



REGION 4

ATLANTA, GA 30303

October 3, 2025

McKinley Ravenell
Plant Manager
Fernandina Beach Plant
RYAM / Rayonier Performance Fibers, LLC
10 Gum Street
Fernandina Beach, Florida 30234

Dear Mr. Ravenell:

This letter is in response to your August 5, 2025, letters submitted to the U.S. Environmental Protection Agency concerning a request for an alternative to the operating limits and related monitoring requirements of 40 CFR Part 63, Subpart DDDDD, National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (NESHAP DDDDD, also known as “the Boiler MACT”) at the RYAM / Rayonier Performance Fibers, LLC Plant in Fernandina Beach, FL (also referred to as “RPF”). The requests were for approval of alternative operating limits and related monitoring procedures under 40 CFR 63.7500(a)(2) to demonstrate continuous compliance with NESHAP DDDDD in lieu of the listed operating limits in Table 4 of the rule. Specifically, the letters requested monitoring of certain operating parameters of its dry electrostatic precipitator (ESP) and wet scrubber, respectively.

According to an email from All4, Inc. on September 30, 2025, your request for alternative operating limits and requirements for the ESP was withdrawn, and we understand that you intend to comply with the ESP operating limits prescribed in NESHAP DDDDD, Table 4, Item 4b, including the establishment of the ESP total secondary power operating parameter during each performance test. The EPA has considered your request letter for the wet scrubber in accordance with 40 CFR 63.8(f) and approves this alternative operating limit and monitoring scenario, pursuant to the specific requirements detailed in this letter.

According to information provided by RPF to the EPA in the wet scrubber request letter and subsequent emails and conversations with your consultant, All4, Inc., we understand the following: The

RPF plant operates a bubbling fluidized bed boiler (known as PB6) with a maximum heat input rate of 660 Million British Thermal Units (MMBtu) per hour that burns at least 10% biomass on an annual basis, and produces steam used in the pulping process and for electricity generation. PB6 emissions are routed to a dry ESP and then to a wet scrubber. The ESP is the primary filterable particulate matter (PM) control device, and the wet scrubber is primarily a sulfur dioxide control device. Currently, the applicable NESHAP DDDDD PM *emission limit* for PB6 is 0.11 pounds per MMBtu (lb/MMBtu) (Table 15, Item 9b), which is applicable until October 6, 2025. The currently applicable Boiler MACT *operating limit* for PB6 is based on opacity (Table 4, Item 4a) and demonstrated using a continuous opacity monitoring system (COMS) installed between the ESP and wet scrubber. Starting on October 6, 2025, PB6 will be subject to a revised NESHAP DDDDD PM emission limit of 0.0074 lb/MMBtu (Table 2, Item 9b). RPF intends to comply with this lower PM *emission limit* using both the ESP and wet scrubber in series, complying with applicable ESP *operating limits* (Table 4, Item 4b) and proposing to operate the scrubber with alternative *operating limits*. At 40 CFR 63.7500(a)(2), NESHAP DDDDD provides that sources can apply for such alternative *operating limits* for control scenarios not directly addressed in Table 4.

Your request letters noted that PM control is mainly achieved with the ESP, which has recently undergone upgrades, and that the wet scrubber will add additional control to ensure compliance with the lower emission limit that will become applicable on October 6, 2025. Your letters included data from 37 different PM testing results for trial runs using both control devices for PM control, coupled with the analysis of those results and parameters to inform the optimization of the proposed alternative monitoring requirements. Based on the analysis of the testing results at both the inlet and outlet of the ESP, you noted that approximately 97% of uncontrolled PM is reduced in the upgraded ESP, and that the remaining PM control necessary to meet the new emission limit is achieved with the wet scrubber.

Alternative Wet Scrubber Operating Limits and Requirements

With the scrubber operating as a PM control device, the applicable NESHAP DDDDD (Table 4, Item 1) operating limits include minimum pressure drop and minimum scrubber flow rate, assessed over a 30-day rolling average. In your request, RPF proposed to instead monitor scrubber flow rate only, with minimum and maximum scrubber flow rates as operating limits (i.e., a scrubber operating range). The request notes that:

Due to the spray chamber design and a relatively low design pressure drop of approximately two inches of water column, RPF does not monitor pressure drop across the scrubber. Pressure drop is an indicative monitoring parameter for other scrubber designs, like a venturi scrubber, where PM is reduced as the gas stream accelerates the liquid droplets through a constricted area, which leads to increased friction and turbulence that creates a definitive pressure gradient. The spray chamber design of the wet scrubber on PB6 does not operate at these turbulent conditions across the scrubber; therefore, pressure drop is not an indicative measure of PM removal. Pressure drops across the spray chamber can only be controlled through

scrubber liquid flow rate, which further supports the need for alternative operating limits based solely on scrubber liquid flow rate.

RPF's proposal is to maintain a site-specific minimum and maximum scrubber liquid flowrate of 600 gallons per minute (gpm) to 1,170 gpm and to assess compliance with the operating limit using a 30-day rolling average, the same averaging period for scrubber operating limits required in NESHA DDDDD, Table 4. The wet scrubber request letter notes that:

*As the majority of PM is controlled in the ESP, the total secondary electric power input in watts (W) is the operating parameter most indicative of PM emissions at the stack. However, recent test results have shown that, in addition to the ESP, the wet scrubber operating conditions are also an indicator of compliance with the revised Boiler MACT PM emissions limit, with the wet scrubber serving as a polishing control device. However, the data indicates that a minimum scrubber liquid flow rate operating limit that would be required by Table 4 to Subpart DDDDD is not sufficient; there should also be a maximum scrubber liquid flow rate to prevent excess scrubber liquid flow resulting in scrubber carryover and increased PM emissions at the stack. **RPF has identified an optimal indicator range of 600-1,170 gallons per minute (gpm) as the proposed minimum and maximum scrubber liquid flow rate operating limit.***

These scrubber alternative operating limits fulfill two objectives:

- 1. The minimum scrubber liquid flow rate of 600 gpm ensures that the scrubber has fully saturated the exhaust gases from the ESP, which is an indicator of sufficient liquid-to-gas contact.*
- 2. The maximum scrubber liquid flow rate of 1,170 gpm ensures scrubber carryover is minimized and the scrubber does not negate the PM reduction of the ESP.*

The wet scrubber request letter further proposed the following details for the alternative operating limits and requirements:

- 1. Indicators of Performance - the parameter or parameters you measure or observe for demonstrating proper operation of the pollution control measures or compliance with the applicable emissions limitation or standard.*
 - a. RPF will continuously measure scrubber liquid flow rate, confirming it is within the range established by this [alternative monitoring request].*
- 2. Measurement Techniques - the means by which you gather and record information of or about the indicators of performance.*

- a. RPF will use the installed Yokogawa EJX110A Differential Pressure Transmitter with an orifice plate to measure scrubber liquid flow rate. Flow rate is determined by calculation from an empirical relationship to the signal provided from a differential pressure sensor in the constricted pipe.
3. Monitoring Frequency - the number of times you obtain and record monitoring data over a specified time interval.

- a. During emissions testing, RPF will measure the scrubber liquid flow rate at least once every 15 minutes to get an average for each individual test run. An average of the three test run averages will be taken and confirmed within the range established by this [alternative monitoring request].

For ongoing compliance, the continuous measurement of the scrubber liquid flow rate must be within the range established in this [alternative monitoring request] on a 30-day rolling average. RPF will measure the scrubber liquid flow rate at least once every 15 minutes to get a one-hour average. Each one-hour average over the course of the operating day will be averaged to get a daily average.

4. Averaging Time - the period over which you average and use data to verify proper operation of the pollution control approach or compliance with the emissions limitation or standard.
 - a. Consistent with §63.7540 and Table 8 to Subpart DDDDD of Part 63, ongoing compliance with the scrubber liquid flow rate alternative operating limit will be demonstrated on a 30-day rolling average basis.

The EPA has reviewed RPF's proposed alternative for the wet scrubber and participated in follow up discussions with All4, Inc., RPF's consultant and agent in this matter, covering further review of the testing data provided, dialogue on issues that are specific to this type of scrubber, and the concept of a scrubber operational range needed for RPF's control scenario. These discussions included the issue of testing at the lower end of the scrubber flow rate range to ensure compliance at minimum operating parameters and including an additional, shorter averaging period for the scrubber flow rate parameter on the upper end of the range to minimize scrubber carryover. Based on these further discussions, the following conditions are also required for this alternative approval:

- During each NESHAP DDDDD PM compliance test, you must operate the wet scrubber at the minimum flow rate of the range established in this approval, defined as between 600 gpm and 660 gpm. Alternatively, if you choose to operate the scrubber at a higher flow rate during any such passing compliance test, this higher flow rate must subsequently be used as the minimum

flow rate for the ongoing alternative operating limit range until it is reestablished through a subsequent passing compliance test.

- In addition to maintaining the 30-day rolling average scrubber flow rate between 600 and 1,170 gpm, you must also maintain the 3-day rolling average scrubber flow rate below the 1,170 upper end of the range.

RPF must ensure that the procedures and requirements laid out in this alternative monitoring approval are incorporated in a timely manner into the applicable operating permit(s) and into an updated site-specific monitoring plan for the RPF Plant as required by 40 CFR 63.7505(d), if applicable.

This response was developed in coordination with the EPA's Office of Air Quality Planning and Standards and Office of Enforcement and Compliance Assurance. This approval is based on the information provided to the EPA and the EPA may alter this approval in the future if the agency determines that it is warranted. If you have any questions regarding this approval, please contact Jake Carpenter at (404) 562-9039 or at carpenter.jacob@epa.gov.

Sincerely,

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BENJAMIN

 Digitally signed by LYNORAE
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For Denisse D. Diaz
Director
Air and Radiation Division

cc: Sheryl Watkins, All4 Inc.
Caleb Fetner, All4 Inc.
Hastings Read, FDEP
David Read, FDEP
Christopher Werner, EPA OAQPS
Robert Bivens, EPA OAQPS
Sara Ayres, EPA OECA
Morgan Everitt, EPA OECA
Brad Akers, EPA R4