STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Woodland Pulp LLC **Washington County** **Baileyville, Maine** **A-215-77-13-A**	**Departmental** **Findings of Fact and Order** **New Source Review** **NSR #13**

FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Woodland Pulp LLC (Woodland Pulp)
LICENSE TYPE	06-096 C.M.R. ch. 115, Major Modification
NAICS CODES	32211
NATURE OF BUSINESS	Pulp Production
FACILITY LOCATION	144 Main Street, Baileyville, Maine

B. NSR License Description

Woodland Pulp LLC (Woodland Pulp) has applied for a New Source Review (NSR) Major Modification license to increase the hourly CO limits for the #3 Recovery Boiler, to increase the corresponding annual allowable CO emissions, to add a one-hour maximum CO mass emission limit, and to remove the CO concentration emission limit. There is no construction schedule associated with this project, as Woodland Pulp is requesting a change in licensed limits.

The facility was licensed in March 2017 in NSR license A-215-77-12-A to conduct temporary trials of alternative black liquor firing scenarios for the #3 Recovery Boiler. This pollution minimization and control optimization project explored operational scenarios to improve energy and production efficiencies and sought to refine the balance between nitrogen oxides (NO_x) and carbon monoxide (CO) emissions under various black liquor firing scenarios. The request for this NSR license was informed by information and knowledge gained from these trials.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate	Primary Fuels	Stack #
#3 Recovery Boiler	1,207 MMBtu/hour (original boiler plate by OEM)	6.0 MMlb dry BLS/day*	Black Liquor	02
		23,550 lb/hr	#6 Fuel Oil	
		490,000 cfh	Natural Gas	

* Though identified in the facility's Part 70 license as 5.2 MMlb dry black liquor solids (BLS) per day, this value has been modified as informed by the results of a trial recently completed. This is for identification of the unit's maximum BLS firing capacity and is not a license limit.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application to increase the CO mass emission limit (lb/hour), to increase the annual allowable CO emissions (tons/year), to add a one-hour maximum CO mass emission limit (lb/hour), and to remove the concentration limit (parts per million, ppm) for the #3 Recovery Boiler does not violate any applicable federal or state requirements. This change will reduce monitoring, reporting, testing, and/or recordkeeping requirements currently required to document compliance with the concentration limit. However, the changes requested will not compromise protection of and compliance with the ambient air quality standards for CO. Additionally, this application does seek to modify a Best Available Control Technology (BACT) analysis performed per New Source Review.

The modification of a major source is considered a major or minor modification based on whether or not expected emissions increases exceed the "Significant Emission Increase" levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emissions increases are determined by subtracting the baseline actual emissions of the 24 months preceding the modification (or representative 24 months) from the projected actual emissions. The results of this comparison are as follows:

Pollutant	Baseline Actual Emissions 11/14 – 10/16 (ton/year)	Projected Actual Emissions (ton/year)	Net Emissions Increase (ton/year)	Significant Emissions Increase Levels (ton/year)
CO	474.6	1,966.0	1,491.4	100

Note: The above values are for CO emissions from the #3 Recovery Boiler only. None of the other equipment at the facility or other pollutants from this unit are affected by this NSR license.

From federal regulation 40 C.F.R. § 52.21 (b)(2)(i), "*Major modification* means any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase (as defined in paragraph (b)(40) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(50) of this section); and a significant net emissions increase of that pollutant from the major stationary source."

Section 40 C.F.R. § 52.21 (b)(2)(iii)(*f*) establishes that a physical change or change in the method of operation shall not include "an increase in the hours of operation or in the production rate, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR subpart I or 40 CFR 51.166."

The process optimizations which Woodland Pulp has undertaken, including the black liquor firing rate, are not "prohibited under any federally enforceable permit condition" as described in the paragraph above. The processing of increased amounts of black liquor in the #3 Recovery Boiler for chemical recovery is an increase in the production rate of recovered pulping chemicals in the form of smelt, and this increase did not require any physical changes to the chemical recovery unit. Thus, this increase in production rate is excluded from the definition of major modification as specified in § 52.21 (b)(2)(i).

The modification requested by the facility is for a change in the previously licensed Best Available Control Technology (BACT) limit for CO from this process unit. Because the requested CO emission limit increase results in a baseline actual to projected actual emissions increase greater than the significant emissions increase level of 100 tons/year, as defined in Maine's *Definitions Regulation*, 06-096 C.M.R. ch. 100, the request change is identified as a major modification.

Therefore, this NSR license is determined to be a major modification under *Minor and Major Source Air Emission License Regulations,* 06-096 C.M.R. ch. 115. Because the changes being made in this NSR license are inconsistent with emission limitations in the Part 70 air emission license, an application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted and will be processed concurrently with this NSR license.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate

control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas. BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. #3 Recovery Boiler CO Emission Limits Increase Project Description

In 2013, Woodland Pulp's Baileyville mill licensed a modification of the facility's bleach plant to identify and operate alternate bleaching process scenarios. Woodland Pulp has proposed to reconfigure the bleaching system to utilize oxygen and/or oxidized white liquor, in addition to sodium hydroxide, chlorine dioxide, and hydrogen peroxide, with the intent to replace some of the chlorinated compounds historically used in the bleaching process with oxygen or oxidized white liquor and gain the ability to recycle more of the extracted lignin into the recovery process. As a result, Woodland Pulp requires a higher liquor firing rate in the recovery boiler to meet the demands of alternate bleaching scenarios such as adding to the Brown Stock stage washing cycle, which has increased the pulping liquor to be processed in the #3 Recovery Boiler. An increase in black liquor firing rate in the recovery boiler potentially results in a corresponding increase in emissions from the unit. Even with the increase in firing in the unit, the facility has proposed a balance of all other emissions at current emission levels with emissions increases of CO only.

The CO ppm limit and the lb/hour and corresponding tons/year limits requested to be changed in this NSR license were established in license A-215-71-B-A/R, issued April 12, 1989, as part of an updated BACT determination for the #3 Recovery Boiler, the installation and operation of which was originally licensed in 1986. Woodland Pulp has undergone several changes since the #3 Recovery Boiler first commenced operations. Some significant changes have taken place in the last five years, including the conversion from firing #6 fuel oil to firing natural gas in the #9 Power Boiler, the #3 Recovery Boiler, and the Lime Kiln. A project was completed in May of 2015 to enable the combustion of non-condensable gases (NCGs), stripper off-gases (SOGs), and high volume, low concentration (HVLC) NCGs in the #3 Recovery Boiler as their primary incineration point. This project allowed the facility to recapture some sulfur in the liquor cycle and to utilize the #9 Power Boiler as the back-up incineration point. The project also facilitated the removal from service of the propane-fired NCG Incinerator. The introduction of these additional gas streams to the #3 Recovery Boiler has also changed the combustion dynamics within the unit.

In the recent past, Woodland Pulp has conducted considerable research and conferred with industry recovery boiler experts seeking to improve the boiler's

performance while maintaining environmental compliance. For example, the facility has done the following:

- Conducted trials with different design liquor nozzles, spray angles, and pressures.
- Explored changes and evaluations of black liquor chemistry.
- Consulted with peer mills and recognized industry experts.
- Implemented mechanical and electrical control upgrades to the electrostatic precipitator (ESP) to enhance performance and reliability.
- Hosted original manufacturer and independent consultant visits to review black liquor firing practices.

Woodland Pulp's #3 Recovery Boiler is a process unit and a key component of the chemical recovery process for the facility's kraft pulping operation. After wood chips are chemically broken down - pulped - in the digester to free cellulose fibers, the pulp is washed and utilized in paper making. The liquid and liquid-borne components from the digester include spent pulping chemicals and lignin, hemicelluloses, and other extractives from the wood. The liquid, called black liquor, is first concentrated and then conveyed to the recovery boiler for chemical recovery. A recovery boiler fulfills the purposes of reducing oxidized sulfur compounds to sulfides, recovering inorganic chemicals in molten form, and burning out organic constituents in the black liquor. A beneficial byproduct of this chemical recovery process is heat which is used to generate steam for use in the mill. As black liquor is sprayed into the recovery furnace, the liquor droplets dry and partially pyrolyze before falling onto the char bed. Incomplete combustion in the porous char bed causes carbon and carbon monoxide to act as reducing agents, thus converting sulfate and thiosulfate to sulfide. The heat is sufficient to melt the sodium salts, which filter through the char bed to the floor of the furnace. The molten salts, called smelt, then flow by gravity through water-cooled spouts to the smelt dissolving tank.

The CO emission limit flexibilities requested by the facility are so that process optimizations can be realized without increases in the other regulated pollutants. Due to the interconnected complexities of the pulping process, black liquor chemistry sometimes fluctuates. Also, non-condensable gases (NCGs) carrying total reduced sulfur compounds (TRS) and other air pollutants are combusted in #3 Recovery Boiler. Combustion of NCGs in the unit also causes substantial variability in the operation and therefore required operational controls for the unit. Proper operation of the unit requires a careful balance of firing concentrations and rates of black liquor and other fuels as necessary to maintain target furnace conditions; primary, secondary, and tertiary air; temperature and chemistry and other characteristics of the char bed and reduction zone; smelt characteristics and handling; and critical safety and environmental effects.

Increased black liquor firing rates are projected to result in improved energy usage, production efficiencies, process and material recovery efficiencies, and

control equipment efficiencies. Woodland Pulp has investigated and identified ways to operate within currently licensed emissions levels and constraints for all pollutants even with increased black liquor firing rates. However, while progress has been made to keep emissions below current CO limits, concerns remain that #3 Recovery Boiler may exceed previously licensed CO emission limits at higher, sustained black liquor firing rates. Research of other North American recovery boilers of similar black liquor firing design has not identified any recovery boiler with emissions limits as stringent as this mill's limits, in total. In fact, information obtained from one recovery boiler manufacturer has indicated that a new recovery boiler of similar design would likely not be certified by the manufacturer as able to meet the #3 Recovery Boiler's existing CO and NO_x limits simultaneously.

Woodland Pulp has requested the following:

- increase the licensed hourly CO limit from #3 Recovery Boiler from 235 pounds per hour (lb/hr) averaged over a 24-hour block period to 429 lb/hr averaged over a 24-hour block period;
- add an hourly CO limit of 1,500 lb/hr for any one hour;
- remove the concentration limit of 215 ppm on a dry basis, corrected to 8% oxygen, on a 30-day rolling average; and
- increase the annual allowable CO emissions from 983 tons per year to 1,966 tons per year.

The requested changes to #3 Recovery Boiler CO emission limits allows the operators to reduce the quantity of combustion air used, thereby increasing residence time in the ESP and therefore increasing particulate removal efficiency in the ESP.

In any combustion process, CO and NO_x are continuously balanced to minimize overall emissions and environmental impacts. An increase in allowed CO emissions therefore will facilitate increased black liquor firing rates without increases to NO_x emissions.

Due to the chemical characteristics of the black liquor and proper smelt bed management, SO_2 emissions have never been a concern for this unit. Low emissions levels for both VOC and TRS are maintained due to the temperatures inherent to the chemical recovery process.

Woodland Pulp has not proposed to change its current alternative CO limit described in Condition (16) of A-215-70-I-R/A (issued November 18, 2011), which allows for a limit of 1,427.4 lb/hr (24-hour block period) from #3 Recovery Boiler and #9 Power Boiler combined when #9 Power Boiler is off-line. This alternative limit may be used for no more than seven (7) 24-hour blocks per year.

The CO concentration limit (ppm) was originally included in the facility's license as a performance-based standard to foster proper operation of the unit at all levels

of fuel firing and minimize environmental impact. Considering the overall operation of the unit and its output, the licensed performance standards for particulate matter emissions and opacity, SO_2, and NO_x are collectively more effective performance drivers than a CO ppm limit in minimizing environmental impacts in total. Flexibility in CO emissions provided through the removal of the ppm limit is necessary to maintain emission limits for all other pollutants at the currently licensed levels, even with greater quantities of black liquor fired in the unit and greater energy output realized.

The facility operates certified continuous emission monitoring systems (CEMS) on this unit for opacity, SO_2, NO_x, TRS, and O_2, with performance based emission limits. Ongoing compliance with license limits for these pollutants will continue to be documented using the continuous monitoring systems. The facility continuously monitors lb/hr emissions of CO using a CO CEMS. The performance based BACT limits for other pollutants in conjunction with the CO lb/hr BACT limit provides superior environmental protection at all loads.

C. Regulatory Requirements

1. New Source Performance Standards (NSPS): *Standards of Performance for Kraft Pulp Mills*, 40 C.F.R. Part 60, Subparts BB and BBa

   There are no Subpart BB or Subpart BBa requirements applicable to the changes addressed in this NSR license. Standards of performance for specific air pollution sources were promulgated by the U.S. EPA in 40 Code of Federal Regulations (C.F.R.) Part 60. Subpart BB defines emission limits, testing, monitoring, recordkeeping, and reporting requirements for PM and TRS emissions for Kraft pulp mill sources, including recovery furnaces, constructed or modified after September 24, 1976. Subpart BBa defines similar requirements for Kraft pulp mill sources constructed or modified after May 23, 2013. The #3 Recovery Boiler will not be modified as a result of the project such that it becomes subject to Subpart BBa.

2. National Emission Standards for Hazardous Air Pollutants (NESHAP): *NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills*, 40 C.F.R. Part 63, Subpart MM

   There are no Subpart MM requirements applicable to the changes addressed in this NSR license. Subpart MM applies to recovery furnaces, smelt dissolving tanks, and lime kilns and regulates particulate matter emissions as a surrogate for HAPs. Woodland Pulp's #3 Recovery Boiler is already subject to Subpart MM requirements and will not be modified as a result of the project such that any new Subpart MM requirements would apply.

3. NESHAP: *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT)*, 40 C.F.R. Part 63, Subpart DDDDD

   The #3 Recovery Boiler is not subject to this NESHAP Subpart, because units covered by 40 C.F.R. Part 63, Subpart MM are not subject to Boiler MACT standards. [40 C.F.R. Part 63, § 63.7491(f)]

4. Best Available Control Technology (BACT)

   Per 06-096 C.M.R. ch. 100, "modification or modified source" means any physical change in or change in the method of operation of a source that would result in an emissions increase of any regulated pollutant. The #3 Recovery Boiler is not being physically modified as part of this NSR license; however, because the CO emission limit from a previous BACT determination is being changed, an updated BACT analysis for CO emissions from the #3 Recovery Boiler is presented here.

   A BACT analysis consists of identification of applicable control technologies; elimination of technically infeasible options; ranking of remaining control technologies by effectiveness; evaluation of energy, environmental, and economic impacts of the ranked control strategies; and, finally, selection of BACT.

   A search was conducted to identify various control technologies which have been applied in the recent past to other, similar projects. Reviewed were recent BACT determinations for recovery boilers in the State of Maine, the U.S. EPA's RACT/BACT/LAER Clearinghouse (RBLC), and recent Prevention of Significant Deterioration (PSD) permits for similar projects in the U.S. Units with production rates similar to that of #3 Recovery Boiler utilizing similar fuels and licensed after 2000 were considered.

   In recovery boilers, CO emissions are formed from incomplete combustion of the fuel, primarily black liquor solids. The RBLC identifies good combustion practices and post-combustion controls as potential CO control technologies. Catalytic oxidation and thermal oxidation are post-combustion CO control strategies that have been used with gas turbines and internal combustion engines firing liquid or gaseous fuels that have relatively clean exhaust gases. This technology has not, however, been demonstrated on a Kraft recovery boiler.

   It is expected that fouling of the catalyst would occur due to the heavy concentration of PM in the exhaust stream. Because PM emissions from #3 Recovery Boiler are currently controlled by an electrostatic precipitator (ESP), it is possible that a catalytic oxidizer could be installed downstream of the ESP. While the combustion temperatures needed for catalytic oxidation are lower than the temperatures needed for thermal oxidation, the typical

range of catalytic oxidation combustion temperatures is between 700 and 900 °F. Placing the catalyst bed after the ESP would require heating the existing flue gas, normally near 350 °F at the exit of the ESP, back up to the effective catalytic oxidation temperatures. This is both economically impractical and environmentally detrimental, as it would generate more emissions from additional fuel combustion. Likewise, the use of a thermal oxidizer for CO control would generate more emissions from additional fuel combustion.

Because there is no demonstrated add-on control technology to control CO emissions from kraft recovery boilers, Woodland Pulp proposes as BACT the use of good combustion practices which minimize all pollutants and to meet a CO limit of 429 lb/hour on a 24-hour block average basis, with no one hour to exceed 1,500 lb/hour.

The facility has implemented some changes and plans to continue exploration and refinement of #3 Recovery Boiler operation within the constraints of the licensed emission limits and operational restrictions. These refinements are expected to result in improved energy usage (lower energy demand from the #9 Power Boiler), production efficiencies, increased process and material recovery efficiencies, greater control equipment efficiency, and lower particulate matter (Na_2SO_4) loading to the ESP.

D. Department Determination

The Department finds that good combustion practices, as currently required, constitutes BACT for CO emissions from the #3 Recovery Boiler. This unit shall meet a CO limit of 429 lb/hour on a 24-hour block average basis, with no one hour to exceed 1,500 lb/hour.

Woodland Pulp shall continue to use the CO continuous emission monitoring system (CEMS), operated in accordance with *Source Surveillance – Emissions* Monitoring, 06-096 C.M.R. ch. 117, to demonstrate compliance with the one-hour and 24-hour block average CO emission limits.

E. Incorporation Into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 New Source Review license shall apply to the facility upon issuance. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a facility modification which has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. Because the changes made in this NSR license are inconsistent with emission limitations in the facility's Part 70 air emission license, an application to

incorporate requirements of this NSR license into the Part 70 air emission license has been submitted and will be processed concurrently with this NSR license.

F. Annual Emissions

Woodland Pulp shall be restricted to the following annual emissions, based on a 12-month rolling total.

Total Licensed Annual Emissions for the Facility [a]
Tons/year
(used to calculate the annual license fee [b])

	PM	PM_{10}	SO_2	NO_x	CO	VOC	TRS
Tissue Machines	--	--	0.6	39.6	43.6	--	--
Tissue Machines and #9 Power Boiler Combined	213.6	213.6	--	--	--	59.5	--
No. 9 Power Boiler	--	--	676	780	5,008	--	--
#3 Recovery Boiler	189	189	1,567	601	1,966	176	--
Smelt Dissolving Tank	50	50	--	--	--	--	13.6
Lime Kiln	87	87	35	175	1,750	--	--
Package Boiler	56	56	9.9	5.6	1.4	0.1	--
NCG Incinerator	8.4	8.4	12.7	39.6	2.8	0.2	--
TOTALS	**604.0**	**604.0**	**2,301.2**	**1,178.0** [c]	**8,771.8**	**235.8**	**13.6**

[a] Emissions limits in the table do not include insignificant activities and process units (e.g. the woodyard) with no licensed emission limits, and do not include emergency engines whose possible emissions provide little or no noticeable contribution to the totals represented in this table.

[b] PM_{10}, CO, and TRS are not used in the calculation of the annual fee.

[c] The total NO_x limit for the mill is less than total allowable emissions from individual units. Woodland Pulp may emit up to each required limit for any one individual unit, provided that the total of all units does not exceed the mill wide total of 1,178.0 ton/year on a 12-month rolling total basis. See License A-215-70-I-R/A, Condition (17), issued November 18, 2011.

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from Woodland Pulp, in conjunction with other sources, will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for CO.

Because the modification is for CO only, and that SO_2, PM_{10}, and NO_2 emissions are not increasing, MEDEP-BAQ has determined that the following analyses need not be evaluated: Class II increment, Class I increment, Class I Air Quality Related Values (AQRV) and Secondary Formation of $PM_{2.5}$ and Secondary Formation of Ozone.

B. Model Inputs

The AERMOD-PRIME refined dispersion model was used to address CO NAAQS. The modeling analysis accounted for the potential of building wake and cavity effects on emissions from all modeled stacks that are below their calculated formula GEP stack heights.

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (USEPA).

A valid five-year hourly on-site meteorological database was used in the AERMOD-PRIME refined modeling analysis. The following parameters and their associated heights were collected at Woodland Pulp's meteorological monitoring site during the five-year period July 1, 1991, to June 30, 1996:

TABLE III-1 : Meteorological Parameters and Collection Heights

Parameter	Sensor Heights
Wind Speed	10 & 76 meters
Wind Direction	10 & 76 meters
Standard Deviation of Wind Direction (Sigma Θ)	10 & 76 meters
Temperature	10 & 76 meters

When possible, ISHD surface data collected at the Bangor International Airport NWS site were substituted for missing on-site surface data. All other missing data were interpolated or coded as missing, per USEPA guidance. In addition, hourly Bangor International Airport NWS data from the same time period were used to supplement the primary surface dataset for any required variables that were not explicitly collected on-site.

Surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Caribou National Weather Service (NWS). Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per USEPA guidance.

All necessary representative micrometeorological surface variables for inclusion into AERMET (surface roughness, Bowen ratio, and albedo) were calculated using the AERSURFACE utility program and from procedures recommended by USEPA.

Point-source parameters used in the modeling for Woodland Pulp are listed in Table III-2.

TABLE III-2: Woodland Pulp Point Source Stack Parameters

Woodland Pulp Stacks	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (m)	UTM Northing NAD83 (m)
CURRENT/PROPOSED						
#9 Power Boiler	37.06	68.58	128.45	3.66	625,698	5,001,618
#3 Recovery Boiler	35.88	83.82	130.05	2.90	625,797	5,001,644
Smelt Tank	35.72	70.71	130.21	1.78	625,745	5,001,652
Lime Kiln	38.51	79.55	127.00	1.27	625,649	5,001,526

Emission parameters for Woodland Pulp NAAQS modeling are listed in Table III-3 and are based on the maximum license allowed operating configuration.

TABLE III-3 : Stack Emission Parameters

Woodland Pulp Stacks	Averaging Periods	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED				
#9 Power Boiler	All	150.24	341.50	9.57
#3 Recovery Boiler	All	29.61	466.50	28.68
Smelt Tank	All	0.00	341.50	6.43
Lime Kiln	All	189.00	344.30	7.92

C. Single Source Modeling Impacts

Refined modeling previously performed for Woodland Pulp demonstrated that the maximum operating scenario predicted the maximum 1-hour and 8-hour CO impact. While only CO emissions from #3 Recovery Boiler are increasing, the remaining equipment was modeled at their maximum operating scenario as part of this analysis.

The AERMOD-PRIME model results for Woodland Pulp alone are shown in Table III-4. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type. For comparison to the Class II significance levels, the impacts were conservatively based on the maximum High-1st-High predicted values.

TABLE III-4 : Maximum AERMOD-PRIME Impacts from Woodland Pulp Alone

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level ($\mu g/m^3$)	Class II Significance Distance (m)
CO	1-hour	**2,328.24**	626,800	4999,600	144.64	**2,000**	2,300
	8-hour	**787.67**	626,200	5001,000	43.21	**500**	3,800

D. Combined Source Modeling Impacts

As indicated in boldface type in Table III-4, other sources not explicitly included in the modeling analysis must be accounted for by using representative background concentrations for the area.

Background concentrations, listed in Table III-5, are derived from representative rural background data for use in the Eastern Maine region.

TABLE III-5 : Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	Date	Monitoring Site
CO	1-hour	365	2010-2012	Acadia National Park
	8-hour	322		

MEDEP examined other nearby sources to determine if any CO impacts would be significant in or near the Woodland Pulp significant impact area. Due to the location of Woodland Pulp, extent of the predicted significant impact area, and other nearby source's emissions, MEDEP has determined that no other sources would be included in combined-source refined modeling.

The maximum AERMOD-PRIME High-2nd-High modeled impacts were added with conservative rural background concentrations to demonstrate compliance with NAAQS, as shown in Table III-6.

Because all pollutant/averaging period impacts using this method meet NAAQS, no further NAAQS modeling analyses need to be performed.

TABLE III-6 : Maximum Combined Source Impacts ($\mu g/m^3$)

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
CO	1-hour	1954.54	623,100	4999,600	144.64	365	2319.54	40,000
	8-hour	519.86	625,600	5001,200	39.21	322	841.86	10,000

E. Impacts on Plants, Soils, and Animals

In accordance with guidance prescribed in USEPA's 1990 Prevention of Significant Deterioration manual, Woodland Pulp evaluated the impacts of its emissions using procedures described in *A Screening Procedure for the Impacts of Air Pollution on Plants, Soils, and Animals.*

Maximum predicted High-1st-High impacts from the AERMOD-PRIME modeling were compared to USEPA's 'Screening Concentrations' (see Table III-7), which represent the minimum concentration at which adverse growth effects or tissue injury in sensitive vegetation can be expected.

Because AERMOD-PRIME is not capable of predicting concentration on a weekly basis, the maximum one-hour CO concentration was conservatively used for comparison purposes.

TABLE III-7 : Maximum Impacts on Plants, Soils & Animals ($\mu g/m^3$)

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Screening Concentration ($\mu g/m^3$)
CO	Week	2328.24	1,800,000

Because all predicted impacts for all pollutants and averaging periods were below Screening Concentrations, no further assessment of the CO impacts to plants, soils, and animals is required, per USEPA guidance.

F. Summary

In summary, it has been demonstrated that Woodland Pulp in its proposed configuration will not cause or contribute to a violation of any CO NAAQS.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-215-77-13-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) #3 Recovery Boiler CO Emissions

CO emissions from the #3 Recovery Boiler shall not exceed 429 lb/hour on a 24-hour block average basis, with no one hour to exceed 1,500 lb/hour.

Woodland Pulp shall continue to use the CO continuous emission monitoring system (CEMS), operated in accordance with 06-096 C.M.R. ch. 117, to demonstrate compliance with the one-hour and 24-hour block average CO emission limits.

[06-096 C.M.R. 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 29 DAY OF September , 2017.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 2/24/2017
Date of application acceptance: 2/28/2017

Date filed with the Board of Environmental Protection:

This Order prepared by Jane E. Gilbert, Bureau of Air Quality.

Filed
OCT 3 2017
State of Maine
Board of Environmental Protection