

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

**TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE
FOR A TITLE V OPERATING PERMIT**

**#OP-95-032
PIN# SJ95-0113**

December 1, 2000

Prepared By: Jennifer Bryan, Environmental Engineer

APPLICANT: American Paper Mills of Vermont, Inc.
Riverside Avenue
Gilman, VT 05904

SOURCE: Paper Making, Zurn Boiler
American Paper Mills of Vermont, Inc.
Riverside Avenue
Gilman, Vermont

RESPONSIBLE OFFICIAL: Jennifer Cusick, Plant Manager

APPLICATION CONTACT: Donald Hallee
American Paper Mills of Vermont Inc.
Riverside Avenue
Gilman, Vermont 05904
(802) 892-5515

COUNTY: Essex

AREA DESIGNATION: Attainment for PM₁₀, SO₂, NO_x, CO, and Pb
Unclassified for O₃

UTM COORDINATES: 49²⁰900 m N
02⁸³600 m E
Zone 19

I. INTRODUCTION

A. Administrative Milestones

Table 1: Administrative Summary

Administrative Item		Result or Date				
Date application received		11/1/95				
Date application declared administratively complete		11/14/95				
Location where receipt of application was noticed (date)		<i>The Caledonian Record</i> (11/16/95)				
Affected State(s) noticed of application receipt (date)		New Hampshire (2/16/96)				
Date application declared technically complete		September 29, 2000				
Date of proposed decision		October 5, 2000 (approved)				
Location where proposed decision and public comment period were noticed (date)		<i>The Caledonian Record</i> (October 5, 2000)				
Affected State(s) noticed of draft decision (date)		New Hampshire, New York and Massachusetts (October 6, 2000)				
Location where public meeting was noticed (date)		none requested				
Location of public meeting (date)		none requested				
Deadline for public comments		November 6, 2000				
Date application was submitted to U.S. EPA		November 7, 2000				
Classification of source under §5-401		§5-401(6)(b): Wood fuel burning equip.>90 Horsepower				
Classification of operating permit		Title V source				
Facility SIC code(s)		2621				
Facility SIC code description(s)		Paper Mill				
Allowable Air Contaminant Emissions (tons/year)						
PM/PM ₁₀	SO ₂	NO _x	CO	VOCs	Other	HAPs
414	85	251	2366	69	-	9

B. Basis of Review

American Paper Mills of Vermont, Inc. (hereinafter “APMV”) operates a paper mill in the village of Gilman, Vermont. Emission sources at the mill include the wood fired boiler and the paper machine.

The mill is classified as an air contaminant source under §5-401(6)(b) of the *Vermont Air Pollution Control Regulations* (“*Regulations*”). Under this section, a facility is classified as an air contaminant

source if it operates wood fuel burning equipment larger than 90 Horsepower ("H.P.").

The mill is classified as a Title V subject source pursuant to §5-1002 of the *Regulations* because its allowable emissions of nitrogen oxides, particulates and carbon monoxide exceed 100 tons per year. As a result, APMV is required to obtain a state and federal operating permit.

The mill was in operation prior to 1979, and has not undergone any significant modifications. An amended Nitrogen Oxide Reasonably Available Control Technology ("NO_x RACT") Administrative Order ("AO") was issued on January 9, 1996. The order requires the facility to limit and monitor emissions from the Zurn wood fired boiler. Therefore, the mill's allowable emissions are based on its administrative order emission limits, proposed operating restrictions, and the applicable requirements of the *Regulations* and the *Code of Federal Regulations* ("CFR").

II. FACILITY DESCRIPTION AND LOCATION

A. Description of Plant Layout and Surrounding Area

The mill is located in the village of Gilman, Vermont (see Appendix A for a site diagram). The mill complex consists of approximately 20 buildings, including the main building, various storage buildings, maintenance/garage building, boiler house, and a sludge building that serves the facility's wastewater treatment plant.

B. Explanation of Process

The mill is categorized under Standard Industrial Classification Code 2621 (Paper Mill). It produces a variety of specialty grade papers from both virgin and recycled fiber. The mill does not perform any primary pulping; it produces paper from fiber produced at other facilities rather than converting wood to pulp onsite. Types of paper produced include commodity bonds, security base papers, diazo (blueprint) paper, wallpaper, label papers, packaging tapes, latex specialty papers, text and cover papers, inkjet papers and indigo press papers.

C. Process Equipment and Stack Information

All of the process equipment at the mill have the potential to run continuously (i.e., 8,760 hours per year). The equipment parameters for significant emission points are summarized in Table 2. Other stacks and vents at the facility are listed in Table 3. Insignificant sources of emissions, as defined in §5-1002(h) of the *Regulations*, are listed in Table 4.

Boilers: The mill operates five boilers: a primary 180 Million British thermal units per hour heat input ("MMBtu/hr") Zurn wood fired boiler (installed in 1977) and four supplemental Babcock & Wilcox boilers. The Babcock & Wilcox boilers fire No. 6 fuel oil with a maximum sulfur content of 2.0% by weight. All boilers exhaust through a single stack (stack #1) having an outlet 225 feet above its base and 180 feet above the roofline. The operation of the boilers results in emissions of sulfur dioxide ("SO₂"), nitrogen oxides ("NO_x"), carbon monoxide ("CO"), particulate matter ("PM/PM₁₀"), volatile

organic compounds (“VOCs”), and federal Hazardous Air Pollutants* (“HAPs”) to the ambient air.

The wood fired boiler is supported by a wood chip storage, processing and conveyance facility. Wood chips and bark are delivered to the facility and stockpiled prior to processing. The wood chips and bark are processed by a hammer mill (wood hog), reducing the size of the chips and bark. The hogged fuel is conveyed pneumatically, from the wood hog to the cyclones. The wood fuel is then stored prior to combustion in the boiler. The cyclones and the wood hog are a source of PM emissions.

Pulp Processes: The Pulp process begins in the Pulp Shed area where both virgin pulp and recycled paper are stored. The pulp purchased may be either hardwood or softwood pulp. The pulp enters the process at the pulpers. Virgin pulp enters the HILLO Pulpers where pulp bales are mixed with water (hydrated), converting the pulp to a slurry. Two Morden Pulpers (2000 lb. capacity) are used to slurry the recycled paper. The pulp slurry is then pumped to the Blend Chest where the hydrated pulp is mixed with various additives, as needed, depending the type of paper being produced. The mixed pulp slurry is then fed into a series of centrifugal cleaners where heavier particles are removed. Sources of emissions in the pulp process are bleaches used to whiten recycled paper and chemicals added in the Blend Chest, resulting in the release of VOCs, HAPs and Hazardous Air Contaminants (“HACs”) to the ambient air

Paper Machine Processes: The cleaned, blended pulp slurry enters the paper machine at the headbox. From the headbox, the pulp is distributed onto the forming wire (“fourdrinier”) where the paper sheet begins to form. The fourdrinier is a single layer, 166.75 inches wide, synthetic fabric that provides for water drainage and sheet formation. The fourdrinier moves at speeds ranging from 500 to 1800 feet per minute. The moisture content of the sheet exceeds 99% at this stage of the process.

The paper sheet then passes into the press section where the formed sheet is pressed and smoothed. The first two presses are felted and remove water from the sheet. They are followed by an unfelted smoothing press which increases the smoothness of the sheet without removing water.

The pressed sheet then enters the main dryer section consisting of thirty 60 inch diameter rollers. The rollers are steam heated and range in temperature from 250 to 350 degrees F. Steam for the rollers is generated by the plant boiler. As the sheet passes through the rollers, the moisture content is reduced to 1.5 to 2.5%.

Following the dryers, the sheet enters the size press where various sizes and/or coatings can be applied to the sheet to enhance its strength and overall surface characteristics. The sizes and/or coatings may contain dyes, chemicals, starch, latex and clays.

The sheet is then further dried in the after dryer. This process removes moisture added in the

* A “hazardous air pollutant” is defined as any air pollutant listed in Sec. 112(b) of the *Clean Air Act*, as amended in 1990.

coating process. The after dryer section is similar to the main dryer section and consists of ten steam heated rollers. The first two rollers are coated with an anti-stick material to prevent the sheet from sticking to the rollers.

The sheet then travels through the calendar stack where it passes through two to four rollers under pressure (500 to 1000 psi) to control the thickness of the final sheet. Finally, the sheets are wound onto individual size rolls for distribution to the customer.

Sources of emissions in the paper machine are the sizings and/or coatings applied which may contain VOCs, HAPs and/or Hazardous Air Contaminants (HACs).

Wastewater Treatment Plant: APMV operates a wastewater treatment plant on site to treat the wastewater generated by the paper making process. The treatment plant includes one aeration basin, a clarifier, an emergency settling basin and a 0.4 MMBtu/hr space heater. Sources of emissions at the treatment plant are volatile compounds (VOCs, HACs and HAPs) in the papermaking wastewater and the space heater combustion emissions. Volatile compounds in the wastewater are included in the emissions from the papermaking process and therefore do not need to be quantified again for the wastewater treatment plant. As the space heater is considered an insignificant emission source, the emissions are not quantified.

Table 2. Equipment Specifications

DESCRIPTION AND MODEL NUMBER	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP. (°F)
Main Boiler: Zurn Watertube Boiler	1	180 MMBTU/hr (input) 4500 Btu/lb Wood as Fired. 1,190 HP	Wood	1977	Multiclone	170,000 acfm	225 ft. (Stack Dia. = 9.17 ft.)	450°F
4 Babcock & Wilcox Watertube Boilers	1	@ 42.5 MMBTU/hr each	# 6 Fuel Oil	1920	Uncontrolled	50,000 acfm		350°F
Paper Machine	various vents	350 tons per day of finished paper	--	1920	Uncontrolled	--	see Table 3	--
Semco Starch Silo	Starch Silo Vent	210 tons	starch	1997	Scientific Dust Collector: Model SP-J- X4B8	482 acfm	55.1 feet	ambient
Jeffrey Wood Hog	--	56 tons/hour	wood chips and bark	1978	2 Radar Long Cone Design Cyclones	5720 acfm each	50 feet each	ambient
2 Safety-Kleen Basin Type Degreasers Model #34	--	30 gallon Solvent Basin	SK 150 Solvent	1994	Uncontrolled	--	--	ambient

DESCRIPTION AND MODEL NUMBER	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP. (°F)
1 Safety-Kleen Basin Type Degreaser Model #23	-	30 gallon Solvent Basin	SK 150 Solvent	1994	Uncontrolled	-	-	ambient

In addition to the equipment listed in Table 2, APMV has identified a number of other stacks and vents (see Table 3). These stacks and vents emit air contaminants from the paper making process in addition to the steam driven off as the paper is produced. These stacks and vents emit negligible quantities of air contaminants. Any VOCs, HAPs, or HACs emitted from these vents and stacks are quantified by the process source (ie. paper machine), on a mass balance basis, rather than by emission point.

Table 3: Other stacks and vents.

Stack	Stack Height, feet	Exhaust Flow Rate, acfm
Heatex Unit	25	120,000
Paper Machine Dryer 1- Section 1	50	30,000
Paper Machine Dryer 2- Main Section	50	30,000
Paper Machine Dryer 3- Main Section	50	30,000
Paper Machine Dryer 4 -Section 3	50	30,000
Room Vent -Section 1	50	20,000
Room Vent - Section 2 (1)	50	17,000
Room Vent - Section 2 (2)	50	17,000
Room Vent - Section 3	50	17,000
Winder Vent (1)	50	12,000
Winder Vent (2)	50	8,000
Sky Vent (1)	50	20,000
Sky Vent (2)	50	20,000
Exhaust Fan	50	6,000
Room Vent	50	7,000
PM Vacuum Pump	50	18,000

D. Description of Air Pollution Control Equipment

There are currently four air pollution control devices at the mill: three cyclones, one multiclone and one baghouse. Two of the cyclones control particulate emissions from the wood chip handling system. The multicyclone controls particulate emissions from the exhaust of the Zurn boiler. The baghouse controls emissions from the starch silo.

E. Description of Compliance Monitoring Devices

The NO_x RACT Administrative Order requires the Facility to operate compliance monitoring devices on the Zurn boiler. The continuous emission monitoring system ("CEMS") measures both exhaust flow rate and concentrations of CO, NO_x, and oxygen in the flue gas exiting the boiler.

III. QUANTIFICATION OF POLLUTANTS

A. Operating Restrictions

1. Proposed in Permit Application

APMV has proposed to limit the mill's allowable emission of VOCs from the wet end of the paper machine to 49 tons per year in order to not be subject to §5-253.20 of the *Regulations*: VOC RACT. The applicant divided the paper machine into two sections, the wet end, where the paper manufacturing begins, and the dry end, where the finish coatings are applied. The permit application also stated that the dry end of the paper machine was subject to §5-253.10 of the *Regulations*: Paper Coating. The Agency has determined that APMV is not subject to §5-253.10 of the *Regulations*, Paper Coating, as this regulation applies to coating units that apply coatings to finished paper products. As APMV applies coatings as part of the paper making process, the Facility is not subject to this regulation. Consequently, the paper machine will be regulated as a single unit, not in two parts, the wet and dry ends. The Agency proposes to limit the paper machine to 49 tons per year of VOCs.

This VOC limit will be complied with by using the following reporting and recordkeeping procedures:

1. The mill would maintain a spreadsheet for each dye or process chemical containing VOCs. These spreadsheets would contain the VOC content and usage rate of each dye or chemical.
2. The mill would maintain an inventory of all process chemicals that could emit HACs. This inventory would contain the name of each process chemical, its HAC constituents, and the emission rate of each HAC.
3. The mill's environmental engineer would review the Material Safety Data Sheet (MSDS) for all new chemicals entering the mill. Any chemical containing VOCs or HACs would be evaluated for use and placed in the appropriate inventory (see (1) and (2) above). An estimate of hourly use would be given to determine the potential for an emissions violation.

4. The mill would maintain a 12-month rolling sum of emissions, and submit this information to the state by February 1 each year as a part of the annual emissions inventory submittal.

As long as APMV complies with the recordkeeping and reporting procedures proposed in its application, the proposed VOC limit will be practically enforceable. These recordkeeping and reporting procedures will be required under the Title V permit (however, the permit will require semiannual, rather than annual, reporting). It should be noted that the VOC emissions from the mill's boiler and degreasers will not count towards the 49 ton per year limit.

The approval of this VOC limit does not exempt APMV from the provisions of Subchapter V of the *Regulations*. In other words, any physical change or change in the method of operation of the mill that increases actual emissions of VOCs will continue to require Agency review in accordance with Subchapter V.

2. Existing Operating Restrictions: Administrative Order

The Administrative Order (AO) issued January 9, 1996 contains operating restrictions for the Zurn boiler and the four Babcock and Wilcox boilers. The AO limits NO_x emissions from the Zurn boiler to 0.3 lbs/MMBtu and a mass discharge rate of 54 lbs/hr, based on a twenty four hour rolling average (except during startup or shutdown). During start-up and shutdown the nitrogen oxide emissions from the Zurn wood-fired boiler are limited to 54 lbs/hr based on a one hour averaging time. The CO emissions from the boiler are limited to 3 lbs/MMBtu and 540 lbs/hr, based on a twenty four hour averaging time, except for start-up and shutdown. During startup and shutdown the CO emissions are limited to 1100 lbs/hr based on a one hour averaging time. Operation of the four Babcock and Wilcox boilers is limited to 5% of capacity (495,900 gallons). APMV is required to maintain records of fuel use in the Babcock and Wilcox boilers to demonstrate compliance with the 5% limit.

The AO required APMV to install, calibrate and operate a CEMS on the exhaust from the wood-fired boiler. APMV was required to develop, submit and follow a Quality Assurance Plan (QA Plan) for the CEMS. Data collected by the CEMS is submitted to the Air Pollution Control Division quarterly.

The AO required APMV to develop, submit and follow a Malfunction Abatement Plan to prevent, detect, and correct malfunctions or equipment failures that could result in excess emissions from the wood-fired boiler. APMV is also required to minimize the generation of air contaminants through good operating practices and optimization of overfire and underfire air.

B. Identification of Insignificant and Exempt Activities

Activities which qualify as “insignificant activities” under §5-1001(h) of the *Regulations* must be listed in the operating permit application, but the emissions from such activities need not be considered for determining the applicability of Subchapter X. The gasoline, diesel fuel, No. 6 fuel oil and propane tanks at the facility qualify as insignificant activities. In addition, the three distillate fuel space heaters, the mill analytic lab, screw press furnace, propane forklifts, vehicle storage and a maintenance areas and diesel tractors are also insignificant activities. Table 4 lists the specifications of the insignificant emission sources.

Table 4: Insignificant Emission Sources

Description	Size or Capacity	Fuel Type	Date Installed
Peerless Space Heater	0.12 MMBtu/hr	No. 2 Fuel Oil	1968
Powermatic Space Heater (WWTP)	0.4 MMBtu/hr combined	No. 2 Fuel Oil	1975
No. 6 Fuel Oil Storage Tank Fixed Roof Type w/ vent	150,000 gallons	No. 6 Fuel Oil	1967
Ecovault Diesel Fuel Storage Tank Fixed Roof Type w/ vent	10,000 gallons	Diesel Fuel	1993
Propane Storage Tank w/ pressure release vent	1,163 gallons	Propane	1979
Ecovault Gasoline Storage Tank Fixed Roof Type w/ vent	1,000 gallons	Gasoline	1993
Mill Analytical Lab	--	--	--
Propane Forklifts	--	--	--
Vehicle Maintenance and Storage Area	--	--	--
Diesel Tractors	--	--	--

It should be noted that a finding that a process or piece of equipment is an “insignificant activity” does not relieve the owner or operator from the responsibility of complying with any applicable requirements associated with said process or equipment.

C. Allowable Emissions from Facility

Allowable emissions of SO₂, NO_x, CO, PM/PM₁₀, and HAPs generated by the mill's boilers, have been estimated using emission factors published by the EPA in its *Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources, 5th Edition, AP-42*, NO_x RACT Administrative Order and the *Regulations*. The emissions estimates for the mill are summarized in Table 5, and all supporting calculations are provided in Appendix B of this document.

Table 5: Summary of allowable emissions from all processes.

Process	Emissions (tons/year)					
	SO ₂	NO _x	CO	PM/PM ₁₀	VOCs	HAPs
Boiler: Wood	7	237	2365	366	19	4
Boilers: No 6 Fuel Oil	78	13.6	1.2	9.6	0.1	0.03
Fuel Wood Cyclones	--	--	--	26	--	--
Starch Silo	--	--	--	1.1	--	--
Degreasers	--	--	--	--	0.3	--
Paper Machine	--	--	--	--	49	5
Totals	85	251	2366	414	69	9.0

IV. APPLICABLE REQUIREMENTS

A. Citation and Description of all Applicable Requirements

Section 5-1006(e)(4) of the *Regulations* requires the owner/operator of a stationary air contaminant source to submit a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations and the requirements of any construction permit issued under 10 V.S.A. §556 and §5-501 of the *Regulations*.

Each applicable requirement (except §§ 5-261 and 5-1010 of the *Regulations*) is discussed below, including its test method and current compliance status. Compliance with §5-261 and §5-1010 of the *Regulations* is discussed separately in sections V and VI of this document, respectively.

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the owner/operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

1. Vermont Air Pollution Control Regulations

§5-201 - Open Burning Prohibited: This regulation prohibits open burning of combustible materials except in conformity with Subchapter II of the *Regulations*.

APMV has stated that the mill is in compliance with this regulation, and will continue to comply in the future. APMV has a policy prohibiting onsite open burning. The Agency will verify compliance with this requirement in the future during its own inspections of the mill. Additionally, the Agency investigates all open burning complaints that it receives to determine if there is a violation.

§5-211(1) - Prohibition of Visible Air Contaminants - Installations constructed prior to April 30, 1970: This regulation applies to the four Babcock and Wilcox oil fired boilers. It states that APMV shall not emit any visible air contaminants for more than a period or periods aggregating six minutes in any hour having a shade, density, or appearance greater than 40% opacity. At no time shall visible air contaminants have a shade, density, or appearance greater than 60% opacity.

The test method used to determine compliance with this standard is Method F-1 (proposed) of Title 40 CFR, Part 52 (51 FR 31076; 8/28/86).

Compliance with this regulation will be determined the Continuous Opacity Monitoring System ("COMS") to be installed and operating within 180 days of Permit issuance.

§5-211(2)- Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970: This regulation applies to the Zurn wood fired boiler, cyclones and starch silo. It states that APMV shall not emit any visible air contaminants for more than a period or periods aggregating six minutes in any hour having a shade, density, or appearance greater than 20% opacity. At no time shall visible air contaminants have a shade, density, or appearance greater than 60% opacity.

Compliance with the opacity limit for the Zurn wood-boiler will be determined by the Continuous Opacity Monitor System ("COMS") that APMV is required to install and operate within 180 days of Permit issuance. Compliance for the cyclones and starch silo will be determined by weekly observations using Method F-1, (proposed) of Title 40 CFR, Part 52 (51 FR 31076; 8/28/86).

§5-211(3) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970. Exceptions - *Wood Fuel Burning Equipment.* (a) During normal startup operations, *emissions* of visible *air contaminants* in excess of the limits specified above may be allowed for a period not to exceed one (1) hour; (b) During normal soot blowing operations, *emissions* of visible *air contaminants* in excess of the limits specified above may be allowed for a period not to exceed 30 minutes during any 24 hour period; (c) At no time shall the visible *air contaminants* allowed under this subsection have a shade, density, or appearance greater than 80% *opacity* (No. 4 of the *Ringelmann Chart*); and (d) Any *wood fuel burning equipment* that has a rated output of 40 *H.P.* or less shall not be subject to this regulation.

Compliance with these opacity standards shall be determined by the COMS to be installed within 180 days of Permit issuance.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel, Sulfur Limitation: This regulation applies to the fuel combusted in the Babcock and Wilcox boilers and the propane forklifts. It prohibits the combustion of any fuel containing more than 2.0% sulfur by weight. The test method used to determine compliance with this standard is a fuel analysis using procedures prescribed by the American Society for Testing and Materials.

APMV has stated that it complies with this standard by purchasing No. 6 fuel oil containing less than 2.0% sulfur, and will continue to do so in the future. The propane combusted at the mill has a negligible sulfur content. APMV has stated that it can demonstrate compliance with this standard by maintaining records of fuel vendor certificates.

The continued use of these fuels, in conjunction with proper recordkeeping, is sufficient to ensure compliance with this regulation in the future.

§5-221(2) - Waste Oil. "No person shall cause or permit the use, purchase, sale or exchange in trade for use as a fuel in fuel burning equipment in Vermont of any waste oil unless: (i) ... (ii) The waste oil has properties and constituents within the allowable limits set forth in Table A prior to blending; and (iii) ... (iv) ... (v) ... and (vi) The seller and user comply with the requirements of (the waste oil section) of the Vermont Hazardous Waste Management Regulations."

APMV does not burn waste oil and therefore is not currently subject to this regulation. All waste oil generated at the facility is recycled for rerefinement.

§5-231(1)(b) - Prohibition of Particulate Matter; Industrial Process Emissions. "In cases where *process weight* is not applicable as determined by the *Air Pollution Control Officer*, the concentration of *particulate matter* in the effluent gas stream shall not exceed 0.14 grams per cubic meter (0.06 grains per cubic foot) of undiluted exhaust gas at *standard conditions* on a dry basis. In the case of wood processing operations, *process weight* is not applicable, and instead, the concentration standard specified in this subsection shall apply." Compliance with this emission standard shall be determined in accordance with Title 40 *CFR* Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

This emission standard applies to starch silo and the two wood chip cyclones.

The Agency will assess compliance with this section in the future as follows: (1) APMV will be required to properly operate and maintain its dust collection systems including fabric filter collector and cyclones; (2) visual observations of each exhaust will be conducted during Agency inspections of the Facility, and (3) weekly observation of the starch silo, and cyclones exhausts by staff at the Facility.

§5-231(3) - Prohibition of Particulate Matter (Combustion Contaminants): Section 5-231(3)(a)(ii) applies to the four (4) Babcock and Wilcox boilers rated at 42.5 MMBtu/hr each. It states that particulate emissions from fuel burning equipment having a rated heat input of greater than 10 MMBtu/hr but less than 250 MMBtu/hr may not exceed the limit determined using the following formula:

$$E_{PM} \left[\frac{lb}{hr \cdot MMBtu} \right] \leq 10^{[0.47039(\log_{10} H) + 0.16936]}$$

Based on the formula, the boiler is limited to 0.25 pounds per hour per MMBtu and 11 pounds per hour per boiler.

The test method used to determine compliance with this standard is Reference Method 5 (40 *CFR* Part 60, App. A).

Compliance determinations will be based on the following:

- (1) The Agency will conduct visual observations of the opacity of the exhaust during its own inspections of the mill in the future. If visible emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require APMV to perform a stack test to verify compliance with the particulate emission standard or take other corrective measures.

§5-231(3)(b) - Prohibition of Particulate Matter; Combustion Contaminants. "A *person*

shall not discharge, cause, suffer, allow, or permit the *emission of particulate matter* caused by the combustion of *wood fuel* in *fuel burning equipment* from any *stack* or chimney:

- (i) In excess of 0.45 grains per dry standard cubic foot (gr/DSCF) of exhaust gas corrected to 12% CO₂ in any combustion installation that has a rated output of greater than 90 H.P. which commenced operation prior to December 5, 1977.
- (ii) In excess of 0.20 gr/DSCF corrected to 12% CO₂ in any combustion installation that has a rated output of greater than 90 H.P., but less than 1300 H.P., which commences operation after December 5, 1977."

Compliance with this emission standard shall be determined in accordance with Title 40 *Code of Federal Regulations* Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

This emission standard applies to the Zurn wood-fired boiler which is rated at 1,190 H.P. Pursuant to §5-101 of the *Regulations*, H.P. is defined as a unit that is equal to 10 square feet of boiler heating surface. Therefore, the emission standard of 0.20 gr/DSCF applies to this unit. The calculated permit allowable particulate emissions from the wood boiler is 0.20 gr/DSCF.

The Agency will assess compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the fuel burning equipment and the multicyclone in addition to visual observations of the stack exhaust. AMPV will be required to perform a stack test within 180 days of Permit issuance and then retest every three years.

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter. "A *person* shall not cause, suffer, allow, or permit any process operation to operate that is not equipped with a *fugitive particulate matter* control system. A *person* shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent *particulate matter* from becoming airborne. Public roads will not be subject to this section unless a public nuisance is created."

This regulation applies to plant yard at the Facility. Based on the application submittal and information available to the Agency, the Facility is currently in compliance with this regulation.

The Agency will require the use of reasonable precautions such as the application of water or surfactants to the plant yard as necessary. The Agency will assess compliance with this requirement during any inspections of the Facility, and will require the use of additional measures if found necessary during a compliance inspection.

§5-241 (1) and (2) - Prohibition of Nuisance and Odor: These regulations apply to the entire

mill. Section 5-241(1) prohibits the emission of air contaminants in quantities which would cause injury, detriment, nuisance, or annoyance to any considerable number of people or to the public. Section 5-241(2) prohibits the discharge of objectionable odors beyond the property line of a premises.

APMV has stated that it complies with these regulations and will continue to comply in the future. APMV based this compliance determination on ongoing monitoring by mill personnel.

The Agency will verify compliance with this requirement in the future during its own inspections of the mill. Additionally, the Agency investigates all nuisance and odor complaints that it receives to determine if there is a violation.

§5-253.5 - Stage I Vapor Recovery Controls at Gasoline Dispensing Facilities. The owner or operator of a gasoline dispensing facility which receives deliveries from account trucks shall fill tanks by submerged fill only.

The gasoline storage tank at the facility is subject to this regulation. As the gasoline storage tank is filled by a submerged fill pipe, the facility is in compliance with this regulation.

§5-253.10 - Paper Coating: This regulation limits emissions of VOCs from paper coating units. It appears that it was intended to address coating units that apply coatings to finished paper products. Since APMV uses coatings as a part of its paper making process, this regulation does not apply to the mill.

§5-253.14 - Solvent Metal Cleaning: This regulation applies to the three Safety-Kleen Model degreasing units at the Facility. The degreasers are subject to the following work practice standards set forth in §5-253.14(c)(1)(iv)-(x) of the *Regulations*.

- (a) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
- (b) Store waste solvent in covered containers;
- (c) Close the cover whenever parts are not being handled in the cleaner;
- (d) Drain the cleaned parts until dripping ceases;
- (e) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed 10 pounds per square inch gauge;
- (f) Degrease only materials that are neither porous nor absorbent; and
- (g) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired.

APMV has stated that it is in compliance with all of the requirements of §5-253.14 of the *Regulations*

Subchapter VIII - Registration of Air Contaminant Source: This Subchapter requires the operator of a stationary source to register it with the Agency if it emits more than 5 tons of any and all air contaminants per year. The operator of a source subject to registration is required to submit information regarding its operations by February 1 of each year, and pay a fee based on its quantity of emissions.

APMV currently participates in the registration program and has stated that it will continue to comply in the future.

2. Administrative Order Issued January 9, 1996

1) AMPV shall properly operate and maintain its fuel burning equipment in order to minimize the generation of air contaminants.

a) The use of good operating practices for fuel fed into the wood boiler (including burning only uncontaminated wood with a moisture content not to exceed 60% by weight and with a size not to exceed two (2) inches by five (5) inches).

b) Optimization of overfire and underfire air system to minimize the generation of CO and NO_x. APMV submitted a report to the Agency determining operating parameters for this requirement on November 15, 1995 and March 7, 1996. The reports determined that the proper operating parameters for the Zurn wood-fired boiler at steam loads between 60,000 lb/hr and 90,000 lb/hr are:

Oxygen 6.5 to 8.0%
 Overfire/Underfire Air Ratio: 40/60 to 70/30

2) Emission Limitations

Table 6: NO_x RACT Emission Limitations

Pollutant	Emission Limit	Averaging Period	Compliance Demonstration	When Applicable
NO _x	0.3 lbs/MMBtu and 54 lbs/hr	Rolling 24 hour	Continuous Emission Monitoring System	At all times except start up and shutdown
	54 lbs/hr	1 hour average		Start up and shutdown
CO	3.0 lbs/MMBtu and 540 lbs/hr	Rolling 24 hour	Continuous Emission Monitoring System	At all times except start up and shutdown

	1100 lbs/hr	1 hour average		Start up and shutdown
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3) Continuous Emission Monitoring (“CEM”)

a) APMV shall equip the Zurn wood fired boiler with continuous emission monitoring equipment which will measure and record the concentrations of CO, NO_x, and CO₂ or O₂ in the flue gas exiting the Zurn boiler.

b) All CEMS shall be operated and maintained as specified below:

i) All CEMS shall be installed, calibrated, maintained and operated in accordance with 40 CFR Part 60, Appendix B, Performance Specifications 2,3, and 4; 40 CFR Part 60 Appendix F - Quality Assurance Procedures and the Air Pollution Control Division Technical Services Section’s (“TSS”) “Continuous Emission Monitoring Requirements”, as amended.

ii) All CEMS shall be installed according to manufacturer’s specifications and shall be operational on or before January 15, 1995. The CEMS shall successfully complete the initial Performance Specification Test Procedures by May 1, 1995.

iii) All CEMS must record valid data during all source operating times except for periods of established quality assurance and quality control procedures, preventive maintenance, or unavoidable malfunction. Nevertheless, the CEMS must record valid data for at least 90% of the source operating time within any quarter of the calendar year.

iv) APMV shall develop, implement and maintain for the CEMS a Quality Assurance Plan which satisfactorily documents operations pursuant to state and federal requirements. APMV shall review the Plan annually.

v) APMV shall submit summary reports for each calendar quarter within 30 days after the close of the quarter. CEMS data for NO_x and CO shall be reported in units of lbs/MMBtu and lbs/hr, as 24 hour rolling averages calculated on an hourly basis.

4) APMV shall not operate its four oil-fired boilers in excess of five (5) percent of their total capacity on a rolling twelve (12) calendar month basis.

5) APMV shall develop and utilize a malfunction abatement plan for those systems/operations that affect regulated emissions for its Zurn wood-fired boiler.

3. Federal Air Pollution Control Regulations

NSPS and NESHAPs: No National Emissions Standards for Hazardous Air Pollutants (NESHAPs) or New Source Performance Standards (NSPS) apply to the mill.

EPA has proposed three MACT standards (also known as NESHAPs) for the pulp and paper industry. MACT I and MACT III were combined into one standard and signed into law in November 1997. This standard, known as the *National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry* (40 CFR, Part 63, Subpart S), regulates emissions from processes such as chemical and semichemical pulping, bleaching, wastewater treatment, mechanical pulping, secondary fiber deinking, nonwood pulping, and paper making. Subpart S applies to pulp, paper, and paperboard mills that are major hazardous air pollutant (HAP) sources. Although some of the activities at APMV's facility fall into the regulated categories, it is not subject to the regulation because it is not a major HAP source.

MACT II, which has not yet been finalized, will address combustion sources at pulp and paper mills (other than virgin fuel combustion). Since this facility does not have any such sources, MACT II will not apply to the mill.

40 CFR Part 64 - Compliance Assurance Monitoring: Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("CAA"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the CAA. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the CAA. Monitoring is proposed to focus on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permits program regulations.

As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA provided an extended implementation schedule for this rule. Facilities which had submitted a complete operating permit application prior to April 20, 1998, were not required to address CAM as part of their initial operating permit application unless they proposed to make significant changes to the facility subsequent to this date and the facility operated "large" pollutant specific emission units ("PSEU"). A "large PSEU" is defined as a unit with post control emissions greater than or equal to the major source threshold. APMV was not required to address CAM as it had submitted an administratively complete operating permit application prior to April 20, 1998.

§64.2 in 40 CFR Part 64 specifies that each pollutant specific emission unit at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

- (A) be subject to an emission limitation or standard,
- (B) use a control device to achieve compliance, and
- (C) have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 CFR Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAPs, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Note that the term “control device” means equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The term “control device” does not include passive methods such as lids or seals, use of low-polluting fuels or inherent process equipment provided for safety or material recovery. Additionally, the CAM rule provides some exemptions, such as an exemption for any affected facility subject to an NSPS or NESHAP promulgated after November 15, 1990.

The Zurn wood-fired boiler meets the three part test for CAM. APMV will need to address CAM for the Zurn wood-fired boiler upon operating permit renewal.

B. Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(11) of the *Regulations*, an owner/operator may request to be shielded from specific state or federal requirements which do not apply to the subject source. If the applicability of a regulatory requirement is unclear to the applicant, when appropriate, the Agency may grant a permit shield stating that the requirement does not apply to the source. Once a permit shield is granted, the Agency may not initiate any enforcement action against the Facility based upon a regulation or standard covered by the permit shield. The Agency would be required to amend the Permit to Operate and incorporate the applicable requirement prior to initiating any enforcement action for non-compliance with the applicable requirement. The Agency’s permit shield determinations are based upon the information submitted by the owner/operator in its operating permit application. The resulting permit shield shall be effective only with respect to activities disclosed in the application.

It is the Agency’s procedure to grant permit shields only for those requirements or standards which conceivably could apply to the Facility, and the Agency has made a determination that such requirement does not in fact apply. The Agency does not intend to grant permit shields for those requirements that clearly do not apply to the Facility. For example, an asphalt plant will not be granted a permit shield from a regulation applying to a dry cleaning operation. Additionally, the Agency and the U.S. EPA do not favor granting permit shields from broad requirements such as a section of the *Clean Air Act* or an entire Subpart of the federal regulations in 40 *CFR*. In the words of the U.S. EPA, “. . . the intended purpose of a negative applicability determination is to memorialize a decision where applicability of a certain regulation is somewhat unclear without extensive knowledge of the regulations and investigation of the relevant facts.”

APMV has requested to be shielded from several potentially applicable requirements. The Agency will grant a permit shield for the state and federal regulations listed in Table 7 below as granted. The permit shields shall be binding only with respect to the activities disclosed in APMV’s application.

Table 7: Permit Shield Determinations

Requirement for Which a Permit Shield has been Requested	Description of Requirement	Agency's Determination	Explanation
40 <i>CFR</i> , Part 60.40 et seq. NSPS, Subpart D	Standards for Performance for Fossil Fuel-Fires Steam Generators (>250 MMBtu/hr)	Granted	No boilers >250 MMBtu/hr
40 <i>CFR</i> , Part 60.40 et seq. NSPS, Subpart Da	Standards for Performance for Electric Utility Steam Generators (>250 MMBtu/hr)	Granted	
40 <i>CFR</i> , Part 60.40a et seq. NSPS, Subpart Db	Standards of Performance for Industrial-Commercial Steam Generating Units (>100 MMBtu/hr and constructed or modified after June 19, 1984)	Granted	All Boilers were installed prior to June 19, 1984 and have not been modified.
40 <i>CFR</i> , Part 60.40a et seq. NSPS, Subpart Dc	Standards of Performance for Small Industrial-Commercial-institutional Steam Generating Units (10<MMBtu/hr<100 and constructed, reconstructed or modified after June 9, 1989)	Granted	All Boilers were installed prior to June 9, 1989 No modifications have taken place.
40 <i>CFR</i> , Part 60.280 et seq NSPS Subpart BB	Kraft Pulp Mills. This subpart applies to specific process in kraft pulp mills that were constructed, reconstructed or modified after September 24, 1976.	Granted	APMV is a non integrated paper mill which does not utilize these processes and was constructed prior to the effective date.
40 <i>CFR</i> , Part 60.110 et seq NSPS Subpart K	Petroleum Storage Vessels. (Capacity >40,000 gal and constructed on or after June 11, 1973)	Granted	The 150,000 gallon No. 6 Fuel Oil tank was installed in 1967.
40 <i>CFR</i> , Part 60.110a et seq NSPS, Subpart Ka	Petroleum Storage Vessels. (Capacity >40,000 and constructed or installed and or after May 18, 1978)	Granted	
40 <i>CFR</i> , Part 60.110b et seq NSPS Subpart Kb	Volatile Organic Liquid Storage Vessels. (Capacity >40 m ³ and constructed on or after July 23, 1984)	Granted	
40 <i>CFR</i> , Part 60.150, et seq. NSPS Subpart O	Sewage Treatment Plants (Applies to incinerators at sewage treatment facilities)	Denied	There are no incinerators at the Facility
40 <i>CFR</i> , Part 60, et seq. NSPS Subparts B through VVV	Facility specific New Source Performance Standards applying to sources of specific air emissions.	Denied	This is too broad a request.*
40 <i>CFR</i> , Part 61 NESHAPS Subparts A through FF	National Emission Standards for Hazardous Air Pollutants. This subpart applies to emission of specific hazardous air pollutants from seven specific source types.	Denied	This is too broad a request.*

40 CFR, Part 63 et seq	MACT Standards	Denied	This is too broad a request.*
40 CFR Parts 72 through 78	Acid Rain Program	Denied	This is too broad a request.*
40 CFR Part 82, et seq.	Stratospheric Ozone Protection.	Denied	This is too broad a request.*
§5-201 to 5-203 of the Regulations	Open Burning Prohibition	Denied	The facility is capable of open burning.
§5-222 of the Regulations	Prohibition of Potentially Polluting Materials in Fuel: Waste Oil Combustion	Denied	The facility is capable of burning waste oil.
§5-231(2) of the Regulations	Prohibition of Particulate Matter: Incinerator Emissions	Denied	The facility does not have an incinerator.
§5-231(5) of the Regulations	Prohibition of Particulate Matter: Asphalt Concrete Plants	Denied	The facility is not an asphalt concrete plant.
§5-241(3)(a) to (e) of the Regulations	Prohibition of Nuisance and Odor: Control of Odor from Industrial Processes	Denied	The facility is capable of producing odors from the industrial processes.
§5-251 of the Regulations	Control of Nitrogen Dioxide Emissions	Granted	The facility has no fuel burning equipment with a heat input ≥ 250 MMBtu
§5-252 of the Regulations	Control of Sulfur Dioxide Emissions	Granted	
§5-253.1 of the Regulations	Control of Volatile Organic Compounds: Petroleum Liquid Storage in Fixed Roof Tanks: Tanks > 40,000 gallon and Vapor Pressure ≥ 1.52 psi	Granted	The facility does not store liquids with vapor pressure ≥ 1.52 psi in tanks > 40,000 gallons.
§5-253.2 to 253.4 and 253.6 of the Regulations	Control of Volatile Organic Compounds: Bulk Gasoline Terminals, Bulk Gasoline Plants, Gasoline Tank Trucks	Denied	The facility does not meet the definition of Bulk Gasoline Terminals, Bulk Gasoline Plants, or Gasoline Tank Trucks
§5-253.13 of the Regulations	Coating of Miscellaneous Metal Parts	Granted	Metal parts coating at the facility is limited to maintenance operations.
§5-253.15 of the Regulations	Cutback and Emulsified Asphalt	Denied	The facility does not mix, store or manufacture cutback or emulsified asphalt.

§5-253.20 of the <i>Regulations</i>	Other Sources that Emit Volatile Organic Compounds (VOC RACT): Applies to operations or processes with allowable emissions of VOCs ≥ 50 tpy, except for fuel burning or processes regulated under other subsections of §5-253 of the <i>Regulations</i> .	Denied	The paper machine is capable of being subject to this regulation. The current permit limits the machine 49 tpy however, the facility will be subject if the emissions exceed the current 49 tpy limit.
§5-405 of the <i>Regulations</i>	Required Air Monitoring: Requires air monitoring, recordkeeping and reporting.	Denied	The facility is required to perform recordkeeping and reporting.
§5-406 of the <i>Regulations</i>	Required Air Modeling	Denied	The facility is capable of being subject to this regulation.
§5-901 of the <i>Regulations</i>	Control of Ozone Depleting Chemicals: Definitions	Denied	
§5-911 of the <i>Regulations</i>	Control of Ozone Depleting Chemicals: Motor Vehicle Air Conditioning	Denied	The facility does not service or repair motor vehicle air conditioners
§5-921 of the <i>Regulations</i>	Control of Ozone Depleting Chemicals: Regulation of Ozone Depleting Products	Denied	The facility does not engage in the sale of ozone-depleting products.

*In light of a recent letter from U. S. EPA to the Agency on broad permit shields (dated March 31, 1999), the Agency is denying a shield from these requirements.

C. Description of Alternative Operating Scenarios

APMV has not requested approval for any alternative operating scenarios.

V. HAZARDOUS AIR CONTAMINANTS

Section 5-261 of the *Regulations* addresses emissions of hazardous air contaminants (HACs). The applicability of this section to an air contaminant source is determined by comparing the actual emissions of each HAC to its Action Level. If the actual emissions of any contaminant exceed its Action Level, the source must demonstrate compliance with §5-261. To calculate the emissions of a HAC, all sources of that contaminant at the facility must be aggregated.

Pursuant to §5-261(1)(b)(i) of the *Regulations*, all fuel burning equipment which combusts virgin liquid fuel is exempt from the requirements of §5-261. In addition, the Zurn wood-fired boiler is exempt based on §5-261(1)(b)(ii), as it was installed prior to January 1, 1993. Therefore, all of the mill's boilers are exempt from this section.

A. Hazardous Air Contaminant Emission Estimates

The mill uses several process chemicals and dyes that contain volatile HACs that are emitted to the

ambient air. The actual 1999 emission rates, scaled up to full time operation, of these HACs are listed and compared to their Action Levels in Table 8. The emission calculations are contained in Appendix B of this document.

Table 8: Emissions of HACs and comparisons to Action Levels.

Process Chemical	HAC	Emission Rate (lb/8hr)	Action Level (lb/8hr)	Action Level Exceedence?
Sodium Hypochlorite	Sodium Hydroxide	0.17	0.84	No
Blue GDF	Diethanolamine	0.10	5.4	No
Saf-T-Brite II	D-Limonene	0.09	60	No
Scriptset 720	Styrene Monomer	0.004	42.5	No
Elvanol 71-30	Methanol	6.8	322	No
Cortrol OS7780	hydroquinone	0.12	0.2	No

As shown in Table 8 above, APMV does not currently generate emissions of any HAC in exceed of its respective Action Level. Therefore, APMV is not subject to §5-261 of the *Regulations*.

VI. REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established an Operating Permit Reasonably Available Control Technology (RACT) (§5-1010 of the *Regulations*) applicable to the mill. The Agency will notify APMV if any applicable RACT requirement is developed in the future.

VIII. COMPLIANCE PLAN

A. Description of the Compliance Status for Each Applicable Requirement

A. Description of the Compliance Status for Each Applicable Requirement

See Part IV above.

B. Compliance Schedule for Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable to this Facility.

IX. PUBLIC PARTICIPATION

The mill is classified as a Title V subject source, and consequently any operating permit application submitted for this facility is subject to the public participation requirements found in §5-1007 of the *Regulations*. The Agency published a notice in *The Caledonian Record* on November 16, 1995

stating that an administratively complete operating permit application had been received from APMV.

A second notice was published in *The Caledonian Record* on October 5, 2000 announcing that the Agency had declared the application technically complete and had issued a draft operating permit. This second notice also solicited comments regarding the draft permit and requests for an informational meeting. The deadline to request an informational meeting was October 30, 2000. The Agency did not receive a request for a public meeting. The public comment period closed on November 6, 2000. The agency received some minor comments from APMV and has incorporated them into the final permit.

On October 5, 2000 the Agency notified the U. S. EPA and the states of New Hampshire, New York and Massachusetts of the draft permit and requested comments. The states of New Hampshire, New York and Massachusetts were given a deadline of November 6, 2000 for comments on the draft permit. No comments were received from the states of New Hampshire, New York or Massachusetts.

On November 7, 2000 the proposed permit was forwarded to the EPA for a 45 day review and comment period. The EPA completed their review of the permit on November 14, 2000 and notified the Agency that they had no comments on the permit.

X. CONCLUSIONS

Based on the foregoing technical analysis, the following conclusions are made:

1. The Agency has determined that the Facility, subject to the recommended permit conditions, will meet all the applicable air pollution control requirements.
2. Pursuant to 10 V.S.A. §556a and Subchapter X of the *Regulations*, the Facility is designated as a Subchapter X Major Source and as a Title V Subject Source.
3. Draft Permit Conditions (see draft permit)

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APPENDIX A

Site Map

Plot Plan

Process Flow Diagram

APPENDIX B

Emissions Calculations

APPENDIX B

Emissions Calculations

I. Allowable Emissions from Boilers

Allowable emissions is defined under Section 5-101(11) of the *Regulations* as "...the emission rate calculated using the maximum rated capacity of the source and, if applicable, either:

- (a) The applicable emission standard contained in the regulations, if any, or
- (b) The emission rate or design, operational or equipment standard specified in any order or agreement issued under these regulations that is state and federally enforceable."

A. Zurn Wood Boiler

Pursuant to the NO_x RACT order issued January 9, 1996, the Zurn Boiler exhaust emissions of nitrogen oxides and carbon monoxide are restricted. The emission limits for the boiler are listed in Table B.1. For most combustion air contaminants, the peak emission rate will be produced when the Zurn Boiler is operating on a continuous operation (i.e., 8,760 hrs/yr) at full load (i.e., 100% of capacity).

Table B.1: Zurn Emission Limitations from NO_x RACT

	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)	
	Emission Limit	Averaging Period	Emission Limit	Averaging Period
Start-Up/Shutdown	54 lbs/hr	1 hour average	1100 lbs/hr	1 hour average
Normal Operation	54 lbs/hr & 0.3 lbs/MMBtu	24 hour rolling average	540 lbs/hr & 3.0 lbs/MMBtu	24 hour rolling average

- The particulate (PM) emissions from the Zurn boiler are limited to 0.20 grains/dscf, corrected to 12% CO₂, by §5-231(3)(b)(ii) of the *Regulations*.
- Allowable Emissions of sulfur oxides (SO_x), volatile organic compounds (VOCs), and Hazardous Air Pollutants (HAPs) for the Zurn boiler were calculated based on emission factors from AP-42 published by the EPA in its *Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources, 5th Edition, Section 1.6 (2/99)*.
- Wood Fuel BTU Content: 4,500 BTU/lb (green wood fuel)
- Maximum Rated Heat Input: 180 MMBTU/hr (Wood)
- Fuel Maximum Firing Rate: 480 tons/day (175,200 tpy)
- CO₂% at Maximum Capacity = 5.6% @ 104,865 dscfm (3/11/93 Source Test, Average of Runs 1-4)

Table B.2: Zurn Boiler Wood Firing Allowable Emissions

Pollutant	Emission Limit/Factor	Source of Limit/Factor	Allowable Emissions, tpy
NO _x	54 lbs/hr	NO _x RACT Administrative Order, 1/9/96	237
CO	540 lbs/hr	NO _x RACT Administrative Order, 1/9/96	2,365
SO _x	0.075 lb/ton	AP-42, Table 1.6-2, 2/99	7
VOC	0.22 lb/ton	AP-42, Table 1.6-3, 2/99	19
PM	0.2 grains/dscf at 12% CO ₂	§5-231 of the <i>Regulations</i>	366*
HAPs	4.52 x 10 ⁻² lb/ton	AP-42, Tables 1.6-4&5, 2/99	4

* The allowable emissions of PM were based on 0.2 grains/dscf converted to 12% CO₂ using the results of a source test performed at maximum capacity on 3/11/93 (5.6% CO at a flow rate of 104,865 dscfm).

$$C_{actual} = C_s \left(\frac{CO_{2, actual}}{12\%} \right) = 0.093 \text{ gr / dscf}$$

B. Babcock and Wilcox Boilers (4)

- APMV operates four Babcock and Wilcox boilers having a rated heat input of 42.5 MMBtu/hr each.
- The Babcock and Wilcox burn No. 6 fuel oil with a maximum sulfur content of 2.0% by weight.
- These boilers are limited to 5% of capacity by the NO_x RACT. Each boiler has a maximum fuel rate of 283 gal/hr, resulting a total maximum annual fuel use of 9.9 million gallons per year. 5% of 9.9 million gallons results in a fuel cap of 495,900 gallons per year, for the four boilers combined.
- Emissions of SO₂, NO_x, CO, VOCs, and HAPs are based on emission factors for fuel oil combustion in boilers less than 100MMBtu/hr published in EPA's *Compilation of Air Pollutant Emission Factors: Volume I: Stationary Point and Area Sources, AP-42, 1995*.
- According to AP-42, the SO₂ emission factors can be calculated according to the following formulas (where %S is the sulfur content by weight percent):

$$F_{SO_2} = (157 \times \%S) \text{ lb}/10^3 \text{ gal} = (157 \times 2.0\%) \text{ lb}/10^3 \text{ gal} = 314 \text{ lb}/10^3 \text{ gal}$$

- Allowable PM emissions were based on §5-231(3)(a)(ii) of the *Regulations*.

Table B.3: Allowable emissions from Babcock and Wilcox Boilers.

Pollutant	Emission Limit/Factor	Source of Limit/Factor	Allowable Emissions, tpy
NO _x	55 lbs/10 ³ gallons	AP-42, Table 1.3-1, 9/98	13.6
CO	5 lbs/10 ³ gallons	AP-42, Table 1.3-1, 9/98	1.24
SO _x	314 lbs/10 ³ gallons	AP-42, Table 1.3-1, 9/98	78
VOC	0.28 lbs/10 ³ gallons	AP-42, Table 1.3-3, 9/98	0.07
PM	0.25 lb/hr/MMBtu per Boiler (11 lb/hr per boiler) x 5%	§5-231 of the <i>Regulations</i>	9.6
HAPs	0.138 lb/10 ³ gallons	AP-42, Table 1.3-9,10,&11, 9/98	0.03

II. Allowable Emissions from Starch Silo

- The maximum capacity of the starch silo baghouse is 482 cfm.
- The starch silo generates PM emissions. Allowable emissions are calculated based on §5-231(1)(b) of the *Regulations* and are limited to 0.06 grains/cf.
- Allowable PM emissions from the starch silo are 1.32 tons/year.

$$482 \text{ cfm} \times 0.06 \text{ gr/dscf} \times 8760 \text{ hr/yr} \times 60 \text{ min/hr} \times (7.14 \times 10^{-8} \text{ ton/gr}) = 1.1 \text{ tpy}$$

III. Allowable Emissions from Wood Chip Handling System

- The wood handling system generates PM emissions. Allowable emissions are calculated based on §5-231(1)(b) of the *Regulations* and are limited to 0.06 grains/cf.
- The two cyclones have a maximum capacity of 5720 cfm each.
- Allowable PM emissions from the wood chip handling system are 26 tons/year.

$$11,440 \text{ cfm} \times 0.06 \text{ gr/dscf} \times 8760 \text{ hr/yr} \times 60 \text{ min/hr} \times (7.14 \times 10^{-8} \text{ ton/gr}) = 26 \text{ tpy}$$

IV. Allowable Emissions from Degreasers

- APMV operates 3 Safety-Kleen degreasers (2 Model 34 and 1 Model 23).
- Solvent used is SK Premium 150, which contains solvent naphtha. Solvent naphtha is a VOC but not a HAP or HAC.
- Estimated annual solvent loss based on letter from Safety-Kleen (April 7, 1994) is approximately 604 lbs/year (0.30 tpy).

V. Allowable Emissions from Paper Machine

- APMV uses various chemical dyes, additives, sizings and coatings in the paper making process. These compounds emit VOCs, HACs, and HAPs into the ambient air. VOC emissions from the paper machine are limited to 49 tons per year. If the facility exceeds this limit APMV will be subject to §5-253.20 of the *Regulations* (VOC RACT).
- The potential VOC emissions are estimated for comparison to the 49 tpy limit. The estimate was based on the 1999 Registration information submitted to the Agency. The 1999 usage amounts were scaled up to full time, year round operation (9 Months operation x 1.33 = 12 months operation, 12 months operation x 1.39 = full time 12 month operation). Factor to scale up from 12 month operation to full time 12 month was developed with APMV.
- Estimated potential emissions of VOCs from the paper machine are listed below in Table B.4.

Table B.4: Potential Emissions of VOCs from Paper Machine

Compound Name	Annual Usage, lbs	% VOC from MSDS	Allowable VOC Emissions, lbs
Blue GDF	251	10.9	27
Elvanol 71-30	323,663	5	16,183
Protocol WB 8000	23,321	20.3	4,734
Caratarex FL	26,943	2.1	566
Yorksize 1030	223,436	8	17,875
Latex DL 233NA	34,984	0.05	17.5
Yellow Rw Liq	713	3.2	23
Blue 2AL	5,971	6	358
Leucophor B302	272,630	0.4	1,091
Perform PC 8138	64,074	30	19,222
WSM-935	18,798	44	8,271
Spectrum RX 8700	354	10	35
Saf-t-Brite	2,882	5	144
Total (34 tpy)			68547

VI. Allowable Emissions of Federal Hazardous Air Pollutants from Paper Machine

- Sources of Hazardous Air Pollutants (HAPs) at the facility are the chemicals added to the paper making process.
- Emission Data based on 1999 actual emissions reported to the Agency through the Registration Program.
- Actual emission data was scaled up from 9 months to 12 (multiplied by 1.33) and then scaled up to potential emissions (multiplied by 1.39).
- Table B.5 shows potential HAP emissions from process chemicals and dyes used at the facility.

Table B.5: Allowable HAP Emissions from Process Chemicals.

HAP	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Styrene	6.7	0.003
Methanol	10,357	5.20
Totals	10363.7	5.20

VII. Actual Emissions of Hazardous Air Contaminants

- The mill uses several process chemicals and dyes that contain volatile HACs. The actual emissions of these HACs are estimated by assuming that 100% of each volatile HAC is emitted to the ambient air.
- HAC emission data based on 1999 Registration Data scaled up from 9 months to twelve (x 1.33).
- Boiler water conditioners were not included as they would not be released to the air.
- No compounds exceed their respective Action Level.

Table B.6: Emissions of hazardous air contaminants.

Process Chemical	HAC	Actual Use Rate (lb/yr)	% HAC	Emission Rate (lb/8hr)	Action Level (lb/8hr)
Sodium Hypochlorite	Sodium Hydroxide	9,310	2	0.17	0.84
Blue GDF	Diethanolamine	180	6	0.01	5.4
Saf-T-Brite II	D-Limonene	2,059	5	0.94	60
Scripset 720	Styrene	9,573	.05	0.004	42.5
Elvanol 71-30	Methanol	231,193	3.2	6.8	322