TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Rayonier Performance Fibers, LLC (RPF)
P.O. Box 2002
Fernandina Beach, Florida, 32035

Fernandina Beach Dissolving Sulfite Pulp Plant
Facility ID No. 0890004

PROJECT

Project No. 0890004-070-AC
Application for Minor Air Construction Permit
New Bioethanol Production Process

COUNTY

Nassau County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Permit Review Section
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

March 13, 2024

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

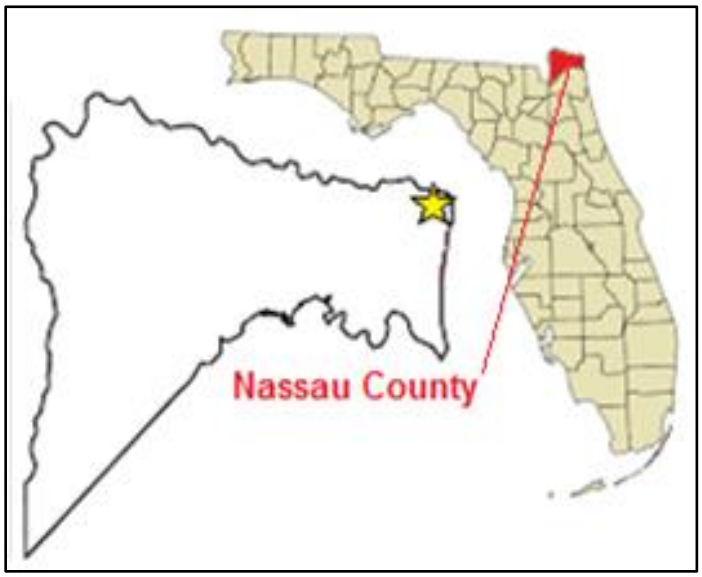
In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

1.2. Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

1.3. Facility Description and Location

Rayonier Performance Fibers, LLC, Fernandina Beach Dissolving Sulfite Pulp Plant (RPF Plant) is an existing acid sulfite-based pulp mill, which is categorized under Standard Industrial Classification Code No. 2611. The existing RPF Plant is in Nassau County at 10 Gum Street in Fernandina Beach, Florida. The UTM coordinates of the existing facility are Zone 17,454.7 kilometers (km) East, and 3392.2 km North. The location of Nassau County is shown in **Figure 1** while the location of the RPF Plant is shown in **Figure 2**. A satellite view of the RPF Plant is given in **Figure 3**. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to Ambient Air Quality Standards (AAQS).



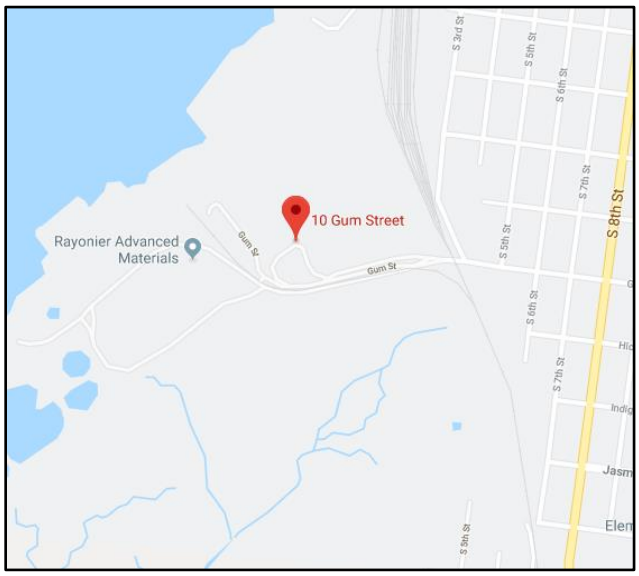


Figure 1. Nassau County and Fernandina Beach.

Figure 2. Location of the RPF Plant.

Figure 3. Satellite View of the RPF Plant.

The RPF Plant runs an acid sulfite-based pulp mill using ammonia as the base chemical for the manufacture of dissolving pulp. This plant produces approximately 10 different grades of pulp. The pulp produced at this plant is used in products such as plastics, photographic film, LCD screens, paints, cigarette filters, pharmaceuticals, food production, cosmetics, and textiles. The Plant is permitted to produce a maximum of 175,000 air-dried metric tons (ADMT) of pulp per year, on a 12-month rolling total basis. **Table 1** lists existing regulated emissions units (EUs) are located at this facility.

TABLE 1. - LIST OF EXISTING REGULATED EUs.

EU No.	Emissions Unit Description
005	Vent Gas Scrubber and Direct Contact Condenser
006	Sulfite Recovery Boiler
010	Biological Effluent Treatment System
011	Dissolving-Grade Bleaching System
021	Evaporator Vents Methanol Condenser
022	No. 6 Power Boiler
026	Emergency Diesel Engine (130 HP)
027	Emergency Diesel Engine (480 HP)
029	Emergency Diesel Fire Pump (237 HP)

The RPF Plant also includes miscellaneous unregulated/insignificant emissions units and/or activities.

1.4. Facility Regulatory Categories

- The RPF Plant is a major source of hazardous air pollutants (HAP).
- The RPF Plant does not operate units subject to the acid rain provisions of the Clean Air Act.
- The RPF Plant is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The RPF Plant is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The RPF Plant operates units subject to the New Source Performance Standards (NSPS) of Title 40 Part 60 of the Code of Federal Regulations (40 CFR 60).

- The facility operates units subject to the National Emissions Standards of Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

1.5. Project Description

On November 14, 2023, the Department received an air construction permit application from Rayonier Performance Fibers, LLC (RYAM) requesting an authority to add a new second-generation bioethanol production process to the existing RPF Plant, capable of producing approximately 7.5 million gallons of bioethanol for sale per year. The proposed process will use spent sulfite liquor (SSL, also called red liquor) as the basis for ethanol fermentation and will consist of continuous fermenters, distillation and dehydration, and yeast recycling and conditioning systems. Volatile organic compounds (VOC) emissions from the new bioethanol production process are expected to be primarily ethanol and will be controlled by the fermentation vent scrubber using cold process water as the scrubbing solution. The project also entails the construction of the bioethanol in-process and storage tank units all equipped with internal floating roofs. More details on the project and process description can be found in Section **3**.

The following existing emissions unit (EU) will be affected by this project.

TABLE 2. - EXISITING EU THAT WILL BE AFFECTED BY THE PROJECT.

EU No.	Description
006	Sulfite Recovery Boiler

The following new EUs will be added by this project:

TABLE 3. - NEW EUs THAT WILL BE ADDED BY THE PROJECT.

EU No.	Description
030	Bioethanol Production Process
031	Bioethanol Product Storage Tank
032	Miscellaneous Process Tanks
033	Bioethanol Loadout

1.6. Processing Schedule

November 14, 2023, Department received the application[1] for an air pollution construction permit; application complete.

March 13, 2024, Department issued draft permit package.

2. PSD APPLICABILITY

2.1. General PSD Applicability

For areas currently in attainment with the AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or

[1] Link to application, click "Public Oculus Login" button

- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, Portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); $PM_{2.5}$; volatile organic compounds (VOC); lead (Pb); fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg).

PSD applicability for a "modification" to an existing major stationary source is based on thresholds known as the significant emission rates (SER) as defined in Rule 62-210.200(282), F.A.C. Any *"net emissions increase"* as defined in Rule 62-210.200(210), F.A.C. of a PSD pollutant from the project that equals or exceeds the respective SER is considered *"significant."* SER also means any emissions rate or any net emissions increase of a PSD pollutant associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 gram per cubic meter, 24-hour average. The SERs for the various PSD pollutants are listed in **Table 4** below.

TABLE 4 - LIST OF SIGNIFICANT EMISSION RATES.

Pollutant[1]	SER (TPY)	Pollutant	SER (TPY)
CO	100	Ozone (VOC) [2]	40
$PM/PM_{10}/PM_{2.5}$	25/15/10	$PM_{2.5}$ (SO_2)	40
$PM_{2.5}$ (NO_X)	40	SAM	7
Ozone (NO_X) [2]	40	Pb	0.6
SO_2	40	Total Reduced Sulfur	10
Hg	0.1	H_2S	10
NO_X	40	GHG (CO_2e)[3]	> 75,000

1. Excluding fluoride and pollutants specific to MWCs, MSW landfills.
2. Ozone (O_3) is regulated by its precursors (VOC and NO_X). PSD for $PM_{2.5}$ can be triggered by its precursors (NO_X and SO_2).
3. "CO_2e" means carbon dioxide equivalents and refers to greenhouse gas (GHG) emissions. The calculation of GHG emissions is defined in 40 CFR 98, Subpart A, Table A-1. Also note, that a project can trigger PSD for GHGs only if the project first triggers PSD for one of the other PSD pollutants; that is, a project cannot trigger PSD for only GHGs.

If the potential emission equals or exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be

major with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

2.2. PSD Applicability for Project

The project is located in Nassau County, which is in an area that is currently in attainment with the AAQS or otherwise designated as unclassifiable for all pollutants. The existing RPF Plant is a major stationary source because its actual emissions and/or potential to emit is 100 TPY or more for several individual PSD pollutants.

For the PSD analysis, all increases from each new and "affected" emissions unit must be accounted for. The "affected" sources are the existing units and/or activities that are impacted by the proposed construction and/or changes and will experience a change in emissions as a result of a modification to an emissions unit located upstream or downstream (e.g., as a result of debottlenecking). The only "affected" source of the project at the RPF Plant is the Sulfite Recovery Boiler (EU 006), due to the new bioethanol production effect on the SSL availability (see also Section **3.2.4**.).

A lignosulfonate product manufacturing plant (LTF Plant), owned and operated by LignoTech Florida, LLC (Facility ID No. 0890444) is co-located with the RPF Plant. For PSD purposes, the RPF and LTF Plants are considered a single facility; however, they operate under separate Title V air operation permits. The LTF Plant processes a portion of RPF Plant's SSL to manufacture wet and dry lignosulfonate products. Due to the new fermentation process, there will be changes in the chemical and physical properties of the SSL sent to the LTF Plant; however, these changes will not affect emissions as the SSL sent to the LTF Plant is not combusted and, therefore, do not generate emissions.

In determining whether any possible increases in emissions exceed the SER values in **Table 4**, *"baseline actual emissions"* (BAE) are compared to *"projected actual emissions"* (PAE) for existing "affected" emissions units and *"potential-to-emit"* (PTE) for new emissions units. The project-related emissions increases are calculated by subtracting the BAE from PAE for each regulated pollutant.

For new emissions units, BAE shall equal zero. For an existing emissions unit other than an electric utility steam generating unit, BAE is defined in Rule 62-210.200(28)(b), F.A.C., as "the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding the date a complete permit application is received by the Department." To determine BAE for the existing Sulfite Recovery Boiler (EU 006), the applicant used data from the RPF Plant-specific continuous emissions monitoring systems (CEMS) and stack tests as well as tests performed by the National Council for Air and Stream Improvement (NCASI) on similar units. The BAE inventory for this project is consistent with the Plant's historic Annual Operating Reports (AORs). The selected baseline period for all pollutants is January 2014 through December 2015. However, the Department excluded the emissions related to No.6 fuel oil firing from BAE as the affected boiler is no longer permitted to fire No.6 fuel oil and has not fired No. 6 fuel oil since 2018.

Future emissions from the new emissions units were estimated as PTE rates. Future emissions from the existing "affected" Sulfite Recovery Boiler were estimated as PAE rates. Pursuant to Rule 62-210.200(208), F.A.C., the expected maximum annual rate was chosen for the PAE considering how the unit is expected to operate during the 5-year period following resumption of regular operation after the project.

After completion of the proposed project, the RPF Plant will be capable of operating in multiple scenarios with respect to the SSL cycle as follows:

(1) Both Bioethanol Production Process and LTF Plant operating at full capacity; and balance of SSL burned in the Sulfite Recovery Boiler *(expected operating scenario and worst-case VOC emissions scenario for the new Bioethanol Production Process)*. See **Table 5**.

(2) Either Bioethanol Production Process or LTF Plant operations down, and balance of SSL burned in the Sulfite Recovery Boiler;

(3) LTF Plant and/or Bioethanol Production Process operating at reduced rates, and balance of SSL burned in the Sulfite Recovery Boiler; and,

(4) Both Bioethanol Production Process and LTF Plant operations are down, and all SSL burned in the Sulfite Recovery Boiler *(worst-case emissions scenario for the Sulfite Recovery Boiler)*. See **Table 6**.

The applicant intends to operate the new Bioethanol Production Process at full capacity where the SSL stream solids available to be burned in the Sulfite Recovery Boiler will be reduced by approximately 20%. SSL feed to the Sulfite Recovery Boiler will be further reduced by the amount of SSL that is sold to LTF Plant. This scenario will result in emissions reduction from the affected Sulfite Recovery Boiler, as shown below:

TABLE 5 - SUMMARY OF THE PSD APPLICABILITY ANALYSIS FOR EXPECTED OPERATING SCENARIO.

Pollutant	Annual Emissions, Tons/Year						Subject to PSD?
	Emissions Unit	Baseline Actual [a]	Projected Actual [b] or Potential to Emit [c]	Change Due to Project [d]	Increase Due to Project [e]	SER/ PSD Threshold	
CO	Sulfite Recovery Boiler *(affected)*	560.58	310.08	(250.5)	0	100	No
NO_X		1,960	1,176	(784)	0	40	No
PM		65.36	25.73	(39.63)	0	25	No
$PM_{10}/PM_{2.5}$		65.36	29.72	(35.64)	0	15	No
SO_2		267.08	119.63	(147.45)	0	40	No
VOC	Sulfite Recovery Boiler *(affected)*	27.74	16.48	(11.26)	30.4	40	No
	Bioethanol Production Process *(new)*	0	28.9	28.9			
	Bioethanol Product Storage Tank *(new)*	0	0.34	0.34			
	Misc. Exempt Process Tanks *(new)*	0	0.94	0.94			
	Bioethanol Loadout *(new)*	0	0.15	0.15			
SAM	Sulfite Recovery Boiler *(affected)*	11.75	5.26	(6.49)	0	7	No
Pb		1.21E-02	5.87E-03	(6.51E-03)	0	0.6	No

a. For new emissions units, baseline actual emissions (BAE) equal zero. BAE for the existing Sulfite Recovery Boiler were calculated based on the following highest consecutive 2-year average for all pollutants: Jan 2014- Dec 2015. Emissions related to No.6 fuel oil firing were excluded from BAE as not representative for current operations (the boiler has not been firing fuel oil since 2018). The BAE inventory for this project is consistent with the RPF Plant's historic Annual Operating Reports (AORs).

b. Projected Actual Emissions (PAE) for the affected Sulfite Recovery Boiler were based on the following: the RPF Plant SSL generated rate was projected by scaling historic SSL-to-pulp ratios to the maximum 12-month rolling pulp production rate of 165,489 ADMTBP/year, resulting in equivalent throughput of 269,801 tons SSL/year. Note that beginning in 2018, RPF began sending a portion of the SSL produced at the Plant to LTF Plant for the production of specialty chemicals. RPF scaled up SSL firing rates on Sulfite Recovery Boiler using 2017 production ratio rather than 2020 production ratio to account for the total amount of SSL generated at the RPF Plant. With the Bioethanol Production Process operating at full capacity, the SSL stream solids available to be burned in the Recovery Boiler will be reduced by 20% (55,586 tons SSL). Projected future demand for the LTF Plant is estimated as an additional 100,000 tons of SSL. This results in the remaining throughput of 113,936 tons SSL/year (2,081,426 Million British Thermal Units (MMBtu)/year) available to be burned in the Recovery Boiler. Natural gas firing rates were projected taking into account the decrease in SSL firing as described above, resulting in equivalent throughput of 1,400 Million Standard Cubic Feet (MMSCF)/year (1,428,000 MMBtu/year). SSL emissions factors were determined based on the highest CEMS emissions rate within last 2018-2022 years (CO, SO_2, NO_x), 5-year average stack tests and NCASI TB 1020 data ($PM/PM_{10}/PM_{2.5}$, VOC and Pb) as follows: 0.43 pounds (lb)/ton for $PM/PM_{10}/PM_{2.5}$; 0.67 lb/MMBtu for NOx; 2.10 lb/ton for SO_2; 0.07 lb/ton for SAM; 4.41 lb/ton for CO; 0.22 lb/ton for VOC; and 9.67E-05 lb/ton for Pb. Natural gas

emission factors were based on EPA AP-42, Tables 1.4-1 and 1.4-2.

c. Potential-to-Emit (PTE) for new units were based on the following:
   - PTE for Bioethanol Production Process *(new)*: VOC emissions are primarily expected to be ethanol and are to be controlled by the fermentation vent scrubber. VOC PTE are based on vendor design specifications of controlled ethanol emissions rate of 6.60 lb/hour, and the stoichiometric conversion of the sugars in the SSL to ethanol along with the 86% yield to estimate the maximum amount of ethanol generated by fermentation (24,535 tons/year of ethanol generated).
   - PTE for Bioethanol Product Storage Tank and Misc. Exempt Process Tanks *(new):* VOC PTE from the new tanks are based on EPA AP-42 Chapter 7.1 emission factors for internal floating roof tanks and were calculated using Emissions Master software. These calculations are provided in the permit application.
   - PTE for Bioethanol Loadout *(new)*: VOC PTE for bioethanol loadout operations is estimated based on the expected hourly loadout rate (300 gallon/min) and thermodynamic modeling as provided in the permit application.

d. For the affected Sulfite Recovery Boiler, the change due to the project is the difference between the PAE and the BAE. Emissions decreases are denoted with parentheses, e.g. (300). For new emissions units, the change due to the project is equal to PTE. Note: In the application, decreases in emissions from the Sulfite Recovery Boiler were conservatively shown versus recent (2020-2022) actual emissions which were lower than BAE. The Department will follow the traditional (PAE-BAE) approach to estimate the change in emissions to avoid misinterpretation of the results.

e. Sum of only the emissions increases due to the project for all emissions units. Note, decreases in emissions associated with the project can only be accounted for in Step-2 of the New Source Review (NSR) process. To reach Step-2, PSD has to be triggered in Step 1 of the NSR process where only increases are considered for a particular pollutant. Since this was not the case for any pollutant, only emission increases are considered for this project.

In addition to the analysis provided in **Table 5** for the expected operation scenario, the applicant has conservatively estimated the worst-case emissions operating scenario for the Sulfite Recovery Boiler assuming that both LTF Plant and Bioethanol Production operations are down, and all SSL is burned in the boiler. This analysis is provided in **Table 6** below. Note that the projected VOC increase from the Sulfite Recovery Boiler cannot happen simultaneously with the VOC PTE of the new units associated with the Bioethanol Production Project as seen in **Table 5**. Also, the applicant elected to **not** exclude that portion of the RPF Plant's emissions following the project that the RPF Plant *"could have accommodated"* during the representative 24-month period used to establish the BAE, making this analysis even more conservative.

TABLE 6 - SUMMARY OF THE PSD APPLICABILITY ANALYSIS FOR WORST-CASE EMISSIONS SCENARIO FOR THE AFFECTED SULFITE RECOVERY BOILER (EU 006).

Pollutant	Annual Emissions, Tons/Year						Subject to PSD?
	Emissions Unit	Baseline Actual [a]	Projected Actual [b]	Change Due to Project [c]	Increase Due to Project [d]	SER/ PSD Threshold	
CO	Sulfite Recovery Boiler *(affected)*	560.58	603.12	42.54	42.54	100	No
NO_X		1,960	1,754	(206)	0	40	No
PM		65.36	57.96	(8.26)	0	25	No
$PM_{10}/PM_{2.5}$		65.36	58.51	(8.38)	0	15	No
SO_2		267.08	283.29	16.21	16.21	40	No
VOC		27.74	30.44	2.58	2.58	40	No
SAM		11.75	12.46	0.71	0.71	7	No
Pb		1.21E-02	1.31E-02	7.21E-04	7.21E-04	0.6	No

a. BAE for the existing Sulfite Recovery Boiler were calculated based on the following highest consecutive 2-year average for all pollutants: Jan 2014- Dec 2015. Emissions related to No.6 fuel oil firing were excluded from BAE as not representative for current operations (the Boiler has not been firing fuel oil since 2019). The BAE inventory for this project is consistent with Plant's historic Annual Operating Reports (AORs).

b. Projected Actual Emissions (PAE) for Sulfite Recovery Boiler *(affected)* were based on the following: SSL firing rates

were projected by scaling historic SSL-to-pulp ratios to the maximum 12-month rolling pulp production rate of 165,489 ADMTBP/year, resulting in equivalent throughput of 269,801 tons SSL/year. Note that beginning in 2018, RPF began sending a portion of the SSL produced at the Plant to LTF Plant for the production of specialty chemicals. RPF scaled up SSL firing rates on Sulfite Recovery Boiler using 2017 production ratio rather than 2020 production ratio to account for the total amount of SSL generated at the RPF Plant. Natural gas firing rates were projected based on the maximum heat input from No. 6 fuel oil firing rate from 2016-2018, resulting in equivalent throughput of 192.7 Million Standard Cubic Feet (MMSCF)/year (200,458 MMBtu/year). SSL emissions factors were determined based on the highest CEMS emissions rate within last 2018-2022 years (CO, SO_2, NO_x), 5-year average stack tests and NCASI TB 1020 data ($PM/PM_{10}/PM_{2.5}$, VOC and Pb) as follows: 0.43 pounds (lb)/ton for $PM/PM_{10}/PM_{2.5}$; 0.67 lb/MMBtu for NO_x; 2.10 lb/ton for SO_s; 0.07 lb/ton for SAM; 4.41 lb/ton for CO; 0.22 lb/ton for VOC; and 9.67E-05 lb/ton for Pb. Natural gas emission factors were based on EPA AP-42, Tables 1.4-1 and 1.4-2.

c. For Sulfite Recovery Boiler, the change due to the project is the difference between the PAE and the BAE. Emissions decreases are denoted with parentheses, e.g. (300).

d. Sum of only the emissions increases due to the project for all emissions units. Note, decreases pollutant emissions associated with the project can only be accounted for in Step-2 of the New Source Review (NSR) process. To reach Step-2, PSD must be triggered in Step 1 of the NSR process where only increases are considered for a particular pollutant. Since this was not the case for any pollutant, only emission increases are considered for this project.

As shown in **Table 5** and **Table 6** above, none of the worst-case scenarios will result in total project emissions to exceed the PSD significant emissions rates; therefore, the project is not subject to PSD preconstruction review. Also, with the new Bioethanol Production Process operating at full capacity, there will be significant emissions reduction from the Sulfite Recovery Boiler due to less SSL available to be fired in the boiler.

The applicant did not provide the PSD analysis for greenhouse gases (GHG). According to guidance[2] issued by the EPA in July 2014, a project can trigger PSD for GHGs only if the project first triggers PSD for one of the other PSD pollutants; that is, a project cannot trigger PSD for only GHGs. PSD review for non-GHGs was not triggered by the proposed project; therefore, PSD for GHGs won't be triggered even if the increase in emission due to the project to be appear over the SER threshold of 75,000 TPY of GHG on a CO_2e basis.

2.3. Note on the Aggregation of Project No. 0890004-068-AC

On December 17, 2021, RPF was issued an Air Construction Permit No. 0890004-068-AC[3], which authorized the modifications to the Evaporator Vents Methanol Condenser System (EU 021) to replace the heating elements in two of the existing evaporators (2A and 3A). EU 021 is not an affected unit for the Bioethanol Production Project; however, the replacement of the heating elements is intended to restore the historical evaporation capacity that could potentially allow the evaporators to process more SSL and affect other emissions units at the RPF Plant including the Sulfite Recovery Boiler (EU 006). In the final preamble published on January 15, 2009[4], the EPA stated that for the projects to be "substantially related" there should be *"…a complementary relationship whereby a change at a plant may exist and operate independently, however its benefit is significantly reduced without the other activity."* For the bioethanol production, the SSL will be taken from the optimum stage of the evaporator system and returned to the next stage after the fermentation process. While, it is arguable if the two projects are "substantially related" (the replacement of heating elements is not related to the construction of the bioethanol production line and must be performed nevertheless in order to restore and maintain the capacity of the evaporator), the Department conservatively evaluated the emissions from both projects to ensure that the combined increases would stay below SER levels (see **Table 7** on the next page). As always, the Department's decisions regarding projects aggregation are made on a case-by-case basis, and any one decision regarding aggregation does not necessarily set a precedent for all projects that may occur close in time.

[2] U.S. Supreme Court opinion dated June 23, 2014. Link to Supreme Court Opinion EPA guidance dated July 24, 2014. Link to EPA Guidance

[3] Permit No. 0890004-068-AC: Link to application, click "Public Oculus Login" button.

[4] 74 FR 2376 LINK

TABLE 7 – COMBINED EMISSION INCREASES FOR PROJECT Nos. 0890004-068-AC AND 0890004-070-AC.

Pollutant	Annual Emissions, Tons/Year				Subject to PSD?
	Increase Due to EU 021 Modification (Project No. 0890004-068-AC)	Worst-Case Increase Due to Bioethanol Production (Project No. 0890004-070-AC) [a]	Total Increase	SER/ PSD Threshold	
CO	0.18	40.31	42.54	100	No
NO_X	0.35	0	0.35	40	No
PM	0	0	0	25	No
$PM_{10}/PM_{2.5}$	0	0	0	15	No
SO_2	4.18	16.21	20.39	40	No
VOC	0.36	30.4	30.8	40	No
SAM	0.18	0.71	0.9	7	No
Pb	0	7.21E-04	7.21E-04	0.6	No
HF	0	0	0	3	No

a. Conservatively, the increases are combined for worst-case emissions scenarios for both the Bioethanol Production (**Table 5**) and the Sulfite Recovery Boiler (**Table 6**).

As shown in the table above, the total project emissions will not exceed the PSD significant emissions rates, whether or not this permitting action is aggregated with the modifications to EU 021 in Project No. 0890004-068-AC.

3. DEPARTMENT REVIEW

The applicant is proposing to construct a second-generation bioethanol production process that will use SSL as feedstock by fermenting sugars in the SSL to produce ethanol. Bioethanol production will consist of evaporation, continuous fermentation, distillation and dehydration and yeast recycling and conditioning. The proposed process will have an approximate maximum capacity of 7.5 million gallons of saleable bioethanol per year.

3.1. Process Description

The simplified diagram of the bioethanol production is shown in

Figure 4 while the detailed process flow diagram is shown in **Figure 5**.

SSL Evaporation. The evaporator system at the plant reduces the water content of the SSL, before it's fired in the Sulfite Recovery Boiler (EU 006). For ethanol production, the SSL will be taken from the optimum stage of the evaporator system, where it is concentrated to approximately 20-30% total solids with the vast majority of methanol already separated from the liquor. The SSL will be returned to the next stage of the evaporator after the fermentation process. Prior to fermentation, the SSL will be neutralized with ammonia in the existing pulp mill to reach the optimum pH for yeast cells to ferment.

Yeast Conditioning. Yeast will be conditioned and acclimated to the fermentation process in the yeast conditioning tank. Weak caustic solution will be used to kill bacteria and weak yeast cells without harming the healthy yeast cells.

Fermentation. During fermentation, sugars contained in the concentrated SSL (predominantly hexoses such as glucose) are transformed to ethyl alcohol, carbon dioxide (CO_2) and various secondary products such as other alcohols, aldehydes, etc. Fermentation will be on a continuous basis with an expected 48-hour cycle. There will be a total of three fermenters, each having controlled temperature and controlled additions of yeast to maintain optimum fermentation conditions. Used yeast will be recycled and may be made up with fresh yeast and nutrients. The product of fermentation, fermentation broth called "beer," is a weak ethanol solution and contains

the residue of fermentation components. The beer will be pumped to a holding tank, designated as the beer well. The alcohol concentration in clean beer is approximately 2%.

Distillation and Dehydration (D&D). From the beer well, the beer will be sent to the D&D process which will include the degassing column, the distillation column ("beer" column), the rectification column, and dehydration. The alcohol stream will be concentrated in the rectifier column. Non-ethanol fermentation products (such as yeast, bacteria, non-fermentable solids, mineral salts) are removed from the lower section of the rectifier column and sent to the clean-in-place (CIP) system for further treatment. Hydrated alcohol from the distillation process undergoes dehydration to produce ethanol at approximately 99.67% by weight purity. The process is performed in a continuous operation where the hydrated alcohol is superheated by steam in a shell and tube heat exchanger to ensure that the ethanol stream is always in the vapor phase as it passes through molecular sieve beds. The ethanol product from the dehydration unit will be processed through one of two shift tanks, with on-specification ethanol being routed to the ethanol storage tank and off-specification ethanol being routed to the off-spec ethanol tank and back to rectifier column. The on-spec ethanol from storage tanks will be loaded to trucks or rail for shipping.

Air Pollution Control Equipment. VOC emissions from the yeast conditioning tank, continuous fermenters, beer well, degassing column, beer column and dehydrator will be controlled by a vent scrubber. The vent scrubber will use cold water as the primary scrubbing solution to condense ethanol vapor. The liquor at the bottom of the scrubber that contains recovered ethanol from the scrubber will be sent back to the beer well by the vent scrubber pump. The design removal efficiency of the scrubber is approximately 96%. The ethanol vapor that could potentially be generated in the shift process tanks, off-spec process tanks, and product storage tank will be eliminated by the internal floating roof of these tanks that leaves no space between the floating roof and liquid ethanol for the formation of ethanol vapor.

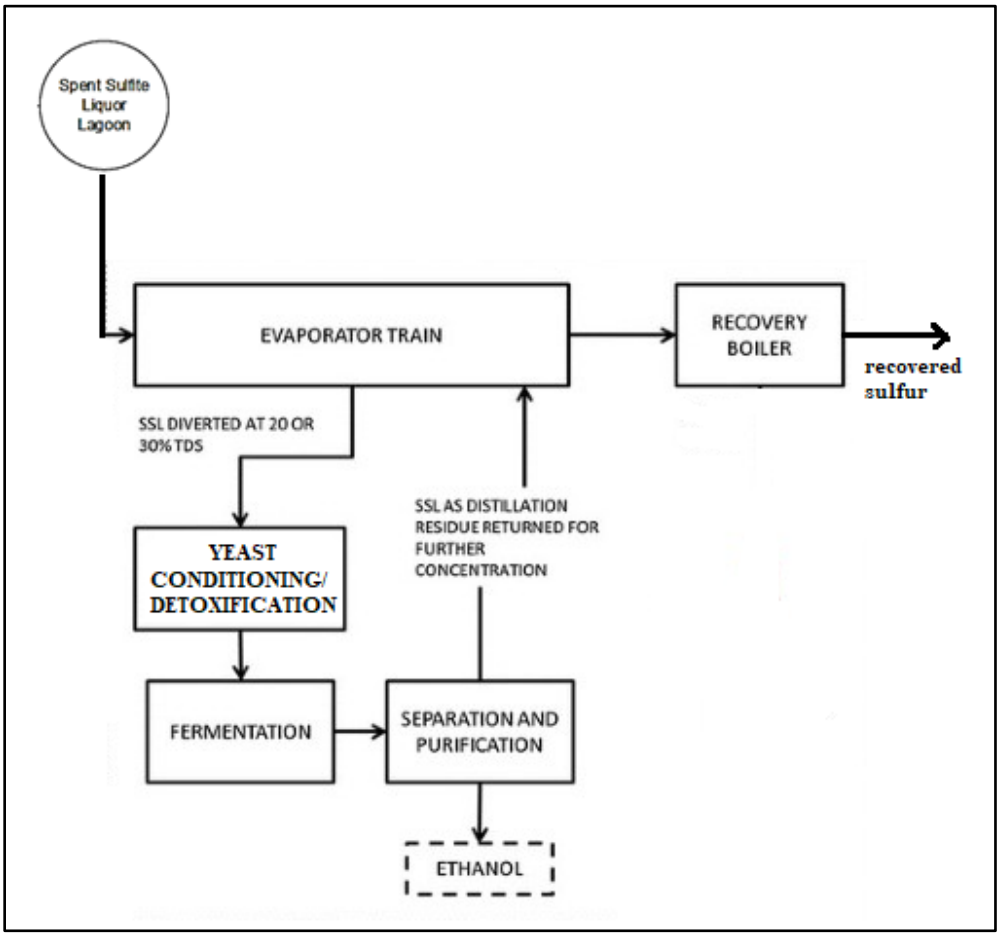


Figure 4. Simplified Diagram of the Bioethanol Production Using SSL as feedstock.

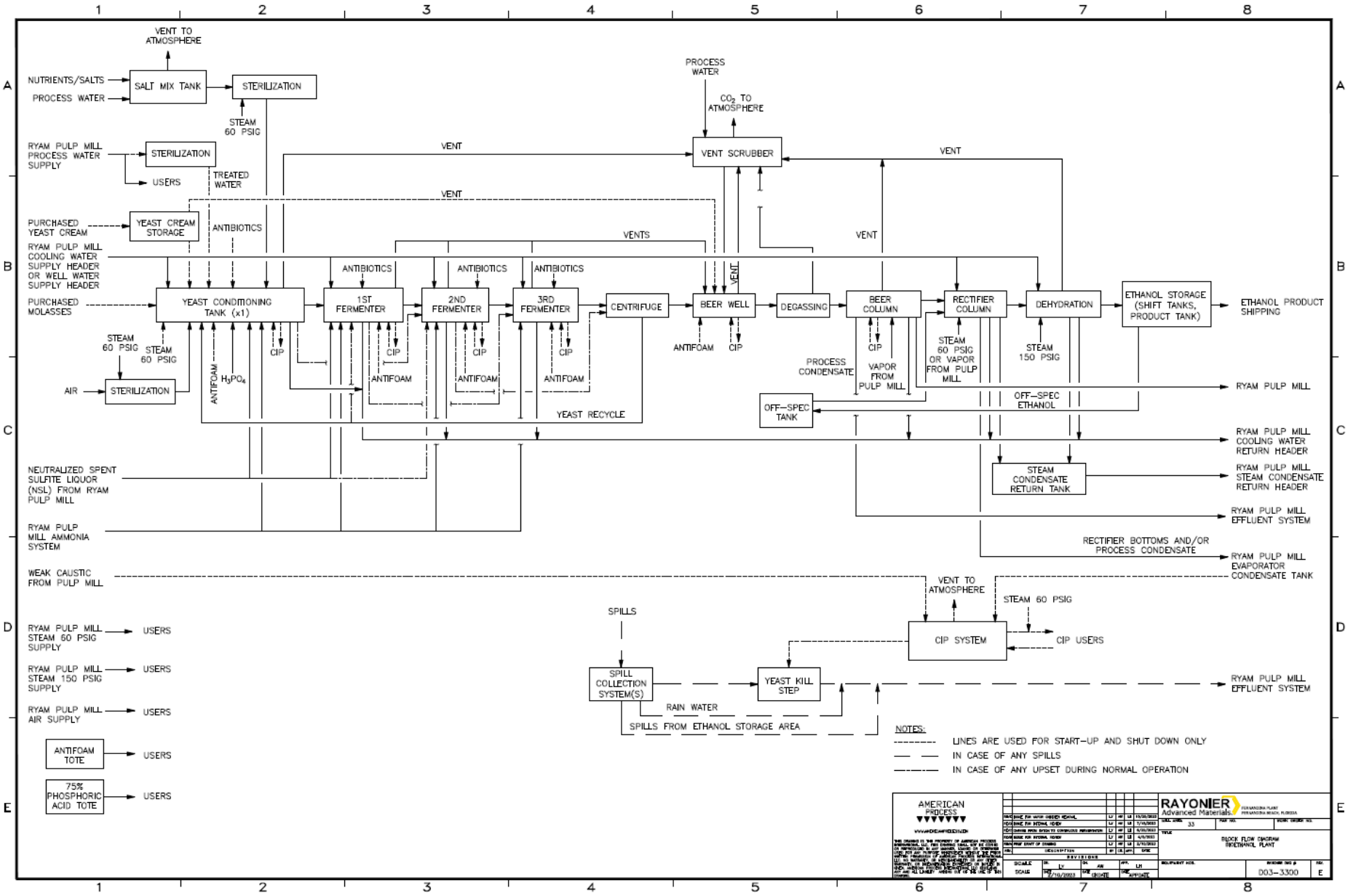


Figure 5. Detailed Process Flow Diagram for the Bioethanol Production Process.

3.2. Project Emissions

3.2.1. Bioethanol Production Process (EU 030)

Bioethanol production will result in the emissions of primarily ethanol (C_2H_5OH) and other minor VOC such as acetic acid. VOC emissions will occur from the following sources: yeast conditioning tank; three (3) fermenters; beer well; distillation vacuum pump separator in CO_2 condenser system; beer column; product receiver, regeneration receiver and regeneration vacuum pump separator in dehydration system; yeast cream tote (only during the plant startup).

The project will include the use of the vent scrubber to control VOC emissions. Wet scrubbers (water as solvent) can achieve good VOC reduction objectives when used on ethanol plants. Ethanol, which comprises the bulk of the VOC emissions, is completely miscible in water. A properly designed scrubber could achieve a level of removal of 96% or greater. Organic acids and strongly polarized molecules such as acetic acid (CH_3COOH) can also be removed in a properly designed scrubber due to their strong interaction with water. The vents from the three fermenters and yeast cream tote will be sent to the beer well first before the vapor gets sent to the vent scrubber. Other vents from the yeast conditioning tank, beer well, distillation vacuum pump separator, beer column, product receiver, regeneration receiver, and regeneration vacuum pump separator will be sent directly to the vent scrubber to remove ethanol from the vapor, reduce product losses, and lower VOC emissions. The vent scrubber will use cold process water (at 75-80 °F) as the primary source of scrubbing water to condense ethanol vapor (flowing upward in the scrubber column) and dissolve it in the water (flowing downward in the scrubber column). Well water or chilled water may be used as a secondary source of water supply to the scrubber. The liquor at the bottom of the scrubber that contains ethanol scrubbed from the vapor will be sent back to the beer well by the vent scrubber pump.

The SSL for the fermentation process will be routed from the optimum stage of the evaporator system such that the vast majority of methanol (a HAP) is already flushed and any remaining amount of methanol that may enter the fermenters will not impact the fermentation yield. The methanol that can potentially enter the Bioethanol Production Process is volatilized in the process but is also recovered in the chilled water scrubber that is returned to the process and then eventually back to the RPF Plant evaporators. The applicant estimated the potential emissions of methanol from the vent scrubber to be negligible (less than 0.0001 TPY).

The sugar composition of SSL depends on the type of wood that is used for pulping. SSL resulting from pulping of softwood (softwood spent sulfite liquor–SSSL) contain mainly hexoses, while SSLs obtained from pulping of hardwood (hardwood spent sulfite liquor—HSSL) present a higher proportion of pentoses. The RPF Plant uses soft pine wood in pulping; therefore, for VOC PTE estimates the applicant assumed that the total of SSL fermented will be equivalent to total of glucose. The microorganisms (yeast) then convert the glucose to ethanol and carbon dioxide:

$$C_6H_{12}O_6 \rightarrow 2\,C_2H_5OH + 2\,CO_2$$

This equation along with the estimated 86% yield[5] was used to calculate the amount of ethanol generated (in tons). The VOC PTE from the new plant were then estimated using scrubber's design specifications as shown in **Table 8**. The permittee will establish a minimum process water temperature and flow rate to maintain VOC emissions below the estimated PTE of 6.60 lb/hour (28.9 TPY) of VOC.

TABLE 8 – SUMMARY OF VOC EMISSIONS FROM BIOETHANOL PRODUCTION PROCESS.

Parameter	Value	Basis
Tons of SSL Fermented	55,865 tons SSL/year	Equivalent to tons of glucose
Tons of Ethanol Generated	24,535 tons/year	Equal to 7.5 million gallons/year

[5] Early in 2023, RYAM performed a lab study and demo trials on plant's SSL to develop the ethanol yield data as well as the potential formation of other VOCs during the fermentation process.

Parameter	Value	Basis
Ethanol Vented to Scrubber	163.55 lb/hour	Vendor's design specifications
Controlled Emissions Rate	6.60 lb/hour	
VOC Emissions	28.9 tons/year	6.60 lb/hour*8,760 hours/year ÷2,000 lb/ton

While CO_2 is a natural by-product of the fermentation process, its project-related emissions increases were not estimated by the applicant, as the project doesn't trigger PSD preconstruction review (see Section **2.2.**)

3.2.2. Bioethanol Product Storage Tank (EU 031) and Misc. Process Tanks (EU 032)

The only pollutant of concern related to the proposed storage tanks is VOC. There will be four bioethanol tanks, including two (2) shift process tanks, one (1) off-spec process tank and one (1) product storage tank, all of which will be equipped with internal floating roofs. The floating roof moves with the level of ethanol and leaves no space between the liquid and the roof effectively minimizing the formation of ethanol vapor. The internal floating roof design is widely recognized as the most ideal practical method to reduce the evaporation loss in the ethanol production industry.

VOC PTE from the bioethanol storage tank and in-process tanks are based on AP-42 Chapter 7.1 (Organic Liquid Storage Tanks) for internal floating roof tanks and assuming the maximum production rate of 7.5 million gallons of bioethanol. Emissions Master 8.4.5.11 software was used by the applicant to compute the lb/hour rates as presented below:

TABLE 9 – SUMMARY OF BIOETHANOL STORAGE AND PROCESS TANKS VOC PTE.

Tank Type	Design Capacity (gal)	VOC Emission Rate (lb/hour)	VOC PTE (TPY)
Product Storage Tank	171,320	0.078	0.34
Off Spec Tank	51,396	0.07	0.29
Shift Tank 1	24,182	0.075	0.33
Shift Tank 2	24,182	0.075	0.33

The Bioethanol Production Project will also include a small salt mix tank and CIP system tank with negligible PM and VOC emissions.

3.2.3. Bioethanol Loadout (EU 033)

The on-spec ethanol from the storage tank will be loaded to trucks or railcars for shipping. VOC PTE from the bioethanol loadout operations were estimated based on the expected loadout rate of 300 gallons per minute, the maximum production rate of 7.5 million gallons and thermodynamic modeling. The emission rate of 0.71 lb/hour was estimated based on the assumption that each gallon of liquid ethanol pumped into an empty tank displaces the equivalent volume of tank vapor space that is in equilibrium with the 99% weight percent ethanol liquid. The tanks will be empty and clean, so no residual vapors from previous cargo will be emitted. Total project related emission increases from the bioethanol loadout activities were estimated to be 0.15 TPY of VOC.

With the capacity of tanker trucks being approximately 6,000 gallons, the applicant has estimated the use of about three (3) trucks per day to ship out the product. The facility will continue to utilize reasonable precautions for controlling fugitive dust emissions due to vehicle traffic. These precautions include the following: paving all main plant access roads and posting speed limits; and watering of paved surfaces as needed to remove dust, as necessary.

3.2.4. Affected Sources

Bioethanol Production Process is being designed to be as independent as possible from the existing RPF Plant operations. The heat recovery projects designed to capture heat from existing liquid or vapor streams will be implemented to offset the energy content of the SSL fermented sugars that would otherwise be burned in the

existing Sulfite Recovery Boiler and offset the additional steam demands from the Bioethanol Production Process for distillation. These projects are to ensure that there will be no incremental increase in the steam demand from the Sulfite Recovery Boiler and No.6 Power Boiler. Due to the simple nature of these projects, they will not modify or affect the capacity of any existing emissions units and are expected to require only additional piping, pumping, and heat recovery equipment external to existing emissions units. Furthermore, neither the Bioethanol Production Project nor the associated heat recovery projects will result in an increase in pulp production.

3.2.4.1. *Sulfite Recovery Boiler (EU 006)*

The Sulfite Recovery Boiler fires SSL to produce steam for process use. A Brinks type mist eliminator is used to control PM emissions. SO_2 emissions from the boiler are recovered with an ammonium hydroxide wet scrubber, producing ammonium bisulfite that is used in cooking acid. The boiler is also permitted to fire natural gas.

No changes will be made to the boiler as a part of this project. With the implementation of the selected heat recovery projects, there will be no increase in the steam demand from the boiler. However, due to the new bioethanol production effect on SSL availability, there will be a change in actual SSL throughput.

With the new Bioethanol Production Process operating at full capacity, thee SSL available to be burned in the Sulfite Recovery Boiler will be reduced by approximately 20%. In addition, SSL feed to the Boiler will be further reduced by the amount of SSL that is sold to LTF. As demonstrated in **Table 5**, this expected operating scenario will result in emissions reduction from the Sulfite Recovery Boiler.

The applicant also estimated the worst-case emissions increases for the Sulfite Recovery Boiler assuming that both LTF Plant and Bioethanol operations are down, and all available SSL is burned in the boiler. These increases are shown in **Table 6**. It is important to know that the projected VOC increase of 2.58 TPY from the Boiler in this scenario cannot happen simultaneously with the VOC PTE of the new units associated with the Bioethanol Production Project of 30.8 TPY.

3.2.4.2. *Evaporator Vents Methanol Condenser System (EU 021)*

The Evaporator Vents Methanol Condenser System is an environmental system that condenses methanol vapor from the evaporator non-condensable gas (NCG) steams. Two sets of multiple effect evaporators (Line A and Line B) are used to increase the solids concentration of SSL. Steam is used to eject the evaporator vent gases through the system. These gases are piped to a pre-condenser which condenses the steam, followed by the main methanol condenser to condense methanol. The NCG gases are then sent to the multistage wet scrubber/Brinks demister at the Recovery Boiler (EU 006) before being vented to the atmosphere.

A third multiple effect evaporator train (Line C), consisting of three refurbished existing evaporator bodies, is used to increase the solids concentration of weak Hot Caustic Extract (HCE). The third MEE train is also vented to the pre-condenser followed by the main condenser, and then to the Recovery Boiler wet scrubber.

The process flow diagram of EU 021 along with the affected by this project Sulfite Recovery Boiler (EU 006) units is shown below in **Figure 6** (next page) for informational purposes.

The Bioethanol Production Project is not expected to affect EU 021 emissions and the RPF Plant's compliance with 40 CFR Part 63, Subpart S. Methanol is incompatible with yeast, so the SSL must be sent to fermentation process from the optimum stage of the Evaporator System such that the methanol is already mostly separated from the liquor. In addition, the proposed heat recovery projects will not impact the way methanol is collected and treated in the wastewater treatment system.

3.2.4.3. *Vent Gas System (EU 005) and Bleaching System (EU 011)*

Vent Gas System (EU 005) and Bleaching System (EU 011) are considered unaffected units under the Bioethanol Project as the production of ethanol is independent from the production of pulp. Neither the Bioethanol Production Project nor the associated heat recovery projects will result in an increase in pulp production.

3.2.4.4. *No.6 Power Boiler (EU 022)*

The applicant identified the No.6 Power Boiler (EU 022) as not affected by the project. The No. 6 Power Boiler is a primarily carbonaceous fuel-fired bubbling fluidized bed boiler that produces steam for electrical generation

and usage in the manufacturing process. The unit is not expected to be utilized more or operate at a higher capacity due to the proposed project. The steam demands of the bioethanol production will be offset by the heat recovery projects as described above.

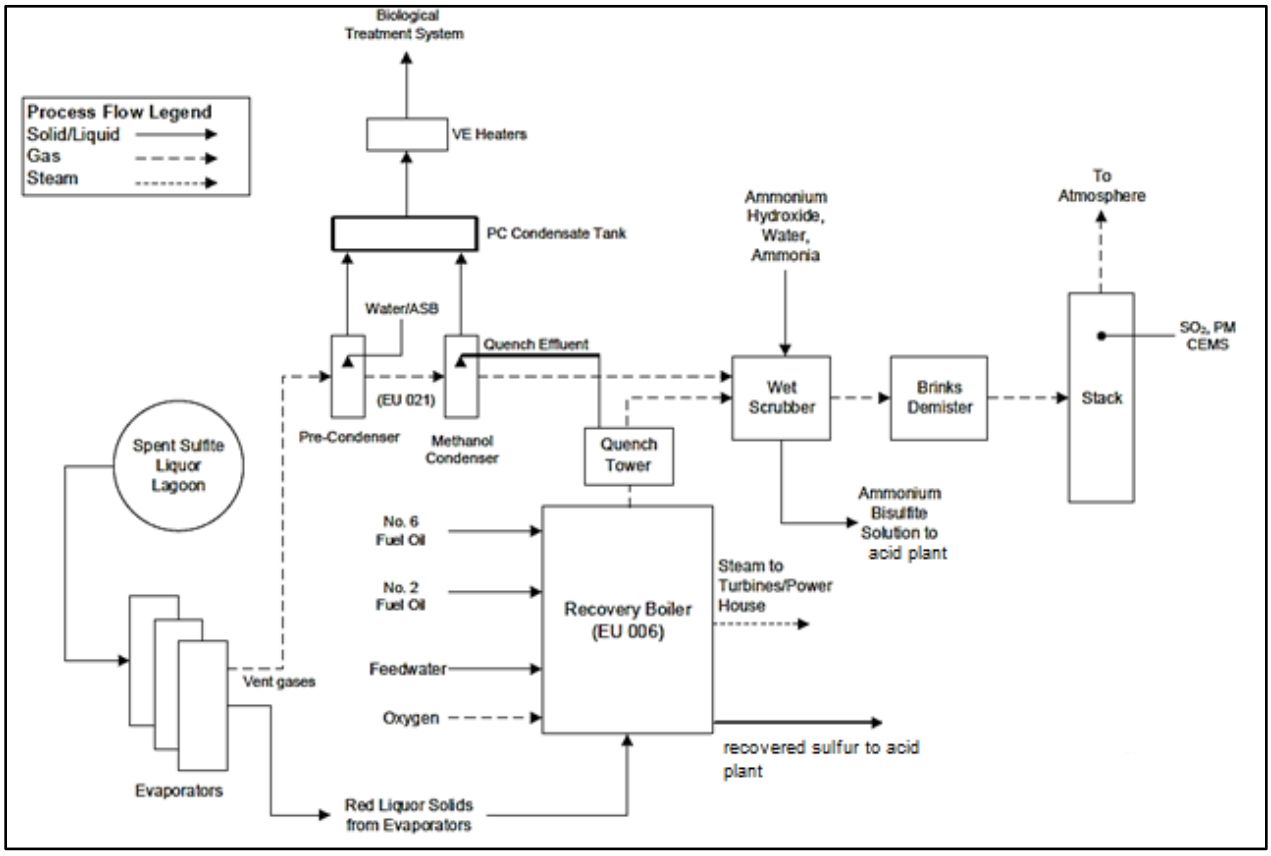


Figure 6. Process Flow Diagram of the Existing Evaporator Vents Methanol Condenser System (EU 021).

3.2.4.5. *No.6 Power Boiler (EU 022)*

The applicant identified the No.6 Power Boiler (EU 022) as not affected by the project. The No. 6 Power Boiler is a primarily carbonaceous fuel-fired bubbling fluidized bed boiler that produces steam for electrical generation and usage in the manufacturing process. The unit is not expected to be utilized more or operate at a higher capacity due to the proposed project. The steam demands of the bioethanol production will be offset by the heat recovery projects as described above.

3.3. Environmental Justice (EJ) Assessment

EPA defines Environmental Justice (EJ) as

> *".. the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, rules, and policies. Environmental justice includes addressing disproportionate environmental health impacts in all laws, rules, and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities, the equitable distribution of resources and benefits, and eliminating harm."*

The proposed project is at an existing facility, and the construction of the new bioethanol production process will not involve acquiring new land or impacting new areas. The existing RPF Plant is in in Nassau County at 10 Gum Street in Fernandina Beach, Florida, as shown in **Figure 7** on the next page:

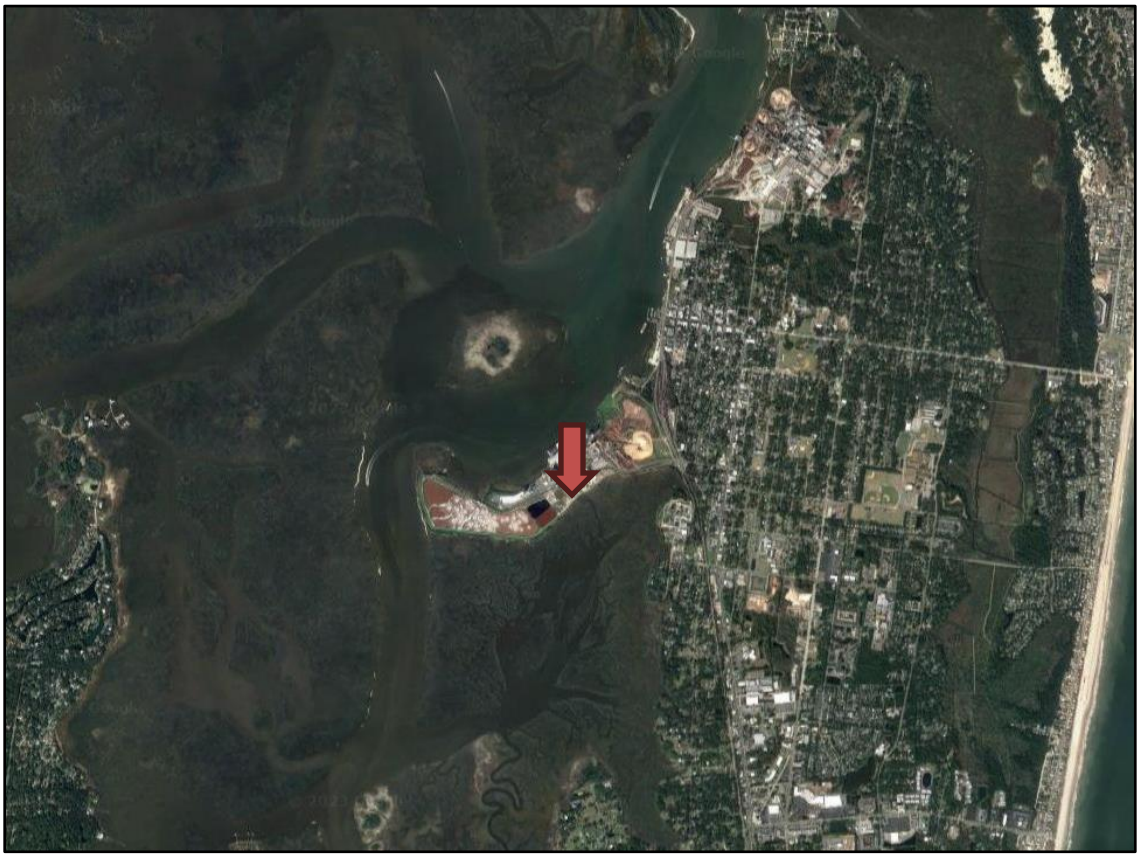


Figure 7. Arial View of the RPF Plant Location.

Indexes representative of the communities surrounding the RPF Plant have been reviewed to characterize their susceptibility or vulnerability in the EJ assessment. The applicant submitted an EJScreen model results for the area within 5-mile radius of the proposed project. The defined area with an approximate population of 32,650 people over nearly 78.5 square miles has the following socioeconomic indicators:

TABLE 10. – SOCIOECONOMIC INDICATORS FOR THE DEFINED AREA.

Socioeconomic Indicators	Value	FL State Average	FL State percentile
People of Color	15%	45%	22
Low Income	21%	33%	32
Unemployment Rate	6%	5%	67
Limited English Speaking	1%	7%	44
Less Than High School Education	4%	11%	29
Under Age 5	6%	5%	63
Over Age 64	25%	23%	69
Low Life Expectancy	19%	19%	44
Demographic Index [a]	18%	39%	19
Supplemental Demographic Index [b]	10%	15%	31

a. Demographic Index = (% people of color + % low-income) / 2.
b. Supplemental Demographic Index = (% low-income + % unemployed + % less than high school education + % limited English speaking + low life expectancy) / 5

In addition to the evaluation of socioeconomic indicators, the applicant has reviewed the EJ and supplemental indexes within a 5-mile radius of the RPF Plant. The EJ and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators: $PM_{2.5}$, Ozone, Diesel PM, Air Toxics Cancer Risk, Air Toxics Respiratory Hazard Index, Toxic Releases to Air, Traffic Proximity, Lead Paint, Risk Management Plan (RMP) Facility Proximity, Hazardous Waste Proximity, Superfund Proximity, Underground Storage Tanks, Wastewater Discharge[6]. A summary of EPA's EJScreen Community Report (Version 2.2) provided by the applicant is shown below in **Figure 8** and **Figure 9**.

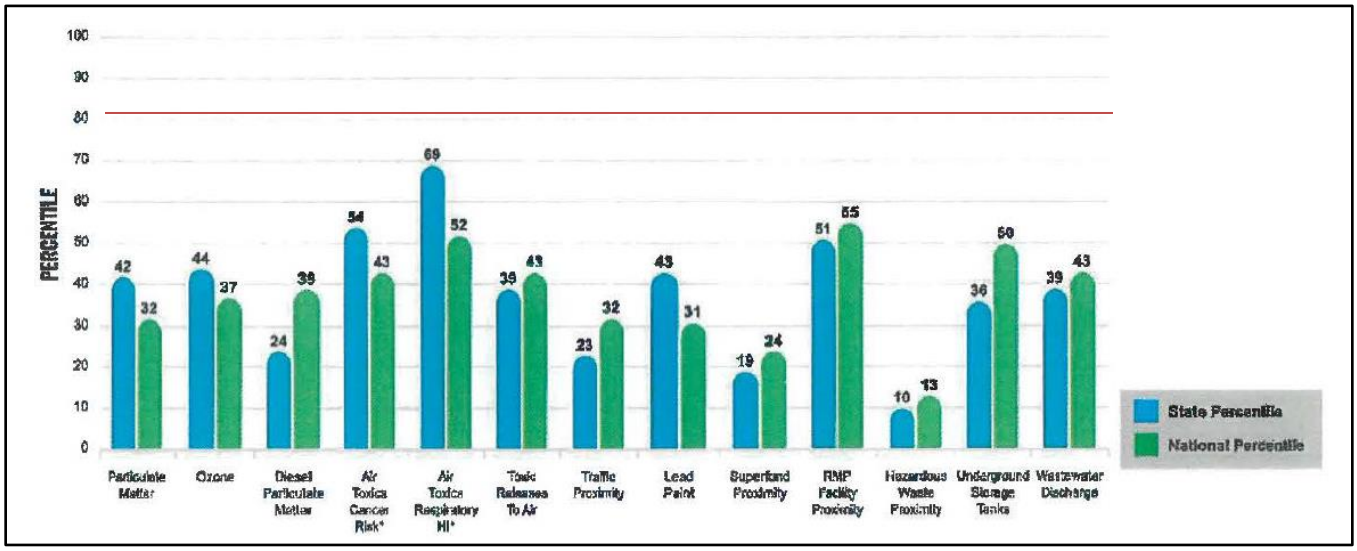


Figure 8. EJ Indexes for the RPF Plant Location.

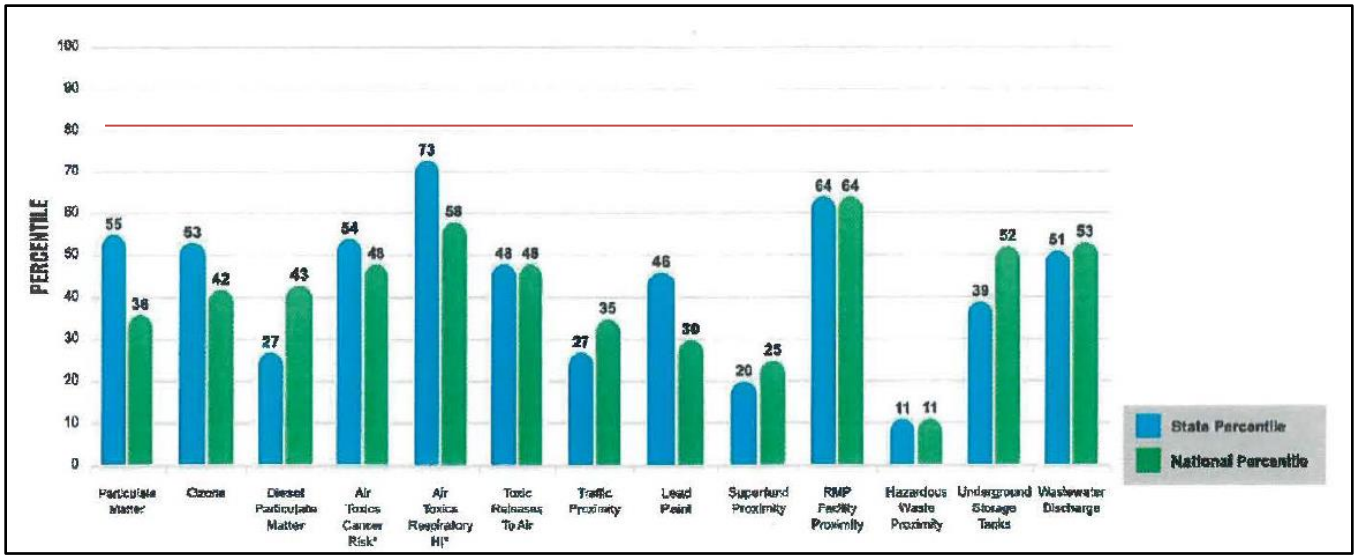


Figure 9. Supplemental Indexes for the RPF Plant Location.

When using EJScreen, the 80th percentile is a suggested starting point for the purpose of identifying geographic areas in the county that may warrant further consideration, analysis, or outreach[7]. None of the EJ or supplemental indexes in **Figure 8** and **Figure 9** above are over the 80th percentile, ranked in comparison to the state or the entire country. Therefore, based on the vast amount of data summarized by EPA's EJScreen tool, the RPF Plant is not

[6] For more information and calculation details on the EJ and supplemental indexes vis it EPA's EJScreen website.
[7] "Technical Guidance for Assessing Environmental Justice in Regulatory Analysis." U.S. Environmental Protection Agency. June 2016.

located in an area of high susceptibility or vulnerability, and the proposed project will not result in a cumulative impact on overburdened areas.

It should be noted that the EJScreen model draws data from all EJ sources in the chosen model area that then contribute to the predictive results. In this case, EJScreen model was provided for 5-mile area and includes state and national averages for underground storage tanks (USTs), but neither the existing RPF facility nor the proposed project has USTs.

3.4. State Requirements

The Recovery Sulfite Boiler affected by this project shall continue to meet all applicable regulations as identified in the current Title V air operation permit.

The applicant has claimed the Generic Emissions Unit Exemption under Rule 62-210.300(3)(b)1, F.A.C. from the requirement to obtain an air construction permit for the following units: Salt Mix Tank, CIP System Tanks, Bioethanol Loadout, Off Spec Tank, Shift Tanks 1 & 2. While each unit's potential emissions are below the exemption thresholds in Rule 62-210.300(3)(b)1.c, F.A.C., only Salt Mix Tank and CIP System Tanks can claim the exemption as these units are not subject to any unit-specific limitations or requirements. Bioethanol Loadout, Off Spec Tank, Shift Tanks 1 & 2 are potentially subject to NSPS 40 CFR 60 Subpart VVa requirements (see Section **3.5.** below); therefore, at this time they cannot be deemed exempt under Rule 62-210.300(3)(b)1, F.A.C.

3.5. Federal NSPS Provisions

- The *Sulfite Recovery Boiler (EU 006)* is currently subject to NSPS 40 CFR 60, Subpart A (General Provisions) and D (Standards of Performance for Fossil-Fuel-Fired Steam Generators). There will be no physical change or change in the method of operation of the Recovery Boiler as a result of the proposed project, nor an increase in emissions of any NSPS-regulated pollutant on a pound per hour basis. This project will not change the performance or increase the capacity of the Recovery Boiler. As such, the project will not constitute modification of the boiler under NSPS. In addition, there will be no replacement of any components of the Boiler; therefore, the project will not constitute reconstruction of the boiler under NSPS either.

- Emission units associated with the Bioethanol Production Project that can leak VOC are subject to NSPS Subpart VVa (Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI)). 40 CFR Part 60.489 lists ethanol as one of the chemicals affected by Subpart VVa. Equipment such as pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves, line valves and flanges or other connectors in VOC service and any devices or systems subject to NSPS, Subpart VVa, and the associated emissions unit must be identified. The permittee shall submit a list identifying the devices or systems to the Compliance Authority no later than 90 days before the new emissions units associated with the Project become operational. Per EPA guidance[8], the permittee shall also develop a leak detection and repair (LDAR) program to comply with NSPS 40 CFR 60, Subpart VVa. The LDAR program (i.e., plan) shall be submitted to the Compliance Authority for approval no later than 90 days before the new emissions units associated with the Project become operational. The LDAR plan shall be incorporated as an appendix into the facility's Title V air operation permit at its next opening for renewal or revision.

  The Department is also tracking the status of proposed rule 40 CFR 60, Subpart VVb that would apply to sources constructed, reconstructed, or modified after April 25, 2023. This rule would potentially include the same requirements as Subpart VVa, plus additional valve and connector monitoring requirements. If 40 CFR 60, Subpart VVb is finalized before the new emissions units associated with the Bioethanol Production Project become operational, the applicant will be required to provide the rule applicability analysis to Department in addition to the information specified above.

- New *Bioethanol Product Storage Tank (EU 031)* is also subject to 40 CFR 60, Subpart Kb (Standards of

[8] "Leak Detection and Repair—A Best Practices Guide." https://www.epa.gov/sites/production/files/2014-02/documents/ldarguide.pdf

Performance for VOC Liquid Storage Vessels). The tank will have a capacity greater than 151 m^3 (39,900 gallons) and will be designed to meet VOC standard with an internal floating roof per requirements under 40 CFR 60.112b(a)(1) or the alternative compliance requirements under 40 CFR 60.110b(e)(1).

3.6. Federal NESHAP Provisions

- *The Sulfite Recovery Boiler (EU 006*) is currently subject to NESHAP 40 CFR 63, Subpart MM (Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills). The proposed project will not affect the applicability of 40 CFR 63, Subpart MM.
- The RPF Plant is an existing major source under NESHAP 40 CFR Part 63. Bioethanol production is not expected to be a source of significant HAP emissions. The only HAP of concern is methanol; however, the presence of methanol in fermentation process must be minimized as methanol is incompatible with the yeast. The SSL for fermentation process will be sent from an optimum evaporator stage where the vast majority of methanol is already separated from the liquor. The methanol that can potentially enter the Bioethanol Production Process is volatilized in the process but will be recovered in the chilled water scrubber that is returned to the process and then eventually back to the RPF Plant evaporators. Therefore, the Bioethanol Production Project is not expected to impact the RPF Plant's compliance with 40 CR 63 Subpart S (NESHAP from the Pulp and Paper Industry).

3.7. Odor Considerations

The existing RPF Plant is subject to and must continue to comply with the Department's objectionable odor regulation pursuant to Rule 62-296.320(2), F.A.C., which states: "*No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor."* An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as "*any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.*" Since the facility will be using SSL as a feedstock for the bioethanol production, the potential for odor is minimal compared to a biomass (such as conventional grain or corn), or municipal solid waste feedstock based facilities. The wet scrubber will be used to control water-soluble VOC from fermentation and distillation steps, while floating roofs will minimize the VOC emissions from the product storage tanks. In addition, as per NSPS 40 CFR 60, Subpart VVa, the applicant will implement a LDAR program to minimize VOC emissions from process equipment leaks to eliminate any potential odor due to the proposed project.

3.8. Other Draft Permit Requirements

The draft permit will limit the annual production of bioethanol to 7.5 million gallons in any consecutive 12-month period. The permittee will be required to maintain rolling monthly records to show that this level of production is not exceeded.

Initial and prior to Title V renewal VOC emissions tests will be required on the vent scrubber stack to demonstrate the compliance with the emission standard for VOC of 6.60 lb/hour. In addition, the permittee will be required to establish the operating parameter limits for the water temperature and pressure drop across the scrubber, or as an alternative to pressure drop, scrubber water recirculation flow and fan amps for ongoing compliance with the VOC emission limit.

The permit will also require actual emissions reporting for SO_2 emissions for the affected Sulfite Recovery Boiler (EU 006) and VOC emissions for the new Bioethanol Production Process (EU 030) for a period of 5 years after completion of the project.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Irina Tsvetkova is the project engineer responsible for reviewing the application and

drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 at 850/717-9080 or by email Irina.Tsvetkova@FloridaDEP.gov.