reviewing the MDEQ-AQD document *Permit to Install Workbook* or even the USEPA *Compilation of Air Pollutant Emission Factors*, boiler emissions are calculated using emission factors multiplied by the amount of fuel in conjunction with its heating value. Tables provided in the application associated with the SDA use this methodology and during PTI condition negotiations we requested to continue using this methodology (see Attachment 4).

It should be also noted that we provided written comments on the PTI conditions, requested the ability to continue its existing methodology for calculating emissions, and received assurances that our current methods could still be used. The application for PTI No. 108-16 included the test data in use at that time (see Attachment 5), which we discussed during our August 16, 2017 meeting. The test data included in Attachment 5 is also referenced in RY2016 MAERS data, submitted earlier this year.

Neenah has demonstrated that HCl emissions are less than the 9 tpy limit for individual HAPs contained in PTI No. 108-16, which confirms that emissions are less than the major source threshold for HAPs and is, therefore, an area source of HAPs.

Going forward, we have offered the following corrective actions to remedy some of the confusion associated with its *area source* status:

- **Updates to the Malfunction Abatement Plan**: During previous meetings with the MDEQ-AQD, Neenah has shared information regarding the operation of and stack test data for its SDA. Neenah will update its MAP to indicate how control efficiency is affected by changes in reagent concentration. Neenah will submit these updates by September 12, 2017.
- **Administrative Changes to PTI 108-16**: Neenah has spoken with Ms. Melissa Byrnes, MDEQ-AQD Permit Engineer, about the PTI and the confusion associated with calculating emissions and operation of the SDA. Ms. Byrnes suggested that small changes could be made to the PTI to clarify emission calculations, operation of the SDA, and/or how the limit is written. Neenah will submit a request for PTI modification by October 19, 2017.
- **Emission Calculations**: Neenah will work with the MDEQ-AQD to add information regarding calculation of boiler HCl emissions to the ROP to avoid confusion in the future. This information will be similar to the detailed information supplied for calculating emissions from EUCOATER and FGSATURATORS&COATERS currently located in Appendix 7 of the ROP. Completion of this activity is dependent on ROP processing.

After reviewing these records, we trust that you will agree that Neenah is an area source of HAPs and has operated as an area source of HAPs since February 2016. In addition, the plant continually strives to operate efficiently, with a commitment to continual improvement, pollution prevention, and compliance with all regulatory requirements. Our commitment to environmental compliance is very important and our past efforts to maintain environmental compliance and remain a good neighbor are well documented.

Due to a change in personnel in the MDEQ-AQD Upper Peninsula Office it appears that certain relevant information has been lost or misplaced. Despite these difficulties, we look forward to resolving this issue and developing a good working relationship with you and the new District Supervisor.

We appreciate the time you took to discuss these issues with us on August 16, 2017. After reviewing the facts, we know you will agree that the facility is an area source of HAPs and we request that you correct the emissions record and rescind the NV.

If you have any questions regarding these issues, or this response, please contact Natalie Kentner, Neenah's Environmental Engineer, at 906.387-7561 or natalie.kentner@neenah.com.

Sincerely,

David Schultz
Manager – Neenah Paper Michigan, Inc.

dmg
Attachments
By email and USPS
cc/att: Natalie Kentner – Neenah
Lillian L. Woolley, PE – FTCH

Abbreviations/Acronyms

AQD	Air Quality Division
HAP	hazardous air pollutant
HCl	hydrochloric acid
lb/hr	pound(s) per hour
MAERS	Michigan Air Emissions Reporting System
MDEQ	Michigan Department of Environmental Quality
NV	Notice of Violation
PTI	Air Use Permit to Install
ROP	Renewable Operating Permit
RY2016	Reporting Year 2016
SC	Special Condition
SDA	spray-dry absorber
tpy	tons per year
USEPA	U.S. Environmental Protection Agency

ATTACHMENT 1

AGENDA

PROJECT:	Neenah Paper (B1470)	**PROJECT NO.**	G150512
SUBJECT:	Neenah Stack Testing Extension	**MEETING DATE:**	April 26, 2016

Compliance with the IB MACT
- Initial Study – November 11, 2011
- Additional Study – October 1, 2014
- Quote from BACT – November 12, 2014
- Pre-application Meeting November 18, 2014
- Application submitted January 22, 2015
- Determined complete March 5, 2015
- PTI issued April 20, 2015
- Project scheduled to start June 6, 2015 – most work completed by July 4, 2015

Regulatory Status and Drivers for Testing
- ROP
- PTI
- IB MACT

Problems at the Site
- Construction – six revisions to the original schedule
- Operations – nozzles plugged and air flow problems
- Going forward

Emissions Status – 12 month rolling total calculations

ROP Modification

AGENDA

PROJECT:	Neenah Paper (B1470)	**PROJECT NO.**	G150512
SUBJECT:	Neenah Stack Testing Extension	**MEETING DATE:**	April 26, 2016

Compliance with the IB GACT/MACT

- Pre-application Meeting November 18, 2014
- PTI issued April 20, 201
- Project scheduled to start June 6, 2015 – most work completed by July 4, 2015
- Problems with vendor delayed start-up until near IB MACT Deadline

Regulatory Status and Drivers for Testing

Pollutant	Limit	Underlying Applicable Requirements		
		PTI	ROP	IB GACT
HCl	$\leq$ 9 tpy	XX		
PM	0.30 lb/1000 lbs exhaust		XX (Rule 331)	
CO	420 ppm (stack test)			XX
Metals	NA	XX		
Hg	2.2×10^{-5} lb/mmbtu (fuel analysis)			XX

Additional Work on Spray Dry Absorber (SDA) System

PTI Modification (Enhanced New Source Review)

- Delay in stack testing
- Approval of HCl – 9.5 (?) tons per rolling 12-month total

PTI Application Content

- Permit Mark-up
- Application Form
- Permit Approval
- Timeframe

Neenah Paper Michigan

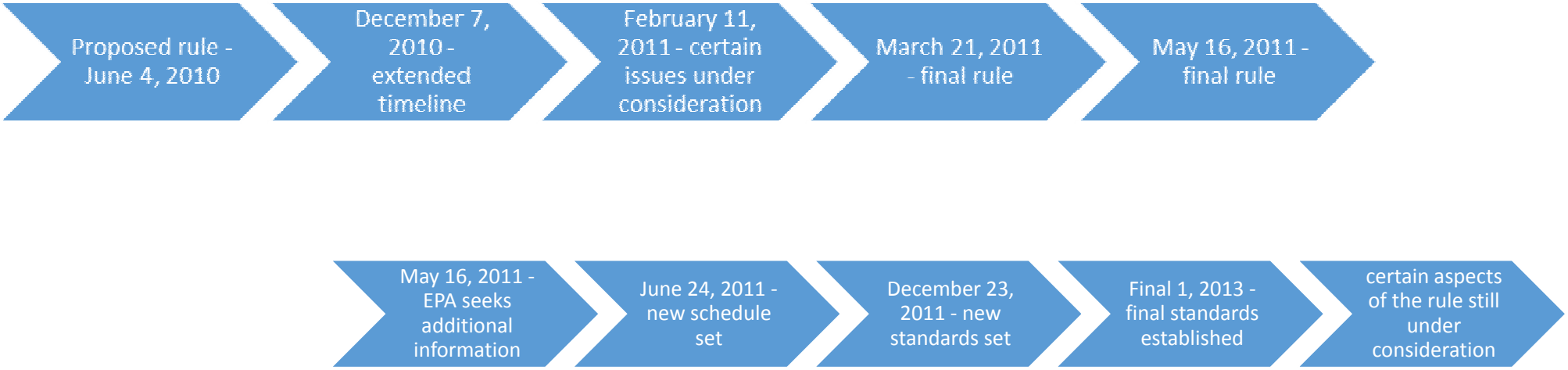
Stack Test Extension Request

April 26, 2016

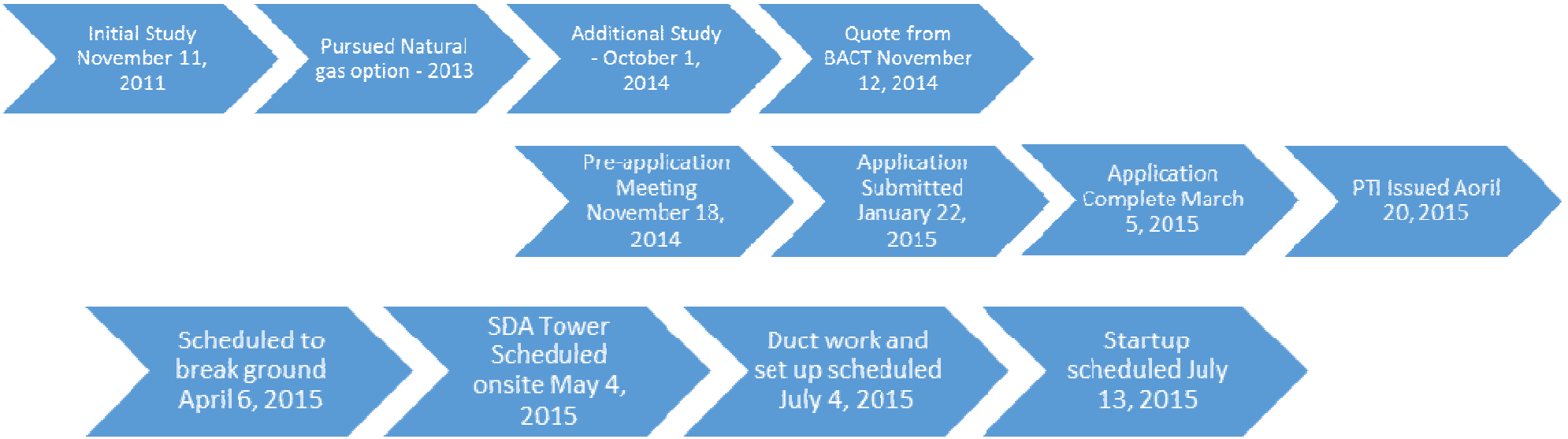
FISHBECK, THOMPSON, CARR, & HUBER INC.

- Compliance with the IB MACT/IB GACT Rules
- Problems at the Site
- Emissions Status
- Regulatory Support
- Going Forward

Overview



IB GACT/IB MACT Timeline



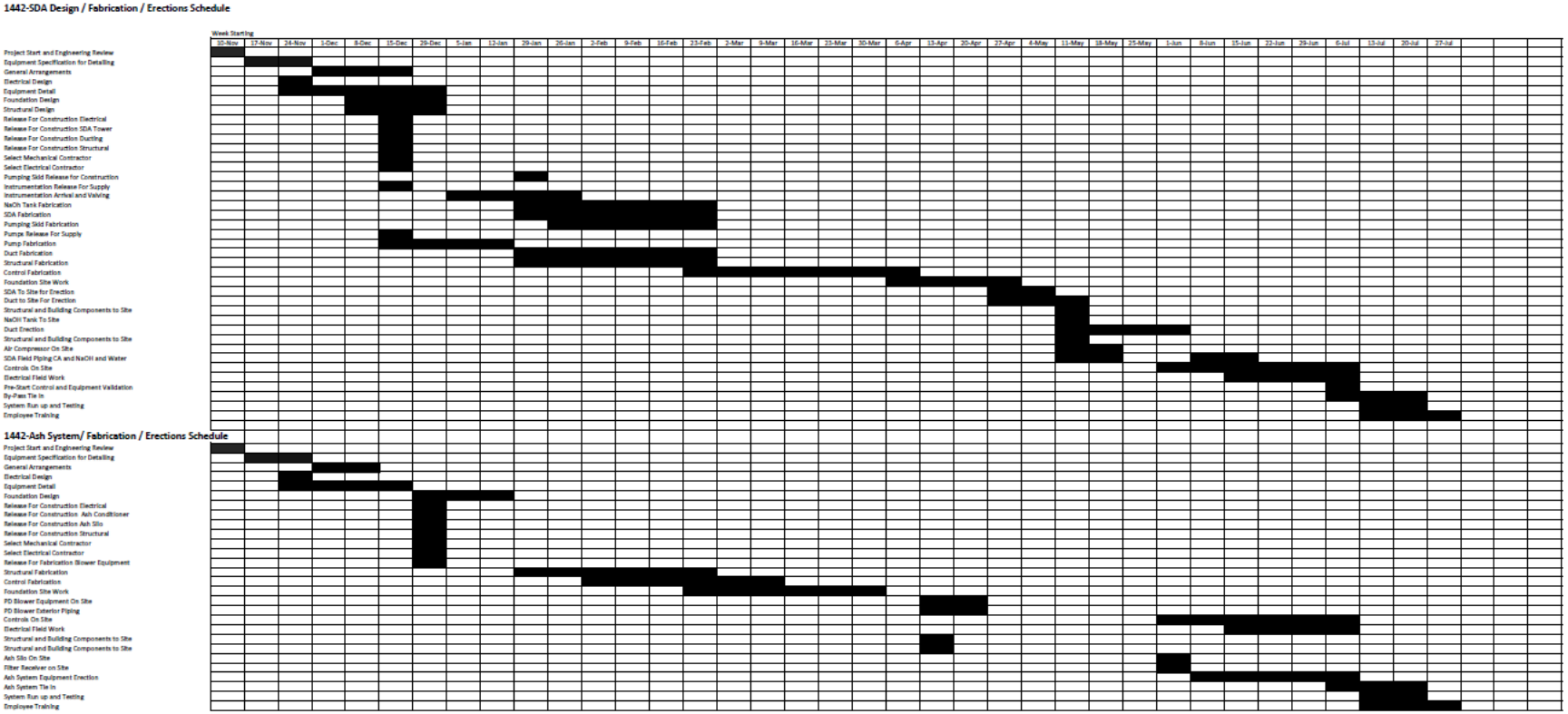
Delayed until May 4

Delivery July 28 – installed following day

Engineering problems delayed set up until September 7

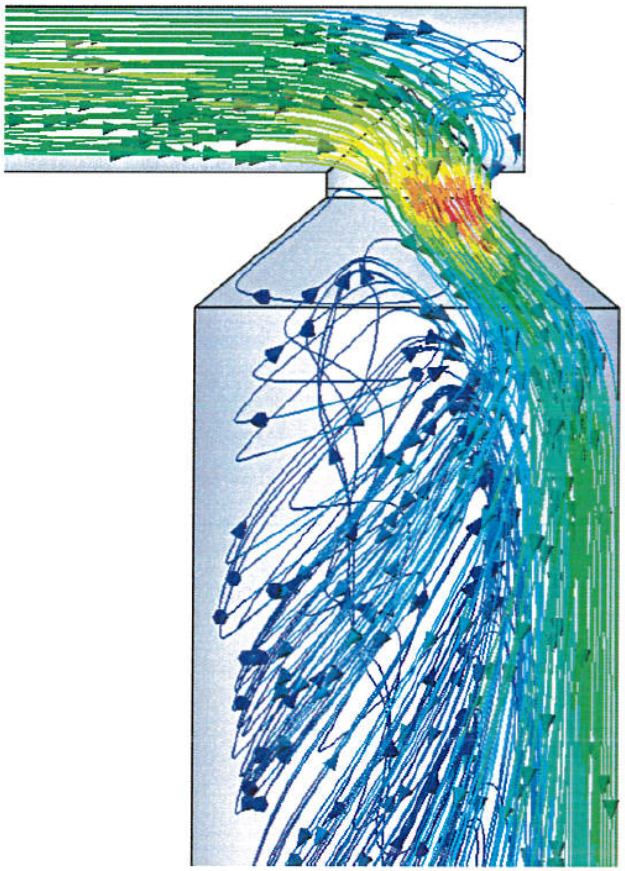
Startup on December 6

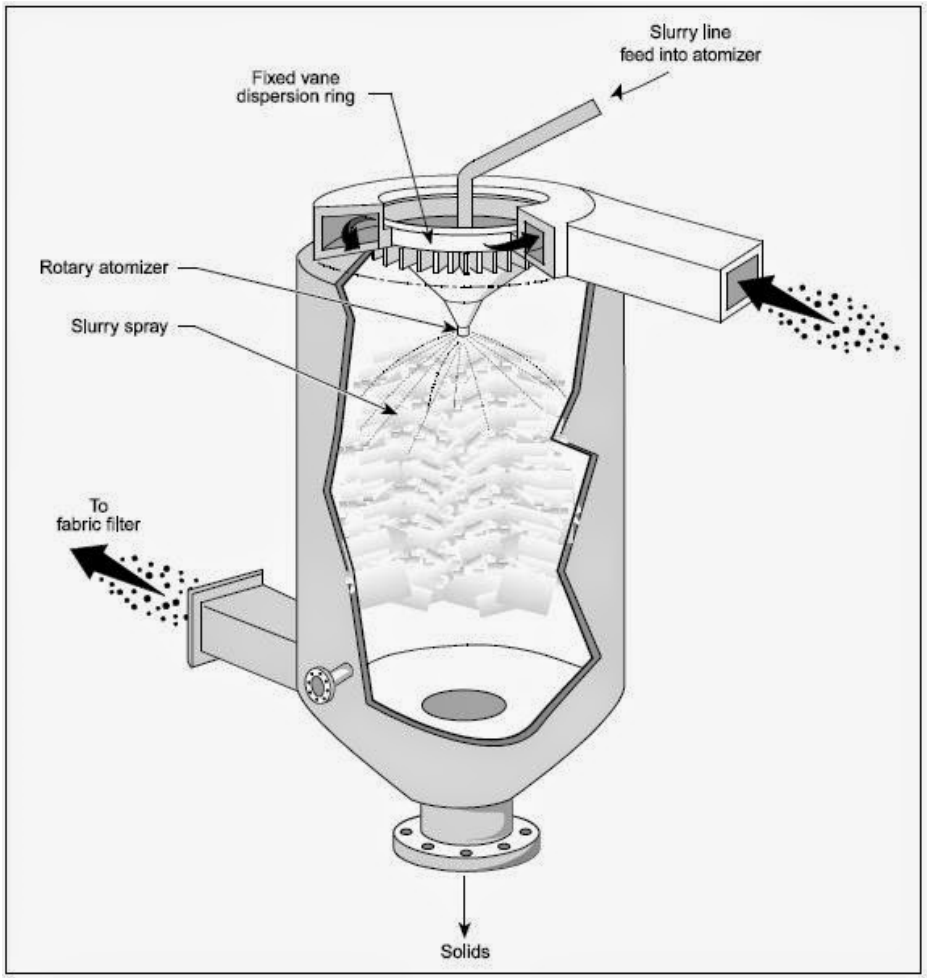
Neenah Paper Timeline



Example Schedule

- Ash and caustic buildup on nozzle lances
- Daily cleaning of lances by operating crews
- Ash and caustic buildup on SDA side walls
- Ash and caustic buildup on bottom of SDA tower
- BOSK vacuum services 6 times to remove material - $30,000
- Caustic soda is approx. $15,000 additional cost (to maintain 92-93% efficiency)





Spray Dry Absorber Operation

ROP required testing within 3 years of issuance – could be once every 5 years

PTI requires testing within 180 days of placing unit in service

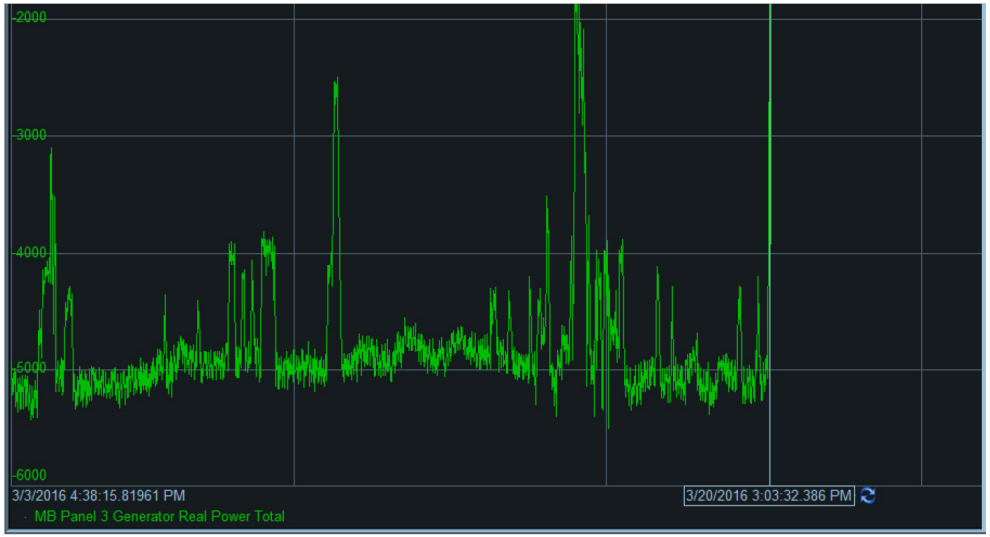
IB GACT requires testing within 180 days of becoming subject

Pollutants	Limit	Underlying Applicable Requirement		
		PTI	ROP	IB GACT
HCl	≤ 9 tpy	XX		
PM	0.03 lb/mmbtu		XX	
Metals	NA	XX		
CO	420 ppm			XX
Hg*	2.2×10^{-6} lb/mmbtu			XX

* Hg compliance will be shown with fuel analysis.

Stack Testing and Limits

Cleaning the vessel

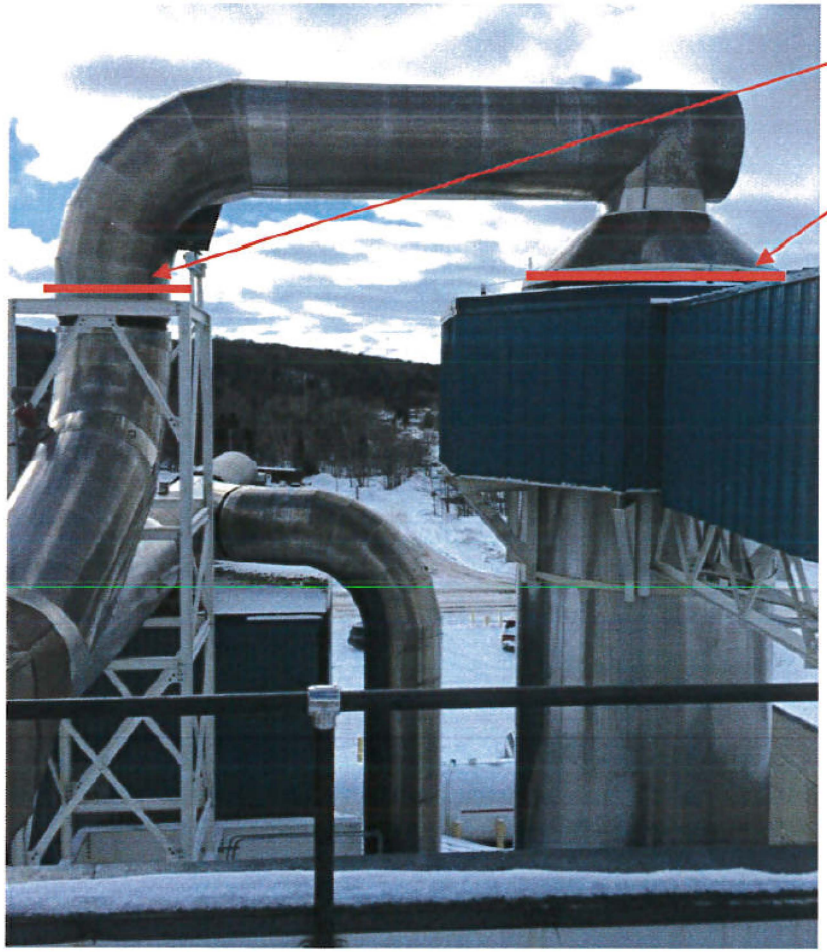


- Early design changes not sufficient
- Boiler shut down when possible to allow clean-outs
- Boiler shut down in March (left mill without heat)
- Costs additional $4000-5000 a day for electricity
- Extra costs for NaOH solution

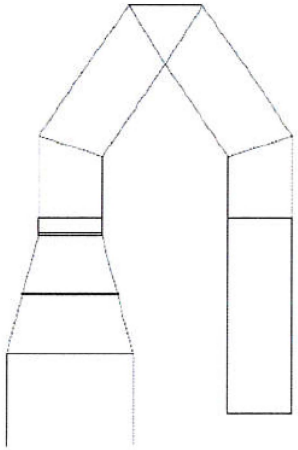
Temporary fix

- Three proposals
- Targeting design changes for July outage
- Periodic “clean-outs” until then
- Tracking emissions with SDA and without to ensure no HCl exceedance
- Showed compliance with other limits before SDA
- Request additional time for final tests

Options going forward…



Potential design change – not final



Sketch of Inlet section to be provided, with internal guiding vanes

Modifications suggested

ROP Modification

Potential PTI Revision

Permit to Install Application

Neenah Paper Michigan, Inc.
501 East Munising Avenue
Munising, Michigan

Project No. G150512STK
June 2016




Fishbeck, Thompson, Carr & Huber, Inc.
engineers | scientists | architects | constructors

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - AIR QUALITY DIVISION

PERMIT TO INSTALL APPLICATION

For authority to install, construct, reconstruct, relocate, or modify process, fuel-burning or refuse burning equipment and/or control equipment. Permits to install are required by administrative rules pursuant to Section 5505 of 1994 PA 451, as amended.

FOR DEQ USE ONLY
APPLICATION NUMBER

Please type or print clearly. The "Application Instructions" and "Information Required for an Administratively Complete Permit to Install Application" are available on the Air Quality Division (AQD) Permit Web Page at http://www.deq.state.mi.us/aps. Please call the AQD at 517-284-6773 if you have not been contacted within 15 days of your application submittal.

1. FACILITY CODES: State Registration Number (SRN) and North American Industry Classification System (NAICS)

SRN: B 1 4 7 0 NAICS: 3 2 2 1 2 1

2. APPLICANT NAME: (Business License Name of Corporation, Partnership, Individual Owner, Government Agency)
Neenah Paper, Inc.

3. APPLICANT ADDRESS: (Number and Street)
501 East Munising Avenue

MAIL CODE:

CITY: (City, Village or Township)
Munising

STATE: MI

ZIP CODE: 49862

COUNTY: Alger

4. EQUIPMENT OR PROCESS LOCATION: (Number and Street – if different than Item 3)

CITY: (City, Village or Township)

ZIP CODE:

COUNTY:

5. GENERAL NATURE OF BUSINESS:
Paper Mill

6. EQUIPMENT OR PROCESS DESCRIPTION: (A Description MUST Be Provided Here. Include Emission Unit IDs. Attach additional sheets if necessary; number and date each page of the submittal.)

Boiler 1 is an existing coal and natural gas fired boiler that was recently retrofit with an add-on spray dryer absorber (SDA) to control acid gas hazardous air pollutants to comply with the federal National Emission Standards for Hazardous Air Pollutants as it would apply to industrial/commercial/institutional boilers.

Neenah is requesting that the deadline for stack testing be extended.

See enclosed materials for support to allow an extension of the stack testing deadline.

7. REASON FOR APPLICATION: (Check all that apply.)

- ☐ INSTALLATION / CONSTRUCTION OF NEW EQUIPMENT OR PROCESS
- ☐ RECONSTRUCTION / MODIFICATION / RELOCATION OF EXISTING EQUIPMENT OR PROCESS – **DATE INSTALLED:**
- ☒ OTHER – DESCRIBE – *ADD ACID GAS AIR POLLUTION CONTROL TECHNOLOGY TO EXISTING BOILER 1*

8. IF THE EQUIPMENT OR PROCESS THAT WILL BE COVERED BY THIS PERMIT TO INSTALL (PTI) IS CURRENTLY COVERED BY ANY ACTIVE PERMITS, LIST THE PTI NUMBER(S): *24-15*

9. DOES THIS FACILITY HAVE AN EXISTING RENEWABLE OPERATING PERMIT (ROP)? ☐ NOT APPLICABLE ☐ PENDING APPLICATION ☒ YES

PENDING APPLICATION OR ROP NUMBER: *MI-ROP-B1470-2013a*

10. AUTHORIZED EMPLOYEE: Ms. Natalie Kentner

TITLE: Environmental Engr

PHONE NUMBER: (Include Area Code) 906-387-7561

SIGNATURE: Natalie Kentner

DATE: 6/13/16

E-MAIL ADDRESS: Natalie.Kentner@Neenah.com

11. CONTACT: (If different than Authorized Employee. The person to contact with questions regarding this application) Ms. Lillian L. Woolley, P.E.

PHONE NUMBER: (Include Area Code) 248-324-4785

CONTACT AFFILIATION: Consultant

E-MAIL ADDRESS: llwoolley@ftch.com

12. IS THE CONTACT PERSON AUTHORIZED TO NEGOTIATE THE TERMS AND CONDITIONS OF THE PERMIT TO INSTALL? ☒ YES ☐ NO

FOR DEQ USE ONLY - DO NOT WRITE BELOW

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:

DATE PERMIT TO INSTALL APPROVED: SIGNATURE:

DATE APPLICATION / PTI VOIDED: SIGNATURE:

DATE APPLICATION DENIED: SIGNATURE:

A PERMIT CERTIFICATE WILL BE ISSUED UPON APPROVAL OF A PERMIT TO INSTALL

PERMIT TO INSTALL APPLICATION

NEENAH PAPER MICHIGAN, INC.
501 EAST MUNISING AVENUE
MUNISING, MICHIGAN

PREPARED FOR:

NEENAH PAPER MICHIGAN, INC.

MUNISING, MICHIGAN

JUNE 2016
PROJECT NO. G150512

39500 MacKenzie Drive, Suite 100
Novi, Michigan 48377

248.324.2090
www.ftch.com

Fishbeck, Thompson, Carr & Huber, Inc.
engineers I scientists I architects I constructors

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LIST OF ABBREVIATIONS/ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
EU	emission unit
FTCH	Fishbeck, Thompson, Carr & Huber, Inc.
GACT	generally available control technology
H_2SO_4	sulfuric acid
HAP	hazardous air pollutant
HCl	hydrogen chloride
HF	hydrogen fluoride
Hg	mercury
IB	industrial/commercial/institutional boiler
lb/gal	pound(s) per gallon
lb/hr	pound(s) per hour
lb/MMBtu	pounds per million Btus
MACT	maximum achievable control technology
MAERS	Michigan Air Emissions Reporting System
MDEQ	Michigan Department of Environmental Quality
MMBtu/hr	million British Thermal Units per hour
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrite
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NSR	new-source review
O_2	oxygen
O_3	ozone
Pb	lead
PM	particulate matter (filterable portion only measured using USEPA Methods 5 or 17)
PM_{10}	fine particulate matter less than 10 microns
$PM_{2.5}$	fine particulate matter less than 2.5 microns
ppm	parts per million
ppmw	parts(s) per million by weight
PSD	Prevention of Significant Deterioration
PTE	potential to emit
PTI	permit to install
RACT	reasonably achievable control technology?
RICE	reciprocating internal combustion engines
ROP	Renewable Operating Permit, identified as MI-ROP-B1470-2013 for Neenah Paper, Inc.
scf	standard cubic feet
SDA	spray dryer absorber
SDS	Safety Data Sheet (formerly Material Safety Data Sheet [MSDS])
SO_2	sulfur dioxide
SO_3	sodium trioxide
TAC	toxic air contaminant
T-BACT	Best Available Control Technology for Toxics
tpy	tons per year
µg/m³	microgram(s) per cubic meter
USEPA	U.S. Environmental Protection Agency
VE	visible emissions
VOC	volatile organic compound

1.0 INTRODUCTION

FTCH has been retained by Neenah Paper Michigan, Inc. to submit a PTI application to modify the existing SDA control system associated with Boiler 1. This control system began installation in May 2015, as authorized by PTI 24-15. Initial stack test results indicate that the new SDA system significantly reduces HCl stack emissions; however, it has not met its performance guarantee. Scrubber enhancements are required to meet its performance guarantee and reduce SDA downtime due to cleaning and other maintenance currently needed to maintain performance. Currently, Neenah staff track actual HCl emissions from Boiler 1 to ensure that the facility remains a minor source of HAPs.

A second boiler – Boiler 2 – is currently limited to firing fuel oil. This unit is considered *limited use* and is used only as a backup should Boiler 1 become unavailable for any reason. It is also operated during periodic maintenance checks and readiness testing. It should be noted that Boiler 2 cannot support total manufacturing plant steam requirements associated with the production equipment. Its primary function is to prevent freeze-ups during extended cold spells if Boiler 1 is down.

Neenah manufactures paper products, the facility is located at 501 East Munising Avenue, Munising, Michigan (the Mill). A Site Location Map is included as Figure 1.

Both boilers are included in Neenah's ROP MI-ROP-B1470-2013, as EU05 (Boiler 1) and EU15 (Boiler 2), respectively; actual emissions are reported annually to the MDEQ.

As noted in Neenah's previously approved PTI, there are other emission units at the Mill, which include: paper machines, saturators and coaters, heaters, ovens, and emergency equipment, (which consists of RICE for emergency backup power and an emergency backup fire pump).

This document contains the information required to evaluate this project's PTI application, including a description of the planned SDA improvements and a revised facility-wide HAP emissions summary. A permit mark-up is also included showing the proposed permit changes.

The Mill's maximum operating schedule is 8,760 hours per year.

2.0 PROJECT DESCRIPTION

2.1 DESCRIPTION OF EXISTING BOILERS

Boiler 1 is capable of 202 MMBtu/hr heat input while firing coal or 71 MMBtu/hr heat input while using natural gas fuel. The existing gas burners installed on Boiler 1 restrict the total amount of natural gas that can be consumed per hour. Boiler 2 is a fuel oil-fired boiler and is also capable of 202 MMBtu/hr heat input, and has historically operated as a backup unit.

2.2 EXISTING PAPER MANUFACTURING OPERATION

Neenah Paper operates a non-integrated paper mill in Munising, Michigan. It obtains large bales of pulp from pulp suppliers; the bales are then soaked in water before use in papermaking machines. Base materials are selected to ensure that the end products meet customer performance specifications. The bales are broken down in a hydro-pulper, which uses a mechanical force to separate the fibers within the bales, creating a suspension in the water having approximately 6 to 12% dry material. Additives, including non-fibrous materials, may be added to the pulp to improve paper characteristics, such as opacity or whiteness. Additives can also be used to improve the surface quality of the final product or to improve the paper's wet strength. At different stages of the paper making process, the pulp can be cleaned with a sieve or cyclonic cleaner to remove large particles.

Once the pulp leaves the pulper, it enters a headbox; the headbox directs the pulp in a thin, wide uniform sheet onto a screen, which is part of the forming table. The screen allows the water to drain while retaining the paper fibers. Water drains from the paper not only due to gravity but also because the sheets are routed through rapidly rotating rolls. These rolls contact the underside of the wire screen and produce a pumping – or vacuum – action which increases the drainage of the water through the wire. These rolls also help support the paper. The press section then increases the solids content of the sheet of paper by removing some of the free water contained in the sheet after it is formed. Without disrupting or disturbing sheet structure, the press section allows routing of the paper; it carries the paper from the forming unit to the dryer section, where the thickness of the paper is reduced. Paper leaving the press section of the machine has a solids content – or dryness – of 32 to 40%. Due to the relatively high cost of removing water by evaporation, as compared to removing it by mechanical means, the sheet must be as dry as possible when it enters the dryers. The dryer section of a conventional paper machine consists of between 40 and 70 drying cylinders – the drying cylinders at Neenah are natural gas-fired and steam-heated. After passing around the cylinders, the sheet of paper is held in close contact with

the heated surfaces by means of dryer felts. Once leaving the dryers, the paper can be placed on large rolls for delivery to customers or further processed by adding saturant.

A flow chart, included as Figure 2, illustrates the general paper-making process.

Neenah operates two papermaking machines, as well as machines that can be used for additional saturation and paper coatings. Paper is coated to improve appearance and printability. *Coated paper* is paper which has been coated by a compound (on either one or both sides) to impart certain qualities to the paper, including weight, surface gloss, smoothness, and absorbency. The coating can be dull, gloss, matte, satin, or various other finishes. Coatings are also applied to paper to achieve uniformity of surface. Coated paper generally produces sharper, brighter images and has better reflectivity than uncoated paper. Coated paper typically is smoother and has better ink holdout – meaning it is less absorbent than uncoated paper, making it more suitable for certain types of overprint finishing techniques. Substrate structures in the paper may consist of pores that penetrate through the entire substrate. By using a saturation coating process, the entire internal web structure is coated, which fills the pores with a material that works to reinforce the entire substrate. These filled pores can either have a surface coating or a non-surface coating (saturation only). The result of adding a saturant is a solid, modified substrate, with a surface that has different characteristics than when the substrate was unsaturated. In addition, the saturant enhances the strength of the substrate, while still maintaining flexibility. Other chemical additives are used to provide water resistance or protect against ultraviolet radiation. The final product produced is determined by the base sheets used, saturant and/or coating formulation, process, etc. Neenah uses several different raw materials in several different combinations to produce paper products. Many of the raw materials contain plastic water-based latex polymers. Specific raw material combinations on Neenah paper products are considered proprietary; however, in general, many can be considered acrylic latex elastomers. An example technical data sheet is included as Appendix 1.

2.3 PROPOSED PROJECT DESCRIPTION

Neenah added an SDA system to control HCl, which is a regulated HAP; however, collateral *decreases* in SO_2 and H_2SO_4 mist are anticipated. H_2SO_4 is generated from SO_2 emissions because a small amount of SO_2 (approximately 1%) converts to SO_3, then all the SO_3 converts to H_2SO_4 in the presence of moisture in the exhaust gases and humidity in the ambient air. The USEPA HAP List *does not* include H_2SO_4.

Figure 3 identifies a typical SDA process flow diagram as it would be applied to a boiler's exhaust gas system.

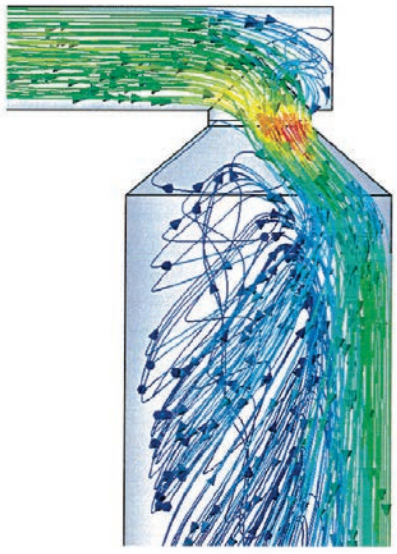
To minimize scrubber maintenance and maximize availability, Neenah is proposing to upgrade the existing SDA control system on the Boiler 1.The SDA performance to date, although proven effective for HCl and SO_2 removal has inherent design issues that have resulted in multiple SDA shutdowns for maintenance repairs. The SDA was originally installed on Boiler 1 to reduce facility-wide HAPs to less than major source thresholds, in time to reclassify the facility as a minor HAP source to comply with the federal Boiler GACT regulations before the effective date within the GACT regulation. To date, the SDA

unit has performed well and actual emissions of HCl are being tracked to maintain the Neenah facility to less than 9 tpy for a single HAP and 22.5 tpy for aggregate HAPs on an 12-month rolling, annual basis, as required by PTI 24-15. Initial SDA performance was estimated at approximately 98% HCl control while actual performance has been approximately 93% HCl control. Additional maintenance is needed to maintain the 93% control, including:

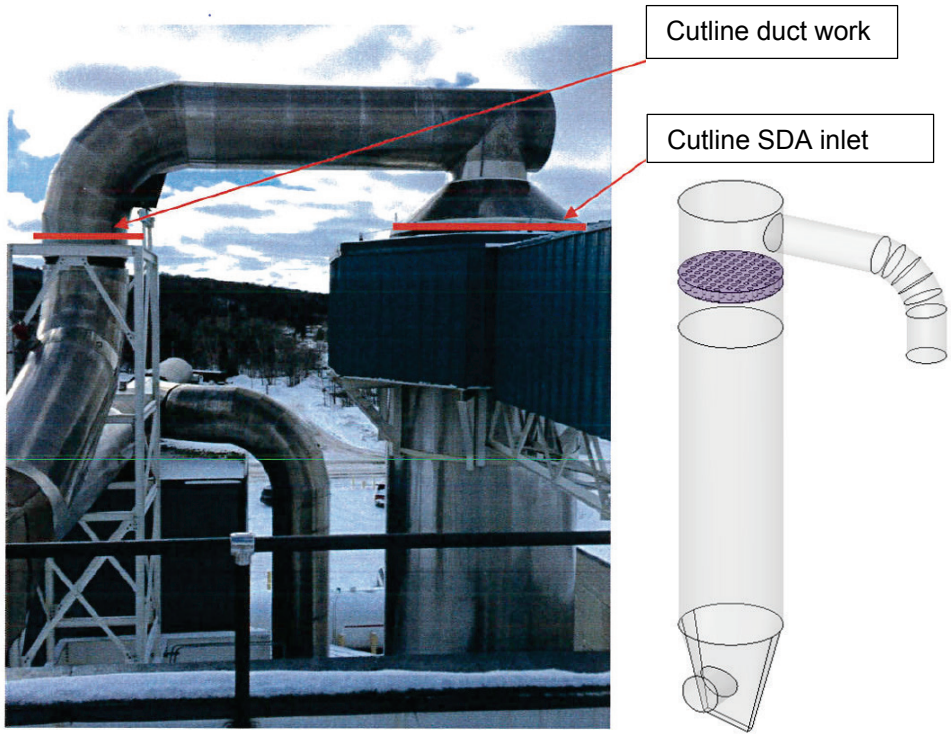
- Daily cleaning of lances by operating crews
- Removal of ash and caustic buildup on SDA side walls
- Removal of ash and caustic buildup on bottom of SDA tower
- Additional outside contractor vacuum services six times to remove material and dispose of it at a cost of approximately $150,000 during the first six months of operation.
- Additional caustic soda use costing approximately $15,000 per month to maintain the 93% efficiency.

Caustic soda build up on nozzles and the inside of the SDA tower.

Issues with SDA operation center around exhaust flow through the system as depicted below:



As the diagram indicates, some channeling occurs, which does not allow for consistent gas-liquid contact. The only way to increase control efficiency is to increase sodium hydroxide usage and Neenah spends approximately $15,000 in additional sorbent per month. Neenah has been working with the original equipment manufacturer on some design changes that would improve exhaust gas flow through the SDA, improving control efficiency and reducing sorbent usage. Changes in the system, which could include changes in the ductwork as illustrated below:



3.0 REGULATORY REVIEW

This permit application includes SDA scrubber modifications necessary to improve reliability, such that a high level of HCl removal is maintained on Boiler 1 so the entire facility can remain a minor source of HAPs without limiting annual hours of operation to less than what is reasonably required to operate the Mill. Preliminary stack test information demonstrates that the SDA can be operated with relatively high HCl removal as shown in Appendix 2. However, SDA modifications are necessary to the initial performance guarantees such that Boiler 1 can supply sufficient process steam to the facility on an annual basis, and still remain a minor HAP source. This PTI application does not propose any physical modifications to Boiler 1 and issuance of this PTI will not serve as a debottlenecking measure.

3.1 MICHIGAN REGULATIONS

3.1.1 AIR POLLUTION CONTROL RULE 201 – PTI REQUIREMENTS

Any process or process equipment installed after August 15, 1967, which may emit an air contaminant requires a PTI prior to installation, construction, reconstruction, relocation, or modification unless specifically exempt. Neenah is requesting limits to the HAP PTE for the entire Mill to below the applicable major source thresholds – i.e., less than 10 tpy for a single HAP and less than 25 tpy for all HAPs combined. Therefore, Boilers 1 and 2 will be subject to the area source requirements contained in the IB GACT (40 CFR 63 Subparts A and JJJJJJ [6J]) rather than the requirements contained in the IB MACT (40 CFR 63 Subparts A and DDDDD [5D]). Based on the need to establish enforceable HAP emission limits for Neenah, the addition of SDA to the Boiler 1 exhaust gas system requires a PTI and changes to the permit conditions require a PTI.

3.1.2 AIR POLLUTION CONTROL RULES 224 TO 230 – T-BACT REQUIREMENT FOR NEW AND MODIFIED SOURCES OF AIR TOXICS AND HEALTH-BASED SCREENING LEVEL REQUIREMENT FOR NEW OR MODIFIED SOURCES OF AIR TOXICS

Rules 224 to 230 apply to any proposed new or modified process or process equipment for which an application for a PTI is required and which emits a TAC. A TAC is defined in Michigan rules as:

> ... any air contaminant for which there is no National Ambient Air Quality Standard (NAAQS) and which is or may become harmful to public health or the environment when present in the outdoor atmosphere in sufficient quantities and duration.

Rules 224 and 225 require emissions of TACs not exceed both of the following:

- Rule 224 – The maximum allowable emission rate that results from the application of best available control technology for toxics.
- Rule 225 – The maximum allowable emission rate that results in a predicted maximum ambient impact below the initial threshold screening level, the initial risk screening level, or both.

The proposed enhancements to the SDA for Boiler 1 are not considered to be a modification to the existing source, as the SDA will not cause an increase in emissions of any air contaminant from Boiler 1. Once the improvements are made to the SDA the emissions of acid gas TAC emissions (as well as a collateral decrease of SO_2 and H_2SO_4.), will represent an overall reduction in emissions. The definition of *modify* is contained in R 336.1113(e) [Rule 113(e)]:

> "Modify" means making a physical change in, or change in the method of operation of, existing process or process equipment which increases the amount of any air contaminant emitted into the outer air which is not already allowed to be emitted under the conditions of a permit or order or which results in the emission of any toxic air contaminant into the outer air not previously emitted. An increase in the hours of operation or an increase in the production rate up to the maximum capacity of the process or process equipment shall not be considered to be a change in the method of operation unless the process or process equipment is subject to enforceable permit conditions or enforceable orders which limit the production rate or the hours of operation, or both, to a level below the proposed increase.

As there will be no physical changes to the Boiler 1 combustion system, for CO emissions to comply with the IB NESHAP emission limit, there will also be no collateral increase in potential NO_X emissions. Appendix 3 contains recent CO testing and demonstrates compliance with the 420 ppm (@ 3% O_2) CO limit in the GACT regulations. Average emissions of 31.7 ppm @ 6.4% O_2 convert to 123 ppm @ 3% O_2.

The proposed enhancements to the existing SDA serving Boiler 1 will further reduce TACs by limiting SDA outages for maintenance and is, therefore, not subject to the requirements contained in Rules 224 to 230.

3.1.3 AIR POLLUTION CONTROL RULE 301 – STANDARDS FOR DENSITY OF EMISSIONS

These proposed SDA enhancements will not adversely affect the ability of Boiler 1 to comply with the Rule 301 (VE) limitations. Rule 301 establishes limitations for the density of PM emissions. The proposed changes are not expected to have any effect on the ability to comply with the VE limitations of Rule 301. Rule 301 limits VE as follows:

- A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
- A limit specified by an applicable federal NSPS.
- A limit specified as a condition of a Permit to Install or Permit to Operate.

The use of baghouse control technology for Boiler 1 is the best demonstrated technology for compliance with the VE requirement contained in Rule 301. Furthermore, the addition of SDA will reduce the potential for acid mist, which can contribute to VE exiting Boiler 1's exhaust gas stack.

3.1.4 AIR POLLUTION CONTROL RULE 401 – EMISSION OF SO_2 FROM POWER PLANTS

A power plant is defined as any single structure devoted to steam or electrical production, or both, and may contain multiple boilers. The SO_2 requirement in Rule 401 applies to Boiler 1; the use of SDA control technology will enhance Boiler 1's ability to comply with this Rule. Furthermore, the current sulfur content of the coal used in Boiler 1 is less than 1%. Rule 401 restricts the maximum sulfur content of the coal used in Boiler 1 to less than 1.5% sulfur, based on the combined steaming rate of the Mill's power plant being less than 500,000 lb/hr.

3.1.5 AIR POLLUTION CONTROL RULE 610(2)(F) – VOC RACT FOR COATING LINES

The papermaking processes at Neenah are subject to a VOC limit of 2.9 lb/gal VOCs minus water as specified in Rule 610(2)(f). Neenah screens raw materials before use in its papermaking processes to ensure compliance with this limit and will not use any raw material that exceeds 2.9 lb/gal.

3.1.6 AIR POLLUTION CONTROL RULE 702 – VOC BACT

New sources of VOC are subject to Rule 702, which requires an emission limitation based upon the application of BACT. In this particular instance, VOC BACT was determined to be equal to the requirements for existing sources contained in Rule 610(2)(f), which restricts emissions from existing lines to 2.9 lb VOCs/gallon minus water, as applied. Neenah has a Raw Materials Review Program in which all raw

materials are reviewed before use at the site and no raw material is compounded in such a manner that will exceed this limit.

Neenah tracks the VOC content of its raw materials and calculates a time-weighted average. That average is currently 900 ppmw. Emissions are then calculated by multiplying the number of gallons of raw materials used per month by the average VOC content, which is currently 900 ppmw.

3.1.7 AIR POLLUTION CONTROL – PART 18 – PSD

The proposed project is limited to the SDA addition to Boiler 1 and non-PM generated equipment additions for reagent receiving, handling, and storage. No changes are proposed to Boiler 1's combustion system to control potential CO emissions, which typically increase potential NO_X emissions. Use of the SDA will not result in any significant emissions increase of any NSR-regulated pollutant. Furthermore, there will be reductions in the emissions of SO_2 and H_2SO_4 as well as HCl and HF; therefore, the proposed project will not be subject to the requirements contained in Part 18 regarding the major source PSD Program. Any collateral increase in PM emissions from Boiler 1 as a result of controlling acid gases will be successfully controlled using the existing baghouse. Therefore, there will be no increase in potential PM, PM_{10}, and $PM_{2.5}$ emissions. CPM will be reduced by controlling acid gases using the SDA with caustic reagent.

3.2 FEDERAL REGULATIONS

3.2.1 NATIONAL AMBIENT AIR QUALITY STANDARDS – ATTAINMENT STATUS

Neenah is located in Alger County, which is currently in compliance with all NAAQS. NAAQS exist for SO_2, NO_2, CO, PM_{10}, $PM_{2.5}$, O_3 and Pb.

3.2.2 40 CFR 60 SUBPART Db – NSPS

The NSPS require that new, modified, or reconstructed affected sources emit less pollution than existing sources. 40 CFR Part 60 (or NSPS), Subpart Db, requires performance standards for each IB steam generating unit (or boiler), that is not an electric steam generating unit, and that has a heat input rate of equal to, or greater than, 100 MMBtu/hr. Boiler 1 was installed in the 1950s, which is prior to the effective date of NSPS Subpart Db; Boiler 1 has not undergone any reconstruction or modification since installation.

For NSPS Subpart Db purposes, an *affected facility* does not include devices to minimize air pollution from a boiler. As the project is limited to the addition of the SDA to further reduce air contaminant emissions from Boiler 1, with no physical changes directly related to Boiler 1 which could cause an increase in NO_X emissions, there will be no physical modification or reconstruction to Boiler 1. The SDA will effectively reduce SO_2 emissions, which is one of the pollutants addressed in the relevant NSPS. Any collateral increase in PM emissions (i.e., sodium chloride, sodium fluoride, and sodium sulfate) as a result of controlling the acid gases will be effectively controlled by the existing baghouse. Therefore, the requirements of 40 CFR 60 Subpart Db will not apply to existing Boiler 1.

3.2.3 40 CFR 63 Subparts A, DDDDD and JJJJJJ – NESHAPs

A *major source* of HAPs is defined in Section 112 of the CAA, in part, as a stationary source that has a PTE 10 tpy or more of any single HAP, or 25 tpy of all HAPs combined subject to regulation under the CAA.

Neenah is currently considered an area source of HAP emissions. As an area source of HAPs, the facility is subject to 40 CFR Part 63, Subpart JJJJJJ, NESHAP: Industrial, Commercial and Institutional Boilers. Boiler 1 is an existing boiler, as it was not installed or reconstructed after June 4, 2010. An existing coal-fired boiler subject to this rule must:

- Comply with a 420 ppm (@3% O_2) CO emission limit. Stack testing is scheduled for July 27, 2016.
- Comply with a 2.2 x 10^{-5} lb/MMBtu Hg emission limit. Fuel sampling is scheduled in conjunction with the CO stack testing.
- Complete a one-time energy assessment. This assessment was completed in November 2014.
- Establish a tune-up schedule. The initial tune-up was completed in 2014 and, because the unit has oxygen trim, tune-ups are only required once every five years.

With this PTI, Neenah has requested that stack testing included in the current PTI and ROP be postponed until work on the SDA has been completed. Some concern has been raised about postponing the required GACT testing; Neenah has withdrawn its request to postpone required GACT testing. Testing required under the GACT regulations is now scheduled for July 27, 2016, which is in compliance with the requirement for performance testing included in the GACT. Stack testing for CO will be performed at that time and fuel will be sampled for Hg.

Pollutants	Limit	Underlying Applicable Requirement		
		PTI	ROP	IB GACT
HCl	≤ 9 tpy	XX		
PM	0.03 lb/1,000 lbs exhaust		XX	
Metals	NA	XX		
CO	420 ppm @ 3% O_2			XX
Hg*	2.2 x 10^{-6} lb/MMBtu			XX

*Fuel sampling will be conducted to demonstrate compliance with the Hg limit.

As this chart demonstrates, the GACT only requires CO and Hg testing. Other testing must be completed for other reasons and the MDEQ may allow a stack test extension for the HCl, PM, and metals testing. Neenah has requested that the MDEQ extend the stack test deadlines an additional six months or until January 31, 2017. A permit mark-up is included in Appendix 4 indicating conditions Neenah has requested to update.

The HAP PTE from all process equipment at Neenah's Mill is addressed in Section 4.

4.0 EMISSION CHARACTERISTICS

There are NSR-regulated pollutants, TAC, and HAP emissions associated with burning coal in Boiler 1. As previously noted, Boiler 1 will not experience a *modification* as adding a control device to further limit acid gas emissions prior to the baghouse PM control device is not a modification to the boiler itself. This is due to a reduction in the PTE (such as SO_2) rather than any increase in emissions (see the definition of *modify* contained in Rule 113(e) and discussed in Section 3.1.2). Furthermore, there will be no NSR-regulated pollutants associated with the caustic reagent proposed to be used in the SDA, such as PM emissions generally associated with handling and storage of dry reagent. Therefore, an estimated emissions analysis for NSR regulated pollutants and TACs are not warranted for the project.

As previously noted, Boiler 2 is not part of the project to control acid gases from Boiler 1 because there will not be any physical change(s) to its method of operation or modification(s) being made to Boiler 2. Boiler 2 will continue to use fuel oil and be a standby boiler whenever necessary should Boiler 1 be unavailable for any reason.

4.1 HAP EMISSIONS

The bulk of the HAP emissions from Neenah result from its combustion sources. Table 1 provides the emissions of HAPs from Boiler 1 while using coal fuel. Table 2 is a summary of HAP emissions from Boiler 1 while using natural gas fuel[1]. Table 3 is a summary of HAP emissions from Boiler 2 while using distillate fuel oil, as no other fuel can be used in Boiler 2. Table 4 provides a summary of HAP emissions from miscellaneous natural gas-fired equipment at the Neenah Mill. Table 5 provides a summary of the HAP emissions associated with the emergency RICE. Table 6 provides a summary of the facility-wide PTE HAPs for the Neenah Mill. The method of calculating the emissions is included in each table.

After the SDA enhancements have been completed, Neenah will perform a stack test within 180 days of completion of these scrubber enhancements to determine an expected HCl removal efficiency. The current ROP includes a requirement to stack test within 180 days of completion of the original SDA construction, but enhancements are now requested within the original 180 day testing window. Therefore, upon approval of this permit application, we propose to complete the HCl stack testing on or before January 31, 2017.

A coal sample will also be taken to establish a baseline chlorine content. Coal burned at Neenah is a *washed coal* from the Leatherwood mine in Kentucky and chlorine levels have been fairly consistent. To track HCl emissions, Neenah will use the baseline chlorine content and amount of coal burned and multiply that by the HCl removal efficiency to obtain HCl monthly emissions. Appendix 5 includes a coal analysis which demonstrates the chlorine content.

[1] Boiler 1 will not generally simultaneously use both coal and natural gas fuels, except during periods of transitioning between fuels. Nonetheless, the HAP emissions due to natural gas firing are included such that there is a conservative estimate for illustrating the facility-wide PTE HAPs.

To ensure proper operation of the SDA and continued use of the HCl removal efficiency, Neenah is proposing to monitor the water feed rate, alkali feed rate, and pH. These operating parameters will be maintained in the range identified through stack testing or recommended by the manufacturer.

For the paper making operations, HAP emissions are entirely dependent on the raw materials. Consistent with historical plant records and emission calculation methods – in place for more than a decade for completion of the annual MAERS and NPDES reports – approximately 5% of the volatile HAPs in the raw materials are discharged to the sewer, the rest are emitted during the drying or curing processes. Emissions are calculated as follows:

$$HAP = HAP_{wt\%} \, x \, RM_{lbs} \, x \, 0.95$$

where:

$HAP_{wt\%}$ = weight % of HAPs
RM_{lbs} = pound(s) of raw material usages

The Neenah papermaking process has remained consistent over the years, using mostly acrylic latex elastomers in its paper coating operations. Neenah has also identified several HAPs that can be associated with its papermaking processes, including:

- acrylamide
- acrylic acid
- acrylonitrile
- butadiene
- ethyl acrylate
- formaldehyde
- glycol ether
- hydrazine
- methyl methacrylate
- phenol
- styrene
- triethyl amine
- vinyl acetate
- vinyl chloride
- 1,4-dioxane
- ethylene oxide

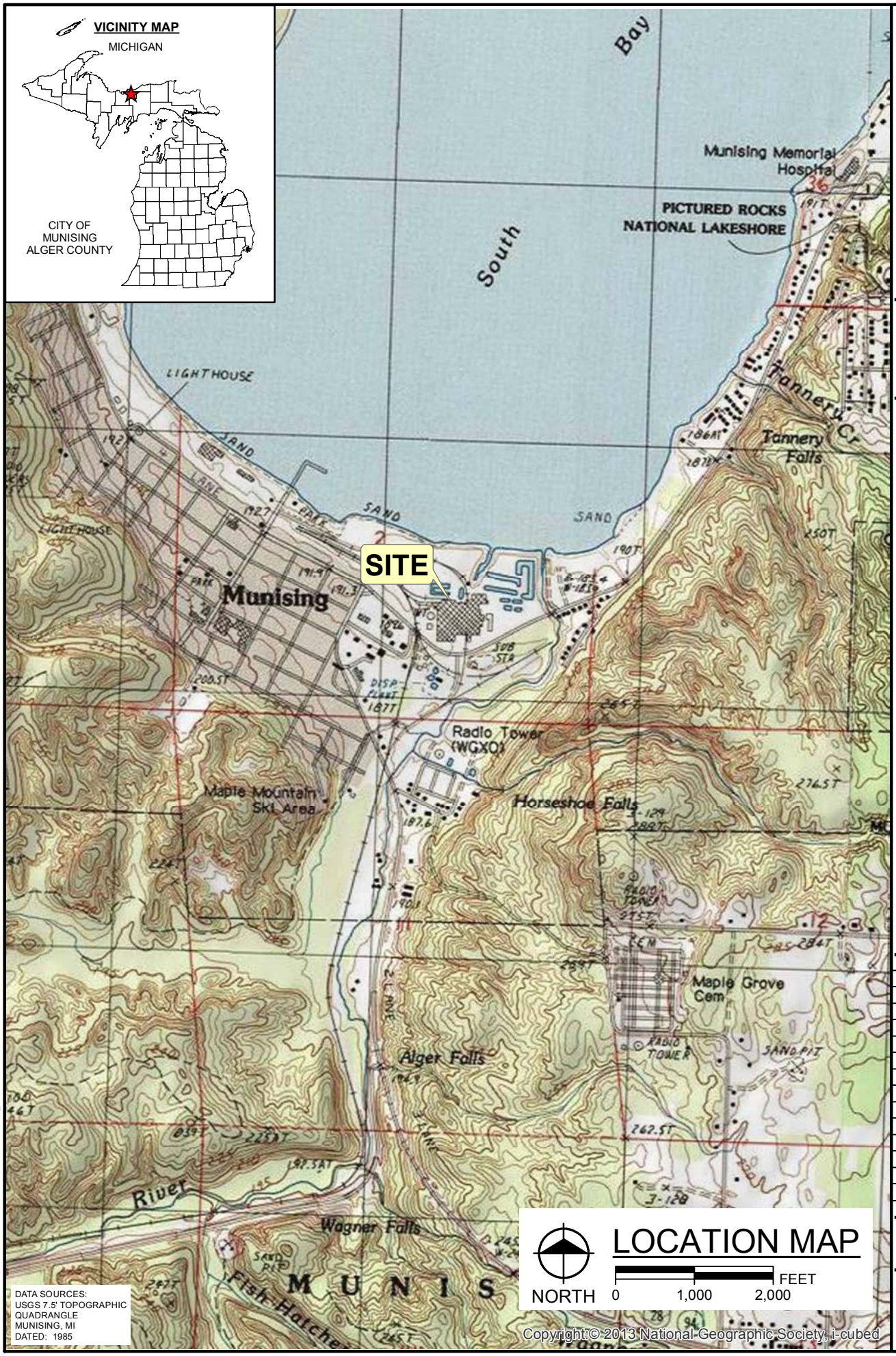
No HCl (the HAP that will be emitted from combustion) will be emitted from the papermaking process.

It is also important to note that, like other Michigan facilities which have accepted annual enforceable HAP limits to be classified as a minor HAP (GACT) facility, Neenah will maintain 12-month rolling emission summaries of HAP emissions using emission factors as approved by the MDEQ-AQD District Supervisor. These emission factors will be selected by Neenah and reviewed/approved by the MDEQ-AQD prior to use in the 12-month rolling (HAP) compliance demonstration.

5.0 SUMMARY AND CONCLUSION

Neenah is proposing specific SDA scrubber enhancements to improve operation of its system. These improvement will reduce costs and improve control efficiency. Work is planned during the July, 2016, outage and testing is planned for later this year. Neenah is requesting a stack testing extension as described in the permit mark-up. Additional time for testing will ensure that representative testing is completed.

Figures



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scientists
architects
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Neenah Paper, Inc.

501 East Munising Avenue, Munising, Michigan

Permit to Install Application

PROJECT NO.
G140833PTI

FIGURE NO.
1

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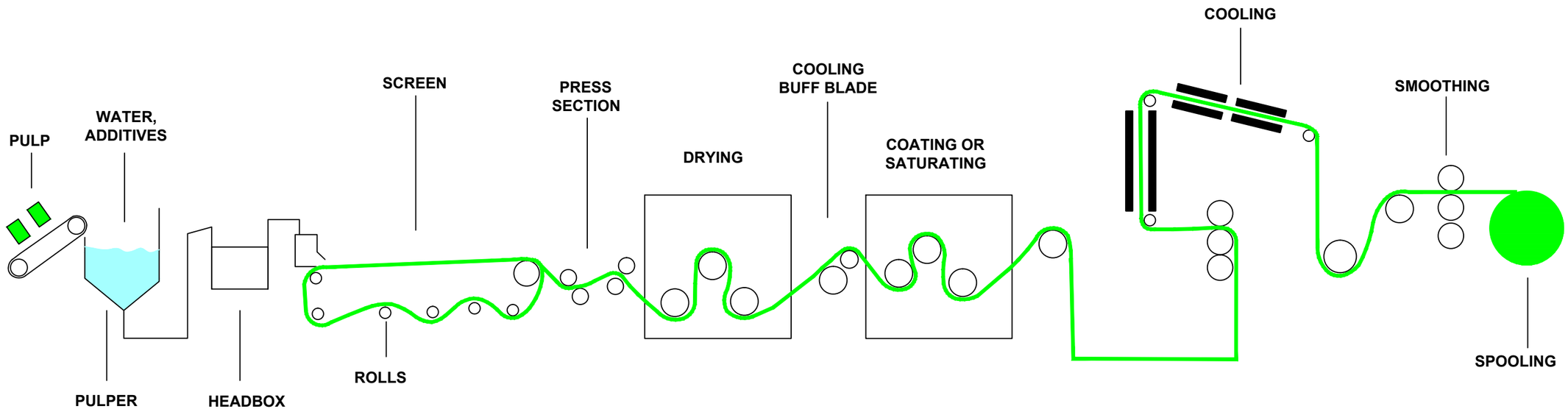

PROCESS FLOW DIAGRAM

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Neenah Paper
Munising, Michigan

Permit to Install Application

PROJECT NO.
G140833PTI

FIGURE NO.
2

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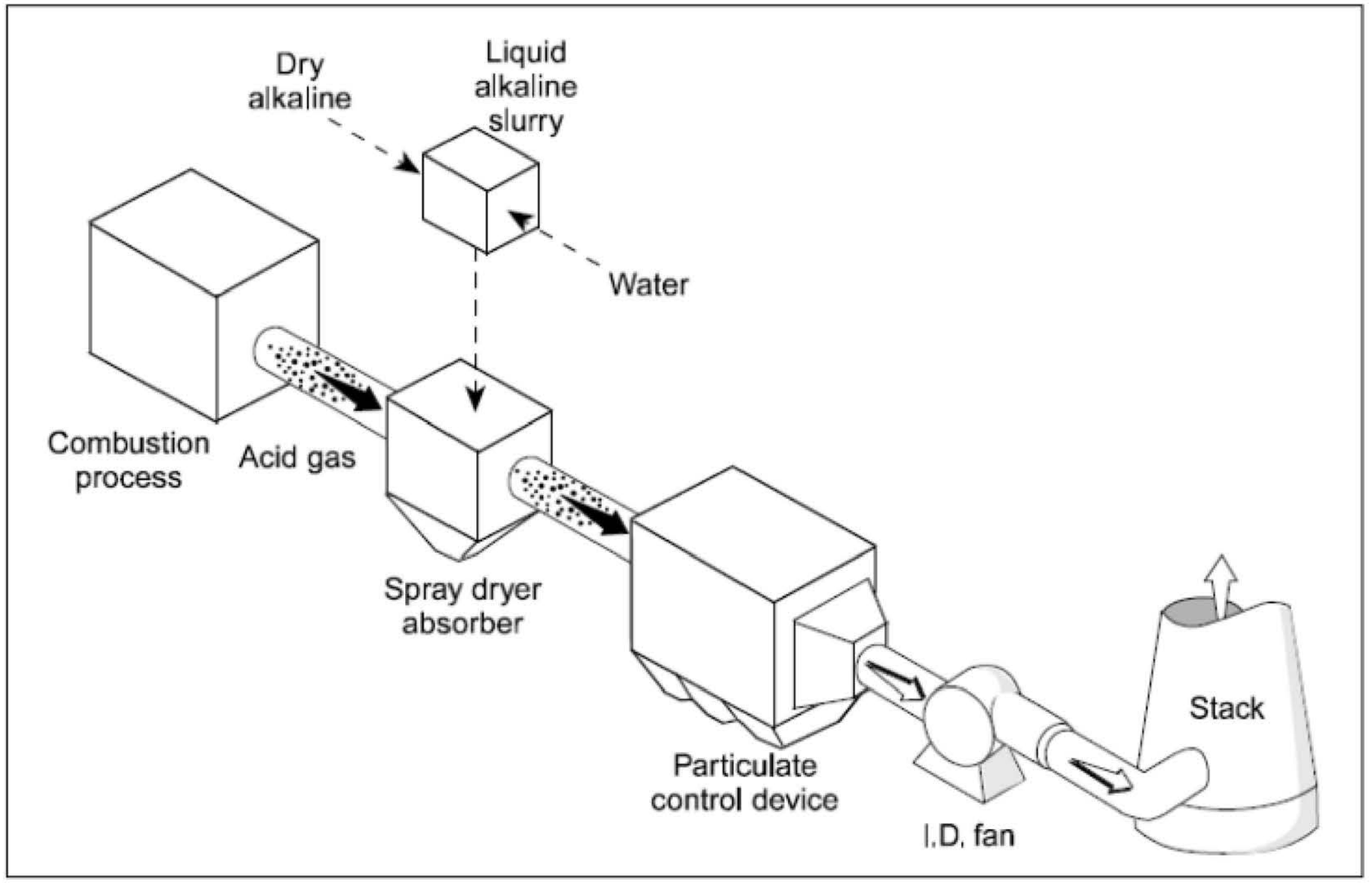

SPRAY DRY ABSORBER

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Neenah Paper
Munising, Michigan
Permit to Install Application

PROJECT NO.
G140833PTI

FIGURE NO.
3

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Tables

Table 1 - Boiler 1 HAPs - Coal Fuel
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Coal HHV =	*13,500*	*Btu/lb*
Boiler 1 Heat Input Rate =	*202*	*MMBtu/hr*
Coal Burn Rate =	*7.5*	*tons/hr*
Boiler Max Operation =	*8,760*	*hrs/yr*
Acid Gas Control Efficiency =	*95%*	
PM Control Efficiency =	*99.0%*	

Pollutant	Emission Factor [1]		Annual Emission Rate [2]
	See Note	EF Units	(tpy)
Metal HAP			
Antimony	2.0E+00	ppmw	8.5E-04
Arsenic	2.0E+00	ppmw	8.5E-04
Beryllium	3.0E+00	ppmw	1.3E-03
Cadmium	2.0E+00	ppmw	8.5E-04
Chromium	1.1E+01	ppmw	4.7E-03
Cobalt	1.0E-04	lb/ton	3.3E-03
Lead	4.0E+00	ppmw	1.7E-03
Manganese	1.2E+01	ppmw	5.1E-03
Mercury	3.0E-02	ppmw	2.0E-03
Nickel	2.8E-04	lb/ton	9.2E-03
Phosphorous	2.5E-01	%, by weight	1.1E+00
Selenium	1.3E-03	lb/ton	4.3E-02
Acid Gas HAP			
HCl	1.8E-01	% Cl^-, by weight	6.1E+00
HF	4.7E+01	ppmw	1.5E-01
Organic HAP			
PAHs (total)	2.1E-05	lb/ton	6.8E-04
Acetaldehyde	5.7E-04	lb/ton	1.9E-02
Acetophenone	1.5E-05	lb/ton	4.9E-04
Acrolein	2.9E-04	lb/ton	9.5E-03
Benzene	1.3E-03	lb/ton	4.3E-02
Benzyl chloride	7.0E-04	lb/ton	2.3E-02
Bis(2-ethylhexyl)phthalate	7.3E-05	lb/ton	2.4E-03
Bromoform	3.9E-05	lb/ton	1.3E-03
Carbon disulfide	1.3E-04	lb/ton	4.3E-03
2-Chloroacetophenone	7.0E-06	lb/ton	2.3E-04
Chlorobenzene	2.2E-05	lb/ton	7.2E-04
Chloroform	5.9E-05	lb/ton	1.9E-03
Cumene	5.3E-06	lb/ton	1.7E-04
2,4-Dinitrotoluene	2.8E-07	lb/ton	9.2E-06
Dimethyl sulfate	4.8E-05	lb/ton	1.6E-03
Ethylbenzene	9.4E-05	lb/ton	3.1E-03
Ethyl chloride	4.2E-05	lb/ton	1.4E-03
Ethylene dichloride	4.0E-05	lb/ton	1.3E-03
Ethylene dibromide	1.2E-06	lb/ton	3.9E-05
Formaldehyde	2.4E-04	lb/ton	7.9E-03
Hexane	6.7E-05	lb/ton	2.2E-03
Isophorone	5.8E-04	lb/ton	1.9E-02
Methyl bromide	1.6E-04	lb/ton	5.2E-03
Methyl chloride	5.3E-04	lb/ton	1.7E-02
Methyl hydrazine	1.7E-04	lb/ton	5.6E-03
Methyl methacrylate	2.0E-05	lb/ton	6.6E-04
Methyl tert-butyl ether	3.5E-05	lb/ton	1.1E-03
Methylene chloride	2.9E-04	lb/ton	9.5E-03

Table 1 - Boiler 1 HAPs - Coal Fuel
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Coal HHV =	*13,500*	*Btu/lb*
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Coal Burn Rate =	*7.5*	*tons/hr*
Boiler Max Operation =	*8,760*	*hrs/yr*
Acid Gas Control Efficiency =	*95%*	
PM Control Efficiency =	*99.0%*	

Pollutant	**Emission Factor [1]**		**Annual Emission Rate [2]**
	See Note	**EF Units**	**(tpy)**
Phenol	1.6E-05	lb/ton	5.2E-04
Propionaldehyde	3.8E-04	lb/ton	1.2E-02
Tetrachloroethylene	4.3E-05	lb/ton	1.4E-03
Toluene	2.4E-04	lb/ton	7.9E-03
Styrene	2.5E-05	lb/ton	8.2E-04
Xylenes	3.7E-05	lb/ton	1.2E-03
Vinyl acetate	7.6E-06	lb/ton	2.5E-04
	Total Combined HAPs (tpy) =		***7.6E+00***

[1] All "lb/ton" emission factors were obtained from the USEPA AP-42, Chapter 1.1, Tables 1.1-13 (for PAHs) and 1.1-14 for controlled equipment. The "ppmw" and "%" were obtained from coal analyses by using the maximum values contained in Appendix 2.

[2] Annual emissions have been determined from the following methods:
"AP-42" -> EF (lb/ton) x Hourly Coal Usage (ton/hr) x Annual Operating Rate (hr/yr) / 2,000 lb/ton.
"ppmw" -> EF (ppmw) / 1,000,000 x Hourly Coal Usage (ton/hr) x Annual Operating Rate (hr/yr) x (1 - control efficiency (fraction))
"%" -> EF (percent value) / 100 x Hourly Coal Usage (ton/hr) x Annual Operating Rate (hr/yr) x (1 - control efficiency (fraction))
For HCl and HF, a 95% control efficiency due to the caustic reagent SDA has been used for determining annual emissions. A 99.0% control efficiency due to the baghouse is applied for PM related non-Hg metal HAPs. Stoker boilers generally result in 65% of the coal ash becoming "flyash" and controlled by a PM control device. No control efficiency is used for Hg and

Table 2 - Boiler 1 HAPs - Natural Gas Fuel
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Heat Input Capacity =	*71.0*	*MMBtu/hr*
Annual Heat Input Limit or Capacity =	*621,960*	*MMBtu/yr*
Natural Gas HHV =	*1,020*	*MMBtu/MMscf*

Pollutant	Emission Factor [1] (lb/MMscf)	Annual Maximum Emissions (E_A) (tpy)
Metals		
Arsenic	2.00E-04	6.10E-05
Beryllium	1.20E-05	3.66E-06
Cadmium	1.10E-03	3.35E-04
Chromium	1.40E-03	4.27E-04
Cobalt	8.40E-05	2.56E-05
Manganese	3.80E-04	1.16E-04
Mercury	2.60E-04	7.93E-05
Nickel	2.10E-03	6.40E-04
Selenium	2.40E-05	7.32E-06
Organics		
2-Methyl Naphthalene	2.40E-05	7.32E-06
Acenaphthene	1.80E-06	5.49E-07
Acenaphthylene	1.80E-06	5.49E-07
Anthracene	2.40E-06	7.32E-07
Benzene	2.10E-03	6.40E-04
Benzo (a) anthracene	1.80E-06	5.49E-07
Benzo (a) pyrene	1.20E-06	3.66E-07
Benzo (b) fluoranthene	1.80E-06	5.49E-07
Benzo (g,h,i) perylene	1.20E-06	3.66E-07
Benzo (k) fluoranthene	1.80E-06	5.49E-07
Chrysene	1.80E-06	5.49E-07
Dibenzo(a,h) anthracene	1.20E-06	3.66E-07
Dichlorobenzene, mixed isomers	1.20E-03	3.66E-04
Fluoranthene	3.00E-06	9.15E-07
Fluorene	2.80E-06	8.54E-07
Formaldehyde	7.50E-02	2.29E-02
Indeno(1,2,3-cd)pyrene	1.80E-06	5.49E-07
Naphthalene	6.10E-04	1.86E-04
N-Hexane	1.80E+00	5.49E-01
Phenanthrene	1.70E-05	5.18E-06
Pyrene	5.00E-06	1.52E-06
Toluene	3.40E-03	1.04E-03
Total Combined HAP Emissions (tpy) =		***5.76E-01***

[1] Emission factors for HAPs from USEPA WebFIRE database for SCC 10200602.
http://cfpub.epa.gov/webfire/index.cfm?action=fire.simpleSearch

Emission Calculations

EST (lb/hr) = CST (MMBtu/hr) X EF (lb/MMscf) / HHV (MMBtu/MMscf)

EA (tpy) = CA (MMBtu/yr) X EF (lb/MMscf) / HHV (MMBtu/MMscf) / 2,000 (lb/ton)

where:

E_{ST} = Short Term Emissions (lb/hr);

E_A = Annual Maximum Emissions (tpy);

CST = Total Heat Input Capacity (MMBtu/hr);

CA = Annual Maximum Heat Input Capacity based on 8,760 hr/yr of operation (MMBtu/yr);

EF = emission factor; (lb/MMBtu) and

HHV = Natural Gas Higher Heating Value (MMBtu/MMCF)

Table 3 - Boiler 2 HAPs - Distillate Fuel Oil
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Short-Term Fuel Oil Usage Rate =	*1,463.8*	*gallons/hr*
Total Hourly Rated Heat Input =	*202*	*MMBtu/hr*
Fuel Oil Heating Value =	*138,000*	*Btu/gallon*
Annual Fuel Oil Use Rate =	*12,822,609*	*gallons/yr*
Annual Heat Input Rate =	*1,769,520*	*MMBtu/yr*

Pollutant	Emission Factor [1]	Annual Emission Rate [2] (tpy)
Metal HAPs		
Asenic	4.00E-06	3.54E-03
Beryllium	3.00E-06	2.65E-03
Cadmium	3.00E-06	2.65E-03
Chromium	3.00E-06	2.65E-03
Lead	9.00E-06	7.96E-03
Mercury	3.00E-06	2.65E-03
Manganese	6.00E-06	5.31E-03
Nickel	3.00E-06	2.65E-03
Selenium	1.50E-05	1.33E-02
Organic HAPs		
Benzene	2.14E-04	1.37E-03
Ethyl Benzene	6.36E-05	4.08E-04
Formaldehyde	3.30E-02	2.12E-01
1,1,1-Trichloroethane	2.36E-04	1.51E-03
Toluene	6.20E-03	3.98E-02
Xylenes	1.09E-04	6.99E-04
OCDD	3.10E-09	1.99E-08
Benzo(b,k)fluoranthene	1.48E-06	9.49E-06
Naphthalene	1.13E-03	7.24E-03
Acenaphthylene	2.53E-07	1.62E-06
Acenaphthene	2.11E-05	1.35E-04
Phenanthrene	1.05E-05	6.73E-05
Anthracene	1.22E-06	7.82E-06
Fluoranthene	4.84E-06	3.10E-05
Fluorene	4.47E-06	2.87E-05
Pyrene	4.25E-06	2.72E-05
Benz(a)anthracene	4.01E-06	2.57E-05
Chrysene	2.38E-06	1.53E-05
Indeno(1,2,3-c,d)pyrene	2.14E-06	1.37E-05
Dibenz(a,h)anthracene	1.67E-06	1.07E-05
Benzo(g,h,i)perylene	2.26E-06	1.45E-05
Total Combined HAPs (tpy) =		***3.06E-01***

1 The emission factors for metal HAPs are as lb/MMBtu and organic HAPs are as lb/1,000 gallons of fuel oil. All emission factors are from the USEPA AP-42, Chapter 1.3 (May 2010), Tables 1.3-9 for organic HAPs and Table 1.3-10 for metal HAPs.

2 The annual emission rate is calculated using the following method:

For metals, the annual heat input rate (MMBtu/yr) is multiplied by the emission factor (lb/MMBtu) and then divided by 2,000 lb/ton, and for organics, the annual fuel usage rate (1,000 gallon/yr) is mulitplied by the emission factor (lb/1,000 gallons) and then divided by 2,000 lb/ton.

Table 4 - Miscellaneous Fuel Firing HAPs - Natural Gas Fuel
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Total Heat Input Capacity [1] =	*70.0*	*MMBtu/hr*
Total Annual Heat Input Limit or Capacity =	*613,200*	*MMBtu/yr*
Natural Gas HHV =	*1,020*	*MMBtu/MMscf*

Pollutant	Emission Factor [2] (lb/MMscf)	Annual Maximum Emissions (E_A) (tpy)
HAP Air Contaminants		
Metals		
Arsenic	2.00E-04	6.01E-05
Beryllium	1.20E-05	3.61E-06
Cadmium	1.10E-03	3.31E-04
Chromium	1.40E-03	4.21E-04
Cobalt	8.40E-05	2.52E-05
Manganese	3.80E-04	1.14E-04
Mercury	2.60E-04	7.82E-05
Nickel	2.10E-03	6.31E-04
Selenium	2.40E-05	7.21E-06
Organics		
2-Methyl Naphthalene	2.40E-05	7.21E-06
Acenaphthene	1.80E-06	5.41E-07
Acenaphthylene	1.80E-06	5.41E-07
Anthracene	2.40E-06	7.21E-07
Benzene	2.10E-03	6.31E-04
Benzo (a) anthracene	1.80E-06	5.41E-07
Benzo (a) pyrene	1.20E-06	3.61E-07
Benzo (b) fluoranthene	1.80E-06	5.41E-07
Benzo (g,h,i) perylene	1.20E-06	3.61E-07
Benzo (k) fluoranthene	1.80E-06	5.41E-07
Chrysene	1.80E-06	5.41E-07
Dibenzo(a,h) anthracene	1.20E-06	3.61E-07
Dichlorobenzene, mixed isomers	1.20E-03	3.61E-04
Fluoranthene	3.00E-06	9.02E-07
Fluorene	2.80E-06	8.42E-07
Formaldehyde	7.50E-02	2.25E-02
Indeno(1,2,3-cd)pyrene	1.80E-06	5.41E-07
Naphthalene	6.10E-04	1.83E-04
N-Hexane	1.80E+00	5.41E-01
Phenanthrene	1.70E-05	5.11E-06
Pyrene	5.00E-06	1.50E-06
Toluene	3.40E-03	1.02E-03
Total Combined HAPs (tpy) =		***5.67E-01***

1 Miscellaneous natural gas equipment includes paper machine ovens, space heating and other process equipment. 70 MMBtu/hr heat input is a conservative estimate.

[2] Emission factors for HAPs from USEPA WebFIRE database for SCC 10200602.

EA (tpy) = CA (MMBtu/yr) X EF (lb/MMscf) / HHV (MMBtu/MMscf) / 2,000 (lb/ton)

where:

E_A = Annual Maximum Emissions (tpy);

CA = Annual Maximum Heat Input Capacity based on 8,760 hr/yr of operation (MMBtu/yr);

EF = emission factor; (lb/MMBtu) and

HHV = Natural Gas Higher Heating Value (MMBtu/MMscf)

Table 5 - Diesel-Fired Emergency RICE HAPs

Air Permit to Install Application

Neenah Paper, Inc., Munising, Michigan

Required Input Parameters

Total RICE Rated Heat Input = *17.05* *MMBtu/hr*

Annual Operation = *500* *hr/yr*

Pollutant	CAS Number	Emission Factor 1 (lb/MMBtu)	Annual Emission Rate [2] (tpy)
Benzene	71-43-2	9.33E-04	3.98E-03
Toluene	108-88-3	4.09E-04	1.74E-03
Xylenes	1330-20-7	2.85E-04	1.21E-03
Propylene	115-07-1	2.58E-03	1.10E-02
1,3-Butadiene	106-99-0	3.91E-05	1.67E-04
Formaldehyde	50-00-0	1.18E-03	5.03E-03
Acetaldehyde	75-07-0	7.67E-04	3.27E-03
Acrolein	107-02-8	9.25E-05	3.94E-04
Naphthalene	91-20-3	8.48E-05	3.61E-04
Acenaphthalene	208-96-8	5.06E-06	2.16E-05
Acenaphthene	83-32-9	1.42E-06	6.05E-06
Fluorene	86-73-7	2.92E-05	1.24E-04
Phenanthrene	85-01-8	2.94E-05	1.25E-04
Anthracene	120-12-7	1.87E-06	7.97E-06
Fluoranthene	206-44-0	7.61E-06	3.24E-05
Pyrene	129-00-0	4.78E-06	2.04E-05
Benz(a)anthracene	56-55-3	1.68E-06	7.16E-06
Chrysene	218-01-9	3.53E-07	1.50E-06
Benzo(b)fluoranthene	205-99-2	9.91E-08	4.22E-07
Benzo(k)fluroanthene	205-82-3	1.55E-07	6.61E-07
Benzo(a)pyrene	50-32-8	1.88E-07	8.01E-07
Indeno(1,2,3-c,d)pyrene	193-39-5	3.75E-07	1.60E-06
Dibenz(a,h)anthracene	53-70-3	5.83E-07	2.49E-06
Benzo(g,h,i)perylene	191-24-2	4.89E-07	2.08E-06
Total Fuel Oil Fired RICE HAP Emissions =			***2.75E-02***

[1] The emission factors are based upon Table 3.3-2 of Chapter 3.3 *"Gasoline and Diesel Industrial Engines"* of the AP-42 document.

2 Annual Emission Rate is calculated using the following method:

Emission Factor (lb/MMBtu) X Total RICE Rated Heat Input (MMBtu/hr) X Annual Operation (500 hr/yr) / 2,000 lb/ton.

Table 6 – Facility-Wide HAP Emissions
Air Permit to Install Application
Neenah Paper, Inc., Munising, Michigan

HAP Emitting Activity	Combined HAPs [1] (tpy)	Highest Single HAP [2] (tpy)
Table 1 - Boiler 1 Coal-Fired HAPs[3]	7.6	6.1
Table 3 - Boiler 2 Fuel Oil-Fired HAPs [4]	0.3	0.2
Table 4 - Miscellaneous Natural Gas-Fired HAPs	0.6	0.5
Table 5 - Diesel-Fired RICE HAPs	0.03	0.01
Papermaking Related HAPs [5]	13.2	2
Total HAPs =	***21.7***	***6.1***

[1] Represents HAP emissions from Tables 1 to 5 plus coatings HAP emissions, and the summation of HAPs from these process equipment represents the facility-wide total HAP PTE.

[2] Highest single HAP is HCl due to coal firing in Boiler 1.

[3] HAPs from natural gas firing will not occur while Boiler 1 is using coal fuel, except during brief periods of transitioning between fuels. Therefore, the 0.6 tpy of HAPs during natural gas combustion is overly conservative and was removed as the total HAP emissions from coal firing is higher than from natural gas firing.

[4] Since Boiler 2 is operated as a back up boiler to Boiler 1, the use of 8,760 hr/yr is overly conservative for estimating HAP emissions.

5 Total consumed raw materials in CY2013 (representative year) is 37,538,769 wet lb, which is equivalent to 4.4 tpy of total HAP emissions. Therefore, the actual usage rate for future potential has been increased by a factor of 3 from CY2013 usage. Approximately 5% of the wet materials are directed to the Mill's sewer system. In addition, HAP content is determined by review of vendor data, with 0.1% being considered de minimus.

Appendix 1

Hycar® 26322

Acrylic Emulsion

TECHNICAL DATA SHEET

General Description:

Product Number	-	Hycar® 26322 Emulsion
Product Type	-	Acrylic
Emulsifier	-	Synthetic Anionic
Weight of Latex (lbs./gal.)	-	8.8
Weight of Solids (lbs./gal.)	-	4.4

Typical Properties:

pH	-	6.2
Total Solids (%)	-	51.0
Brookfield Viscosity (centipoises) Spindle No. 2, 60 rpm	-	40.0
Surface Tension (dynes/cm.)	-	38.0
Specific Gravity: Latex	-	1.06
Specific Gravity: Solids	-	1.13
Glass Transition Temperature (^{o}C)	-	-15

Outstanding Properties:

Excellent heat and light aging resistance … high elongation … good washing and dry cleaning resistance

Suggested Applications:

Paper saturation where outstanding elongation, edge tear or resistance to heat aging is desired … nonwoven binder … leather finishing … wet-end addition.

June 4, 2007

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Saturated Paper Properties [1]

	Cure Cycle – Five Minutes at 300°F
Dry Tensile Strength (lbs./in.)	23
Elongation (%)	27
Wet Tensile Strength (lbs./in.) [2]	16
Solvent Tensile Strength (lbs./in.) [3]	2
Internal Bond Strength (oz./in.)	25
Edge Tear (lbs./in)	45

[1] Eleven mil flat paper dip saturated for 15 seconds per side and drip-dried at room temperature. Saturated paper was then cured 5 minutes at 300°F. Polymer add-on was 50%.

[2] Samples soaked in distilled water for 16 hours before evaluation and pulled while wet.

[3] Samples soaked in perchloroethylene for 20 minutes before testing and pulled while wet.

Thickeners:

(Hercules, Inc) CMC 12-H, Carbopol® 934 Resin

Stability:

pH range – 10 maximum – Sensitive to Bivalent Metallic Ions

FDA Status:

Hycar® 26322 emulsion is composed of ingredients which meet the requirements of the FDA regulations 175.105, 175.125, 175.300, 175.320, 176.170, 176.180, 177.1010, 177.1200, 177.1210, 177.2260, 177.2600 and 178.3790.

Defoamers:

Balab® 748

® Balab is a Registered Trademark of Witco Chemical Corp.

Appendix 2

Table 1
Particulate Matter and HCl Emission Rates

	Company	**Neenah Paper**		
	Source Designation	**Boiler**		
	Test Date	**2/24/2016**	**2/24/2016**	
	Meter/Nozzle Information	Run 1	Run 2	Average
	Meter Temperature Tm (F)	65.3	60.9	63.1
	Meter Pressure - Pm (in. Hg)	29.5	29.4	29.4
	Measured Sample Volume (Vm)	51.3	50.6	51.0
	Sample Volume (Vm-Std ft3)	50.7	50.4	50.5
	Sample Volume (Vm-Std m3)	1.43	1.43	1.43
	Condensate Volume (Vw-std)	4.574	4.621	4.597
	Gas Density (Ps(std) lbs/ft3) (wet)	0.0756	0.0756	0.0756
	Gas Density (Ps(std) lbs/ft3) (dry)	0.0783	0.0783	0.0783
	Total weight of sampled gas (m g lbs) (wet)	4.18	4.16	4.17
	Total weight of sampled gas (m g lbs) (dry)	3.96	3.94	3.95
	Nozzle Size - An (sq. ft.)	0.000668	0.000668	0.000668
	Isokinetic Variation - I	102.6	101.3	102.0
	Stack Data			
	Average Stack Temperature - Ts (F)	266.5	267.1	266.8
	Molecular Weight Stack Gas- dry (Md)	30.3	30.3	30.3
	Molecular Weight Stack Gas-wet (Ms)	29.3	29.2	29.3
	Stack Gas Specific Gravity (Gs)	1.010	1.010	1.010
	Percent Moisture (Bws)	8.28	8.40	8.34
	Water Vapor Volume (fraction)	0.0828	0.0840	0.0834
	Pressure - Ps ("Hg)	29.3	29.3	29.3
	Average Stack Velocity -Vs (ft/sec)	31.5	31.8	31.6
	Area of Stack (ft2)	39.9	39.9	39.9
	Inlet FTIR CO_2(%, wet)	10.8	10.8	10.8
	Outlet FTIR CO_2(%, wet)	10.3	10.2	10.2
	Inlet Gas Flowrate			
	Flowrate ft^3(Actual)	82,807	84,754	83,781
	Flowrate ft^3 (Standard Wet)	53,303	53,797	53,550
	Flowrate ft^3 (Standard Dry)	48,889	49,278	49,084
	Flowrate m^3 (standard dry)	1,384	1,395	1,390
	Exhaust Gas Flowrate			
	Flowrate ft^3(Actual)	75,243	76,009	75,626
	Flowrate ft^3 (Standard Wet)	53,490	53,991	53,741
	Flowrate ft^3 (Standard Dry)	49,061	49,455	49,258
	Flowrate m^3 (standard dry)	1,389	1,400	1,395
	Total Particulate Weights (mg)			
	Nozzle/Probe/Filter	0.5	1.2	0.9
	Total Particulate Concentration			
Method 5	lb/1000 lb (wet)	0.00026	0.00064	0.00045
	lb/1000 lb (dry)	0.00028	0.00067	0.00047
	mg/dscm (dry)	0.3	0.8	0.6
	gr/dscf	0.0002	0.0004	0.0003
	Total Particulate Emission Rate			
	lb/ hr	0.06	0.16	0.11
	lb/mmbtu	0.0003	0.0009	0.0006
	Total HCl Weight (ug)			
	Sample Catch	15,000	13,000	14,000
	Blank correction	0	0	0
	Total	15,000	13,000	14,000
	Total HCl Concentration			
Method 26A	lb/1000 lb (wet)	0.008	0.007	0.007
	lb/1000 lb (dry)	0.008	0.007	0.008
	mg/dscm (dry)	10.5	9.1	9.8
	ppmv (dry)	6.9	6.0	6.5
	ppmv (wet)	6.3	5.5	5.9
	Total HCl Emission Rate			
	lb/ hr	1.93	1.69	1.81
	lb/mmbtu	0.010	0.009	0.010
	FTIR HCl Concentration			
	Inlet ppmv (wet)	89.9	89.9	89.90
	Outlet ppmv (wet)	6.2	6.34	6.26
FTIR	**FTIR Total HCl Emission Rate**			
	Inlet lb/hr	27.14	27.39	27.27
	Inlet lb/mmbtu	0.141	0.141	0.141
	Outlet lb/hr	1.87	1.94	1.90
	Outlet lb/mmbtu	0.010	0.011	0.010
	HCl Removal Rate			
	HCl Removal (%, FTIR Inlet, M26A Outlet)	92.9	93.8	93.4
	HCl Removal (%, FTIR Inlet, FTIR Outlet)	93.1	92.9	93.0

Table 2
Particulate Matter and HCl Emission Rates

	Company	**Neenah Paper**		
	Source Designation	**Boiler**		
	Test Date	**2/26/2016**	**2/26/2016**	
	Meter/Nozzle Information	Run 3	Run 4	Average
	Meter Temperature Tm (F)	59.6	73.5	66.5
	Meter Pressure - Pm (in. Hg)	29.5	29.5	29.5
	Measured Sample Volume (Vm)	50.9	51.5	51.2
	Sample Volume (Vm-Std ft3)	51.0	50.2	50.6
	Sample Volume (Vm-Std m3)	1.44	1.42	1.43
	Condensate Volume (Vw-std)	3.819	4.196	4.008
	Gas Density (Ps(std) lbs/ft3) (wet)	0.0761	0.0758	0.0759
	Gas Density (Ps(std) lbs/ft3) (dry)	0.0783	0.0783	0.0783
	Total weight of sampled gas (m g lbs) (wet)	4.17	4.13	4.15
	Total weight of sampled gas (m g lbs) (dry)	3.99	3.93	3.96
	Nozzle Size - An (sq. ft.)	0.000668	0.000668	0.000668
	Isokinetic Variation - I	99.2	99.9	99.6
	Stack Data			
	Average Stack Temperature - Ts (F)	275.0	278.1	276.5
	Molecular Weight Stack Gas- dry (Md)	30.3	30.3	30.3
	Molecular Weight Stack Gas-wet (Ms)	29.4	29.3	29.4
	Stack Gas Specific Gravity (Gs)	1.016	1.013	1.014
	Percent Moisture (Bws)	6.97	7.71	7.34
	Water Vapor Volume (fraction)	0.0697	0.0771	0.0734
	Pressure - Ps ("Hg)	29.4	29.4	29.4
	Average Stack Velocity -Vs (ft/sec)	32.6	32.2	32.4
	Area of Stack (ft2)	39.9	39.9	39.9
	Inlet FTIR CO_2(%, wet)	11.4	11.4	11.4
	Outlet FTIR CO_2(%, wet)	10.1	9.7	9.9
	Inlet Gas Flowrate			
	Flowrate ft^3(Actual)	85,452	86,235	85,844
	Flowrate ft^3 (Standard Wet)	54,575	54,984	54,780
	Flowrate ft^3 (Standard Dry)	50,771	50,744	50,758
	Flowrate m^3 (standard dry)	1,438	1,437	1,437
	Exhaust Gas Flowrate			
	Flowrate ft^3(Actual)	77,906	77,112	77,509
	Flowrate ft^3 (Standard Wet)	54,931	54,143	54,537
	Flowrate ft^3 (Standard Dry)	51,103	49,969	50,536
	Flowrate m^3 (standard dry)	1,447	1,415	1,431
	Total Particulate Weights (mg)			
	Nozzle/Probe/Filter	0.9	2.1	1.5
	Total Particulate Concentration			
Method 5	lb/1000 lb (wet)	0.00048	0.00112	0.00080
	lb/1000 lb (dry)	0.00050	0.00118	0.00084
	mg/dscm (dry)	0.6	1.5	1.0
	gr/dscf	0.0003	0.0006	0.0005
	Total Particulate Emission Rate			
	lb/ hr	0.12	0.28	0.20
	lb/mmbtu	0.00065	0.0016	0.0011
	Total HCl Weight (ug)			
	Sample Catch	13,000	13,000	13,000
	Blank correction	0	0	0
	Total	13,000	13,000	13,000
	Total HCl Concentration			
Method 26A	lb/1000 lb (wet)	0.007	0.007	0.007
	lb/1000 lb (dry)	0.007	0.007	0.007
	mg/dscm (dry)	9.0	9.1	9.1
	ppmv (dry)	6.0	6.0	6.0
	ppmv (wet)	5.5	5.6	5.6
	Total HCl Emission Rate			
	lb/ hr	1.73	1.72	1.72
	lb/mmbtu	0.009	0.010	0.010
	FTIR HCl Concentration			
	Inlet ppmv (wet)	97.3	97.3	97.30
	Outlet ppmv (wet)	7.3	6.34	6.82
FTIR	**FTIR Total HCl Emission Rate**			
	Inlet lb/hr	30.08	30.30	30.19
	Inlet lb/mmbtu	0.145	0.145	0.145
	Outlet lb/hr	2.27	1.94	2.11
	Outlet lb/mmbtu	0.012	0.011	0.012
	HCl Removal Rate			
	HCl Removal (%, FTIR Inlet, M26A Outlet)	94.2	94.3	94.3
	HCl Removal (%, FTIR Inlet, FTIR Outlet)	92.4	93.6	93.0

Appendix 3

Derenzo and Associates, Inc.
Environmental Consultants

October 21, 2014

Mr. Larry J. Passinault
Environmental Engineer
NEENAH PAPER, INC.
501 E. Munising Avenue
Munising, MI 49862

Subject: Results of Coal Fired Boiler CO Emission Tests
DAI Project No. 1409002

Dear Mr. Passinault:

Derenzo and Associates, Inc. is providing Neenah Paper, Inc. with the results of carbon monoxide (CO) emission rate testing that was performed for the exhaust of a coal fired boiler (No. 1 coal fired boiler) operated at its Munising, Michigan facility.

The coal fired boiler CO emission rate measurements were performed October 8, 2014. The boiler exhaust gas:

- Flowrate and composition were determined using USEPA stationary source reference test Methods 1 through 4.

- CO concentration was measured using a non-dispersive infrared (NDIR) instrumental analyzer in accordance with USEPA Method 10, *Determination of Carbon Monoxide Emissions from Stationary Sources*.

The exhaust gas flowrate and CO emission measurements were performed using the existing sampling ports installed in the 84-inch diameter vertical exhaust stack.

Table 1 presents a summary of the coal fired boiler emission measurements.

Results are presented in Table 1 for each of the three (3) one-hour test periods. Test 1 was performed while the boiler operated at normal capacity (approximately 125,000 pounds of steam per hour); Test Nos. 2 and 3 were performed while the boiler operated near maximum capacity (approximaltey 141,000 pounds of steam per hour).

Figures 1 though 3 present plots of the measured CO concentration throughout each one-hour test period.

Attachment 1 provides field data sheets and calculations for exhaust gas flow, moisture and CO emissions.

Attachment 2 provides instrumental analyzer data acquisition system records for each test period.

Please contact us at (517) 324-1880 or rharvey@derenzo.com if you have any questions or require additional information.

Sincerely,

DERENZO AND ASSOCIATES, INC.

Robert L. Harvey, P.E.
General Manager

Attachments

Table 1. Summary of Neenah Paper coal fired boiler emission measurements

Test Number:	1	2	3
Test Date:	10/08/14	10/08/14	10/08/14
Test Period (24-hr clock):	1150-1250	1330-1430	1500-1600
Boiler operating data			
Steam production (Kpph)	124.9	141.4	140.9
Coal use (tons)	5.56	6.87	8.99
O_2 content (% vol)	7.1	6.0	6.1
Exhaust gas properties			
CO_2 content (% vol)	10.3	11.4	10.9
Moisture (% vol)	3.9	7.1	7.6
Temperature (°F)	303	313	313
Exhaust gas flowrate			
Standard flow (scfm)	52,114	55,848	54,793
Standard flow, dry basis (dscfm)	50,098	51,899	50,641
Carbon monoxide emission rates			
CO concentration (ppmvd)	25.6	32.2	37.2
CO emissions (lb/hr)	5.61	7.30	8.22

Figure 1. Measured CO concentrations for Test No. 1

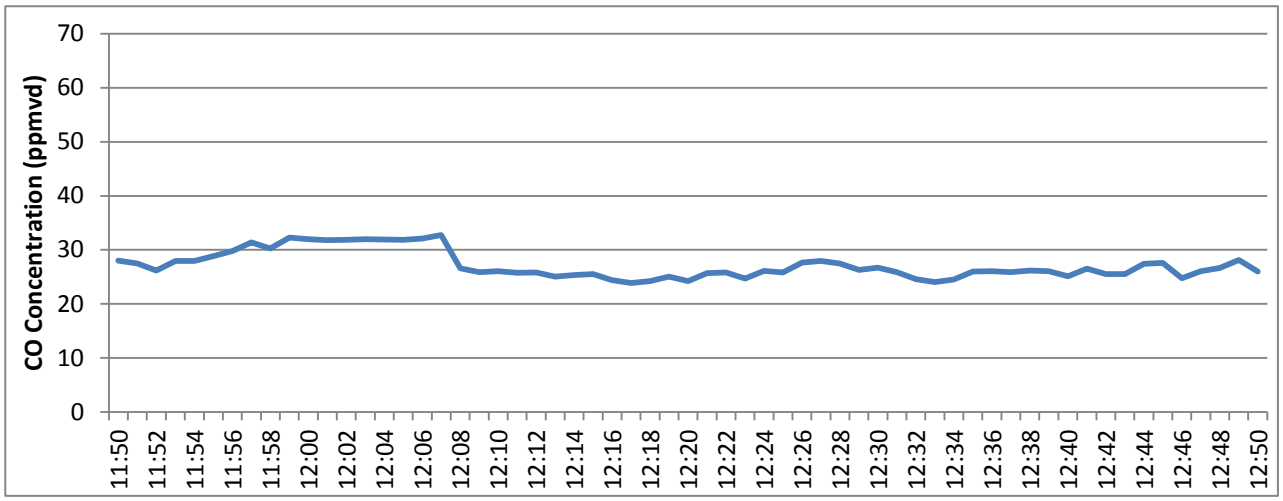


Figure 2. Measured CO concentrations for Test No. 2

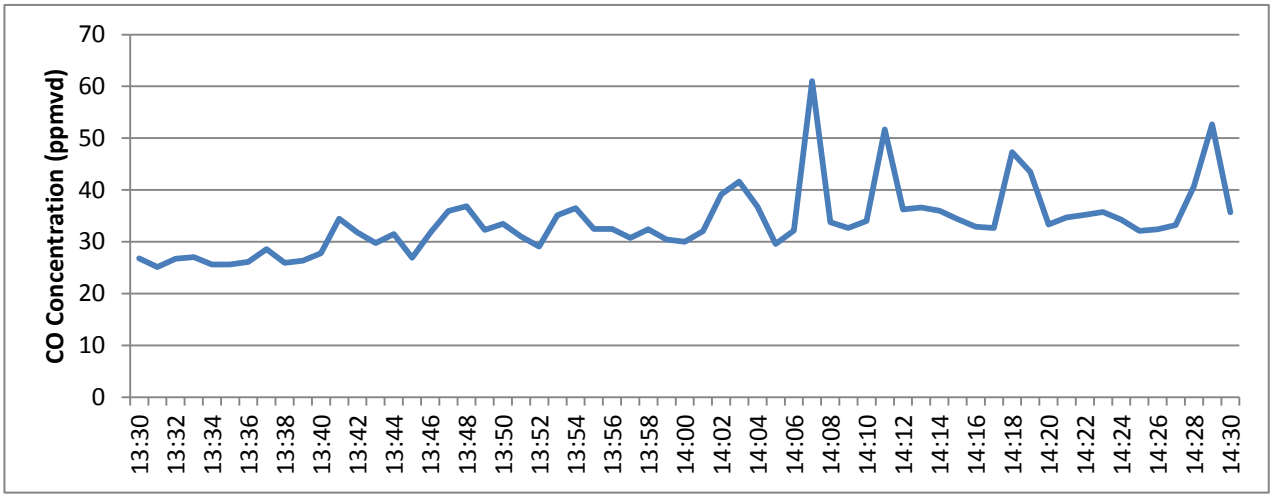
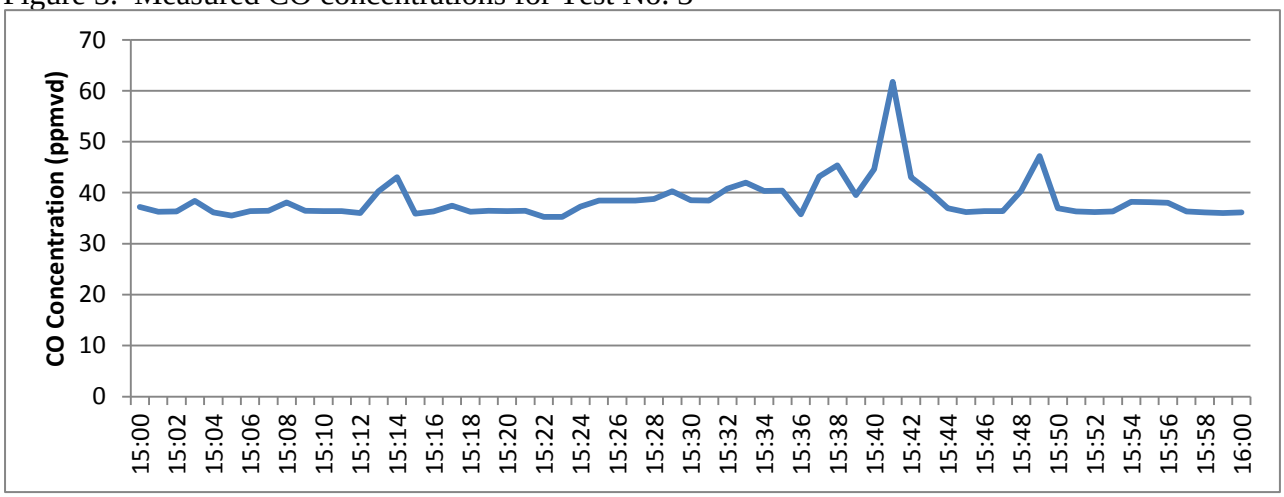


Figure 3. Measured CO concentrations for Test No. 3



ATTACHMENT 1

FIELD DATA SHEETS AND CALCULATIONS FOR
EXHAUST GAS FLOW, MOISTURE AND PARTICULATE MATTER EMISSIONS

Derenzo and Associates, Inc.

EPA Method 10 CO Calculation Summary

Company: Neenah Paper
Location: Munising, MI
Source: Coal-Fired Boiler
Date: 10/8/2014

		Test 1	Test 2	Test 3	
CO CONCENTRATION CORRECTED FOR CALIBRATION/ZERO DRIFT					
C_d = (CO conc.-Avg. zero)x(Cal. gas conc.)/(Avg. cal.-Avg. zero)	=	25.7	32.3	37.2	ppmvd
CO EMISSION RATE					
Stack gas volumetric flow rate	=	50,098	51,899	50,641	dscfm
$E_{CO} = (C_d)\ (Q_d std)\ (60\ min/hr)\ (MW_{CO})\ /\ (V_M)$	=	5.61	7.31	8.23	lb/hr

where:

C_d = observed CO concentration, dry basis (ft^3 CO / 10^6 ft^3 stack gas)
$Q_d std$ = stack gas flowrate (dscfm)
MW_{CO} = molecular weight CO (28.0 lb/lb-mol)
V_M = molar volume of ideal gas at std conditions (385 ft^3/lb-mol)

Derenzo and Associates, Inc.

Calibration / Drift Correction Worksheet

Site: Neenah Paper
Dates: 10/8/14

CO	Results		Test 1	Test 2	Test 3
CO	Calibration, Expected value	C_{MA}	88.20	88.20	88.20
CO	Calibration, Avg upscale response	C_M	88.32	88.35	88.25
CO	Calibration, Avg zero	C_0	2.06	2.31	2.17
CO	Avg. measured during test	C_{Avg}	27.16	33.78	38.50
CO	**Adjusted***	$\mathbf{C_{Adj}}$	**25.67**	**32.26**	**37.23**

O_2	Results		Test 1	Test 2	Test 3
O_2	Calibration, Expected value	C_{MA}	10.47	10.47	10.47
O_2	Calibration, Avg upscale response	C_M	10.39	10.44	10.44
O_2	Calibration, Avg zero	C_0	0.00	0.00	0.00
O_2	Avg. measured during test	C_{Avg}	9.61	8.20	8.77
O_2	**Adjusted***	$\mathbf{C_{Adj}}$	**9.69**	**8.23**	**8.80**

CO_2	Results		Test 1	Test 2	Test 3
CO_2	Calibration, Expected value	C_{MA}	11.32	11.32	11.32
CO_2	Calibration, Avg upscale response	C_M	10.95	10.97	10.96
CO_2	Calibration, Avg zero	C_0	0.01	0.03	0.04
CO_2	Avg. measured during test	C_{Avg}	9.93	11.06	10.60
CO_2	**Adjusted***	$\mathbf{C_{Adj}}$	**10.26**	**11.41**	**10.94**

* Adjusted for calibration bias

$C_{Adj} = (C_{Avg} - C_0)\, C_{MA} / (C_M - C_0)$

EXHAUST GAS VELOCITY, MOISTURE, AND FLOWRATE CALCULATION SHEET

Company	Neenah Paper		
Source Designation	Coal Boiler	**Pitot Tube Number**	10F
Test Date	10/8/2014	**Pitot Tube Corr. Factor**	0.84
Test Number	Pre-1	**% CO_2**	10.26
Time	11:40	**% O_2**	9.69
Barometric Pressure	29.35	**% CO**	0.003
Stack Static Pressure	-0.20	**% N_2**	80.05
Stack Diameter (in.)	84.00	**Md**	30.03
Traverse points	16	**Ms**	29.56
Operator	RH/TW	**Moisture Content (%)**	3.9

Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)	Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)
Side A			Side B		
1	286	0.21	1	301	0.19
2	285	0.22	2	304	0.20
3	289	0.24	3	307	0.22
4	283	0.26	4	309	0.23
5	302	0.28	5	311	0.25
6	307	0.30	6	312	0.28
7	309	0.26	7	317	0.29
8	311	0.23	8	318	0.26
Average	297	0.25		310	0.24

Average Velocity Pressure ("H_2O)	0.245
Average Velocity Pressure Sqrt ("H_2O)	0.494
Stack Pressure ("Hg)	29.34
Stack Gas Specific Gravity (Gs)	1.02
Average Stack Temperature (^oF)	303.2
Average Stack Velocity (fps)	33.27
Average Stack Velocity (fpm)	1996.4
Area of Stack (ft^2)	38.484
Flowrate (Actual-CFM)	76,829
Flowrate (Standard Wet-SCFM)	52,114
Flowrate (Standard Dry-DSCFM)	50,098

Moisture Calculation	
Bws=	0.039
Cond. Vol.=	1.35
Samp. Vol. std=	33.59
Vwc=	19.3
Wsg=	9.4
Vmf=	522.545
Vmi=	488.981
Ym=	1.017
Delta H@=	1.956
Tm=	66

EXHAUST GAS VELOCITY, MOISTURE, AND FLOWRATE CALCULATION SHEET

Company	Neenah Paper		
Source Designation	Coal Boiler	**Pitot Tube Number**	10F
Test Date	10/8/2014	**Pitot Tube Corr. Factor**	0.84
Test Number	Post 1 / Pre 2	**% CO_2**	11.41
Time	13:02	**% O_2**	8.23
Barometric Pressure	29.32	**% CO**	0.003
Stack Static Pressure	-0.33	**% N_2**	80.35
Stack Diameter (in.)	84.00	**Md**	30.16
Traverse points	16	**Ms**	29.36
Operator	RH/TW	**Moisture Content (%)**	6.6

Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)	Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)
Side A			Side B		
1	290	0.27	1	312	0.22
2	295	0.29	2	315	0.25
3	296	0.31	3	316	0.27
4	301	0.30	4	317	0.28
5	305	0.30	5	319	0.30
6	309	0.31	6	322	0.32
7	312	0.31	7	323	0.32
8	318	0.30	8	323	0.32
Average	303	0.30		318	0.29

Average Velocity Pressure ("H_2O)	0.292
Average Velocity Pressure Sqrt ("H_2O)	0.540
Stack Pressure ("Hg)	29.30
Stack Gas Specific Gravity (Gs)	1.01
Average Stack Temperature (^oF)	310.8
Average Stack Velocity (fps)	36.69
Average Stack Velocity (fpm)	2201.3
Area of Stack (ft^2)	38.484
Flowrate (Actual-CFM)	84,715
Flowrate (Standard Wet-SCFM)	56,818
Flowrate (Standard Dry-DSCFM)	53,081

Moisture Calculation	
Bws=	0.066
Cond. Vol.=	2.35
Samp. Vol. std=	33.37
Vwc=	44.0
Wsg=	5.9
Vmf=	556.725
Vmi=	522.745
Ym=	1.017
Delta H@=	1.956
Tm=	75

EXHAUST GAS VELOCITY, MOISTURE, AND FLOWRATE CALCULATION SHEET

Company	Neenah Paper		
Source Designation	Coal Boiler	**Pitot Tube Number**	10F
Test Date	10/8/2014	**Pitot Tube Corr. Factor**	0.84
Test Number	Post 2 / Pre 3	**% CO_2**	10.94
Time	14:44	**% O_2**	8.80
Barometric Pressure	29.29	**% CO**	0.004
Stack Static Pressure	-0.30	**% N_2**	80.25
Stack Diameter (in.)	84.00	**Md**	30.10
Traverse points	16	**Ms**	29.19
Operator	RH/TW	**Moisture Content (%)**	7.6

Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)	Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)
Side A			Side B		
1	301	0.18	1	314	0.19
2	302	0.23	2	315	0.21
3	306	0.26	3	317	0.23
4	309	0.29	4	320	0.26
5	314	0.31	5	320	0.28
6	316	0.32	6	322	0.31
7	319	0.32	7	323	0.33
8	319	0.33	8	324	0.34
Average	311	0.28		319	0.27

Average Velocity Pressure ("H_2O)	0.274
Average Velocity Pressure Sqrt ("H_2O)	0.521
Stack Pressure ("Hg)	29.27
Stack Gas Specific Gravity (Gs)	1.01
Average Stack Temperature (^oF)	315.1
Average Stack Velocity (fps)	35.66
Average Stack Velocity (fpm)	2139.9
Area of Stack (ft^2)	38.484
Flowrate (Actual-CFM)	82,351
Flowrate (Standard Wet-SCFM)	54,878
Flowrate (Standard Dry-DSCFM)	50,717

Moisture Calculation	
Bws=	0.076
Cond. Vol.=	2.74
Samp. Vol. std=	33.45
Vwc=	52.5
Wsg=	5.8
Vmf=	591.105
Vmi=	556.906
Ym=	1.017
Delta H@=	1.956
Tm=	77

EXHAUST GAS VELOCITY, MOISTURE, AND FLOWRATE CALCULATION SHEET

Company	Neenah Paper		
Source Designation	Coal Boiler	**Pitot Tube Number**	10F
Test Date	10/8/2014	**Pitot Tube Corr. Factor**	0.84
Test Number	Post 3	**% CO_2**	10.94
Time	16:13	**% O_2**	8.80
Barometric Pressure	29.31	**% CO**	0.004
Stack Static Pressure	-0.31	**% N_2**	80.25
Stack Diameter (in.)	84.00	**Md**	30.10
Traverse points	16	**Ms**	29.19
Operator	RH/TW	**Moisture Content (%)**	7.6

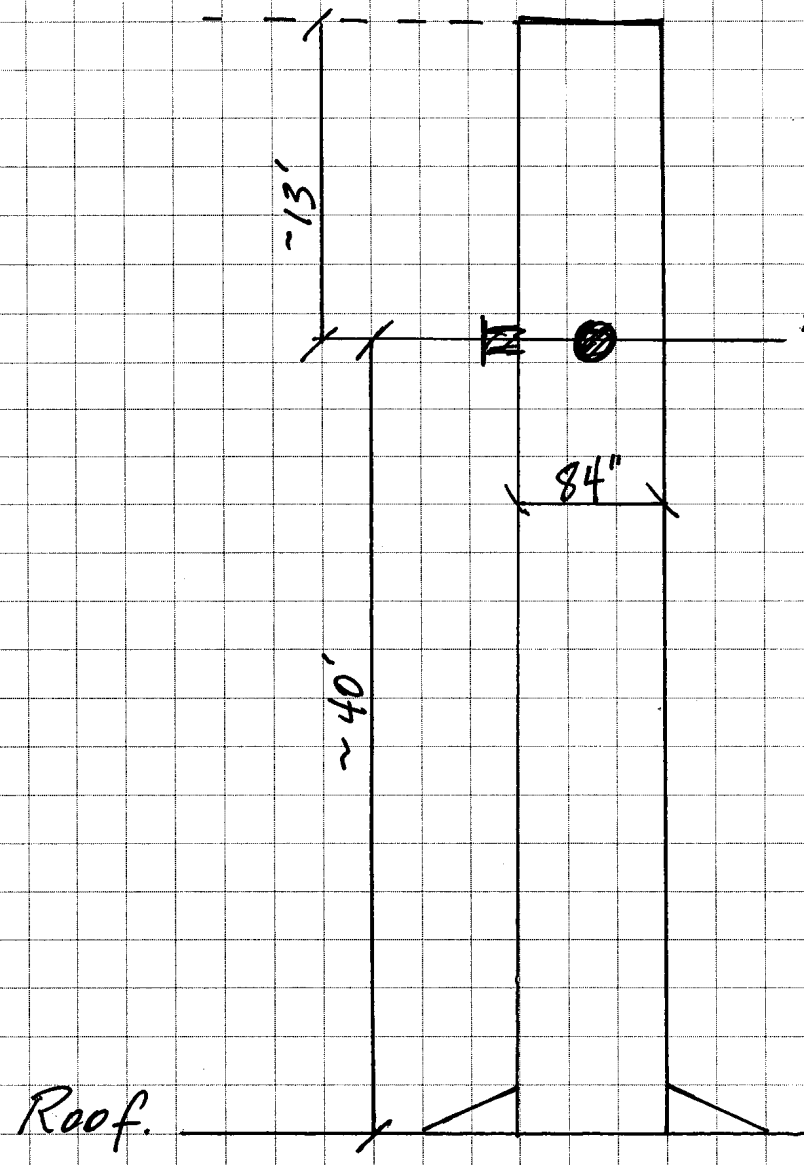
Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)	Traverse Point Number	Stack Temp. (^oF)	Velocity Pres. ("H2O)
Side A			Side B		
1	295	0.22	1	309	0.20
2	295	0.24	2	312	0.23
3	303	0.26	3	314	0.25
4	304	0.29	4	316	0.26
5	306	0.29	5	317	0.28
6	310	0.30	6	319	0.30
7	312	0.30	7	321	0.30
8	313	0.29	8	321	0.30
Average	305	0.27		316	0.27

Average Velocity Pressure ("H_2O)	0.269
Average Velocity Pressure Sqrt ("H_2O)	0.518
Stack Pressure ("Hg)	29.29
Stack Gas Specific Gravity (Gs)	1.01
Average Stack Temperature (^oF)	310.4
Average Stack Velocity (fps)	35.32
Average Stack Velocity (fpm)	2119.1
Area of Stack (ft^2)	38.484
Flowrate (Actual-CFM)	81,554
Flowrate (Standard Wet-SCFM)	54,709
Flowrate (Standard Dry-DSCFM)	50,566

Moisture Calculation	
Bws=	0.076
Cond. Vol.=	2.74
Samp. Vol. std=	33.50
Vwc=	52.5
Wsg=	5.8
Vmf=	591.105
Vmi=	556.906
Ym=	1.017
Delta H@=	1.956
Tm=	76

Derenzo and Associates, Inc.

Client: Neenah Paper	Project No. 1409002	Date: 10/8/14	
Project/Description: Boiler Stack		Page: 1	Intl: RG



Traverse Points →

1	0.032	2.7"
2	0.105	8.8"
3	0.194	16.3"
4	0.322	27.0"
5	0.677	56.9"
6	0.806	67.7"
7	0.895	75.2"
8	0.968	81.3"

USEPA Method 4 Field Sampling Data Sheet

Company: NEENAH Paper
Source Designation: Coal Fired Boiler

Test Date: 10/8/14
Test Number: 1
Operator: TW/RH
Bar. Press (Pb): 29.35

Meter Number: N-1
Kiso: 1583.118
Delta H@: 1.811
Meter Yd: 1.0174
Assumed H2O: ~~10%~~ 3.87%

Leak Rate Initial: 0.0 00 @ 11 "
Leak Rate Final: 0.0 00 @ 7 "

Moisture Data			
Impinger	Initial (g / mL)	Final (g / mL)	Net Gain (g / mL)
1 - Modified	710.0	727.2	17.2
2 - Standard	683.1	683.3	0.2
3 - Modified	620.5	622.4	1.9
4			
5			
Silica Gel	976.7	986.1	9.4
Cond.Vol. (Vlc-1)			(g / mL) 19.3
SG Gain (Vlc-2)			(g / mL) 9.4

Sampling Time (Min) ø	Time (24 hour)	Train Vacuum ("Hg)	Orifice Differential ("H2O) ΔH	Sample Volume (ft3) Vm	DGM Temp. Inlet (°F) Tm	DGM Temp. Outlet (°F) Tm	Last Imp. Temp. (°F)
0	11:53	4.0	2.0	488.981	58	57	51
5	11:58	3.5	2.0	492.72	62	58	49
10	12:03	3.5	2.0	496.47	67	59	55
15	12:08	3.5	2.0	500.15	70	60	63
20	12:13	3.5	2.0	503.79	72	60	64
25	12:18	3.5	2.0	507.54	74	62	63
30	12:23	3.5	2.0	511.28	76	63	58
35	12:28	3.5	2.0	515.04	78	65	54
40	12:33	3.5	2.0	518.79	79	65	57
45	12:38	—	—	522.545	—	—	—

USEPA Method 4 Field Sampling Data Sheet

Company	NEENAH Paper				
Source Designation	Coal Fired Boiler				
Test Date	10/8/14	Meter Number	N-1	Leak Rate Initial	0.0 00 @ 8 "
Test Number	2	Kiso	1583.118	Leak Rate Final	0.0 00 @ 8 "
Operator	TW/RH	Delta H@	1.811		
Bar. Press (Pb)	29.30	Meter Yd	1.0174		
		Assumed H2O	3.87%		

Moisture Data			
Impinger	Initial (g / mL)	Final (g / mL)	Net Gain (g / mL)
1 - Modified	727.2	770.0	42.8
2 - Standard	683.3	684.0	0.7
3 - Modified	622.4	622.9	0.5
4			
5			
Silica Gel	986.1	992.0	5.9
Cond.Vol. (Vlc-1)			(g / mL) 44.0
SG Gain (Vlc-2)			(g / mL) 5.9

Sampling Time (Min) ø	Time (24 hour)	Train Vacuum ("Hg)	Orifice Differential ("H2O) ΔH	Sample Volume (ft3) Vm	DGM Temp. Inlet (°F) Tm	DGM Temp. Outlet (°F) Tm	Last Imp. Temp. (°F)
0	13:40	3.5	2.0	522.745	69	68	52
5	13:45	3.5	2.0	526.56	72	68	55
10	13:50	3.5	2.0	530.37	76	69	55
15	13:55	3.5	2.0	534.18	80	70	56
20	14:00	3.5	2.0	537.89	80	70	55
25	14:05	3.5	2.0	541.66	83	72	52
30	14:10	3.5	2.0	545.43	85	73	50
35	14:15	3.5	2.0	549.20	86	73	48
40	14:20	3.5	2.0	552.90	86	74	48
45	14:25	—	—	556.725	—	—	—

USEPA Method 4 Field Sampling Data Sheet

Company: NEENAH Paper
Source Designation: Coal Fired Boiler

Test Date: 10/8/14
Test Number: 3
Operator: TW/RH
Bar. Press (Pb): 29.29

Meter Number: N-1
Kiso: 1583.118
Delta H@: 1.811
Meter Yd: 1.0174
Assumed H2O: 3.87%

Leak Rate Initial: 0.000 @ 8 "
Leak Rate Final: 0.0 @ "

Moisture Data			
Impinger	Initial (g / mL)	Final (g / mL)	Net Gain (g / mL)
1 - Modified	770.0	821.6	51.6
2 - Standard	684.0	684.6	0.6
3 - Modified	622.9	623.2	0.3
4			
5			
Silica Gel	992.0	997.8	5.8
Cond.Vol. (Vlc-1)			52.5 (g / mL)
SG Gain (Vlc-2)			5.8 (g / mL)

Sampling Time (Min) ø	Time (24 hour)	Train Vacuum ("Hg)	Orifice Differential ("H2O) ΔH	Sample Volume (ft3) Vm	DGM Temp. Inlet (°F) Tm	DGM Temp. Outlet (°F) Tm	Last Imp. Temp. (°F)
0	15:12	3.5	2.0	556.906	72	72	41
5	15:17	3.5	2.0	560.76	74	72	45
10	15:22	3.5	2.0	564.55	78	72	50
15	15:27	3.5	2.0	568.34	8	72	62
20	15:32	3.5	2.0	572.14	82	73	62
25	15:37	3.5	2.0	575.94	84	73	64
30	15:42	3.5	2.0	579.73	84	74	65
35	15:47	3.5	2.0	583.51	85	74	64
40	15:52	3.5	2.0	587.31	86	75	59
45	15:57	—	—	591.105	—	—	—

Derenzo and Associates, Inc.

USEPA Method 2
Gas Velocity Measurement Data Sheet

Company: NEENAH Paper | No. Points: 16 | Pitot Type: (Type S) or Standard
Source ID: Coal Fired Boiler | Operator: TW/RH | Pitot ID: 10F

	Date:	10/8/14		Date:	10/8/14		Date:	10/8/14		Date:	10/8/14	
	Test No.:	Pre-1		Test No.:	Post-1/Pre-2		Test No.:	Post-2/Pre-3		Test No.:	Post-3	
	Time:	11:40	(24-hr)	Time:	13:02	(24-hr)	Time:	14:44	(24-hr)	Time:	16:13	(24-hr)
	Bar. Press.:	29.35	in. Hg	Bar. Press.:	29.32	in. Hg	Bar. Press.:	29.29	in. Hg	Bar. Press.:	29.31	in. Hg
	Static Press.:	-0.20	in. H_2O	Static Press.:	-0.33	in. H_2O	Static Press.:	-0.30	in. H_2O	Static Press.:	-0.31	in. H_2O
	O_2 Content:	—	%	O_2 Content:	—	%	O_2 Content:	—	%	O_2 Content:	—	%
	CO_2 Content:	—	%	CO_2 Content:	—	%	CO_2 Content:	—	%	CO_2 Content:	—	%
	Wet Bulb Temp.:	—	°F	Wet Bulb Temp.:	—	°F	Wet Bulb Temp.:	—	°F	Wet Bulb Temp.:	—	°F

Traverse Point No.	Stack Temp. (°F)	Velocity Head (in. H_2O)	Stack Temp. (°F)	Velocity Head (in. H_2O)	Stack Temp. (°F)	Velocity Head (in. H_2O)	Stack Temp. (°F)	Velocity Head (in. H_2O)
1	286	0.21	290	0.27	301	0.18	295	0.22
2	285	0.22	295	0.29	302	0.23	295	0.24
3	289	0.24	296	0.31	306	0.26	303	0.26
4	283	0.26	301	0.30	309	0.29	304	0.29
5	302	0.28	305	0.30	314	0.31	306	0.29
6	307	0.30	309	0.31	316	0.32	310	0.30
7	309	0.26	312	0.31	319	0.32	312	0.30
8	311	0.23	318	0.30	319	0.33	313	0.29
—	—	—	—	—	—	—	—	—
1	301	0.19	312	0.22	314	0.19	309	0.20
2	304	0.20	315	0.25	315	0.21	312	0.23
3	307	0.22	316	0.27	317	0.23	314	0.25
4	309	0.23	317	0.28	320	0.26	316	0.26
5	311	0.25	319	0.30	320	0.28	317	0.28
6	312	0.28	322	0.32	322	0.31	319	0.30
7	317	0.29	323	0.32	323	0.33	321	0.30
8	318	0.26	323	0.32	324	0.34	321	0.30
—	—	—	—	—	—	—	—	—

ATTACHMENT 2

INSTRUMENTAL ANALYZER DATA ACQUISITION SYSTEM RECORDS

Derenzo and Associates, Inc.

Summary of Analyzer Calibration Error Data

Client: **Neenah Paper**
Source: **Coal Fired Boiler**
Date: **10/8/2014**
Protocol CO **882 ppm**
Protocol CO_2 **22.6 %**
Protocol O_2 **20.9 %**

Instrument: **TEI 48c - CO**
Span: 176.4

	Response to Calibration Gas (ppm)		
	Expected Concentration	Analyzer Response	Analyzer Calibration Error
Gas Concentration	(ppm)	(ppm)	(%)
High	176.4	176.4	-0.01
Mid	88.2	88.1	-0.06
Low	0.00	1.80	1.02

Instrument: **Servomex 1440D - CO_2**
Span: 22.6

	Response to Calibration Gas (ppm)		
	Expected Concentration	Analyzer Response	Analyzer Calibration Error
Gas Concentration	(ppm)	(ppm)	(%)
High	22.6	22.8	0.57
Mid	11.3	11.2	-0.42
Low	0.00	0.00	0.00

Instrument: **Servomex 1440D - O_2**
Span: 20.9

	Response to Calibration Gas (ppm)		
	Expected Concentration	Analyzer Response	Analyzer Calibration Error
Gas Concentration	(ppm)	(ppm)	(%)
High	20.9	20.8	-0.86
Mid	10.5	10.3	-0.86
Low	0.00	0.01	0.05

Derenzo and Associates, Inc.

Summary of System Calibration Data

Client: **Neenah Paper**
Source: **Coal Fired Boiler**
Date: **10/8/2014**
CO **882 ppm**
CO_2 **22.6 %**
O_2 **20.9 %**

Instrument: **TEI 48c - CO**
Span: 176.4

	Response to Calibration Gas (ppm)					
	Up-Scale Gas	System Bias	Drift	Zero	System Bias	Drift
Expected Conc. (ppm CO)	88.1	(%)	(%)	1.80	(%)	(%)
Boiler, Pre Test 1	88.1	0.02	-	1.90	0.06	-
Boiler, Post Test 1/Pre Test 2	88.5	0.23	0.22	2.22	0.24	0.18
Boiler, Post Test 2/Pre Test 3	88.2	0.05	0.18	2.40	0.34	0.10
Boiler, Post Test 3	88.3	0.12	0.07	1.94	0.08	0.26

Instrument: **Servomex 1440D - CO_2**
Span: 22.6

	Response to Calibration Gas (ppm)					
	Up-Scale Gas	System Bias	Drift	Zero	System Bias	Drift
Expected Conc. (% CO_2)	11.22	(%)	(%)	0.00	(%)	(%)
Boiler, Pre Test 1	10.95	-1.19	-	0.00	0.00	-
Boiler, Post Test 1/Pre Test 2	10.95	-1.19	0.00	0.01	0.04	0.04
Boiler, Post Test 2/Pre Test 3	10.98	-1.06	0.13	0.04	0.18	0.13
Boiler, Post Test 3	10.94	-1.24	0.18	0.03	0.13	0.04

Instrument: **Servomex 1440D - O_2**
Span: 20.9

	Response to Calibration Gas (ppm)					
	Up-Scale Gas	System Bias	Drift	Zero	System Bias	Drift
Expected Conc. (% O_2)	10.29	(%)	(%)	0.01	(%)	(%)
Boiler, Pre Test 1	10.33	0.19	-	0.00	-0.05	-
Boiler, Post Test 1/Pre Test 2	10.44	0.72	0.53	0.00	-0.05	0.00
Boiler, Post Test 2/Pre Test 3	10.43	0.67	0.05	0.00	-0.05	0.00
Boiler, Post Test 3	10.44	0.72	0.05	0.00	-0.05	0.00

CALIBRATION SUMMARY

Company: NEENAH Paper
Location: Munising, MI
Source Designation: Coal Fired Boiler
Date: 10/8/14
Operator(s): TW

Pre 1: Run High, Mid, Low, Zero, for CH_4, NMOC, THC
Run High, Mid, Low (Zero) Instrument Cal, and Mid, Zero Dynamic Cal for NOX, O2, CO, CO2, SO2

Cylinder ID	Analyte	Concentration	Unit

	Time	Procedure		Response (ppm)	Exp. Value (ppm)	Notes
	8:18	O_2 Inst.	100%	21.03	20.94	M205 Divider Cert.
	8:20		60%	12.51	12.56	
Test 1	8:22		40%	8.26	8.38	
	8:24		100%	21.05	20.94	
Start Time: 11:50	8:26		60%	12.52	12.56	
	8:28		40%	8.27	8.38	
	8:30		100%	21.06	20.94	
Stop Time: 12:50	8:33		60%	12.52	12.56	
	8:35		40%	8.28	8.38	
	8:37	O_2 Inst.	Mid	12.54	12.47	
	8:40		Zero	0.01	0	
	8:43		Mid	12.50	12.47	
	8:47		Zero	0.00	0	
	8:50		Mid	12.47	12.47	
	8:52		Zero	0.01	0	
Test 2	11:00	CO Inst.	Hi	357.55	352.80	40 %
	11:04/11:08		Mid	176.39/88.10	176.40/88.20	20%/10%
Start Time: 13:30	11:12		Zero	1.80	0	0%
	11:11	O_2 Inst.	Hi	20.76	20.94	100 %
	11:16		Mid	10.29	10.47	50 %
Stop Time: 14:30	11:21		Zero	0.01	0	0%
	11:18	CO_2 Inst.	Hi	22.76	22.63	100 %
	11:20		Mid	11.22	11.32	50 %
	11:14		Zero	0.00	0	0%
	~~11:27~~					
	11:27/11:32	CO Dyn	Mid	166.32/88.13	176.39/88.10	20%/10 %
	11:37		Zero	1.90	0	0%
	11:35	O_2 Dyn	Mid	10.33	10.29	50 %
	11:27		Zero	0.00	0	0 %
Test 3	11:40	CO_2 Dyn	Mid	10.95	11.22	50 %
	11:27		Zero	0.00	0	0 %
Start Time: 15:00						~~0%~~
	13:04/13:09	CO Dyn	Mid	164.50/88.51	176.39/88.10	20%/10 %
	13:16		Zero	2.22	0	0%
Stop Time: 16:00	13:13	O_2 Dyn	Mid	10.44	10.29	50%
	13:06		Zero	0.00	0	0%
	13:16	CO_2 Dyn	Mid	10.95	11.22	50%
	13:10		Zero	0.01	0	0%

Calibration Error = $(C_{dir} - C_v)/CS \times 100$ (must be ≤ 2%)
Initial System Bias (SB) = $(C_s - C_{dir})/CS * 100$ (must be ≤ 5%)

Calibration Drift = $(SB_f - SBi)$ (must be ≤ 3%)

CALIBRATION SUMMARY

Company: NEENAH Paper
Location: Munising, MI
Source Designation: Coal Fired Boiler
Date: 10/8/14
Operator(s): TW

Pre 1: Run High, Mid, Low, Zero, for CH_4, NMOC, THC
Run High, Mid, Low (Zero) Instrument Cal, and Mid, Zero Dynamic Cal for NOX, O2, CO, CO2, SO2

Cylinder ID	Analyte	Concentration	Unit

	Time	Procedure	Response (ppm)	Exp. Value (ppm)	Notes
Test 1	14:36/14:40	CO Dyn Mid	164.62/88.19	176.39/88.10	20%/10%
	14:44	Zero	2.40	0	0%
	14:43	O_2 Dyn Mid	10.43	10.29	50%
	14:36	Zero	0.00	0	0%
Start Time:	14:47	CO_2 Dyn Mid	10.98	11.22	50%
	14:40	Zero	0.04	0	0%
Stop Time:	16:15/16:20	CO Dyn Mid	164.54/88.31	176.39/88.10	20%/10%
	16:25	Zero	1.94	0	0%
	16:24	O_2 Dyn Mid	10.44	10.29	50%
	16:17	Zero	0.00	0	0%
	16:28	CO_2 Dyn Mid	10.94	11.22	50%
	16:17	Zero	0.03	0	0%
Test 2					
Start Time:					
Stop Time:					
Test 3					
Start Time:					
Stop Time:					

Calibration Error $=(C_{dir} - C_v)/CS \times 100$ (must be $\leq 2\%$)
Initial System Bias (SB) $= (C_s - C_{dir})/CS * 100$ (must be $\leq 5\%$)

Calibration Drift $=(SB_f - SBi)$ (must be $\leq 3\%$)

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	07:58	1.85	0.17	21.11
10/08/14	07:59	2.00	0.16	21.16
10/08/14	08:00	2.10	0.16	21.17
10/08/14	08:01	1.89	0.15	21.18
10/08/14	08:02	2.03	0.15	21.19
10/08/14	08:03	1.83	0.15	21.19
10/08/14	08:04	1.86	0.15	21.19
10/08/14	08:05	1.84	0.14	20.59
10/08/14	08:06	1.89	0.06	6.12
10/08/14	08:07	0.00	0.00	0.00
10/08/14	08:08	-999.00	-999.00	-999.00
10/08/14	08:09	1.94	0.02	-0.08
10/08/14	08:10	1.95	0.02	0.00
10/08/14	08:11	1.98	0.01	0.00
10/08/14	08:12	1.98	0.00	0.00
10/08/14	08:13	1.97	0.00	0.00
10/08/14	08:14	2.01	0.00	0.00
10/08/14	08:15	2.06	0.00	18.14
10/08/14	08:16	2.41	0.00	21.23
10/08/14	08:17	1.93	0.00	21.05
10/08/14	08:18	2.11	0.00	21.03
10/08/14	08:19	2.05	0.00	15.94
10/08/14	08:20	1.98	0.00	12.51
10/08/14	08:21	2.06	0.00	9.84
10/08/14	08:22	1.95	0.00	8.26
10/08/14	08:23	2.31	0.00	14.13
10/08/14	08:24	2.14	0.00	21.05
10/08/14	08:25	1.97	0.00	16.91
10/08/14	08:26	2.06	0.00	12.52
10/08/14	08:27	2.26	0.00	10.14
10/08/14	08:28	2.18	0.00	8.27
10/08/14	08:29	1.94	0.00	15.36
10/08/14	08:30	2.33	0.00	21.06
10/08/14	08:31	2.08	0.00	20.94
10/08/14	08:32	1.90	0.00	12.68
10/08/14	08:33	2.30	0.00	12.52
10/08/14	08:34	2.38	0.00	10.08
10/08/14	08:35	2.00	0.00	8.28
10/08/14	08:36	1.96	0.01	8.38
10/08/14	08:37	5.63	0.03	12.54
10/08/14	08:38	2.23	0.02	10.84
10/08/14	08:39	2.15	0.00	0.02
10/08/14	08:40	1.96	0.00	0.01
10/08/14	08:41	1.84	0.01	0.44
10/08/14	08:42	1.85	0.00	11.83
10/08/14	08:43	1.95	0.00	12.50
10/08/14	08:44	1.90	0.00	6.20
10/08/14	08:45	2.07	0.00	0.02
10/08/14	08:46	2.28	0.00	0.02
10/08/14	08:47	1.92	0.00	0.00
10/08/14	08:48	2.04	0.00	0.36

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	08:49	1.97	0.00	11.66
10/08/14	08:50	1.84	0.00	12.47
10/08/14	08:51	1.84	0.00	9.38
10/08/14	08:52	1.91	0.00	0.01
10/08/14	08:53	1.98	0.01	0.07
10/08/14	08:54	1.91	0.08	13.03
10/08/14	08:55	96.07	0.04	6.45
10/08/14	08:56	390.50	0.00	0.00
10/08/14	08:57	385.38	0.00	0.00
10/08/14	08:58	350.99	0.00	0.00
10/08/14	08:59	83.67	0.00	0.00
10/08/14	09:00	2.03	0.00	0.00
10/08/14	09:01	1.89	0.00	0.00
10/08/14	09:02	117.24	0.00	0.00
10/08/14	09:03	189.94	0.00	0.00
10/08/14	09:04	189.66	0.00	0.00
10/08/14	09:05	92.70	0.02	1.92
10/08/14	09:06	7.60	20.03	-0.03
10/08/14	09:07	2.11	8.88	-0.02
10/08/14	09:08	2.11	0.03	0.00
10/08/14	09:09	1.98	0.14	17.33
10/08/14	09:10	2.12	0.15	20.89
10/08/14	09:11	2.02	0.14	20.90
10/08/14	09:12	2.06	0.14	20.89
10/08/14	09:13	2.10	0.14	20.90
10/08/14	09:14	2.05	0.14	20.90
10/08/14	09:15	1.89	0.13	20.90
10/08/14	09:16	2.03	0.12	20.92
10/08/14	09:17	2.05	0.07	20.96
10/08/14	09:18	2.24	0.06	20.97
10/08/14	09:19	2.30	0.06	20.97
10/08/14	09:20	1.92	0.06	20.97
10/08/14	09:21	1.79	0.06	20.97
10/08/14	09:22	1.80	0.05	20.98
10/08/14	09:23	2.22	0.06	20.97
10/08/14	09:24	2.02	0.06	20.97
10/08/14	09:25	2.05	0.05	20.98
10/08/14	09:26	2.09	0.05	20.98
10/08/14	09:27	1.87	0.06	20.97
10/08/14	09:28	1.82	0.05	20.98
10/08/14	09:29	2.06	0.05	20.98
10/08/14	09:30	2.26	0.05	20.98
10/08/14	09:31	1.87	0.05	20.98
10/08/14	09:32	1.92	0.05	20.98
10/08/14	09:33	1.76	0.05	20.98
10/08/14	09:34	1.73	0.05	20.98
10/08/14	09:35	1.77	0.05	20.98
10/08/14	09:36	1.78	0.06	20.98
10/08/14	09:37	1.97	0.05	20.98
10/08/14	09:38	1.89	0.05	20.98
10/08/14	09:39	2.26	0.05	20.98

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	09:40	1.83	0.05	20.98
10/08/14	09:41	1.83	0.05	20.98
10/08/14	09:42	1.76	0.05	20.98
10/08/14	09:43	1.77	0.05	20.98
10/08/14	09:44	1.93	0.05	20.98
10/08/14	09:45	1.86	0.05	20.98
10/08/14	09:46	1.78	0.06	20.98
10/08/14	09:47	2.06	0.06	20.97
10/08/14	09:48	3.41	0.06	20.98
10/08/14	09:49	124.93	0.44	10.12
10/08/14	09:50	347.31	0.01	0.38
10/08/14	09:51	352.69	0.01	0.33
10/08/14	09:52	270.93	0.01	0.30
10/08/14	09:53	191.74	0.00	0.29
10/08/14	09:54	191.05	0.01	0.78
10/08/14	09:55	578.99	0.01	1.27
10/08/14	09:56	730.63	0.01	0.31
10/08/14	09:57	749.03	0.02	0.31
10/08/14	09:58	689.61	0.01	5.95
10/08/14	09:59	110.13	0.00	20.73
10/08/14	10:00	4.09	0.00	20.78
10/08/14	10:01	3.74	0.00	11.04
10/08/14	10:02	2.71	0.00	10.45
10/08/14	10:03	1.86	0.00	7.10
10/08/14	10:04	1.77	0.00	0.31
10/08/14	10:05	1.73	0.00	0.00
10/08/14	10:06	3.08	7.45	0.45
10/08/14	10:07	2.53	21.87	-0.06
10/08/14	10:08	1.76	21.51	-0.08
10/08/14	10:09	1.90	11.23	-0.05
10/08/14	10:10	1.88	8.37	4.79
10/08/14	10:11	1.75	2.53	16.24
10/08/14	10:12	1.78	0.55	0.14
10/08/14	10:13	1.84	0.10	-0.01
10/08/14	10:14	1.71	0.01	0.00
10/08/14	10:15	1.74	-0.01	0.76
10/08/14	10:16	1.80	0.01	19.75
10/08/14	10:17	1.81	0.00	20.36
10/08/14	10:18	1.87	0.00	20.38
10/08/14	10:19	1.74	0.00	20.41
10/08/14	10:20	1.72	0.00	20.42
10/08/14	10:21	1.79	0.00	20.39
10/08/14	10:22	2.06	0.00	20.38
10/08/14	10:23	1.78	0.00	20.40
10/08/14	10:24	1.97	0.00	20.40
10/08/14	10:25	1.75	0.00	20.43
10/08/14	10:26	1.75	0.00	20.44
10/08/14	10:27	1.76	0.00	20.40
10/08/14	10:28	1.74	0.00	20.44
10/08/14	10:29	1.74	0.00	20.40
10/08/14	10:30	1.93	0.00	20.41

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	10:31	1.71	0.00	20.41
10/08/14	10:32	1.75	0.00	20.36
10/08/14	10:33	1.76	0.00	20.37
10/08/14	10:34	1.74	0.00	20.36
10/08/14	10:35	1.80	0.00	20.41
10/08/14	10:36	1.81	0.00	20.45
10/08/14	10:37	1.80	0.00	20.40
10/08/14	10:38	1.81	0.00	20.34
10/08/14	10:39	2.77	0.01	19.27
10/08/14	10:40	4.23	0.02	19.95
10/08/14	10:41	3.94	0.00	20.65
10/08/14	10:42	2.74	0.00	20.67
10/08/14	10:43	1.77	0.00	20.68
10/08/14	10:44	1.75	0.00	20.68
10/08/14	10:45	1.82	0.00	20.68
10/08/14	10:46	1.81	0.00	20.68
10/08/14	10:47	1.81	0.00	20.68
10/08/14	10:48	1.90	0.00	20.68
10/08/14	10:49	6.61	2.85	17.49
10/08/14	10:50	15.57	6.14	13.62
10/08/14	10:51	30.29	9.45	9.60
10/08/14	10:52	32.01	9.93	8.97
10/08/14	10:53	32.48	10.21	8.59
10/08/14	10:54	33.13	9.56	9.53
10/08/14	10:55	20.73	2.83	17.35
10/08/14	10:56	1.98	0.08	20.63
10/08/14	10:57	11.29	0.13	15.91
10/08/14	10:58	270.00	-0.05	-0.26
10/08/14	10:59	329.25	-0.05	-0.27
10/08/14	11:00	357.55	-0.05	-0.28
10/08/14	11:01	309.49	-0.06	-0.28
10/08/14	11:02	193.70	-0.06	-0.29
10/08/14	11:03	186.95	-0.06	-0.29
10/08/14	11:04	176.39	-0.06	-0.29
10/08/14	11:05	149.70	-0.06	-0.29
10/08/14	11:06	92.58	-0.06	-0.29
10/08/14	11:07	91.15	-0.06	-0.29
10/08/14	11:08	88.10	-0.06	-0.29
10/08/14	11:09	152.07	-0.03	8.29
10/08/14	11:10	23.32	-0.06	20.75
10/08/14	11:11	1.84	0.00	20.76
10/08/14	11:12	1.80	0.00	14.10
10/08/14	11:13	1.81	0.00	10.06
10/08/14	11:14	1.82	0.00	10.06
10/08/14	11:15	1.81	0.00	10.19
10/08/14	11:16	1.80	0.00	10.29
10/08/14	11:17	3.19	12.56	6.29
10/08/14	11:18	2.07	22.76	-0.01
10/08/14	11:19	1.92	18.09	0.01
10/08/14	11:20	1.90	11.22	0.04
10/08/14	11:21	1.76	11.22	0.01

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	11:22	2.20	3.18	0.02
10/08/14	11:23	1.93	0.02	8.78
10/08/14	11:24	2.12	0.06	21.45
10/08/14	11:25	26.43	0.14	6.22
10/08/14	11:26	159.22	0.00	0.10
10/08/14	11:27	166.32	0.00	0.00
10/08/14	11:28	165.99	0.00	-0.01
10/08/14	11:29	166.22	0.00	0.01
10/08/14	11:30	166.20	0.00	0.00
10/08/14	11:31	135.33	0.00	-0.01
10/08/14	11:32	88.13	0.00	-0.01
10/08/14	11:33	87.94	0.00	-0.01
10/08/14	11:34	100.10	0.01	1.30
10/08/14	11:35	46.73	0.00	10.33
10/08/14	11:36	2.14	0.00	10.45
10/08/14	11:37	1.90	0.00	10.46
10/08/14	11:38	3.02	7.75	2.92
10/08/14	11:39	1.89	10.88	-0.01
10/08/14	11:40	1.93	10.95	-0.03
10/08/14	11:41	1.76	10.98	-0.04
10/08/14	11:42	5.02	9.79	5.33
10/08/14	11:43	26.04	9.88	9.42
10/08/14	11:44	27.74	10.12	9.11
10/08/14	11:45	25.92	10.22	8.96
10/08/14	11:46	25.99	10.09	9.18
10/08/14	11:47	25.92	10.02	9.28
10/08/14	11:48	27.84	9.86	9.52
10/08/14	11:49	26.86	9.97	9.34
Date	**Hour**	**CO**	**CO2**	**O2**
Test No. 1 Averages		**27.16**	**9.93**	**9.61**
10/08/14	11:50	28.01	10.07	9.21
10/08/14	11:51	27.48	10.40	8.74
10/08/14	11:52	26.18	10.09	9.17
10/08/14	11:53	27.98	9.93	9.41
10/08/14	11:54	27.94	10.02	9.27
10/08/14	11:55	28.85	10.03	9.27
10/08/14	11:56	29.80	9.92	9.42
10/08/14	11:57	31.41	9.76	9.87
10/08/14	11:58	30.26	9.64	10.03
10/08/14	11:59	32.29	9.59	10.10
10/08/14	12:00	32.01	9.92	9.64
10/08/14	12:01	31.79	9.81	9.79
10/08/14	12:02	31.85	9.77	9.86
10/08/14	12:03	32.00	9.63	10.04
10/08/14	12:04	31.91	9.66	10.00
10/08/14	12:05	31.87	9.64	10.04
10/08/14	12:06	32.08	9.60	10.08
10/08/14	12:07	32.78	9.97	9.57
10/08/14	12:08	26.60	10.14	9.32
10/08/14	12:09	25.90	9.89	9.69
10/08/14	12:10	26.06	9.79	9.83

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	12:11	25.79	9.80	9.83
10/08/14	12:12	25.81	10.22	9.22
10/08/14	12:13	25.08	10.04	9.49
10/08/14	12:14	25.37	9.98	9.57
10/08/14	12:15	25.51	9.76	9.89
10/08/14	12:16	24.38	9.98	9.59
10/08/14	12:17	23.88	10.00	9.56
10/08/14	12:18	24.20	9.92	9.66
10/08/14	12:19	25.05	9.98	9.58
10/08/14	12:20	24.25	10.10	9.39
10/08/14	12:21	25.69	9.86	9.75
10/08/14	12:22	25.80	10.07	9.45
10/08/14	12:23	24.70	9.95	9.61
10/08/14	12:24	26.12	9.90	9.70
10/08/14	12:25	25.83	9.90	9.69
10/08/14	12:26	27.65	9.86	9.77
10/08/14	12:27	27.95	10.21	9.26
10/08/14	12:28	27.50	10.24	9.21
10/08/14	12:29	26.27	9.94	9.63
10/08/14	12:30	26.70	9.51	10.21
10/08/14	12:31	25.87	9.83	9.77
10/08/14	12:32	24.58	10.18	9.28
10/08/14	12:33	24.05	10.02	9.54
10/08/14	12:34	24.51	9.96	9.61
10/08/14	12:35	25.99	9.94	9.63
10/08/14	12:36	26.06	9.94	9.62
10/08/14	12:37	25.90	9.92	9.66
10/08/14	12:38	26.16	10.01	9.56
10/08/14	12:39	26.05	10.03	9.54
10/08/14	12:40	25.11	9.85	9.77
10/08/14	12:41	26.56	10.19	9.29
10/08/14	12:42	25.51	10.26	9.18
10/08/14	12:43	25.51	9.92	9.68
10/08/14	12:44	27.43	9.72	9.95
10/08/14	12:45	27.57	9.81	9.83
10/08/14	12:46	24.75	10.11	9.36
10/08/14	12:47	26.05	9.88	9.71
10/08/14	12:48	26.68	9.76	9.89
10/08/14	12:49	28.13	9.82	9.81
10/08/14	12:50	25.98	10.33	9.06
10/08/14	12:51	26.07	10.03	9.52
10/08/14	12:52	26.73	9.64	10.06
10/08/14	12:53	29.41	9.70	9.98
10/08/14	12:54	27.51	10.38	8.99
10/08/14	12:55	25.93	9.99	9.57
10/08/14	12:56	27.52	9.55	10.19
10/08/14	12:57	28.37	7.21	12.88
10/08/14	12:58	5.27	0.24	8.07
10/08/14	12:59	2.04	0.11	1.71
10/08/14	13:00	2.24	0.08	1.78
10/08/14	13:01	2.21	0.09	15.99

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	13:02	12.51	0.43	14.11
10/08/14	13:03	149.59	0.05	0.09
10/08/14	13:04	164.50	0.03	0.02
10/08/14	13:05	164.45	0.03	0.00
10/08/14	13:06	164.49	0.02	0.00
10/08/14	13:07	162.95	0.02	-0.01
10/08/14	13:08	100.35	0.02	-0.01
10/08/14	13:09	88.51	0.01	-0.01
10/08/14	13:10	88.53	0.01	-0.02
10/08/14	13:11	96.05	0.03	0.60
10/08/14	13:12	61.78	0.01	10.22
10/08/14	13:13	2.45	0.01	10.44
10/08/14	13:14	2.42	0.14	10.21
10/08/14	13:15	3.42	10.36	0.47
10/08/14	13:16	2.22	10.95	-0.02
10/08/14	13:17	2.24	11.00	-0.04
10/08/14	13:18	3.38	10.44	2.99
10/08/14	13:19	24.41	11.27	7.59
10/08/14	13:20	28.45	11.27	7.63
10/08/14	13:21	26.20	10.84	8.21
10/08/14	13:22	29.08	11.40	7.51
10/08/14	13:23	46.03	11.68	7.15
10/08/14	13:24	32.57	11.36	7.58
10/08/14	13:25	28.49	11.18	7.78
10/08/14	13:26	27.17	11.07	7.90
10/08/14	13:27	26.53	10.98	8.01
10/08/14	13:28	36.39	11.50	7.32
10/08/14	13:29	28.21	11.08	7.86
Date	**Hour**	**CO**	**CO2**	**O2**
Test No. 2 Averages		**33.78**	**11.06**	**8.20**
10/08/14	13:30	26.81	11.24	7.69
10/08/14	13:31	25.13	10.87	8.20
10/08/14	13:32	26.72	11.04	8.21
10/08/14	13:33	27.02	11.08	8.14
10/08/14	13:34	25.62	10.76	8.58
10/08/14	13:35	25.62	10.87	8.41
10/08/14	13:36	26.08	10.91	8.35
10/08/14	13:37	28.60	10.98	8.25
10/08/14	13:38	25.95	10.53	8.91
10/08/14	13:39	26.37	10.72	8.60
10/08/14	13:40	27.77	10.80	8.49
10/08/14	13:41	34.43	11.11	8.10
10/08/14	13:42	31.79	11.16	8.06
10/08/14	13:43	29.74	11.38	7.80
10/08/14	13:44	31.48	11.08	8.16
10/08/14	13:45	26.91	10.99	8.32
10/08/14	13:46	31.69	11.16	8.08
10/08/14	13:47	35.96	11.10	8.16
10/08/14	13:48	36.84	11.25	7.99
10/08/14	13:49	32.28	11.18	8.07
10/08/14	13:50	33.46	11.27	7.96

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	13:51	31.02	11.27	7.97
10/08/14	13:52	29.10	11.39	7.83
10/08/14	13:53	35.14	11.39	7.83
10/08/14	13:54	36.51	11.34	7.88
10/08/14	13:55	32.46	11.32	7.93
10/08/14	13:56	32.45	11.28	7.97
10/08/14	13:57	30.72	11.28	7.97
10/08/14	13:58	32.42	11.21	8.03
10/08/14	13:59	30.43	11.21	8.04
10/08/14	14:00	29.99	11.02	8.26
10/08/14	14:01	32.03	11.26	7.98
10/08/14	14:02	39.16	11.27	7.96
10/08/14	14:03	41.61	11.40	7.81
10/08/14	14:04	36.82	11.22	8.02
10/08/14	14:05	29.58	10.59	8.85
10/08/14	14:06	32.18	10.83	8.51
10/08/14	14:07	61.04	11.28	7.90
10/08/14	14:08	33.79	10.91	8.41
10/08/14	14:09	32.64	10.94	8.38
10/08/14	14:10	34.00	10.89	8.43
10/08/14	14:11	51.70	11.06	8.16
10/08/14	14:12	36.25	10.81	8.51
10/08/14	14:13	36.59	10.80	8.53
10/08/14	14:14	36.00	10.97	8.32
10/08/14	14:15	34.40	10.97	8.31
10/08/14	14:16	32.91	11.03	8.28
10/08/14	14:17	32.63	10.94	8.40
10/08/14	14:18	47.29	11.63	7.50
10/08/14	14:19	43.44	11.26	7.99
10/08/14	14:20	33.34	10.91	8.42
10/08/14	14:21	34.67	11.05	8.24
10/08/14	14:22	35.16	11.07	8.18
10/08/14	14:23	35.77	11.16	8.08
10/08/14	14:24	34.29	10.68	8.73
10/08/14	14:25	32.12	10.75	8.63
10/08/14	14:26	32.44	10.91	8.38
10/08/14	14:27	33.23	10.81	8.50
10/08/14	14:28	40.68	11.08	8.15
10/08/14	14:29	52.70	11.46	7.73
10/08/14	14:30	35.69	10.54	8.93
10/08/14	14:31	30.42	10.64	8.76
10/08/14	14:32	29.50	8.31	11.45
10/08/14	14:33	10.93	0.61	16.11
10/08/14	14:34	139.79	0.14	0.12
10/08/14	14:35	164.37	0.09	0.02
10/08/14	14:36	164.62	0.07	0.00
10/08/14	14:37	164.32	0.06	0.00
10/08/14	14:38	133.74	0.05	-0.01
10/08/14	14:39	88.53	0.05	-0.01
10/08/14	14:40	88.19	0.04	-0.02
10/08/14	14:41	89.35	0.04	-0.02

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	14:42	111.84	0.06	8.11
10/08/14	14:43	3.47	0.03	10.43
10/08/14	14:44	2.40	0.03	10.45
10/08/14	14:45	2.88	1.60	8.86
10/08/14	14:46	3.28	10.79	0.06
10/08/14	14:47	2.42	10.98	-0.03
10/08/14	14:48	2.33	11.02	-0.04
10/08/14	14:49	3.77	8.69	6.68
10/08/14	14:50	33.38	11.26	7.63
10/08/14	14:51	41.99	11.01	7.97
10/08/14	14:52	30.70	10.59	8.60
10/08/14	14:53	34.23	10.95	8.05
10/08/14	14:54	36.05	11.03	7.95
10/08/14	14:55	35.72	11.06	7.94
10/08/14	14:56	33.55	10.68	8.47
10/08/14	14:57	34.38	10.81	8.23
10/08/14	14:58	34.38	10.77	8.30
10/08/14	14:59	35.08	10.98	8.02
Date	**Hour**	**CO**	**CO2**	**O2**
Test No. 3 Averages		**38.50**	**10.60**	**8.77**
10/08/14	15:00	37.18	10.87	8.16
10/08/14	15:01	36.27	10.77	8.31
10/08/14	15:02	36.30	10.78	8.29
10/08/14	15:03	38.39	11.16	7.81
10/08/14	15:04	36.12	10.74	8.60
10/08/14	15:05	35.49	10.54	8.89
10/08/14	15:06	36.37	10.39	9.11
10/08/14	15:07	36.44	10.53	8.91
10/08/14	15:08	38.07	10.93	8.31
10/08/14	15:09	36.46	10.64	8.75
10/08/14	15:10	36.39	10.54	8.88
10/08/14	15:11	36.41	10.50	8.95
10/08/14	15:12	36.03	10.56	8.86
10/08/14	15:13	40.27	10.98	8.28
10/08/14	15:14	43.03	10.84	8.46
10/08/14	15:15	35.88	10.53	8.92
10/08/14	15:16	36.30	10.78	8.52
10/08/14	15:17	37.47	10.65	8.72
10/08/14	15:18	36.26	10.57	8.85
10/08/14	15:19	36.42	10.60	8.79
10/08/14	15:20	36.37	10.62	8.76
10/08/14	15:21	36.46	10.57	8.83
10/08/14	15:22	35.23	10.57	8.83
10/08/14	15:23	35.25	10.49	8.95
10/08/14	15:24	37.26	10.11	9.44
10/08/14	15:25	38.47	10.15	9.37
10/08/14	15:26	38.48	10.23	9.25
10/08/14	15:27	38.45	10.25	9.22
10/08/14	15:28	38.77	10.31	9.16
10/08/14	15:29	40.30	10.28	9.21
10/08/14	15:30	38.49	10.27	9.21

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	15:31	38.44	10.39	9.05
10/08/14	15:32	40.77	10.31	9.15
10/08/14	15:33	41.98	10.40	9.03
10/08/14	15:34	40.33	10.41	9.03
10/08/14	15:35	40.42	10.46	8.96
10/08/14	15:36	35.78	10.34	9.17
10/08/14	15:37	43.14	10.50	8.90
10/08/14	15:38	45.39	10.44	8.98
10/08/14	15:39	39.52	10.22	9.32
10/08/14	15:40	44.58	10.52	8.88
10/08/14	15:41	61.76	10.58	8.76
10/08/14	15:42	43.07	10.31	9.18
10/08/14	15:43	40.28	10.49	8.96
10/08/14	15:44	36.95	10.79	8.54
10/08/14	15:45	36.21	10.82	8.51
10/08/14	15:46	36.37	10.79	8.55
10/08/14	15:47	36.38	10.77	8.57
10/08/14	15:48	40.31	11.03	8.25
10/08/14	15:49	47.16	11.13	8.10
10/08/14	15:50	36.95	10.93	8.36
10/08/14	15:51	36.35	10.64	8.77
10/08/14	15:52	36.19	10.80	8.52
10/08/14	15:53	36.33	10.82	8.49
10/08/14	15:54	38.22	10.91	8.37
10/08/14	15:55	38.13	10.84	8.47
10/08/14	15:56	38.04	10.92	8.35
10/08/14	15:57	36.34	10.58	8.86
10/08/14	15:58	36.16	10.69	8.67
10/08/14	15:59	36.04	10.50	8.97
10/08/14	16:00	36.12	10.62	8.77
10/08/14	16:01	36.21	10.72	8.63
10/08/14	16:02	36.34	10.56	8.87
10/08/14	16:03	33.09	10.42	9.09
10/08/14	16:04	28.93	10.58	8.83
10/08/14	16:05	29.78	10.67	8.67
10/08/14	16:06	28.22	10.47	8.98
10/08/14	16:07	24.42	10.52	8.90
10/08/14	16:08	11.83	0.99	14.51
10/08/14	16:09	2.31	0.15	2.75
10/08/14	16:10	2.17	0.11	2.69
10/08/14	16:11	2.04	0.08	2.65
10/08/14	16:12	1.96	0.08	8.45
10/08/14	16:13	34.60	0.34	10.01
10/08/14	16:14	160.80	0.05	0.10
10/08/14	16:15	164.54	0.04	0.02
10/08/14	16:16	164.38	0.04	0.02
10/08/14	16:17	164.24	0.03	0.00
10/08/14	16:18	109.96	0.03	-0.01
10/08/14	16:19	88.45	0.03	-0.02
10/08/14	16:20	88.31	0.03	-0.02
10/08/14	16:21	88.36	0.02	-0.02

ESC 8816
1-minute averages

Date	Hour	CO	CO2	O2
10/08/14	16:22	130.90	0.04	4.16
10/08/14	16:23	15.16	0.02	10.40
10/08/14	16:24	1.97	0.02	10.44
10/08/14	16:25	1.94	0.02	10.46
10/08/14	16:26	2.10	0.02	10.46
10/08/14	16:27	3.40	8.75	1.93
10/08/14	16:28	2.16	10.94	-0.02
10/08/14	16:29	1.85	11.00	-0.04
10/08/14	16:30	2.01	11.02	-0.05

Appendix 4

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

EFFECTIVE DATE: January 7, 2013

REVISION DATE: April 6, 2016

ISSUED TO:

Neenah Paper Michigan, Inc. - Munising Mill

State Registration Number (SRN): B1470

LOCATED AT:

501 E. Munising Avenue, Munising, Michigan 49862

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-B1470-2013a

Expiration Date: January 7, 2018

Administratively Complete ROP Renewal Application Due Between July 7, 2016, and July 7, 2017

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-B1470-2013a

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

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Dan W. Maki, Upper Peninsula District Supervisor

B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Each Individual Hazardous Air Pollutant (HAP)	Less than 9 tpy[2]*	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)R 336.1225
2. Aggregate HAPs	Less than 22.5 tpy[2]*	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)
* Beginning on February 1, 2016, and continuing for the first 12 calendar months, this limit applies to the cumulative total HAP emissions. Thereafter, the limit shall become a 12-month rolling limit.					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. ~~Within 180 days of placing the spray dry absorber (SDA) into service,~~ Before January 31, 2017, the permittee shall determine emission rates for Hydrogen Chloride, Arsenic, Phosphorous, Manganese, Barium, Chromium, and lead and determine the Hydrogen Chloride control efficiency from EU05 (using exhaust emissions and the chlorine in the coal) by testing at owner's expense, in accordance with Department requirements. The permittee must complete the test once every five years, thereafter.[2] **(R 336.2001, R 336.2003, R 336.2004)**

2. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date.[2] **(R 336.1213(3))**

3. The permittee shall notify the AQD no less than seven days prior to the anticipated test date.[2] **(R 336.2001(3))**

4. The permittee shall submit two complete test reports of the test results to the AQD, one to the Technical Programs Unit and one to the district office, within 60 days following the last date of the test.[2] **(R 336.2001(4))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. Formulation data (which identifies HAP content down to the 0.1 percent) can be used in completing calculations.[2] **(R 336.1201)**

2. The permittee shall keep the following information on a monthly basis:
   a. The quantity of each HAP containing material used or emitted.
   b. The HAP emission factor of each HAP containing material used or emitted. (Emission factors are to be based on testing at the facility or as approved by the AQD District Supervisor.)
   c. Individual and aggregate HAP emission calculations determining the monthly emission rate of each in tons per calendar month.
   d. Individual and aggregate HAP emission calculations determining the annual emission rate of each in tons per 12-month rolling time period as determined at the end of each calendar month. For the first month following permit issuance, the calculations shall include the summation of emissions from the 11-month period immediately preceding the issuance date. For each month thereafter, calculations shall include the summation of emissions for the appropriate number of months prior to permit issuance plus the months following permit issuance for a total of 12 consecutive months.

   The permittee shall keep the records in a format acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.[2] **(R 336.1205(3))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2] This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU05	BOILER #1 (also known as EU05), BAGHOUSE AND STACK: The boiler is capable of burning coal and natural gas. The boiler capacity is 202 MM BTU/hr. heat input. The baghouse is utilized to reduce emissions of particulate. EU05 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutant for the emission unit is PM-10.	1/1/1958 & 1997	NA
EU15	BOILER #2 AND STACK: This boiler is only capable of burning #2 fuel oil. Boiler produces 150,000 lbs. of steam per hr. Boiler capacity is 225 MM BTU/hour heat input.	1970	NA
EUCOATER	On machine coater #1	1989	NA
EUPAPERMACHINE1	Paper machine #1	1903 & 1989	FGPAPERMACHINES
EUPAPERMACHINE2	Paper machine #2	1903	FGPAPERMACHINES
EUPM1SATURATOR	Paper machine #1 saturator	1989	FGSATURATORS&COATERS
EUPM2SATURATOR	Paper machine #2 saturator	1903	FGSATURATORS&COATERS
EUSATURATOR15	Saturator #15 & ovens	1964	FGSATURATORS&COATERS
EUSATURATOR18	Saturator #18 & ovens	1968	FGSATURATORS&COATERS
EUCOATER16	Coater #16	1966	FGSATURATORS&COATERS
EUCOATER17	Coater #17	1966	FGSATURATORS&COATERS
EUCOATER19	Coater #19	1976	FGSATURATORS&COATERS
EUCOLDCLEANER	Any existing cold cleaner (placed into operation prior to 7/1/79) or new cold cleaner (placed into operation after 7/1/79) that is exempt from NSR permitting by R 336.1281(h) or R 336.1285 (r)(iv).	2000	FGCOLDCLEANERS
EUPAINTBOOTH	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).	1994	FGRULE287(c)

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUPOWERGENERATOR	Emergency diesel-fired power generator located (7.63 MMBtu/hr heat input) in the Power House that would be used to restart the mill operations in the event of a power failure.	1978	FGEMERGENCYENGINES
EUFIREPUMPGEN	Emergency fire pumps with diesel engine (6.02 MMBtu/hr heat input).	1972	FGEMERGENCYENGINES
EUWWTPGENERATOR	Emergency diesel-powered generator (3.40 MMBTU/hr heat input) that would allow the wastewater treatment system to continue operation in the event of a power failure.	1996	FGEMERGENCYENGINES

EU05
EMISSION UNIT CONDITIONS

DESCRIPTION

Boiler, baghouse, stack, coal and ash handling; Boiler #1 (also known as EU05) is capable of burning coal and natural gas. The boiler capacity is 202 MM BTU/Hr. heat input. The baghouse is utilized to reduce particulate emissions from EU05.

EU05 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutant for the emission unit is PM-10.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Fabric filter baghouse to control particulate matter emissions (this is a CAM subject control device), and a spray dry absorber (SDA) to control Hazardous Air Pollutants (HAPs).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Particulate	0.30 lbs/1000 lbs of exhaust gases corrected to 50% excess air[2]	According to Method	EU05	SC V.1	**R 336.1331(a)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Coal	The coal burned in EU05 shall not exceed a maximum sulfur content of 1.5% by weight calculated on the basis of 12,000 BTU's per pound of coal.[2]	According to Method	EU05	SC VI.2	**R 336.1401(1)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. If less than three baghouse modules (out of five) are operating at the baghouse collector, the permittee shall implement corrective action and maintain a record of action taken to prevent reoccurrence. **(R 336.1213(3), R 336.1910)**

2. Within 60 calendar days of placing the SDA into service, the permittee shall submit to the AQD District Supervisor, an updated Malfunction Abatement Plan (MAP) for EU05. At a minimum the plan shall contain the following:
   a. Operation and maintenance criteria for EU05, add-on control device(s), and for the process and control device(s) monitoring equipment as well as a standardized checklist to document the operation a d maintenance of the equipment;
   b. The work practice standards for the add-on control device(s) and monitoring equipment;
   c. Procedures to be followed to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions do not occur; and
   d. A systematic procedure for identifying process equipment, add-on control device(s) and monitoring equipment malfunctions and for implementing corrective actions to address such malfunctions.[2] **(R 336.1911)**

3. Upon detecting an excursion of the opacity limit, the permittee shall restore operation of EU05 to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. An excursion is the exceedance of the opacity limit (i.e., opacity greater than 20%, except for one 6-minute average per hour greater than 27%). **(40 CFR 64.6, 40 CFR 64.7)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain the baghouse collector with a pressure drop indicator.[2] **(R 336.1910)**

2. The permittee shall not operate EU05, after January 31, 2016, unless the SDA is installed, maintained, and operated in a satisfactory manner. Satisfactory manner includes operating and maintaining the control device in accordance with an approved MAP.[2] **(R 336.1910)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall perform a stack test for particulate matter by January 31, 2017,~~June 30, 2016~~, and thereafter once every three years from the date of the previous stack test.[2] **(R 336.2001, R 336.2003, R 336.2004)**

2. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date. **(R 336.1213(3))**

3. The permittee shall notify the AQD no less than seven days prior to the anticipated test date. **(R 336.2001(3))**

4. The permittee shall submit two complete test reports of the test results to the AQD, one to the Technical Programs Unit and one to the district office, within 60 days following the last date of the test. **(R 336.2001(4))**

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall carry out an Inspection and Maintenance Program for EU05, Coal Handling and Storage Equipment, Ash Handling and Storage Equipment and Associated Air Cleaning Devices as detailed in Appendix 4 to assure that the air cleaning devices are installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control Rules and existing law. **(R 336.1213(3), R 336.1910)**

2. Applicant shall monitor and record the fuel sulfur content for EU05 as detailed in Appendix 4. **(R 336.1213(3), R 336.1401(1))**

3. When EU05 is operating, the permittee shall operate, calibrate, and maintain a Continuous Opacity Monitoring System on the baghouse for EU05. The permittee shall keep a summary record of all six-minute averages of opacity greater than 20%, except for one six-minute average per hour of not more than 27% opacity, including cause if known, and corrective action taken. Also, the permittee shall keep a summary record of opacity monitor downtime. The permittee shall submit these summary records with the semiannual reports submitted under VII. Reporting. Data recorded during monitoring malfunctions, associated repairs, and required QA/QC activities shall not be used for 40 CFR Part 64 compliance. **(R 336.1213(3), 40 CFR 64.6, 40 CFR 64.7, 40 CFR 64.9)**

See Appendix 4

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. Each semiannual report of deviations shall include summary information on the number, duration and cause of excursions and/or exceedances and the corrective action taken. **(40 CFR 64.9(a)(2)(i))**

5. Each semiannual report of deviations shall include summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than monitor downtime associated with zero and span or other daily calibration checks, if applicable). **(40 CFR 64.9(a)(2)(ii))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV05	86[1]	135[1]	**R 336.1901**

IX. OTHER REQUIREMENT(S)

1. The permittee shall maintain the continuous opacity monitor associated with EU05. This includes, but is not limited to, maintaining the necessary parts for routine repairs of the monitor, and maintaining the monitor according to manufacturer's specifications (e.g., equipment calibration, etc.). **(40 CFR 64.6, 40 CFR 64.7)**

2. The permittee shall comply with all applicable requirements of 40 CFR Part 64. **(40 CFR Part 64)**

3. The permittee shall comply with the applicable requirements of 40 CFR Part 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers. **(40 CFR Part 63, Subpart JJJJJJ)**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EU15
EMISSION UNIT CONDITIONS

DESCRIPTION

Boiler #2 and stack: Boiler #2 burns #2 fuel oil. This boiler produces 150,000 lbs. of steam per hour. Boiler capacity is 225 MMBTU/hour heat input.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Sulfur Dioxide	1.7 pounds per million BTUs of heat input for fuel oil	According to Method	EU05	GC13	**R 336.1402(1)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
2. #2 Fuel Oil	Maximum sulfur content of 1.6%, calculated on the basis of 18,000 BTUs per pound of fuel oil.	According to Method	EU05	SC VI.1	**R 336.1213(2)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall obtain and keep records of the sulfur content of the fuel oil burned in Boiler #2 as detailed in Appendix 4 & 7. **(R 336.1213(3))**

See Appendix 4 & 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the applicable requirements of 40 CFR Part 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers. **(40 CFR Part 63, Subpart JJJJJJ)**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EUCOATER
EMISSION UNIT CONDITIONS

DESCRIPTION

One Machine Coater #1.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. VOCs	12 lb/hr and 7.8 tpy[2]	According to Method	EUCOATER	GC 13 SC VI.2	**R 336.1702(c)**
2. Acrylonitrile	0.19 mg/m^3, corrected to 70°F and 29.92 inches Hg[1]	According to Method	EUCOATER	GC 13 SC VI.2	**R 336.1225**
3. Formaldehyde	6.3 mg/m^3, corrected to 70°F and 29.92 inches Hg[1]	According to Method	EUCOATER	GC 13 SC VI.2	**R 336.1225**
4. Particulate	0.01 lbs/1000 lbs of exhaust gases[2]	According to Method	EUCOATER	GC 13	**R 336.1331**
5. Opacity	0%[2]	6-minute average	EUCOATER	GC13	**R 336.1301(1)(c)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Applicant shall not fire any fuel in the dryers other than sweet natural gas.[2] **(R 336.1201(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall perform a stack test for particulate matter by ~~June 30, 2016~~January 31, 2017, and thereafter once every three years from the date of the previous stack test.[2] **(R 336.2001, R 336.2003, R 336.2004)**

2. The permittee shall submit a complete test protocol to the AQD for approval at least 30 days prior to the anticipated test date. **(R 336.1213(3))**

3. The permittee shall notify the AQD no less than seven days prior to the anticipated test date. **(R 336.2001(3))**

4. The permittee shall submit two complete test reports of the test results to the AQD, one to the Technical Programs Unit and one to the district office, within 60 days following the last date of the test. **(R 336.2001(4))**

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Applicant shall monitor and record the paper machine feed rate from the paper machine No. 1 on a continuous basis in a manner and with instrumentation acceptable to the Air Quality Division.[2] **(R 336.1201(3))**

2. The permittee shall obtain and keep records of emissions and VOC content of as applied coatings as detailed in Appendix 4 and 7. **(R 336.1213(3))**

See Appendix 4 & 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVCOATER	44.8 x 30.3	90	**R 336.1201(3)**

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGPAPERMACHINES	Paper Machine #1 and #2, dryers and stacks. Paper machines are a converter of pulp and water mixture into a sheet of uniform thickness. The dryers are used to remove moisture at a predetermined rate.	EUPAPERMACHINE1 EUPAPERMACHINE2
FGSATURATORS&COATERS	Paper Machine #1 and 2 and saturators, Saturator #15 and 18 and ovens, and Coater #16, 17 and 19.	EUPM1SATURATOR EUPM2SATURATOR EUSATURATOR15 EUSATURATOR18 EUCOATER16 EUCOATER17 EUCOATER19
FGCOLDCLEANERS	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.	EUCOLDCLEANER
FGRULE287(c)	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).	EUPAINTBOOTH
FGEMERGENCYENGINES	Emergency engines exempt from the requirements of Rule 201 pursuant to Rules 278 and 285(g). These engines are used to run the mill, the fire pump and the wastewater treatment system in the event of a power failure.	EUPOWERGENERATOR EUFIREPUMPGEN EUWWTPGENERATOR

FGPAPERMACHINES
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Paper Machine #1 and #2, dryers and stacks. Paper machines are a converter of pulp and water mixture into a sheet of uniform thickness. The dryers are used to remove moisture at a predetermined rate.

Emission Units: EUPAPERMACHINE1, EUPAPERMACHINE2

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Paper machine shall burn only sweet natural gas fuel. **(R 336.1213(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

FGSATURATORS&COATERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Paper Machine Nos. 1 and 2 and saturators, Saturator Nos. 15 and 18 and ovens, and Coater Nos. 16, 17 and 19.

Emission Units: EUPM1SATURATOR, EUPM2SATURATOR, EUSATURATOR15, EUSATURATOR18, EUCOATER16, EUCOATER17, & EUCOATER19

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Coatings	2.9 lbs VOC emitted per gallon of coating, minus water, as applied.	According to Method	FGSATURATORS& COATERS	GC VI.1	**R 336.1610(2)(f) R 336.1702(d)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The VOC content of coatings, as applied, minus water, may be determined from the manufacturer's formulation data derived using Method 311. **(40 CFR 63.3360(c)(3))**

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall obtain and keep records to demonstrate compliance with Special Condition No. II.1 as detailed in Appendices 4 and 7. **(R 336.1213(3))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable requirements of the National emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating by the compliance date(s) specified in the standards. 40 CFR Part 63, Subpart JJJJ does not apply to on machine coaters and saturators for #1 paper machine. **(40 CFR Part 63, Subpart JJJJ)**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

FGCOLDCLEANERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Emission Unit: EUCOLDCLEANER

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

1. The permittee shall not use cleaning solvents containing more than 5% by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof. **(R 336.1213(2))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Cleaned parts shall be drained for no less than 15 seconds or until dripping ceases. **(R 336.1611(2)(b), R 336.1707(3)(b))**

2. The permittee shall perform routine maintenance on each cold cleaner as recommended by the manufacturer. **(R 336.1213(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The cold cleaner must meet one of the following design requirements:
   a. The air/vapor interface of the cold cleaner is no more than ten square feet. **(R 336.1281(h))**
   b. The cold cleaner is used for cleaning metal parts and the emissions are released to the general in-plant environment. **(R 336.1285(r)(iv))**

2. The cold cleaner shall be equipped with a device for draining cleaned parts. **(R 336.1611(2)(b), R 336.1707(3)(b))**

3. All new and existing cold cleaners shall be equipped with a cover and the cover shall be closed whenever parts are not being handled in the cold cleaner. **(R 336.1611(2)(a), R 336.1707(3)(a))**

4. The cover of a new cold cleaner shall be mechanically assisted if the Reid vapor pressure of the solvent is more than 0.3 psia or if the solvent is agitated or heated. **(R 336.1707(3)(a))**

5. If the Reid vapor pressure of any solvent used in a new cold cleaner is greater than 0.6 psia; or, if any solvent used in a new cold cleaner is heated above 120°F, then the cold cleaner must comply with at least one of the following provisions:
   a. The cold cleaner must be designed such that the ratio of the freeboard height to the width of the cleaner is equal to or greater than 0.7. **(R 336.1707(2)(a))**

b. The solvent bath must be covered with water if the solvent is insoluble and has a specific gravity of more than 1.0. **(R 336.1707(2)(b))**
c. The cold cleaner must be controlled by a carbon adsorption system, condensation system, or other method of equivalent control approved by the AQD. **(R 336.1707(2)(c))**

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For each new cold cleaner in which the solvent is heated, the solvent temperature shall be monitored and recorded at least once each calendar week during routine operating conditions. **(R 336.1213(3))**

2. The permittee shall maintain the following information on file for each cold cleaner: **(R 336.1213(3))**
   a. A serial number, model number, or other unique identifier for each cold cleaner.
   b. The date the unit was installed, manufactured or that it commenced operation.
   c. The air/vapor interface area for any unit claimed to be exempt under Rule 281(h).
   d. The applicable Rule 201 exemption.
   e. The Reid vapor pressure of each solvent used.
   f. If applicable, the option chosen to comply with Rule 707(2).

3. The permittee shall maintain written operating procedures for each cold cleaner. These written procedures shall be posted in an accessible, conspicuous location near each cold cleaner. **(R 336.1611(3), R 336.1707(4))**

4. As noted in Rule 611(2)(c) and Rule 707(3)(c), if applicable, an initial demonstration that the waste solvent is a safety hazard shall be made prior to storage in non-closed containers. If the waste solvent is a safety hazard and is stored in non-closed containers, verification that the waste solvent is disposed of so that not more than 20%, by weight, is allowed to evaporate into the atmosphere shall be made on a monthly basis. **(R 336.1213(3), R 336.1611(2)(c), R 336.1707(3)(c))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

FGRULE 287(c)
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).

Emission Unit: EUPAINTBOOTH

POLLUTION CONTROL EQUIPMENT

Overspray Filter

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Underlying Applicable Requirement
1. Coatings	200 gallons	Per month, as applied, minus water, per emission unit	NA	**R 336.1287(c)(i)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Any exhaust system that serves only coating spray equipment shall be equipped with a properly installed and operating particulate control system. **(R 336.1287(c)(ii))**

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall maintain records of the following information for each emission unit for each calendar month using the methods outlined in the DEQ, AQD Rule 287(c), Permit to Install Exemption Record form (EQP 3562) or an alternative format that is approved by the AQD District Supervisor. **(R 336.1213(3))**
   a. Volume of coating used, as applied, minus water, in gallons. **(R 336.1287(c)(iii))**
   b. Documentation of any filter replacements for exhaust systems serving coating spray equipment. **(R 336.1213(3))**

See Appendix 4

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

FGEMERGENCYENGINES
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emergency engines exempt from the requirements of Rule 201 pursuant to Rules 278 and 285(g). These engines are used to run the mill, the fire pump and the wastewater treatment system in the event of a power failure.

Emission Unit: EUPOWERGENERATOR, EUFIREPUMPGEN & EUWWTPGENERATOR

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Underlying Applicable Requirement
NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

See Appendix 4

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the applicable requirements of 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. **(40 CFR Part 63, Subpart ZZZZ)**

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Abbreviations and Acronyms

AQD	Air Quality Division	MM	Million
acfm	Actual cubic feet per minute	MSDS	Material Safety Data Sheet
BACT	Best Available Control Technology	MW	Megawatts
BTU	British Thermal Unit	NA	Not Applicable
°C	Degrees Celsius	NAAQS	National Ambient Air Quality Standards
CAA	Federal Clean Air Act	NESHAP	National Emission Standard for Hazardous Air Pollutants
CAM	Compliance Assurance Monitoring	NMOC	Non-methane Organic Compounds
CEM	Continuous Emission Monitoring	NOx	Oxides of Nitrogen
CFR	Code of Federal Regulations	NSPS	New Source Performance Standards
CO	Carbon Monoxide	NSR	New Source Review
COM	Continuous Opacity Monitoring	PM	Particulate Matter
department	Michigan Department of Environmental Quality	PM-10	Particulate Matter less than 10 microns in diameter
dscf	Dry standard cubic foot	pph	Pound per hour
dscm	Dry standard cubic meter	ppm	Parts per million
EPA	United States Environmental Protection Agency	ppmv	Parts per million by volume
EU	Emission Unit	ppmw	Parts per million by weight
°F	Degrees Fahrenheit	PS	Performance Specification
FG	Flexible Group	PSD	Prevention of Significant Deterioration
GACS	Gallon of Applied Coating Solids	psia	Pounds per square inch absolute
GC	General Condition	psig	Pounds per square inch gauge
gr	Grains	PeTE	Permanent Total Enclosure
HAP	Hazardous Air Pollutant	PTI	Permit to Install
Hg	Mercury	RACT	Reasonable Available Control Technology
hr	Hour	ROP	Renewable Operating Permit
HP	Horsepower	SC	Special Condition
H_2S	Hydrogen Sulfide	scf	Standard cubic feet
HVLP	High Volume Low Pressure *	sec	Seconds
ID	Identification (Number)	SCR	Selective Catalytic Reduction
IRSL	Initial Risk Screening Level	SO_2	Sulfur Dioxide
ITSL	Initial Threshold Screening Level	SRN	State Registration Number
LAER	Lowest Achievable Emission Rate	TAC	Toxic Air Contaminant
lb	Pound	Temp	Temperature
m	Meter	THC	Total Hydrocarbons
MACT	Maximum Achievable Control Technology	tpy	Tons per year
MAERS	Michigan Air Emissions Reporting System	µg	Microgram
MAP	Malfunction Abatement Plan	VE	Visible Emissions
MDEQ	Michigan Department of Environmental Quality	VOC	Volatile Organic Compounds
mg	Milligram	yr	Year
mm	Millimeter		

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 pounds per square inch gauge (psig).

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

The permittee shall use the following approved formats and procedures for the recordkeeping requirements referenced in EU05, EU15, FGSATURATORS&COATERS, and EUCOATER. Alternative formats must be approved by the AQD District Supervisor.

1) EU05 - Coal Shipments Received:

a) For each coal shipment received, the permittee shall record the date received, source of coal and shipper, tons received, and a laboratory analysis of ash content, sulfur content, and moisture content to demonstrate compliance with the 1.5% sulfur content limitation. The determination of sulfur content (percent by weight) of fuel shall be carried out in accordance with a procedure acceptable to the Air Quality Division. The records of ash content and sulfur content shall specify whether they were measured on a dry basis or "as received."

b) At least once per calendar year, the permittee shall have a coal analysis performed of the ash content, sulfur content, and moisture content. This analysis shall be independent of the analysis received from the coal supplier with each coal delivery. The determination of sulfur content (percent by weight) of fuel shall be carried out in accordance with ASTM Method 3177-75 or Method 4239-85 or a procedure acceptable to the District Supervisor.

2) EU05 - Boiler Inspection and Maintenance Program:

The permittee shall carry out an Inspection and Maintenance Program for EU05, the associated Bag House dust collection system, Opacity Meter, Ash Handling and Coal Handling and Storage equipment. The program shall include keeping a Daily Log which details equipment problems found, repairs done and/or corrective action taken and a Preventative Maintenance Log of scheduled and completed maintenance on the equipment listed above.

3) EU15 - Fuel Oil Analysis:

For each fuel oil shipment received, the permittee shall obtain from the fuel oil supplier a laboratory analysis of the sulfur content. The determination of sulfur content (percent by weight) shall be carried out in accordance with any of the following procedures: ASTM Method D129-64 or ASTM Method 1552-83 or ASTM Method 2622-87 or ASTM Method 1266-87, or an alternative method approved by the AQD District Supervisor. For each fuel oil shipment received, the permittee shall also record the date received, source of fuel oil and supplier, and gallons received. These records shall be retained by the permittee for a minimum of five years, and made available to the Air Quality Division upon request.

4) FGSATURATORS&COATERS & EUCOATER - Coating Records:

a) FGSATURATORS&COATERS: The permittee shall keep monthly records for the latex used at all coaters and saturators on a facility wide basis. The records will represent the volume throughput on either a wet pound or total gallon basis. The Volatile Organic Compound (VOC) content of each coating or saturant (minus water) shall be less than 2.9 lbs. per gallon as applied for #1 Paper Machine Saturator, #2 Paper Machine Saturator, #15 Saturator, #18 Saturator, #6 Coater, #17 Coater and #19 Coater.

b) EUCOATER: The permittee shall be able to demonstrate that the VOC content of as applied coatings on the #1 Paper Machine Coater are at levels equal to or less than 12.0 lbs per hour and at less than 7.8 tons per year.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

The following table lists any PTIs issued since the effective date of previously issued ROP No. MI-ROP-B1470-2006b. This includes any PTIs that were incorporated into the Source-Wide PTI No MI-PTI-B1470-2006b through amendments or modifications and any PTI that remained off-permit until this ROP renewal.

Permit to Install Number	Description of Equipment	Corresponding Emission Unit(s) or Flexible Group(s)
NA	NA	NA

The following ROP amendments or modifications were issued after the effective date of ROP No. MI-ROP-B1470-2013.

Permit to Install Number	ROP Revision Application Number/Issuance Date	Description of Change	Corresponding Emission Unit(s) or Flexible Group(s)
24-15	201600016 / April 6, 2016	Incorporate PTI 24-15 to install a spray dry absorbent (SDA) system to control hazardous air pollutants (HAPs) (hydrogen chloride emissions), and qualify as an area source of HAPs. The SDA is anticipated to be installed and operating beginning January 31, 2016.	EU05 and EU15
NA	201600003 / April 6, 2016	Extend the testing deadline under EU05, special condition (SC) V.1 and EUCOATER (SC V.1) from the existing permitted date to June 30, 2016.	EU05 and EUCOATER

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EUCOATER and FGSATURATORS&COATERS.

1. EUCOATER: VOC emissions in pounds/hour = Coating or saturant flow in gallons/hour X VOC content in pounds/gallon minus water.

2. EUCOATER: VOC emissions in tons/year = VOC emissions in pounds/hour X hours of operation divided by 2000 pounds per ton minus water.

3. FGSATURATORS&COATERS: VOC concentration in pounds/gallon = Coating or Saturant Manufacturer's Formulation Data concentration in pounds of VOC/gallon minus water.

4. EUCOATER: ACRYLONITRILE emission in milligrams/meter3 = Coating Manufacturer's Formulation Data for acrylonitrile concentration in mg/kilogram of coating times the kilograms of coating/hr divided by the meters3 of air/hr.

5. EUCOATER: FORMALDEHYDE emissions in milligrams/meter3 = Coating Manufacturer's Formulation Data for formaldehyde concentration in mg/kilogram of coating times the kilograms of coating/hr divided by the meters3 of air/hr.

6. EU15: The permittee shall use the following calculation in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EU15. Alternative calculations must be approved by the AQD District Supervisor.

7. Values for percent sulfur and for heat value of fuel oil, which are obtained from analytical data, can be used in the following equation to determine % sulfur on the basis of 18,000 Btu per pound of fuel oil:

$$S = \left(\frac{S_{oil}}{1}\right) * \left(\frac{18{,}000\ \text{Btu}}{H_{oil}}\right)$$

Where:
S = % sulfur on the basis of 18,000 Btu per pound of fuel oil
H_{oil} = actual Heat Value of the fuel oil in Btu per pound of fuel oil
S_{oil} = actual percent Sulfur in the fuel oil

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ Report Certification form (EQP 5736) and MDEQ Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

Appendix 5

SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #1

SGS Minerals Sample ID: 550-1666820-001

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	5.33		
Ash %	ASTM D3174	5.38	5.68	
Volatile Matter %	ASTM D3175	36.38	38.43	
Fixed Carbon %	ASTM D3172 (by diff)	52.91	55.89	
Sulfur %	ASTM D4239 (A)	0.77	0.82	
Gross Calorific Value Btu/lb	ASTM D5865	13564	14327	15190
Carbon %	ASTM D5373	76.75	81.07	
Hydrogen %	ASTM D5373	4.95	5.23	
Nitrogen %	ASTM D5373	1.46	1.54	
Oxygen %	ASTM D3176 (by diff)	5.36	5.66	

Tests	Result	Unit	Method
lb. of SO2 / Million Btu @ 100%	1.14	---	ASTM D5865
Chloride, Cl	1800.00	µg/g	ASTM D4208

Edward Pendleton
Branch Manager

SGS North America Inc. | Minerals Services Division
248 Harrogate Industrial Drive Harrogate TN 37752 t (423) 869-5383 f (423) 869-9391

Member of the SGS Group (Société Générale de Surveillance)

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #1

SGS Minerals Sample ID: 550-1666820-001

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Antimony, Sb	<2	µg/g	ASTM D3683 (Mod)
Arsenic, As	3.00	µg/g	ASTM D3683 (Mod)
Barium, Ba	31.00	µg/g	ASTM D3683 (Mod)
Beryllium, Be	4.00	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<2	µg/g	ASTM D3683 (Mod)
Chromium, Cr	9.00	µg/g	ASTM D3683 (Mod)
Copper, Cu	12.00	µg/g	ASTM D3683 (Mod)
Fluoride, Fl	53.00	µg/g	ASTM D3761
Lead, Pb	3.00	µg/g	ASTM D3683 (Mod)
Manganese, Mn	6.00	µg/g	ASTM D3683 (Mod)
Mercury, Hg	0.06	µg/g	ASTM D6722
Silver, Ag	<2	µg/g	ASTM D3683 (Mod)
Thallium, Tl	<2	µg/g	ASTM D3683 (Mod)
Vanadium, V	23.00	µg/g	ASTM D3683 (Mod)
Zinc, Zn	7.00	µg/g	ASTM D3683 (Mod)

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #2

SGS Minerals Sample ID: 550-1666820-002

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	5.26		
Ash %	ASTM D3174	5.45	5.75	
Volatile Matter %	ASTM D3175	37.53	39.62	
Fixed Carbon %	ASTM D3172 (by diff)	51.76	54.63	
Sulfur %	ASTM D4239 (A)	0.79	0.83	
Gross Calorific Value Btu/lb	ASTM D5865	13600	14356	15232
Carbon %	ASTM D5373	77.12	81.40	
Hydrogen %	ASTM D5373	4.93	5.20	
Nitrogen %	ASTM D5373	1.59	1.68	
Oxygen %	ASTM D3176 (by diff)	4.86	5.14	

Tests	Result	Unit	Method
lb. of SO2 / Million Btu @ 100%	1.16	---	ASTM D5865
Chloride, Cl	1800.00	µg/g	ASTM D4208

Edward Pendleton
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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #2

SGS Minerals Sample ID: 550-1666820-002

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Antimony, Sb	<2	µg/g	ASTM D3683 (Mod)
Arsenic, As	3.00	µg/g	ASTM D3683 (Mod)
Barium, Ba	39.00	µg/g	ASTM D3683 (Mod)
Beryllium, Be	4.00	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<2	µg/g	ASTM D3683 (Mod)
Chromium, Cr	9.00	µg/g	ASTM D3683 (Mod)
Copper, Cu	11.00	µg/g	ASTM D3683 (Mod)
Fluoride, Fl	45.00	µg/g	ASTM D3761
Lead, Pb	3.00	µg/g	ASTM D3683 (Mod)
Manganese, Mn	7.00	µg/g	ASTM D3683 (Mod)
Mercury, Hg	0.06	µg/g	ASTM D6722
Silver, Ag	<2	µg/g	ASTM D3683 (Mod)
Thallium, Tl	<2	µg/g	ASTM D3683 (Mod)
Vanadium, V	23.00	µg/g	ASTM D3683 (Mod)
Zinc, Zn	7.00	µg/g	ASTM D3683 (Mod)

Edward Pendleton
Branch Manager

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #3

SGS Minerals Sample ID: 550-1666820-003

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	5.03		
Ash %	ASTM D3174	4.93	5.19	
Volatile Matter %	ASTM D3175	37.34	39.32	
Fixed Carbon %	ASTM D3172 (by diff)	52.70	55.49	
Sulfur %	ASTM D4239 (A)	0.80	0.85	
Gross Calorific Value Btu/lb	ASTM D5865	13619	14340	15125
Carbon %	ASTM D5373	75.82	79.83	
Hydrogen %	ASTM D5373	5.03	5.30	
Nitrogen %	ASTM D5373	1.62	1.71	
Oxygen %	ASTM D3176 (by diff)	6.77	7.12	

Tests	Result	Unit	Method
lb. of SO2 / Million Btu @ 100%	1.18	---	ASTM D5865
Chloride, Cl	1600.00	µg/g	ASTM D4208

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 24, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #3

SGS Minerals Sample ID: 550-1666820-003

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Antimony, Sb	<2	µg/g	ASTM D3683 (Mod)
Arsenic, As	2.00	µg/g	ASTM D3683 (Mod)
Barium, Ba	31.00	µg/g	ASTM D3683 (Mod)
Beryllium, Be	4.00	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<2	µg/g	ASTM D3683 (Mod)
Chromium, Cr	9.00	µg/g	ASTM D3683 (Mod)
Copper, Cu	11.00	µg/g	ASTM D3683 (Mod)
Fluoride, Fl	41.00	µg/g	ASTM D3761
Lead, Pb	3.00	µg/g	ASTM D3683 (Mod)
Manganese, Mn	5.00	µg/g	ASTM D3683 (Mod)
Mercury, Hg	0.06	µg/g	ASTM D6722
Silver, Ag	<2	µg/g	ASTM D3683 (Mod)
Thallium, Tl	<2	µg/g	ASTM D3683 (Mod)
Vanadium, V	23.00	µg/g	ASTM D3683 (Mod)
Zinc, Zn	6.00	µg/g	ASTM D3683 (Mod)

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 26, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #4

SGS Minerals Sample ID: 550-1666820-004

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	4.98		
Ash %	ASTM D3174	5.22	5.50	
Volatile Matter %	ASTM D3175	37.22	39.17	
Fixed Carbon %	ASTM D3172 (by diff)	52.58	55.33	
Sulfur %	ASTM D4239 (A)	0.76	0.80	
Gross Calorific Value Btu/lb	ASTM D5865	13583	14295	15126
Carbon %	ASTM D5373	76.71	80.73	
Hydrogen %	ASTM D5373	5.04	5.30	
Nitrogen %	ASTM D5373	1.58	1.67	
Oxygen %	ASTM D3176 (by diff)	5.71	6.00	

Tests	Result	Unit	Method
lb. of SO2 / Million Btu @ 100%	1.12	---	ASTM D5865
Chloride, Cl	1600.00	µg/g	ASTM D4208

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SGS

Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 26, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #4

SGS Minerals Sample ID: 550-1666820-004

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Antimony, Sb	<2	µg/g	ASTM D3683 (Mod)
Arsenic, As	3.00	µg/g	ASTM D3683 (Mod)
Barium, Ba	37.00	µg/g	ASTM D3683 (Mod)
Beryllium, Be	4.00	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<2	µg/g	ASTM D3683 (Mod)
Chromium, Cr	8.00	µg/g	ASTM D3683 (Mod)
Copper, Cu	11.00	µg/g	ASTM D3683 (Mod)
Fluoride, Fl	38.00	µg/g	ASTM D3761
Lead, Pb	3.00	µg/g	ASTM D3683 (Mod)
Manganese, Mn	6.00	µg/g	ASTM D3683 (Mod)
Mercury, Hg	0.06	µg/g	ASTM D6722
Silver, Ag	<2	µg/g	ASTM D3683 (Mod)
Thallium, Tl	<2	µg/g	ASTM D3683 (Mod)
Vanadium, V	23.00	µg/g	ASTM D3683 (Mod)
Zinc, Zn	6.00	µg/g	ASTM D3683 (Mod)

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Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 26, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #5

SGS Minerals Sample ID: 550-1666820-005

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	4.94		
Ash %	ASTM D3174	5.31	5.58	
Volatile Matter %	ASTM D3175	37.04	38.97	
Fixed Carbon %	ASTM D3172 (by diff)	52.71	55.45	
Sulfur %	ASTM D4239 (A)	0.73	0.77	
Gross Calorific Value Btu/lb	ASTM D5865	13600	14307	15153
Carbon %	ASTM D5373	76.58	80.56	
Hydrogen %	ASTM D5373	5.03	5.29	
Nitrogen %	ASTM D5373	1.61	1.70	
Oxygen %	ASTM D3176 (by diff)	5.80	6.10	

Tests	Result	Unit	Method
lb. of SO2 / Million Btu @ 100%	1.08	---	ASTM D5865
Chloride, Cl	1800.00	µg/g	ASTM D4208

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Analysis Report

March 17, 2016

NEENAH PAPER MICHIGAN INC
501 EAST MUNISING AVE
MUNISING MILL
MUNISING MI 49862

Client Sample ID:		Sample ID By:	NEENAH PAPER
Date Sampled:	Feb 26, 2016	Sample Taken At:	NEENAH PAPER
Date Received:	Mar 10, 2016	Sample Taken By:	NEENAH PAPER
Product Description:	COAL	SAMPLE TYPE I:	SUBMITTED
		SAMPLE TYPE II:	RUN #5

SGS Minerals Sample ID: 550-1666820-005

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Antimony, Sb	<2	µg/g	ASTM D3683 (Mod)
Arsenic, As	3.00	µg/g	ASTM D3683 (Mod)
Barium, Ba	55.00	µg/g	ASTM D3683 (Mod)
Beryllium, Be	4.00	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<2	µg/g	ASTM D3683 (Mod)
Chromium, Cr	9.00	µg/g	ASTM D3683 (Mod)
Copper, Cu	12.00	µg/g	ASTM D3683 (Mod)
Fluoride, Fl	57.00	µg/g	ASTM D3761
Lead, Pb	3.00	µg/g	ASTM D3683 (Mod)
Manganese, Mn	5.00	µg/g	ASTM D3683 (Mod)
Mercury, Hg	0.06	µg/g	ASTM D6722
Silver, Ag	<2	µg/g	ASTM D3683 (Mod)
Thallium, Tl	<2	µg/g	ASTM D3683 (Mod)
Vanadium, V	23.00	µg/g	ASTM D3683 (Mod)
Zinc, Zn	7.00	µg/g	ASTM D3683 (Mod)

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Attachment 2, Table 1 - Summary of HCl Emissions February 1, 2016 through January 31, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
February (February 1 through 24)	2016	2	3,821	103,530	408	0.0155	0.157	0.802	0.032	1.04
February (February 25 through 29)	2016	3	457	10,459	1,976	0.0095	0.157	0.050	0.155	
March (March 1 through 10)	2016	3	1,461	37,640	2,113	0.0095	0.157	0.179	0.166	1.32
March (March 11 through 16)	2016	2	821	21,486	843	0.0155	0.157	0.167	0.066	
March (March 17 through 31)	2016	3	1,519	33,905	7,419	0.0095	0.157	0.161	0.582	
April	2016	3	4,298	115,414	1,479	0.0095	0.157	0.548	0.116	0.66
May	2016	3	3,570	84,612	12,481	0.0095	0.157	0.402	0.980	1.38
June	2016	3	4,634	126,050	0	0.0095	0.157	0.599	0.000	0.60
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
Total									**tons/12 months**	**8.9**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 2 - Summary of HCl Emissions March 1, 2016 through February 28, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
March (March 1 through 10)	2016	3	1,461	37,640	2,113	0.0095	0.157	0.179	0.166	1.32
March (March 11 through 16)	2016	2	821	21,486	843	0.0155	0.157	0.167	0.066	
March (March 17 through 31)	2016	3	1,519	33,905	7,419	0.0095	0.157	0.161	0.582	
April	2016	3	4,298	115,414	1,479	0.0095	0.157	0.548	0.116	0.66
May	2016	3	3,570	84,612	12,481	0.0095	0.157	0.402	0.980	1.38
June	2016	3	4,634	126,050	0	0.0095	0.157	0.599	0.000	0.60
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
Total									**tons/12 months**	**8.5**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 3 - Summary of HCl Emissions April 1, 2016 through March 31,2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
April	2016	3	4,298	115,414	1,479	0.0095	0.157	0.548	0.116	0.66
May	2016	3	3,570	84,612	12,481	0.0095	0.157	0.402	0.980	1.38
June	2016	3	4,634	126,050	0	0.0095	0.157	0.599	0.000	0.60
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
March	2017	7	4,299	116,936	0	0.0129	0.157	0.754	0.000	0.75
Total									**tons/12 months**	**8.0**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions)

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu)

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu)

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu)

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu)

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu)

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129)

Attachment 2, Table 4 - Summary of HCl Emissions May 1, 2016 through April 30, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
May	2016	3	3,570	84,612	12,481	0.0095	0.157	0.402	0.980	1.38
June	2016	3	4,634	126,050	0	0.0095	0.157	0.599	0.000	0.60
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
March	2017	7	4,299	116,936	0	0.0129	0.157	0.754	0.000	0.75
April	2017	7	3,774	102,419	225	0.0129	0.157	0.661	0.018	0.68
Total									**tons/12 months**	**8.0**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 5 - Summary of HCl Emissions June 1, 2016 through May 31, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
June	2016	3	4,634	126,050	0	0.0095	0.157	0.599	0.000	0.60
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
March	2017	7	4,299	116,936	0	0.0129	0.157	0.754	0.000	0.75
April	2017	7	3,774	102,419	225	0.0129	0.157	0.661	0.018	0.68
May	2017	7	4,039	109,869	0	0.0129	0.157	0.709	0.000	0.71
Total									**tons/12 months**	**7.3**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 6 - Summary of HCl Emissions July 1, 2016 through June 30, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
July (July 1 through 8)	2016	3	243	6,614	0	0.0095	0.157	0.031	0.000	0.52
July (July 9 through 21)	2016	4	1,668	45,382	0	0.017	0.157	0.386	0.000	
July (July 22 through 31)	2016	5	1,090	29,648	0	0.007	0.157	0.104	0.000	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
March	2017	7	4,299	116,936	0	0.0129	0.157	0.754	0.000	0.75
April	2017	7	3,774	102,419	225	0.0129	0.157	0.661	0.018	0.68
May	2017	7	4,039	109,869	0	0.0129	0.157	0.709	0.000	0.71
June	2017	7	4,142	111,749	913	0.0129	0.157	0.721	0.072	0.79
Total									**tons/12 months**	**7.5**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 7 - Summary of HCl Emissions August 1, 2016 through July 31, 2017

Neenah Paper Michigan, Inc. (B1470)

Munising, Michigan

Month	Year	EF*	Coal Burned (tons/mo)	Heat Input (MMBtu/mo)		HCl Emission Factor (lb/MMBtu)		HCl Emissions (tons)		Total HCl Emissions (tons/mo)
				Controlled	Uncontrolled	Controlled	Uncontrolled[1]	Controlled	Uncontrolled	
August	2016	5	4,507	122,185	415	0.007	0.157	0.428	0.033	0.46
September	2016	5	3,523	95,817	0	0.007	0.157	0.335	0.000	0.34
October (October 1 through 12)	2016	5	1,511	41,094	0	0.007	0.157	0.144	0.000	0.46
October (October 13 through 31)	2016	6	2,523	68,613	0	0.0092	0.157	0.316	0.000	
November (November 1)	2016	6	165	4,481	0	0.0092	0.157	0.021	0.000	0.59
November (November 2 through 30	2016	7	3,100	83,999	313	0.0129	0.157	0.542	0.025	
December	2016	7	4,453	120,665	456	0.0129	0.157	0.778	0.036	0.81
January	2017	7	4,168	113,294	73	0.0129	0.157	0.731	0.006	0.74
February	2017	7	3,634	98,814	20	0.0129	0.157	0.637	0.002	0.64
March	2017	7	4,299	116,936	0	0.0129	0.157	0.754	0.000	0.75
April	2017	7	3,774	102,419	225	0.0129	0.157	0.661	0.018	0.68
May	2017	7	4,039	109,869	0	0.0129	0.157	0.709	0.000	0.71
June	2017	7	4,142	111,749	913	0.0129	0.157	0.721	0.072	0.79
July	2017	7	3,294	89,371	223	0.0129	0.157	0.576	0.017	0.59
Total									**tons/12 months**	**7.6**

Coal heat input - 13,600 btu/lb

[1]HCl - uncontrolled emission factor from Stack Test Summary Report dated March 25, 2016 (source of all uncontrolled emissions

Total HCl Emissions (tons/mo) = Controlled HCl Emissions (tons/mo) + Uncontrolled HCl Emissions (tons/mo)

Uncontrolled Heat Input (mmbtu/mo) = (coal burned without control equipment - tons/mo) x (heat input - mmbtu/ton)

Controlled Heat Input (mmbtu/mo) = (coal burned while operating control equipment - tons/mo) x (heat input - mmbtu/ton)

***Source of Uncontrolled Emission Factors**

[2]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of reagent specific gravity of 1.037 (0.0155 lb/mmbtu

[3]HCl - controlled emission factor from Stack Test Summary Report dated March 25, 2016 - use of regaent specific gravity of 1.067 (0.0095 lb/mmbtu

[4]HCl - controlled emission actor from Stack Test Report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.037 (0.017 lb/mmbtu

[5]HCl - controlled emission factor from Stack Test report dated August 16, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.007 lb/mmbtu

[6]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of different inlet design and reagent specific gravity of 1.04 (0.0092 lb/mmbtu

[7]HCl - controlled emission factor from Stack Test report dated December 14, 2016 - use of final inlet design and reagent specific gravity of 1.04 (0.0129

Attachment 2, Table 8 - EU05 Coal Consumption - February, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
2/1/2016	158	24	0	13,600	4,307	0
2/2/2016	160	24	0	13,600	4,347	0
2/3/2016	155	24	0	13,600	4,204	0
2/4/2016	152	24	0	13,600	4,147	0
2/5/2016	153	24	0	13,600	4,150	0
2/6/2016	148	24	0	13,600	4,030	0
2/7/2016	144	24	0	13,600	3,916	0
2/8/2016	143	24	0	13,600	3,893	0
2/9/2016	152	24	0	13,600	4,127	0
2/10/2016	155	24	2.32	13,600	3,816	408
2/11/2016	145	24	0	13,600	3,944	0
2/12/2016	158	24	0	13,600	4,284	0
2/13/2016	166	24	0	13,600	4,512	0
2/14/2016	158	24	0	13,600	4,287	0
2/15/2016	162	24	0	13,600	4,401	0
2/16/2016	154	24	0	13,600	4,193	0
2/17/2016	148	24	0	13,600	4,033	0
2/18/2016	160	24	0	13,600	4,350	0
2/19/2016	138	24	0	13,600	3,747	0
2/20/2016	146	24	0	13,600	3,970	0
2/21/2016	149	24	0	13,600	4,058	0
2/22/2016	156	24	0	13,600	4,250	0
2/23/2016	146	24	0	13,600	3,958	0
2/24/2016	159	24	0	13,600	4,318	0
2/25/2016	158	24	0	13,600	4,290	0
Subtotal	**3,821**				**103,530**	**408**
2/26/2016	157	24	0	13,600	4,278	0
2/27/2016	151	24	0	13,600	4,096	0
2/28/2016	0	24	0	13,600	0	0
2/29/2016 *	149	24	11.68	13,600	2,085	1,976
Subtotal	**457**				**10,459**	**1,976**
Total	**4,278**				**113,989**	**2,385**

* SDA taken offline to allow cleaning of build-up in tower.
Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 9 - EU05 Coal Consumption - March, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
3/1/2016*	164	24	0	13,600	4,470	0
3/2/2016*	161	24	0	13,600	4,393	0
3/3/2016*	151	24	12.33	13,600	2,000	2,113
3/4/2016	135	24	0	13,600	3,681	0
3/5/2016	150	24	0	13,600	4,087	0
3/6/2016	146	24	0	13,600	3,958	0
3/7/2016	144	24	0	13,600	3,930	0
3/8/2016	138	24	0	13,600	3,741	0
3/9/2016	139	24	0	13,600	3,773	0
3/10/2016	133	24	0	13,600	3,607	0
Subtotal	**1,461**				**37,640**	**2,113**
3/11/2016	147	24	0	13,600	3,998	0
3/12/2016	132	24	0	13,600	3,590	0
3/13/2016	142	24	0	13,600	3,861	0
3/14/2016	138	24	0	13,600	3,741	0
3/15/2016	138	24	0	13,600	3,767	0
3/16/2016**	124	24	6	13,600	2,528	843
Subtotal	**821**				**21,486**	**843**
3/17/2016	145	24	0	13,600	3,933	0
3/18/2016*	153	24	1.02	13,600	3,987	177
3/19/2016*	150	24	24	13,600	0	4,084
3/20/2016*	117	24	19.8	13,600	557	2,625
3/21/2016*	89	24	0.18	13,600	2,401	18
3/22/2016	90	24	0	13,600	2,442	0
3/23/2016	94	24	0	13,600	2,550	0
3/24/2016	101	24	0	13,600	2,756	0
3/25/2016*	1	24	18.32	13,600	7	22
3/26/2016*	-	0	24	13,600	0	0
3/27/2016*	19	24	23.4	13,600	13	493
3/28/2016	110	24	0	13,600	2,990	0
3/29/2016	148	24	0	13,600	4,030	0
3/30/2016	153	24	0	13,600	4,173	0
3/31/2016	150	24	0	13,600	4,067	0
Subtotal	**1,519**				**33,905**	**7,419**
Total	**3,802**				**93,030**	**10,374**

* SDA taken offline to allow cleaning of build-up in tower.
** SDA offline because of a temperature setpoint
*** Software changes

Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 10 - EU05 Coal Consumption - April, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
4/1/2016	142	24	0	13,600	3,853	0
4/2/2016	154	24	0	13,600	4,181	0
4/3/2016	147	24	0	13,600	4,001	0
4/4/2016	155	24	0	13,600	4,210	0
4/5/2016	143	24	0	13,600	3,887	0
4/6/2016	142	24	0	13,600	3,856	0
4/7/2016	152	24	0	13,600	4,127	0
4/8/2016	149	24	0	13,600	4,056	0
4/9/2016	145	24	0	13,600	3,947	0
4/10/2016	143	24	0	13,600	3,878	0
4/11/2016	142	24	0	13,600	3,861	0
4/12/2016	137	24	0	13,600	3,724	0
4/13/2016	143	24	0	13,600	3,893	0
4/14/2016*	141	24	9.25	13,600	2,359	1,479
4/15/2016	135	24	0	13,600	3,659	0
4/16/2016	105	24	0	13,600	2,845	0
4/17/2016	93	24	0	13,600	2,522	0
4/18/2016	120	24	0	13,600	3,253	0
4/19/2016	161	24	0	13,600	4,373	0
4/20/2016	147	24	0	13,600	4,007	0
4/21/2016	145	24	0	13,600	3,953	0
4/22/2016	154	24	0	13,600	4,198	0
4/23/2016	155	24	0	13,600	4,218	0
4/24/2016	134	24	0	13,600	3,641	0
4/25/2016	150	24	0	13,600	4,084	0
4/26/2016	159	24	0	13,600	4,333	0
4/27/2016	162	24	0	13,600	4,395	0
4/28/2016	156	24	0	13,600	4,250	0
4/29/2016	154	24	0	13,600	4,190	0
4/30/2016	135	24	0	13,600	3,661	0
Total	**4,298**				**115,414**	**1,479**

* SDA taken offline to allow cleaning of build-up in tower.

Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 11 - EU05 Coal Consumption - May, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
5/1/2016	135	24	0	13600	3,661	0
5/2/2016	136	24	0	13600	3,701	0
5/3/2016	131	24	0	13600	3,564	0
5/4/2016	135	24	0	13600	3,664	0
5/5/2016	137	24	0	13600	3,727	0
5/6/2016	139	24	0	13600	3,781	0
5/7/2016	132	24	0	13600	3,593	0
5/8/2016	122	24	0	13600	3,310	0
5/9/2016	133	24	0	13600	3,624	0
5/10/2016	111	24	0	13600	3,016	0
5/11/2016	127	24	0	13600	3,450	0
5/12/2016	134	24	0	13600	3,644	0
5/13/2016	135	24	0	13600	3,659	0
5/14/2016	139	24	0	13600	3,773	0
5/15/2016	145	24	0	13600	3,938	0
5/16/2016	129	24	0	13600	3,516	0
5/17/2016	116	24	0	13600	3,153	0
5/18/2016	119	24	0	13600	3,233	0
5/19/2016	117	24	0	13600	3,193	0
5/20/2016	120	24	0	13600	3,276	0
5/21/2016	115	24	0	13600	3,139	0
5/22/2016	113	24	0	13600	3,064	0
5/23/2016	106	24	0	13600	2,876	0
5/24/2016*	123	24	17.12	13600	958	2,384
5/25/2016*	117	24	24	13600	0	3,176
5/26/2016*	126	24	24	13600	0	3,436
5/27/2016*	103	24	24	13600	0	2,813
5/28/2016**	-	0	0	13600	0	0
5/29/2016**	-	0	0	13600	0	0
5/30/2016*	27	24	22.08	13600	58	673
5/31/2016	148	24	0	13600	4,038	0
Total	**3,570**				**84,612**	**12,481**

* SDA taken offline to allow cleaning of build-up in tower.
** Boiler down Memorial Day Week-end
Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 12 - EU05 Coal Consumption - June, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
6/1/2016	158	24	0	13600	4,304	0
6/2/2016	161	24	0	13600	4,384	0
6/3/2016	160	24	0	13600	4,353	0
6/4/2016	154	24	0	13600	4,193	0
6/5/2016	148	24	0	13600	4,027	0
6/6/2016	155	24	0	13600	4,218	0
6/7/2016	157	24	0	13600	4,278	0
6/8/2016	161	24	0	13600	4,384	0
6/9/2016	156	24	0	13600	4,235	0
6/10/2016	159	24	0	13600	4,333	0
6/11/2016	155	24	0	13600	4,224	0
6/12/2016	160	24	0	13600	4,353	0
6/13/2016	151	24	0	13600	4,118	0
6/14/2016	166	24	0	13600	4,518	0
6/15/2016	164	24	0	13600	4,458	0
6/16/2016	160	24	0	13600	4,350	0
6/17/2016	170	24	0	13600	4,632	0
6/18/2016	161	24	0	13600	4,390	0
6/19/2016	156	24	0	13600	4,253	0
6/20/2016	157	24	0	13600	4,267	0
6/21/2016	170	24	0	13600	4,635	0
6/22/2016	165.8	24	0	13600	4,510	0
6/23/2016	153.3	24	0	13600	4,170	0
6/24/2016	127.4	24	0	13600	3,464	0
6/25/2016	136.9	24	0	13600	3,724	0
6/26/2016	144.1	24	0	13600	3,918	0
6/27/2016	146.4	24	0	13600	3,981	0
6/28/2016	146.4	24	0	13600	3,981	0
6/29/2016	140.6	24	0	13600	3,824	0
6/30/2016	131.3	24	0	13600	3,570	0
Total	**4,634**				**126,050**	**0**

Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 13 - EU05 Coal Consumption - July, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
7/1/2016	134	24	0	13,600	3,656	0
7/2/2016	109	24	0	13,600	2,959	0
7/3/2016*	0	0	0	13,600	0	0
7/4/2016*	0	0	0	13,600	0	0
7/5/2016*	0	0	0	13,600	0	0
7/6/2016*	0	0	0	13,600	0	0
7/7/2016*	0	0	0	13,600	0	0
7/8/2016*	0	0	0	13,600	0	0
Subtotal	**243**				**6,614**	**0**
7/9/2016*	0	0	0	13,600	0	0
7/10/2016	36	24	0	13,600	968	0
7/11/2016	108	24	0	13,600	2,942	0
7/12/2016	138	24	0	13,600	3,756	0
7/13/2016	140	24	0	13,600	3,801	0
7/14/2016	146	24	0	13,600	3,964	0
7/15/2016	144	24	0	13,600	3,907	0
7/16/2016	132	24	0	13,600	3,587	0
7/17/2016	137	24	0	13,600	3,716	0
7/18/2016	134	24	0	13,600	3,656	0
7/19/2016	136	24	0	13,600	3,701	0
7/20/2016	137	24	0	13,600	3,713	0
7/21/2016**	151	24	0	13,600	4,107	0
7/22/2016**	131	24	0	13,600	3,564	0
Subtotal	1,668				45,382	0
7/23/2016	140	24	0	13,600	3,798	0
7/24/2016	0	0	0	13,600	0	0
7/25/2016	93	24	0	13,600	2,516	0
7/26/2016	139	24	0	13,600	3,770	0
7/27/2016	128	24	0	13,600	3,481	0
7/28/2016	147	24	0	13,600	3,996	0
7/29/2016	150	24	0	13,600	4,081	0
7/30/2016	145	24	0	13,600	3,956	0
7/31/2016	149	24	0	13,600	4,050	0
Subtotal	**1,090**				**29,648**	**0**
Total	**3,002**				**81,644**	**0**

* Design changes made during outage
** Performance testing
Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 14 - EU05 Coal Consumption - August, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
8/1/2016	144.2	24	0	13600	3,921	0
8/2/2016	157.3	24	0	13600	4,278	0
8/3/2016	151.2	24	2.42	13600	3,698	415
8/4/2016	163.6	24	0	13600	4,450	0
8/5/2016	154.1	24	0	13600	4,193	0
8/6/2016	146.9	24	0	13600	3,996	0
8/7/2016	153.8	24	0	13600	4,184	0
8/8/2016	147.1	24	0	13600	4,001	0
8/9/2016	142.1	24	0	13600	3,864	0
8/10/2016	153.3	24	0	13600	4,170	0
8/11/2016	151.1	24	0	13600	4,110	0
8/12/2016	145.8	24	0	13600	3,967	0
8/13/2016	140.7	24	0	13600	3,827	0
8/14/2016	115.8	24	0	13600	3,150	0
8/15/2016	17.9	11.8	0	13600	486	0
8/16/2016	128.7	24	0	13600	3,501	0
8/17/2016	143.7	24	0	13600	3,910	0
8/18/2016	147.9	24	0	13600	4,024	0
8/19/2016	151.2	24	0	13600	4,113	0
8/20/2016	150.7	24	0	13600	4,098	0
8/21/2016	147.0	24	0	13600	3,998	0
8/22/2016	145.1	24	0	13600	3,947	0
8/23/2016	150.0	24	0	13600	4,081	0
8/24/2016	162.1	24	0	13600	4,410	0
8/25/2016	158.0	24	0	13600	4,298	0
8/26/2016	152.8	24	0	13600	4,155	0
8/27/2016	154.7	24	0	13600	4,207	0
8/28/2016	152.7	24	0	13600	4,153	0
8/29/2016	155.2	24	0	13600	4,221	0
8/30/2016	160.5	24	0	13600	4,367	0
8/31/2016	162.0	24	0	13600	4,407	0
Total	**4,507**				**122,185**	**415**

Attachment 2, Table 15 - EU05 Coal Consumption - August, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
9/1/2016	154	24	0	13600	4,175	0
9/2/2016	155	24	0	13600	4,204	0
9/3/2016	7	7.6	0	13600	192	0
9/4/2016	0	0	0	13600	0	0
9/5/2016	29	3.5	0	13600	784	0
9/6/2016	117	24	0	13600	3,191	0
9/7/2016	138	24	0	13600	3,754	0
9/8/2016	123	24	0	13600	3,338	0
9/9/2016	136	24	0	13600	3,689	0
9/10/2016	132	24	0	13600	3,578	0
9/11/2016	124	24	0	13600	3,375	0
9/12/2016	124	24	0	13600	3,386	0
9/13/2016	126	24	0	13600	3,434	0
9/14/2016	125	24	0	13600	3,400	0
9/15/2016	119	24	0	13600	3,247	0
9/16/2016	119	24	0	13600	3,247	0
9/17/2016	123	24	0	13600	3,344	0
9/18/2016	120	24	0	13600	3,270	0
9/19/2016	122	24	0	13600	3,324	0
9/20/2016	128	24	0	13600	3,491	0
9/21/2016	131	24	0	13600	3,561	0
9/22/2016	123	24	0	13600	3,349	0
9/23/2016	129	24	0	13600	3,496	0
9/24/2016	131	24	0	13600	3,570	0
9/25/2016	121	24	0	13600	3,298	0
9/26/2016	136	24	0	13600	3,686	0
9/27/2016	136	24	0	13600	3,692	0
9/28/2016	142	24	0	13600	3,856	0
9/29/2016	130	24	0	13600	3,542	0
9/30/2016	123	24	0	13600	3,344	0
Total	**3523**				**95817**	**0**

Attachment 2, Table 16 - EU05 Coal Consumption - September, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
10/1/2016	114.5	24	0	13600	3,115	0
10/2/2016	117.2	24	0	13600	3,188	0
10/3/2016	123.7	24	0	13600	3,363	0
10/4/2016	123.8	24	0	13600	3,366	0
10/5/2016	136.8	24	0	13600	3,720	0
10/6/2016	143.9	24	0	13600	3,915	0
10/7/2016	120.4	24	0	13600	3,276	0
10/8/2016	121.2	24	0	13600	3,296	0
10/9/2016	118.2	24	0	13600	3,216	0
10/10/2016	124.3	24	0	13600	3,380	0
10/11/2016	123.0	24	0	13600	3,346	0
10/12/2016	143.8	24	0	13600	3,912	0
Subtotal	**1510.8**				**41094.0**	**0**
10/13/2016	153.1	24	0	13600	4,164	0
10/14/2016	148.2	24	0	13600	4,031	0
10/15/2016	57.8	24	0	13600	1,573	0
10/16/2016	60.7	24	0	13600	1,652	0
10/17/2016	130.3	24	0	13600	3,544	0
10/18/2016	142.2	24	0	13600	3,867	0
10/19/2016	122.9	24	0	13600	3,344	0
10/20/2016	140.4	24	0	13600	3,819	0
10/21/2016	139.7	24	0	13600	3,799	0
10/22/2016	137.8	24	0	13600	3,748	0
10/23/2016	137.4	24	0	13600	3,737	0
10/24/2016	152.4	24	0	13600	4,144	0
10/25/2016	149.3	24	0	13600	4,062	0
10/26/2016	156.8	24	0	13600	4,266	0
10/27/2016	144.8	24	0	13600	3,938	0
10/28/2016	145.8	24	0	13600	3,966	0
10/29/2016	134.6	24	0	13600	3,660	0
10/30/2016	133.1	24	0	13600	3,621	0
10/31/2016	135.2	24	0	13600	3,677	0
Subtotal	**2522.5**				**68612.5**	**0**
Total	4033.3				109706.5	0

Attachment 2, Table 17 - EU05 Coal Consumption - November, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
11/1/2016	165	24	0	13,600	4,481	0
Subtotal	**165**				**4,481**	**0**
11/2/2016	163	24	0	13,600	4,424	0
11/3/2016	153	24	0	13,600	4,167	0
11/4/2016	142	24	0	13,600	3,875	0
11/5/2016	152	24	0	13,600	4,144	0
11/6/2016	141	24	0	13,600	3,842	0
11/7/2016	137	24	0	13,600	3,734	0
11/8/2016	139	24	0	13,600	3,788	0
11/9/2016	131	24	0	13,600	3,573	0
11/10/2016	133	24	0	13,600	3,615	0
11/11/2016	142	24	0	13,600	3,856	0
11/12/2016	138	24	0	13,600	3,748	0
11/13/2016	131	24	0	13,600	3,573	0
11/14/2016	136	24	0	13,600	3,711	0
11/15/2016	136	24	0	13,600	3,689	0
11/16/2016	150	24	0	13,600	4,071	0
11/17/2016	149	24	0	13,600	4,062	0
11/18/2016	152	24	0	13,600	4,122	0
11/19/2016	119	24	0	13,600	3,236	0
11/20/2016	79	24	0	13,600	2,139	0
11/21/2016	0	0	0	13,600	0	0
11/22/2016	0	0	0	13,600	0	0
11/23/2016	0	0	0	13,600	0	0
11/24/2016	0	0	0	13,600	0	0
11/25/2016	0	0	0	13,600	0	0
11/26/2016	0	0	0	13,600	0	0
11/27/2016	39	7	0	13,600	1,061	0
11/28/2016	128	24	0	13,600	3,491	0
11/29/2016	146	24	0	13,600	3,974	0
11/30/2016	162	24	2	13,600	4,106	313
Subtotal	**3,100**				**83,999**	**313**
Total	**3,264**				**88,480**	**313**

Attachment 2, Table 18 - EU05 Coal Consumption - December, 2016
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
12/1/2016	160	24	0	13,600	4,354	0
12/2/2016	158	24	0	13,600	4,300	0
12/3/2016	111	24	0	13,600	3,010	0
12/4/2016	187	24	0	13,600	5,095	0
12/5/2016	152	24	3	13,600	3,674	456
12/6/2016	150	24	0	13,600	4,082	0
12/7/2016	161	24	0	13,600	4,376	0
12/8/2016	158	24	0	13,600	4,297	0
12/9/2016	148	24	0	13,600	4,014	0
12/10/2016	142	24	0	13,600	3,873	0
12/11/2016	123	24	0	13,600	3,352	0
12/12/2016	140	24	0	13,600	3,819	0
12/13/2016	151	24	0	13,600	4,119	0
12/14/2016	151	24	0	13,600	4,102	0
12/15/2016	149	24	0	13,600	4,062	0
12/16/2016	161	24	0	13,600	4,373	0
12/17/2016	150	24	0	13,600	4,068	0
12/18/2016	147	24	0	13,600	3,994	0
12/19/2016	163	24	0	13,600	4,424	0
12/20/2016	152	24	0	13,600	4,130	0
12/21/2016	140	24	0	13,600	3,802	0
12/22/2016	155	24	0	13,600	4,204	0
12/23/2016	148	24	0	13,600	4,028	0
12/24/2016	68	24	0	13,600	1,861	0
12/25/2016	71	24	0	13,600	1,921	0
12/26/2016	139	24	0	13,600	3,782	0
12/27/2016	168	24	0	13,600	4,566	0
12/28/2016	165	24	0	13,600	4,501	0
12/29/2016	155	24	0	13,600	4,204	0
12/30/2016	156	24	0	13,600	4,246	0
12/31/2016	75	24	0	13,600	2,034	0
Total	**4,453**				**120,665**	**456**

Attachment 2, Table 19 - EU05 Coal Consumption - January, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
1/1/2017	71	24	0	13,600	1,923	0
1/2/2017	138	24	0	13,600	3,764	0
1/3/2017	152	24	0	13,600	4,121	0
1/4/2017	158	24	0	13,600	4,298	0
1/5/2017	157	24	0	13,600	4,270	0
1/6/2017	174	24	0	13,600	4,736	0
1/7/2017	130	24	0	13,600	3,528	0
1/8/2017	117	24	0	13,600	3,177	0
1/9/2017	143	24	0	13,600	3,890	0
1/10/2017	144	24	0	13,600	3,903	0
1/11/2017	148	24	0	13,600	4,023	0
1/12/2017	144	24	0	13,600	3,922	0
1/13/2017	143	24	0	13,600	3,900	0
1/14/2017	111	24	0	13,600	3,008	0
1/15/2017	102	24	0	13,600	2,772	0
1/16/2017	143	24	0	13,600	3,803	73
1/17/2017	135	24	0	13,600	3,669	0
1/18/2017	133	24	0	13,600	3,604	0
1/19/2017	131	24	0	13,600	3,566	0
1/20/2017	139	24	0	13,600	3,789	0
1/21/2017	103	24	0	13,600	2,804	0
1/22/2017	105	24	0	13,600	2,856	0
1/23/2017	144	24	0	13,600	3,928	0
1/24/2017	146	24	0	13,600	3,958	0
1/25/2017	146	24	0	13,600	3,979	0
1/26/2017	148	24	0	13,600	4,028	0
1/27/2017	147	24	0	13,600	3,996	0
1/28/2017	116	24	0	13,600	3,158	0
1/29/2017	112	24	0	13,600	3,041	0
1/30/2017	143	24	0	13,600	3,876	0
1/31/2017	147	24	0	13,600	4,004	0
Total	**4,168**				**113,294**	**73**

Attachment 2, Table 20 - EU05 Coal Consumption - February, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
2/1/2017	154.0	24	0	13,600	4,189	0
2/2/2017	153.0	24	0	13,600	4,162	0
2/3/2017	157.0	24	0	13,600	4,270	0
2/4/2017	143.2	24	0	13,600	3,895	0
2/5/2017	152.6	24	0	13,600	4,151	0
2/6/2017	147.8	24	0.12	13,600	4,000	20
2/7/2017	159.4	24	0	13,600	4,336	0
2/8/2017	150.3	24	0	13,600	4,088	0
2/9/2017	154.5	24	0	13,600	4,202	0
2/10/2017	124.6	24	0	13,600	3,389	0
2/11/2017	86.1	24	0	13,600	2,342	0
2/12/2017	97.9	24	0	13,600	2,663	0
2/13/2017	102.6	24	0	13,600	2,791	0
2/14/2017	96.5	24	0	13,600	2,625	0
2/15/2017	93.5	24	0	13,600	2,543	0
2/16/2017	44.4	24	0	13,600	1,208	0
2/17/2017	156.5	24	0	13,600	4,257	0
2/18/2017	106.2	24	0	13,600	2,889	0
2/19/2017	89.2	24	0	13,600	2,426	0
2/20/2017	93.6	24	0	13,600	2,546	0
2/21/2017	129.0	24	0	13,600	3,509	0
2/22/2017	145.9	24	0	13,600	3,968	0
2/23/2017	145.9	24	0	13,600	3,968	0
2/24/2017	152.0	24	0	13,600	4,134	0
2/25/2017	149.3	24	0	13,600	4,061	0
2/26/2017	153.5	24	0	13,600	4,175	0
2/27/2017	150.9	24	0	13,600	4,104	0
2/28/2017	144.2	24	0	13,600	3,922	0
Total	**3,634**				**98,814**	**20**

Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 21 - EU05 Coal Consumption - March, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
3/1/2017	151	24	0	13,600	4,118	0
3/2/2017	154	24	0	13,600	4,192	0
3/3/2017	144	24	0	13,600	3,925	0
3/4/2017	125	24	0	13,600	3,386	0
3/5/2017	111	24	0	13,600	3,025	0
3/6/2017	133	24	0	13,600	3,604	0
3/7/2017	139	24	0	13,600	3,770	0
3/8/2017	143	24	0	13,600	3,900	0
3/9/2017	147	24	0	13,600	4,007	0
3/10/2017	144	24	0	13,600	3,909	0
3/11/2017	139	24	0	13,600	3,773	0
3/12/2017	133	24	0	13,600	3,615	0
3/13/2017	145	24	0	13,600	3,930	0
3/14/2017	141	24	0	13,600	3,841	0
3/15/2017	141	24	0	13,600	3,830	0
3/16/2017	137	24	0	13,600	3,726	0
3/17/2017	133	24	0	13,600	3,607	0
3/18/2017	120	24	0	13,600	3,269	0
3/19/2017	114	24	0	13,600	3,090	0
3/20/2017	140	24	0	13,600	3,797	0
3/21/2017	147	24	0	13,600	3,985	0
3/22/2017	138	24	0	13,600	3,745	0
3/23/2017	139	24	0	13,600	3,773	0
3/24/2017	142	24	0	13,600	3,873	0
3/25/2017	139	24	0	13,600	3,781	0
3/26/2017	133	24	0	13,600	3,609	0
3/27/2017	149	24	0	13,600	4,053	0
3/28/2017	150	24	0	13,600	4,072	0
3/29/2017	144	24	0	13,600	3,917	0
3/30/2017	144	24	0	13,600	3,917	0
3/31/2017	143	24	0	13,600	3,898	0
Total	**4,299**				**116,936**	**0**

Attachment 2, Table 22 - EU05 Coal Consumption - April, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
4/1/2017	141	24	0	13,600	3,824	0
4/2/2017	138	24	0	13,600	3,751	0
4/3/2017	146	24	0	13,600	3,974	0
4/4/2017	144	24	0	13,600	3,914	0
4/5/2017	140	24	0	13,600	3,800	0
4/6/2017	137	24	0	13,600	3,737	0
4/7/2017	148	24	0	13,600	4,028	0
4/8/2017	137	24	0	13,600	3,724	0
4/9/2017	130	24	0	13,600	3,547	0
4/10/2017	136	24	0	13,600	3,696	0
4/11/2017*	141	24	1	13,600	3,758	85
4/12/2017*	140	24	0	13,600	3,803	0
4/13/2017*	121	24	0.37	13,600	3,238	51
4/14/2017*	0	0	0	13,600	0	0
4/15/2017*	0	0	0	13,600	0	0
4/16/2017*	3	2	2	13,600	0	90
4/16/2017*	35	9	0	13,600	944	0
4/17/2017	130	24	0	13,600	3,544	0
4/18/2017	140	24	0	13,600	3,808	0
4/19/2017	126	24	0	13,600	3,435	0
4/20/2017	137	24	0	13,600	3,735	0
4/21/2017	127	24	0	13,600	3,444	0
4/22/2017	128	24	0	13,600	3,492	0
4/23/2017	144	24	0	13,600	3,922	0
4/24/2017	144	24	0	13,600	3,903	0
4/25/2017	143	24	0	13,600	3,876	0
4/26/2017	141	24	0	13,600	3,824	0
4/27/2017	144	24	0	13,600	3,914	0
4/28/2017	143	24	0	13,600	3,879	0
4/29/2017	150	24	0	13,600	4,066	0
4/30/2017	141	24	0	13,600	3,838	0
Total	**3,774**				**102,419**	**225**

* Boiler offline for Easter week-end
Highlighted areas indicate that SDA was offline for a period of time

Attachment 2, Table 23 - EU05 Coal Consumption - May, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
5/1/2017	138	24	0	13,600	3,764	0
5/2/2017	137	24	0	13,600	3,718	0
5/3/2017	144	24	0	13,600	3,922	0
5/4/2017	145	24	0	13,600	3,930	0
5/5/2017	146	24	0	13,600	3,963	0
5/6/2017	144	24	0	13,600	3,922	0
5/7/2017	134	24	0	13,600	3,645	0
5/8/2017	139	24	0	13,600	3,784	0
5/9/2017	136	24	0	13,600	3,710	0
5/10/2017	124	24	0	13,600	3,381	0
5/11/2017	105	24	0	13,600	2,861	0
5/12/2017	127	24	0	13,600	3,446	0
5/13/2017	122	24	0	13,600	3,318	0
5/14/2017	124	24	0	13,600	3,367	0
5/15/2017	125	24	0	13,600	3,386	0
5/16/2017	128	24	0	13,600	3,476	0
5/17/2017	123	24	0	13,600	3,340	0
5/18/2017	129	24	0	13,600	3,506	0
5/19/2017	128	24	0	13,600	3,473	0
5/20/2017	121	24	0	13,600	3,299	0
5/21/2017	121	24	0	13,600	3,299	0
5/22/2017	140	24	0	13,600	3,805	0
5/23/2017	143	24	0	13,600	3,900	0
5/24/2017	157	24	0	13,600	4,260	0
5/25/2017	159	24	0	13,600	4,317	0
5/26/2017	147	24	0	13,600	3,993	0
5/27/2017	104	24	0	13,600	2,826	0
5/28/2017	99	24	0	13,600	2,693	0
5/29/2017	59	24	0	13,600	1,605	0
5/30/2017	138	24	0	13,600	3,762	0
5/31/2017	154	24	0	13,600	4,194	0
Total	**4,039**				**109,869**	**0**

Attachment 2, Table 24 - EU05 Coal Consumption - June, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
6/1/2017	156	24	0	13,600	4,254	0
6/2/2017	152	24	0	13,600	4,124	0
6/3/2017	134	24	0	13,600	3,656	0
6/4/2017	129	24	0	13,600	3,517	0
6/5/2017	151	24	0	13,600	4,107	0
6/6/2017	148	24	0	13,600	4,020	0
6/7/2017	152	24	0	13,600	4,129	0
6/8/2017	148	24	0	13,600	4,034	0
6/9/2017	142	24	0	13,600	3,865	0
6/10/2017*	139	24	2	13,600	3,445	325
6/11/2017*	143	24	4	13,600	3,301	588
6/12/2017	129	24	0	13,600	3,512	0
6/13/2017	138	24	0	13,600	3,745	0
6/14/2017	83	24	0	13,600	2,258	0
6/15/2017	94	24	0	13,600	2,551	0
6/16/2017	138	24	0	13,600	3,759	0
6/17/2017	136	24	0	13,600	3,686	0
6/18/2017	125	24	0	13,600	3,405	0
6/19/2017	146	24	0	13,600	3,960	0
6/20/2017	146	24	0	13,600	3,971	0
6/21/2017	136	24	0	13,600	3,707	0
6/22/2017	138	24	0	13,600	3,740	0
6/23/2017	140	24	0	13,600	3,803	0
6/24/2017	135	24	0	13,600	3,675	0
6/25/2017	141	24	0	13,600	3,824	0
6/26/2017	148	24	0	13,600	4,012	0
6/27/2017	146	24	0	13,600	3,982	0
6/28/2017	142	24	0	13,600	3,871	0
6/29/2017	147	24	0	13,600	4,004	0
6/30/2017	141	24	0	13,600	3,832	0
Total	4,142				111,749	913

Highlighted areas indicate that SDA was offline for a period of time
* Level transmitter failure

Attachment 2, Table 25 - EU05 Coal Consumption - July, 2017
Neenah Paper Michigan, Inc. (B1470)
Munising, Michigan

Calendar Day	Daily Coal Use (tons)	Hours EU05 Operated	Hours EU05 Operated With SDA Control Off-Line	Heat Value of Coal (Btu/lb)	Heat Input from Coal When SDA is On-Line (MMBtu)	Heat Input from Coal When SDA is Off-Line (MMBtu)
7/1/2017*	124	24	0	13,600	3,384	0
7/2/2017*	75	24	0	13,600	1,986	41
7/3/2017*	0	0	0	13,600	0	0
7/4/2017*	0	0	0	13,600	0	0
7/5/2017*	0	0	0	13,600	0	0
7/6/2017*	0	0	0	13,600	0	0
7/7/2017*	0	0	0	13,600	0	0
7/8/2017*	0	0	0	13,600	0	0
7/9/2017*	7	3	3	13,600	0	182
7/9/2017*	19	22	0	13,600	514	0
7/10/2017	118	24	0	13,600	3,207	0
7/11/2017	138	24	0	13,600	3,756	0
7/12/2017	137	24	0	13,600	3,729	0
7/13/2017	142	24	0	13,600	3,865	0
7/14/2017	140	24	0	13,600	3,813	0
7/15/2017	135	24	0	13,600	3,675	0
7/16/2017	133	24	0	13,600	3,626	0
7/17/2017	150	24	0	13,600	4,075	0
7/18/2017	152	24	0	13,600	4,145	0
7/19/2017	150	24	0	13,600	4,069	0
7/20/2017	148	24	0	13,600	4,015	0
7/21/2017	146	24	0	13,600	3,960	0
7/22/2017	140	24	0	13,600	3,813	0
7/23/2017	141	24	0	13,600	3,835	0
7/24/2017	152	24	0	13,600	4,126	0
7/25/2017	146	24	0	13,600	3,968	0
7/26/2017	144	24	0	13,600	3,925	0
7/27/2017	138	24	0	13,600	3,748	0
7/28/2017	135	24	0	13,600	3,661	0
7/29/2017	124	24	0	13,600	3,381	0
7/30/2017	130	24	0	13,600	3,525	0
7/31/2017	131	24	0	13,600	3,569	0
Total	**3,294**				**89,371**	**223**

* Boiler and SDA down for outage during Holiday week
Highlighted areas indicate that SDA was offline for a period of time

Attachment 3 2016 MAERS HCl Emission factor summary

Emission Factor Type	HCl Emission Factor	Specific Gravity Setpoint	Test Report	Notes
Uncontrolled	0.157 lbs HCl/MMBtu	NA	"Particulate Matter and Hydrochloric Acid Emissions Test Summary Report" dated March 25, 2016.	Run #2 inlet lb/MMBTU.
Controlled	0.0155 lbs HCl/MMBtu	1.037	"Particulate Matter and Hydrochloric Acid Emissions Test Summary Report" dated March 25, 2016, pg 3.	Average of test results run #5. Method 26A used.
Controlled	0.0095 lbs HCl/MMBtu	1.067	Control factor from performance test February 2016. "Particulate Matter and Hydrochloric Acid Emissions Test Summary Report" dated March 25, 2016 pg 3.	Average of test results runs 3 &4. Method 26A used.
Design changes implemented in the SDA tower during Annual July 4th down week.				
Controlled	0.017 lbs HCl/MMBtu	1.037	Control factor based on performance data from "FTIR Emission Testing" Report dated August 16, 2016.	Density set based on recommendation from contractor following July down and SDA inlet design changes installed.
Controlled	0.0071 lb HCl/MMBtu	1.040	Control factor based on performance data from "FTIR Emission Testing" Report dated August 16, 2016.	Average of runs (#7,2,8).
Controlled	0.0092 lb HCl/MMBtu	1.040	Based on performance testing "Emissions Test Report" dated December 14, 2016 performed on October 12-14th 2016.	Run #2 FTIR testing.
Controlled	0.0129 lbs HCl/MMBtu	1.040	Based on compliance data "Test Report for the Verification of Air Pollutant Emissions From a Coal Fired Boiler and a Machine Coater" dated December 22, 2016.	Method 26A compliance testing.

ATTACHMENT 4

Woolley, Lillian L.

From: Byrnes, Melissa (DEQ) <BYRNESM@michigan.gov>
Sent: Friday, April 17, 2015 11:52 AM
To: Woolley, Lillian L.
Cc: Larry Passinault; Caudell, John F.
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit
Attachments: 24-15.docx

Sorry, with the delay in getting back to you. I am fine with the condition you proposed below. I made the changes to the draft, see attached. Let me know if everyone is in agreement and I will approve it.
Thanks!

Melissa Byrnes
(517) 284-6790

From: Woolley, Lillian L. [mailto:llwoolley@ftch.com]
Sent: Monday, April 13, 2015 1:43 PM
To: Byrnes, Melissa (DEQ)
Cc: Larry Passinault; Caudell, John F.
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

What about this condition?

Within 180 days of placing the SDA in service, the permittee shall determine emission rates for Hydrogen Chloride, Arsenic, Phosphorus, Manganese, Barium, Chromium and Lead and determine the ~~SDA~~ HCl control efficiency from EU05 (using exhaust emissions and Cl in coal) by testing at owner's expense, in accordance with Department requirements. The permittee must complete the test once every five years, thereafter. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205(3), R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)**

From: Byrnes, Melissa (DEQ) [mailto:BYRNESM@michigan.gov]
Sent: Wednesday, April 08, 2015 2:27 PM
To: Woolley, Lillian L.
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

Great, thanks!

Melissa Byrnes
(517) 284-6790

From: Woolley, Lillian L. [mailto:llwoolley@ftch.com]
Sent: Wednesday, April 08, 2015 1:14 PM
To: Byrnes, Melissa (DEQ); Caudell, John F.
Cc: 'Larry Passinault'
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

We should have something to use shortly!!

From: Byrnes, Melissa (DEQ) [mailto:BYRNESM@michigan.gov]
Sent: Wednesday, April 08, 2015 1:11 PM
To: Caudell, John F.; Woolley, Lillian L.
Cc: 'Larry Passinault'
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

Any comments on what I sent yesterday? I would like to get this one approved today, if possible.

Melissa Byrnes
(517) 284-6790

From: Caudell, John F. [mailto:jfcaudell@ftch.com]
Sent: Tuesday, April 07, 2015 3:17 PM
To: Byrnes, Melissa (DEQ); Woolley, Lillian L.
Cc: 'Larry Passinault'
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

If this approach is agreeable to Larry, I recommend we accept Missy's logic and move forward……John

---

From: Byrnes, Melissa (DEQ) [mailto:BYRNESM@michigan.gov]
Sent: Tuesday, April 07, 2015 3:12 PM
To: Woolley, Lillian L.
Cc: Larry Passinault; Caudell, John F.
Subject: RE: Neenah Paper (24-15) Comments on Draft Permit

I reviewed the comments and made the changes requested, except for the HAP testing. The intent of that condition was to test for the highest emitting metal HAP, acid gas HAP, and organic HAP. From the spreadsheets submitted Phosphorous, HCl, and Benzene had the highest emission rates.
Let me know if you want to discuss further or if you are in agreement with the conditions. This week, I am in the office today until 5:00 and tomorrow 8 -5.
Thanks,

Melissa Byrnes
(517) 284-6790

From: Woolley, Lillian L. [mailto:llwoolley@ftch.com]
Sent: Thursday, April 02, 2015 9:13 AM
To: Byrnes, Melissa (DEQ)
Cc: Larry Passinault; Caudell, John F.
Subject: Neenah Paper (24-15) Comments on Draft Permit

Hi,
Thank you so much for the opportunity to review the draft conditions for Neenah Paper Company (24-15). We have attached a mark-up with alternative language:
* to allow for time to install the new SDA system. The permit cannot require emission reductions from the SDA system until after it is installed, though installation will begin shortly after permit issuance. In addition, the SDA is installed to allow permitting of the facility as an area source and its new status need only be in place before the IB MACT applicability date of January 31, 2016.
* to delete testing for benzene and phosphorus, as this may be a typographical error. No phosphorus (and very little benzene) is expected from the permitted boiler.
In addition, Neenah does have concern over HAP monitoring described in Section VI. of the draft permit. For example, the existing ROP includes emission calculations for VOC in Appendix 7 and Neenah proposes similar record keeping for HAPs. It would be helpful if the District could provide some assurances that record keeping referenced in the existing

ROP will not change and the methodology currently referenced for air toxics and VOCs can also be used for HAP monitoring included in this permit.
Again, thanks so much for the quick turnaround – it has been a pleasure working with you!!
Lillian L. Woolley, PE | Senior Chemical Engineer | 248.324.4785 |llwoolley@ftch.com
Fishbeck, Thompson, Carr & Huber, Inc. | Engineers, Scientists, Architects, Constructors

ATTACHMENT 5

Table 1
Particulate Matter and HCl Emission Rates

	Company	**Neenah Paper**		
	Source Designation	**Boiler**		
	Test Date	**2/24/2016**	**2/24/2016**	
	Meter/Nozzle Information	Run 1	Run 2	Average
	Meter Temperature Tm (F)	65.3	60.9	63.1
	Meter Pressure - Pm (in. Hg)	29.5	29.4	29.4
	Measured Sample Volume (Vm)	51.3	50.6	51.0
	Sample Volume (Vm-Std ft3)	50.7	50.4	50.5
	Sample Volume (Vm-Std m3)	1.43	1.43	1.43
	Condensate Volume (Vw-std)	4.574	4.621	4.597
	Gas Density (Ps(std) lbs/ft3) (wet)	0.0756	0.0756	0.0756
	Gas Density (Ps(std) lbs/ft3) (dry)	0.0783	0.0783	0.0783
	Total weight of sampled gas (m g lbs) (wet)	4.18	4.16	4.17
	Total weight of sampled gas (m g lbs) (dry)	3.96	3.94	3.95
	Nozzle Size - An (sq. ft.)	0.000668	0.000668	0.000668
	Isokinetic Variation - I	102.6	101.3	102.0
	Stack Data			
	Average Stack Temperature - Ts (F)	266.5	267.1	266.8
	Molecular Weight Stack Gas- dry (Md)	30.3	30.3	30.3
	Molecular Weight Stack Gas-wet (Ms)	29.3	29.2	29.3
	Stack Gas Specific Gravity (Gs)	1.010	1.010	1.010
	Percent Moisture (Bws)	8.28	8.40	8.34
	Water Vapor Volume (fraction)	0.0828	0.0840	0.0834
	Pressure - Ps ("Hg)	29.3	29.3	29.3
	Average Stack Velocity -Vs (ft/sec)	31.5	31.8	31.6
	Area of Stack (ft2)	39.9	39.9	39.9
	Inlet FTIR CO_2(%, wet)	10.8	10.8	10.8
	Outlet FTIR CO_2(%, wet)	10.3	10.2	10.2
	Inlet Gas Flowrate			
	Flowrate ft^3(Actual)	82,807	84,754	83,781
	Flowrate ft^3 (Standard Wet)	53,303	53,797	53,550
	Flowrate ft^3 (Standard Dry)	48,889	49,278	49,084
	Flowrate m^3 (standard dry)	1,384	1,395	1,390
	Exhaust Gas Flowrate			
	Flowrate ft^3(Actual)	75,243	76,009	75,626
	Flowrate ft^3 (Standard Wet)	53,490	53,991	53,741
	Flowrate ft^3 (Standard Dry)	49,061	49,455	49,258
	Flowrate m^3 (standard dry)	1,389	1,400	1,395
Method 5	**Total Particulate Weights (mg)**			
	Nozzle/Probe/Filter	0.5	1.2	0.9
	Total Particulate Concentration			
	lb/1000 lb (wet)	0.00026	0.00064	0.00045
	lb/1000 lb (dry)	0.00028	0.00067	0.00047
	mg/dscm (dry)	0.3	0.8	0.6
	gr/dscf	0.0002	0.0004	0.0003
	Total Particulate Emission Rate			
	lb/ hr	0.06	0.16	0.11
	lb/mmbtu	0.0003	0.0009	0.0006
Method 26A	**Total HCl Weight (ug)**			
	Sample Catch	15,000	13,000	14,000
	Blank correction	0	0	0
	Total	15,000	13,000	14,000
	Total HCl Concentration			
	lb/1000 lb (wet)	0.008	0.007	0.007
	lb/1000 lb (dry)	0.008	0.007	0.008
	mg/dscm (dry)	10.5	9.1	9.8
	ppmv (dry)	6.9	6.0	6.5
	ppmv (wet)	6.3	5.5	5.9
	Total HCl Emission Rate			
	lb/ hr	1.93	1.69	1.81
	lb/mmbtu	0.010	0.009	0.010
FTIR	**FTIR HCl Concentration**			
	Inlet ppmv (wet)	89.9	89.9	89.90
	Outlet ppmv (wet)	6.2	6.34	6.26
	FTIR Total HCl Emission Rate			
	Inlet lb/hr	27.14	27.39	27.27
	Inlet lb/mmbtu	0.141	0.141	0.141
	Outlet lb/hr	1.87	1.94	1.90
	Outlet lb/mmbtu	0.010	0.011	0.010
	HCl Removal Rate			
	HCl Removal (%, FTIR Inlet, M26A Outlet)	92.9	93.8	93.4
	HCl Removal (%, FTIR Inlet, FTIR Outlet)	93.1	92.9	93.0

Table 2
Particulate Matter and HCl Emission Rates

	Company	**Neenah Paper**		
	Source Designation	**Boiler**		
	Test Date	**2/26/2016**	**2/26/2016**	
	Meter/Nozzle Information	Run 3	Run 4	Average
	Meter Temperature Tm (F)	59.6	73.5	66.5
	Meter Pressure - Pm (in. Hg)	29.5	29.5	29.5
	Measured Sample Volume (Vm)	50.9	51.5	51.2
	Sample Volume (Vm-Std ft3)	51.0	50.2	50.6
	Sample Volume (Vm-Std m3)	1.44	1.42	1.43
	Condensate Volume (Vw-std)	3.819	4.196	4.008
	Gas Density (Ps(std) lbs/ft3) (wet)	0.0761	0.0758	0.0759
	Gas Density (Ps(std) lbs/ft3) (dry)	0.0783	0.0783	0.0783
	Total weight of sampled gas (m g lbs) (wet)	4.17	4.13	4.15
	Total weight of sampled gas (m g lbs) (dry)	3.99	3.93	3.96
	Nozzle Size - An (sq. ft.)	0.000668	0.000668	0.000668
	Isokinetic Variation - I	99.2	99.9	99.6
	Stack Data			
	Average Stack Temperature - Ts (F)	275.0	278.1	276.5
	Molecular Weight Stack Gas- dry (Md)	30.3	30.3	30.3
	Molecular Weight Stack Gas-wet (Ms)	29.4	29.3	29.4
	Stack Gas Specific Gravity (Gs)	1.016	1.013	1.014
	Percent Moisture (Bws)	6.97	7.71	7.34
	Water Vapor Volume (fraction)	0.0697	0.0771	0.0734
	Pressure - Ps ("Hg)	29.4	29.4	29.4
	Average Stack Velocity -Vs (ft/sec)	32.6	32.2	32.4
	Area of Stack (ft2)	39.9	39.9	39.9
	Inlet FTIR CO_2(%, wet)	11.4	11.4	11.4
	Outlet FTIR CO_2(%, wet)	10.1	9.7	9.9
	Inlet Gas Flowrate			
	Flowrate ft^3(Actual)	85,452	86,235	85,844
	Flowrate ft^3 (Standard Wet)	54,575	54,984	54,780
	Flowrate ft^3 (Standard Dry)	50,771	50,744	50,758
	Flowrate m^3 (standard dry)	1,438	1,437	1,437
	Exhaust Gas Flowrate			
	Flowrate ft^3(Actual)	77,906	77,112	77,509
	Flowrate ft^3 (Standard Wet)	54,931	54,143	54,537
	Flowrate ft^3 (Standard Dry)	51,103	49,969	50,536
	Flowrate m^3 (standard dry)	1,447	1,415	1,431
	Total Particulate Weights (mg)			
	Nozzle/Probe/Filter	0.9	2.1	1.5
	Total Particulate Concentration			
Method 5	lb/1000 lb (wet)	0.00048	0.00112	0.00080
	lb/1000 lb (dry)	0.00050	0.00118	0.00084
	mg/dscm (dry)	0.6	1.5	1.0
	gr/dscf	0.0003	0.0006	0.0005
	Total Particulate Emission Rate			
	lb/ hr	0.12	0.28	0.20
	lb/mmbtu	0.00065	0.0016	0.0011
	Total HCl Weight (ug)			
	Sample Catch	13,000	13,000	13,000
	Blank correction	0	0	0
	Total	13,000	13,000	13,000
	Total HCl Concentration			
Method 26A	lb/1000 lb (wet)	0.007	0.007	0.007
	lb/1000 lb (dry)	0.007	0.007	0.007
	mg/dscm (dry)	9.0	9.1	9.1
	ppmv (dry)	6.0	6.0	6.0
	ppmv (wet)	5.5	5.6	5.6
	Total HCl Emission Rate			
	lb/ hr	1.73	1.72	1.72
	lb/mmbtu	0.009	0.010	0.010
	FTIR HCl Concentration			
	Inlet ppmv (wet)	97.3	97.3	97.30
	Outlet ppmv (wet)	7.3	6.34	6.82
FTIR	**FTIR Total HCl Emission Rate**			
	Inlet lb/hr	30.08	30.30	30.19
	Inlet lb/mmbtu	0.145	0.145	0.145
	Outlet lb/hr	2.27	1.94	2.11
	Outlet lb/mmbtu	0.012	0.011	0.012
	HCl Removal Rate			
	HCl Removal (%, FTIR Inlet, M26A Outlet)	94.2	94.3	94.3
	HCl Removal (%, FTIR Inlet, FTIR Outlet)	92.4	93.6	93.0