ALABAMA RIVER CELLULOSE LLC

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT APPLICATION

NO. 7 MILL TRANSFORMATION PROJECT

Alabama River Cellulose LLC
Perdue Hill, Alabama

Submitted to the
Alabama Department of Environmental Management

December 2024
Updated July 2025 with Post-Submittal Updates

EXECUTIVE SUMMARY

Alabama River Cellulose LLC (ARC), a wholly-owned subsidiary of Georgia-Pacific LLC (GP), owns and operates a bleached Kraft pulp mill (Mill) classified under North American Industrial Classification System (NAICS) code 322110 and Standard Industrial Classification (SIC) code 2611. The ARC Mill has two pulping lines: the No. 7 Line and the No. 8 Line. The No. 7 Line produces bleached softwood Kraft pulp for sale as market pulp. The No. 8 Line produces bleached softwood Kraft pulp for sale as market (baled) pulp and rolled fluff pulp. Each line has the ability to utilize bark, chips, steam, black liquor, and pulp from the other line.

The ARC Mill is a major stationary source under the Title V Major Source Operating Permit program administered by the Alabama Department of Environmental Management (ADEM) under ADEM Admin Code r. 335-3-16. ADEM issued Title V Major Source (Part 70) Operating Permit Number 106-0010, with an effective date of November 9, 2022.

This Prevention of Significant Deterioration (PSD) permit application is being submitted to authorize construction for a mill-wide improvement project (the No. 7 Mill Transformation Project, or Project). Specific details on the scope of the project are included in Section 1.6. The ARC Mill would like to begin construction of the Project in Summer 2025.

The proposed project triggers Prevention of Significant (PSD) permitting for particulate matter (PM), PM less than 10 microns in aerodynamic diameter (PM_{10}), PM less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), oxides of nitrogen (NO_X), carbon monoxide (CO), volatile organic compounds (VOC), sulfuric acid mist (SAM), hydrogen sulfide (H_2S), total reduced sulfur (TRS), and greenhouse gases (GHGs expressed as carbon dioxide equivalents, CO_2e).

This application contains the following sections to address PSD permitting requirements:

- Section 1 – Facility and Project Description
- Section 2 – Emissions Calculations
- Section 3 – Regulatory Applicability Assessment
- Section 4 – Best Available Control Technology (BACT) Analysis
- Section 5 – Air Quality Analysis Summary
- Appendix A – Area Map and Plot Plan
- Appendix B – Emissions Calculations
- Appendix C – BACT Reference Materials
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1. FACILITY AND PROJECT DESCRIPTION

1.1 FACILITY DESCRIPTION

Alabama River Cellulose LLC (ARC, ARC Mill, or Mill), a subsidiary of Georgia-Pacific LLC (GP), owns and operates a bleached Kraft pulp mill classified under North American Industrial Classification System (NAICS) code 322110 and Standard Industrial Classification (SIC) code 2611. The ARC Mill has two pulping lines, the No. 7 Line and the No. 8 Line. The mill produces bleached softwood Kraft pulp for sale as market (baled) pulp and rolled fluff pulp. Each line has the ability to utilize bark, chips, steam, black liquor, and pulp from the other line.

The ARC Mill is a major stationary source under the Title V Major Source Operating Permit program administered by the Alabama Department of Environmental Management (ADEM) under ADEM Admin Code r. 335-3-16. ADEM issued Title V Major Source (Part 70) Operating Permit Number 106-0010, most recently with an effective date of March 23, 2023.

1.2 FACILITY LOCATION

The ARC Mill is located at 2373 Lena Landegger Highway between US Highway 84 and State Highway 41 in Perdue Hill in Monroe County, Alabama. Monroe County has been designated by the United States Environmental Protection Agency (U.S. EPA) as "attainment" or "unclassified" with respect to the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. [1] The location of the main process area is approximately 453.7 km East, 3,494.20 km North (Universal Transverse Mercator coordinates, Zone 16, North American Datum [NAD] 83). Refer to the Area Map and Plot Plan in Appendix A for additional details.

1.3 PROCESS DESCRIPTION (EXISTING CONFIGURATION) – NO. 7 LINE

The No. 7 Line produces bleached softwood Kraft pulp for sale as market pulp. The No. 7 Line historically produced bleached hardwood Kraft pulp for sale as well; however, hardwood pulp has not been processed in recent years.

1.3.1 No. 7 Woodyard

Roundwood of varying lengths is delivered to the woodyard by truck and either stored onsite or immediately processed. The processed roundwood is debarked, chipped, and screened. The screened chips are combined with purchased chips, which are screened separately, and either stored or sent to a bin in the woodyard that feeds a final screening system. Chips from the final screening system are conveyed to a chip bin in the digester area. Chips reclaimed from storage are mixed with the fresh chips in the chip bin prior to final screening. Oversized chips from the various screening systems are re-chipped or transported to a landfill, sold, or otherwise utilized at the mill.

Fines and bark are sent to a single bark handling system that receives material from both the No. 7 and No. 8 Woodyards. Bark and fines are screened and sent to storage prior to use as fuel for the No. 7 Power Boiler[2]. Excess bark and fines can also be transported to a landfill or sold.

[1] 40 CFR §81.301.
[2] The No. 8 Power Boiler was permanently shut down in April 2024.

1.3.2 No. 7 Pulp Mill

Wood chips are cooked in two vertical, single vessel downflow continuous digesters. The chips are combined with a hot solution containing sodium hydroxide and sodium sulfide, also referred to as white liquor. The cooking stages in the digester include pre-steaming, liquor impregnation, cooking, and cooling. The chip/liquor mixture from the digester is released from the pressurized vessel through a blow valve to the blow tank.

From the blow tank the pulp and spent cooking chemicals, also referred to as black liquor, are pumped through a centrifugal cyclone to remove tramp metal and other heavy trash. The stock flows through two stages of deknotters, where large pieces of uncooked chips and knots are removed from the pulp. After deknotting, the pulp and liquor mixture pass over a series of four rotary vacuum washers (brown stock washers). Brown stock washing has a two-fold purpose: 1) to remove the residual cooking chemicals so that they will not interfere with the pulp bleaching process, and 2) to recover the spent black liquor so that it can be converted back to white cooking liquor in the liquor recovery and recausticizing areas. The pulp washing system uses a counter-current flow sequence where the unwashed pulp enters the first stage and mill water enters at the last stage.

After the last stage of brown stock washing, the stock is diluted and flows to a washed stock storage chest or to an oxygen delignification system. The oxygen delignification system consists of a series of reactors and washers that remove lignin from the pulp to facilitate bleaching. Pulp from the oxygen delignification system flows to the washed stock storage chest. From the storage chest, the pulp is pumped through multiple screening stages to remove fiber bundles and other small particles that were accepted at the deknotters. The screen-accepted pulp passes over another rotary vacuum washer, also referred to as a decker. From the decker the medium consistency pulp is pumped through an upflow, narrow diameter tower to the brown stock high density storage tank. Oxygen can be added to the brown stock in the upflow tower to obtain further delignification, if necessary.

1.3.3 No. 7 Bleach Plant

Brown stock from high density storage is diluted and pumped to the bleach plant. The bleaching sequence is carried out continuously in five stages using different chemicals, temperatures, and retention times at each stage. The sequence is:

1. Chlorine dioxide
2. Caustic extraction with hydrogen peroxide
3. Chlorine dioxide
4. Caustic extraction with hydrogen peroxide
5. Chlorine dioxide

The final bleached pulp is pumped at medium consistency to one of three storage chests prior to drying at the pulp dryer. The caustic extraction stages (washers and associated seal chests) vent to atmosphere. All other emissions from the No. 7 Bleach Plant are controlled by the No. 7 Bleach Plant Scrubber.

1.3.4 No. 7 Pulp Dryer

Bleached pulp from the three high density storage chests flows through a low-density surge chest to the No. 7 Pulp Dryer. Bleached pulp from the Nos. 1 and 2 High Density Storage Chests can also be sent to the No. 8 Mill Low Density Surge Chest; conversely, the No. 7 Mill Low Density

Surge Chest can also receive bleached pulp from the No. 8 Mill's No. 2 Bleached High Density Storage Chest. The No. 7 Pulp Dryer is designed and operated similar to a typical bleached Kraft paper machine with a forming section, press section, steam-heated drying section, and baling/rolling and packaging section, except pulp dryers operate at much slower speeds than conventional paper machines. The fourdrinier section is the first stage of the forming section where water is drained away from the pulp on a continuously moving plastic fabric filter supported on the "drainage table" with two main rollers, identified as the breast roll and the suction couch roll. The breast roll is located at the front-end of the drainage table, while the suction couch roll is located at the end of the drainage table. As the water drains through the fabric and away from the pulp, a sheet is formed as it moves through the fourdrinier section. The sheet of pulp is transferred from the suction couch roll to the pickup roller of the press section as it continues to the next processing step on the pulp dryer. The No. 7 Pulp Dryer is also capable of making rolled fluff pulp.

1.3.5 No. 7 Liquor Recovery/Recausticizing

The spent cooking liquor (black liquor) extracted from the bottom of the continuous digesters and the brown stock washers contains sodium carbonate, sodium sulfate, and organic materials removed from the wood chips. As part of the Kraft pulping system, black liquor is processed to regenerate cooking liquor (white liquor). The black liquor solids are concentrated through evaporation and burned in a recovery furnace to produce a smelt of sodium carbonate, sodium sulfide, residual organics, and spent chemicals. If the black liquor inventory is low, fuel oil and natural gas can be fired in the recovery furnace as auxiliary fuels to help meet the Mill steam demand. Additional authorized auxiliary fuels include tall oil, glycerin, and biodiesel. Auxiliary fuels can also be fired during startup and shutdown of the recovery furnace or to stabilize the furnace. Black liquor is sometimes received from off-site to supplement the black liquor inventory and to avoid burning auxiliary fuel. Black liquor can also be traded between the No. 7 and No. 8 Lines. High volume, low concentration (HVLC) non-condensable gases (NCGs) from the No. 7 Pulp Mill (brown stock washer hood vents, foam tower, and O_2 delignification system) are burned in the No. 7 Recovery Furnace. PM emissions from the No. 7 Recovery Furnace are controlled by two dry electrostatic precipitators in parallel configuration.

The recausticizing process produces white cooking liquor from recycled inorganic compounds generated in the recovery furnace and lime kiln. The smelt from the recovery furnace is discharged to the smelt dissolving tank where it is combined with weak wash from the mud washing system to form green liquor. Emissions from the smelt dissolving tank are controlled by a wet venturi scrubber. The green liquor is blended and clarified to remove the residual organics and spent chemicals (referred to as dregs) before being routed to a lime slaker, where water and lime (calcium oxide) are added and react to create slaked lime (calcium hydroxide). This mixture of green liquor and slaked lime is then routed to a series of four causticizers, where the green liquor reacts with the slaked lime to convert the sodium carbonate to sodium hydroxide, creating white liquor. Residual calcium carbonate (lime mud) is formed during this reaction. The calcium carbonate is dewatered and burned in the rotary cylindrical No. 7 Lime Kiln to recover the lime. The lime kiln's existing multi-fuel burner is capable of firing natural gas, low-sulfur fuel oil, crude tall oil, glycerin, biodiesel, and/or hydrogen, either alone or in combination with each other[3]. Low volume, high concentration (LVHC) NCGs are also burned in the lime kiln. Emissions from the No. 7 Lime Kiln are currently controlled by a wet venturi scrubber.

[3]As described in Section 1.6.1.5, the No. 7 Lime Kiln's burner is proposed for replacement and in the future will only have the capability to fire natural gas as fuel.

A diesel-fired kiln auxiliary drive engine (the No. 7 Kiln Auxiliary Drive Engine) is available to rotate the lime kiln in emergency situations when electrical power is unavailable at the No. 7 Mill.

1.3.6 No. 7 Utilities

Supplemental steam for the No. 7 Mill (e.g., additional steam beyond what is produced by the No. 7 Recovery Furnace) is produced by the No. 7 Power Boiler, which is capable of firing bark, low-sulfur fuel oil, natural gas, biodiesel, and tall oil. Emissions from the No. 7 Power Boiler are controlled by a mechanical dust collector, followed by two wet venturi scrubbers in a parallel configuration.

All of the high-pressure steam produced at the No. 7 Mill flows through a turbine generator to produce electrical power. If supplemental power is required, it is purchased from a public utility. Following the turbine generator, the steam pressure is reduced to meet the ARC Mill's requirements for process heat.

In addition to the power boiler and turbine generator described above, a diesel-fired Turbine Emergency Generator can be used to support the No. 7 Line when electrical power is unavailable.

1.3.7 No. 7 Line LVHC and HVLC Gases and Pulping Condensates

In the Kraft pulp manufacturing processes, NCGs containing reduced sulfur compounds and various other organic compounds are generated. The NCGs are collected in the LVHC system from the LVHC sources in the pulp mill area, turpentine decanters, turpentine storage, evaporators, and concentrators and are combined and combusted in either the No. 7 Lime Kiln or the Backup NCG Incinerator.

Foul process condensates that must be controlled under the 40 CFR Part 63 Subpart S include selected contaminated condensates that are combined with the condensates from low point drains in the NCG system and treated in the mill's wastewater treatment system.

Emissions from all No. 7 Line HVLC and some LVHC (Blow Tank) sources are collected and combusted in the No. 7 Recovery Furnace.

1.4 PROCESS DESCRIPTION (EXISTING CONFIGURATION) – NO. 8 LINE

The No. 8 Line produces bleached softwood Kraft pulp for sale as market pulp and rolled fluff pulp.

1.4.1 No. 8 Woodyard

Roundwood of varying lengths is delivered to the woodyard by truck and either stored onsite or immediately processed. The processed roundwood is debarked, chipped, and screened. The screened chips are combined with purchased chips, which are screened separately, and either stored or sent to a bin in the woodyard that feeds a final screening system. Accepts from the final screening system are conveyed to a chip bin in the digester area. Chips reclaimed from storage are mixed with the fresh chips in the chip bin prior to final screening. Oversized chips from the various screening systems are re-chipped or transported to a landfill, sold, or otherwise utilized at the mill.

Fines and bark are sent to a single bark handling system that receives material from both the No. 7 and No. 8 Woodyards. Bark and fines are screened and sent to storage prior to use as fuel for the No. 7 Power Boiler. Excess bark and fines can also be transported to a landfill or sold.

1.4.2 No. 8 Pulp Mill

The ARC Mill cooks softwood chips on the No. 8 Line in a two-vessel continuous digester (impregnation vessel and digester). The cooking system involves five distinct phases: pre-steaming, liquor impregnation, cooking, high temperature washing, and cooling. When the chip/liquor mixture reaches the bottom of the digester, it is released from the pressurized vessel through a blow valve to the blow tank.

Brown stock washing (to separate the spent black liquor from the fibers and to remove the residual cooking chemicals so that they will not interfere with the pulp bleaching process) is accomplished in the No. 8 Line by a thickener and filtrate tank/filtrate dump tank configuration. Other pre-bleach treatment includes deknotting, screening, and oxygen delignification, as described above for the No. 7 Pulp Mill.

Emissions from certain sources in the No. 8 Pulp Mill are routed to the No. 8 HVLC System or No. 8 LVHC System.

1.4.3 No. 8 Bleach Plant

Bleaching is carried out in a continuous four-stage sequence, with different chemicals, temperatures, and retention times at each stage. The bleaching sequence in the No. 8 Line is:

1. Chlorine dioxide
2. Caustic extraction with oxygen and hydrogen peroxide
3. Chlorine dioxide
4. Chlorine dioxide

The final bleached pulp is pumped at medium consistency to two high density storage tanks. Emissions from the No. 8 Bleach Plant are controlled by the No. 8 Bleach Plant Scrubber with the exception of the caustic extraction washer, which is vented directly to atmosphere.

1.4.4 No. 8 Pulp Dryer

Bleached pulp from the two high density storage chests flows through a low-density surge chest and then to the No. 8 Pulp Dryer. Bleached pulp from the No. 2 Bleached High Density Storage Chest can be sent to the No. 7 Mill Low Density Surge Chest; conversely, the No. 8 Mill Low Density Surge Chest can also receive bleached pulp from the No. 7 Mill's Nos. 1 and 2 Bleached High Density Storage Chests. The No. 8 Pulp Dryer is designed and operated similar to a typical bleached Kraft paper machine with a forming section, press section, steam-heated drying section, and baling and packaging section, except that pulp dryers operate at much slower speeds than a conventional paper machine. The fourdrinier section is the first stage of the forming section where water is drained away from the pulp on a continuously moving plastic fabric filter supported on the drainage table with two main rollers, identified as the breast roll and the solid couch roll. The breast roll is located at the front-end of the drainage table, while the solid couch roll is located at the end of the drainage table. As the water drains through the fabric and away from the pulp, a sheet is formed as it moves through the fourdrinier section. The sheet of pulp is transferred from the solid couch roll to the pickup roller of the press section as it continues to the

next processing step on the pulp dryer. The No. 8 Pulp Dryer is also capable of making rolled fluff pulp.

1.4.5 No. 8 Liquor Recovery/Recausticizing

The spent cooking liquor (black liquor) extracted from the chip digester flash tanks contains sodium carbonate, sodium sulfate, and organic materials removed from the wood chips. As part of the Kraft pulping system, black liquor is processed to regenerate cooking liquor (white liquor). The black liquor solids are concentrated through evaporation and burned in a recovery furnace to produce a smelt of sodium carbonate, sodium sulfide, residual organics, and spent chemicals. If the black liquor inventory is low, fuel oil and natural gas can be fired in the recovery furnace as auxiliary fuels to help meet steam demand. Additional authorized auxiliary fuels include tall oil, glycerin, and biodiesel. Auxiliary fuels can also be fired during startup and shutdown of the recovery furnace. Black liquor is sometimes received from off-site to supplement the black liquor inventory and to avoid burning auxiliary fuel. Black liquor can also be traded between the No. 7 and No. 8 Lines or sold offsite. HVLC NCGs from the No. 8 Pulp Mill (chip digestion, pulp washing, and oxygen delignification systems) are burned in the No. 8 Recovery Furnace. PM emissions from the No. 8 Recovery Furnace are controlled by two dry electrostatic precipitators in parallel configuration.

The recausticizing process produces cooking liquor from recycled inorganic compounds generated in the recovery furnace and lime kiln. The smelt from the recovery furnace is discharged to the smelt dissolving tank, where it is combined with weak wash from the mud washing system to form green liquor. Emissions from the smelt dissolving tank are controlled by a wet dynamic fan scrubber. The green liquor is blended and clarified to remove the residual organics and spent chemicals (referred to as dregs) before being routed to a lime slaker, where water and lime (calcium oxide) are added and react to create slaked lime (calcium hydroxide).This mixture of green liquor and slaked lime are then routed to a series of four causticizers, where the green liquor reacts with the slaked lime to convert the sodium carbonate to sodium hydroxide, creating white liquor. Residual calcium carbonate (lime mud) is formed during this reaction. The calcium carbonate is dewatered and burned in the rotary cylindrical No. 8 Lime Kiln to recover the lime. The lime kiln's multi-fuel burner is capable of firing natural gas, low-sulfur fuel oil, crude tall oil, glycerin, biodiesel, and/or hydrogen, either alone or in combination with each other. LVHC NCGs are also burned in the lime kiln. PM emissions from the No. 8 Lime Kiln are controlled by a dry electrostatic precipitator.

A diesel-fired kiln auxiliary drive engine, The No. 8 Kiln Auxiliary Drive Engine, is available to rotate the lime kiln in emergency situations when electrical power is unavailable at the No. 8 Mill.

1.4.6 No. 8 Utilities

Supplemental steam for the No. 8 Line (e.g., additional steam beyond what is produced by the No. 8 Recovery Furnace) is produced by a natural gas-fired boiler.

All of the high-pressure steam produced at the No. 8 Mill flows through a turbine generator to produce electrical power. If supplemental power is required, it is purchased from a public utility. Following the turbine generator, the steam pressure is reduced to meet the ARC Mill's requirements for process heat.

In addition to the power boiler and turbine generator described above, a diesel-fired Turbine Emergency Generator can be used to support the No. 8 Line when electrical power is unavailable.

1.4.7 No. 8 Line LVHC and HVLC Gases and Pulping Condensates

In the Kraft pulp manufacturing processes, NCGs containing reduced sulfur compounds and various other organic compounds are generated. The NCGs are collected in the LVHC system from the LVHC sources at the pulp mill area, turpentine decanters, turpentine storage, evaporators, and concentrators, and are combined and combusted in either the No. 8 Lime Kiln or Backup NCG Incinerator.

Foul process condensates that must be controlled under 40 CFR Part 63 Subpart S include selected contaminated condensates that are combined with the condensates from low point drains in the NCG system and treated in ARC's wastewater treatment system.

HAP emissions from No. 8 Line HVLC sources are combusted in the No. 8 Recovery Furnace.

1.5 MISCELLANEOUS INDUSTRIAL ACTIVITIES

1.5.1 Crude Tall Oil/Turpentine Production

Crude sulfate turpentine and crude tall oil (CTO) are generated as by-products of the Kraft pulping of softwoods. Turpentine is condensed and recovered in the Turpentine Recovery System from the vapors formed in the continuous digesters during the cooking process. The recovered turpentine is loaded into trucks and sold off-site. Emissions from the turpentine decanters are routed to the No. 8 LVHC System.

CTO is produced by acidulating the sodium soaps that are formed when the resinous acids in softwood combine with cooking liquors during the Kraft pulping process. CTO can be burned as fuel or loaded onto trucks or railcars and sold off-site.

Emissions from certain emissions units in the CTO process are controlled by a wet scrubber.

1.5.2 Chlorine Dioxide Generation

Chlorine dioxide is manufactured on-site from the reaction of sodium chlorate and sulfuric acid with methanol used as the catalyst or reducing agent. The continuous reaction is carried out under vacuum in a sealed vessel, also referred to as a generator. Chlorine dioxide gas is pulled from the generator by vacuum and passes upward through a packed column, also referred to as an absorption tower. The gas is absorbed by cold water flowing downward through the tower. The chlorine dioxide solution is stored for use in the No. 7 and No. 8 Bleach Plants.

Emissions from the ARC Mill's three chlorine dioxide generators are controlled by two white liquor scrubbers, one for the Module A and B generators and one for the Module C generator.

1.5.3 Wastewater Treatment

The wastewater streams generated by various process operations at the ARC Mill are combined prior to treatment. The wastewater treatment system includes primary clarification for the removal of suspended solids; temperature control through the use of cooling towers; and secondary treatment, where elemental oxygen is injected in enclosed aeration basins. The secondary treatment breaks down the oxygen demanding components of the wastewater. From aeration basins, wastewater flows into secondary clarifiers for the removal of additional suspended solids. The treated effluent leaving the secondary clarifiers is discharged pursuant to a State discharge permit into the Alabama River through an underwater diffuser.

Process condensates utilized to demonstrate compliance with the facility Subpart S methanol destruction requirements are directly injected into the enclosed aeration basins for treatment via an enclosed hard-pipe.

The largely biomass-containing residuals removed during the primary and secondary clarification steps are collected in thickeners and pumped to filter presses to remove additional water. These thickened residuals, or sludge, are beneficially reused or sent to the ARC Mill's on-site landfill for disposal. Liquid filtrate from the filter presses is returned to the wastewater treatment system.

1.5.4 Other Miscellaneous Processes

The ARC Mill has other miscellaneous process operations that support pulp manufacturing. Two industrial on-site landfills are utilized for disposal of residuals from wastewater treatment, ash generated by the power boilers, and general industrial waste. As is typical for a large industrial facility, the ARC Mill: (1) operates a number of small stationary and portable engines (some of which may be used on a temporary basis and have their own small fuel tanks); (2) uses equipment that contains chlorofluorocarbons (CFCs); (3) uses parts washers in its maintenance areas; and (4) stores gasoline, lubricants, and other materials for use in company-owned vehicles and maintenance equipment which are used on-site. The ARC Mill also conducts other miscellaneous insignificant activities such as: (1) storing chemicals in 55-gallon drums, totes, bins, and other small containers; (2) blast cleaning and painting of structural components; (3) machining and welding of equipment to support process operations; (4) fire training activities for emergency response personnel; and (5) the operation of laboratory hoods.

1.6 PROJECT DESCRIPTION

The overall goal of the No. 7 Mill Transformation Project is to increase efficiency and reliability to optimize the production of the No. 7 Mill. The project is expected to be implemented over several years. The proposed changes to each portion of the Mill are detailed in the following subsections as they are currently understood (at this point in the project development). The final project scope may include additional changes at the Mill necessary to reach the production rates presented in this application. As such, GP is proposing to permit all changes identified during project development as necessary for this transformation and optimization project to the extent they do not result in additional emissions increases over those represented in this application. Additional detail on the expected changes is included throughout this application, including the process flow diagrams in Appendix E.

1.6.1 No. 7 Mill Process Changes

1.6.1.1 Pulp Mill

One of the main purposes of the proposed project is the replacement of the existing two continuous digesters (Emissions Unit [EU] Z004, Equipment ID Nos. 276-279) with a single new continuous digester (Equipment ID No. 282). The new digester will have a capacity of 1,897 air dried short tons of unbleached pulp (ADTUBP) and will be routed to the existing LVHC system or HVLC system[4] (e.g., chip meter, blow tank). The following changes to ancillary equipment in the digester area are proposed.

[4]In some cases, due to process safety concerns, gases from LVHC sources can contain properties (e.g., excess oxygen) that could cause unsafe conditions to exist if introduced to the LVHC system. In those cases, these gases are collected and controlled by the HVLC system. Applicable federal rules acknowledge this practice in §60.284a(e)(vi) and §63.443(e)(3).

- The existing No. 1 and 2 Digesters Chip Bin (Equipment ID No. 205) will be replaced with a new Chip Bin (Equipment ID No. 206). The new chip bin will utilize fresh steam (i.e., steam from the low-pressure steam header and clean steam from the vapor reboiler) and will vent to atmosphere (i.e., not be collected).
- In the No. 7 Mill Woodyard, Digester Chip Conveyor 3 (part of EU WDYD), which feeds the existing Chip Bin, will be removed, and Digester Chip Conveyor 2 (Equipment ID No. 7RWC50) will be modified to reach the location of the new Air Lock Screw Conveyor (Equipment ID No. 7RWC58) that will feed the new Chip Bin.
- The Nos. 1 and 2 Presteamers (Equipment ID Nos. 278 and 279) will be removed from service.
- A new Chip Meter (Equipment ID No. 207) will convey chips to the Digester, and any emissions will be collected by the HVLC system.
- A new Digester Evaporator (Equipment ID No. 285) will be added.[5] The resulting vapor will be sent to the Digester and collected by the LVHC system.
- The existing Flash Tanks (Equipment ID Nos. 276 and 277) will be replaced with a new Flash Tank (Equipment ID No. 283), which will be sent to the Vapor Reboiler and collected by the LVHC system.
- The existing Blow Tank (Equipment ID No. 275) will be repurposed (see discussion below regarding utilization as the Brown Stock Transfer Tank) and replaced with a new Blow Tank (Equipment ID No. 286), which will be collected by the HVLC system.
- A new Digester Area Foul Condensate Tank (Equipment ID No. 284) will be added, which will be collected by the HVLC system. The tank will be able to direct condensate to the No. 8 Foul Condensate Tank or directly to the wastewater treatment system.

The following additional changes are proposed in Brown Stock Line Area to accommodate increased digester production and improve pulp quality.

- The three existing Pressure Knotters will be replaced with a new Primary Pressure Knotter (Equipment ID No. 104a). The pressure knotter is enclosed and will not vent directly to atmosphere.
- The existing Nos. 1 and 2 Secondary Knotters (Equipment ID No. 103a and b) will be replaced by a new Secondary Knotter[6] (Equipment ID No. 104b), which will be collected by the HVLC system.
- A new Knotter Accepts Tank (Equipment ID No. 104c) and new Knot Conveyor (Equipment ID No. 104d) will be added. Emissions from both units will be collected by the HVLC system.
- The existing Knot Press (Equipment ID No. 213) will be removed.
- The existing Blow Tank (Equipment ID No. 275) will be repurposed as the Brown Stock Transfer Tank (Equipment ID No. 275) and will be collected by the HVLC system.
- The Primary and Secondary Screens (Equipment ID Nos. 133a-133d and 134, respectively) will be modified to increase the flow through the system (e.g., stock pump and impeller replacements).

[5] A portion of the wash extraction from the wash extraction screens will be sent to the Digester Evaporator. The Digester Evaporator will use medium-pressure steam to evaporate water and produce steam for the new Continuous Digester's vapor zone. The concentrated liquor will get pumped back to the new Flash Tank for further heat recovery, and the medium-pressure steam condensate will be recovered and sent to either the Vapor Reboiler or the recovery area.

[6] The Secondary Knotter is also referred to as the Knot Reject Washer.

- A new Quaternary Screen (Equipment ID No. 130) and Shive Cleaner (Equipment ID No. 131) will be added.

1.6.1.2 Bleach Plant

The No. 7 Bleach Plant (EU X020) will be modified to facilitate the increase in production to 1,747 air dried short tons bleached pulp (ADTBP) per day. Physical modifications for all stages, including the extraction stages, are expected and may include changes such as installation of vacuum assist or drop leg modifications and pump and motor upgrades and/or replacements.

1.6.1.3 Pulp Drying

The existing No. 7 Mill Pulp Dryer (Equipment ID No. 109) will be replaced with a new Pulp Dryer (Equipment ID No. 108). The new Pulp Dryer will have a capacity of 1,925 air dried short tons of finished paper (ADTFP) per day.

1.6.1.4 Liquor Recovery

The following changes are proposed in the No. 7 Mill's Liquor Recovery area.

- The existing Multiple Effect Evaporator System (EU X006) will be modified by replacing the falling film surface condensers on the concentrators to improve reliability.
- The Precipitator Mix Tank (Equipment ID No. 127) will be modified to receive intermediate black liquor from the No. 7 Mill's Intermediate Liquor Storage Tank (Equipment ID No. 239) and then once combined with ash from the precipitator, will feed the Falling Film Evaporator.[7]

1.6.1.5 Recausticizing Area

The following changes are proposed for the recausticizing area to support the requested higher production rates for the No. 7 Line.

- The existing Slaker (Equipment ID No. 116) and associated scrubber will be replaced with a new Slaker (Equipment ID No. 132) and scrubber.
- A new causticizer, the No. 5 Causticizer (Equipment ID No. 261), will be added following the Causticizer Sump Tank (Equipment ID No. 252).
- A White Liquor Pressure Disk Filter (Equipment ID No. 287), No. 2 Lime Mud Storage Tank (Equipment ID No. 288)[8], Shrink Tank[9], and Acid Tank[10] will be added.
- The Nos. 1 and 2 Green Liquor Clarifiers (EUs 115a and 115b) will be modified.
- The No. 1 White Liquor Clarifier (Equipment ID No. 117a) will be converted to a Green and White Liquor Swing Tank.
- The No. 2 White Liquor Clarifier (Equipment ID No. 117b) will be converted to a white liquor storage tank and will be referred to as the No. 2 White Liquor Storage Tank.

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[7] The tank currently receives heavy black liquor and once combined with the ash from the precipitators sends the mixture to the Black Liquor Dump Tank (Equipment ID No. 281) or to the Salt Cake Mix Tank (Equipment ID No. I-111).

[8] Past permit applications have included reference to a No. 2 Lime Mud Storage Tank. The existing unit is no longer in service.

[9] The Shrink Tank will store water and thus, is not otherwise addressed in this application.

[10] The Acid Tank will only be filled when acid cleaning of the new White Liquor Pressure Disk Filter is needed. Because this tank will only be used intermittently and is not associated with production operations, it is not otherwise addressed in this application.

- The Lime Mud Mix Tank (Equipment ID No. 254) will be permanently removed from service.
- The Weak Wash Clarifier (Equipment ID No. 258) will be converted to a Weak Wash Storage Tank.
- The No. 7 Lime Kiln will be modified to increase efficiency and capacity to 462 tons of lime product (TCaO) per day. Modifications to the lime kiln will include replacement of the existing lime mud feed conveyance and natural gas burner as well as installation of a flash dryer and rotary cooler. The new burner will have a maximum fuel firing rate of 127 MMBtu/hr and will also have the capability to fire LVHC NCGs (i.e., same as existing burner). In addition, the existing scrubber will be replaced with an electrostatic precipitator (ESP).
- The existing in-line Lime Product Crusher and associated belt conveyor and bucket elevator (all enclosed) will be replaced.

1.6.2 No. 8 Mill Process Changes

In addition to modifications of the No. 7 Mill, selected upgrades described as follows will be made to the No. 8 Mill to support increased production at the No. 7 Mill.

- Two existing tanks historically used to store biodiesel will be modified to skim soap and are referred to as the Nos. 1 and 2 Soap Skimmer Tanks (Equipment ID Nos. 424 and 425).[11]
- The existing Soap Skimmer Tank (Equipment ID No. 427) will be permanently removed from service.
- An Intermediate Black Liquor Storage Tank (Equipment ID No. 426) will be installed to facilitate transfer of intermediate black liquor between the two lines.
- The No. 8 Multiple Effect Evaporator (EU X016) will be modified to increase its capacity to 3,842 tons of black liquor solids (TBLS) per day, which will include the addition of two effects (one expected to be in parallel with an existing effect), a black liquor heater, and other changes.
- The No. 8 Recovery Furnace (EU X012) will be modified to increase its capacity to burn black liquor solids (BLS) to 3,750 TBLS per day as well as provide additional steam to the No. 7 Mill to meet increased demand.
- The Mill has plans to replace the existing No. 8 Smelt Dissolving Tank (EU X013) as a separate project, unrelated to the current project. However, since the No. 7 Transformation Project is funding modifications to increase the capacity of the new smelt dissolving tank (EU X015), the replacement project has been aggregated for the federal applicability analysis. In addition, as part of the No. 7 Transformation Project, the scrubber on the outlet will be replaced, a tube condenser added, and the resulting exhaust will normally be routed to the No. 8 Recovery Furnace

  In limited operating scenarios (e.g., when performing maintenance on the No. 8 Smelt Dissolving Tank's condenser or 'clean air' fan), the exhaust from the No. 8 Smelt Dissolving Tank will vent through the scrubber directly to atmosphere. The ARC Mill requests that the flexibility to vent from the scrubber outlet for up to 24 hours in any semiannual period while the smelt dissolving tank is receiving smelt (e.g., within 30

[11] The analysis included herein considers these tanks as new, because the existing biodiesel tanks have been out of service for several years. The current design intends to utilize the existing tanks, but the final design may include construction of new two new tanks.

minutes of establishing black liquor solids firing in the No. 8 Recovery Furnace[12]). ARC expects that black liquor solids firing will be required to be established in the No. 8 Recovery Furnace to meet safety interlocks necessary to introduce the smelt dissolving tank scrubber exhaust into the furnace.

- Foul condensate collected in the No. 7 Digester Area Foul Condensate Tank (Equipment ID No. 284) will be able to be routed to the No. 8 Foul Condensate Tank or directly to the Wastewater Treatment System (EU 704).

1.6.3 Crude Tall Oil Plant Changes

The existing Tall Oil Reactor (Equipment ID No. 321), associated equipment (including the Flash Tower and condenser [Equipment ID No. 497] and Flash Tower Feed Tank [Equipment ID No. 474]), and scrubber may be modified to increase production or replaced with new Tall Oil Reactor (Equipment ID No. 320), associated equipment (including Flash Tower Feed Tank [Equipment ID No. 475][13]), and scrubber. In addition, the scrubber exhaust – if modified or replaced -- will be collected to the HVLC system[14]. The capacity of the modified or new plant will be 182 tons of crude tall oil (TTO) per day to accommodate the increased black liquor production associated with the production increase proposed for the No. 7 Mill. The ARC Mill is still contemplating what changes, if any, will be made to the Tall Oil Plant as part of this project. Therefore, this application considers the emission units as new (replaced) or modified as well as affected.

1.6.4 Turpentine Plant Changes

The existing No. 7 Turpentine Decanter will be replaced with a new decanter (Equipment ID No. 503). In addition, a new Turpentine Storage Tank (Equipment ID No. 504), under flow tank, and turpentine loading station will be added that will be dedicated to the No. 7 Decanter[15]. The new decanter, storage tank, and under flow tank will be routed to the LVHC system.

1.6.5 Administrative Updates Unrelated to the Project

As part of this application, GP proposes to clarify the following items that are unrelated to the proposed project.

- The current Major Source Operating Permit for the Mill represents the operating capacity of the No. 7 Power Boiler as 504 million British thermal units per hour (MMBtu/hr). After review of original design documents, GP believes the boiler's total and wood residual (e.g., bark) maximum firing rates are 598.4 MMBtu/hr. Therefore, this application proposes to update the permit to reflect this higher capacity; the higher firing rate is reflected on the

[12] During the first 30 minutes of black liquor solids firing, no smelt is expected to be discharged from the recovery furnace bed into the smelt dissolving tank.

[13]The existing Flash Tower Feed Tank vents to atmosphere. This analysis conservatively assumes the tank, if replaced, will vent to atmosphere. However, the final design may include control of the unit to the Tall Oil Reactor Scrubber.

[14] Since the Tall Oil Reactor and scrubber will be routed to the HVLC system, the potential to emit of the modified or new system is based on assuming venting for up to 4% of the year, consistent with the streams required to be collected to the HVLC system by 40 CFR Part 63, Subpart S at §63.443(e) or 40 CFR Part 60, Subpart BBa at §60.284a(e)(1)(vi).

[15] The existing Turpentine Storage Tank receives turpentine from the Nos. 7 and 8 Turpentine Decanters. With this project, the existing storage tank will be dedicated to the No. 8 Decanter. In addition, the unloading station will continue to be associated with that tank and thus, turpentine from the No. 8 Decanter.

updated forms for the No. 7 Power Boiler in Appendix D. No changes to any emission limits are proposed as part of this request.

- Historical applications have represented the maximum natural gas firing rate of the No. 8 Lime Kiln as 103 MMBtu/hr. GP now believes the maximum firing rate to be 145 MMBtu/hr; the higher firing rate is reflected on the updated forms for the No. 8 Lime Kiln in Appendix D. The potential to emit (PTE) calculations for greenhouses gases (GHGs) in the application are based on the higher natural gas firing rate. No changes to any emissions limits are proposed as part of this request.

In the preparation of this application, GP also conducted a comprehensive review of the mill's process flow diagrams, process description, and emission factors, focused on the emissions units that are new, modified, and affected with respect to the No. 7 Mill Transformation Project and updated, as applicable. Emission factors for existing emissions units were updated, as necessary, to best represent emissions from the equipment based on available emissions data. The basis of emissions rates is described in detail in Section 2 and Appendix B.

1.6.6 Other Planned Projects Unrelated to the Project

Two projects are under consideration for potential concurrent implementation with the No. 7 Mill Transformation Project, though both initiatives are technically and economically independent from the project that is the subject of this application.

- LVHC NCGs from the Nos. 7 and 8 Mills are routed to the Nos. 7 and 8 Lime Kilns (EUs X003 and X014), respectively, as the primary incineration devices for compliance with the requirements of 40 CFR 60 Subpart BB and 40 CFR 63 Subpart S. The Backup NCG Incinerator (EU X029) serves as the secondary incineration device for both lines. GP is evaluating options to eliminate the Backup NCG Incinerator. If implemented, it is likely that the recovery furnace for each line (EU X001 for the No. 7 Line and EU X012 for the No. 8 Line) will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. Conservatively, any future actual or potential emissions associated with the incineration of LVHC NCGs are reflected at the Lime Kilns, the Recovery Furnaces, and the Backup NCG Incinerator in this application, even though it is not known if this project will be implemented. In addition, the contemporaneous netting analysis conservatively includes modification of the No. 7 and No. 8 Recovery Furnaces to accept LVHC NCGs as creditable increases but does not include the creditable decrease associated with the shutdown of the Backup NCG Incinerator as the project. GP will seek authorization of this project separately once the projects are approved and scope is finalized.
- The No. 8 Power Boiler (EU X017) was permanently removed from service in April 2024. GP is planning a project to install a new natural gas-fired package boiler that would replace the shutdown boiler and any rental package boilers on-site. ADEM issued Construction Permit No. 106-0010-X034 that authorized construction of the new unit. Neither the rental boiler(s) nor the new No. 8 Power Boiler are necessary to support the increased steam demand for the No. 7 Mill due to the No. 7 Mill Transformation Project so the new No. 8 Boiler project is not aggregated with this project. This project has been included in the contemporaneous netting analysis.

GP will seek authorization of these projects separately (as applicable) once the projects are approved and scope is finalized.

2. EMISSIONS CALCULATIONS

To determine the appropriate permitting path for the No. 7 Transformation Project, it is necessary to calculate the emissions increases expected to occur. A major PSD modification is triggered if both a significant emissions increase ("Step 1") and a significant net emissions increase ("Step 2") occur. The following sections detail the selected emission factors, calculation methodologies for baseline actual, projected actual and potential emissions, and netting calculations.

2.1 OVERVIEW OF EMISSION FACTORS

To facilitate the emission calculations for this project, GP first determined the appropriate emission factors for each emissions source. Emission factors were obtained using various methodologies and literature sources. These include:

- National Council for Air and Stream Improvement, Inc. (NCASI),
- U.S. EPA's *AP-42 Compilation of Air Emission Factors (5th Edition, Revised),*
- U.S. EPA Mandatory Reporting Rule (MRR),
- Facility stack test data and continuous emissions monitoring (CEMS) data,
- Vendor guarantees and estimates, and
- Other sources of information.

2.1.1 NCASI Emission Factors

NCASI conducts research and provides technical information to all pulp and paper member companies through a variety of publications, including technical bulletins, special reports, handbooks, databases, and newsletters. The emission factor information presented in the technical bulletins is typically deemed the most accurate available for the pulp and paper industry if representative mill-specific test data are unavailable.

GP utilized data from the NCASI Technical Bulletins (TBs) listed below for this project.

- NCASI TB No. 424, *Fugitive Dust Emission Factors and Control Methods Important to the Forest Products Industry Manufacturing Operations*, March 1984.
- NCASI TB No. 677, *Volatile Organic Emissions from Pulp and Paper Mill Sources, Part III - Miscellaneous Source at Kraft and TMP Mill,* September 1994.
- NCASI TB No. 678, *Volatile Organic Emissions from Pulp and Paper Mill Sources – Part IV – Kraft Brownstock Washing, Screening, and Rejects Refining Sources*, October 1994.
- NCASI TB No. 760, *Carbon Monoxide Emissions from Oxygen Delignification and Chlorine Dioxide Bleaching of Wood Pulp,* July 1998.
- NCASI TB No. 942, *Measurement of PM, PM_{10}, and CPM Emissions from Paper Machine Source*s, November 2007 and updated 2017.
- NCASI TB No. 973, *Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources – A Second Update*, February 2010.
- NCASI TB No. 1020*, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers – An Update to Technical Bulletin 884*, December 2013.
- NCASI TB No. 1050, *Compilation of Air Toxic Emissions Data for Pulp and Paper Sources – Publication Accompanying the 2018 Air Toxics Emissions Database,* September 2018.

Additionally, the 2018 NCASI Air Toxics Pulp and Paper Database (last updated April 2020) and information contained in a whitepaper prepared by NCASI on PM_{10} and $PM_{2.5}$ emissions from wood debarking were used.

2.1.2 U.S. EPA Emission Factors

Emission factors from U.S. EPA's AP-42 database (5^{th} edition unless otherwise noted) were relied upon to supplement the emission factor data from NCASI for fuel combustion. Additionally, AP-42 emission factors were utilized for several material handling activities and fugitive particulate matter (PM) emissions for the specified sources. Emission factors from the following AP-42 sections were utilized to estimate emissions from emissions units in this application:

- Section 1.3, *Fuel Oil Combustion*,
- Section 1.4, *Natural Gas Combustion*,
- Section 5.2, *Transportation and Marketing of Petroleum Liquids,*
- Section 7.1, *Organic Liquid Storage Tanks,*
- Section 13.2.1, *Paved Roads*,
- Section 13.2.2, *Unpaved Roads*, and
- Section 13.2.4, *Aggregate Handling and Storage Piles*.

In addition, U.S. EPA's WebFIRE emissions database was relied upon for particle size information for log debarking (Source Classification Code [SCC] 30700801) and U.S. EPA's PM Augmentation Tool was relied upon for particle size information for cooling towers (SCC 38500101).

2.1.3 Greenhouse Gas Emission Factors

Emission factors from U.S. EPA's Mandatory Greenhouse Gas Reporting Rule (40 CFR Part 98, updated April 25, 2024) were used to estimate GHG emissions for the various combustion emissions sources and applicable process sources at the Mill. These factors were taken from Tables C-1 and C-2 for fossil fuels, Table AA-1 for black liquor combustion in the recovery furnaces, and Table AA-2 for natural gas and fuel oil combustion in the lime kilns. In addition, the global warming potentials for the GHGs included in this application were taken from Table A-1, as updated April 25, 2024.

2.1.4 Stack Test Data

Site-specific stack test data and CEMS were used for the calculation of baseline actual emissions where available.

Sources with stack test data include the following:

- Nos. 7 and 8 Recovery Furnaces,
- Nos. 7 and 8 Smelt Dissolving Tanks,
- Nos. 7 and 8 Lime Kilns, and
- No. 7 Power Boiler.

The recovery furnaces and lime kilns are equipped with TRS CEMS.

For affected sources, projected actual emissions for units with stack test data or CEMS data were calculated based on a review of the emissions data over the baseline period with a safety margin applied.

Stack test data from similar sources from other GP mills were used as well when determined to be representative (e.g., VOC emission factors for the existing and new No. 7 Pulp Dryer).

2.1.5 Vendor Guarantees and Estimates

Emission factors for certain pollutants emitted from the No. 7 Lime Kiln and No. 8 Recovery Furnace are based on vendor guarantees. Other emission factors were also based on the vendor information (e.g., NO_X emission factor for natural gas firing for the Nos. 7 and 8 Recovery Furnaces).

2.1.6 Other Sources of Emissions Data

Other emission factors and approaches were also used to estimate emissions from the emissions units in this application such as existing and proposed BACT and regulatory emission limits, mass balance, and other published information.

2.2 PSD Calculations

ARC is an existing major source with respect to the PSD permitting program. ADEM administers its own PSD permitting program under ADEM Administrative Code r. 335-3-14-.04 and defines the term "major modification" under subsection (2)(b) of that regulation as "any physical change or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any regulated NSR pollutant."

For determining whether the No. 7 Mill Transformation Project is deemed a major modification, ARC used the hybrid test for projects that involve multiple times of emissions units (i.e., new and existing emissions units) as described under ADEM Administrative Code r. 335-3-14-.04(1)(i). Specifically, the "actual-to-projected-actual applicability test" was used for existing units, and the "actual-to-potential test" was used for new units. A significant emissions increase is projected to occur if the sum of the emissions increase for each pollutant equals or exceeds the significant emission rate (SER) for that pollutant.

For units shut down as part of the project, the emissions decreases from these sources are included in Step 1 of the PSD applicability analysis, as allowed under U.S. EPA's final November 24, 2020 Project Emissions Accounting Rule (PEAR).[16] For existing emissions units that show a negative change in emissions not associated with a federally enforceable reduction in emissions (e.g., installation of a control device or measure), the emissions change is set to zero as a conservative calculation.

2.2.1 Baseline Actual Emissions

Baseline actual emissions are defined by ADEM Admin. Code r. 335-3-14-.04(2)(uu)2. as:

> *the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the date the owner or operator begins*

[16] U.S. EPA published the final rule on PEA in the Federal Resister on November 24, 2020, https://www.federalregister.gov/documents/2020/11/24/2020-23784/prevention-of-significant-deterioration-psd-and-nonattainment-new-source-review-nnsr-project.

actual construction of the project, or the date a complete permit application is received by the Department for a permit required under this rule, whichever is earlier…

For this project, ARC reviewed the readily available data from the baseline period, which included the 10-year period beginning January 2015 and identified the highest 24-consecutive month period of emissions for each pollutant. The baseline actual emission calculations were performed using a combination of emission factors from the references identified above. As allowed under ADEM Admin. Code r. 335-3-14.04(2)(uu)(2)(iv) of ADEM's air pollution control rules, we used different consecutive 24-month baseline periods for each of the regulated NSR pollutants.

Table 2-1 provides a summary of the selected baseline periods for each regulated NSR pollutant emitted by an emissions unit associated with the No. 7 Mill Transformation Project. Detailed baseline actual emission calculations are provided in Appendix B.

TABLE 2-1. BASELINE ACTUAL PERIOD FOR EACH POLLUTANT

Pollutant	Start Period	End Period
Filterable PM	January 2018	December 2019
Total PM_{10}	May 2017	April 2019
Total $PM_{2.5}$	January 2017	December 2018
SO_2	January 2015	December 2016
NO_X	January 2020	December 2021
CO	January 2016	December 2017
VOC	June 2019	May 2021
SAM	May 2022	April 2024
Lead	May 2016	April 2018
H_2S	July 2019	June 2021
TRS	June 2019	May 2021
Total GHG	June 2019	May 2021
Total GHG as CO_2e	June 2019	May 2021

2.2.2 Potential-to-Emit and Projected Actual Emissions

As mentioned previously, under the PSD permitting program, emissions increases are calculated differently for new and existing emissions units. The "Potential-to-Emit" or PTE for an emissions unit is defined in ADEM Admin. Code r. 335-3-14-.04(2)(d) as:

the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is enforceable. Secondary emissions [see Paragraph 335-3-14-.04(2)(r)] do not count in determining the potential to emit of a stationary source.

The PTE were used for the following new equipment and were based on design capacity:

- Transfer of Chips to the Air Lock Screw Conveyor (Equipment ID No. 7RWC58),
- No. 7 Mill Chip Bin (Equipment No. ID 206),
- No. 7 Mill Continuous Digester (Equipment ID No. 282),

- No. 7 Mill Flash Tank (Equipment ID No. 283),
- No. 7 Mill Digester Area Foul Condensate Tank (Equipment ID No. 284),
- No. 7 Mill Digester Evaporator (Equipment ID No. 285),
- No. 7 Mill Blow Tank (Equipment ID No. 286),
- No. 7 Mill Knotter System (Equipment ID Nos. 104a – 104d),
- No. 7 Mill Chip Meter (Equipment ID No. 207),
- No. 7 Mill Quaternary Screen (Equipment ID No. 130),
- No. 7 Mill Shive Cleaner (Equipment ID No. 131),
- No. 7 Mill Pulp Dryer (EU X108),
- No. 8 Mill No. 2 Intermediate Black Liquor Storage Tank (Equipment ID No. 426),
- No. 8 Smelt Dissolving Tank (EU X015),
- No. 7 Mill Slaker (Equipment ID No. 132),
- No. 7 Mill No. 5 Causticizer (Equipment No. ID 261),
- Tall Oil Reactor and Ancillary Equipment[17] (Equipment ID No. 320),
- Tall Oil Flash Tower Feed Tank[17] (Equipment ID No. 475),
- No. 7 Turpentine Decanter and Underflow Tank (Equipment ID No. 503),
- No. 7 Turpentine Storage Tank (Equipment ID No. 504), and
- No. 7 Turpentine Loading.[18]

For modifications to existing units, emissions changes are calculated as the difference between the future projected actual emissions (PAE) and the BAE.

Projected actual emissions are defined by ADEM Rule 335-3-14-.04(2)(nn) as:

> *the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (consecutive 12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source....*

When determining the maximum annual projected actual emission rate, a source must consider all relevant information, including historical operational data, the company's own representations, the company's expected business activity, and the company's highest projections of business activity for the five-year period following project implementation.

PAE for existing sources associated with the No. 7 Mill were based on a production of 1,725 air dried tons of unbleached pulp (ADTUBP) per day and 355 days per year of operation and expected production rates upstream and downstream established based on engineering design information (i.e., accounting for efficiency improvements proposed in this application) as well as historical relationships between production parameters.

[17] As described in Section 1.6.3, equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be affected, modified, or replaced. Project emissions increases are accounted for as PTE of new or modified equipment minus the BAE of the existing equipment (i.e. Project Emissions Accounting approach as described later in this section) for the scenarios where the unit is modified or replaced.

[18] New equipment that are not expected to generate emissions (e.g., the White Liquor Pressure Disc Filter) are not included in this list as the associated PTE is zero.

By definition, PAE should exclude that portion of a unit's emissions following a project that the unit could have accommodated during the baseline period and are unrelated to the proposed changes. Typically, the "could have accommodated" (CHA) emissions are estimated from the maximum 30-day emission rate during the baseline period. Due to the number of new units and changes associated with the Mill, the CHA emissions were not excluded for the purposes of this application. However, GP reserves the right to consider these emissions in the future.

2.2.3 Associated Emissions Increases

Due to the nature of the proposed changes, nearly every emissions unit on the No. 7 Line is assumed to be affected by the project, even if no physical modifications are made. Emissions increases for affected emissions units were calculated based on a PAE to BAE analysis, as described for modified units.

Table 2-2 summarizes how each emissions source was considered with respect to emissions increases.[19]

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
Woodyard			
Digester Chip Conveyor 2	WDYD	7RWC50	Modified
Air Lock Screw Conveyor	WDYD	7RWC58	New
Digester Chip Conveyor 3	WDYD	7RWC59	Shutdown
Other Affected Transfers and Equipment	WDYD	Multiple	Affected
Other Unaffected Transfers and Equipment	WDYD	Multiple	Unaffected
No. 7 Pulp Mill			
No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	Z004	205	Shutdown
No. 7 Mill - Chip Bin	Z004	206	New
No. 7 Mill - Chip Meter	Z004	207	New
No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, & Flash Tanks	Z004	276-279	Shutdown
No. 7 Mill - Continuous Digester	Z004	282	New
No. 7 Mill - Flash Tank	Z004	283	New
No. 7 Mill - Foul Condensate Tank	Z004	LVHC	Affected
No. 7 Mill - Digester Area Foul Condensate Tank	Z004	284	New
No. 7 Mill - Digester Evaporator	Z004	285	New
No. 7 Mill – Blow Tank	Z004	286	New
No. 7 Mill - Secondary Knotter No. 1	Z007	103a	Shutdown
No. 7 Mill - Secondary Knotter No. 2	Z007	103b	Shutdown
No. 7 Mill - Knot Press	Z007	213	Shutdown

[19] The table excludes the following equipment that will be new or modified as part of the project but are not sources of emissions: No. 7 Mill - Nos. 1 and 2 Green Liquor Clarifiers (Equipment IDs 115a and 115b, No. 7 Mill - White Liquor Pressure Disc Filter (Equipment ID 287), No. 7 Mill - No. 2 Lime Mud Storage Tank (288), and the Lime Product Crusher.

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
No. 7 Mill - Primary (Pressure) Knotter	Z007	104a	New
No. 7 Mill - Secondary Knotter (Knotter Drainer)	Z007	104b	New
No. 7 Mill - Knotter Accepts Tank	Z007	104c	New
No. 7 Mill - Knot Conveyor	Z007	104d	New
No. 7 Mill - Brown Stock Transfer Tank (current No. 7 Mill – Blow Tank)	Z007	275	Modified
No. 7 Mill - Brownstock Washers (4 Stages)	Z007	118a – 118d	Affected
No. 7 Mill - Foam Tower	Z007	119	Affected
No. 7 Mill - Brown Stock Dump Tank	Z007	N/A	Unaffected
No. 7 Mill - Oxygen Delignification	Z007	122	Affected
No. 7 Mill - Decker	Z007	105	Affected
No. 7 Mill - Decker Filtrate Chest	Z007	106	Affected
No. 7 Mill - MC Standpipe	Z007	214	Affected
No. 7 Mill - Washed Brown Stock Chest	Z007	128	Affected
No. 7 Mill - Primary Screens	Z007	133a – 133d	Modified
No. 7 Mill - Primary Rejects Tank	Z007	120	Affected
No. 7 Mill - Secondary Screen	Z007	134	Modified
No. 7 Mill - Secondary Rejects Tank	Z007	121	Affected
No. 7 Mill - Swing Screen	Z007	135	Affected
No. 7 Mill - Tertiary Screen	Z007	136	Affected
No. 7 Mill - Tertiary Rejects Tank	Z007	129	Affected
No. 7 Mill - Quaternary Screen	Z007	130	New
No. 7 Mill - Shive Cleaner	Z007	131	New
No. 7 Mill - Brown Stock High Density Storage No. 1	N/A	107a	Affected
No. 7 Mill Bleach Plant			
No. 7 Mill Bleach Plant	X020	X020a – X020b, X020e – X020f, X020j – X020l	Modified
No. 7 Mill - 1st Extraction Stage Washer	X020	X020c	Modified
No. 7 Mill - 1st Extraction Stage Seal Chest	X020	X020d	Modified
No. 7 Mill - 2nd Extraction Stage Washer	X020	X020h	Modified
No. 7 Mill - 2nd Extraction Stage Seal Chest	X020	X020i	Modified
No. 7 Mill Pulp Drying			
No. 7 Mill Bleached HD Storage Chest No. 1	N/A	225	Affected
No. 7 Mill Bleached HD Storage Chest No. 2	N/A	226	Affected
No. 7 Mill Bleached HD Storage Chest No. 3	N/A	224	Affected
No. 7 Mill Bleached LD Surge Chest	N/A	227	Affected
No. 7 Mill Pulp Dryer	X109	109	Shutdown
No. 7 Mill Pulp Dryer	X108	108	New
No. 7 Mill Liquor Recovery			

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
No. 7 Mill - Weak Black Liquor Tank No. 1	X032	110A	Affected
No. 7 Mill - Weak Black Liquor Tank No. 2	X032	110B	Affected
No. 7 Mill - Weak Black Liquor Tank No. 3	X032	110C	Affected
No. 7 Multiple Effect Evaporator System	X006	X006	Modified
No. 7 Mill Soap Skimmer Tank	X032	123	Affected
No. 7 Mill Soap Storage Tank	X032	123	Affected
No. 7 Mill - Intermediate (55%) Black Liquor Tank	X032	239	Affected
No. 7 Precipitator Mix Tank	X032	127	Modified
No. 7 Mill - Boilout Tank	X032	242	Affected
No. 7 Mill - No. 1 Heavy Black Liquor Storage Tank	X032	240	Affected
No. 7 Mill - No. 2 Heavy Black Liquor Storage Tank	X032	241	Affected
No. 7 Mill - Black Liquor Dump Tank	X032	281	Affected
No. 7 Salt Cake Mix Tank	X032	111	Affected
No. 7 Recovery Furnace	X001	X001	Affected
No. 7 Smelt Dissolving Tank	X002	X002	Affected
No. 7 Mill Recausticizing			
No. 7 Mill - Green Liquor Blend Tank	X030	278	Affected
No. 7 Mill - Dregs Filter	X030	246	Affected
No. 7 Mill - Dregs Filter Vacuum Pump	X030	247	Affected
No. 7 Mill - Slaker	X030	116	Shutdown
No. 7 Mill - Slaker	X030	132	New
No. 7 Mill - No. 1 Causticizer	X030	248	Affected
No. 7 Mill - No. 2 Causticizer	X030	249	Affected
No. 7 Mill - No. 3 Causticizer	X030	250	Affected
No. 7 Mill - No. 4 Causticizer	X030	251	Affected
No. 7 Mill - Causticizer Sump Tank	X030	252	Affected
No. 7 Mill - No. 5 Causticizer	X030	261	New
No. 7 Mill - Green and White Liquor Swing Tank (current No. 7 Mill - No. 1 White Liquor Clarifier)	X030	117a	Modified
No. 7 Mill - No. 2 White Liquor Storage Tank (current No. 7 Mill - No. 2 White Liquor Clarifier)	X030	117b	Modified
No. 7 Mill - No. 1 White Liquor Storage Tank	X030	253	Affected
No. 7 Mill - NASH Tank	X030	244	Affected
No. 7 Mill – NaOH Tank	X030	245	Affected
No. 7 Mill - No. 1 Lime Mud Storage Tank	X030	255a	Affected
No. 7 Mill - Lime Mud Precoat Filter	X030	256	Affected
No. 7 Mill - Lime Mud Filter Vacuum Pump	X030	257	Affected
No. 7 Mill - Weak Wash Storage Tank (current No. 7 Mill – Weak Wash Clarifier)	X030	258	Affected
No. 7 Lime Kiln	X003	X003	Modified

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
No. 7 Mill - Reburned Lime Silo/Bin	X030	259	Affected
No. 7 Mill - Purchased Lime Silo/Bin	X030	260	Affected
No. 7 Mill - Lime Mud Mix Tank	X030	254	Shutdown
No. 7 Mill Utilities			
No. 7 Power Boiler - Bark Surge Bin	N/A	I-271	Affected
No. 7 Power Boiler	Z008	Z008	Affected
No. 7 Power Boiler Fly Ash Storage	N/A	I-272	Affected
No. 7 Power Boiler Bottom Ash Storage	N/A	I-273	Affected
No. 7 Mill Other Sources			
Components of LVHC Collection, HVLC Collection, and Foul Condensate Collection Systems	Multiple	Multiple	Affected
No. 8 Pulp Mill			
All Emissions Units Part of the No. 8 Mill Brown Stock Line, including No. 8 Mill - Oxygen Delignification	Multiple	Multiple	Unaffected
No. 8 Mill Bleach Plant			
All Emissions Units Part of the No. 8 Mill Bleach Plant	Multiple	Multiple	Unaffected
No. 8 Mill Pulp Drying			
All Emissions Units Part of the No. 8 Mill Pulp Drying	Multiple	Multiple	Unaffected
No. 8 Mill Liquor Recovery			
No. 8 Mill - Weak Black Liquor Tank	X033	309	Affected
No. 8 Multiple Effect Evaporator System	X016	X016	Modified
No. 8 Mill Soap Skimmer Tank	X033	424	New
No. 8 Mill Soap Skimmer Tank	X033	425	New
No. 8 Mill Soap Storage Tank	X033	429	Affected
No. 8 Mill - Intermediate (55%) Black Liquor Tank	X033	430	Affected
No. 8 Mill - Intermediate (55%) Black Liquor Tank	X033	426	New
No. 8 Mill - Boilout Tank	X033	432	Affected
No. 8 Mill - Heavy Black Liquor Storage Tank	X033	431	Affected
No. 8 Mill - Black Liquor Dump Tank	X033	479	Affected
No. 8 Mill - Black Liquor Spill Tank	X033	433	Affected
No. 8 Recovery Furnace	X012	X012	Modified
No. 8 Smelt Dissolving Tank	X013	X013	Shutdown
No. 8 Smelt Dissolving Tank	X015	X015	New
No. 8 Salt Cake Mix Tank	X012	310	Affected
No. 8 Mill Recausticizing			
No. 8 Lime Kiln	X014	X014	Affected
No. 8 Mill - Green Liquor Blend Tank	X031	435	Affected
All Other Emission Units Part of No. 8 Mill Recausticizing	Multiple	Multiple	Unaffected
No. 8 Mill Utilities (including Rental Boiler(s))			

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
All Emissions Units Part of the No. 8 Mill Utilities	Multiple	Multiple	Unaffected
No. 8 Mill Other Sources			
No. 8 Foul Condensate Tank	N/A	N/A	Affected
Other Emission Units Not Mentioned	N/A	N/A	Unaffected
Crude Tall Oil Plant			
No. 1 Soap Tank	X321	469	Affected
No. 2 Soap Tank	X321	470	Affected
Soap Separator	X321	472	Affected
No. 3 Soap Tank	X321	477	Affected
No. 4 Soap Tank	X321	500	Affected
No. 5 Soap Tank	X321	501	Affected
No. 6 Soap Tank	X321	502	Affected
Brine Tank	X321	498	Affected
Tall Oil Reactor (Decanters & Feed Tank)	X321	321	Affected, Shutdown or Modified[20]
Flash Tower w/ Condenser	X321	497	Affected, Shutdown or Modified[20]
Flash Tower Feed Tank	X321	474	Affected, Shutdown or Modified[20]
Tall Oil Reactor and Associated Equipment	X321	320/321	New[20]
Spent Sulfuric Acid Tank	X321	N/A	Affected
No. 1 CTO Storage Tank	X321	476a	Affected
No. 2 CTO Storage Tank	X321	476b	Affected
Tall Oil Loading	N/A	319	Affected
Turpentine Plant			
No. 7 Turpentine Decanter	N/A	N/A	Shutdown
No. 7 Turpentine Decanter	N/A	N/A	New
No. 7 Turpentine Under Flow Tank	N/A	N/A	Shutdown
No. 7 Turpentine Under Flow Tank	N/A	N/A	New
No. 7 Turpentine Storage Tank	N/A	504	New
No. 7 Turpentine Loading Station	N/A	N/A	New
No. 8 Turpentine Decanter	N/A	N/A	Unaffected
No. 8 Turpentine Under Flow Tank	N/A	N/A	Unaffected
No. 8 Turpentine Storage Tank (currently serves both lines)	N/A	N/A	Unaffected
No. 8 Turpentine Loading Station (currently serves both lines)	N/A	N/A	Unaffected
Miscellaneous Sources			
Chlorine Dioxide Generator	X024	X024	Affected

[20]Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be affected, modified, or replaced.

TABLE 2-2. EMISSION CALCULATION TYPE BY SOURCE

Emissions Unit	EU	Equipment ID No.	Impact by Project
Methanol Storage Tank	X025	X025	Affected
Backup NCG Incinerator	X029	X029	Affected
Wastewater Treatment System	704	704	Affected
WWT Cooling Tower No. 1	704	704a	Affected
WWT Cooling Tower No. 2	704	704b	Affected
WWT Cooling Tower No. 3	704	704c	Affected
No. 7 Powerhouse Cooling Tower	N/A	N/A	Affected
No. 8 Powerhouse Cooling Tower	N/A	N/A	Affected
Chemical Prep Cooling Tower	N/A	N/A	Affected
Truck Traffic on Paved and Unpaved Roads	N/A	N/A	Affected
Admin Building Emergency Generator	X853	X853	Unaffected
No. 2 Diesel Fire Pump	X814	X814	Unaffected
No. 1 Diesel Fire Pump	X815	X815	Unaffected
No. 7 Turbine Emergency Generator	X126	X126	Unaffected
No. 8 Turbine Emergency Generator	X327	X327	Unaffected
No. 7 Kiln Auxiliary Drive Engine	X125	X125	Unaffected
No. 8 Kiln Auxiliary Drive Engine	X434	X434	Unaffected

2.2.4 Summary of Project Emissions Increases

Emissions increases were calculated as described in previous sections. A summary of the project emissions increases is provided, including a comparison to the PSD significant emission rate (SER) thresholds, in **Error! Reference source not found.**. Detailed emission calculations are provided in Appendix B.

TABLE 2-3. SUMMARY OF PROJECT EMISSIONS INCREASES

Pollutant	Project Emissions Increases (tpy)	SER (tpy)
Filterable PM	225.53	25
Total PM_{10}	495.51	15
Total $PM_{2.5}$	445.31	10
SO_2	39.79	40
NO_X	774.54	40
CO	1,990.82	100
VOC	270.31	40
SAM	130.49	7
Lead	9.25E-4	0.6

TABLE 2-3. SUMMARY OF PROJECT EMISSIONS INCREASES

Pollutant	Project Emissions Increases (tpy)	SER (tpy)
H_2S	42.42	10
TRS	40.50	10
Total GHG as $CO2_e$	584,287	75,000

Based on the results of the calculations, PSD permitting is required for PM, PM_{10}, $PM_{2.5}$, NO_X, CO, VOC, SAM, H_2S, TRS, and GHGs (i.e., all pollutants except SO_2 and lead).

ADEM Admin Code r. 335-3-14-.04(17)(d) and (e) require recordkeeping and/or reporting in certain situations if there is a "reasonable possibility" that a project is part of a major modification and may result in a significant emissions increase. The reasonable possibility threshold is not specifically defined by ADEM's regulations. However, ADEM follows U.S. EPA's regulatory definition of reasonable possibility (40 CFR 52.21(r)(6)(vi)). Under the reasonable possibility rules, if the emissions increases from a project exceed 50% of the SER for a regulated pollutant, without accounting for emissions associated with demand growth, facilities must document and maintain initial information/records relevant to the proposed project. The emissions analysis conducted for this project does not account for demand growth for any of the PSD-regulated pollutants. However, project emissions increases of SO_2 exceed 50% of the SER. Therefore, reasonable possibility post-project recordkeeping requirements apply to this project for SO_2, and ARC is required to document and maintain the information described in ADEM Admin Code r. 335-3-14-.04(17)(e)1. This application serves as the notification to ADEM required by ADEM Admin Code r. 335-3-14-.04(17)(e)2. In addition, ARC will monitor SO_2 emissions after implementation of the project and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of ten years following resumption of regular operations after the changes described herein. This information will be submitted to ADEM within 60 days after the end of each calendar year during which records must be generated.

For lead, the emissions increase for the project does not exceed the 50% reasonable possibility threshold, and as a result, the reasonable possibility rules do not apply to this project.

2.2.5 Calculation of Net Emissions Increase

The net emissions increases are calculated for all pollutants, except SO_2 lead, because the project emissions increases are greater than the SER. Net emissions increase is defined in ADEM Admin Code r. 335-3-14-.04(2)(c). The calculation includes the project emissions increase in Section 2.2.4, as well as the following:

> *2. Any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable. Baseline actual emissions for calculating increases and decreases under this subparagraph shall be determined as provided in subparagraph (2)(uu) of this Rule, except that subparagraphs (2)(uu)1.(iii) and (2)(uu)2.(iv) of this Rule shall not apply.*

(i) An increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs between:

(I) The date five (5) years before construction [see subparagraph (h) of this paragraph] on the particular change commences [see subparagraph (i) of this paragraph]; and

(II) The date that the increase from the particular change occurs.

...

As such, projects were reviewed for five years prior to construction and through project implementation. Construction is expected to start in September 2025, and operation of the last change is expected to begin in April 2027. Therefore, emissions changes with projects that were or are planned to be implemented during September 2020 through April 2027 were reviewed.

At times, projects included in the contemporaneous period overlap with one another and the units included in many of those projects are also considered modified or affected as part of the current project. In calculating the contemporaneous increases and decreases, GP has taken steps to avoid any double-counting of emissions for units with overlapping BAE and post-project PTE.

BAE for sources included in the contemporaneous period were calculated as described in Section 2.2.1, with potentially different baseline periods as allowed by ADEM Admin Code r. 335-3-14-.04(2)(c). Therefore, the baseline period for each contemporaneous project is based on its operating rate and may be unique from all other projects in the contemporaneous period as well as the baseline period used for emissions calculated during Step 1 of the PSD permitting applicability analysis. The post-project PTE was used to calculate any emissions increase that occurred within the contemporaneous period.

Each project included in the contemporaneous period is summarized in Table 2-4 with details on how the increases or decreases in actual emissions associated with the project were calculated.

TABLE 2-4. DETAILS ON CONTEMPORANEOUS PROJECTS

Project Date	Project	Details on Calculation of Increase or Decrease
September 2021	No. 8 Lime Kiln Cold Zone Chain System Project	The No. 8 Lime Kiln (EU X014) is an affected source with respect to the proposed project. Therefore, to prevent double-counting, an end point analysis was conducted such that the emissions increase associated with the current and contemporaneous projects are collectively calculated as PTE after implementation of both projects minus the BAE prior to implementation of both projects.
March 2022	No. 7 Mill No. 4 Brown Stock Washer Vat Replacement	The No. 7 Mill Brown Stock Washer System (Equipment ID Nos. 118a-118d) is an affected source with respect to the proposed project. Therefore, to prevent double-counting, the contemporaneous project increase is included in the project increase calculations (Step 1), because the project increase for the proposed project is based on the PTE after implementation of both projects minus BAE prior to implementation of both projects. In this case, the BAE for the current project (No. 7 Mill Transformation Project) concludes before the contemporaneous project. This approach conservatively includes emissions from all four stages of the No. 7 Mill Brown Stock Washers (i.e., not just No. 4 Brown Stock Washer).
September 2022	No. 8 Recovery Furnace Lower Furnace Wall Tube Replacement	The No. 8 Recovery Furnace (EU X012) is a modified source with respect to the proposed project. Therefore, to prevent double-counting, an end point analysis was conducted such that the emissions increase associated with the current and contemporaneous projects are collectively calculated as PTE after

TABLE 2-4. DETAILS ON CONTEMPORANEOUS PROJECTS

Project Date	Project	Details on Calculation of Increase or Decrease
		implementation of both projects minus the BAE prior to implementation of both projects. In this case, the BAE for the current project (No. 7 Mill Transformation Project) concludes before the contemporaneous project.
September 2022	No. 8 Lime Kiln Pier 1 Shell Replacement	The No. 8 Lime Kiln (EU X014) is an affected source with respect to the proposed project. The shell replacement was conservatively considered modified for purposes of calculating net emissions increases. As described above for the No. 8 Lime Kiln Cold Zone Chain System Project, end point netting was conducted for all emissions associated with the No. 8 Lim Kiln. Therefore, emissions associated with the No. 8 Lime Kiln are already accounted for.
September 2022	Turpentine Segregation Project	The contemporaneous project increase is calculated as the PTE minus BAE for affected sources.
November 2022	No. 2 Rental Boiler	The contemporaneous project emissions change is conservatively equal to the PTE, since this project included the installation of a new emissions unit. (Note: The emissions unit is not considered "new" in accordance with the definition of baseline actual emissions in ADEM Admin Code r. 335-3-14-.04(2)(uu)3, since it has been in operation for over two years.)
Spring 2023	No. 7 Mill Bleach Plant D0 Washer Drum and Vat Replacement	The No. 7 Bleach Plant (EU X020), which includes the D0 Washer, is a modified source with respect to the proposed project. Therefore, to prevent double-counting, an end point analysis was conducted such that the emissions increase associated with the current and contemporaneous projects are collectively calculated as PTE after implementation of both projects minus the BAE prior to implementation of both projects. In this case, the BAE for the current project (No. 7 Mill Transformation Project) concludes before the contemporaneous project. This approach conservatively includes emissions from all equipment routed to the No. 7 Mill Bleach Plant Scrubber (i.e., not just the D0 Washer).
June 2023	Chemical Preparation Area Generator	The contemporaneous project emissions change is zero, because baseline actual emissions are set equal to the PTE as the emissions unit is considered "new" in accordance with the definition of baseline actual emissions in ADEM Admin Code r. 335-3-14-.04(2)(uu)3.
June 2023	No. 1 Rental Boiler	The contemporaneous project emissions change is conservatively equal to the PTE, since this project included the installation of a new emissions unit.
March 2024	No. 7 Bleach Plant 1st ClO_2 Washer Vat and 2nd Caustic Washer Vat Replacements	The No. 7 Bleach Plant (EU X020), which includes the 1st ClO_2 and 2nd Caustic Washers, is a modified source with respect to the proposed project. As described above for the No. 7 Mill Bleach Plant D0 Washer Drum and Vat Replacement Project, end point netting was conducted for all emissions associated with the No. 7 Bleach Plant scrubber. Therefore, emissions associated with the 1st ClO_2 Washer are already accounted for. For the 2nd Caustic Washer, an end point analysis was conducted such that the emissions increase associated with the current and contemporaneous projects are collectively calculated as PTE after implementation of both projects minus the BAE prior to implementation of both projects. In this case, the BAE for the current project (No. 7 Mill Transformation Project) concludes before the contemporaneous project. This approach conservatively includes emissions for both caustic washers part of the No. 7 Mill Bleach Plant.
March 2024	No. 7 Mill Screen System Upgrade	The No. 7 Mill Screening System (EU Z007) includes new, modified, and affected sources with respect to the proposed project. Therefore, to prevent double-counting, an end point analysis was conducted such that the emissions increase associated with the current and contemporaneous projects are collectively calculated as PTE after implementation of both projects minus the

TABLE 2-4. DETAILS ON CONTEMPORANEOUS PROJECTS

Project Date	Project	Details on Calculation of Increase or Decrease
		BAE prior to implementation of both projects. In this case, the BAE for the current project (No. 7 Mill Transformation Project) concludes before the contemporaneous project.
June 2024	No. 8 Fiberline Bleach Plant Bypass	The contemporaneous project increase is calculated as the PTE minus BAE for the No. 8 Pulp Dryer, the only emissions unit modified or affected as part of this project.
September 2024	No. 8 Mill Continuous Digester Low Pressure Feeder Upgrade	This project included many of the emissions units associated with and supporting the No. 8 Mill as affected sources. In general, the approach included the contemporaneous net emissions increase as the PTE minus BAE for any emissions units that are not affected or modified as part of the No. 7 Mill Transformation Project. For emissions units that are affected or modified as part of the No. 7 Mill Transformation Project or any other project in the contemporaneous window, end point netting was conducted, and the net emissions increase was calculated as the PTE after implementation of the final project minus BAE for the earliest project.
September 2024	No. 8 Recovery Furnace Economizer and Lower Furnace Wall Tube Replacement Projects	The No. 8 Recovery Furnace (EU X012) is a modified source with respect to the proposed project. As described above for the No. 8 Recovery Furnace Lower Furnace Wall Tube Replacement Project, end point netting was conducted for all emissions associated with the No. 8 Recovery Furnace. Therefore, emissions associated with the No. 8 Recovery Furnace are already accounted for.
December 2024	No. 3 Rental Boiler	The contemporaneous project emissions change is zero, because baseline actual emissions are set equal to the PTE as the emissions unit is considered "new" in accordance with the definition of baseline actual emissions in ADEM Admin Code r. 335-3-14-.04(2)(uu)3.
December 2024	Shutdown of No. 2 Rental Boiler	The No. 2 Rental Boiler (installed in November 2022) was decommissioned. A creditable decrease is claimed for shutdown of the boiler, equivalent to its BAE.
December 2024	New No. 2 Rental Boiler	The contemporaneous project emissions change is zero, because baseline actual emissions are set equal to the PTE as the emissions unit is considered "new" in accordance with the definition of baseline actual emissions in ADEM Admin Code r. 335-3-14-.04(2)(uu)3.
March 2025	Shutdown of No. 1 Rental Boiler and New No. 2 Rental Boiler	The Nos. 1 and 2 Rental Boilers were decommissioned. A creditable decrease is claimed for shutdown of the No. 1 Rental Boiler, equivalent to its BAE. No creditable decrease for the New No. 2 Rental Boiler is claimed at this time, since it is currently considered a new unit (see above).
April 2025	Unbleached Pulp Transfer Lines	This project allowed for the limited transfer of unbleached pulp from the No. 8 Line to the No. 7 Line to be processed through the No. 7 Bleach Plant and downstream units. This project will have negligible effect on throughput of the No. 7 Line and will not allow the associated emission units to operate above the projected actual emissions represented in this application. Therefore, this project is not separately accounted for in the netting analysis.
Future (TBD)	No. 8 Power Boiler Replacement	This project includes shutdown of the existing No. 8 Power Boiler and associated emissions units, including the No. 8 Power Boiler Fly Ash Storage, No. 8 Power Boiler Bottom Ash Storage, No. 8 Power Boiler Bark Surge Bin, and associated transfers of wood fuel as well as the construction of the new No. 8 Power Boiler[21].
Future (TBD)	Shutdown of No. 3 Rental Boiler	Once commissioning of the No. 8 Power Boiler is complete, the No. 3 Rental Boiler will be shutdown. No creditable decrease for the No. 3 Rental Boiler is claimed at this time, since it is currently considered a new unit (see above).

[21] The existing No. 8 Power Boiler was shut down in April 2024.

TABLE 2-4. DETAILS ON CONTEMPORANEOUS PROJECTS

Project Date	Project	Details on Calculation of Increase or Decrease
Future (TBD)	Backup NCG Incinerator Elimination Project	The scope of this future project is not well defined. If implemented, it is likely the recovery furnace for each line (EU X001 for the No. 7 Line and EU X012 for the No. 8 Line) will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. The contemporaneous netting analysis conservatively includes modification of the Nos. 7 and 8 Recovery Furnaces to accept LVHC NCGs as creditable increases but does not include the creditable decrease associated with the shutdown of the Backup NCG Incinerator as the project. End point netting was conducted for the two recovery furnaces since both units are modified or affected by the No. 7 Transformation Project.

In addition, GP would like to provide clarification on the exclusion of several other items and their inclusion (or not) in the contemporaneous netting analysis.

- *Temporary Rental Boilers.* In November 2021 and September 2022, ARC brought two temporary rental boilers on site to provide supplemental steam during the winter months as necessary. Neither of these boilers remain at the Mill as they were rented and returned and are not included in the netting.
- *No. 7 Mill Causticizing Area Projects.* Components of the No. 7 Lime Mud Precoat Filter (Equipment ID No. 256) were replaced and operational in Spring 2021. No. 7 Mill Green Liquor Dregs Filter (Equipment ID No. 246) was replaced and operational in Spring 2022. ARC uses only fresh water in the No. 7 Mill causticizing area. NCASI has indicated that organic emissions are not expected from causticizing areas that use 100% fresh water, and lime mud precoat filters and green liquor dregs filters are not sources of emissions other than organics. Therefore, no project increases are included in the contemporaneous netting analysis for these projects.
- *Clean Condensate Alternative (CCA) Plan Updates.* In December 2022, ARC submitted a significant modification to the Mill's Title V permit incorporate the CCA Plan update approved June 23, 2022. The modification did not authorize any physical modifications or changes in the method of operation of any emissions units. Therefore, this permitting action is not included in the contemporaneous netting analysis.
- *No. 7 Mill Baled Pulp and Rolled Fluff Line Upgrade.* In 2024, ARC installed new roll equipment and a roll wrap line to allow the production of both baled and rolled fluff pulp from the No. 7 Mill. As this project did not involve the addition or modification of any emissions units and did not result in an increase in actual emissions from any upstream emissions units, no net emissions increase was calculated for this project.

2.2.6 Summary of Net Emissions Increase

A summary of the net emissions increases for pollutants where the project emissions increase exceeds the SER is provided in Table 2-5.

TABLE 2-5. SUMMARY OF NET EMISSIONS INCREASES

Pollutant	Net Emissions Increases (tpy)	SER (tpy)
Filterable PM	482.07	25
Total PM_{10}	607.94	15
Total $PM_{2.5}$	510.10	10
NO_X	805.67	40
CO	3,547.80	100
VOC	844.48	40
SAM	244.69	7
H_2S	47.38	10
TRS	116.78	10
Total GHG as $CO2_e$	923,061	75,000

Detailed contemporaneous increase and decrease emission calculations will be provided upon request. As demonstrated in previous sections, the net emissions increases of PM, PM_{10}, $PM_{2.5}$, NO_X, CO, VOC, SAM, H_2S, TRS, and GHGs are greater than the SERs. Therefore, PSD review is required for these pollutants.

3. REGULATORY APPLICABILITY ASSESSMENT

3.1 PREVENTION OF SIGNIFICANT DETERIORATION APPLICABILITY

The federal PSD regulatory program is contained at 40 CFR 52.21 and ADEM has adopted similar rules under ADEM Admin. Code. r. 335-3-14-.04 of their Air Pollution Control Regulations. ARC is an existing major source as defined at 40 CFR 52.21(b)(1)(i)(a) and ADEM 335-3-14-.04(2)(a)1 since it has the potential-to-emit 100 tons per year or more of a regulated New Source Review (NSR) pollutant. As detailed in Section 3 of this application, emission calculations were prepared following ADEM Regulation 335-3-14-.04(1)(g) and (h) to determine PSD applicability. As previously described, the proposed project triggers PSD permitting for PM, PM_{10}, $PM_{2.5}$, NO_X, CO, VOC, SAM, H_2S, TRS, and GHGs.

3.2 TITLE V PERMITTING

The Mill operates under Major Source Operating Permit No. 106-0010, most recently issued by ADEM on March 23, 2023. Per ADEM Admin. Code r. 335-3-16-.13(4), because these proposed modifications require a PSD construction permit and are modifications under the New Source Performance Standards (NSPS), a significant modification of the Mill's Title V operating permit is required.

3.3 NEW SOURCE PERFORMANCE STANDARDS APPLICABILITY

NSPS require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Any source subject to an individual NSPS is also subject to the general provisions of NSPS Subpart A (40 CFR 60, Subpart A and ADEM 335-3-10-.02(1)), unless specifically excluded.40 CFR Part 60 is incorporated by reference into ADEM Admin. Code. r. 335-3-10-.01, -.02, and -.03.

To evaluate NSPS applicability for the proposed project, we reviewed the definitions of construction, modification, and reconstruction at 40 CFR Part 60.

Construction	*fabrication, erection, or installation of an affected facility.*
Modification	*any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.* With regard to modifications, 40 CFR 60.14 specifies that the increase in emissions is evaluated on an hourly basis. Comparisons of hourly emissions rates (before and after the modification) are made by comparing the capacity of the unit both before and after the modification (e.g., potential-to-potential evaluation). This approach is supported by numerous consistent determinations from the U.S. EPA on this issue in the past.
Reconstruction	*the replacement of components of an existing facility to such an extent that...The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable*

entirely new facility, and...It is technologically and economically feasible to meet the applicable standards set forth in this part...

Applicability of NSPS for new and modified sources is described in this section. In general, reconstruction applicability is reviewed and then modification applicability as reconstruction results in more stringent emission limits for some rules.

3.3.1 Subpart A, NSPS General Provisions

This section of NSPS regulations contains definitions and broad requirements for notifications, stack testing methodologies, monitoring methodologies, applicability determinations, etc. Any piece of equipment that is subject to an individual NSPS is also subject to the NSPS General Provisions in Subpart A (40 CFR 60, Subpart A and ADEM Admin. Code r. 335-3-10-.02(1)) unless otherwise stated or excluded in the individual subpart.

3.3.2 Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators

NSPS Subpart D regulates fossil-fuel-fired and wood-residue-fired steam generating units capable of firing fossil fuel at a heat input rate of more than 73 megawatts (MW) or 250 MMBtu/hour that commenced construction or modification after August 17, 1971. The No. 7 Power Boiler (EU Z008) is currently subject to the requirements of NSPS Subpart D. This application does not propose to modify or reconstruct the boiler and thus, the unit's applicability to this rule will not change with the proposed project[22].

NSPS Subpart Db, at 40 CFR 60.40b(j) states, "Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to subpart D (Standards of Performance for Fossil-Fuel-Fired Steam Generators, §60.40)". As such, any steam generating units that would commence construction, modification, or reconstruction as part of the projects included in this application would be assessed for NSPS applicability and requirements pursuant to Subpart Db (see Section 3.3.4).

3.3.3 Subpart Da, Standards of Performance for Electric Utility Steam Generating Units

NSPS Subpart Da provides standards of performance for electric utility steam generating units that are capable of combusting more than 73 MW or 250 MMBtu/hour heat input of fossil fuel, either alone or in combination with any other fuel for which construction, modification, or reconstruction commences after September 18, 1978.

NSPS Subpart Da (40 CFR 60.41Da) defines "electric utility steam-generating unit" as, "any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW net-electrical output to any utility power distribution system for sale. Also, any steam supplied to a steam distribution system for the purpose of providing steam to a steam-electric generator that would produce electrical energy for sale is considered in determining the electrical energy output capacity of the affected facility". The only modified steam generating unit in this application, the No. 8 Recovery Furnace (EU X012), will supply steam to a turbine generator; the turbine generates power for use on site and does not supply one-third or more of its power to a utility power distribution system that sells

[22] As detailed in Section 1.6.5, GP is correcting the maximum natural gas firing rate for the No. 7 Power Boiler in this application. However, this application does not propose any physical or operational changes to the boiler (i.e., the unit is an affected source with respect to the project).

power. As such, this NSPS is not applicable for any of the modified units that are included in the proposed projects.

3.3.4 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Db provides standards for steam generating units that commences construction, modification, or reconstruction after June 19, 1984 and that have a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 MMBtu/hour).

No. 7 Power Boiler

The No. 7 Power Boiler (EU Z008) is currently subject to the requirements of NSPS Subpart D. This application does not propose to modify or reconstruct the boiler and thus, the unit will remain subject to NSPS Subpart D as described in Section 3.3.2 and not NSPS Subpart Db.

No. 8 Recovery Furnace

The only source that would potentially have applicability change under NSPS Subpart Db as part of the proposed project would be the No. 8 Recovery Furnace (EU X012) because physical modifications are proposed for the unit to increase capacity. Modifications are not proposed to any other steam generating units as part of the project. The No. 8 Recovery Furnace was modified in 2004 and has a heat input capacity greater than 100 MMBtu/hr. Therefore, the unit is currently considered an affected facility with respect to NSPS Subpart Db.

As described in Section 3.3, reconstruction is triggered if the fixed capital cost of the replacement components exceeds 50% of the fixed capital cost required to construct a comparable, entirely new facility. The cost for the proposed changes is approximately $50 million dollars[23], compared to a cost of $405 million dollars for a new recovery furnace, much less than 50%. Therefore, reconstruction is not triggered.

As described in Section 3.3, a modification is any physical change in, or change in the method of operation of, that increases emissions rates to which a standard applies. Per 40 CFR §60.40b(l), affected facilities that also meet the applicability requirements under NSPS Subpart BB, such as the No. 8 Recovery Furnace (see Section 3.3.8), are potentially subject to the NO_X and SO_2 standards under NSPS Subpart Db, but are subject to the PM standards under NSPS Subpart BB. Therefore, for purposes of evaluating whether the No. 8 Recovery Furnace will undergo modification with respect to NSPS Subpart Db, it is necessary to understand if the project will result in an increase in NO_X or SO_2 hourly emissions[24]. With the proposed changes to the No. 8 Recovery Furnace, maximum NO_X hourly emissions are expected to rise due to increased capacity and resulting exhaust flow rate. Conversely, SO_2 emissions are expected to decrease due to combustion air improvements.

Although the unit is considered modified, there is no change to the currently applicable requirements since the only change to NSPS Subpart Db since the previous modification in 2004 is for PM. As discussed previously, as the unit is subject to NSPS BB, the PM limits from NSPS Db do not apply. The ARC Mill will continue to comply with other provisions of NSPS Db as applicable.

[23] The project cost conservatively includes changes other than replacement of components.
[24] 40 CFR §60.14(b) clarifies that the determination of whether an increase in emissions will result is based on hourly emissions.

3.3.5 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc potentially applies to steam generating units with a maximum design heat input capacity of 29 MW (100 MMBtu/hour) or less, but greater than or equal to 2.9 MW (10 MMBtu/hour) for which construction, modification, or reconstruction commences after June 9, 1989. There are no steam generating units in this size range that are being constructed, modified, or reconstructed as part of the proposed project.

3.3.6 Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kb regulates storage vessels with a capacity greater than 75 cubic meters (m^3) (19,800 gallons) that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984 and on or before October 4, 2023. NSPS Subpart Kb specifies that process tanks are not considered storage tanks and defines a process tank as:

> *… a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw material.*

Many of the units commonly referred to as storage tanks at pulp and paper mills are actually considered process tanks under the NSPS Subpart Kb definition.

In addition to size-based thresholds for applicability, NSPS Subpart Kb has no applicable requirements for certain tanks based on the maximum true vapor pressure of the material stored. 40 CFR §60.110b(b) states:

> *This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure (MTVP) less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 (19,800 gallons) but less than 151 m^3 (39,900 gallons) storing a liquid with a maximum true vapor pressure less than 15.0 kPa.*

Table 3-1 summarizes NSPS Subpart Kb applicability for existing tanks that are affected by the proposed project. As shown in the table, none of the existing tanks associated with the No. 7 Mill Transformation Project are subject to the requirements of NSPS Subpart Kb.

TABLE 3-1. NSPS SUBPART KB APPLICABILITY SUMMARY

Tank	Equipment ID No.	Project Status	NSPS Subpart Kb Applicability
No. 7 Mill Foul Condensate Tank	--	Affected	Not Subject – Process Tank
No. 7 Mill Brown Stock Transfer Tank	275	Modified	Not Subject – Process Tank
No. 7 Mill Decker Filtrate Chest	106	Affected	Not Subject – Process Tank
No. 7 Mill Washed Stock Brown Chest	128	Affected	Not Subject – Process Tank
No. 7 Mill Secondary Rejects Tank	121	Affected	Not Subject – Process Tank
No. 7 Mill Tertiary Rejects Tank	129	Affected	Not Subject – Process Tank

TABLE 3-1. NSPS SUBPART KB APPLICABILITY SUMMARY

Tank	Equipment ID No.	Project Status	NSPS Subpart Kb Applicability
No. 7 Mill Brown High Density Storage No. 1	107a	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Bleach Plant Dilution Tanks, Seal Chests, and other Process Tanks	Multiple	Affected/ Modified	Not Subject – Process Tanks
No. 7 Mill Surge Bleached HD Storage Chest No. 1	225	Affected	Not Subject – Process Tank
No. 7 Mill Surge Bleached HD Storage Chest No. 2	226	Affected	Not Subject – Process Tank
No. 7 Mill Surge Bleached HD Storage Chest No. 3	224	Affected	Not Subject – Process Tank
No. 7 Mill Bleached LD Surge Chest	227	Affected	Not Subject – Process Tank
No. 7 Smelt Dissolving Tank	X002	Affected	Not Subject – Process Tank
No. 7 Salt Cake Mix Tank	111	Affected	Not Subject – Process Tank
No. 7 Precipitator Mix Tank	127	Modified	Not Subject – Process Tank
No. 7 Mill Weak Black Liquor Tank No. 1	110A	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Weak Black Liquor Tank No. 2	110B	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Weak Black Liquor Tank No. 2	110C	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Boilout Tank	242	Affected	Not Subject – Process Tank
No. 7 Mill Soap Skimmer Tank	123	Affected	Not Subject – Process Tank
No. 7 Mill Soap Storage Tank	124	Affected	Not Subject – Process Tank
No. 7 Mill Intermediate Black Liquor Tank	239	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill No. 1 Heavy Black Liquor Tank	240	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill No. 2 Heavy Black Liquor Tank	241	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Black Liquor Dump Tank	281	Affected	Not Subject – Capacity less than 75 m^3 (19,800 gallons)
No. 8 Smelt Dissolving Tank	X015	New	Not Subject – Process Tank
No. 8 Salt Cake Mix Tank	310	Affected	Not Subject – Process Tank
No. 8 Mill Weak Black Liquor Tank	309	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 8 Mill Boilout Tank	432	Affected	Not Subject – Process Tank
No. 8 Mill Soap Storage Tank	429	Affected	Not Subject – Process Tank
No. 8 Mill Intermediate Black Liquor Tank	430	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa

TABLE 3-1. NSPS SUBPART KB APPLICABILITY SUMMARY

Tank	Equipment ID No.	Project Status	NSPS Subpart Kb Applicability
No. 8 Mill Heavy Black Liquor Storage Tank	431	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 8 Mill Black Liquor Dump Tank	479	Affected	Not Subject – Capacity less than 75 m^3 (19,800 gallons)
No. 8 Mill Black Liquor Spill Tank	433	Affected	Not Subject – Capacity greater than 151 m^3 (39,890 gallons) with a MTVP less than 3.5 kPa
No. 7 Mill Causticizer Sump Tank	252	Affected	Not Subject – Process Tank
No. 7 Mill Green and White Liquor Swing Tank	117a	Modified	Not Subject – Process Tank
No. 7 Mill No. 2 White Liquor Storage Tank	117b	Modified	Not Subject – Process Tank
No. 7 Mill No. 1 Lime Mud Storage Tank	255a	Affected	Not Subject – Process Tank
No. 7 Mill Weak Wash Storage Tank	258	Affected	Not Subject – Process Tank
No. 7 Mill Green Liquor Blend Tank	278	Affected	Not Subject – Process Tank
No. 7 Mill No. 1 White Liquor Storage Tank	253	Affected	Not Subject – Process Tank
No. 8 Mill Green Liquor Blend Tank	435	Affected	Not Subject – Process Tank
No. 1 CTO Storage Tank	476a	Affected	Not Subject – Capacity greater than 75 m^3 (19,800 gallons) but less than 151 m^3 (39,890 gallons) with a MTVP less than 15.0 kPa
No. 2 CTO Storage Tank	476b	Affected	Not Subject – Capacity greater than 75 m^3 (19,800 gallons) but less than 151 m^3 (39,890 gallons) with a MTVP less than 15.0 kPa
Brine Tank	498	Affected	Not Subject – Process Tank
No. 1 Soap Tank	469	Affected	Not Subject – Process Tank
No. 2 Soap Tank	470	Affected	Not Subject – Process Tank
Soap Separator	472	Affected	Not Subject – Process Tank
No. 3 Soap Tank	477	Affected	Not Subject – Process Tank
No. 4 Soap Tank	500	Affected	Not Subject – Process Tank
No. 5 Soap Tank	501	Affected	Not Subject – Process Tank
No. 6 Soap Tank	502	Affected	Not Subject – Process Tank
Methanol Storage Tank	X025	Affected	Not Subject – Capacity less than 75 m^3 (19,800 gallons)

3.3.7 Subpart Kc, Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kc was recently promulgated[25] and regulates storage vessels with a capacity greater than or equal to 20,000 gallons that are used to store VOL for which construction, reconstruction, or modification is commenced after October 4, 2023. NSPS Subpart Kc specifies that process tanks are not considered storage tanks and defines a process tank in the same way as NSPS Subpart Kb.

[25] *89 FR 83319*, published on October 15, 2024.

Per 40 CFR §60.110c(c), NSPS Subpart Kc has no applicable requirements for the following tanks constructed after October 4, 2023 based on the maximum true vapor pressure of the material stored:

- Storage vessels with a capacity greater than or equal to 40,000 gal (151 m^3) containing a VOL that, as stored, has a maximum true vapor pressure less than 0.5 psia (3.4 kPa), or
- Storage vessels with a capacity greater than or equal to 20,000 gal (75.7 m^3) but less than 40,000 gal (151 m^3) containing a VOL that, as stored, has a maximum true vapor pressure less than 1.5 psia (10.3 kPa).

If any tank meeting these criteria later exceeds the MTVP thresholds above, the tank will be subject to the requirements of NSPS Subpart Kc as a new source.

Table 3-2 summarizes NSPS Subpart Kc applicability for tanks that are proposed to be constructed or affected as part of the No. 7 Mill Transformation Project and potentially subject to the requirements of NSPS Subpart Kc.

TABLE 3-2. NSPS SUBPART KC APPLICABILITY SUMMARY

Tank	Equipment ID	Project Status	NSPS Subpart Kc Applicability
No. 7 Mill Flash Tank	283	New	Not Subject – Process Tank
No. 7 Mill Digester Area Foul Condensate Tank	284	New	Not Subject – Process Tank
No. 7 Mill Blow Tank	286	New	Not Subject – Process Tank
No. 7 Mill Knotter Accepts Tank	104c	New	Not Subject – Process Tank
No. 8 Mill Soap Skimmer Tank	424	New[26]	Not Subject – Process Tank
No. 8 Mill Soap Skimmer Tank	425	New[25]	Not Subject – Process Tank
No. 8 Mill Intermediate Black Liquor Tank	426	New	Not Subject – Only stores VOL with MTVP less than 0.25 psia (1.7 kPa absolute)
No. 7 Mill No. 2 Lime Mud Storage Tank	288	New	Not Subject – Process Tank
No. 7 Turpentine Decanter and Under Flow Tank	503	New	Not Subject – Process Tank
No. 7 Turpentine Storage Tank	504	New	Not Subject – Capacity less than 20,000 gallons

As shown in Table 3-2, none of the proposed new tanks are subject to the standards in 40 CFR §60.112c or the corresponding requirements in 40 CFR §§60.113c through 60.116c of NSPS Subpart Kc.

3.3.8 Subparts BB and BBa, Standards of Performance for Kraft Pulp Mills

NSPS Subparts BB and BBa contain TRS and PM limitations for certain process equipment operated at Kraft pulp mills. This equipment includes digester systems, brown stock washer systems, multiple-effect evaporator systems, recovery furnaces, smelt dissolving tanks, lime kilns, and condensate stripper systems. NSPS Subpart BB applies to affected facilities that commence construction, reconstruction, or modification after September 24, 1976 and on or before May 23, 2013; NSPS Subpart BBa applies to affected facilities that commence construction, reconstruction, or modification after May 23, 2013.

[26] The analysis included herein considers No. 8 Mill Soap Skimmer Tanks as new, because the existing biodiesel tanks have been out of service for several years. The current design intends to utilize the existing tanks, but the final design may include construction of new two new tanks.

Equipment that has been modified or newly constructed as part of this project and potentially subject to NSPS Subparts BB or BBa are reviewed below.

Digester System

NSPS Subparts BB and BBa both define the digester system as "each continuous digester or each batch digester used for the cooking of wood in white liquor, and associated flash tank(s), blow tank(s), chip steamer(s), and condenser(s)." The existing No. 7 Mill's digester system is subject to the requirements of NSPS Subpart BB. With the proposed No. 7 Mill Transformation Project, a new continuous digester (Equipment ID No. 282) and associated flash tank (Equipment ID No. 283), blow tank (Equipment ID No. 286), and condensers will be constructed on the No. 7 Line and therefore, will be subject to NSPS Subpart BBa.

The project will also include the installation of a new chip bin (Equipment ID No. 206). However, the new chip bin will not use live steam and thus will not be subject to NSPS Subpart BBa (i.e., not part of the digester system as defined in 40 CFR §60.281a). Further, the chip bin is separated from the process gases by the chip pumps that meets the intended separation between the chip bin and high-pressure process gases feeding back into the chip bin. The chip bin that will be used has a positive pressure differential that would prevent any process gases from being allowed to enter the chip bin from the feed screw or subsequent processes. Therefore, based on the proposed design, the chip bin meets the definition of utilizing fresh steam and being separated from the high-pressure process gases and does not need to be collected.

Per 40 CFR 60.283a(a)(1), TRS emissions from the digester system will be limited to 5 ppmvd at 10% oxygen, required to be collected in an LVHC or HVLC closed-vent system and combusted in a lime kiln, recovery furnace, or other device, or controlled by a method other than combustion and limited to 5 ppmvd uncorrected for oxygen content. Currently, the LVHC NCGs generated by the No. 7 Mill are combusted in the No. 7 Lime Kiln (EU X003) with the Backup NCG Incinerator (EU X029) as back-up. As part of a separate project, the incinerator is proposed to be removed and the LVHC NCGs from the No. 7 Mill are expected to be combusted in the No. 7 Recovery Furnace as the primary incineration device with either the No. 7 or No. 8 Lime Kiln as back-up. The existing and future configurations satisfy the requirements for control described in 40 CFR §60.283a(a)(1).

Brown Stock Washer System

NSPS Subparts BB and BBa both define the brown stock washer system as "brown stock washers and associated knotters, vacuum pumps, and filtrate tanks used to wash the pulp following the digester system. Diffusion washers are excluded from this definition." The No. 7 Mill Brown Stock Washers (Equipment ID No. 118a-118d) and system collectively are not currently subject to NSPS Subpart BB[27]. With the proposed No. 7 Mill Transformation Project, a new knotter system (including the primary (pressure) knotter [Equipment ID No. 104a], secondary knotter [Equipment ID No. 104b], knotter accepts tank [Equipment ID No. 104c], and knot conveyor [Equipment ID No. 104d]) will be installed at the No. 7 Mill.

As described in Section 3.3, reconstruction is triggered if the fixed capital cost of the replacement components exceeds 50% of the fixed capital cost required to construct a comparable, entirely new facility (i.e., brown stock washer system). The cost for the proposed changes is

[27]Title V Permit No. 106-0010 indicates that the No. 7 Brown Stock Washing System (EU Z007) is subject to the requirements of NSPS Subpart BB. However, construction commenced on the No. 7 Brown Stock Washing System prior to September 24, 1976, and it has not been modified or reconstructed since original construction.

approximately $7 million dollars, compared to a cost of $135 million dollars for a comparable new brown stock washer system, much less than 50%. Therefore, reconstruction is not triggered.

As described in Section 3.3, a modification is any physical change in, or change in the method of operation of, that increases emissions rates to which a standard applies. As a result of the proposed changes, the throughput (and therefore, the emissions) from the brown stock washer system will increase. Therefore, the No. 7 Mill's brown stock washer system will undergo modification with respect to NSPS Subpart BBa as a result of this project.

The existing No. 7 Mill Brown Stock Washers are collected by the HVLC NCG system and combusted in the No. 7 Recovery Furnace (EU X001). In addition, this project will include the collection and incineration of the HVLC NCGs resulting from the new No. 7 Mill Knotter System as required by 40 CFR §60.283a(1) as part of the brown stock washer system.

Multiple-Effect Evaporator Systems

NSPS Subparts BB and BBa both define the multiple-effect evaporator system as "the multiple-effect evaporators and associated condenser(s) and hotwell(s) used to concentrate the spent cooking liquid that is separated from the pulp (black liquor)." The Nos. 7 and 8 Multiple-Effect Evaporator Systems (EUs X006 and X016, respectively) are both currently subject to NSPS Subpart BB.

With the proposed No. 7 Mill Transformation Project, the No.7 Mill Multiple-Effect Evaporator System will be modified to improve reliability; however, there will be no increase in potential throughput or emissions (i.e., no modification with respect to NSPS Subpart BBa will occur). The cost of the component replacements on the evaporator system is $5 million compared to $90 million for a comparable new evaporator system, well below 50%. Therefore, the proposed project will not trigger reconstruction of the No. 7 Multiple-Effect Evaporator System. Because the proposed changes will not trigger modification or reconstruction of the unit, the No. 7 Multiple-Effect Evaporator will remain subject to the requirements of NSPS Subpart BB.

For the No. 8 Multiple-Effect Evaporator System, the cost for the proposed changes is approximately $25 million dollars, compared to a cost of $93 million dollars for a comparable new evaporator system, below 50%. Therefore, reconstruction is not triggered. This analysis is extremely conservative as no component replacements are proposed as part of the scope (i.e., just addition of new equipment).

As described in Section 3.3, a modification is any physical change in, or change in the method of operation of, that increases emissions rates to which a standard applies. With the proposed project, the No. 8 Multiple-Effect Evaporator System will be modified to increase capacity and thus, TRS emissions from the affected facility are expected to increase on an hourly basis. Therefore, the No. 8 Multiple-Effect Evaporator System will undergo modification with respect to NSPS Subpart BBa as a result of this project and NSPS Subpart BBa requirements will apply.

The control options for TRS emissions in 40 CFR 60.283a(a)(1) are the same as described previously for the digester system. Currently, the LVHC NCGs generated by the No. 8 Mill are combusted in the No. 8 Lime Kiln (EU X014) with the Backup NCG Incinerator (EU X029) as back-up. As part of a separate project, the incinerator is proposed to be removed and the LVHC NCGs from the No. 8 Mill are expected to be combusted in the No. 8 Recovery Furnace as the primary incineration device and either the No. 7 or No. 8 Lime Kiln as back-up. The existing and future configurations satisfy the requirements for control described in 40 CFR §60.283a(a)(1).

Recovery Furnaces

The Nos. 7 and 8 Recovery Furnaces (EUs X001 and X012, respectively) are both currently subject to NSPS Subpart BB. The No. 7 Transformation Project does not include any physical changes to the No. 7 Recovery Furnace. Therefore, the unit will remain subject to the requirements of NSPS Subpart BB.

As described above for NSPS Db, reconstruction is not triggered for the proposed changes to the No. 8 Recovery Furnace since the fixed capital cost of the replacement components (i.e., conservatively estimated at $50 million) are significantly less than 50% of the fixed capital cost required to construct a comparable, entirely new facility ($405 million).

With the proposed No. 7 Mill Transformation Project, the No. 8 Recovery Furnace will be modified to increase processing of black liquor and steam generation and thus, PM and TRS emissions from the affected facility are expected to increase on an hourly basis. As a modified unit with respect to NSPS Subpart BBa, the No. 8 Recovery Furnace will be subject to the requirements of NSPS Subpart BBa, including limits of 0.044 gr/dscf corrected to 8% O_2 for PM as specified in 40 CFR §60.282a(1)(i), 20% opacity as specified in 40 CFR §60.282a(1)(ii), and 5 ppmvd TRS corrected to 8% O2 specified in 40 CFR §60.283a(a)(2). The No. 8 Recovery Furnace will be subject to emission limits for PM and TRS under NSPS Subpart BBa that are identical to the emission limits under NSPS Subpart BB. In accordance with 40 CFR §60.284a(b)(3), the No. 8 Recovery Furnace will be required by NSPS Subpart BBa to continuously monitor secondary voltage and secondary current or total secondary power of each ESP collection field and comply with site-specific operating limits established during the initial and subsequent performance tests.

Smelt Dissolving Tanks

The No. 7 Smelt Dissolving Tank (EU X002) is currently subject to NSPS Subpart BBa, no physical modifications are proposed for the emissions unit as part of the No. 7 Mill Transformation Project. Therefore, applicability of NSPS Subpart BBa will not change as a result of this project.

As described in Section 1.6.2, the No. 8 Smelt Dissolving Tank will be replaced. Therefore, the emissions unit will be subject to the requirements of NSPS Subpart BBa as a new smelt dissolving tank that is not associated with a new or reconstructed recovery furnace, including limits of 0.20 pounds per ton (lb/ton) black liquor solids (BLS, dry weight) for PM as specified in 40 CFR §60.282a(3) and 0.033 lb/ton BLS for TRS as H_2S as specified in 40 CFR §60.283a(a)(4). As described in Section 1.6.2, the exhaust from the No. 8 Recovery Furnace will normally be routed to the No. 8 Recovery Furnace.

Lime Kiln

The No. 7 Lime Kiln (EU X003) is currently subject to NSPS Subpart BB. With the proposed No. 7 Mill Transformation Project, physical modifications are proposed to the lime kiln to increase efficiency and capacity.

As described in Section 3.3, reconstruction is triggered if the fixed capital cost of the replacement components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility. The cost for the proposed changes (excluding control device costs) is approximately $20 million dollars, compared to a cost of $97 million dollars for a lime kiln (excluding control device costs), much less than 50%. Therefore, reconstruction is not triggered.

As a result of the changes proposed to the No. 7 Lime Kiln as part of the project, maximum hourly PM and TRS emissions are expected to remain the same or decrease. Therefore, the No. 7 Lime Kiln will not undergo a modification as a result of the project.

Since neither reconstruction nor modification are triggered by the proposed project, the No. 7 Lime Kiln will continue to comply with applicable requirements of NSPS Subpart BB.

3.3.9 Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants

NSPS Subpart OOO establishes standards of performance to operations at fixed or portable nonmetallic mineral processing plants. The No. 7 Mill Transformation Project includes replacement of the crusher and conveyances associated with the No. 7 Lime Kiln (EU X003). After processing in the lime kiln, lime product is crushed and transferred to either the Reburned Lime Silo (EU 259) or the Purchased Lime Silo (EU 260). U.S. EPA has determined that processing of lime product is not subject to the requirements of NSPS Subpart OOO as it is no longer a non-metallic mineral, per U.S. EPA Applicability Determination Index Control Number 04000016 dated November 18, 2003. Therefore, NSPS Subpart OOO does not apply to the crusher or any conveyances between the lime kiln and the silos.

3.3.10 Non-Applicability of Other NSPS

NSPS standards are developed for particular industrial source categories. Applicable and potentially applicable NSPS subparts have been identified in the sections above. All other NSPS are categorically not applicable to sources affected by the proposed project.

3.4 National Emission Standards for Hazardous Air Pollutants Applicability

National Emission Standards for Hazardous Air Pollutants (NESHAP) federal regulations found in 40 CFR Parts 61 and 63 of the CFR, establish emissions standards for hazardous air pollutants (HAPs). The No. 7 Mill Transformation Project does not impact the Mill's applicability with the Part 61 NESHAPs. As such, applicability of those standards is not discussed further.

The requirements in Part 63 are generally only applicable to major sources of HAP (i.e., facilities that exceed the major source thresholds of 10 tons per year (tpy) of a single HAP or 25 tpy of any combination of HAPs) or specifically designated area sources. Part 63 NESHAPs apply to sources in specifically regulated industrial source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Sections 112(g) and 112(j)) for facilities not regulated as a specific industrial source type. ARC is a major source of HAPs that is currently subject to several NESHAP.

NESHAP specifies standards for new and existing sources. New source is defined at 40 CFR §63.2 as "any affected source the construction or reconstruction of which is commenced after the Administrator first proposes a relevant emission standard under this part establishing an emission standard applicable to such source". An existing source is simply defined in this same section as "any affected source that is not a new source". This same section of the NESHAP rule defines reconstruction consistent with the NSPS as, "…the replacement of components of an affected or a previously nonaffected source to such an extent that…(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source…".

The NESHAP in 40 CFR Part 63 defines the affected source more broadly than the parallel term ("i.e., affected facility) is defined and applied to the NSPS regulations. The term "affected source" is defined in the NESHAP General Provisions in 40 CFR §63.2 as, "… the collection of equipment, activities, or both

within a single contiguous area and under common control that is included in a…subcategory for which a section 112(d) standard or other relevant standard is established pursuant to section 112 of the Act. Each relevant standard will define the "affected source," as defined in this paragraph unless a different definition is warranted based on a published justification as to why this definition would result in significant administrative, practical, or implementation problems and why the different definition would resolve those problems. The term "affected source," as used in this part, is separate and distinct from any other use of that term in EPA regulations…Affected source may be defined differently for part 63 than affected facility and stationary source in parts 60 and 61, respectively...".

The NESHAP promulgated in 40 CFR Part 63 that are potentially applicable for the new and modified sources include the subparts described in the following subsections.

3.4.1 Subpart A, NESHAP General Provisions

As is the case with the NSPS, the General Provisions for the NESHAP regulations contain definitions and broad requirements for notifications, stack testing methodologies, monitoring methodologies, applicability determinations, etc. As noted above, any piece of equipment that is subject to an individual NESHAP contained in 40 CFR, Part 63 is also subject to the NESHAP General Provisions in Subpart A unless otherwise stated or excluded in the individual subpart.

3.4.2 Subpart S, NESHAP for the Pulp and Paper Industry

Subpart S of 40 CFR 63, NESHAPs for the Pulp and Paper Industry, requires that various pulping process air emissions and Kraft pulping process condensate emissions be collected and controlled/treated at pulp mills that are major sources of HAP emissions. The potentially affected source for this NESHAP is specified at 40 CFR §63.440(b)(1) as the total HAP emissions points in the pulping and bleaching systems. Pulping system and bleaching system are defined in 40 CFR §63.441 as follows.

> *Pulping system means all process equipment, beginning with the digester system, and up to and including the last piece of pulp conditioning equipment prior to the bleaching system, including treatment with ozone, oxygen, or peroxide before the first application of a chemical bleaching agent intended to brighten pulp. The pulping system includes pulping process condensates and can include multiple pulping lines.*
>
> *Bleaching system means all process equipment after high-density pulp storage prior to the first application of oxidizing chemicals or reducing chemicals following the pulping system, up to and including the final bleaching stage.*

For the proposed project, all equipment considered new and modified is subject to the standards for existing sources. Although individual pieces of equipment in the pulping and bleaching systems are being added or modified, the work does not constitute construction or reconstruction of an affected source that would cause the pulping and bleaching systems to become subject to the standards for new sources. The project does not include construction or an entirely new pulping or bleaching system or the construction of a new pulping or bleaching line.

With respect to reconstruction, the cost of modifications to existing equipment and newly installed equipment is estimated at $250 million (i.e., conservatively includes costs other than replacement of components), while the replacement cost of the entire pulping and bleaching

systems is estimated at $600 million[28]. Thus, the cost of the new and replacement components is less than 50% of the cost that would be required to construct a comparable new source. Therefore, the pulping and bleaching systems will continue to be regulated as an existing source under NESHAP Subpart S.

The No. 7 Mill Transformation Project includes several new pieces of equipment that are part of the affected source under NESHAP Subpart S. Additional details on the approach for compliance with the rule for several of the new units are provided herein.

- No. 7 Mill Chip Bin (Equipment ID No. 206) – As described in Section 0 for NSPS Subpart BBa applicability, emissions from the No. 7 Mill Chip Bin will not be collected, because fresh steam will be utilized.
- No. 7 Mill – Chip Meter (Equipment ID No. 207) – The Chip Meter (also referred to as the twin meter screw) utilizes black liquor to slurry chips into the chip feed system and may come into contact with process gases from the black liquor or associated white liquor feed. Therefore, gases from this unit will be collected to the HVLC system and controlled.
- No. 7 Mill Continuous Digester (Equipment ID No. 282), Flash Tank (Equipment ID No. 283), Digester Area Foul Condensate Tank (Equipment ID No. 284), Digester Evaporator[29] (Equipment ID No. 285), and Blow Tank (Equipment ID No. 286) – As required by 40 CFR §63.443(a)(1)(i) and §63.443(d), HAP emissions from the affected source (including these new pieces of equipment) will be collected to the LVHC collection system and controlled.
- No. 7 Mill Primary (Pressure) Knotter (Equipment ID No. 104a), Secondary Knotter (Knotter Drainer, Equipment ID No. 104b), Knotter Accepts Tank (Equipment ID No. 104c), and Knot Conveyor (Equipment ID No. 104d) – Although the knotter system[30] emissions are expected to be less than 0.1 pounds HAP per ton oven-dried pulp (lb/ODT) threshold specified in 40 CFR §63.443(a)(1)(ii)(A), ARC plans to collect any HAP emissions to the HVLC collection system for control.
- No. 7 Mill Quaternary Screen (Equipment ID No. 130) and Shive Cleaner (Equipment ID No. 131) – The addition of these two components to the existing No. 7 Mill screen system[31] is not expected to result in increases in emissions above the 0.2 lb/ODT HAP threshold specified in 40 CFR §63.443(a)(1)(ii)(B).

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[28] The cost provided for the pulping and bleaching systems is conservative in that it represents only one line, and the ARC Mill has two lines. The Plain English Guidebook for Subpart S indicates to determine if reconstruction occurs, replacement costs would be compared to the construction costs for the entire pulping system, including multiple lines if relevant applicable.

[29] The digester evaporator utilizes fresh steam to evaporate a portion of the digester extraction liquor. The concentrated liquor from the digester evaporator is sent to the flash tank for further processing and heat recovery. Process steam generated by the evaporators are fed into the vapor reboiler which is utilized to generate fresh clean steam for the chip bin. 40 CFR §63.441 specifies that evaporator systems include all equipment associated with increasing solids content and/or concentrating spent cooking liquor from the pulp washing system. The digester evaporator will utilize digester extraction liquor and is located between the digester and prior to the digester flash tanks. Therefore, this equipment is located prior to any pulp washing activities and is included as part of the digester system.

[30] Knotter system is defined in 40 CFR §63.441 as "equipment where knots, oversized material, or pieces of uncooked wood are removed from the pulp slurry after the digester system and prior to the pulp washing system. The knotter system equipment includes the knotter, knot drainer tanks, ancillary tanks, and any other equipment serving the same function as those previously listed.

[31] Screen system is defined in 40 CFR §63.441 as "equipment in which oversized particles are removed from the pulp slurry prior to the bleaching or papermaking system washed stock storage."

- No. 7 Turpentine Decanter (Equipment ID No. 503) and No. 7 Turpentine Storage Tank (Equipment ID No. 504) – These units and other equipment associated with recovering turpentine from the digester system (e.g., condensers) are part of the turpentine recovery system and also the LVHC collection system, which is required to be controlled.
- Following completion of the project, a methanol recharacterization study will be completed to determine the necessary streams to monitor to demonstrate compliance with the methanol collection/destruction requirements specified in 40 CFR §§63.446(c)(3) and 63.446(a)(5). Condensates streams from the digester systems, evaporator systems, turpentine recovery systems, HVLC collection systems, and LVHC collection systems will be included in this analysis.

This project proposes to convert the existing No. 7 Mill Blow Tank (Equipment ID No. 275) to the No. 7 Brown Stock Transfer Tank, which will feed the No. 7 Brown Stock Washers. Therefore, this tank will now be routed to the HVLC system (i.e., instead of LVHC collection system in current utilization). In addition, modifications are proposed to the No. 7 Mill Primary and Secondary Screens (EU Z007, Equipment ID Nos. 133a-133d and 134); these changes are not expected to impact to affect the screen system's ability to meet the threshold in 40 CFR §63.443(a)(1)(ii)(B).

3.4.3 Subpart MM, NESHAP for Chemical Recovery Combustion at Kraft, Soda, Sulfite, and Stand-Alone Semi-Chemical Pulp Mills

Subpart MM of 40 CFR 63, NESHAPs for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills, establishes limits on HAP emissions from chemical recovery combustion sources at pulp mills that are major sources of HAP emissions. The affected source for NESHAP Subpart MM is defined at 40 CFR 63.860(b)(1) through (7) as described herein.

> *The requirements of this subpart apply to each new or existing affected source listed in paragraphs (b)(1) through (7) of this section:*
>
> *(1) Each existing chemical recovery system (as defined in § 63.861) located at a kraft or soda pulp mill.*
> *(2) Each new nondirect contact evaporator (NDCE) recovery furnace and associated smelt dissolving tank(s) located at a kraft or soda pulp mill.*
> *(3) Each new direct contact evaporator (DCE) recovery furnace system (as defined in § 63.861) and associated smelt dissolving tank(s) located at a kraft or soda pulp mill.*
> *(4) Each new lime kiln located at a kraft or soda pulp mill.*
> *(5) Each new or existing sulfite combustion unit located at a sulfite pulp mill, except such existing units at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. AP-10).*
> *(6) Each new or existing semichemical combustion unit located at a stand-alone semichemical pulp mill.*
> *(7) The requirements of the alternative standard in § 63.862(d) apply to the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD-14).*

As discussed previously, the No. 7 Lime Kiln and the No. 8 Recovery Furnace are currently subject to NESHAP Subpart MM and will be physically modified as part of the proposed project. Neither of these units are new, and both units will continue to be subject to the existing unit

emission limits under NESHAP Subpart MM. As a part of the project, the existing scrubber system on the No. 7 Lime Kiln will be replaced with an ESP. Pursuant to 40 CFR §§63.834(d) and 63.864(e)(1), the No. 7 Lime Kiln will be required to install a continuous opacity monitoring system (COMS) to maintain compliance against the 20% opacity limitation specified in 40 CFR §63.864(k)(1)(i) and maintain proper operation of the ESP's automatic voltage controller (AVC).

As described in Section 1.6.2, the No. 8 Smelt Dissolving Tank will be replaced. Therefore, the emissions unit will be subject to the requirements for a new kraft smelt dissolving tank, including a limit of 0.12 lb/ton BLS (dry weight) for PM as specified in 40 CFR §63.862(b)(2). As described in Section 1.6.2, the exhaust from the No. 8 Recovery Furnace will normally be routed to the No. 8 Recovery Furnace.

3.4.4 Subpart RR, National Emissions Standards for Individual Drain Systems

Subpart RR of 40 CFR Part 63, NESHAPS for Individual Drain Systems, applies to the control of air emissions from individual drain systems for which another subpart references the use of this subpart. NESHAP Subpart RR is applicable for Kraft condensate collection systems. Therefore, these provisions apply for the collection systems that are addressed in the Pulp and Paper NESHAP Rule, 40 CFR 63, Subpart S.

3.4.5 Subpart DDDDD, NESHAP for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters

40 CFR Part 63, Subpart DDDDD, NESHAP for Industrial-Commercial-Institutional Boilers and Process Heaters (Boiler MACT) applies to boilers and process heaters.

<u>No. 7 Power Boiler</u>
The No. 7 Power Boiler (EU Z008) is currently subject to the requirements of Boiler MACT. This application does not propose any changes to the boiler and thus, the unit will remain subject to the requirements for an existing hybrid suspension/grate boiler designed to burn wet biomass/bio-based solid.

<u>Recovery Furnaces</u>
As specified in at 40 CFR Part §63.7491(b), recovery furnaces subject to Subpart MM of Part 63 are specifically exempted from the requirements of Subpart DDDDD. Therefore, the recovery furnaces are not subject to any requirements of Boiler MACT.

3.4.6 Non-Applicability of Other NESHAP

As with the NSPS standards, NESHAPs are primarily developed for particular industrial source categories. Therefore, the applicability of a particular NESHAP to a facility can be readily ascertained based on the industrial source category covered. All NESHAP regulations, both in 40 CFR Part 61 and 40 CFR Part 63, excluding those specifically discussed above, are not applicable to sources at the proposed project.

3.5 COMPLIANCE ASSURANCE MONITORING

Under 40 CFR Part 64, CAM facilities are required to prepare and submit monitoring plans for certain emissions units with the initial or renewal Title V operating permit application. CAM plans are intended to provide a reasonable assurance of compliance with emissions limits. Under the general applicability criteria, this regulation only applies to emissions units that use a control device to achieve compliance

with an emissions limitation or standard and whose pre-controlled emissions levels exceed the major source thresholds under the Title V operating program.

For large pollutant-specific units[32], CAM plans are also required to be submitted as part of an application for a significant permit revision for those pollutant-specific emissions units for which the proposed revision is applicable. Conservatively, ARC reviewed CAM applicability for all emissions units at the site. An updated CAM applicability analysis in included in Appendix F. However, there are no changes to previous CAM applicability determinations as a result of this project. Any new or modified control devices are for sources which are already subject to an NSPS or NESHAP promulgated after November 15, 1990, are already subject to continuous monitoring requirements, or are not large pollutant-specific units (i.e., will be addressed at renewal). In addition, since the No. 8 Power Boiler (X017) has been permanently removed from service, ARC requests removal of all requirements, including CAM, from the permit as part of this revision.

3.6 ADEM REGULATIONS APPLICABILITY

A number of ADEM regulations are applicable for the sources that are being modified and added as part of the proposed projects. The following chapters from the ADEM regulations were found to be applicable to one or more of the individual sources:

- Chapter 335-3-4, Control of Particulate Emissions;
- Chapter 335-3-5, Control of Sulfur Compound Emissions;
- Chapter 335-3-10, Standards of Performance for New Stationary Sources; and
- Chapter 335-3-11, National Emission Standards for Hazardous Air Pollutants.

In addition to these unit-specific regulations, ADEM Regulation 335-3-14-.04 details the requirements for obtaining a PSD construction permit. This application is submitted following the requirements of that regulation.

[32] Large pollutant-specific emissions unit is defined in 40 CFR §64.5 as a pollutant-specific emissions unit with a PTE (taking into account control devices to the extent appropriate under the definition in 40 CFR §64.1) of the applicable regulated air pollutant equal to or greater than the amount for a source to be classified as a major source.

4. BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

4.1 BACT OVERVIEW

Pursuant to federal and state PSD regulations (i.e., 40 CFR §52.21(j) and ADEM Admin Code r. 335-3-14-.04, respectively), a best available control technology (BACT) analysis is required for each regulated NSR pollutant emitted in significant amounts from new and modified major stationary sources. Therefore, BACT for PM, PM_{10}, $PM_{2.5}$, CO, NO_X, VOC, TRS, H_2S, SAM, and GHGs is addressed for the new and modified units that are part of the No. 7 Mill Transformation Project. The federal regulations define BACT as:

> *"…an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the [ADEM Director], on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the [ADEM Director] determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."*

U.S. EPA recommends that a "top down" approach be used to conduct the BACT analysis. This process begins with the identification of the alternative control technologies available for the source category based upon a review of:

- Those technologies required by previous BACT determinations made by U.S. EPA or state agencies; and
- Those technologies applied in practice to the same category or a similar source category by means of technology transfer.

The available control technologies are then evaluated to determine whether they are technically feasible for the given application. Those control technologies found to be technically infeasible are eliminated from further consideration, while the remaining control technologies are ranked by their performance levels, from the highest to the lowest performance level. The technically feasible control technologies are then evaluated based on the associated economic, energy, and environmental impacts. If an available technology, starting with the highest performance level, is eliminated based on any of these criteria, the control technology with the next highest performance level is evaluated until a control technology qualifies as BACT.

Historically, the cost effectiveness of alternative control technologies in reducing air pollutant emissions is the principal criterion used to assess the economic feasibility of a particular emissions control alternative in their determinations of BACT. All evaluated control technologies must be capable of meeting the NSPS for the pollutant in question (i.e., NSPS is the BACT floor).

According to U.S. EPA guidance[33], potentially applicable BACT candidates can be categorized in three ways:

- Inherently lower-emitting processes or practices;
- Add-on controls; and
- Combinations of inherently lower-emitting processes and add-on controls.

Consideration of lower-emitting processes through a change in raw materials is generally only considered for industrial processes that use chemicals, such as solvents, where substitution with a lower emitting chemical may be technically feasible. In this instance, consideration of any alternate fuels as lower-emitting processes is inappropriate for the new or modified emissions units for this project.

In summary, U.S. EPA "top-down" BACT process consists of five steps as outlined below:

- Step 1. Identify all available control options with potential for application to the specific unit for the regulated pollutant under evaluation;
- Step 2. Eliminate technically infeasible options;
- Step 3. Rank remaining control technologies by control effectiveness;
- Step 4. Evaluate feasible control options and document results to determine if energy, environmental, and economic impacts are reasonable. If top option is not selected as BACT, evaluate next most effective control option;
- Step 5. Select BACT, which will be the most effective option not rejected based on energy, environmental, and economic impacts.

The "top-down" approach was used in this analysis to evaluate available air emissions controls for PM, PM_{10}, $PM_{2.5}$, CO, NO_X, VOC, TRS, H_2S, SAM, and GHGs for the new and modified sources for the No. 7 Mill Transformation Project. These sources are identified in Table 4-1 along with the pollutants they emit. The table does not include new or modified process units that do not emit any NSR-regulated pollutants.

[33] Draft U.S. EPA NSR Workshop Manual, Section B.IV.A, October 1990.

TABLE 4-1. UNITS AND POLLUTANTS FOR WHICH A BACT ANALYSIS IS REQUIRED

Emissions Unit	Equipment ID No.	Source Name	Status	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	VOC	TRS	H_2S	SAM	GHGs
WDYD	--	Digester Chip Conveyor No. 2[34]	Modified[34]	X	X	X	--	--	--	--	--	--	--
Z004	206	No. 7 Mill Chip Bin	New	--	--	--	--	--	X	X	X	--	--
Z004	207	No. 7 Mill Chip Meter	New	--	--	--	--	--	X	X	--	--	--
Z004	282	No. 7 Mill Continuous Digester	New	--	--	--	--	--	X	X	X	--	--
X006	285	No. 7 Mill Digester Evaporator	New	--	--	--	--	--	X	X	X	--	--
Z004	283	No. 7 Mill Flash Tank	New	--	--	--	--	--	X	X	X	--	--
Z004	286	No. 7 Mill Blow Tank	New	--	--	--	--	--	X	X	X	--	--
Z004	284	No. 7 Mill Digester Area Foul Condensate Tank	New	--	--	--	--	--	X	X	X	--	--
Z007	104a	No. 7 Mill Primary Knotter	New	--	--	--	--	--	X	X	--	--	--
Z007	104b	No. 7 Mill Secondary Knotter	New	--	--	--	--	--	X	X	--	--	--
Z007	104c	No. 7 Mill Knotter Accepts Tank	New	--	--	--	--	--	X	X	--	--	--
Z007	104d	No. 7 Mill Knot Conveyor	New	--	--	--	--	--	X	X	--	--	--
Z007	275	No. 7 Mill Brown Stock Transfer Tank	Modified	--	--	--	--	--	X	X	X	--	--
Z007	133a-133d	No. 7 Mill Primary Screens	Modified	--	--	--	--	--	X	X	--	--	--
Z007	134	No. 7 Mill Secondary Screen	Modified	--	--	--	--	--	X	X	--	--	--
Z007	130	No. 7 Mill Quaternary Screen	New	--	--	--	--	--	X	X	--	--	--
Z007	131	No. 7 Mill Shive Cleaner	New	--	--	--	--	--	X	X	--	--	--
X020	X020a-X020l	No. 7 Mill Bleach Plant	Modified	--	--	--	X	--	X	X	X	--	--
X108	108	No. 7 Mill Pulp Dryer	New	X	X	X	--	--	X	--	--	--	--
X006	X006	No. 7 Mill Multiple Effect Evaporator System	Modified	--	--	--	--	--	X	X	X	--	--
X032	127	No. 7 Precipitator Mix Tank	Modified	--	--	--	--	--	X	--	--	--	--
X016	X016	No. 8 Multiple Effect Evaporator System	Modified	--	--	--	--	--	X	X	X	--	--

[34]This entry reflects the modification of Digester Chip Conveyor No. 2 as well as the associated transfer on to the new Air Lock Screw Conveyor that feeds the No. 7 Mill Chip Bin.

TABLE 4-1. UNITS AND POLLUTANTS FOR WHICH A BACT ANALYSIS IS REQUIRED

Emissions Unit	Equipment ID No.	Source Name	Status	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	VOC	TRS	H_2S	SAM	GHGs
X033	426	No. 8 Mill Intermediate (55%) Black Liquor Tank	New	--	--	--	--	--	X	X	X	--	--
X012	X012	No. 8 Recovery Furnace	Modified	X	X	X	X	X	X	X	X	X	X
X015	X015	No. 8 Smelt Dissolving Tank	New	X	X	X	X	--	--	X	X	--	--
Z007	132	No. 7 Mill Slaker	New	X	X	X	--	--	--	X	--	--	--
X030	261	No. 7 Mill No. 5 Causticizer	New	--	--	--	--	--	--	X	--	--	--
X030	117a	No. 7 Mill Green and White Liquor Swing Tank	Modified	--	--	--	--	--	--	X	X	--	--
X030	117b	No. 7 Mill – No. 2 White Liquor Storage Tank	Modified	--	--	--	--	--	--	X	X	--	--
X003	X003	No. 7 Lime Kiln	Modified	X	X	X	X	X	X	X	X	X	X
X321	320 (new) or 321/497 (existing)	Tall Oil Reactor and Associated Equipment	New or Modified	--	--	--	--	--	X	X	X	--	--
X321	475 (new) or 474 (existing)	Flash Tower Feed Tank	New or Modified	--	--	--	--	--	X	X	--	--	--
N/A	503	No. 7 Turpentine Decanter and Underflow Tank	New	--	--	--	--	--	X	X	X	--	--
N/A	504	No. 7 Turpentine Storage Tank	New	--	--	--	--	--	X	--	--	--	--
N/A	N/A	No. 7 Turpentine Loading Station	New	--	--	--	--	--	X	--	--	--	--
X033	424	No. 8 Mill Soap Skimmer Tank	New	--	--	--	--	--	X	X	X	--	--
X033	425	No. 8 Mill Soap Skimmer Tank	New	--	--	--	--	--	X	X	X	--	--

4.2 BACT FOR THE PROJECT

This section contains the BACT analysis for the new or physically modified emissions units and pollutants triggering PSD applicability. Due to the number of emissions units and pollutants, performing a separate BACT analysis for each emissions unit would provide redundant information throughout the five-step evaluation. To reduce unnecessary repetition, the BACT analyses have been consolidated and organized in the subsequent sections as follows.

1) Each step is completed on a project level (i.e., there is a project BACT consideration within this step).
2) Each step is repeated relevant to the project with specific consideration to the pollutant-specific control technology and emissions unit-specific considerations.

The only exception is that Steps 2 through 5 of the BACT analysis for the No. 8 Mill Soap Skimmers are included in Appendix G. The BACT analysis for these emission units was added after original submittal and thus, is included separately.

4.2.1 Step 1. Identify Available Control Technologies

In accordance with Step 1 of the five-step approach, an evaluation was conducted to identify all available control options with potential applicability to the identified units for each regulated pollutant. Table 4-2 presents the control technologies available for each identified unit and regulated pollutant evaluated for control, along with their respective control efficiencies and ranking relative to the other available control options. This table does not take into consideration the technical feasibility of the control device, which is addressed in Step 2 of the evaluation. Available control options were determined through review of the RACT/BACT/LAER Clearinghouse (RBLC) database for entries over the last 20 years, as well as knowledge of feasible controls for similar sources. The results of all RBLC queries conducted in support of this analysis are included in Appendix C[35].

[35]For completeness, the RBLC summaries in Appendix C include all entries the relevant search returned. However, for projects not completed and associated emission limits that are known to not have been demonstrated (e.g., Sun Bio Material Company) are highlighted orange.

TABLE 4-2. SUMMARY OF AVAILABLE CONTROL TECHNOLOGIES AND RANKINGS

Pollutant	Control Technology or Technique	Control Efficiency (%)	Control Efficiency Ranking
$PM/PM_{10}/PM_{2.5}$	Baghouse	95-99.9%	1
	Electrostatic Precipitator (ESP)	95-99%	2
	Wet Scrubber	70-99%	3
	Mechanical Cyclone	0-99% (by particle diameter)	4
	Good Operating Practices	Varies by design	5
CO	Thermal Oxidation (Incineration)	95-99%	1
	Catalytic Oxidation	95-99%	2
	Good Operating Practices / Combustion Controls	Varies by design	3
TRS/ H_2S	Thermal Oxidation (Incineration)	95-99%	1
	Wet Scrubber with low/non-sulfide scrubbing material	90-98%	2
	Good Design and Operating Practices	Varies by design	3
SAM	Wet ESP	95-99%	1
	Good Operating Practices	Varies by design	2
NO_X	Selective Catalytic Reduction (SCR)	70-90%	1
	Oxidation with Subsequent Absorption	60-90%	2
	Selective Non-Catalytic Reduction (SNCR)	30-50%	3
	Flue Gas Recirculation	30-50%	4
	Low-NOx Burners	25-50%	5
	Good Operating Practices / Combustion Controls	Varies by design	6
VOC	Thermal Oxidation (Incineration)	95-99%	1
	Catalytic Oxidation	95-99%	2
	Packed Bed Scrubber	70-99%	3
	Condenser Technology	50-99%	4
	Carbon Absorption	95-98%	5
	Biofiltration	90-93%	6
	Good Operating Practices (includes low-VOC materials)	Varies by design	7
GHG	Carbon Capture	85-90%	1
	Efficient Operating Practices/Maximize use of Biogenic Fuels	Varies by design	2

4.2.1.1 Descriptions of PM, PM_{10}, and $PM_{2.5}$ Control Technologies

PM emissions are generated from various pulp and paper mill process equipment. Wood/chip handling and processing is one main source of PM. Other sources include pulp mill recovery furnaces, lime kilns, and combustion devices that oxidize non-condensable gases generated during kraft pulping. Auxiliary equipment like boilers, turbines, and cooling towers are also common sources of PM at pulp and paper mills.

Baghouse

A baghouse, or fabric filter, is one of the most efficient devices for removing PM. Baghouses have the capability of maintaining collection efficiencies above 99% for particles down to 0.3 micrometer (μm) in size. The basic components of a fabric filter unit consist of woven or felted fabric, usually in the form of bags that are suspended in a housing structure (baghouse), an induced draft or forced draft fan, a blow-back or reverse air fan for cleaning the bags, or a pulse-jet fan or a mechanical shaking mechanism for cleaning the bags. The emissions stream is distributed by means of specially designed entry and exit plenum chambers, providing equal gas flow through the filtration medium. The particle collection mechanism for fabric filters includes inertial impaction, Brownian diffusion, gravity settling, and electrostatic attraction. The particles are collected in dry form on a cake of dust supported by the fabric or on the fabric itself. The process occurs with a relatively low-pressure drop requirement (usually within the range of 2-6" water column (w.c.)). Periodically, most of the cake dust is removed for disposal. Cake dust is removed using a mechanical shaking or "rapping" system, with the use of reverse air, or with the use of a pulse jet of air. Dust is collected in a hopper at the bottom of the baghouse and is removed through a valve and dumped into a storage container. Usually, the dust is disposed of at an industrial landfill, although it may be recycled back to the process.

The condition of the exhaust is crucial for baghouse design and sustained operating conditions. Acidic or elevated temperature exhaust flow (excess of 290°C) require special refractory mineral or metallic fiber filters and will most likely experience shorter life spans due to the harsh environment. In addition, baghouses are an inherently poor choice for airstreams containing moisture. High moisture or humidity levels cannot be tolerated by a baghouse as the filter media would quickly become "blinded" due to the moisture in the stream, and as a result, would not collect dust efficiently. The collected PM cannot be effectively removed from wet bag filters, which could result in plugging of the bags. The air stream entering a baghouse must be very dry for the technology to work effectively.

Baghouses can be a combustible dust risk due to the collection of dust in a confined space that can lead to a fire or explosion if a source of ignition is present. Cellulosic fibers that are prominent in the wood products industry can fuel a flash fire or explosion with potentially catastrophic consequences.

Electrostatic Precipitator

ESPs use electrical energy to charge and collect particles with a very high removal efficiency. The classification of ESPs may be as wet or dry systems and/or single-stage or two-stage systems. Dry systems are the predominant type used in industrial applications but are only suited to dry exhaust streams. Wet systems are increasing in use today since they eliminate the possibility of fires, which can sometimes occur in dry systems.

The principal components of a dry ESP include the housing, discharge and collection electrodes, power source, cleaning mechanism, and solids handling systems. The housing is gas-tight, weatherproof, and grounded for safety. Dust particles entering the housing are charged by ions

from the discharge electrodes. Dust is collected on the collection electrodes, which are also referred to as plates. The system voltage and the distance between the discharge and collection electrodes govern the electric field strength and the amount of charge on the particles. Dry ESPs are most effective at collecting coarse, larger particles above 1.0 μm in diameter. Particles smaller than this are difficult to remove because they can inhibit the generation of the charging corona in the inlet field and thereby reduce collection efficiency.

Rappers serve as the cleaning mechanisms for dry ESPs. Dust hoppers collect the precipitated particles from a dry ESP. Dust is removed continuously or periodically from the hopper and stored in a container until final disposition. Collection efficiencies for dry ESPs are usually at or above 98%.

Similar to baghouses, dry ESPs are also considered a combustible dust risk due to the collection of dust in a confined space that can lead to a fire or explosion if a source of ignition is present. Dry ESPs are also an inherently poor choice for airstreams containing moisture because the electrodes in these units are not designed for moisture-containing air streams.

Wet ESPs work on the same principle as dry ESPs, except that wet ESPs operate a wet wall within the ESP with either continuous or intermittent water flow. The water flow is collected into a sump. The advantages of a wet ESP are that they have no back coronas and a reduced risk of developing fires. Wet ESPs are specifically designed to collect PM from wet air streams.

Wet Scrubber

Wet scrubbers are collection devices that trap wet particles to remove them from a gas stream. They utilize inertial impaction and/or Brownian diffusion as the particle collection mechanism. Wet scrubbers generally use water as the cleaning liquid. Water usage and wastewater disposal requirements are important factors in the evaluation of a scrubber alternative. Types of scrubbers include spray scrubbers, cyclone scrubbers, packed-bed scrubbers, plate scrubbers, and venturi scrubbers. The most common PM removal scrubber is the venturi scrubber because of its simplicity (no moving parts) and high collection efficiency. In this type of scrubber, a gas stream is passed through a venturi section, before which a low-pressure liquid (usually water) is added to the throat. The liquid is atomized by the turbulence in the throat and begins to collect particles impacting the liquid as a result of differing velocities for the gas stream and atomized droplets. A separator is used to remove the particles or liquid from the gas stream. The most important design consideration is the pressure drop across the venturi. Generally, the higher the pressure drop, the higher the collection efficiency.

Mechanical Cyclone

Cyclone separators are devices that utilize centrifugal forces and low pressure caused by spinning motion to separate materials of different density, size, and shape. Gas cyclones are used to separate PM from dust-laden air streams and typically work best to remove larger particles (they are not effective for $PM_{2.5}$). Cyclones are popular because they are simple to operate, inexpensive to manufacture, require little maintenance, and operate at high temperatures and pressures. There are two types of separators available, tangential and axial. In axial flow cyclones, the gas stream enters from the top of the unit and is forced to move tangentially by a grate in the top of the cyclone. In tangential cyclones, the gas stream enters from an inlet on the side that is positioned tangentially to the body of the unit. Multi-stage cyclones can increase the amount of PM that is removed by connecting multiple single stage cyclones in series. The first stage of a multi-stage cyclone removes the larger particles while the remaining stages remove smaller particles. The collection efficiency of cyclones varies, and can be up to 99%, depending upon the size of the particles in the gas stream and whether the system is comprised of a single stage or multiple

stages. Cyclones can sufficiently handle gas streams with high moisture and do not present a combustible dust concern because dust is continuously removed from the system.

Good Operating Practices

"Good operating practices" is a broad term that encompasses the operation of equipment in a way that best minimizes emissions and, for combustion equipment, best maximizes combustion efficiency. Good operating practices that apply to all sources and pollutants being evaluated in this BACT analysis include routine maintenance and operation in accordance with manufacturer specifications. Additional good operating practices will vary by source. For a recovery furnace, good operating practices would also include staged air combustion, as well as optimizing combustion airflow to minimize particle carryover. For material handling sources, good operating practices would include enclosures, water sprays, and minimizing drop distance during drop loading.

4.2.1.2 Description of CO Control Technologies

CO emissions are generated from various pulp and paper mill process equipment, typically as a result of incomplete combustion of carbonaceous fuels or byproducts. This section provides a brief description of each control technology for CO, how each operates, and the unique advantages and disadvantages of each.

Thermal and Catalytic Oxidation (Incineration)

Thermal oxidizers work on the principle of reacting CO in an industrial process exhaust gas stream with oxygen in air to form carbon dioxide (CO_2) and water vapor. This reaction occurs when the exhaust gases from an industrial process are heated to a sufficiently high temperature, typically 1,400 – 1,600°F, with a residence time in the combustion chamber between one-half to one second. Thermal oxidizers can be designed as conventional thermal units, recuperative units, or regenerative thermal oxidizers (RTO). Combustion units such as boilers, furnaces, and kilns can also be used to thermally oxidize process gases

Catalytic oxidation is an add-on control technology designed to reduce CO emissions. The catalyst is typically made of a precious metal. The catalyst promotes the oxidation of CO and hydrocarbon compounds to CO_2 and water as the emissions stream passes through the catalyst bed. The oxidation process takes place spontaneously, without the requirement for introducing reactants. A case-by-case temperature range, to be specified by the manufacturer, is needed along with the metals in the catalyst, to optimize the oxidation process. The catalyst causes excess O_2 to react with CO and hydrocarbons to form CO_2, thus reducing CO emissions.

Good Operating Practices/Combustion Controls

The formation of CO is minimized by ensuring that the boiler or combustion device temperatures and oxygen levels are optimum for complete combustion. This can be further achieved through parameter monitoring and consistent equipment maintenance. Good combustion practices, also commonly referred to as proper operation and maintenance, are a method of controlling CO emissions. Employing an efficient unit design, performing periodic tune-ups, and optimizing air and fuel flow are examples of good operating and combustion practices.

4.2.1.3 Description of TRS Control Technologies

TRS emissions are byproducts of the kraft pulp process. This section provides a brief description of each control technology for TRS, how each operates, and the unique advantages and disadvantages of each.

Thermal and Catalytic Oxidation (Incineration)

Thermal oxidizers work on the principle of reacting TRS compounds in an industrial process exhaust gas stream with oxygen in air to form SO_2, carbon dioxide, and water vapor. This reaction occurs when the exhaust gases from an industrial process are heated to a sufficiently high temperature, typically 1,400 – 1,600°F, with a residence time in the combustion chamber between one-half to one second. Thermal oxidizers can be designed as conventional thermal units, recuperative units, or RTOs. RTOs and other thermal oxidizers are described in more detail above. Combustion units such as boilers, furnaces, and kilns can also be used to thermally oxidize process gases.

Catalytic oxidation is an add-on control technology that uses a catalyst to facilitate the oxidation reaction instead of depending on heat alone. More detail on catalytic oxidation was provided above.

Wet Scrubber

Wet scrubbers are designed to bring gas mixtures into contact with a sorbent so that one or more soluble components of the gas interact with the sorbent. Sorbents are generally liquid solvents such as water, mineral oils, nonvolatile hydrocarbon oils, and aqueous solutions. A properly designed scrubber will provide enough contact between the gas and solvent to facilitate diffusion of the pollutants. Gas absorbers can be classified as either "wet" or "dry" scrubbers depending on the physical state of the sorbent. In a wet scrubber, the sorbent is injected into the waste gas stream as an aqueous solution and the pollutants dissolve in the aqueous droplets and/or react with the sorbent. Wet scrubbers used to control TRS often use a low-sulfide or non-sulfide scrubbing media such as sodium hypochlorite to first oxidize the TRS compounds to SO_2 before they are scrubbed from the waste gas stream. Gas absorbers have been used at refineries, fertilizer manufacturers, chemical plants (e.g., ethylene dichloride production), pulp and paper mills, cement and lime kilns, incinerators, glass furnaces, sulfuric acid plants, plating operations, steel pickling and metal smelters. Wet scrubbers using alkaline scrubbing solutions such as weak wash and caustic are effective at controlling at H_2S but are not as efficient at controlling the remaining TRS compounds (i.e., methyl mercaptan, dimethyl sulfide, and dimethyl disulfide).[36]

Good Operating Practices

Good operating practices for TRS reduction include efficient operation, good lime mud washing prior to the kiln, proper maintenance of equipment, limiting exposure of TRS-containing materials to the atmosphere, and use of lower TRS containing process water or additives.

4.2.1.4 Description of SAM Control Technology

SAM emissions result from the combustion of sulfur-containing gases or fuel. This section provides a brief description of each control technology for SAM, how each operates, and the unique advantages and disadvantages of each. Wet scrubbers are not included here as they are not effective at controlling SAM.

Wet ESP

Wet ESPs use electrical energy to charge and collect SAM particles with a very high removal efficiency, as they are essentially $PM_{2.5}$, and were described in detail above. For the sake of conciseness, the discussion has not been repeated here.

[36]NCASI TB No. 895: *Smelt Dissolving Tank TRS Emissions: A Review of the Impact of Operating Variables and Scrubber Characteristics.*

Good Operating Practices

Good operating practices for reducing SAM emissions include good combustion practices and use of lower sulfur fuels.

4.2.1.5 Descriptions of NO_X Control Technologies

NO_X is formed during combustion processes by the thermal oxidation of nitrogen in the combustion air (thermal NO_X) and the oxidation of nitrogen in the fuel (fuel-bound NO_X). Fuel properties, temperature, excess oxygen in the combustion zone, and the stoichiometric conditions present during combustion are additional variables that affect NO_X formation. NO_X control can be achieved via either combustion modifications or post-combustion control technology. This section provides a brief description of each control technology for NO_X, how each operates, and the unique advantages and disadvantages of each.

Selective Catalytic Reduction

SCR is a NO_X control technology that uses a catalyst to react injected anhydrous ammonia, aqueous ammonia, or urea to chemically convert NO_X into N_2 and water. SCR employs a metal-based catalyst, such as vanadium or titanium, to increase the rate of the NO_X reduction reaction. The flue gases flow into a reactor module containing the catalyst where the reagent selectively reacts with the NO_X. The reduction reactions used by SCR are effective only within a given temperature range where ammonia or urea is injected into the exhaust gases in a temperature range of 480°F – 800°F. Under optimum temperatures, amount of reducing agent and injection grid design, SCR can achieve 90 percent reduction efficiencies on NO_X concentrations. However, ammonia slip can also occur, which refers to the emissions of unreacted ammonia due to the incomplete reaction of the reagent and NO_X.

SCR systems are well suited to stable exhaust stream temperatures with low amounts of PM and sulfur concentrations, which can cause catalyst deactivation and fouling of downstream equipment. Because the optimum temperature window for the SCR process is less than that for the SNCR process, reaction of NO_X is designed to take place downstream of the combustion chamber as opposed to inside the combustion chamber as is the case for an SNCR system. Most designs install the reaction chamber downstream of the economizer, but upstream of the air pre-heater, where the metal oxide-based catalyst works best. Reheating of the flue gas is required for reaction chambers located downstream of the air pre-heater.

Catalysts can lose their activity over time for several reasons as discussed below:

- *Poisoning* - certain fuel constituents released during the combustion process can act as catalyst poisons. Catalyst poisons include calcium and magnesium oxides, potassium, sodium, arsenic, chlorine, fluorine, and lead. These constituents deactivate the catalyst by diffusing into active pore sites and occupying them irreversibly.
- *Thermal Sintering* - high flue gas temperatures cause sintering (i.e., a permanent loss of catalyst activity due to a change in pore structure of the catalyst). Thermal sintering can occur at temperatures as low as 450°F. The amount of sintering that occurs is dependent upon the composition and structure of the catalyst.
- *Binding/Plugging/Fouling* - ammonia salts, fly ash, and other PM in the flue gas can cause binding, plugging, and/or fouling of the catalyst. The PM deposits in the active pore sites of the catalyst, which results in a decrease in the number of sites available for NO_X reduction and an increase in flue gas pressure loss across the catalyst bed.
- *Erosion and Aging* - catalysts with hardened leading edges or increased structural strength are less susceptible to erosion. Increasing catalyst strength by hardening reduces the number of

active pore sites. Catalyst aging occurs over time and changes the physical and chemical properties of the catalyst.

Oxidation of NO_X with Subsequent Absorption

There are three types of add-on NOx control technologies that involve oxidation of NOx with subsequent absorption: oxidant injection, non-thermal plasma reactor (NTPR), and oxidation/reduction (O/R) scrubbing. Oxidant injection is mentioned in EPA's Clean Air Technology Center's Technical Bulletin "Nitrogen Oxides (NO_X), Why and How they are Controlled[37]" as a control method for reducing NO_X emissions from combustion sources. The oxidation of nitrogen to its higher valence states makes NO_X soluble in water. When this is done, a gas absorber can be effective in reducing NO_X emissions. According to EPA, oxidants that have been injected into gas streams are ozone, ionized oxygen, or hydrogen peroxide. The only types of combustion sources identified in EPA's technical bulletin that have used this control method are dry bottom wall-fired, front-fired, or opposed-fired boilers, and boilers with stokers and traveling grates, but not sources in the pulp mill chemical recovery area. EPA's technical bulletin claims that this technology can reduce NO_X emissions by 60-80% for the types of boilers on which it has been used.

NTPR is also mentioned in EPA's NO_X control technical bulletin. This technique generates electron energies in the gas stream that generate gas-phased radicals, such as hydroxyl (OH) and atomic oxygen (O) through collision of electrons with water and oxygen molecules present in the flue gas stream. In the flue gas stream, these radicals oxidize NO_X to form nitric acid (HNO_3), which can then be condensed using a wet condensing precipitator. The only types of combustion sources identified in EPA's technical bulletin that have used this control method are dry bottom wall-fired, front-fired or opposed-fired boilers, wet bottom (slag tap) boilers, fluidized bed boilers, stationary internal combustion engines, and boilers with stokers and traveling grates, but not lime kilns. EPA's technical bulletin claims that this technology can reduce NO_X emissions by 60-80% for the types of combustion sources on which it has been implemented.

Proprietary O/R processes are commercially available, such as Tri-Mer Corporation's TRI-NO_X and Linde LLC's LoTO$_X$ systems. It has been reported that these systems can achieve up to 90% NO_X control. The gas stream is cooled to its dew point, which condenses a portion of the water vapor and generates condensate that requires disposal. Low temperature oxidation of NO_X, CO, and SO_2 to higher oxides is achieved through controlled injection of ozone of sodium chlorite in a static mixer or reaction duct. The higher forms of nitrogen and sulfur oxides are then absorbed in a wet scrubber that produces a nitric, sulfuric, and carbonic acid solution that is recovered and neutralized using sodium hydroxide.

Selective Non-Catalytic Reduction

SNCR systems work by injecting ammonia or urea into the combustion chamber, thereby converting NO_X to elemental nitrogen, carbon dioxide, and water vapor. The reaction must take place between specific temperature ranges or more NO_X will be formed instead of less NO_X. The optimum temperature range for a system that uses ammonia is 1,600-2,000°F and for a system that uses urea, the optimum temperature range is 1,650-2,100°F. Increasing the residence time available for mass transfer and chemical reactions generally increases NO_X removal. Variations in boiler steam load or flue gas temperature make the design and operation of an SNCR system more difficult.

[37] https://www3.epa.gov/ttncatc1/dir1/fnoxdoc.pdf

Flue Gas Recirculation

Flue gas recirculation (FGR) is, as the term implies, taking exhaust gas and introducing it at the flame zone to replace clean combustion air. The FGR system reduces NOx emissions by two mechanisms. Primarily, the recirculated gas acts as a diluent to lower the combustion temperature in the flame zone, thus suppressing the thermal NOx mechanism. To a lesser extent, FGR also reduces NOx formation by lowering the oxygen concentration in the primary flame zone. The amount of recirculated flue gas is a key operating parameter influencing NOx emission rates for these systems. An FGR system is normally used in combination with specially designed low NOx burners capable of sustaining a stable flame with the increased inert gas flow resulting from the use of FGR.

FGR is classified as either internal or external. Internal FGR is inherent in most ultra low-NO_X burner (ULNB) systems and is accomplished by the recirculation of hot oxygen-depleted flue gas into the combustion zone based on burner design characteristics. External FGR requires the use of fans and ductwork to re-route some of the flue gas to the burner combustion air supply and is typically not considered as a separate, stand-alone control technique for NO_X. FGR entails recirculating a portion of the relatively cool exhaust gases back to the combustion zone to lower the flame temperature. An external fan or a combustion air fan can be used to recirculate the relatively inert flue gases to lower the peak flame temperatures and reduce NO_X formation by acting as a heat sink, absorbing heat from the flame. The flue gas can also be recirculated back and mixed with combustion air, which acts to lower the average oxygen content of the air, cutting off oxygen supply to the NO_X forming reaction. Typical NO_X control efficiency for FGR ranges from 30% to 50% (U.S. EPA Summary of NO_X Control Technologies and Their Availability and Extent of Application, EPA-450 3-92-004).

Low-NO_X and Ultra Low-NOx Burners

"Low-NO_X" burners (LNB) employ either air staging or fuel staging or a combination of air/fuel staging techniques and specialized combustion controls to minimize the formation of NO_X emissions. Air staging is performed by introducing 50 – 75% of the combustion air into the primary combustion zone with the fuel. This produces a rich flame zone that reduces NO_X emissions due to substoichiometric combustion conditions (low oxygen content). The remainder of the air is injected downstream, forming a secondary flame zone where combustion is completed. NO_X emissions in the secondary flame zone are reduced because the inerts from the primary flame zone reduce flame temperature.

Fuel staging is the reverse condition of air staging. Generally, 30 – 50% of the fuel is injected into the combustion air to form a lean primary flame zone. NO_X emissions are minimized by the low flame temperatures that are generated due to the lean combustion conditions. The remainder of the fuel is then injected downstream forming a secondary flame zone where combustion is completed. NO_X formation rates in this zone are low because the inerts from the primary flame zone lower the flame temperature and oxygen concentration.

The terms "low-NO_X" and "ultra low-NO_X" are often used by vendors to differentiate the burners they have on the market. However, there is no consistent level of NO_X emissions that distinguishes an LNB from a ULNB. Low-NO_X burner conversion capability may also be complicated by boiler age, configuration, and firebox dimensions. In addition, for a recovery furnace, traditional LNB cannot be implemented due to the design of the firing system and chemical recovery furnace characteristics.

Good Operating Practices/Combustion Controls

Combustion controls include the use of air staging and FGR, both of which are discussed above. Staged-air combustion is integral to the operation of most recovery furnaces and is the most effective strategy for minimizing NO_X formation in a recovery furnace. Most non-direct contact evaporator (NDCE) recovery furnaces operating in the U.S. today have multiple stages of combustion air injection. Adding an additional combustion air injection port can improve combustion and reduce NOx emissions.

FGR recirculates a portion of relatively cool exhaust gases back into the combustion zone to lower the peak flame temperature, thereby reducing NO_X emissions. To a lesser extent, FGR also reduces NOx formation by lowering the oxygen concentration in the primary flame zone.

The formation of NO_X is minimized in lime kilns by proper kiln design and operation. Generally, emissions are minimized when the lime kiln temperature is kept at the lower end of the desired range and when the distribution of air at the air and fuel injection zones is controlled. Ideally, maintaining a low-oxygen condition near fuel injection points approaches an off-stoichiometric staged combustion process. A high thermal efficiency would lead to less consumption of heat and fuel and would produce less NOx emissions. General improvement in thermal efficiency is one design method of reducing NOx formation since less fuel is used.

4.2.1.6 Descriptions of VOC Control Technologies

VOC emissions are generated from various pulp and paper mill process equipment from the processing of wood fiber and from use of VOC-containing chemicals. VOC emissions are also generated from combustion units and are an inverse function of combustion efficiency. Generally, maintaining a high combustion efficiency will lower VOC emissions. This section provides a brief description of each control technology for VOC, how each operates, and the unique advantages and disadvantages of each.

Thermal and Catalytic Oxidation (Incineration)

Thermal oxidizers work on the principle of reacting VOCs in an industrial process exhaust gas stream with oxygen in air to form carbon dioxide and water vapor. This reaction occurs when the exhaust gases from an industrial process are heated to a sufficiently high temperature, typically 1,400 – 1,600°F, with a residence time in the combustion chamber between one-half to one second. Thermal oxidizers can be designed as conventional thermal units, recuperative units, or RTOs. A conventional thermal oxidizer does not utilize heat recovery with a heat exchanger. Therefore, the supplemental fuel cost is extremely high and is not suitable for applications with high exhaust gas flow and low VOC concentrations. A regenerative thermal oxidizer is better suited to low VOC concentration streams than a recuperative unit. As such, the BACT analysis will consider RTO control devices.

In an RTO, the VOC-laden inlet gases are preheated by the combustion exhaust gas stream of the oxidizer through the use of a heat exchanger. The heat exchanger will recover as much as 95% of the heat from the exhaust gases and preheat the combustion air, thereby providing significant fuel savings compared to a system that does not incorporate a heat exchanger. An RTO consists of at least two separate chambers packed with ceramic media. The VOC-laden gas enters one hot ceramic bed, where the gas is heated to the desired combustion temperature. Auxiliary fuel may be required in this stage, depending on the heat content of the VOCs contained in the inlet gas stream. The gas stream is directed through the other ceramic bed, where the heat released from combustion is recovered and stored in the ceramic bed. The process gas flow is then switched so that the inlet gas stream can be preheated by the heat recovered in the ceramic bed. The RTO is

operated using an alternating cycle for the two ceramic beds, recovering up to 95% of the thermal energy generated by the combustion process during normal operation.

VOC destruction efficiencies can be 95% or higher with thermal efficiencies as high as 95%. RTOs work best when the VOC-laden stream to be incinerated has a high heat content so that the desired combustion chamber temperature can be maintained without needing to fire much supplemental fuel. If the VOC-laden air stream does not have significant heat content, the RTO will not be able to save as much on fuel costs since the supplemental burner will be needed to maintain the desired combustion chamber temperature.

RTO performance is affected by the quality of filterable PM and condensable PM (CPM) contained in the exhaust gas stream. Therefore, to avoid interference from PM or CPM contained in the exhaust gases, as much PM and CPM as possible should be removed prior to the exhaust gas entering the RTO.

In contrast with thermal oxidizers, catalytic oxidizer systems use a catalyst to facilitate the oxidation reaction instead of depending on heat alone. Reactions in a catalytic oxidizer usually take place between 600 and 900°F. The lower combustion temperature creates the opportunity to reduce fuel expenses and material costs. The addition of a preheater can further reduce the fuel costs. These types of oxidizers are capable of removing VOCs from a gas stream with a destruction efficiency of at least 95%.

PM removal is even more critical for regenerative catalytic oxidizers (RCOs) than RTOs, as the catalyst may be blinded by PM build-up and, as a result, may operate at much lower conversion efficiencies. If the PM build-up on the catalyst is significant, the system may not remove VOCs at all. Therefore, it is typically preferable to use an RTO rather than an RCO for gas streams that have PM or CPM.

Combustion units such as boilers, furnaces, and kilns can also be used to thermally oxidize process gases. The process gases can be used as combustion air in these units or injected into the flame zone for emissions control.

Packed-Bed Scrubbers

Packed bed scrubbers control VOC emissions by absorbing certain VOCs in a liquid solvent. Packed bed scrubbers consist of a chamber containing layers of variously shaped packing material that provide a large surface area for liquid-particle contact. Scrubbing liquid is evenly introduced above the packing and flows down through the bed, establishing a thin film. When the pollutant-laden gas stream is forced through the chamber, chemical absorption occurs to remove VOC. The pollutant to be absorbed must be soluble in the fluid. For VOC, possible scrubbing fluids include water, mineral oils, or other nonvolatile petroleum oils. A consideration for this control technique is the treatment or disposal of the material removed from the unit. In most cases, the scrubbing liquid containing the VOC is regenerated in an operation known as stripping. However, this is an additional cost to be considered.

Packed bed scrubbers are generally dependent on availability of a suitable solvent, required removal efficiency, pollutant concentration in the inlet vapor, capacity required for handling waste gas, and recovery value of the pollutants or the disposal costs of unrecoverable solvent. Packed bed scrubbers have a wide range of operational temperatures and can control both PM and VOC at relatively low capital costs; however, they experience high maintenance costs and can require additional processing of wet waste products.

In addition, NCASI has published data indicating that bleach plant scrubbers designed for chlorinated HAP removal have little to no (positive) effect on most organic compounds.[38] The removal efficiencies for most organic toxics as well as total hydrocarbons were often negative, suggesting stripping of the compounds from the scrubbing solutions. The effectiveness of a scrubber is dependent on the solubility of the compound controlled (i.e., highly soluble compounds can achieve 99% removal and low-solubility compounds achieve negligible removal). Even so, highly soluble compounds like methanol may volatilize back into the atmosphere during the waste treatment process, reducing the overall control efficiency.[39]

Condenser Technology

Condensers are used to convert condensable components of a gas stream, like VOCs, to the liquid phase, usually by reducing the temperature of the gas stream. Condensation occurs when the partial pressure of the condensable pollutant in the waste gas stream is equal to its vapor pressure as a pure substance at the outlet gas temperature of the condenser. The waste gas stream is cooled by transfer of its heat to a refrigerant or coolant. The temperature at which the gases condense can be predicted from vapor pressure data for the pollutant and its mole fraction in the waste gas stream. Condenser efficiencies vary and are dependent on the type of gas stream entering the condenser, as well as the condenser operating parameters (e.g., coolant temperature). Gas stream properties, such as the number of pollutants, chemical and physical properties of those pollutants, moisture content, PM content, flow rate, and temperature, all affect how well the condenser operates.

The primary indicators of the performance of condensers are the condenser outlet VOC concentration and condenser outlet gas temperature. Therefore, condensers are most suitable for gas streams with relatively stable VOC concentrations and temperatures entering the condenser.

Carbon Adsorption

Carbon adsorption recovers VOCs from a gas stream by passing it through a static bed of activated carbon. The VOCs are retained in the pores of the carbon molecules while air is discharged to the atmosphere. The bed of carbon must be regenerated after it becomes saturated with VOCs. Regeneration may involve the use of heat to release the adsorbed VOCs so the "bed" can be reused. The VOCs may be collected by condensation or treated by another piece of control equipment, such as an incinerator.

There are usually a series of "beds" in the unit so that one or more beds are in use while the other beds are being regenerated. The VOC removal efficiency is dependent upon the adsorption capacity for each of the specific organic compounds that make up the exhaust gas stream. Activated carbon is less effective for compounds that are highly polar, volatile or have small diameters. For example, vinyl chloride, methanol, and formaldehyde are not adsorbed well by activated carbon. Activated carbon is less effective in situations where the waste gas has high relative humidity as the water molecules readily adsorb to the activated carbon reducing the number of available absorption sites. Wastes with oxygen bearing compounds, such as peroxides, ketones, organic acids, aldehydes and organic sulfur compounds should be avoided as activated carbon can cause exothermic reactions with these compounds.[40]

[38] NCASI Technical Bulletin 858, Pg. 21.
[39] U.S. EPA. Pulp, Paper, and Paperboard Industry – Background Information for Proposed Air Emission Standards. EPA-453/R-93-050b, October 1997. Available electronically at https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=00002WM9.txt.
[40] https://www.epa.gov/sites/default/files/2018-10/documents/final_carbonadsorberschapter_7thedition.pdf

Biofiltration

Biofiltration is a technology where a VOC-laden exhaust stream is directed through a biologically active media. Biofiltration uses microorganisms to break down organic compounds into carbon dioxide, water, and salts. When the biofilter is built, the microorganisms are already on the material that is used as a filter bed. The filter material normally used is peat, soil, or compost, but granulated activated carbon and polystyrene can also be used. The choice of filter material is very important because it has to supply the nutrients for the microorganisms, support biological growth, and have good sorption capacity.

The microorganisms live in a thin layer of moisture, the biofilm, that is built around the particles of the filter material. The contaminated gas is diffused in the biofilter and adsorbed onto the biofilm. This is the place where the oxidation process actually takes place. The contaminant is not permanently transferred to the filter material.

Temperature, oxygen level, and pH are parameters that affect the level of control. Microorganisms work best when the temperature is between 85 and 105°F. Gas stream temperatures well above 105°F will kill the bacteria contained in the filter media and thereby negate its effectiveness. Also, since most of the biological degradations are aerobic in nature, the oxygen level is very important in a biofiltration process. In fact, oxygen is not used directly in the gaseous form, but the microorganisms use the oxygen present in the dissolved form in the biofilm. The pH value where the microorganisms are the most efficient is around 7. Thus, the pH of the contaminated gas stream must be maintained near this level. This VOC removal technology has not been demonstrated for the reduction of VOCs in any pulp mill process operation to date. Vendors claim that this technology has the capability to remove up to 93% of the VOCs emitted from a gas stream when used under favorable operating conditions such as low temperature, available oxygen, and neutral pH. A realistic control efficiency is more likely in the 30-40% range for total VOC, based on our own familiarity with the operation of biofiltration units in the wood (building) products industry.

Good Operating Practices

Good operating practices for VOC reduction include efficient operation, proper maintenance of equipment, limiting exposure of VOC-containing materials to the atmosphere, and use of lower VOC-containing materials or additives.

4.2.1.7 Description of GHG and CO_2e Control Technology

GHG emissions from pulp and paper mills are a result of fuel combustion. This section describes available technologies for reduction of GHG emissions.

Carbon Capture and Sequestration

The use of carbon capture and sequestration (CCS) is a slowly evolving approach to controlling GHG emissions from combustion devices. As a post combustion approach, carbon capture of CO_2 in the exhaust stream occurs initially and then the sequestration of the captured CO_2 takes place. There must also be a method of transportation of the captured CO_2 unless sequestration can occur onsite. U.S. EPA does not indicate any readily accessible sequestration sites near the mill that can accommodate the GHG emissions from the combustion sources.

Carbon Capture and Utilization

Carbon capture and utilization (CCU) uses the same technology to capture and compress the CO_2 as CCS. The captured CO_2 is then used for industrial purposes, including enhanced oil recovery (EOR) (in which a facility will inject CO_2 into near depleted crude-producing wells to increase pressure and stimulate production), chemical usage (as a urea yield-boosting feedstock), or

beverage manufacturing. The CO_2 may ultimately be emitted offsite, depending on how it is utilized.

Efficient Operating Practices

Good operating practices inherently reduce GHG emissions by ensuring the combustion equipment is operating at peak efficiency. U.S. EPA has issued several guidance documents addressing BACT for GHG emissions from the pulp and paper industry (e.g., for recovery furnaces and lime kilns). The U.S. EPA document addressing control technologies from the pulp and paper manufacturing industry[41] describes a number of technologies for reducing GHG emissions from recovery furnaces and lime kilns; the technologies are summarized below.

- *Black liquor solids concentration* – Increased black liquor solids content means less water must be evaporated in the recovery furnace, which can increase the efficiency of steam generation. Black liquor concentrators are designed to increase the solids content of black liquor prior to combustion in a recovery furnace. There are two primary types in use today: submerged tube concentrators and falling film concentrators. In a submerged tube concentrator, black liquor is circulated in submerged tubes where it is heated but not evaporated; the liquor is then flashed to the concentrator vapor space, causing evaporation. A tube-type falling film evaporator effect operates almost exactly the same way as a more traditional rising film effect, except that the black liquor flow is reversed. The falling film effect is more resistant to fouling because the liquor is flowing faster and the bubbles flow in the opposite direction of the liquor. This resistance to fouling allows the evaporator to produce black liquor with considerably higher solids content (up to 70 percent solids, rather than the traditional 50 percent), thus eliminating the need for a final concentrator.
- *Improved composite tubes for recovery furnaces* – Recovery furnaces consist of tubes that circulate pressurized water to permit steam generation. These tubes are normally made out of carbon steel, but severe corrosion thinning, and occasional tube failure has led to the research and development of more advanced tube alloys, including new weld overlay and co-extruded tubing alloys. Composite alloy tubes allow the use of black liquor with higher solids content, which increases the thermal efficiency of the recovery furnace and potentially decreases the number of furnace shutdowns.
- *Recovery furnace deposition monitoring* – Better control of deposits on heat transfer surfaces in recovery furnaces can potentially lead to higher operating efficiencies, reduced downtime (by avoiding plugging), and more predictable shutdown schedules.
- *Quaternary air injection* – Most NDCE recovery furnaces operating in the U.S. today have multiple stages of combustion air injection. Adding an additional combustion air injection port can reduce PM carry over and tube fouling, thereby reducing the frequency of recovery furnace washing, which can lead to energy savings, because the number of boiler shutdowns and reheating with fossil fuel for startup can be reduced.
- *Recovery Furnace Fuel Selection* – Small amounts of supplemental fossil fuels (e.g., oil or natural gas) are fired in a recovery furnace, usually during startup or shutdown. U.S. EPA indicates that fuel switching is generally not an option of significance for recovery furnaces because black liquor is a biogenic fuel and usually comprises most (90% or more) of the heat input to the furnace. In addition, the primary purpose of the recovery furnace is the recovery of chemicals in the spent cooking liquor, and not the generation of power. Use of fossil fuels is minimized in a recovery furnace and use of biogenic fuel is maximized.
- *Pipe Lime Kiln Gases to an Adjacent Precipitated Calcium Carbonate (PCC) Plant* – Some mills have an adjacent PCC Plant to which they send a portion of the lime kiln exhaust gases. The CO_2 in the exhaust is used as a raw material.

[41] https://www.epa.gov/sites/default/files/2015-12/documents/pulpandpaper.pdf

- *Lime Kiln Oxygen Enrichment* – Studies indicate oxygen enrichment may be able to increase the efficiency of combustion in a lime kiln. This process has been used in the glass manufacturing industry.
- *Lime Kiln Modifications* – The document includes several actions that could reduce energy consumption in lime kilns, such as better mud filtration to reduce the water content of the lime mud entering the kiln, higher efficiency refractory brick to reduce heat loss, heat recovery to pre-heat the incoming lime mud and combustion air.
- *Lime Kiln ESPs* – Use of an ESP rather than a wet scrubber can lead to energy and water savings. An ESP collects kiln dust as a dry material and can return it directly to the kiln feed without adding moisture to the incoming lime mud.

4.2.2 Step 2. Eliminate Infeasible Control Technology

The following section presents a discussion of only the technically infeasible control technologies at the project-level and at the emissions unit-level, as applicable. It is assumed that good operating practices, such as combustion efficiency and proper operation and maintenance practices are technically feasible and practicable at the project-level and emissions unit-level. If only one control technology is technically feasible at the emissions unit-level, Steps 2-4 of the BACT analysis have been abbreviated.

4.2.2.1 PM, PM_{10}, and $PM_{2.5}$ Control Technologies

This section presents the BACT technical feasibility discussion for PM, PM_{10}, and $PM_{2.5}$. Table 4-3 presents a summary of the technical infeasibility of the control technologies available for reducing PM, PM_{10}, and $PM_{2.5}$ emissions from the new or modified sources associated with the project. For each emissions unit and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible;
- The letter "B" indicates that the top-ranked feasible control technology for the emissions unit has been selected as BACT for the emissions unit; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-3. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Baghouse	ESP	Wet Scrubber	Mechanical Cyclone	Good Operating Practices
WDYD	Digester Chip Conveyor No. 2	Y	Y	Y	N	Y
X108	No. 7 Mill Pulp Dryer	N	Y	Y	Y	Y
X012	No. 8 Recovery Furnace	N	B	N	Y	Y
X015	No. 8 Smelt Dissolving Tank	N	B	Y	Y	Y
Z007	No. 7 Mill Slaker	N	N	Y	Y	Y
X003	No. 7 Lime Kiln	N	B	Y	Y	Y

Digester Chip Conveyor No. 2

Digester Chip Conveyor No. 2 will be used to transport wood chips from the woodyard to the new continuous digester. As part of this project, the Digester Chip Conveyor No. 2 will be extended to reach the location of the new Air Lock Screw Conveyor that will ultimately feed the No. 7 Mill Chip Bin.

A review of the RBLC database was conducted using the keyword "conveyor." The search only produced results within Process Codes 70.320 (Corn Oil Manufacturing – Dry Mill), 81.290 (Other Steel Manufacturing Processes), 81.370 (Miscellaneous Melt Shop Operations), 90.011 (Coal Handling/Processing/Preparation/Cleaning), and 90.031 (Taconite Iron Ore Processing) among other entries for vegetable oil manufacturing, ferrous metal, secondary aluminum, and mineral products industries, none of which are representative of the Digester Chip Conveyor or the Mill's operations.

The PM, PM_{10}, and $PM_{2.5}$ emissions control technologies that are feasible for the Digester Chip Conveyor No. 2 are baghouses, ESPs, wet scrubbers, and good operating practices. Feasible good operating practices include use of partial enclosures to minimize fugitive dust and minimizing the height of drop points. Use of a water spray on the conveyor is not a feasible control technology because adding moisture to the chips prior to them entering the digester would affect the cooking conditions in the digester and wet wood dust would build up on equipment, which could lead to operating and maintenance problems. A cyclone is not considered feasible because they are typically used as chip transport devices as part of a pneumatic system (i.e., change of design), not emissions control equipment. Furthermore, a cyclone would not provide appreciable control of the small amount of particulate generated at Digester Chip Conveyor No. 2. For the aforementioned reasons, cyclones are not carried forward as an option in this analysis.

No. 7 Mill Pulp Dryer

As part of this project, the No. 7 Mill Pulp Dryer will be replaced. The new Pulp Dryer will only use steam heat and is not a combustion source. The No. 7 Mill Pulp Dryer will receive bleached pulp from the No. 7 Mill Bleach Plant, which will be applied in sheet form through the dryer to remove excess moisture from the pulp. This process results in PM, PM_{10}, and $PM_{2.5}$ emissions.

A review of the RBLC database was conducted using Process Code 30.241 (Kraft Paper Machines). The search did not yield any listings for pulp dryers with BACT determinations for PM, but did yield a tissue machine with PM limits (including a wet scrubber on the reel section) and several paper machines with PM limits (including a wet scrubber on the dry and reel sections of five units). Tissue machines and paper machines make different products and emit significantly more PM than pulp dryers.

Baghouses are a combustible dust risk due to the collection of dust in a confined space, which can lead to a fire or explosion if near an ignition source. GP has taken many measures, such as removing baghouses, to reduce combustible dust explosion risks over the past several years. As such, GP does not consider installing a baghouse on a pulp dryer to be technically feasible for safety reasons. In addition, the moisture levels expected in the exhaust stream cannot be tolerated by a baghouse as the filter media would quickly become "blinded" due to the moisture in the stream and, as a result, would not collect dust efficiently.

Similar to baghouses, a dry ESP is considered a combustible dust risk. Dry ESPs are also a poor choice for moisture-containing exhaust streams because their electrodes are not designed to handle moisture. Therefore, the Mill has determined that a dry ESP is not technically feasible. A wet ESP, however, would be able to accommodate the high moisture content of the pulp dryer's

exhaust stream and is considered technically feasible. A cyclone and a wet scrubber would also be technically feasible PM control devices for the pulp dryer.

No. 8 Recovery Furnace

Recovery furnaces are designed and operated to ensure high levels of sodium fumes are present in the furnace to capture the sulfur dioxide that is produced as a result of oxidation of reduced sulfur compounds. As such, the majority of PM emissions from recovery furnaces are sodium salts. PM emissions from recovery furnaces are controlled using ESPs and the saltcake captured in the ESP is returned to the process.

A search of the RBLC for recovery furnaces with similar configurations and fuel types was performed. This search encompassed recovery furnaces categorized using Process Codes 30.211 (Kraft Recovery Furnaces/Boilers) and 30.219 (Other Kraft Material Recovery Processes). The search identified a total of 19 listings of recovery furnaces with BACT determinations for PM, total PM_{10}, and/or total $PM_{2.5}$. The PM, PM_{10}, and $PM_{2.5}$ emissions technology that is employed by the furnace is identified in 11 of these listings, all of which describe the use of an ESP as the PM, PM_{10}, and $PM_{2.5}$ control.

While fabric filters can achieve high levels of PM control, the exhaust gas stream from a recovery furnace has a relatively high moisture content that causes the PM to be hydroscopic in nature and would cause the filter bags to blind and plug. Therefore, fabric filters are not a feasible PM control technology for recovery furnaces. A wet scrubber installed after an ESP was deemed infeasible for additional PM, PM_{10}, and $PM_{2.5}$ control due to its inefficiency of collecting fine particulate in the exhaust stream as discussed in Section 4.2.1.1. Therefore, the Mill has determined that ESPs and mechanical cyclones are the only technically feasible add-on control technologies for control of PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Recovery Furnace.

No. 8 Smelt Dissolving Tank

Smelt dissolving tanks are designed to accept molten inorganic smelt from the char bed of the recovery furnace and mix in weak wash to form green liquor. During this process, PM, PM_{10}, and $PM_{2.5}$ emissions are formed from the smelt dissolving process. As part of the Project, the No. 8 Smelt Dissolving Tank will be replaced. The exhaust will be routed to the No. 8 Recovery Furnace (used as combustion air), after the exhaust gases have been conditioned and most of the moisture removed by a new scrubber. As a result, the No. 8 Smelt Dissolving Tank will not routinely emit directly to the atmosphere. However, in limited operating scenarios, the exhaust from the No. 8 Smelt Dissolving Tank will vent through the scrubber directly to atmosphere.

No. 7 Mill Slaker

The Slaker receives green liquor from the green liquor clarifiers and mixes it with water and lime, which react to produce calcium hydroxide, also known as slaked lime. This process results in PM, PM_{10}, and $PM_{2.5}$ emissions. As part of this project, the No. 7 Mill Slaker will be replaced.

A review of the RBLC database was conducted using Process Code 30.239 (Other Kraft Lime Kiln Processes). The search identified two listings for lime slakers with a BACT determination for PM, one of which describes the use of a wet scrubber as the PM, PM_{10}, and $PM_{2.5}$ control.

The exhaust gas stream from a lime slaker is saturated with steam from the exothermic reaction between the mixing of green liquor and lime. The moisture levels expected in the exhaust stream will quickly cause bag filters to “blind” and plug. As a result, a baghouse is not an appropriate control technology for controlling PM emissions from a lime slaker and will not be considered further as part of this BACT analysis. The moisture content and mineral levels in the lime slaker

exhaust stream would create an adverse environment for a dry ESP to properly function. A wet ESP would also not be suitable for use in controlling PM emissions from a lime slaker due to the mineral deposits that would build up inside the unit and significantly reduce the unit's ability to function properly.

Only certain types of wet scrubbers are technically feasible for reducing PM emissions from lime slakers. The normal operation of a lime slaker generates a tremendous build-up of calcium and sodium carbonates and sulfates on the interior surfaces of the "water spray" scrubbers used to control PM emissions on most, if not all lime slakers. This build-up must be removed, otherwise, the water spray nozzles inside of the scrubber will become clogged, and as a result, will not function properly and reduce PM emissions generated by the lime slaker. Only scrubbers that have sufficient "open area" and no moving parts will be able to function properly with the significant build-up of minerals that occurs. Therefore, the Mill has determined that wet scrubbers and mechanical cyclones are the only technically feasible add-on control technologies for the control of PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Mill Slaker.

No. 7 Lime Kiln

The No. 7 Lime Kiln receives lime mud from the Lime Mud Precoat Filter and dewaters it to recover the lime. Lime recovery is achieved by using high temperatures to burn the lime mud and convert calcium carbonate to calcium oxide. During this process, carbon dioxide is driven off, and lime kiln dust is emitted PM, PM_{10}, and $PM_{2.5}$. As part of the Project, the No. 7 Lime Kiln will be modified, including replacement of the unit's burner. The project also includes replacement of the lime kiln's existing scrubber with an ESP.

A review of the RBLC database was conducted using Process Code 30.231 (Kraft Lime Kilns). The search identified ten listings of lime kilns with BACT determinations for PM, PM_{10}, and $PM_{2.5}$. Four describe the use of an ESP, and one describes the use of a mechanical cyclone followed by a wet scrubber as the PM, PM_{10}, and $PM_{2.5}$ control.

The moisture content and temperature of the exhaust gas stream of the lime kiln are expected to be approximately 30% and 585°F, respectively. In order for a fabric filter to operate properly, and within the range designed, condensation would have to be totally prevented. In order to prevent condensation, the temperature of the stream would need to be maintained above the dew point temperature, which would be extremely difficult, if not impossible. A fabric filter would have to be fully insulated with no air leaks. Furthermore, it would have to be assured that the insulation was put back on exactly as originally installed anytime that maintenance took place on the unit. If any condensation occurred within the fabric filter at all, the bags would plug and the collection efficiency would drop rapidly. A fabric filter is much more appropriate for "dry" air streams. For these reasons, this technology is considered to be technically infeasible for a lime kiln.

The Mill has determined that ESPs, wet scrubbers, and mechanical cyclones are the only technically feasible add-on control technologies for the control of PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Lime Kiln.

4.2.2.2 CO Control Technologies

This section presents the BACT technical feasibility discussion for CO. Table 4-4 presents a summary of the technical infeasibility of the control technologies available for reducing CO

emissions from the new or modified sources associated with the project. For each emissions unit and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible;
- The letter "B" indicates that the top-ranked control technology for the emissions unit has been selected as BACT for the emissions unit; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-4. SUMMARY OF CO CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation	Catalytic Oxidation	Good Operating Practices/Combustion Controls
X020	No. 7 Mill Bleach Plant	Y	N	Y
X012	No. 8 Recovery Furnace	N	N	Y
X015	No. 8 Smelt Dissolving Tank	B	N	Y
X003	No. 7 Lime Kiln	N	N	Y

No. 7 Mill Bleach Plant

Bleach plants are designed to whiten pulp using an oxygen bleaching agent, such as chlorine dioxide (ClO_2). The bleaching process typically occurs in stages, including the acidic ClO_2 bleaching phase (D phase) followed by a basic extraction phase (E phase) to dissolve the lignin. CO emissions from bleach plants are generated as a byproduct of the bleaching process. As part of this project, the No. 7 Mill Bleach Plant will be modified and both the D and E phases are included in this analysis.

A review of the RBLC database was conducted for process group 30.242 (Kraft Bleach Processes) to identify potential control technologies. The search did not yield any listings for bleach plants with BACT determinations for CO. However, thermal oxidation is a technically feasible add-on control technology.

Catalytic oxidation would not be technically feasible for the No. 7 Mill Bleach Plant due to the high moisture content of the exhaust gas, as well as the chlorinated compounds in the exhaust gas, resulting in catalyst poisoning.

No. 8 Recovery Furnace

CO is generated in a recovery furnace when there is not sufficient oxygen present to achieve complete combustion of the black liquor solids in the combustion chamber of the furnace. CO generation is inversely proportional to the generation of NO_X emissions. In other words, if NO_X emissions are minimized through the use of internal combustion modification techniques, it is likely that CO emissions will be increased and vice versa. Therefore, efforts to minimize CO emissions in a recovery furnace must be balanced so that NO_X emissions are not significantly increased.

A review of the RBLC database was conducted for process group 30.210 (Kraft Recovery Processes), specifically for Process Codes 30.211 (Kraft Recovery Furnaces/Boilers) and 30.219 (Other Kraft Material Recovery Processes) to identify potential control technologies. The search of Process Code 30.219 did not generate any results. The search of Process Code 30.211 generated 27 listings of recovery furnaces, 14 of which identified control technologies. All 14 of those listings identified good combustion practices (including staged combustion) and good operating practices (including proper boiler/furnace design and optimization) as BACT. No add-on controls were identified in the RBLC search to control CO emissions in recovery furnaces.

There are two approaches that can be used to reduce CO emissions from recovery furnaces. The first one is staged-air combustion, and the second is post-combustion controls, such as the use of thermal or catalytic oxidation. Combustion controls such as staged air combustion are generally available, technically feasible, and well proven for the control of CO emissions from recovery furnaces.

Thermal oxidizers are not applied to recovery furnaces to control emissions, because the furnace itself is generally recognized as a thermal oxidizer in that it operates at a very high temperature and can be used to control emissions from other sources at a pulp and paper mill. Thermal oxidation is also not considered feasible, because a manifold of multiple oxidizers would be required to accommodate the high exhaust gas flow rate from a recovery furnace.

Catalytic oxidation would not be technically feasible because the toxic metals present in the flue gas exhaust, even after passing through an ESP, are of sufficient quantity to build up on the surface of the catalyst bed and poison the catalyst within relatively short periods of time. GP is unaware of the use of oxidation catalyst systems in the U.S. to reduce CO emissions from recovery furnaces. Therefore, the Mill has determined that no add-on control technology is technically feasible.

No. 8 Mill Smelt Dissolving Tank

Smelt dissolving tanks are designed to accept molten inorganic smelt from the char bed of the recovery furnace and mix in weak wash to form green liquor. During this process, small amounts of CO are emitted as residuals from the combustion process in the recovery furnace.

As part of the project, the exhaust from the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace (used as combustion air), after the exhaust gases have been conditioned and most of the moisture removed by a new scrubber. As a result, the No. 8 Smelt Dissolving Tank will not routinely emit directly to the atmosphere. The No. 8 Recovery Furnace is expected to oxidize CO emissions and thus, serve as the top ranked control technique for CO emissions from the No. 8 Smelt Dissolving Tank.

No. 7 Lime Kiln

CO emissions, which result from incomplete combustion of carbon in the fuel, are controlled by lime kiln design features and combustion air systems. The important parameters that prevent CO formation are combustion temperature, combustion gas residence time, and local stoichiometric ratio of fuel and air (i.e., mixing of fuel and air). Each of these parameters, working in conjunction with each other inside of the kiln, minimize the generation of CO emissions. If the carbon contained in the fuel being burned in the kiln is not exposed to the correct temperature, residence time, and correct mix of combustion air, there will be significant generation of CO emissions and other organic compounds instead of being fully oxidized to carbon dioxide and water vapor.

A review of the RBLC database was conducted for process group 30.230 (Kraft Lime Kiln Processes), specifically for Process Code 30.231 (Kraft Lime Kilns) to identify potential control technologies. A control method of good combustion practices was identified on two of nine similar units. No add-on control technologies were identified in the RBLC search.

Thermal oxidation (incineration) is a potential control technology for sources of CO emissions. Thermal oxidizers are not used to control CO emissions from lime kilns, because the kiln itself is generally recognized as a thermal oxidizer in that it operates at a very high temperature and can be used to control emissions from other sources at a pulp and paper mill. If a thermal oxidizer was to be used, it would have to be applied following the PM control device on a lime kiln, and the moisture content of the exhaust gas would likely be too high for thermal or catalytic oxidation to be feasible. At a minimum, the exhaust gases would need to be heated up before being routed to the oxidizer, and the high moisture content would result in catalyst poisoning. Therefore, the Mill has determined that no add-on control technology is technically feasible.

4.2.2.3 TRS Control Technologies

This section presents the BACT technical feasibility discussion for TRS/H_2S. Table 4-5 presents a summary of the technical feasibility of the control technologies available for reducing emissions of TRS/H_2S from the new or modified sources at the Mill. For each emissions unit and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible;
- The letter "B" indicates that the top-ranked control technology for the emissions unit has been selected as BACT for the emissions unit; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-5. SUMMARY OF TRS/H_2S CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Wet Scrubber	Good Operating Practices
Z004	No. 7 Mill Chip Bin	Y	Y	Y
Z004	No. 7 Mill Chip Meter	B (HVLC)	Y	Y
Z004	No. 7 Mill Continuous Digester	B (LVHC)	Y	Y
X006	No. 7 Mill Digester Evaporator	B (LVHC)	Y	Y
Z004	No. 7 Mill Flash Tank	B (LVHC)	Y	Y
Z004	No. 7 Mill Blow Tank	B (HVLC)	Y	Y
Z004	No. 7 Mill Digester Area Foul Condensate Tank	B (LVHC)	Y	Y
Z007	No. 7 Mill Primary Knotter	B (HVLC)	Y	Y
Z007	No. 7 Mill Secondary Knotter	B (HVLC)	Y	Y
Z007	No. 7 Mill Knotter Accepts Tank	B (HVLC)	Y	Y
Z007	No. 7 Mill Knot Conveyor	B (HVLC)	Y	Y
Z007	No. 7 Mill Brown Stock Transfer Tank	B (HVLC)	Y	Y
Z007	No. 7 Mill Primary Screens	Y	Y	Y
Z007	No. 7 Mill Secondary Screen	Y	Y	Y
Z007	No. 7 Mill Quaternary Screen	Y	Y	Y

TABLE 4-5. SUMMARY OF TRS/H_2S CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Wet Scrubber	Good Operating Practices
Z007	No. 7 Mill Shive Cleaner	Y	Y	Y
X020	No. 7 Mill Bleach Plant	Y	Y	Y
X006	No. 7 Mill Multiple Effect Evaporator System	B (LVHC)	Y	Y
X016	No. 8 Multiple Effect Evaporator System	B (LVHC)	Y	Y
X033	No. 8 Mill Intermediate (55%) Black Liquor Tank	Y	Y	Y
X012	No. 8 Recovery Furnace	N	Y	Y
X015	No. 8 Smelt Dissolving Tank	B (No. 8 Recovery Furnace)	Y	Y
Z007	No. 7 Mill Slaker	Y	Y	Y
X030	No. 7 Mill No. 5 Causticizer	Y	Y	Y
X030	No. 7 Mill Green and White Liquor Swing Tank	Y	Y	Y
X030	No. 7 Mill No. 2 White Liquor Storage Tank	Y	Y	Y
X003	No. 7 Lime Kiln	N	Y	Y
X321	Tall Oil Reactor and Associated Equipment	B (HVLC)	Y	Y
X321	Tall Oil Flash Tower Feed Tank	Y	Y	Y
N/A	No. 7 Mill Turpentine Decanter and Under Flow Tank	B (LVHC)	Y	Y

Sources Vented to LVHC or HVLC Collection Systems

As part of this project, the Mill has a number of new and modified sources to be captured and collected within the existing LVHC and HVLC systems to control emissions of TRS compounds. Currently, the LVHC collection system directs gases to the lime kiln associated with the specific mill as the primary incineration device and then the Backup NCG Incinerator (serves both mills) as the secondary incineration device, and the HVLC collection system directs gases to the recovery furnace associated with the specific mill. As described in Section 1.6.6, GP is evaluating options to eliminate the Backup NCG Incinerator. If implemented, it is likely the recovery furnace for each mill will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. The sources venting to the LVHC system include the No. 7 Mill Continuous Digester, No. 7 Mill Digester Evaporator, No. 7 Mill Flash Tank, No. 7 Mill Digester Area Foul Condensate Tank, No. 7 Multiple Effect Evaporator System, No. 8 Multiple Effect Evaporator System, and the No. 7 Mill Turpentine Decanter and Under Flow Tank. The sources venting to the HVLC system include the No. 7 Mill Chip Meter, No. 7 Mill Blow Tank, No. 7 Mill Primary Knotter, No. 7 Mill Secondary Knotter, No. 7 Mill Knotter Accepts Tank, No. 7 Mill Knot Conveyor, No. 7 Mill Brown Stock Transfer Tank, and the Tall Oil Reactor and associated equipment. All control technologies listed are technically feasible.

No. 7 Mill Chip Bin

The No. 7 Mill Chip Bin will handle the delivery, storage, and handling of wood chips to the digester. Wood chips will be stored in the bins until the digester is ready to receive and begin the delignification process. The wood chips will be introduced on a continuous basis to charge the digester. As the chips are loaded into the continuous digester, the chip bins and feeding system

will be pre-steamed with fresh steam. Due to the use of fresh steam, TRS and H_2S emissions are anticipated to be negligible from the bin (0.10 tpy and <0.01 tpy for TRS and H_2S, respectively).

A review of the RBLC database for TRS and H_2S from Process Code 30.221 (Kraft Digesters) resulted incineration being identified as the only control for digesters; digester chip bins were not specifically called out in the RBLC. Searches were also performed for Process Code 30.290 (Other Kraft Sources) and using the keyword "chip"; however, neither provided results for chip bins. While add-on control devices for sulfur compounds are not specifically listed in the RBLC for this particular source, all control technologies listed are technically feasible.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

The screening process includes a four-step screening process (primary, secondary, tertiary, and quaternary screens) to remove any incompletely digested wood chips (rejects) from the clean fiber (accepts). Following a pass from each screen, the rejects will enter a shive cleaner which will recover any remaining clean fiber that may have passed through the system. Throughout this process, small amounts of TRS compounds, including H_2S, are emitted from the quaternary screen and the shive cleaner. The primary, secondary, and tertiary screens are pressurized and do not vent directly to the atmosphere. Any emissions from the primary, secondary and tertiary screens are recognized at the downstream atmospheric tank emissions. For completeness, the primary and secondary screens will be included in the BACT evaluation.

Although a review of the RBLC database for Process Code 30.290 (Other Kraft Processes) did not find any BACT determinations for add-on control technology applied to screens or shive cleaners, the Mill has concluded that all control technologies listed are technically feasible.

No. 7 Mill Bleach Plant

TRS emissions from the No. 7 Mill Bleach Plant are formed as a byproduct of the bleaching process.

A review of the RBLC database was conducted for process group 30.242 (Kraft Bleach Processes) to identify potential control technologies. The search did not yield any listings for bleach plants with BACT determinations for TRS or H_2S. While thermal oxidation has not been demonstrated on a bleach plant, it is a technically feasible add-on control technology. A wet scrubber is also considered a feasible add-on control technology as the No. 7 Bleach Plant is already equipped with a scrubber for control of chlorinated HAP from the source.

No. 8 Mill Intermediate Black Liquor Storage Tank

The proposed project includes the addition of a No. 8 Mill Intermediate Black Liquor Storage Tank to facilitate transfer of intermediate black liquor between the Nos. 7 and 8 Mills.

A review of the RBLC database was conducted for Process Codes 30.219 (Other Kraft Material Recovery Processes), 30.211 (Kraft Recovery Furnaces/Boilers), 30.249 (Other Kraft Paper Making Processes) and 30.290 (Other Kraft Processes), and no add-on control technology was identified for black liquor storage tanks. However, some facilities do collect and control emissions from weak black liquor tanks in the HVLC system (thermal oxidation). All control technologies listed are technically feasible.

No. 8 Recovery Furnace

TRS emissions from the No. 8 Recovery Furnace are formed due to incomplete oxidation of lower furnace gases.

A search of the RBLC for recovery furnaces with similar configurations and fuel types was performed. This search encompassed recovery furnaces categorized using Process Codes 30.211 (Kraft Recovery Furnaces/Boilers), 30.219 (Other Kraft Material Recovery Processes), and 30.290 (Other Kraft Processes). The searches of Process Codes 30.219 and 30.290 did not generate any results pertaining to recovery furnaces. The search of Process Code 30.211 identified a total of 17 listings of recovery furnaces with BACT determinations for TRS and two listings for H_2S. Eight other listings without control technologies identified were also present. Of these listings, nine provided control technologies for TRS from recovery furnaces, all of which describe good combustion/operating practices.

As discussed in Section 4.2.2.2, thermal oxidation is not technically feasible for recovery furnaces. Therefore, the Mill has concluded that a wet scrubber and good operating practices are the only remaining technically feasible control technologies.

No. 8 Smelt Dissolving Tank

As part of the project, the exhaust from the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace (used as combustion air), after the exhaust gases have been conditioned and most of the moisture removed by a new scrubber. As a result, the No. 8 Smelt Dissolving Tank will not routinely emit directly to the atmosphere. The No. 8 Recovery Furnace is expected to oxidize TRS emissions and thus, serve as the top ranked control technique for TRS emissions from the No. 8 Smelt Dissolving Tank.

No. 7 Mill Slaker

The No. 7 Mill Slaker will be replaced as part of this project. The slaker receives green liquor from the green liquor clarifiers and mixes it with water and lime, which react to produce calcium hydroxide, also known as slaked lime. This process results in emissions of TRS. The Mill plans to install a wet scrubber on the slaker for PM control as part of this project.

A review of the RBLC database was conducted for Process Code 30.239 (Other Kraft Lime Kiln Processes) in addition to a specific search for "Slaker". A single result was found with a BACT determination for TRS with the control technology being a wet scrubber. Although not mentioned in the RBLC database, it is also technically feasible to collect and control TRS emissions in the HVLC collection system as well. Therefore, all control devices identified are technically feasible.

No. 7 Mill – No. 5 Causticizer, Green and White Liquor Swing Tank, and No. 2 White Liquor Storage Tank

As part of the Project, a new causticizer tank (No. 5 Causticizer) will be added to the No. 7 Mill recausticizing process. The causticizer tanks are multiple tanks in series to ensure a complete reaction of green liquor and lime to form white liquor and lime mud. This process results in relatively low emissions of TRS (0.85 tpy estimated for the additional causticizer).

This project will also modify the existing white liquor clarifiers at the No. 7 Mill. The No. 1 White Liquor Clarifier will be converted to the Green and White Liquor Swing Tank, and the No. 2 White Liquor Clarifier will be converted to store white liquor and be referred to as the No. 2 White Liquor Storage Tank. The tanks will be sources of TRS and H_2S emissions (estimated at <0.01 tpy and 0.04 tpy, respectively, for each).

A review of the RBLC database was conducted for Process Codes 30.231 (Kraft Lime Kilns) and 30.239 (Other Kraft Lime Kiln Processes), as well as specific searches for "Causticizer," "White Liquor," and "Green Liquor," and no add-on control technologies were identified for causticizer

tanks or storage tanks for green and white liquor. All control technologies listed are technically feasible.

No. 7 Lime Kiln
TRS emissions from the No. 7 Lime Kiln are formed due to incomplete washing of sodium sulfide-containing lime mud.

A review of the RBLC database was conducted for Process Code 30.231 (Kraft Lime Kilns). The search identified seven listings of lime kilns with BACT determinations for TRS and one listing for H_2S. Of these listings, only two provided control technologies for TRS from lime kilns; one for good combustion/operating practices and one for a wet scrubber. As discussed in Section 4.2.2.2, thermal oxidation is not technically feasible for lime kilns. Therefore, the Mill has concluded that a wet scrubber and good operating practices are the only remaining technically feasible control technologies.

Tall Oil Flash Tower Feed Tank
During the black liquor evaporation process, black liquor soap skimmings are collected from the multiple effect evaporators as weak black liquor is converted into intermediate black liquor from both the No. 7 and No. 8 Mills. The soap is transferred to soap separator tanks before eventually reaching the Tall Oil Reactor with steam, hot water and sulfuric acid to produce tall oil. Due to the sulfur content of the black liquor soap, TRS can be emitted during the soap acidulation process in the reactor and other steps in the process such as at the Flash Tower Feed Tank, which may be modified or replaced as part of the Project.

A review of the RBLC database for Process Code 30.290 (Other Kraft Process) for Tall Oil Reactors did not identify any BACT determinations for TRS, although most tall oil reactors employ wet scrubbers to minimize odor or are collected in the NCG system. A search with the keyword "tall oil" was also conducted to identify any other RBLC entries for tanks in the tall oil process. No entries resulted. Therefore, the Mill has concluded that all control technologies listed are technically feasible for the Tall Oil Flash Tower Feed Tank, which currently vents to atmosphere.

4.2.2.4 SAM Control Technologies

This section presents the BACT technical feasibility discussion for SAM. Table 4-6 presents a summary of the technical feasibility of the control technologies available for reducing emissions of SAM from the new or modified sources at the Mill. For each emissions unit and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-6. SUMMARY OF SAM CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Wet ESP	Good Operating Practices/Combustion Controls
X012	No. 8 Recovery Furnace	Y	Y
X003	No. 7 Lime Kiln	Y	Y

No. 8 Recovery Furnace

SAM is generated either as a reaction between water and sulfur trioxide vapor or can form when sulfuric acid vapor in the exhaust gas stream cools to form droplets (around 350°F). The sulfur trioxide is a combustion by-product and typically accounts for less than five percent of the oxidized sulfur in the exhaust stream. This sulfur can enter the combustion stream through NCG incineration and sulfur-containing fuels.

SAM resembles fine particles, such as $PM_{2.5}$, in aerodynamic diameter and can be controlled in a similar fashion. A wet ESP is technically a feasible control option for the No. 8 Recovery Furnace, because it is efficient in controlling fine particulate and can operate within the moisture content of the exhaust stream. Good combustion practices in the recovery furnace and the use of low-sulfur auxiliary fuels can also reduce the formation of sulfur trioxide and the resulting SAM.

A search of the RBLC for recovery furnaces with similar configurations was performed. This search encompassed recovery furnaces categorized using Process Code 30.211 (Kraft Recovery Furnaces/Boilers), 30.219 (Other Kraft Material Recovery Processes), and 30.290 (Other Kraft Processes). The searches of Process Codes 30.219 and 30.290 did not generate any results pertaining to recovery furnaces. The search of Process Code 30.211 identified a total of nine listings of recovery furnaces, seven of which identified control technologies. Six provided good combustion practices as BACT and one mentioned use of an existing wet ESP. Therefore, the Mill has concluded that both control technologies listed are technically feasible.

No. 7 Lime Kiln

SAM is generated by the same mechanisms as described above for recovery furnaces. Similar to the No. 8 Recovery Furnace, a wet ESP is a technically feasible control option for the No. 7 Lime Kiln, because it is efficient in controlling fine particulate and can operate within the moisture content of the exhaust stream. Good combustion practices in the lime kiln and the use of low-sulfur fuels can also reduce the formation of sulfur trioxide and the resulting SAM.

A search of the RBLC for lime kilns with similar configurations was performed. This search encompassed lime kilns categorized using Process Code 30.231 (Kraft Lime Kiln). This search identified two listings with BACT determinations for SAM, one of which was good operating practices and another was wet scrubbing. Two other listings without control technologies identified were also present. Due to the size of the SAM particles, a wet scrubber will not be able to efficiently capture the SAM as discussed in Section 4.2.1.4 and has not been included in this analysis. Therefore, both control technologies identified in Table 4-6 are technically feasible.

4.2.2.5 NO_X Control Technologies

This section presents the BACT technical feasibility discussion for NO_X. The technical feasibility of the control technologies depends on the characteristics of the exhaust stream.

Table 4-7 presents a summary of the technical infeasibility of the control technologies available for reducing NO_X emissions from the new or modified sources associated with the project. For each emissions unit and control technology listed:

- The letter “N” indicates that the available control technology has been determined to be technically infeasible; and
- The letter “Y” indicates that the available control technology has been determined to be technically feasible.

TABLE 4-7. SUMMARY OF NO_X CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Selective Catalytic Reduction	Oxidation and Scrubbing	Selective Non-Catalytic Reduction	Flue Gas Recirculation	Low-NO_X and Ultra Low-NO_X Burners	Good Operating Practices/ Combustion Controls
X012	No. 8 Recovery Furnace	N	N	N	N	N	Y
X003	No. 7 Lime Kiln	N	N	N	N	N	Y

No. 8 Recovery Furnace

NO_X emissions from recovery furnaces are generated through three different mechanisms – the oxidation of the nitrogen in the combustion air, the conversion of nitrogen present in the black liquor and auxiliary fuels such as natural gas and fuel oil, and the reaction of nitrogen in the combustion air with radicals in the fuel.

A search of the RBLC for recovery furnaces with similar configurations and fuel types was performed. This search encompassed recovery furnaces categorized using Process Code 30.211 (Kraft Recovery Furnaces/Boilers). This search identified a total of 28 listings of recovery furnaces with BACT determinations for NO_X. The NO_X emissions technology that is employed by the furnace is identified in 11 of these listings; the other 17 listings do not identify control technologies. Nearly all of the listings with any detail describe efficient design of the recovery furnace and combustion controls (good combustion practices and optimizing the staged combustion in the design of the existing furnace) as the NO_X control alternative. The review of the RBLC database for NO_X did not list SCR or SNCR as BACT for recovery furnaces.

The use of SCR to control NO_X emissions from a recovery furnace would encounter several technical hurdles, such as the fact that the SCR system must be installed downstream of the recovery furnace's ESP due to the risk of catalyst poisoning and the resulting supplemental natural gas combustion required to raise the flue gas temperature to an optimal level. SCR has never been demonstrated on a recovery furnace. Therefore, the Mill has concluded that the installation of an SCR system is not a technically feasible control option for the No. 8 Recovery Furnace when firing black liquor solids. The use of SCR when firing only auxiliary fuels (e.g., natural gas) could be technically feasible. However, the recovery furnace is a chemical recovery unit, not a boiler or furnace firing one or more fuels to provide steam or heat. Since the unit fires primarily black liquor solids and uses auxiliary fuels to supplement and during specific operational conditions, SCR is deemed not technically feasible for the unit, since the catalyst would encounter significant challenges when subjected to the flue gas resulting from BLS combustion.

The use of NO_X oxidation techniques with subsequent absorption has not been demonstrated on a recovery furnace. To the best of our knowledge, these technologies are not commercially available for recovery furnaces. Therefore, the Mill does not consider them technically feasible.

The use of SNCR to control NO_X emissions from a recovery furnace would also encounter several technical hurdles, such as the fact that the injection of urea or ammonia could lead to an explosion if any water condenses and mixes with the black liquor solids in the furnace.

Therefore, the Mill has concluded that the installation of an SNCR system is not a technically feasible control option for the No. 8 Recovery Furnace.

FGR has not been used in recovery furnaces due to complications that would arise by recycling additional air back into the combustion zone. Because NO_X formation in a recovery furnace is primarily dependent on the nitrogen content in the BLS, the use of FGR would have limited benefits. In addition, literature suggests that FGR could prevent the complete combustion of BLS and result in carryover of solids.[42] Excess carryover would potentially accumulate on the furnace side walls and also increase the particulate inlet concentration to PM control devices. As a result, the normal and efficient operation of the No. 8 Recovery Furnace would be compromised by adding FGR. Therefore, the Mill has concluded that FGR is not a technically feasible control option for the No. 8 Recovery Furnace.

The burners, or "guns," that are used to spray BLS into a recovery furnace are designed to address several unique aspects to firing BLS. Efficient combustion of BLS depends on the droplet diameter of the sprayed BLS. In addition, the distribution of the droplets, how fast the droplets are sprayed, the solids density, and BLS temperature are important design features that must be addressed by the "guns" that spray the BLS. Thus, LNB and ULNB that are used to fire natural gas are not equivalent to the burners that fire BLS. Therefore, the Mill has determined that the use of LNB and ULNB to fire BLS in the No. 8 Recovery Furnace is not technically feasible. Use of LNB or ULNB for natural gas firing is also not technically feasible. The design of these burners would not hold up in the environment within the recovery furnace (i.e., the burners would become damaged over time from the black liquor combustion).

NCASI published TB No. 1051, "An Update to NO_X Control Limits and Technologies for Forest Products Industry Boilers, Kraft Recovery Furnaces, and Lime Kilns," in May 2019. This TB provides un update to the NCASI 2003 Special Report 03-06, where NCASI determined that staged combustion (multiple levels of combustion air) within Kraft recovery furnaces is the only technology feasible to reduce emissions of NO_X. The liquor nitrogen content is dependent on the type of wood pulped and is the dominant factor affecting the level of NO_X emissions from black liquor combustion in recovery furnaces, which cannot be controlled by Mill operators. The May 2019 TB reviewed fundamental research for NO_X control in recovery furnaces over the past decade and concluded that staged combustion is still the only NO_X emission reduction strategy for recovery furnaces at this time. Staged-air combustion using primary, secondary, and tertiary levels of air can achieve between a 20%-50% reduction in NO_x emissions. Adding a fourth level of staged air combustion can reduce NO_x emissions by an additional 10-15%. Most of the recovery furnaces located at GP mills utilize three or four levels of staged-air combustion control.

<u>No. 7 Mill Lime Kiln</u>
The primary NO_X formation mechanism in a lime kiln is thermal NO_X.

A review of the RBLC database was conducted for Process Codes 30.231 (Kraft Lime Kilns) and 30.239 (Other Lime Kiln Processes). This search identified a total of six listings of lime kilns with BACT determinations for NO_X, and none of the listings included an add-on control device. Nine other listings without control technologies identified were also present. All of the listings describe efficient design and combustion controls as the NO_X control alternative.

Because the calcination reaction requires a certain temperature and residence time within the kiln, combustion temperature cannot be reduced without changing the size of the kiln. Therefore,

[42] https://www.paperenvironment.org/PDF/SOxNOx/NOx/NOx_recovery_furnace.pdf

technologies that involve injecting cooler exhaust gas or water into the kiln are not feasible. Although cement kilns and calciners used in other industries have employed SNCR and SCR, the pulp and paper mill lime kilns are different because they are not equipped with a pre-calciner, pre-heater, or a separate fuel combustion chamber into which a reagent could be injected (or flue gas recirculated) for NO_X control. The temperature within the kiln is not in the SNCR effective range because of the calcination temperature. Even if it were, injecting ammonia or urea into a rotating lime kiln would be difficult to achieve and would affect product quality.

While it might be possible to add SCR on the back end of a lime kiln exhaust system, it would need to be installed after existing PM control equipment to ensure the integrity of the catalyst. Location at the tail end of the pollution control train would require re-heating of the gases to create an ideal SCR temperature zone (480°F – 800°F[43]) as well, thereby increasing operating cost, energy use, and product of combustion emissions. No operator of a pulp and paper mill lime kiln has found SCR to be feasible. Because pulp and paper mill lime kiln exhaust gas temperatures are well below the effective SCR and SNCR operating temperatures and due to design differences from other types of kilns and calciners that have employed NO_X control technologies, FGR, SNCR, and SCR are not technically feasible for pulp and paper mill lime kilns.

The use of NO_X oxidation techniques with subsequent absorption has not been demonstrated on a lime kiln. To the best of our knowledge, these technologies are not commercially available for lime kilns. NCASI's TB No. 1051 dismissed NO_X scrubbing as a viable NO_X control technology for lime kilns. Therefore, the Mill does not consider this type of add-on control technically feasible.

LNB and ULNB technology reduce NO_X emissions by using staged combustion and lean premixing of the air and fuel to reduce peak flame temperature of the burner. ULNB includes additional internal FGR. This configuration of LNB and ULNB typically results in more branched and larger flames spread over a larger area. The inherent design of the No. 7 Lime Kiln includes the use of a large single burner with a flame that extends for the majority of the length of the rotary cylinder to achieve uniform heating of the lime mud. This uniform heating requires a specific temperature profile achieved by the direct-fired burner configuration and is inherent to the cyclic chemical recovery process. Impurities that are introduced in raw material or fuels must be purged or otherwise not allowed to concentrate in ways that could interfere with pulping liquor and affect eventual product quality. The Mill has determined that maintaining the appropriate heat transfer conditions from the lime kiln is vital to the quality of the product. The technically feasible control options to reduce NO_X emissions from the lime kiln are therefore limited due to the temperature and combustion conditions that must be sustained to efficiently produce calcium oxide (CaO) of desired quality. Using LNB and ULNB in the No. 7 Lime Kiln would have the effect of altering the temperature profile of the natural gas-fired burner and could result in further downstream complications that would result in unintended consequences leading to product rejection and inefficient energy use. Therefore, the mill has determined that the use of neither LNB nor ULNB in the No. 7 Lime Kiln is technically feasible.

4.2.2.6 VOC Control Technologies

This section presents the BACT technical feasibility discussion for VOC. Table 4-8 presents a summary of the technical feasibility of the control technologies available for reducing emissions of VOC from the new or modified sources at the Mill. For each emissions unit and control technology listed:

[43] Air Pollution Control Technology Fact Sheet. EPA-452/F-03-032. https://www3.epa.gov/ttncatc1/dir1/fscr.pdf. (pg. 1).

- The letter "N" indicates that the available control technology has been determined to be technically infeasible;
- The letter "B" indicates that the top-ranked control technology for the emissions unit has been selected as BACT for the emissions unit; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-8. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Catalytic Oxidation	Packed Bed Scrubber	Condenser Technology	Carbon Adsorption	Biofiltration	Good Operating Practices
Z004	No. 7 Mill Chip Bin	Y	N	Y	Y	Y	N	Y
Z004	No. 7 Mill Chip Meter	B (HVLC)	N	Y	Y	Y	N	Y
Z004	No. 7 Mill Continuous Digester	B (LVHC)	N	Y	Y	Y	N	Y
X006	No. 7 Mill Digester Evaporator	B (LVHC)	N	Y	Y	Y	N	Y
Z004	No. 7 Mill Flash Tank	B (LVHC)	N	Y	Y	Y	N	Y
Z004	No. 7 Mill Blow Tank	B (HVLC)	N	Y	Y	Y	N	Y
Z004	No. 7 Mill Digester Area Foul Condensate Tank	B (LVHC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Primary Knotter	B (HVLC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Secondary Knotter	B (HVLC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Knotter Accepts Tank	B (HVLC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Knot Conveyor	B (HVLC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Brown Stock Transfer Tank	B (HVLC)	N	Y	Y	Y	N	Y
Z007	No. 7 Mill Primary Screens	Y	Y	Y	N	Y	N	Y
Z007	No. 7 Mill Secondary Screen	Y	Y	Y	N	Y	N	Y
Z007	No. 7 Mill Quaternary Screen	Y	Y	Y	N	Y	N	Y
Z007	No. 7 Mill Shive Cleaner	Y	Y	Y	N	Y	N	Y
X020	No. 7 Mill Bleach Plant	Y	N	Y	N	N	N	Y
X108	No. 7 Mill Pulp Dryer	Y	Y	N	N	N	N	Y
X006	No. 7 Mill Multiple Effect Evaporator System	B (LVHC)	N	Y	Y	Y	N	Y

TABLE 4-8. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Catalytic Oxidation	Packed Bed Scrubber	Condenser Technology	Carbon Adsorption	Biofiltration	Good Operating Practices
X032	No. 7 Mill Precipitator Mix Tank	Y	N	Y	N	Y	N	Y
X033	No. 8 Mill Multiple Effect Evaporator System	B (LVHC)	N	Y	Y	Y	N	Y
X033	No. 8 Mill Intermediate (55%) Black Liquor Tank	Y	N	Y	N	Y	N	Y
X012	No. 8 Recovery Furnace	N	N	N	N	N	N	Y
X003	No. 7 Lime Kiln	N	N	Y	N	N	N	Y
X321	Tall Oil Reactor and Associated Equipment	B (HVLC)	N	Y	N	N	N	Y
X321	Tall Oil Flash Tower Feed Tank	Y	N	Y	N	N	N	Y
N/A	No. 7 Mill Turpentine Decanter and Under Flow Tank	B (LVHC)	N	Y	Y	Y	N	Y
N/A	No. 7 Mill Turpentine Storage Tank	B (LVHC)	N	Y	Y	Y	N	Y
N/A	No. 7 Turpentine Loading Station	Y	Y	N	Y	Y	N	Y

Sources that Vent to the LVHC/HVLC System

As part of this project, the Mill has designed a variety of new and modified sources to be captured and collected within the existing LVHC and HVLC systems to control VOC emissions. Currently, the LVHC collection system directs gases to the lime kiln associated with the specific mill as the primary incineration device and then the Backup NCG Incinerator (serves both mills) as the secondary incineration device, and the HVLC collection system directs gases to the recovery furnace associated with the specific mill. As described in Section 1.6.6, GP is evaluating options to eliminate the Backup NCG Incinerator. If implemented, it is likely the recovery furnace for each mill will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. The sources venting to the LVHC system include the No. 7 Mill Continuous Digester, No. 7 Mill Digester Evaporator, No. 7 Mill Flash Tank, No. 7 Mill Digester Area Foul Condensate Tank, No. 7 Mill Multiple Effect Evaporator System, No. 8 Multiple Effect Evaporator System, the No. 7 Mill Turpentine Decanter and Under Flow Tank, and the No. 7 Mill Turpentine Storage Tank. The sources venting to the HVLC system include the No. 7 Mill Chip Meter, No. 7 Mill Blow Tank, No. 7 Mill Primary Knotter, No. 7 Mill Secondary Knotter, No. 7 Mill Knotter Accepts Tank, No. 7 Mill Knot Conveyor, No. 7 Mill Brown Stock Transfer Tank, and the Tall Oil Reactor and associated equipment (if modified or replaced).

A review of the entries in the RBLC database did not find other control technologies for this equipment at pulp and paper mills[44]. Thermal oxidation is technically feasible and is the end result of venting emissions to the LVHC or HVLC system. Catalytic oxidation would encounter technical hurdles, such as catalyst deactivation through sulfur-containing exhaust gases, and has been deemed not a technically feasible control option. A packed bed scrubber could be a technically feasible control device. In general, condensers and carbon adsorption units could be technically feasible, however the concentration of VOC in the exhaust streams may be outside of the normal operating ranges for condensers (<5,000 ppm) and carbon adsorption units (approximately 500-2,000 ppm). In addition, exhaust streams with methanol and high humidity render carbon adsorption less effective as the water molecules readily adsorb to the activated carbon. For the purpose of this analysis, condensers and carbon adsorption will remain technically feasible for these sources. Generally, a biofilter would not be technically feasible for this group of sources due to the temperature and composition of the exhaust creating an inhospitable environment. Therefore, the Mill has determined that thermal oxidation, packed bed scrubber, condenser technology, carbon adsorption and good operating practices as technically feasible control technologies for all of these streams, except the Tall Oil Reactor and associated equipment.

For the Tall Oil Reactor and associated equipment, the VOC concentration in the exhaust stream (approximately 1,000 ppmd) will be outside the typical operating range for condenser technology (approximately 5,000 ppmd). Because the exhaust gas will have a high moisture content and contain methanol and other sulfur compounds, a carbon adsorber is not feasible. Therefore, the Mill has concluded that thermal oxidation, packed-bed scrubber, and good operating practices are technically feasible control technologies for Tall Oil Reactor (including associated sources proposed to be routed to the scrubber for odor control).

No. 7 Mill Chip Bin

The chip feeding system will receive fresh steam as it is charging the continuous digester. As the chips are pre-steamed, VOCs in the chips will be captured in the steam as it vents prior to the digester. As part of the project, the chip bin will use fresh steam, and the design of the chip bin will include installation of a condenser on the exhaust of the chip bin for turpentine recovery. None of the emissions control devices listed were identified specifically for digester chip bins or chip feeders in the review of the RBLC database for VOC from Process Codes 30.290 (Other Kraft Sources) and 30.221 (Kraft Digesters); however, thermal incineration was the BACT determination for all but one entry for digesters.

Thermal oxidation by collecting and routing VOC emissions to the LVHC system with eventual destruction in a combustion unit is technically feasible. The use of catalytic oxidation to control VOCs could encounter technical hurdles, including catalyst deactivation through sulfur-containing exhaust gases. Therefore, the Mill has concluded that the installation of a catalytic oxidation system is not a technically feasible option for the No. 7 Mill Chip Bin.

The use of a packed bed scrubber to control VOC emissions from a chip bin has not been demonstrated in practice within the pulp and paper industry, and the VOC loading would be lower end of the typical effective operating range (VOC pollutant concentration less than 300 ppmv is anticipated). However, the installation of a packed bed scrubber could be technically feasible option for the No. 7 Chip Bin.

[44] The only entry for a Tall Oil Reactor (identified by key word search for "tall oil") showed no control for VOC.

As part of this project, the Mill is planning on installing a condenser on the exhaust of the chip bin to recover turpentine; therefore, a condenser is a technically feasible control technology.

A carbon adsorption system could be technically feasible; however, the VOC loading from the No. 7 Mill Chip Bin will be outside of the effective operating range for this control device (typical operating range is between 500-2,000 ppm). In addition, the use of carbon adsorption to control VOC emissions from a chip bin has not been demonstrated in practice within the pulp and paper industry.

The use of biofiltration to control VOC emissions from a chip bin has not been demonstrated in practice within the pulp and paper industry. Variables that affect the operation and efficiency of a bioreactor include: temperature, pH, moisture, pollutant mix, pollutant concentration, macronutrient feeding, residence time, compacted bed media, and gas channeling. For the microbes to survive, the gas to be treated must ideally be between 60 and 105°F and contain an adequate VOC concentration. The composition of the exhaust gas stream including sulfur compounds (form acids when they decompose) and extremely low concentration of VOC would likely create an inhospitable environment for the microbes within the biofilter. Therefore, the Mill has concluded that the use of biofiltration is not a technically feasible control option for VOC emissions from the No. 7 Mill Chip Bin.

Good operating practices will include the use of fresh steam rather than steam that has come into contact with process gases in the chip bin and maintaining the proper chip level in the bin to minimize VOC emissions. Therefore, the Mill has concluded that the use of thermal oxidation, packed-bed scrubber, condenser technology, carbon adsorption, and good operating practices are feasible control technologies for VOC emissions from the No. 7 Mill Chip Bin.

<u>No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner</u>
As discussed in Section 4.2.2.3, the screening process includes a four-step screening to remove any rejects from the accepts. Following a pass from each screen, the rejects will enter a shive cleaner which will recover any remaining clean fiber that may have passed through the system. Throughout this process, small amounts of VOC emissions are volatilized and emitted from the screens and the shive cleaner. The primary, secondary, and tertiary screens are pressurized and do not vent directly to the atmosphere. Any emissions from the primary, secondary and tertiary screens are recognized at the downstream atmospheric tank emissions. For completeness, the primary and secondary screens will be included in the BACT evaluation.

The VOC emissions from the screens and shive cleaner are predominantly methanol. Although a review of the RBLC database for Process Code 30.290 (Other Kraft Processes) did not find any BACT determinations for add-on control technology applied to screens or shive cleaners, thermal and catalytic oxidation for the control of VOC from these sources is technically feasible. A packed-bed scrubber could be a technically feasible control technology for these sources. Condensing technology would not be a technically feasible control technology as the pollutant loading from these sources is outside the normal operating ranges (<5,000 ppm). Carbon adsorption might be feasible for controlling some of the individual VOC compounds that are emitted, but not for all VOC compounds. Activated carbon has a varying “adsorption ability” for different VOC compounds and this affects the overall VOC control efficiency for the exhaust stream to be controlled. Biofiltration is not a technically feasible control device because the exhaust stream is too dilute to support microbe survival. The Mill has concluded that the use of thermal oxidation, catalytic oxidation, a packed-bed scrubber, carbon adsorption, and good operating practices are feasible control technologies for VOC emissions from the primary, secondary, and quaternary screens and the shive cleaner.

No. 7 Mill Bleach Plant

VOC emissions from the No. 7 Mill Bleach Plant are formed as a byproduct of the bleaching process, due to the reaction of the chlorinated bleaching chemicals with the pulp.

A review of the RBLC database was conducted for process group 30.242 (Kraft Bleach Processes) to identify potential control technologies. The search yielded two listings for bleach plants with BACT determinations for VOC, but neither specified add-on control technologies.

Thermal oxidation involves combustion of waste gases at high temperatures to form carbon dioxide and water. Technical factors related to this technology include combustion temperature, residence time, and the mixing of combustion air with waste gas. Although the use of thermal oxidation to control VOC emissions from a bleach plant has not been demonstrated, it is technically feasible.

The use of catalytic oxidation to control VOCs could encounter technical hurdles, including the low temperature of the bleach plant vent gases and catalyst deactivation due to the sulfur- and chlorine-containing high-moisture exhaust gases. In addition, a review of the RBLC database did not identify catalytic oxidation as BACT for this type of emissions unit. Therefore, the Mill has concluded that the installation of a catalytic oxidation system is not a technically feasible option for the No. 7 Mill Bleach Plant.

The No. 7 Bleach Plant is currently equipped with a scrubber for control of chlorinated HAP emissions. Therefore, the use of the existing wet scrubber for control of VOC emissions is technically feasible. However, as described in Section 4.2.1.6, industry test data indicates that these scrubbers do not offer any significant level of control of organics. In addition, the washers and seal chests associated with the extraction stages are not sent to the scrubber.

The use of condenser technology to control VOC emissions would encounter several technical hurdles, such as the need for a relatively pure VOC exhaust stream in order to achieve a high control efficiency. A condenser has never been demonstrated on a bleach plant. Therefore, the Mill has concluded that the installation of a condenser system is not a technically feasible option for the No. 7 Bleach Plant.

The use of carbon adsorption to control VOC emissions would encounter several technical hurdles, such as the need for a relatively pure VOC exhaust stream in order to achieve a high control efficiency. A carbon adsorber has never been demonstrated on a bleach plant, and activated carbon is less effective in situations where the waste gas has high relative humidity (e.g., following a scrubber) because the water molecules readily adsorb to the carbon, reducing the number of available adsorption sites. Therefore, the Mill has concluded that the installation of a carbon adsorption system is not a technically feasible option for the No. 7 Bleach Plant.

The use of biofiltration to control VOC emissions from a bleach plant would encounter technical hurdles such as the low concentration of VOC in the exhaust stream. The chlorine dioxide in the bleaching chemicals would also inhibit bacterial growth in the biofilter. A biofilter has never been demonstrated on a bleach plant. Therefore, the Mill has concluded that the installation of a biofiltration system is not a technically feasible option for the No. 7 Mill Bleach Plant.

Good operating practices are feasible for the No. 7 Mill Bleach Plant and would include performing routine maintenance and operating equipment according to the manufacturer's specifications.

The Mill has concluded that thermal oxidation, a packed-bed scrubber, and good operating practices are feasible control technologies for VOC emissions from the No. 7 Mill Bleach Plant.

No. 7 Mill Pulp Dryer

The pulp dryer receives bleached pulp from the No. 7 Mill Bleach Plant. The bleached pulp is formed as a sheet as it is de-watered through the forming section, press section, and steam-heated drying section before it is prepared for storage.

Because of the various individual processes that make up the pulp dryer system, there is no single flue containing all the exhaust gases from the source. Instead of exhausting through a stack in the roof, process emissions travel upwards to the roof of the building where there are numerous vents to the atmosphere, rendering capture and collection of emissions challenging. In addition, a review of the RBLC database for Process Code 30.241 (paper machines as a surrogate for pulp dryers) did not find any BACT determinations for add-on control technology. The relatively low concentration of VOC emissions in combination with the exhaust flow of the building atmosphere proves the recovery of VOC through adsorption, scrubbing, and condensing infeasible, while the steam drying will create an adverse environment for the biofiltration unit as noted in the No. 7 Mill Chip Bin feasibility discussion. Therefore, the Mill has concluded that the use of thermal and catalytic oxidation as well as good operating practices are technically feasible control technologies for VOC emissions for the No. 7 Mill Pulp Dryer.

No. 7 Precipitator Mix Tank

The No. 7 Precipitator Mix Tank will be converted to receive intermediate liquor and feed the falling film evaporator as part of the liquor recovery process. VOCs are emitted through breathing and working losses of these storage tanks.

A review of the RBLC database was conducted for Process Codes 30.219 (Other Kraft Material Recovery Processes), 30.211 (Kraft Recovery Furnaces/Boilers), 30.249 (Other Kraft Paper Making Processes) and 30.290 (Other Kraft Processes). No precipitator mix tanks were identified. A search using the keyword “precipitator” was also conducted that generated one result for process code 65.999 (Other Synthetic Fibers Production Sources), which would not be representative of the No. 7 Precipitator Mix Tank. Precipitator mix and salt cake mix tanks are not required to be controlled under 40 CFR Part 63, Subpart S or MM.

Thermal oxidation for the control of VOC from these tanks is technically feasible. Catalytic oxidation would encounter technical hurdles, such as catalyst deactivation through sulfur-containing exhaust gases, and has been deemed not a technically feasible control option. A packed-bed scrubber could be a technically feasible control technology for this type of tank. Condensing technology would not be a technically feasible control technology as the pollutant loading from these sources is outside the normal operating ranges (<5,000 ppm). Carbon adsorption might be feasible for controlling some of the individual VOC compounds that are emitted, but not for all VOC compounds. Activated carbon has a varying “adsorption ability” for different VOC compounds and this affects the overall VOC control efficiency for the exhaust stream to be controlled. To the best of our knowledge, biofiltration has never been demonstrated for use to control VOCs from precipitator mix tanks. However, average temperatures of the exhaust leaving this tank would be approximately 160°F, well above the optimal temperature for the bacteria to survive. Diluting the exhaust gas with ambient air to reduce the temperature would reduce VOC concentrations to a level that would significantly reduce the effectiveness of the biofilter.

The Mill has concluded that the use of thermal oxidation, packed-bed scrubber, carbon adsorption, and good operating practices are technically feasible control technologies for VOC emissions from the No. 7 Precipitator Mix Tank.

No. 8 Mill Intermediate Black Liquor Storage Tank

The No. 7 Mill Transformation Project includes the addition of a No. 8 Mill Intermediate Black Liquor Storage Tank to facilitate transfer of intermediate black liquor between the Nos. 7 and 8 Mills. VOCs are emitted through breathing and working losses of this storage tank.

A review of the RBLC database was conducted for Process Codes 30.219 (Other Kraft Material Recovery Processes), 30.211 (Kraft Recovery Furnaces/Boilers), 30.249 (Other Kraft Paper Making Processes) and 30.290 (Other Kraft Processes), and no add-on control technology was identified for black liquor storage tanks. These tanks are not required to be controlled under 40 CFR Part 63, Subpart S or MM.

The control technology feasibility evaluation is similar to the No. 7 Precipitator Mix Tank and has not been repeated here. Following this evaluation, the Mill has concluded that the use of thermal oxidation, packed-bed scrubber, carbon adsorption, and good operating practices are technically feasible control technologies for VOC emissions from the intermediate black liquor storage tank.

No. 8 Recovery Furnace

The VOC emissions rate from a recovery furnace is an inverse function of combustion efficiency. In other words, maintaining high combustion efficiencies will lower the VOC emissions rate. This holds true in most combustion-related processes.

The RBLC database lists efficient design of the recovery furnace and combustion controls as the most common VOC control. None of the add-on emissions control devices listed were identified in the review of the RBLC database for VOC from Process Codes 30.211 (Kraft Recovery Furnaces/Boilers), 30.219 (Other Kraft Material Recovery Processes), and 30.290 (Other Kraft Processes).

Thermal oxidation involves combustion of waste gases at high temperatures to form carbon dioxide and water. Technical factors related to this technology include combustion temperature, residence time, and the mixing of combustion air with waste gas. As discussed in Section 4.2.2.2, thermal oxidation is not technically feasible for recovery furnaces.

The use of catalytic oxidation (either an RCO or an oxidation catalyst) to control VOC emissions would encounter several technical hurdles, such as the fact that the catalytic oxidation system must be installed downstream of the recovery furnace's ESP due to the risk of catalyst poisoning. A catalytic oxidizer has never been demonstrated on a recovery furnace and would not be recommended for this type of application. Therefore, the Mill has concluded that the installation of a catalytic oxidation system is not a technically feasible control option for the No. 8 Recovery Furnace.

The use of a packed bed scrubber to control VOC emissions would encounter several technical hurdles, such as the high-flow, low-VOC concentration nature of the furnace exhaust, potential need for absorbent separation and scrubbing liquid regeneration for liquids other than water, and scaling. A packed bed scrubber has never been demonstrated on a recovery furnace and is not expected to be feasible on a combustion source with such a high exhaust flow. Therefore, the

Mill has concluded that the installation of a packed bed scrubber is not a technically feasible option for the No. 8 Recovery Furnace.

The use of condenser technology to control VOC emissions would encounter several technical hurdles, such as the high temperature and flow rate exhaust of the recovery furnace, as well as the need for a relatively pure VOC exhaust stream in order to achieve a high control efficiency. A condenser has never been demonstrated on a recovery furnace. Therefore, the Mill has concluded that the installation of a condenser system is not a technically feasible option for the No. 8 Recovery Furnace.

The use of carbon adsorption to control VOC emissions would encounter several technical hurdles, such as the high exhaust temperature of the recovery furnace, as well as the need for a relatively pure VOC exhaust stream in order to achieve a high control efficiency. A carbon adsorber has never been demonstrated on a recovery furnace. Therefore, the Mill has concluded that the installation of a carbon adsorption system is not a technically feasible option for the No. 8 Recovery Furnace.

The use of biofiltration to control VOC emissions would encounter several technical hurdles, such as the low concentration of VOC in the exhaust stream and the temperature of the exhaust leading to inhospitable conditions for the microbes within the control unit. A biofilter has never been demonstrated on a recovery furnace. Therefore, the Mill has concluded that the installation of a biofiltration system is not a technically feasible option for the No. 8 Recovery Furnace.

Combustion control is inherent in the design of recovery furnaces due to the use of staged-air combustion techniques. Recovery furnaces typically use three to four levels of combustion air to assure the correct black liquor to combustion air ratio in the combustion chamber of the furnace. "Good combustion practices" is a broad term that encompasses the operation of equipment in a way that best maximizes combustion efficiency. Good combustion practices are feasible for the recovery furnace and would include performing routine maintenance on the furnace and operating equipment according to the manufacturer's specifications.

Following this evaluation, the Mill has concluded that the good operating practices is the sole technically feasible control technology for VOC emissions from the No. 8 Recovery Furnace.

<u>No. 7 Lime Kiln</u>

The No. 7 Lime Kiln recovers lime by burning lime mud to convert calcium carbonate to calcium oxide. VOC emissions are emitted as a result of firing fossil fuel (natural gas) and from incomplete combustion of any organic material in the lime mud or the VOC in the NCGs controlled in the kiln.

A review of the RBLC database was conducted for Process Code 30.231 (Kraft Lime Kilns). This search identified a total of six listings of lime kilns with BACT determinations for VOC, four of which identify good combustion and operating practices as BACT. The other two listings do not identify a control technology.

As discussed in Section 4.2.2.2, thermal and catalytic oxidation are not technically feasible for lime kilns. Although not mentioned in the RBLC search, a packed bed scrubber could be technically feasible as the VOC will include water-soluble methanol, but the other constituents (products of incomplete combustion) may not absorb well. The concentration of VOC (25 ppm at 10% O_2) will be outside the typical operating range for condenser technology (approximately 5,000 ppm) and carbon adsorption technology (approximately 500-2,000 ppm), rendering them

technically infeasible. Biofiltration will not be a technically feasible option due to the exhaust stream temperature creating an environment inhospitable for microorganisms. Therefore, the Mill has concluded that packed bed scrubbers and good operating practices are feasible control technologies for VOC emissions from the No. 7 Lime Kiln.

Tall Oil Flash Tower Feed Tank

The Tall Oil Flash Tower Feed Tank receives crude tall oil from the decanters for transfer to the flash tower or for transfer to the tall oil truck loading station. VOC emissions result due to working and breathing losses associated with the tank.

A review of the RBLC database for Process Code 30.290 (Other Kraft Process) and a key word search for "tall oil" did not identify any BACT determinations for add-on control technology. Thermal oxidation is technically feasible for the control of VOC emissions from the Tall Oil Flash Tower Feed Tank. The use of catalytic oxidation to control VOCs could encounter technical hurdles, including the low temperature of the Tall Oil Flash Tower Feed Tank vent gases and catalyst deactivation due to the sulfur-containing high-moisture exhaust gases. A wet scrubber is technically feasible as some VOC in the exhaust will be water-soluble (methanol). The VOC concentration in the exhaust stream (approximately 200 ppmd) will be outside the typical operating range for condenser technology (approximately 5,000 ppmd). Because the exhaust gas will have a high moisture content and contain methanol and other sulfur compounds, a carbon adsorber is not feasible. Biofiltration will not be a technically feasible option due to the exhaust stream temperature and composition creating an environment inhospitable for microorganisms. Therefore, the Mill has concluded that thermal oxidation, packed-bed scrubber, and good operating practices are technically feasible control technologies for the Tall Oil Flash Tower Feed Tank.

No. 7 Turpentine Loading Station

VOC emissions from turpentine loading are due to evaporative loss during the loading process. Emissions will be minimized by using submerged loading. Turpentine is immiscible in water; therefore, a packed bed scrubber is not feasible. It is GP's experience that biofilters are not effective at controlling VOCs like turpentine and the exhaust gas would be extremely dilute and not continuous. Therefore, biofiltration is not feasible. Use of thermal oxidation, catalytic oxidation, a condenser, or carbon adsorption may be technically feasible as add-on control of VOC emissions from turpentine loading. Good operating practices are technically feasible and would include the use of submerged filling.

4.2.2.7 GHG Control Technologies

This section presents the BACT technical infeasibility discussion for GHGs. The technical feasibility of each available control technology is dependent on both the characteristics of the exhaust stream, the process or fuel combustion, and the feasibility of collecting the exhaust stream.

Table 4-9 presents a summary of the technical feasibility of the control technologies available for reducing emissions of GHG from the new or modified sources at the Mill. For each source and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE 4-9. SUMMARY OF GHG CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Carbon Capture and Sequestration	Carbon Capture and Utilization	Efficient Operating Practices
X012	No. 8 Recovery Furnace	N	N	Y
X003	No. 7 Lime Kiln	N	N	Y

No. 8 Recovery Furnace

GHG emissions are generated during the combustion of black liquor and natural gas due to the conversion of carbon-containing compounds in the fuels to CO_2 and water. GHG emissions are principally influenced by the carbon content of the fuel and equipment operating conditions. The No. 8 Recovery Furnace will primarily combust black liquor, which is a biogenic fuel because it is produced from the digestion of wood fiber, and will minimize combustion of natural gas, a fossil fuel that will be used primarily during startup and shutdown.

A search of the RBLC for recovery furnaces with similar configurations and fuel types was performed. This search encompassed recovery furnaces categorized using Process Codes 30.211 (Kraft Recovery Furnaces/Boilers), 30.219 (Other Kraft Material Recovery Processes), 30.290 (Other Kraft Processes), and 30.490 (Other Non-Kraft Operations). This search identified a total of four listings of black liquor and natural gas-fired recovery furnaces with BACT determinations for GHGs. The GHG emissions technology that is employed by the furnace is identified in two of these listings. One of the listings describes the use of good combustion practices as the GHG control alternative, and the other listing describes efficient operation of the recovery furnace with previously implemented technologies as the GHG control alternative.

Carbon Capture and Sequestration (CCS)

There are many technical engineering hurdles for capturing and sequestering GHG, which include the energy requirements to pressurize the captured GHG to a transferable volume and the availability of local sequestration options. The first hurdle involves isolating CO_2 from the remainder of the source exhaust stream, which could be completed by stripping the CO_2 using a CO_2 soluble solvent. Post combustion technologies used to capture the CO_2 from exhaust gases are relatively expensive and complex because the CO_2 is diluted with combustion gases. Impurities such as nitrogen, H_2S, methane, SO_2, and mercaptans make the CO_2 separation process difficult. All of these impurities are present in the exhaust gases generated in a recovery furnace with the normal products of combustion using natural gas as the supplemental fuel and with the incineration of HVLC gases (contains H_2S, mercaptans, sulfur bearing compounds that are oxidized to SO_2 when combusted) from the pulp mill. These impurities can also change the ability of the porous rock in the underground locations to adequately "seal-in" the CO_2[45]. Once the CO_2 is isolated, the CO_2 gas stream would be required to go through further polish and refinement by removing the excess moisture and be compressed to approximately 2,000 pounds per square inch before being injected into a CO_2 pipeline. As discussed in Section 4.2.1.7, captured CO_2 is stored in geological basins that provide adequate pore space for storage, like saline or brine basins, oil and gas reservoirs, and un-mineable coal seams[46]. While there is increased interest in development of dedicated saline storage, there are few dedicated storage facilities within feasible distance of the facility with the capacity to store the CO_2. According to

[45] Based on information from Section 4 of "Identification and Selection of Major Carbon Dioxide Stream Compositions", U.S. Department of Energy, June 2011.
[46] https://sgp.fas.org/crs/misc/R44902.pdf

the Clean Air Task Force, there are only four operational dedicated saline storage carbon capture projects within the United States, of which two have a capacity that could theoretically store the captured CO_2[47]. The projected CO_2 captured from this project would utilize between 40%-50% of the capacity per year of these two storage basins. Additional pipeline infrastructure would be required to transport the CO_2 directly to the storage location.

Because GP is not aware of any nearby storage available and because this technology has not been demonstrated in practice on a recovery furnace, carbon capture and sequestration is not a technically feasible control option for the No. 8 Recovery Furnace.

Carbon Capture and Utilization (CCU)
The carbon capture process is identical to the process described for CCS above. After the carbon has been captured and injected into the pipeline, it is used for industrial purposes such as enhanced oil recovery (EOR), beverage production, and chemical yield boosting feedstock.

In addition to the challenges outlined above for the capture of carbon for CCS, CCU faces several technical hurdles. Few large-scale operations have demonstrated the anticipated performance and practice of the control technology. Additionally, market volatility, whether the system performs as designed, and whether the equipment life will be significantly less than the recovery furnace life decrease the feasibility of CCU. One example of the technical hurdles such systems face is the Petra Nova CCU project, a coal-fired power plant in Richmond, Texas. During the COVID-19 pandemic, the Petra Nova CCU project had to shut down operations due to a plunge in oil prices. Even if GP were to sell any captured CO_2 to offset the cost of the CCU system, unknown future market fluctuations could heavily increase the economic burden of the system. It is also unclear whether any tax credits will be available for CCU. Petra Nova also experienced difficulties in meeting the design carbon capture rates, missing expected carbon capture targets by almost 1,000,000 tons of CO_2 during the four-year operation. The CCU system would be designed to remove 95% of the CO_2 directed to the CCU; however, actual system performance may vary based on operating conditions of the kiln and exhaust conditions. Furthermore, additional pipeline infrastructure would be required to transport the CO_2 directly to the utilization location.

Finally, BACT determinations must be met throughout the life of the emissions unit. The performance and economics of a CCU system are uncertain and the recovery furnace is expected to have an equipment life greater than 30 years. Due to these challenges, carbon capture and utilization is not a technically feasible control option.

Efficient Operating Practices
Good operating practices are the only feasible control technique for the No. 8 Recovery Furnace. Efficient operation of the recovery furnace and minimization of fossil fuel use inherently reduce GHG emissions. The project will include a design improvement to increase the as-fired solids and an upgraded air system, leading to increased steam generation efficiency.

<u>No. 7 Lime Kiln</u>
$CaCO_3$ is calcined in the Lime Kin to produce CaO for re-use in the causticizing process. The following reaction takes place in the No. 7 Lime Kiln:

$$CaCO_3 \text{ (lime mud)} + \text{Heat} = CaO + CO_2$$

[47] https://www.catf.us/ccsmapus/

The CO_2 emissions produced from calcining the $CaCO_3$ are biogenic in nature.[48] GHG emissions are also generated during the combustion of natural gas due to the conversion of carbon-containing compounds in the fuels to form CO_2 and water. GHG emissions are principally influenced by the carbon content of the fuel and equipment operating conditions.

A search of the RBLC for lime kilns with similar configurations and fuel types was performed. This search encompassed lime kilns categorized using Process Code 30.231 (Kraft Lime Kilns) and identified a total of two listings of natural gas-fired lime kilns with BACT determinations for GHG. A GHG emissions technology that is employed by a lime kiln is identified in one of these listings, which describes the use of good combustion practices as the GHG control alternative.

Carbon Capture and Sequestration
As discussed for the No. 8 Recovery Furnace, carbon capture and sequestration is not a technically feasible control for the No. 7 Lime Kiln due to the engineering hurdles of capturing the GHGs, the difficulty of transporting captured CO_2, and the lack of availability for CO_2 storage.

Carbon Capture and Utilization
As discussed for the No. 8 Recovery Furnace, carbon capture and utilization is not a technically feasible control for the No. 7 Lime Kiln due to the same hurdles of carbon capture using CCS and the market instability for the sale of captured CO_2.

Efficient Operating Practices
Good operating practices inherently reduce GHG emissions by ensuring the combustion equipment is operating at peak efficiency. The only feasible BACT for GHG is the use of good operating practices/efficient combustion for the No. 7 Lime Kiln. Although EPA identified several types of energy efficiency improvement options in their guidance documents addressing BACT for GHG emissions from the pulp and paper industry, because the No. 7 Lime Kiln is an existing kiln, only some options are feasible (those that would not be considered redesign of the kiln). For example, there is no co-located PCC plant to accept lime kiln exhaust gases. Feasible operating practices include use of low-emitting fuels (fuel oil is being removed from the permit), use of a dry ESP (the current wet scrubber is being replaced with an ESP), and the removal of the chain section of the kiln and retrofit with a lime mud flash dryer that uses flue gas to help dry the lime mud and improves fuel efficiency.

4.2.3 Step 3. Rank Remaining Control Technologies by Control Effectiveness

This section ranks the remaining feasible control technologies identified in Step 2 by control efficiency for each emissions unit and pollutant.

4.2.3.1 PM, PM_{10}, and $PM_{2.5}$ Control Efficiencies and Rankings

Digester Chip Conveyor No. 2
Following the feasibility review in Step 2, four control technologies remain for control of PM emissions from the Digester Chip Conveyor No. 2. They have been ranked according to their control efficiency in Table 4-10.

[48] It should be noted that biogenic CO_2 emissions from conversion of $CaCO_3$ to CaO in lime kilns are included in the biogenic CO_2 estimates normally calculated for recovery furnaces.

TABLE 4-10. SUMMARY OF PM CONTROL TECHNOLOGY FEASIBILITY – DIGESTER CHIP CONVEYOR NO. 2

Control Technology	Control Efficiency	Rank
Baghouse	95-99.9%	1
ESP	95-99%	2
Wet Scrubber	70-99%	3
Good Operating Practices	Varies by design	4

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. An economic evaluation of these technologies is provided as Step 4 of the BACT process for PM, PM_{10}, and $PM_{2.5}$.

No. 7 Mill Pulp Dryer

Following the feasibility review in Step 2, four control technologies remain for control of PM emissions from the No. 7 Mill Pulp Dryer. They have been ranked according to their control efficiency in Table 4-11.

TABLE 4-11. SUMMARY OF PM CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL PULP DRYER

Control Technology	Control Efficiency	Rank
Wet ESP	95-99%	1
Wet Scrubber	70-99%	2
Mechanical Cyclone	0-99% (by particle diameter)	3
Good Operating Practices	Varies by design	4

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. An economic evaluation of these technologies is provided as Step 4 of the BACT process for PM, PM_{10}, and $PM_{2.5}$.

No. 8 Recovery Furnace

Following the feasibility review in Step 2, three control technologies remain for control of PM emissions from the No. 8 Recovery Furnace. They have been ranked according to their control efficiency in Table 4-12.

TABLE 4-12. SUMMARY OF PM CONTROL TECHNOLOGY FEASIBILITY – NO. 8 RECOVERY FURNACE

Control Technology	Control Efficiency	Rank
ESP	95-99%	1
Mechanical Cyclone	0-99% (by particle diameter)	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The Mill is proposing the top-ranked control technology, an ESP, as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Recovery Furnace. Neither the ESP nor mechanical cyclone address condensable PM emissions; therefore, the rankings for filterable PM also stand for total PM_{10} and $PM_{2.5}$.

No. 8 Smelt Dissolving Tank

The No. 8 Smelt Dissolving Tank will be vented to the No. 8 Recovery Furnace, which provides the highest level of control. Therefore, a ranking of remaining control technologies was not conducted for this source.

No. 7 Mill Slaker

Following the feasibility review in Step 2, three control technologies remain for control of PM emissions from the No. 7 Mill Slaker. They have been ranked according to their control efficiency in Table 4-13.

TABLE 4-13. SUMMARY OF PM CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL SLAKER

Control Technology	Control Efficiency	Rank
Wet Scrubber	70-99%	1
Mechanical Cyclone	0-99% (by particle diameter)	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The Mill is proposing the top-ranked control technology, a wet scrubber, as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Mill Slaker.

No. 7 Lime Kiln

Following the feasibility review in Step 2, four feasible control technologies remain for control of PM emissions from the No. 7 Lime Kiln. They have been ranked according to their control efficiency in Table 4-14.

TABLE 4-14. SUMMARY OF PM CONTROL TECHNOLOGY FEASIBILITY – NO. 7 LIME KILN

Control Technology	Control Efficiency	Rank
ESP	95-99%	1
Wet Scrubber	70-99%	2
Mechanical Cyclone	0-99% (by particle diameter)	3
Good Operating Practices	Varies by design	4

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control

technology. The Mill is proposing the top-ranked control technology, an ESP, as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Lime Kiln.

4.2.3.2 CO Control Efficiencies and Rankings

No. 7 Mill Bleach Plant

Following the feasibility review in Step 2, two feasible control technologies remain for control of CO emissions from the No. 8 Recovery Furnace. They have been ranked according to their control efficiency in Table 4-15.

TABLE 4-15. SUMMARY OF CO CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL BLEACH PLANT

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Good Operating Practices	Varies by design	2

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. An economic evaluation of these technologies is provided as Step 4 of the BACT process for CO.

No. 8 Recovery Furnace

As discussed in Section 4.2.2.2, there are no technically feasible add-on control technologies for the No. 8 Recovery Furnace. Therefore, good operating practices are proposed as BACT for this source, and a ranking of CO control alternatives by control effectiveness is not conducted.

No. 8 Smelt Dissolving Tank

As discussed in Section 4.2.2.2, the No. 8 Smelt Dissolving Tank will be vented to the No. 8 Recovery Furnace, which provides the highest level of control. Therefore, a ranking of remaining control technologies was not conducted for this source.

No. 7 Lime Kiln

As discussed in Section 4.2.2.2, there are no technically feasible add-on control technologies for the No. 7 Lime Kiln. Therefore, good operating practices are proposed as BACT for this source and a ranking of CO control alternatives by control effectiveness is not conducted.

4.2.3.3 TRS and H_2S Control Efficiencies and Rankings

Sources Vented to the LVHC/HVLC System

Following the feasibility review in Step 2, three feasible control technologies remain for control of TRS and H_2S emissions from the sources identified in Section 4.2.2.3 that are (or proposed to be) vented to the LVHC or HVLC collections systems. The technologies have been ranked according to their control efficiency in Table 4-16.

TABLE 4-16. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY – SOURCES VENTING TO THE LVHC OR HVLC COLLECTION SYSTEMS

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1

TABLE 4-16. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY – SOURCES VENTING TO THE LVHC OR HVLC COLLECTION SYSTEMS

Control Technology	Control Efficiency	Rank
Wet Scrubber	90-98%	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The sources identified in Section 4.2.2.3 that will be vented to the LVHC or HVLC collections systems will be controlled in the Mill's recovery furnaces, lime kilns, or Back-Up NCG Incinerator. Thermal oxidation is the top level of control. No further analysis was conducted.

No. 7 Mill Chip Bin, No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner, No. 7 Bleach Plant, No. 8 Mill Intermediate Black Liquor Storage Tank, No. 7 Mill Slaker, No. 7 Mill – No. 5 Causticizer, No. 7 Mill - Green and White Liquor Swing Tank, and No. 7 Mill - No. 2 White Liquor Storage Tank, and Tall Oil Flash Tower Feed Tank

Following the feasibility review in Step 2, three feasible control technologies remain for control of TRS and H_2S emissions from the No. 7 Mill Chip Bin, No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner, No. 7 Mill Bleach Plant, No. 8 Mill Intermediate Black Liquor Storage Tank, No. 7 Mill Slaker, No. 7 Mill – No. 5 Causticizer, No. 7 Mill - Green and White Liquor Swing Tank, No. 7 Mill - No. 2 White Liquor Storage Tank, and Tall Oil Flash Tower Feed Tank. The technologies have been ranked according to their control efficiency in Table 4-17.

TABLE 4-17. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY – VARIOUS SOURCES WITH THREE FEASIBLE CONTROL TECHNOLOGIES REMAINING

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Wet Scrubber	90-98%	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.3.

No. 8 Recovery Furnace

Following the feasibility review in Step 2, two feasible control technologies remain for control of TRS/H_2S emissions from the No. 8 Recovery Furnace. The technologies have been ranked according to their control efficiency in Table 4-18.

TABLE 4-18. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY – NO. 8 RECOVERY FURNACE

Control Technology	Control Efficiency	Rank
Wet Scrubber	90-98%	1
Good Operating Practices	Varies by design	2

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.3.

No. 8 Smelt Dissolving Tank

As discussed in Section 4.2.2.3, the No. 8 Smelt Dissolving Tank will be vented to the No. 8 Recovery Furnace, which provides the highest level of control for TRS and H_2S emissions. Therefore, a ranking of remaining control technologies was not conducted for this source.

No. 7 Lime Kiln

Following the feasibility review in Step 2, two feasible control technologies remain for control of TRS/H_2S emissions from the No. 7 Lime Kiln. The technologies have been ranked according to their control efficiency in Table 4-19.

TABLE 4-19. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY – NO. 7 LIME KILN

Control Technology	Control Efficiency	Rank
Wet Scrubber	90-98%	1
Good Operating Practices	Varies by design	2

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.3.

4.2.3.4 SAM Control Efficiencies and Rankings

No. 8 Recovery Furnace and No. 7 Lime Kiln

Following the feasibility review in Step 2, two feasible control technologies remain for control of SAM emissions from the No. 8 Recovery Furnace and No. 7 Lime Kiln. They have been ranked according to their control efficiency in Table 4-20.

TABLE 4-20. SUMMARY OF SAM CONTROL TECHNOLOGY FEASIBILITY – NO. 8 RECOVERY FURNACE AND NO. 7 LIME KILN

Control Technology	Control Efficiency	Rank
Wet ESP	95-99%	1
Good Operating Practices	Varies by design	2

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.4.

4.2.3.5 NO_X Control Efficiencies and Rankings

No. 8 Recovery Furnace

As discussed in Section 4.2.2.5, the use of good operating practices/combustion controls such as staged air combustion is the only feasible control technology for the No. 8 Recovery Furnace. The Mill proposes the use of good operating practices/ combustion controls as NO_X BACT for BLS firing in the No. 8 Recovery Furnace. Therefore, the Mill proposes the use of good combustion and operating practices as NO_X BACT for the No. 8 Recovery Furnace, and a ranking of NO_X control alternatives by control effectiveness was not conducted.

No. 7 Lime Kiln

As discussed in Section 4.2.2.5, the use of good combustion and operating practices (kiln design, low temperatures, controlled air-fuel mix, and high efficiency) is the only feasible control technology for the No. 7 Lime Kiln. Therefore, the Mill proposes the use of good combustion and operating practices as NO_X BACT for the No. 7 Lime Kiln, and a ranking of NO_X control alternatives by control effectiveness was not conducted.

4.2.3.6 VOC Control Efficiencies and Rankings

Sources that Vent to the LVHC/HVLC System

Following the feasibility review in Step 2, the remaining control technologies have been ranked according to their control efficiency in Table 4-21.

TABLE 4-21. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – SOURCES VENTING TO THE LVHC OR HVLC COLLECTION SYSTEMS

Control Technology	Control Efficiency	Rank – All Sources Except Tall Oil Reactor	Rank – Tall Oil Reactor
Thermal Oxidation (Incineration)	95-99%	1	1
Packed Bed Scrubber	70-99%	2	2
Condenser Technology	50-99%	3	Not Applicable
Carbon Adsorption	95-98%	4	Not Applicable
Good Operating Practices	Varies by design	5	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The sources identified in Section 4.2.2.6 that will be vented to the LVHC or HVLC collections systems will be controlled in the Mill's recovery furnaces, lime kilns, or Back-Up NCG Incinerator. Thermal oxidation is the top level of control. No further analysis was conducted.

No. 7 Mill Chip Bin

Following the feasibility review in Step 2, the remaining control technologies have been ranked according to their control efficiency in Table 4-22.

TABLE 4-22. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL CHIP BIN

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Condenser Technology	50-99%	3
Carbon Adsorption	95-98%	4
Good Operating Practices	Varies by design	5

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

Following the feasibility review in Step 2, the remaining control technologies have been ranked according to their control efficiency in Table 4-23.

TABLE 4-23. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL PRIMARY SCREENS, SECONDARY SCREEN, QUATERNARY SCREEN, AND SHIVE CLEANER

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Catalytic Oxidation	95-99%	2
Packed Bed Scrubber	70-99%	3
Carbon Adsorption	95-98%	4
Good Operating Practices	Varies by design	5

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6

No. 7 Mill Bleach Plant

Following the feasibility review in Step 2, three feasible control technologies remain for control of VOC emissions from a bleach plant. The technologies have been ranked according to their control efficiency in Table 4-24.

TABLE 4-24. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL BLEACH PLANT

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6

No. 7 Mill Pulp Dryer
Following the feasibility review in Step 2, the remaining VOC control technologies have been ranked according to their control efficiency in Table 4-25.

TABLE 4-25. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL PULP DRYER

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Catalytic Oxidation	95-99%	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

No. 7 Precipitator Mix Tank
Following the feasibility review in Step 2, the remaining VOC control technologies have been ranked according to their control efficiency in Table 4-26.

TABLE 4-26. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 MILL PRECIPITATOR MIX TANK

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Carbon Adsorption	95-98%	3
Good Operating Practices	Varies by design	4

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

No. 8 Mill Intermediate Black Liquor Storage Tank
Following the feasibility review in Step 2, the remaining control technologies have been ranked according to their control efficiency in Table 4-27.

TABLE 4-27. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 8 MILL INTERMEDIATE BLACK LIQUOR STORAGE TANK

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Carbon Adsorption	95-98%	3
Good Operating Practices	Varies by design	4

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

No. 8 Recovery Furnace

As discussed in Section 4.2.2.6, there are no technically feasible add-on control technologies for the No. 8 Recovery Furnace. Therefore, good operating practices are proposed as BACT for this source, and a ranking of VOC control alternatives by control effectiveness is not conducted.

No. 7 Lime Kiln

Following the feasibility review in Step 2, the remaining VOC control technologies have been ranked according to their control efficiency in Table 4-28.

TABLE 4-28. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 LIME KILN

Control Technology	Control Efficiency	Rank
Packed Bed Scrubber	70-99%	1
Good Operating Practices	Varies by design	2

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

Tall Oil Flash Tower Feed Tank

Following the feasibility review in Step 2, the remaining VOC control technologies have been ranked according to their control efficiency in Table 4-29.

TABLE 4-29. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – TALL OIL REACTOR, ASSOCIATED EQUIPMENT, AND FLASH TOWER FEED TANK

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Good Operating Practices	Varies by design	3

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

No. 7 Turpentine Loading Station

Following the feasibility review in Step 2, the remaining VOC control technologies have been ranked according to their control efficiency in Table 4-30.

TABLE 4-30. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY – NO. 7 TURPENTINE LOADING STATION

Control Technology	Control Efficiency	Rank
Thermal Oxidation	95-99%	1
Catalytic Oxidation	95-99%	2
Condenser Technology	50-99%	3
Carbon Adsorption	95-98%	4
Good Operating Practices	Varies by design	5

The top ranked control technology is selected by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Section 4.2.4.6.

4.2.3.7 GHG Control Efficiencies and Rankings

Following the feasibility review, the Mill has selected the top control technology, the use of good operating practices, as BACT for control of GHG emissions for the No. 8 Recovery Furnace and No. 7 Lime Kiln. The Mill is using energy efficiency and good combustion practices both units; therefore, a ranking of control devices has not been performed for these sources.

4.2.4 Step 4. Evaluate Economic, Environmental, and Energy Impacts of Technically Feasible Control Technologies

This section outlines the economic, environmental, and energy impacts of the remaining feasible control technologies identified in Step 3. For emissions units where only one technically feasible control technology was identified, the economic, environmental, and energy impact evaluation is not conducted.

4.2.4.1 PM, PM_{10}, and $PM_{2.5}$ Control Technologies Impacts

This section presents the economic, environmental, and energy impacts of the remaining feasible control technologies for PM, PM_{10}, and $PM_{2.5}$ emissions.

Digester Chip Conveyor No. 2

A baghouse, ESP, or wet scrubber could be used to control fugitive PM, PM_{10}, and $PM_{2.5}$ emissions from a chip conveyor. An economic analysis was performed for installation of a baghouse based on information in EPA's Air Pollution Control Technology Fact Sheet for Pulse-Jet Fabric Filters.[49] Assuming a fan is installed to pull a draft from the conveyor to the baghouse at a rate of 10,000 scfm and a control efficiency of 99.9%, a baghouse is not cost effective as reflected in Table 4-31. Additional cost detail is included in Table C-40 in Appendix C.

TABLE 4-31. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – DIGESTER CHIP CONVEYOR NO. 2, BAGHOUSE[50]

Cost Type	Total Cost (2023$[51])
Total Capital Investment	$322,710
Direct Annual Costs	$292,456
Indirect Annual Costs	$32,260
Total Annual Costs	$324,715
Emissions Reductions	PM - 0.30 tpy/ PM_{10} - 0.14 tpy/ $PM_{2.5}$ - 0.02 tpy
Cost Effectiveness ($/ton removed)	
PM	**$1,094,451**

[49]https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf

[50]This cost assessment conservatively assumes PM_{10} and $PM_{2.5}$ will be controlled at the same level as PM.

[51]The Chemical Engineering Plant Cost Index (CEPCI) was used to account for equipment cost escalation and escalation from the year of any cost estimate issued prior to 2024 and convert it to a 2023 dollar basis. The annual 2023 CEPCI was 797.9 and is representative of an entire year (less variable than monthly values). Any estimates provided in 2024 were used as-is (no index applied).

TABLE 4-31. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – DIGESTER CHIP CONVEYOR NO. 2, BAGHOUSE[50]

Cost Type	Total Cost (2023$[51])
PM_{10}	**$2,313,982**
$PM_{2.5}$	**$15,281,013**

An economic analysis was performed for installation of an ESP based on information in EPA's Air Pollution Control Technology Fact Sheet for Wire-Plate Type Dry ESPs.[52] Assuming a fan is installed to pull a draft from the conveyor to the ESP at a rate of 10,000 scfm and a control efficiency of 99%, an ESP is not cost effective as reflected in Table 4-32. Additional cost detail is included in Table C-41 in Appendix C.

TABLE 4-32. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – DIGESTER CHIP CONVEYOR NO. 2, ESP[50]

Cost Type	Total Cost (2023$)
Total Capital Investment	$433,641
Direct Annual Costs	$383,218
Indirect Annual Costs	$43,349
Total Annual Costs	$426,567
Emissions Reductions	PM - 0.29 tpy/ PM_{10} - 0.14 tpy/ $PM_{2.5}$ - 0.02 tpy
Cost Effectiveness ($/ton removed)	
PM	**$1,450,811**
PM_{10}	**$3,067,428**
$PM_{2.5}$	**$20,256,602**

An economic analysis was performed for installation of a wet scrubber based on information in EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers.[53] Assuming a fan is installed to pull a draft from the conveyor to the wet scrubber at a rate of 10,000 scfm and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-33. Additional cost detail is included in Table C-42 in Appendix C.

TABLE 4-33. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – DIGESTER CHIP CONVEYOR NO. 2, WET SCRUBBER[54]

Cost Type	Total Cost (2023$)
Total Capital Investment	$80,677
Direct Annual Costs	$317,667
Indirect Annual Costs	$8,065
Total Annual Costs	$325,732
Emissions Reductions	PM - 0.29 tpy/ PM_{10} - 0.14 tpy/ $PM_{2.5}$ - 0.02 tpy
Cost Effectiveness ($/ton removed)	

[52] https://www3.epa.gov/ttncatc1/dir1/fdespwpl.pdf
[53] https://www3.epa.gov/ttncatc1/dir1/fsprytwr.pdf
[54] This cost assessment conservatively assumes PM_{10} and $PM_{2.5}$ will be controlled at the same level as PM.

TABLE 4-33. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – DIGESTER CHIP CONVEYOR NO. 2, WET SCRUBBER[54]

Cost Type	Total Cost (2023$)
PM	**$1,107,859**
PM_{10}	**$2,342,331**
$PM_{2.5}$	**$15,468,227**

The remaining feasible, cost-effective technology to control PM, PM_{10}, and $PM_{2.5}$ emissions from Digester Chip Conveyor No. 2 is good operating practices, which consists of enclosing the conveyor to minimize fugitive emissions.

No. 7 Mill Pulp Dryer

An economic analysis was performed for installation of a wet ESP based on information in EPA's Air Pollution Control Technology Fact Sheet for Wire-Plate Type Wet ESPs.[55] Assuming a total flow from the dryer to the wet ESP of approximately 1,300,000 scfm (based on preliminary design information) and a control efficiency of 99%, an ESP is not cost effective as reflected in Table 4-34. Additional cost detail is included in Table C-43 in Appendix C.

TABLE 4-34. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 PULP DRYER, WET ESP[54]

Cost Type	Total Cost (2023$)
Total Capital Investment	$78,641,897
Direct Annual Costs	$58,981,423
Indirect Annual Costs	$7,861,416
Total Annual Costs	$66,842,839
Emissions Reductions	PM - 6.32 tpy/ PM_{10} - 9.48 tpy/ $PM_{2.5}$ - 7.27 tpy
Cost Effectiveness ($/ton removed)	
PM	**$10,572,485**
PM_{10}	**$7,048,323**
$PM_{2.5}$	**$9,193,465**

An economic analysis was performed for installation of a wet scrubber based on information in EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers[56]. The EPA Fact Sheet states that the typical gas flow rate for a spray tower wet scrubber ranges from 1,500 to 100,000 scfm; therefore, multiple scrubbers would be required to accommodate the high flow of the pulp dryer. Assuming a total flow from the dryer to the wet scrubber(s) of approximately 1,300,000 scfm (based on preliminary design) and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-35. Additional cost detail is included in Table C-44 in Appendix C.

[55] https://www3.epa.gov/ttncatc1/dir1/fwespwpl.pdf
[56] https://www3.epa.gov/ttnchie1/mkb/documents/fsprytwr.pdf

TABLE 4-35. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 PULP DRYER, WET SCRUBBER[57]

Cost Type	Total Cost (2023$)
Total Capital Investment	$10,485,586
Direct Annual Costs	$41,286,996
Indirect Annual Costs	$1,048,189
Total Annual Costs	$42,335,185
Emissions Reductions	PM - 6.32 tpy/ PM_{10} - 9.48 tpy/ $PM_{2.5}$ - 7.27 tpy
Cost Effectiveness ($/ton removed)	
PM	**$6,696,126**
PM_{10}	**$4,464,084**
$PM_{2.5}$	**$5,822,719**

An economic analysis was performed for installation of a mechanical cyclone based on information in EPA's Air Pollution Control Technology Fact Sheet for Cyclones.[58] The EPA Fact Sheet states that the typical gas flow rate for a cyclone ranges from 1,060 to 25,400 scfm; therefore, multiple cyclones would be required to accommodate the high exhaust flow rate of the pulp dryer. Assuming a total flow from the dryer to the mechanical cyclone(s) of approximately 1,300,000 scfm (based on preliminary design) and a control efficiency of 99% , mechanical cyclones are not cost effective as reflected in Table 4-36. Additional cost detail is included in Table C-45 in Appendix C. Since the mechanical cyclones will not provide any control of condensable PM, the cost effectiveness calculation is based on filterable PM, PM_{10}, and $PM_{2.5}$ only.

TABLE 4-36. SUMMARY OF PM, PM_{10}, AND $PM_{2.5}$ CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 PULP DRYER, CYCLONES[57]

Cost Type	Total Cost (2023$)
Total Capital Investment	$7,470,980
Direct Annual Costs	$12,058,424
Indirect Annual Costs	$746,835
Total Annual Costs	$12,805,259
Emissions Reductions	PM - 6.32 tpy/ PM_{10} - 3.79 tpy/ $PM_{2.5}$ - 1.58 tpy
Cost Effectiveness ($/ton removed)	
PM	**$2,025,399**
PM_{10}	**$3,375,665**
$PM_{2.5}$	**$8,101,595**

The remaining feasible, cost-effective control technology to control PM, PM_{10}, and $PM_{2.5}$ emissions from No. 7 Mill Pulp Dryer is good operating practices, which consist of operating and maintaining the dryer according to the manufacturer's specifications.

[57] This cost assessment conservatively assumes PM_{10} and $PM_{2.5}$ will be controlled at the same level as PM.
[58] https://www3.epa.gov/ttnchie1/mkb/documents/fcyclon.pdf

No. 8 Recovery Furnace
As discussed in Sections 4.2.2.1 and 4.2.3.1, an ESP is proposed as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Recovery Furnace. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

No. 8 Smelt Dissolving Tank
As discussed in Sections 4.2.2.1 and 4.2.3.1, venting the No. 8 Mill Smelt Dissolving Tank to the No. 8 Recovery Furnace was selected as BACT for PM, PM_{10}, and $PM_{2.5}$. Therefore, an economic, environmental, and energy impact analysis was not conducted for these sources.

No. 7 Slaker
As discussed in Sections 4.2.2.1 and 4.2.3.1, a wet scrubber is proposed as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Mill Slaker. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

No. 7 Lime Kiln
As discussed in Sections 4.2.2.1 and 4.2.3.1, an ESP is proposed as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Lime Kiln. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

4.2.4.2 CO Control Technologies Impacts

This section presents the economic, environmental, and energy impacts of the remaining feasible control technologies for CO emissions.

No. 7 Mill Bleach Plant
An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact for purchasing and operating a standalone thermal oxidizer is summarized in Table 4-37. Additional cost detail is included in Table C-46 in Appendix C.

TABLE 4-37. SUMMARY OF CO CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL BLEACH PLANT, THERMAL OXIDATION

Cost Type	Total Cost (2024$)
Total Capital Investment	$57,491,868
Direct Annual Costs	$733,565
Indirect Annual Costs	$8,086,858
Total Annual Costs	$8,820,424
CO Reduction (tpy)	468.73
Cost Effectiveness ($/ton removed)	**$18,818**

Based on this economic evaluation, controlling CO emissions from the No. 7 Mill Bleach Plant using thermal oxidation is not economically feasible. The remaining feasible, cost-effective control technology to control CO emissions from the No. 7 Mill Bleach Plant is good operating practices, which consist of operating and maintaining the bleach plant according to the manufacturer's specifications.

No. 8 Recovery Furnace
As discussed in Sections 4.2.2.2 and 4.2.3.2, there are no feasible add-on controls, and good operating and combustion practices are proposed as BACT for CO emissions from the No. 8 Recovery Furnace. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

No. 8 Smelt Dissolving Tank
As discussed in Sections 4.2.2.2 and 4.2.3.2, although BACT for smelt dissolving tanks is typically good operating practices, because the Mill will vent the No. 8 Smelt Dissolving Tank to the No. 8 Recovery Furnace, this practice represents BACT. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

No. 7 Lime Kiln
As discussed in Sections 4.2.2.2 and 4.2.3.2, good operating practices are proposed as BACT for CO emissions from the No. 7 Lime Kiln. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

4.2.4.3 TRS/H_2S Control Technologies Impacts

This section presents the economic, environmental, and energy impacts of the remaining feasible control technologies for TRS and H_2S emissions. Since H_2S in a subset of TRS, the economic assessments in this section focus on reduction in TRS compounds. Any control technology that is not economically feasible for control of TRS emissions is not economically feasible for control of H_2S emissions.

Sources Vented to LVHC/HVLC System
As discussed in Section 4.2.2.3, these sources are vented to the LVHC and HVLC systems and do not directly emit sulfur compounds. Any resulting sulfur compound emissions will be captured and controlled. Currently, the LVHC collection system directs gases to the lime kiln associated with the specific mill as the primary incineration device and then the Backup NCG Incinerator (serves both mills) as the secondary incineration device, and the HVLC collection system directs gases to the recovery furnace associated with the specific mill. As described in Section 1.6.6, GP is evaluating options to eliminate the Backup NCG Incinerator. If implemented, it is likely the recovery furnace for each mill will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. Because thermal oxidation (incineration) is the top-ranked control, an evaluation of economic, energy, and environmental impacts was not conducted.

No. 7 Mill Chip Bin
An economic analysis was performed to evaluate the feasibility of enclosing, collecting and transporting TRS emissions from the No. 7 Mill Chip Bin to an existing combustion unit. Initial estimates for the capital cost of the collection system are approximately $4.1 million. Using a capital recovery factor (CRF) of 0.1[59] results in an annual cost of $409,855. Combining the annualized cost with the anticipated tons of TRS removed (0.10 tpy) results in a total cost per ton of TRS removed of $3,991,600 in 2024 dollars. Additional cost detail is included in Table C-47 in Appendix C. Based on this economic evaluation, collecting and transporting TRS emissions from the No. 7 Mill Chip Bin to an existing control (incineration) device is not economically feasible.

[59]CRF of 0.1 is calculated based on current prime rate of 7.75% and an assumed 20-year equipment life.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill Chip Bin with a wet scrubber. Assuming a fan is installed to pull a draft from the chip bin to the wet scrubber at a rate of 1,920 scfm (similarly sized collection system) and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-38. Additional cost detail is included in Table C-48 in Appendix C.

TABLE 4-38. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL CHIP BIN, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$15,490
Direct Annual Costs	$60,991
Indirect Annual Costs	$1,548
Total Annual Costs	$62,539
TRS Reduction (tpy)	0.10
Cost Effectiveness ($/ton removed)	**$615,286**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

An economic analysis was performed to evaluate the feasibility of enclosing, collecting, and transporting TRS emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to an existing combustion unit. Initial estimates for the capital cost of the collection system are approximately $773,670. Using a CRF of 0.1 results in an annual cost of $77,340. Combining the annualized cost with the anticipated tons of TRS removed (0.12 tpy) results in a total cost per ton of TRS removed of $623,589 in 2024 dollars. Additional cost detail is included in Table C-49 in Appendix C. Based on this economic evaluation, collecting and transporting TRS emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to a control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner with a wet scrubber. Assuming a fan is installed to pull a draft from the screens and shive cleaner to the wet scrubber at a rate of 1,000 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-39. Additional cost detail is included in Table C-50 of Appendix C.

TABLE 4-39. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – SCREENS AND SHIVE CLEANER, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$8,068
Direct Annual Costs	$31,767
Indirect Annual Costs	$806
Total Annual Costs	$32,573
TRS Reduction (tpy)	0.12
Cost Effectiveness ($/ton removed)	**$265,318**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Mill Bleach Plant

An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact of purchasing and operating a standalone thermal oxidizer is summarized in Table 4-40 below. Additional cost detail is included in Table C-51 of Appendix C. Based on this economic evaluation, a thermal oxidizer is not a feasible control technology for TRS emissions from the No. 7 Mill Bleach Plant to an existing control (incineration) device is not economically feasible.

TABLE 4-40. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL BLEACH PLANT, THERMAL OXIDATION

Cost Type	Total Cost (2024$)
Total Capital Investment	$57,491,868
Direct Annual Costs	$736,693
Indirect Annual Costs	$8,086,858
Total Annual Costs	$8,823,551
TRS Reduction (tpy)	6.10
Cost Effectiveness ($/ton removed)	**$1,446,863**

The No. 7 Mill Bleach Plant is currently equipped with a wet scrubber, which is the highest ranking technically feasible control device.

No. 8 Mill Intermediate Black Liquor Storage Tank

An economic analysis was performed to evaluate the feasibility of collecting and transporting sulfur compound emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank to an existing wet scrubber or combustion unit. Initial estimates for the capital cost of the collection system are approximately $528,360. Using a CRF of 0.1 results in an annual cost of $52,817. Combining the annualized cost with the anticipated tons of TRS removed (0.32 tpy) results in a total cost per ton of sulfur compounds removed of $163,938 in 2024 dollars. Additional cost detail is included in Table C-52 in Appendix C. Based on this economic evaluation, collecting and transporting sulfur compound emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank to an existing control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank with a wet scrubber. Assuming a fan is installed to pull a draft from the No. 8 Intermediate Black Liquor Storage Tank to the wet scrubber at a rate of 10,000 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-41. Additional cost detail is included in Table C-53 in Appendix C.

TABLE 4-41. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 MILL INTERMEDIATE BLACK LIQUOR STORAGE TANK, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$8,068
Direct Annual Costs	$31,767

TABLE 4-41. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 MILL INTERMEDIATE BLACK LIQUOR STORAGE TANK, WET SCRUBBER

Cost Type	Total Cost (2023$)
Indirect Annual Costs	$806
Total Annual Costs	$32,573
TRS Reduction (tpy)	0.32
Cost Effectiveness ($/ton removed)	**$100,721**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 8 Recovery Furnace

An economic analysis was performed using assumptions in the EPA Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling sulfur compound emissions from the No. 8 Recovery Furnace with a wet scrubber. Using a control efficiency of 98%, controlling sulfur compound emissions from the No. 8 Recovery Furnace using a scrubber is not economically feasible as reflected in Table 4-42. Additional cost detail is included in Table C-54 in Appendix C.

TABLE 4-42. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 RECOVERY FURNACE, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$3,459,632
Direct Annual Costs	$13,622,300
Indirect Annual Costs	$345,841
Total Annual Costs	$13,968,142
TRS Reduction (tpy)	50.39
Cost Effectiveness ($/ton removed)	**$277,199**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 8 Smelt Dissolving Tank

As discussed in Sections 4.2.2.3 and 4.2.3.3, venting the No. 8 Smelt Dissolving Tank to the No. 8 Recovery Furnace was selected as BACT. Therefore, an economic, environmental, and energy impact analysis was not conducted for this source.

No. 7 Mill Slaker

An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact of purchasing and operating a standalone thermal oxidizer is summarized in Table 4-43 below. Additional cost detail is included in Table C-55 of Appendix C. Based on this economic evaluation, a thermal oxidizer is not a feasible control technology for TRS emissions from the No. 7 Mill Slaker to an existing control (incineration) device is not economically feasible.

TABLE 4-43. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL SLAKER, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$1,192,220
Direct Annual Costs	$84,023
Indirect Annual Costs	$206,893
Total Annual Costs	$290,916
TRS Reduction (tpy)	8.00
Cost Effectiveness ($/ton removed)	**$36,368**

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill Slaker with a wet scrubber. Assuming a fan is installed to pull a draft from the slaker to the wet scrubber at a rate of approximately 1,300 scfm and a control efficiency of 98%[60], a wet scrubber is not cost effective as reflected in Table 4-44. Additional cost detail is included in Table C-56 in Appendix C.

TABLE 4-44. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL SLAKER, PACKED-BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$141,066
Direct Annual Costs	$84,149
Indirect Annual Costs	$59,774
Total Annual Costs	$143,923
TRS Reduction (tpy)	7.92
Cost Effectiveness ($/ton removed)	**$18,176**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Mill – No. 5 Causticizer

An economic analysis was performed to evaluate the feasibility of collecting and transporting TRS emissions from the No. 7 Mill – No. 5 Causticizer to an existing wet scrubber or combustion unit with a control efficiency of 99%. Initial estimates for the capital cost of the collection system are roughly $500,000. Using a CRF of 0.1 results in an annual cost of $49,982. Combining the annualized cost with the anticipated tons of TRS removed (0.84 tpy) results in a total cost per ton of sulfur compounds removed of $59,340 in 2024 dollars. Additional cost detail is included in Table C-57 in Appendix C. Based on this economic evaluation, collecting and transporting sulfur compound emissions from the No. 7 Mill – No. 5 Causticizer to an existing control device is not economically feasible.

An additional economic analysis was performed using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill – No. 5 Causticizer with an RTO. Assuming a fan is installed to pull a draft from the causticizer to the RTO at a rate of 500 scfm and a control efficiency of 99%, an RTO is

[60]To be conservative, this analysis assumes 98% control of the total TRS emissions. However, as described previously, wet scrubbers using alkaline scrubbing solutions such as weak wash and caustic are effective at controlling at H_2S but are not as efficient at controlling the dimethyl sulfide and dimethyl disulfide, the TRS compounds expected from lime slakers based on available published data.

not cost effective as reflected in Table 4-45. Additional cost detail is included in Table C-58 in Appendix C.

TABLE 4-45. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL – NO. 5 CAUSTICIZER, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$88,241
Direct Annual Costs	$7,059
Indirect Annual Costs	$8,821
Total Annual Costs	$15,880
TRS Reduction (tpy)	0.84
Cost Effectiveness ($/ton removed)	**$18,853**

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill - No. 5 Causticizer with a wet scrubber. Assuming a fan is installed to pull a draft from the causticizer to the wet scrubber at a rate of 500 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-46. Additional cost detail is included in Table C-59 in Appendix C.

TABLE 4-46. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL – NO. 5 CAUSTICIZER, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$4,034
Direct Annual Costs	$15,883
Indirect Annual Costs	$403
Total Annual Costs	$16,287
TRS Reduction (tpy)	0.83
Cost Effectiveness ($/ton removed)	**$19,533**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Mill Green and White Liquor Swing Tank

An economic analysis was performed to evaluate the feasibility of collecting and transporting TRS emissions from the No. 7 Mill Green and White Liquor Swing Tank to an existing wet scrubber or combustion unit with a control efficiency of 99%. Initial estimates for the capital cost of the collection system are roughly $500,000. Using a CRF of 0.1 results in an annual cost of $49,982. Combining the annualized cost with the anticipated tons of TRS removed (0.04 tpy) results in a total cost per ton of sulfur compounds removed of $1,262,181 in 2024 dollars. Additional cost detail is included in Table C-60 in Appendix C. Based on this economic evaluation, collecting and transporting sulfur compound emissions from the No. 7 Mill Green and White Liquor Swing Tank to an existing control device is not economically feasible.

An additional economic analysis was performed using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill Green and White Liquor Swing Tank with an RTO. Assuming a fan is installed to pull a draft from the tank to the RTO at a rate of 500 scfm and a control efficiency of 99%, an RTO is not cost effective as reflected in Table 4-47. Additional cost detail is included in Table C-61 in Appendix C.

TABLE 4-47. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL GREEN AND WHITE LIQUOR SWING TANK, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$88,241
Direct Annual Costs	$7,059
Indirect Annual Costs	$8,821
Total Annual Costs	$15,880
TRS Reduction (tpy)	0.04
Cost Effectiveness ($/ton removed)	**$398,504**

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill Green and White Liquor Swing Tank with a wet scrubber. Assuming a fan is installed to pull a draft from the tank to the wet scrubber at a rate of 500 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-48. Additional cost detail is included in Table C-62 in Appendix C.

TABLE 4-48. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL GREEN AND WHITE LIQUOR SWING TANK, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$4,034
Direct Annual Costs	$15,883
Indirect Annual Costs	$403
Total Annual Costs	$16,287
TRS Reduction (tpy)	0.04
Cost Effectiveness ($/ton removed)	**$412,872**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Mill – No. 2 White Liquor Storage Tank

An economic analysis was performed to evaluate the feasibility of collecting and transporting TRS emissions from the No. 7 Mill – No. 2 White Liquor Storage Tank to an existing wet scrubber or combustion unit with a control efficiency of 99%. Initial estimates for the capital cost of the collection system are roughly $500,000. Using a CRF of 0.1 results in an annual cost of $49,982. Combining the annualized cost with the anticipated tons of TRS removed (0.04 tpy) results in a total cost per ton of sulfur compounds removed of $1,254,273 in 2024 dollars. Additional cost detail is included in Table C-63 in Appendix C. Based on this economic evaluation, collecting and transporting sulfur compound emissions from the No. 7 Mill – No. 2 White Liquor Storage Tank to an existing control device is not economically feasible.

An additional economic analysis was performed using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill – No. 2 White Liquor Storage Tank with an RTO. Assuming a fan is installed to pull a draft from the causticizer to the RTO at a rate of 500 scfm and a control efficiency of 99%, an RTO is not cost effective as reflected in Table 4-49. Additional cost detail is included in Table C-64 in Appendix C.

TABLE 4-49. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL – NO. 2 WHITE LIQUOR STORAGE TANK, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$88,241
Direct Annual Costs	$7,059
Indirect Annual Costs	$8,821
Total Annual Costs	$15,880
TRS Reduction (tpy)	0.04
Cost Effectiveness ($/ton removed)	**$398,504**

An economic analysis was also performed to evaluate the feasibility of controlling TRS emissions from the No. 7 Mill – No. 2 White Liquor Storage Tank with a wet scrubber. Assuming a fan is installed to pull a draft from the storage tank to the wet scrubber at a rate of 500 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-50. Additional cost detail is included in Table C-65 in Appendix C.

TABLE 4-50. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL – NO. 2 WHITE LIQUOR STORAGE TANK, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$4,034
Direct Annual Costs	$15,883
Indirect Annual Costs	$403
Total Annual Costs	$16,287
TRS Reduction (tpy)	0.04
Cost Effectiveness ($/ton removed)	**$412,872**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

No. 7 Lime Kiln

An economic analysis was performed to evaluate the feasibility of controlling TRS emissions from the No. 7 Lime Kiln (post-ESP) with a wet scrubber. Based on an exhaust flow rate of 39,616 scfm (preliminary design information) and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table 4-51. Additional cost detail is included in Table C-66 in Appendix C.

TABLE 4-51. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 LIME KILN, WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$319,615
Direct Annual Costs	$1,258,482
Indirect Annual Costs	$31,950
Total Annual Costs	$1,290,432
TRS Reduction (tpy)	6.31
Cost Effectiveness ($/ton removed)	**$204,660**

Based on this analysis, good operating practices is the only remaining feasible control alternative.

Tall Oil Flash Tower Feed Tank

An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact for purchasing and operating a standalone thermal oxidizer is summarized in Table 4-52. Additional cost detail is included in Table C-67 of Appendix C. Based on this economic evaluation, a thermal oxidizer is not a feasible control technology for TRS emissions from the Tall Oil Flash Tower Feed Tank.

TABLE 4-52. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – TALL OIL FLASH TOWER FEED TANK, RTO

Cost Type	Total Cost (2024$)
Total Capital Investment	$3,887,221
Direct Annual Costs	$82,463
Indirect Annual Costs	$584,098
Total Annual Costs	$666,561
TRS Reduction (tpy)	1.76E-3
Cost Effectiveness ($/ton removed)	**$378,254,949**

An economic analysis was also performed to evaluate the feasibility of controlling TRS emissions from the Flash Tower Feed Tank by routing the unit to the Tall Oil Reactor Scrubber for control.[61] An initial estimate for the capital cost of the piping and fitting/safety devices necessary is estimated at $50,000. Using a CRF of 0.08[62] results in an annual cost of $3,970. Combining the annualized cost with the anticipated tons of TRS removed (1.74E-3 tpy) results in a total cost per ton of sulfur compounds removed of $2,275,407 in 2024 dollars.[63] Additional cost detail is included in Table C-68 in Appendix C. Based on this analysis, good operating practices is the only remaining feasible control alternative for the Flash Tower Feed Tank.

4.2.4.4 SAM Control Technologies Impacts

This section presents the economic, environmental, and energy impacts of the remaining feasible control technologies for SAM emissions.

No. 8 Recovery Furnace

An economic analysis was performed for installation of a wet ESP based on information in EPA's Air Pollution Control Technology Fact Sheet for Wire-Plate Type Wet ESPs. Assuming the total flow from the recovery furnace to the wet ESP is approximately 428,823 scfm (based on

[61]Due to the extremely low emissions (concentration expected to be less than 220 ppmd) and flow (expected to be less than 200 dscfm), installation of a standalone control device for TRS emissions is considered technically infeasible (in addition to economically infeasible as shown in Table 4-52). Furthermore, a standalone scrubber would be significantly more expensive than piping the stream to the Tall Oil Scrubber, which is deemed not cost effective for control of TRS emissions.

[62]CRF of 0.08 is calculated based on current prime rate of 7.75% and an assumed 50-year equipment life.

[63] If the Tall Oil Reactor is replaced or modified, the ARC Mill plans to route the exhaust of the Tall Oil Scrubber to the HVLC system. Therefore, additional control (conversion) of TRS emissions would be expected. However, routing the Tall Oil Flash Tower Feed Tank to the Tall Oil Scrubber still remains economically infeasible, even when accounting for any additional control associated with collection to the HVLC system, due to the extremely low TRS emissions.

preliminary design information) and a control efficiency of 99%, an ESP is not cost effective as reflected in Table 4-53, and good operating practices are the only remaining feasible control alternative. Additional cost detail is included in Table C-69 in Appendix C.

TABLE 4-53. SUMMARY OF SAM CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 RECOVERY FURNACE, WET ESP

Cost Type	Total Cost (2023$)
Total Capital Investment	$25,947,239
Direct Annual Costs	$19,460,429
Indirect Annual Costs	$2,593,809
Total Annual Costs	$22,054,238
SAM Reduction (tpy)	146.49
Cost Effectiveness ($/ton removed)	**$150,552**

No. 7 Lime Kiln

An economic analysis was performed for installation of a wet ESP based on information in EPA's Air Pollution Control Technology Fact Sheet for Wire-Plate Type Wet ESPs. Assuming the total flow from the lime kiln to the wet ESP is approximately 39,616 scfm (based on preliminary design information) and a control efficiency of 99%, an ESP is not cost effective as reflected in Table 4-54, and good operating practices are the only remaining feasible control alternative. Additional cost detail is included in Table C-70 in Appendix C.

TABLE 4-54. SUMMARY OF SAM CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 LIME KILN, WET ESP

Cost Type	Total Cost (2023$)
Total Capital Investment	$2,397,109
Direct Annual Costs	$1,797,832
Indirect Annual Costs	$239,626
Total Annual Costs	$2,037,458
SAM Reduction (tpy)	5.20
Cost Effectiveness ($/ton removed)	**$391,560**

4.2.4.5 NO_X Control Technologies Impacts

This purpose of this section is to present the economic, environmental, and energy impacts of any remaining feasible control technologies for NO_X emissions. However, as discussed in Sections 4.2.2.5 and 4.2.3.5, the only remaining feasible control technology for NO_X emissions from the No. 8 Recovery Furnace and No. 7 Lime Kiln is good combustion and operating practices.

No. 8 Recovery Furnace

With this project, improvements are proposed for the tertiary combustion air system currently installed on the No. 8 Recovery Furnace. Specifically, the project plans to optimize air port location to achieve better mixing and aiding in better combustion. This improved tertiary combustion air system will reduce NO_x emissions comparable to a quaternary combustion air system. Therefore, a further evaluation of control alternatives for economic, energy, and

environmental impacts was not conducted. in Sections 4.2.2.5 and 4.2.3.5, the use of good combustion and operating practices (staged air combustion) to control NO_X emissions from the No. 8 Recovery Furnace is the only feasible control technology. Part of this project will be to improve the tertiary combustion air system currently installed on the No. 8 Recovery Furnace by optimizing airport location to achieve better mixing and aiding in better combustion. This improved tertiary combustion air system will reduce NO_x emissions comparable to quaternary air. Therefore, a further evaluation of control alternatives for economic, energy, and environmental impacts was not conducted.

No. 7 Lime Kiln

The use of good combustion and operating practices such as kiln design, low temperatures, controlled air-fuel mix, and high efficiency will be used to control NO_X emissions from the No. 7 Lime Kiln. Therefore, an evaluation of control alternatives for economic, energy, and environmental impacts was not conducted.

4.2.4.6 VOC Control Technologies Impacts

This section presents the economic, environmental, and energy impacts of the remaining feasible control technologies for VOC emissions.

Sources that Vent to the LVHC/HVLC System

As discussed in Section 4.2.2.6, these sources are vented to the LVHC and HVLC systems and do not normally directly emit VOC compounds. Any resulting VOC emissions will be captured and controlled[64]. Currently, the LVHC collection system directs gases to the lime kiln associated with the specific mill as the primary incineration device and then the Backup NCG Incinerator (serves both mills) as the secondary incineration device, and the HVLC collection system directs gases to the recovery furnace associated with the specific mill. As described in Section 1.6.6, GP is evaluating options to eliminate the Backup NCG Incinerator. If implemented, it is likely the recovery furnace for each mill will become the primary incineration devices for LVHC NCGs, and the secondary incineration devices would be the Nos. 7 and 8 Lime Kilns with the flexibility to send LVHC NCGs to the other line's lime kiln. Because thermal oxidation (incineration) is the top-ranked control, an evaluation of economic, energy, and environmental impacts was not conducted.

No. 7 Mill Chip Bin

An economic analysis was performed to evaluate the feasibility of enclosing, collecting and transporting VOC emissions from the No. 7 Mill Chip Bin to an existing combustion unit. Initial estimates for the capital cost of the collection system are roughly $4.1 million. Using a CRF of 0.1 results in an annual cost of $409,855. Combining the annualized cost with the anticipated tons of VOC destroyed (5.62 tpy), results in a total cost per ton of VOC removed of $72,922 in 2024 dollars. Additional cost detail is included in Table C-71 in Appendix C. Based on this economic evaluation, collecting and transporting VOC emissions from the No. 7 Mill Chip Bin to an existing control (incineration) device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 7 Mill Chip Bin with a wet scrubber. Assuming a fan is installed to pull a draft from the chip bin to the wet scrubber at a rate of 1,920 scfm (similarly sized collection

[64] This BACT determination to send NCGs through the LVHC or HVLC system includes the venting allowance per 40 CFR Part 63 Subpart S at §63.443(e) and 40 CFR Part 60, Subpart BBa at §60.284a(e)(vi), as applicable.

system) and a control efficiency of 99%, a wet scrubber is not reasonably considered cost effective as reflected in Table 4-55. Additional cost detail is included in Table C-72 in Appendix C.

TABLE 4-55. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 CHIP BIN, PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$127,790
Direct Annual Costs	$123,917
Indirect Annual Costs	$12,774
Total Annual Costs	$136,692
VOC Reduction (tpy)	5.62
Cost Effectiveness ($/ton removed)	**$24,320**

The design of the chip bin includes installation of a condenser on the exhaust for turpentine recovery. Condenser technology is the third-highest ranked VOC control technology for the No. 7 Chip Bin and has a maximum control efficiency equal to that of the two higher ranked technologies. Therefore, the Mill proposes use of fresh steam and installation of a condenser on the exhaust of the chip bin as BACT for VOC emissions.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

An economic analysis was performed to evaluate the feasibility of collecting and transporting VOC emissions the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to an existing combustion unit. Initial estimates for the capital cost of the collection system are roughly $773,670. Using a CRF of 0.1 results in an annual cost of $77,340. Combining the annualized cost with the anticipated tons of VOC destroyed (1.16 tpy) results in a total cost per ton of VOC removed of $66,538 in 2023 dollars. Additional cost detail is included in Table C-73 in Appendix C. Based on this economic evaluation, collecting and transporting VOC emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to a control device is not economically feasible.

An economic analysis was performed using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators to evaluate the feasibility of controlling VOC emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner with catalytic oxidation. Assuming a fan is installed to pull a draft from the screens and shive cleaner to the catalytic oxidizer at a rate of 1,000 scfm and a control efficiency of 99%, a catalytic oxidizer is not cost effective as reflected in Table 4-56. Additional cost detail is included in Table C-74 in Appendix C.

TABLE 4-56. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PRIMARY SCREENS, SECONDARY SCREEN, QUATERNARY SCREEN, AND SHIVE CLEANER, REGENERATIVE CATALYTIC OXIDATION

Cost Type	Total Cost (2023$)
Total Capital Investment	$176,482
Direct Annual Costs	$26,220
Indirect Annual Costs	$17,642
Total Annual Costs	$43,862

TABLE 4-56. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PRIMARY SCREENS, SECONDARY SCREEN, QUATERNARY SCREEN, AND SHIVE CLEANER, REGENERATIVE CATALYTIC OXIDATION

Cost Type	Total Cost (2023$)
VOC Reduction (tpy)	1.16
Cost Effectiveness ($/ton removed)	**$37,736**

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner with a wet scrubber. Assuming a fan is installed to pull a draft from the screens and shive cleaner to the wet scrubber at a rate of 1,000 scfm and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-57. Additional cost detail is included in Table C-75 in Appendix C.

TABLE 4-57. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PRIMARY SCREENS, SECONDARY SCREEN, QUATERNARY SCREEN, AND SHIVE CLEANER, PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$66,559
Direct Annual Costs	$64,542
Indirect Annual Costs	$6,654
Total Annual Costs	$71,196
VOC Reduction (tpy)	1.16
Cost Effectiveness ($/ton removed)	**$61,252**

An economic evaluation of an add-on carbon adsorption unit was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Carbon Adsorbers, U.S. EPA (November 2020).* The economic impact for purchasing and operating a stand-alone carbon adsorber is summarized in Table 4-58. Additional cost detail is included in Table C-76 of Appendix C.

TABLE 4-58. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PRIMARY SCREENS, SECONDARY SCREEN, QUATERNARY SCREEN, AND SHIVE CLEANER, CARBON ADSORPTION

Cost Type	Total Cost (2023$)
Total Capital Investment	$3,392,819
Direct Annual Costs	$67,955
Indirect Annual Costs	$566,080
Total Annual Costs	$633,213
VOC Reduction (tpy)	1.15
Cost Effectiveness ($/ton removed)	**$550,338**

Based on this economic evaluation, collecting and transporting VOC emissions from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to a control

device is not economically feasible, and good operating practices is the only remaining feasible control alternative.

No. 7 Mill Bleach Plant

An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact for purchasing and operating a standalone thermal oxidizer to control the emissions from the No. 7 Bleach Plant's chlorinated and extraction stages is summarized in Table 4-59. Additional cost detail is included in Table C-77 of Appendix C. Based on this economic evaluation, a thermal oxidizer is not a feasible control technology for VOC emissions from the No. 7 Mill Bleach Plant.

TABLE 4-59. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL BLEACH PLANT, THERMAL OXIDATION

Cost Type	Total Cost (2024$)
Total Capital Investment	$57,491,868
Direct Annual Costs	$733,588
Indirect Annual Costs	$8,086,858
Total Annual Costs	$8,820,446
VOC Reduction (tpy)	66.84
Cost Effectiveness ($/ton removed)	**$131,954**

The No. 7 Mill Bleach Plant's chlorinated stages are currently equipped with a wet scrubber, which is the next highest technically feasible control technology. As described in Section 4.2.1.6, industry test data indicates that bleach plant scrubbers do not offer a significant level of control of organics. In addition, the washers and seal chests associated with the extraction stages are not sent to the scrubber. Therefore, good operating practices is the only remaining feasible control alternative to control VOC emissions from the No. 7 Bleach Plant.

No. 7 Mill Pulp Dryer

As discussed in Section 4.2.2.6, there is no single flue containing all the exhaust gases, and the large exhaust flow travels to the roof of the building where the emissions vent through numerous vents. The collection of all these numerous vents and large exhaust flows would be quite expensive and would require PM control upstream prior to the control devices to ensure proper operation. The economic analyses in this section only considers the costs specifically to reduce VOC emissions and thus, does not take into account PM controls upstream of any technically feasible VOC control device.

An economic analysis of an add-on thermal oxidation system was conducted using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators. The economic impact for purchasing and operating one or more standalone thermal oxidizers control emissions from the No. 7 Mill Pulp Dryer is summarized in Table 4-60 and shows that this control technology is not economically feasible. Additional cost detail is included in Table C-78 of Appendix C.

TABLE 4-60. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PULP DRYER, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$229,372,148

TABLE 4-60. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PULP DRYER, RTO

Cost Type	Total Cost (2023$)
Direct Annual Costs	$18,349,772
Indirect Annual Costs	$22,929,125
Total Annual Costs	$41,278,897
VOC Reduction (tpy)	47.25
Cost Effectiveness ($/ton removed)	**$873,578**

An economic analysis of an add-on catalytic oxidation system was conducted using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators. The economic impact for purchasing and operating one or more catalytic oxidizers to control emissions from the No. 7 Pulp Dryer is summarized in Table 4-61 and shows that this technology is not economically feasible. Additional cost detail is included in Table C-79 of Appendix C.

TABLE 4-61. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PULP DRYER, RCO

Cost Type	Total Cost (2023$)
Total Capital Investment	$229,372,148
Direct Annual Costs	$34,078,148
Indirect Annual Costs	$22,929,125
Total Annual Costs	$57,007,273
VOC Reduction (tpy)	47.25
Cost Effectiveness ($/ton removed)	**$1,206,434**

Based on this economic evaluation, good operating practices is the only remaining feasible control alternative.

No. 7 Mill Precipitator Mix Tank

The No. 7 Mill Precipitator Mix Tank currently vents to the No. 7 Smelt Dissolving Tank scrubber. This analysis evaluates economic feasibility of controlling VOC emissions from the tank by utilizing a different control device.

An economic analysis was performed to evaluate the feasibility of collecting and transporting VOC emissions from the No. 7 Mill Precipitator Mix Tank to an existing combustion unit. Initial estimates for the capital cost of the collection system are roughly $500,000. Using a CRF of 0.1 results in an annual cost of $49,982. Combining the annualized cost with the anticipated tons of VOC destroyed (0.61 tpy) results in a total cost per ton of VOC removed of $81,847 in 2024 dollars. Additional cost detail is included in Table C-80 in Appendix C. Based on this economic evaluation, collecting and transporting VOC emissions from the No. 7 Precipitator Mix Tank to an existing control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 7 Mill Precipitator Mix Tanks with a wet scrubber. Assuming a fan is installed to pull a draft from this tank to the wet scrubber at a rate of 500 scfm and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-62. Additional cost detail is included in Table C-81 in Appendix C.

TABLE 4-62. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL PRECIPITATOR MIX TANK, PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$33,279
Direct Annual Costs	$32,271
Indirect Annual Costs	$3,327
Total Annual Costs	$35,598
VOC Reduction (tpy)	0.61
Cost Effectiveness ($/ton removed)	**$58,292**

An economic evaluation of an add-on carbon adsorption unit was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Carbon Adsorbers, U.S. EPA (November 2020)*. The economic impact for purchasing and operating a standard-alone carbon adsorber is summarized in Table 4-63. Additional cost detail is included in Table C-82 of Appendix C.

TABLE 4-63. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 PRECIPITATOR MIX TANK, CARBON ADSORPTION

Cost Type	Total Cost (2023$)
Total Capital Investment	$2,261,769
Direct Annual Costs	$67,692
Indirect Annual Costs	$390,708
Total Annual Costs	$457,550
VOC Reduction (tpy)	1.21
Cost Effectiveness ($/ton removed)	**$379,584**

Based on this economic evaluation, good operating practices is the only remaining feasible control alternative.

No. 8 Mill Intermediate Black Liquor Storage Tank

An economic analysis was performed to evaluate the feasibility of collecting and transporting VOC emissions the No. 8 Mill Intermediate Black Liquor Storage Tank to an existing combustion unit. Initial estimates for the capital cost of the collection system are roughly $528,360. Using a capital recovery factor of 0.1 results in an annual cost of $52,817. Combining the annual cost with the anticipated tons of VOC removed (0.49 tpy) results in a total cost per ton of VOC removed of $107,793 in 2024 dollars. Additional cost detail is included in Table C-83 in Appendix C. Based on this economic evaluation, collecting and transporting VOC emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank to an existing control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank with a wet scrubber. Assuming a fan is installed to pull a draft from this tank to the wet scrubber at a rate of 500 scfm and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-64. Additional cost detail is provided in Table C-84 in Appendix C.

TABLE 4-64. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 INTERMEDIATE BLACK LIQUOR STORAGE TANK, PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$4,034
Direct Annual Costs	$15,883
Indirect Annual Costs	$403
Total Annual Costs	$16,287
VOC Reduction (tpy)	0.49
Cost Effectiveness ($/ton removed)	**$33,239**

An economic evaluation of an add-on carbon adsorption unit was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Carbon Adsorbers, U.S. EPA (November 2020)*. The economic impact for purchasing and operating a stand-alone carbon adsorber is summarized in Table 4-65. Additional cost detail is included in Table C-85 of Appendix C.

TABLE 4-65. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 8 INTERMEDIATE BLACK LIQUOR STORAGE TANK, CARBON ADSORPTION

Cost Type	Total Cost (2023$)
Total Capital Investment	$3,536,667
Direct Annual Costs	$67,886
Indirect Annual Costs	$588,389
Total Annual Costs	$655,958
VOC Reduction (tpy)	0.48
Cost Effectiveness ($/ton removed)	**$1,366,010**

Based on this economic evaluation, good operating practices is the only remaining feasible control alternative.

No. 8 Recovery Furnace

As discussed in Section 4.2.3.6, the use of good combustion and operating practices to control VOC emissions from the No. 8 Recovery Furnace is the only technically feasible control technology. Therefore, an evaluation of control alternatives for economic, energy, and environmental impacts was not conducted.

No. 7 Lime Kiln

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Regenerative Incinerators to evaluate the feasibility of controlling VOC emissions from the No. 7 Mill Lime Kiln with thermal oxidation. Assuming at a flow rate of 39,616 scfm (based on preliminary design information) and a control efficiency of 99%, a thermal oxidizer is not cost effective as reflected in Table 4-66. Additional cost detail is included in Table C-86 in Appendix C.

TABLE 4-66. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL LIME KILN, RTO

Cost Type	Total Cost (2023$)
Total Capital Investment	$6,991,567

TABLE 4-66. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 MILL LIME KILN, RTO

Cost Type	Total Cost (2023$)
Direct Annual Costs	$1,038,747
Indirect Annual Costs	$698,910
Total Annual Costs	$1,737,657
VOC Reduction (tpy)	7.01
Cost Effectiveness ($/ton removed)	**$247,716**

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 7 Lime Kiln (after the proposed ESP) with a wet scrubber. Assuming a flow rate of 39,616 scfm (based on preliminary design basis) and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table 4-67. Additional cost detail is provided in Table C-87 in Appendix C.

TABLE 4-67. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – NO. 7 LIME KILN, PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$319,615
Direct Annual Costs	$1,258,482
Indirect Annual Costs	$31,950
Total Annual Costs	$1,290,432
VOC Reduction (tpy)	7.01
Cost Effectiveness ($/ton removed)	**$183,961**

Based on this economic evaluation, good operating practices is the only remaining feasible control alternative.

Tall Oil Flash Tower Feed Tank

An economic evaluation of an add-on thermal oxidation system was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Thermal and Catalytic Oxidizers, U.S. EPA (September 2022)*. The economic impact for purchasing and operating a standalone thermal oxidizer is summarized in Table 4-68. Additional cost detail is included in Table C-88 of Appendix C.

TABLE 4-68. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – TALL OIL REACTOR, RTO

Cost Type	Total Cost (2024$)
Total Capital Investment	$3,887,221
Direct Annual Costs	$82,455
Indirect Annual Costs	$584,098
Total Annual Costs	$666,553
VOC Reduction (tpy)	0.15
Cost Effectiveness ($/ton removed)	**$4,488,574**

Based on this economic evaluation, a thermal oxidizer is not a feasible control technology for VOC emissions from the Tall Oil Flash Tower Feed Tank.

An economic analysis was also performed to evaluate the feasibility of controlling VOC emissions from the Flash Tower Feed Tank by routing the unit to the Tall Oil Reactor Scrubber for control[65]. An initial estimate for the capital cost of the piping and fitting/safety devices necessary is estimated at $50,000. Using a CRF of 0.08 results in an annual cost of $3,970. Combining the annualized cost with the anticipated tons of VOC removed (0.12 tpy) results in a total cost per ton of sulfur compounds removed of $33,562 in 2024 dollars. Additional cost detail is included in Table C-89 in Appendix C. Based on this analysis, good operating practices is the only remaining feasible control alternative for the Flash Tower Feed Tank.

No. 7 Turpentine Loading Station

Because the VOC emissions from turpentine loading are only 0.09 tpy, typical annual cost ranges from EPA control technology fact sheets for thermal and catalytic oxidizers were used to demonstrate that add-on controls are not economically feasible. Assuming an exhaust flow rate of 1,000 scfm and an average annual cost range of $50/scfm, the cost effectiveness of control is approximately $565,000/ton. The annual cost of other add-on controls for VOC is not expected to be any more cost effective, considering the cost of installing ductwork and a fan, the cost of the control device itself, and the energy required to operate a condenser or carbon adsorber for such a dilute vent stream. No cost-effective add-on control option exists for VOC emissions from turpentine loading. Good operating practices (e.g., use of submerged filling) are the only feasible control technology.

4.2.4.7 GHG Control Technologies Impact

As discussed in Sections 4.2.2.7 and 4.2.3.7, the use of good combustion and operating practices to control GHG emissions from the No. 8 Recovery Furnace and No. 7 Lime Kiln is the only technically feasible control technology. Therefore, an evaluation of control alternatives for economic, energy, and environmental impacts was not conducted.

4.2.5 Step 5. Identify BACT

Table 4-69 presents the proposed BACT control technologies that were selected using the "top-down" approach for each regulated pollutant emitted for the new or modified emissions units, other than for the No. 8 Mill Soap Skimmer Tanks that are addressed in Appendix G. Based on ADEM guidance, numerical emission limits are only proposed for emission units where compliance demonstrations were deemed necessary. For all other units, the emissions will have a minimal impact.

Please note that any BACT determination that involves venting a source to the LVHC or HVLC system also includes the venting allowance per 40 CFR Part 63, Subpart S at §63.443(e) and 40 CFR Part 60, Subpart BBa at §60.284a(e)(vi), as applicable. In addition, PM BACT determinations generally represent filterable PM, and PM_{10}, and $PM_{2.5}$ BACT determinations generally present total PM_{10} and $PM_{2.5}$ (i.e., filterable and condensable fractions). Last, the BACT determination for the No. 7 Bleach Plant is separated for those sources controlled to the No. 7 Bleach Plant Scrubber and those that are not (i.e., extraction stages).

[65]Due to the low emissions (concentration expected to be less than 200 ppmd) and flow (expected to be less than 200 dscfm), installation of a standalone control device for VOC emissions is considered technically infeasible. Furthermore, a standalone scrubber would be significantly more expensive than piping the stream to the Tall Oil Scrubber, which is deemed not cost effective for control of VOC emissions.

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
Digester Chip Conveyor No. 2[66]	PM	Good Operating Practices	AP-42, Section 13.2.4	--	--	--
	Filterable PM_{10}	Good Operating Practices	AP-42, Section 13.2.4	--	--	--
	Filterable $PM_{2.5}$	Good Operating Practices	AP-42, Section 13.2.4	--	--	--
No. 7 Mill Chip Bin	VOC	Condenser Technology and Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
	H_2S	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
No. 7 Mill Chip Meter	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Continuous Digester	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Digester Evaporator	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Flash Tank	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Blow Tank	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A

[66]Emissions include transfer on and off (to new Air Lock Screw Conveyor) associated with the Digester Chip Conveyor No. 2.

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Digester Area Foul Condensate Tank	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Primary Knotter	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Secondary Knotter	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Knotter Accepts Tank	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Knot Conveyor	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Brown Stock Transfer Tank	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner	VOC	Good Operating Practices	NCASI TB No. 1020	--	--	--
	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
No. 7 Mill Bleach Plant – Chlorinated Stages	CO	Good Operating Practices	NCASI TB No. 760	1.53	lb/ADTBP	*Published Factor*
				111.34	lb/hr	*Published Factor*
				462.37	tpy	Annual
	VOC	Wet Scrubber[67]	NCASI TB No. 1020	0.2	lb/ADTBP	*Developed Based on Published Data*
				14.73	lb/hr	*Developed Based on Published Data*
				61.17	tpy	Annual
	TRS	Wet Scrubber[68]	2018 NCASI Air Toxics Pulp and Paper Database	0.02	lb/ADTBP	*Published Factor*
				1.48	lb/hr	*Published Factor*
				6.16	tpy	Annual
	H_2S	Wet Scrubber68	NCASI Data for TRS	0.01	lb/ADTBP	*Developed Based on TRS Data*
				0.79	lb/hr	*Developed Based on TRS Data*
				3.28	tpy	*Developed Based on TRS Data*
No. 7 Bleach Plant – Extraction Stages	CO	Good Operating Practices	NCASI TB No. 1020	--	--	--
	VOC	Good Operating Practices	NCASI TB No. 1020	--	--	--
No. 7 Mill Pulp Dryer	PM	Good Operating Practices	NCASI TB No. 942	0.02	lb/ADTFP	*Published Factor*
				1.60	lb/hr	*Published Factor*
				6.39	tpy	Annual
	PM_{10}	Good Operating Practices	NCASI TB No. 942	0.03	lb/ADTFP	*Published Factor*
				2.41	lb/hr	*Published Factor*
				9.58	tpy	Annual
	$PM_{2.5}$	Good Operating Practices	NCASI TB No. 942	0.023	lb/ADTFP	*Published Factor*
				1.84	lb/hr	*Published Factor*
				7.34	tpy	Annual
	VOC	Good Operating Practices	Site-Specific from GP's Leaf River Mill	0.149	lb/ADTFP	*Published Factor*
				11.99	lb/hr	*Published Factor*
				47.73	tpy	Annual

[67]As described in Section 4.2.1.6, wet scrubbers with alkaline scrubbing solutions may not be as effective at controlling VOCs.
[68]As described in Section 4.2.1.3, wet scrubbers with alkaline scrubbing solutions may not be as effective at controlling methyl mercaptan, dimethyl sulfide, and dimethyl disulfide.

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
No. 7 Mill Multiple Effect Evaporator System	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Precipitator Mix Tank	VOC	Good Operating Practices	NCASI TB No. 1020	--	--	--
No. 8 Mill Multiple Effect Evaporator System	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 8 Mill Intermediate (55%) Black Liquor Tank	VOC	Good Operating Practices	NCASI TB No. 1020	--	--	--
	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
	H_2S	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
No. 8 Recovery Furnace	PM	ESP	Proposed BACT Limit	0.015	gr/dscf @ 8% O_2	3-Run Average (Performance Stack Test)
				56.86	lb/hr	3-Run Average (Performance Stack Test)
	PM_{10}	ESP	Proposed BACT Limit	0.030	gr/dscf @ 8% O_2	3-Run Average (Performance Stack Test)
				113.71	lb/hr	3-Run Average (Performance Stack Test)
				498.07	tpy	Annual
	$PM_{2.5}$	ESP	Proposed BACT Limit	0.027	gr/dscf @ 8% O_2	3-Run Average (Performance Stack Test)
				102.34	lb/hr	3-Run Average (Performance Stack Test)
				448.26	tpy	Annual

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
	CO	Good Operating Practices	Existing BACT Limit	200	ppmv @ 8% O_2	3-Run Average (Performance Stack Test)
				385.91	lb/hr	3-Run Average (Performance Stack Test)
	NO_X	Good Operating Practices	Existing BACT Limit	75	ppmv @ 8% O_2	3-Run Average (Performance Stack Test)
				237.69	lb/hr	3-Run Average (Performance Stack Test)
	VOC	Good Operating Practices	Vendor Guarantee	20	ppmv @ 8% O_2	3-Run Average (Performance Stack Test)
				16.55	lb/hr	3-Run Average (Performance Stack Test)
	TRS (as H_2S)	Good Operating Practices	Existing BACT Limit	5	ppmv @ 8% O_2	12-Hour Block Average
				11.74	lb/hr	12-Hour Block Average
	H_2S	Good Operating Practices	NCASI TB No. 1050	4	ppmv @ 8% O_2	3-Run Average (Performance Stack Test)
				9.39	lb/hr	*Published Factor*
				41.14	tpy	Annual
	SAM	Good Operating Practices	Existing BACT Limit	5	ppmv @ 8% O_2	3-Run Average (Performance Stack Test)
				33.78	lb/hr	3-Run Average (Performance Stack Test)
	GHG (sum of individual GHGs)	Efficient Operating Practices/ Maximize Use of Biogenic Fuel	40 CFR Part 98, Subparts C and AA	1,830,307 for BLS and fuel combustion	tpy	Annual
			NCASI Emission Factors	4,965 for control of NCGs	tpy	Annual
No. 8 Smelt Dissolving Tank	PM	Vent to the No. 8 Recovery Furnace during routine operation	Not a direct source of emissions	N/A	N/A	N/A
	PM_{10}		Not a direct source of emissions	N/A	N/A	N/A
	$PM_{2.5}$		Not a direct source of emissions	N/A	N/A	N/A
	CO		Not a direct source of emissions	N/A	N/A	N/A

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
	TRS		Not a direct source of emissions	N/A	N/A	N/A
	H_2S		Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Slaker	PM	Water Spray/Wet Scrubber[69]	NCASI TB No. 1020	0.029	lb/ton CaO	*Published Factor*
				0.56	lb/hr	*Published Factor*
				2.22	tpy	Annual
	Filterable PM_{10}	Water Spray/Wet Scrubber[69]	NCASI TB No. 1020	0.029	lb/ton CaO	*Published Factor*
				0.56	lb/hr	*Published Factor*
				2.22	tpy	Annual
	Filterable $PM_{2.5}$	Water Spray/Wet Scrubber[69]	NCASI TB No. 1020	0.029	lb/ton CaO	*Published Factor*
				0.56	lb/hr	*Published Factor*
				2.22	tpy	Annual
	TRS	Wet Scrubber	2018 NCASI Air Toxics Pulp and Paper Database	0.105	lb/ton CaO	*Published Factor with 20% Safety Margin*
				2.03	lb/hr	*Published Factor with 20% Safety Margin*
				8.08	tpy	Annual
No. 7 Mill – No. 5 Causticizer	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
No. 7 Mill Green and White Liquor Swing Tank	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
	H_2S	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
No. 7 Mill – No. 2 White Liquor Storage Tank	TRS	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
	H_2S	Good Operating Practices	2018 NCASI Air Toxics Pulp and Paper Database	--	--	--
No. 7 Mill Lime Kiln	PM	ESP	Proposed BACT Limit	0.01	gr/dscf at 10% O_2	3-Run Average (Performance Stack Test)
				2.96	lb/hr	3-Run Average (Performance Stack Test)
	PM_{10}	ESP	Proposed BACT Limit	0.030	gr/dscf at 10% O_2	3-Run Average (Performance Stack Test)

[69]As discussed in Section 4.2.2.1, a "water spray" scrubber is proposed for the new No. 7 Slaker. Most, if not all, slakers use this design.

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
				8.89	lb/hr	3-Run Average (Performance Stack Test)
				38.95	tpy	Annual
	$PM_{2.5}$	ESP	Proposed BACT Limit	0.027	gr/dscf at 10% O_2	3-Run Average (Performance Stack Test)
				8.00	lb/hr	3-Run Average (Performance Stack Test)
				35.06	tpy	Annual
	CO	Good Operating Practices	Proposed BACT Limit	50	ppmvd at 10% O_2	3-Run Average (Performance Stack Test)
				7.55	lb/hr	3-Run Average (Performance Stack Test)
	NO_X	Good Operating Practices	Proposed BACT Limit	112	ppmvd at 10% O_2	3-Run Average (Performance Stack Test)
				27.76	lb/hr	3-Run Average (Performance Stack Test)
	VOC	Good Operating Practices	Proposed BACT Limit	25	ppmvd at 10% O_2	3-Run Average (Performance Stack Test)
				1.62	lb/hr	3-Run Average (Performance Stack Test)
	TRS (as H_2S)	Good Operating Practices	Existing BACT Limit	8	ppmvd at 10% O_2	12-Hour Block Average
				1.47	lb/hr	12-Hour Block Average
	H_2S	Good Operating Practices	Proposed BACT Limit	8	ppmvd at 10% O_2	12-Hour Block Average
				1.47	lb/hr	12-Hour Block Average
	SAM	Good Operating Practices	Existing BACT Limit	1.2	lb/hr	3-Run Average (Performance Stack Test)
	GHG (sum of individual GHGs)	Good Operating Practices	40 CFR Part 98, Subparts C and AA	65,073[70] for fuel combustion	tpy	Annual
			NCASI Emission Factors	4,965 for control of NCGs	tpy	Annual

[70]Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO_2 emissions from the conversion of $CaCO_3$ to CaO are included in the biogenic CO_2 estimates calculated for the No. 7 Recovery Furnace.

TABLE 4-69. PROPOSED BACT

Source Name	Pollutant	BACT	Emissions Factor Basis	BACT Limit	Units	Averaging Period
Tall Oil Reactor and Associated Equipment	VOC	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (HVLC)	Not a direct source of emissions	N/A	N/A	N/A
Tall Oil Flash Tower Feed Tank	VOC	Good Operating Practices	Facility PTE Calculations	--	--	--
	TRS	Good Operating Practices	Facility PTE Calculations	--	--	--
No. 7 Mill Turpentine Decanter and Under Flow Tank	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	TRS	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
	H_2S	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Mill Turpentine Storage Tank	VOC	Thermal Oxidation (LVHC)	Not a direct source of emissions	N/A	N/A	N/A
No. 7 Turpentine Loading Station	VOC	Good Operating Practices (use of submerged loading)	AP-42, Section 5.2	--	--	--

4.2.5.1 PM/PM_{10}/$PM_{2.5}$ BACT

This section discusses the proposed PM, PM_{10}, and $PM_{2.5}$ BACT for each new and modified source. The Mill proposes the continued use of good operating practices represents BACT for the control of PM, PM_{10}, and $PM_{2.5}$ in addition to the add-on control devices selected from the evaluation of technical feasibility and economic, environmental, and energy impacts. The Mill is also proposing emissions limits as presented in Table 4-69.

Digester Chip Conveyor No. 2

As discussed in Sections 4.2.2.1, 4.2.3.1, and 4.2.4.1, good operating practices (minimize drop height and use a partial enclosure) are the only technically feasible control alternative for PM, PM_{10}, and $PM_{2.5}$ emissions from the Digester Chip Conveyor No. 2. The PTE of the Digester Chip Conveyor No. 2 is estimated as 0.30 tpy of filterable PM, 0.14 tpy of PM_{10}, and 0.02 tpy of $PM_{2.5}$. The proposed emissions were calculated based on the U.S. EPA AP-42, Section 13.2.4 drop loading equation using the maximum moisture content provided for validity of the equation.

No. 7 Mill Pulp Dryer

As discussed in Sections 4.2.2.1, 4.2.3.1, and 4.2.4.1, good operating practices (routine maintenance and operation in accordance with manufacturer specifications) are the only technically feasible control alternative for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Mill Pulp Dryer. A summary of the proposed PM, PM_{10}, and $PM_{2.5}$ BACT is presented in Table 4-69. The Mill is proposing annual emissions limits of 6.39 tpy for PM, 9.58 tpy for PM_{10}, and 7.34 tpy for $PM_{2.5}$ as BACT for the No. 7 Mill Pulp Dryer. The proposed emissions limits were calculated based on Table F4 of NCASI TB No. 942 – Measurement of PM, PM_{10}, $PM_{2.5}$, and CPM Emissions from Paper Machine Sources (November 2007).

No. 8 Recovery Furnace

As discussed in Section 4.2.2.1, the use of an ESP to control PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Recovery Furnace is the only technically feasible add-on control alternative. A summary of the proposed PM, PM_{10}, and $PM_{2.5}$ BACT is presented in Table 4-69. Therefore, the Mill is proposing a Dry Bottom ESP as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Recovery Furnace, and the proposed emissions limits for the No. 8 Recovery Furnace are 0.015 gr/dscf at 8% O_2 for PM, 0.030 gr/dscf at 8% O_2 for PM_{10}, and 0.027 gr/dscf at 8% O_2 tpy for $PM_{2.5}$. The proposed emissions limits are based on the combined PM, PM_{10}, and $PM_{2.5}$ emissions generated from the combustion of BLS and limited quantities of natural gas and fuel oil. These proposed PM, PM_{10}, and $PM_{2.5}$ BACT limits incorporate the PM emissions limit for new or reconstructed recovery furnaces in 40 CFR §60.282a(a)(2)[71], as well as recent BACT determinations for PM_{10} and $PM_{2.5}$[72].

To confirm that the proposed emissions limit is comparable to other recovery furnace BACT determinations for PM, PM_{10}, and $PM_{2.5}$, a search of the RBLC database was conducted. The PM RBLC summary shows that the proposed BACT emissions limit of 0.015 gr/dscf at 8% O_2 is equivalent to or lower than the 0.015 to 0.03 gr/dscf at 8% O_2 range of PM BACT emissions limits. The RBLC summary also shows that the proposed BACT limits for PM_{10} and $PM_{2.5}$ at 0.030

[71]As discussed in Section 3.3.8, the No. 8 Recovery Furnace will be modified (i.e., not new or reconstructed) as part of the changes proposed in this application.

[72]The Arkansas Department of Environmental Quality issued Permit No. 0224-AOP-R25 on October 26, 2023 to Green Bay Packaging Inc. in Morrilton, AR that includes numerical BACT limits of 0.015 gr/dscf at 8% O_2 for PM, 0.030 gr/dscf at 8% O_2 for PM_{10}, and 0.027 gr/dscf at 8% O_2 for $PM_{2.5}$ for the No. 6 Recovery Boiler (SN-401). These limits could not be located in the RBLC.

gr/dscf at 8% O_2 and 0.027 gr/dscf at 8% O_2, respectively, are equivalent to the values of PM_{10} and $PM_{2.5}$ BACT emissions limits. The proposed limits are also consistent with the more recent Permit No. 0224-AOP-R25 issued by the Arkansas Department of Environmental Quality to Green Bay Packaging Inc., which was not located in the RBLC. Due to uncertainty associated with PM speciation and condensable measurements and consistent with the PM_{10} and $PM_{2.5}$ BACT limits established within the last ten years, GP requests that any PM_{10} and $PM_{2.5}$ BACT limits established for the No. 8 Recovery Furnace be based on the combined filterable and condensable PM fractions.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be included to fire BLS in the No. 8 Recovery Furnace only when the ESP is operating. Routine stack testing during BLS firing is proposed to demonstrate compliance with the short-term emissions limit. The Mill will also ensure that the tons of BLS fired can be calculated on a consistent basis to demonstrate compliance with the numerical emissions limit on an annual average basis.

No. 8 Smelt Dissolving Tank

As discussed in Section 4.2.2.1., PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 8 Smelt Dissolving Tank will be normally vented to the No. 8 Recovery Furnace, after the exhaust gases have been conditioned and moisture removed by the tank's scrubber. The Mill is not proposing numeric emissions limits for this source.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be included to vent emissions from the No. 8 Mill Smelt Dissolving Tank to the No. 8 Recovery Furnace, except in limited operating conditions as described in Section 1.6.2.

No. 7 Mill Slaker

As discussed in Sections 4.2.2.1, 4.2.3.1, and 4.2.4.1, a wet scrubber is the only technically feasible add-on control technology for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Mill Slaker. Therefore, the Mill is proposing good operating practices as BACT for the No. 7 Mill Slaker. A summary of the proposed PM, PM_{10}, and $PM_{2.5}$ BACT is presented in Table 4-69. The Mill is proposing annual emissions limits of 2.22 tpy for PM, PM_{10}, and $PM_{2.5}$ as BACT for the No. 7 Mill Slaker. The proposed emissions limits were calculated based on Table 4.14 of NCASI TB No. 1020 – Compilation of Criteria Air Pollutant Emissions for Sources at Pulp and Paper Mills Including Boilers – An Update to Technical Bulletin No. 884 (December 2013).

To confirm that the proposed emissions limit is comparable to other lime slaker BACT determinations for PM, PM_{10}, and $PM_{2.5}$, a search of the RBLC database was conducted. The PM BACT summary shows that the proposed BACT emissions limit of 2.22 tpy is lower than the 2.10 lb/hr (equivalent to 9.20 tpy) and 1.54 lb/hr (equivalent to 6.75 tpy) values identified in the two lime slaker BACT determination.

No. 7 Lime Kiln

As discussed in Sections 4.2.2.1, 4.2.3.1, and 4.2.4.1, an ESP was the top-ranked technically feasible control alternative for PM, PM_{10}, and $PM_{2.5}$ emissions from the No. 7 Lime Kiln. Therefore, the Mill is proposing an ESP as BACT for the No. 7 Lime Kiln. The proposed emissions limits for the No. 7 Lime Kiln are 0.01 gr/dscf at 10% O_2 for PM, 0.030 gr/dscf at 10% O_2 for PM_{10}, and 0.027 gr/dscf at 10% O_2 for $PM_{2.5}$. A summary of the proposed PM, PM_{10}, and

$PM_{2.5}$ BACT is presented in Table 4-69. The proposed BACT limits incorporate vendor-provided data for PM, as well as recent BACT determinations for similar units[73].

To confirm that the proposed emissions limits are comparable to other lime kiln BACT determinations for PM, PM_{10}, and $PM_{2.5}$, a search of the RBLC database was conducted. The PM BACT summary shows that the proposed BACT emissions limits of 0.01 gr/dscf at 10% O_2 is equivalent to or below the range of values in the RBLC of 0.01 to 0.06 gr/dscf at 10% O_2. The RBLC summary also shows that the proposed BACT limits for PM_{10} and $PM_{2.5}$ at 0.030 gr/dscf at 10% O_2 and 0.027 gr/dscf at 10% O_2, respectively, are equivalent to the values of PM_{10} and $PM_{2.5}$ BACT emissions limits. The proposed limits are also consistent with the more recent Permit No. 0224-AOP-R25 issued by the Arkansas Department of Environmental Quality to Green Bay Packaging Inc., which was not located in the RBLC. Due to uncertainty associated with PM speciation and condensable measurements and consistent with the PM_{10} and $PM_{2.5}$ BACT limits established within the last ten years, GP requests that any PM_{10} and $PM_{2.5}$ BACT limits established for the No. 7 Lime Kiln be based on the combined filterable and condensable PM fractions.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be included to feed lime mud to the No. 7 Lime Kiln only when the ESP is running. Routine stack testing while lime mud is being fed is proposed to demonstrate compliance with the short-term emissions limits. The Mill will also maintain records of daily lime production rates as part of the ongoing compliance demonstration with the numerical limit on an annual average basis.

4.2.5.2 CO BACT

This section discusses the proposed CO BACT for each new and modified source with the potential to emit CO.

No. 7 Mill Bleach Plant

As discussed in Sections 4.2.2.2, 4.2.3.2, and 4.2.4.2, the use of good operating practices was identified as the only technically and economically feasible control technology for the No. 7 Mill Bleach Plant. A summary of the proposed CO BACT is presented in Table 4-69. The Mill is proposing an annual emissions limit of 462.37 tpy for chlorinated stages of the No. 7 Mill Bleach Plant. This emissions limit is based on an emission factors from NCASI TB Nos. 760.

No. 8 Recovery Furnace

As discussed in Sections 4.2.2.2, 4.2.3.2, and 4.2.4.2, the use of good combustion and/or operating practices was identified as the only technically and economically feasible control technology for the No. 8 Recovery Furnace. The proposed emissions limit for the No. 8 Recovery Furnace is 200 ppmvd at 8% O_2. A summary of the proposed CO BACT is presented in Table 4-69. The proposed BACT limit is based on vendor-provided data.

To confirm that the proposed concentration is comparable to other recovery furnace BACT determinations for CO, the Mill conducted a search of the RBLC database. The proposed CO BACT concentration of 200 ppmvd at 8% O_2 is comparable to the 200 to 930 ppmvd at 8% O_2 range of CO BACT concentrations.

[73]The Arkansas Department of Environmental Quality issued Permit No. 0224-AOP-R25 on October 26, 2023 to Green Bay Packaging Inc. in Morrilton, AR that includes numerical BACT limits of 0.01 gr/dscf at 10% O_2 for PM, 0.030 gr/dscf at 10% O_2 for PM_{10}, and 0.027 gr/dscf at 10% O_2 for $PM_{2.5}$ for the No. 3 Lime Kiln (SN-501). These limits could not be located in the RBLC.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Routine stack testing during BLS firing is proposed to demonstrate compliance with the short-term emissions limit. The Mill will also ensure that the tons of BLS fired can be calculated on a consistent basis to demonstrate compliance with the numerical emissions limit on an annual average basis.

No. 8 Smelt Dissolving Tank

As discussed in Sections 4.2.2.2, 4.2.3.2, and 4.2.4.2, CO emissions from the No. 8 Smelt Dissolving Tank will be normally vented to the No. 8 Recovery Furnace. The Mill is not proposing numeric emissions limits for this source.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be included to vent emissions from the No. 8 Smelt Dissolving Tank to the No. 8 Recovery Furnace, except in limited operating conditions as described in Section 1.6.2.

No. 7 Lime Kiln

As discussed in Sections 4.2.2.2, 4.2.3.2, and 4.2.4.2, the use of good combustion practices was identified as the only technically and economically feasible control technology for the No. 7 Lime Kiln. The proposed emissions limit for the No. 7 Lime Kiln is 50 ppmvd at 10% O_2. A summary of the proposed CO BACT is presented in Table 4-69. The proposed BACT limit is based on vendor-provided data.

To confirm that the proposed emissions limit is comparable to other lime kiln BACT determinations for CO, a search of the RBLC database was conducted. The CO BACT summary shows that the proposed BACT emissions limit of 50 ppmvd at 10% O_2 is within the 50 – 1,400 ppmvd at 10% O_2 range of CO emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed CO BACT limit. Routine stack testing while lime mud is being fed is proposed to demonstrate compliance with the short-term emissions limits. The Mill will also maintain records of daily lime production rates as part of the ongoing compliance demonstration with the numerical limit on an annual average basis.

4.2.5.3 TRS/H_2S BACT

This section discusses the proposed sulfur compounds BACT (TRS and H_2S) for each new and modified source. The Mill proposes the continued use of good combustion/operating practices as BACT for the control of sulfur compounds, in addition to the add-on control devices selected from the evaluation of technical feasibility and economic, environmental, and energy impacts. The Mill is also proposing emissions limits as presented in Table 4-69.

Sources Vented to LVHC/HVLC System

As discussed in Section 4.2.2.3, the sources that vent to the LVHC or HVLC system (No. 7 Mill Chip Meter, No. 7 Mill Continuous Digester, No. 7 Mill Digester Evaporator, No. 7 Mill Flash Tank, No. 7 Mill Blow Tank, No. 7 Mill Digester Area Foul Condensate Tank, No. 7 Mill Primary Knotter, No. 7 Mill Secondary Knotter, No. 7 Mill Knotter Accepts Tank, No. 7 Mill Knot Conveyor, No. 7 Mill Brown Stock Transfer Tank, No. 7 Mill Multiple Effect Evaporator System, No. 8 Mill Multiple Effect Evaporator System, Tall Oil Reactor and associated sources, and No. 7 Mill Turpentine Decanter and Under Flow Tank) are not direct emitters of sulfur compounds as the

emissions will be routed to control devices. Therefore, the Mill does not propose numerical limits for these sources as streams routed to the LVHC and HVLC systems are subject to these rules.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be included to vent the emissions from these sources to the LVHC and HVLC system for control, except as allowed in 40 CFR Part 63, Subpart S at §63.443(e) and 40 CFR Part 60, Subpart BBa at §60.284a(e)(vi).

No. 7 Mill Chip Bin

As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. The Mill estimated the PTE of the No. 7 Mill Chip Bin as 0.10 tpy of TRS and <0.01 tpy of H_2S. The annual emissions are based on emissions factors from the 2018 NCASI Air Toxics Pulp and Paper Database.

The available data in the RBLC search results is not sufficient to show that the Mill's proposed TRS and H_2S emissions limit would be comparable to similar continuous chip bin operations. The 2018 NCASI Air Toxics Pulp and Paper Database emissions factor set for continuous digester chip bin exhaust using fresh steam is an extremely small sample size and half the results were below the detection limit. However, this data is the best available and is comparable to current industry standards.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. The Mill estimate the PTE of No. 7 Mill Screens as 0.13 tpy of TRS. The annual emissions are based on emissions factors from the 2018 NCASI Air Toxics Pulp and Paper Database.

No. 7 Mill Bleach Plant

As discussed in Section 4.2.2.3, a wet scrubber was selected as BACT for the control of sulfur compound emissions from the No. 7 Mill Bleach Plant. A summary of the proposed sulfur compounds BACT is presented in Table 4-69. The Mill is proposing an annual TRS emissions limit of 6.16 tpy for the No. 7 Mill Bleach Plant's chlorinated stages. This emissions limit is based on emissions data in the 2018 NCASI Air Toxics Pulp and Paper Database for bleach plant scrubbers. As no published data exists for H_2S emissions from bleach plant scrubbers, H_2S emissions were estimated as equivalent to the TRS emissions factor.

No. 8 Mill Intermediate Black Liquor Storage Tank

As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. The Mill estimated the PTE of the tank as 0.33 tpy of TRS and 0.21 tpy of H_2S. The annual emissions are based on emissions factors from the 2018 NCASI Air Toxics Pulp and Paper Database.

The available data in the RBLC search results is not sufficient to show that the Mill's proposed TRS and H_2S emissions limit would be comparable to similar black liquor storage tanks. However, this data is the best available and is comparable to current industry representations for TRS emissions from intermediate black liquor storage tanks.

No. 8 Recovery Furnace

As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. A summary of the proposed sulfur compounds BACT is presented in

Table 4-69. The proposed TRS emissions limit for the No. 8 Recovery Furnace is equivalent to the NSPS Subpart BBa emissions limit, 5 ppmvd at 8% O_2 (12-hour block average). The Mill is also proposing an annual H_2S emissions limit of 41.14 tpy. These emissions limits are based on NSPS and established BACT for comparable units, respectively.

To confirm that the proposed TRS emissions limit is comparable to other recovery furnace BACT determinations for sulfur compounds, a search of the RBLC database was conducted. The sulfur compound BACT summary shows that the proposed BACT emissions limit of 5 ppmvd at 8% O_2 is within the 3 – 17.5 ppmvd at 8% O_2 range of BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Routine stack testing is proposed to demonstrate compliance with the TRS short-term emissions limit. The Mill will also ensure that the tons of BLS fired can be calculated on a consistent basis to demonstrate compliance with the numerical emissions limit on an annual average basis.

No. 8 Smelt Dissolving Tank

As discussed in Section 4.2.2.3, sulfur compound emissions from the No. 8 Smelt Dissolving Tank will normally be vented to the No. 8 Recovery Furnace. The Mill is not proposing numeric emissions limits for this source.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a general permit condition may be added to vent emissions from the No. 8 Smelt Dissolving Tank to the No. 8 Recovery Furnace, except in limited operating conditions as described in Section 1.6.2.

No. 7 Mill Slaker

As discussed in Section 4.2.2.3, the Mill has chosen to implement the top ranked control technology for sulfur compounds, a wet scrubber, for the No. 7 Mill Slaker. A summary of the proposed sulfur compounds BACT is presented in Table 4-69. The Mill is proposing an annual emissions limit of 8.08 tpy of TRS. The annual emissions limit is based on an emissions factor from the 2018 NCASI Air Toxics Pulp and Paper Database (median plus a safety margin of 20%).

To confirm that the proposed emissions limit is comparable to other slaker BACT determinations for sulfur compounds, a search of the RBLC database was conducted. The sulfur compounds BACT summary shows that the proposed BACT emissions limit of 1.54 lb/hr (annual average rate) is greater than the singular RBLC entry for slaker with a wet scrubber (0.14 lb/hr); however, the emissions factor used to calculate emissions represents the latest data available for slakers and is comparable to current industry representations for TRS emissions from slakers[74]. Furthermore, the proposed limits are also consistent with the more recent Permit No. 0224-AOP-R25 issued by the Arkansas Department of Environmental Quality to Green Bay Packaging Inc. (i.e., 0.105 lb/TCaO for the No. 3 Lime Slaker [SN-502A]), which was not located in the RBLC.

No. 7 Mill – No. 5 Causticizer, Green and White Liquor Swing Tank, White Liquor Storage Tank

As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. The Mill estimated the PTE for these units as 0.85 tpy of TRS for the No. 7 Mill – No. 5 Causticizer, <0.01 tpy of TRS and 0.04 tpy of H_2S from the Green and White

[74]Based on additional review of the single value in the RBLC, it was determined that no numerical emission limitation was established or included in the permit for the subject slaker. BACT was determined and approved as the slaker's existing wet scrubber for TRS control.

Liquor Swing Tank, and <0.01 tpy of TRS and 0.04 tpy of H_2S from the White Liquor Storage Tank. The annual emissions are based on emissions factors from the 2018 NCASI Air Toxics Pulp and Paper Database.

No. 7 Lime Kiln
As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. A summary of the proposed sulfur compounds BACT is presented in Table 4-69. The proposed TRS and H_2S emissions limits for the No. 7 Lime Kiln are equivalent to NSPS Subpart BB[75] emission limit for TRS: 8 ppmvd at 10% O_2 (12-hour block average).

To confirm that the proposed emissions limit is comparable to other lime kiln BACT determinations for sulfur compounds, a search of the RBLC database was conducted. The sulfur compound BACT summary shows that the proposed BACT emissions limit of 8 ppmvd at 10% O_2 for TRS and H_2S is within the 8 – 20 ppmvd at 10% O_2 range of BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. A TRS CEMS will be used to demonstrate compliance with the TRS emissions limit.

Tall Oil Flash Tower Feed Tank
As discussed in Section 4.2.4.3, good operating practices are the only technically and economically feasible control technology. The Mill estimate the PTE of the Tall Oil Flash Tower Feed Tank as <0.01 tpy of TRS. The annual emissions are based on emissions factors from NCASI Technical Bulletin No. 677, Table XI.A.5 for a wet oil drying tank.

4.2.5.4 SAM BACT

This section discusses the proposed SAM BACT for each new and modified source. The Mill proposes the use of good operating practices/combustion controls to represent BACT for the control of SAM. The Mill is also proposing mass emissions limits as presented in Table 4-69.

No. 8 Recovery Furnace
As discussed in Section 4.2.4.4, good combustion practices are the only technically feasible control technology for the No. 8 Recovery Furnace. A summary of the proposed SAM BACT is presented in Table 4-69. The Mill proposes a SAM BACT emissions limit of 5 ppmv at 8% O_2. This emissions limit is based on vendor-provided data for the No. 8 Recovery Furnace.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. Specifically, a general permit condition may be added to operate the No. 8 Recovery Furnace with good operating practices and in accordance with manufacturer specifications. Routine emissions testing is proposed to demonstrate compliance with the emissions limits.

No. 7 Lime Kiln
As discussed in Section 4.2.4.4, the use of good operating practices was identified as the only technically feasible control technology for SAM emissions from the No. 7 Lime Kiln. A summary of the proposed SAM BACT is presented in Table 4-69. The Mill proposes a SAM BACT emissions limit of 1.2 lb/hr.

[75]The same numerical TRS emissions limit is also included in NSPS Subpart BBa, although the No. 7 Lime Kiln is not subject to the rule.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. Specifically, a general permit condition to operate the No. 7 Lime Kiln using good combustion practices may be added. Routine emissions testing is proposed to demonstrate compliance with the numerical BACT emissions limit on a lb/hr basis.

4.2.5.5 NO_X BACT

This section discusses the proposed NO_X BACT for each new and modified source. The Mill proposes the use of good operating practices/combustion controls to represent BACT for the control of NO_X. The Mill is also proposing mass emissions limits as presented in Table 4-69.

No. 8 Recovery Furnace

As discussed in Sections 4.2.2.5, 4.2.3.5, and 4.2.4.5, good combustion practices (staged air combustion) are the only technically feasible control technology for the No. 8 Recovery Furnace. A summary of the proposed NO_X BACT is presented in Table 4-69. The Mill proposes a NO_X BACT emissions limit of 75 ppmvd at 8% O_2. This emissions limit is based on vendor-provided data for the No. 8 Recovery Furnace.

To confirm that the proposed emissions limit is comparable to other recovery furnace BACT determinations for NO_X, a search of the RBLC database was conducted. The NO_X BACT summary shows that the proposed BACT emissions limit of 75 ppmvd at 8% O_2 is comparable to the 75 to 120 ppmvd at 8% O_2 range of NO_X BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. Specifically, a general permit condition to operate the No. 8 Recovery Furnace with staged air combustion and routine emissions testing to demonstrate compliance with the emissions limits may be added.

No. 7 Lime Kiln

As discussed in Sections 4.2.2.5, 4.2.3.5, and 4.2.4.5, the use of good operating practices was identified as the only technically feasible control technology for NOx emissions from the No. 7 Lime Kiln. A summary of the proposed NOx BACT is presented in Table 4-69. The Mill proposes a NO_X BACT emissions limit of 112 ppmvd at 10% O_2.

To confirm that the proposed emissions limit is comparable to other Kraft Lime Kiln BACT determinations for NO_X, a search of both the RBLC database and the applicable NCASI publications was conducted. A query of the RBLC database was prepared that evaluated similar-sized lime kilns with BACT determinations that had been made since 2003. The NO_X BACT summary shows that the proposed BACT emissions limit of 112 ppmvd at 10% O_2 is comparable to the 112 to 340 ppmvd at 10% O_2 range of NO_X BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. Specifically, a general permit condition to operate the No. 7 Lime Kiln using good combustion practices may be added. Routine emissions testing is proposed to demonstrate compliance with the numerical BACT emissions limit.

4.2.5.6 VOC BACT

This section discusses the proposed VOC BACT for each new and modified source.

Sources that Vent to the LVHC/HVLC System

As discussed in Section 4.2.3.6, the Mill chose to implement the top-ranked control option, thermal oxidation, for the control of VOC emissions from the sources venting to the LVHC and HVLC systems. The sources venting to the LVHC and HVLC systems include the No. 7 Mill Chip Meter, No. 7 Mill Continuous Digester, No. 7 Mill Digester Evaporator, No. 7 Mill Flash Tank, No. 7 Mill Blow Tank, No. 7 Mill Digester Area Foul Condensate Tank, No. 7 Mill Primary Knotter, No. 7 Mill Secondary Knotter, No. 7 Mill Knotter Accepts Tank, No. 7 Mill Knot Conveyor, No. 7 Mill Brown Stock Transfer Tank, No. 7 Mill Multiple Effect Evaporator System, No. 8 Mill Multiple Effect Evaporator System, Tall Oil Reactor and associated sources, No. 7 Mill Turpentine Decanter and Under Flow Tank, and the No. 7 Mill Turpentine Storage Tank. The Mill does not propose numeric emissions limits for these sources.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limits. Specifically, a permit condition may be included that requires ARC to vent the emissions from these sources to the LVHC or HVLC system for control, except as allowed in 40 CFR Part 63, Subpart S at §63.443(e) and 40 CFR Part 60, Subpart BBa at §60.284a(e)(vi) as streams routed to the LVHC and HVLC systems are subject to these rules.

No. 7 Mill Chip Bin

As discussed in Section 4.2.4.6, a condenser was selected as BACT for the No. 7 Mill Chip Bin. The Mill estimated the PTE of the No. 7 Mill Chip Bin as 5.68 tpy VOC based on emissions factors referenced from the NCASI Air Toxics Pulp and Paper Database. The Mill will use fresh steam to minimize VOC emissions from chip steaming.

The available data in the RBLC search results is not sufficient to show that the Mill's proposed VOC emissions limit would be comparable to similar continuous chip bin operations. However, this data is the best available and is comparable to current industry standards.

No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner

As discussed in Section 4.2.4.6, capturing, collecting, and incinerating the VOC emissions from the No. 7 Mill Primary Screens, No. 7 Mill Secondary Screen, No. 7 Mill Quaternary Screen, and Shive Cleaner feeding is not economically feasible, and good operating practices are the sole remaining control technology. The Mill estimated the PTE of the No. 7 Mill Screens as 1.17 tpy VOC based on emissions factors referenced from the NCASI TB No. 1020. There are no RBLC search results with which a comparison of the proposed limit can be performed.

No. 7 Mill Bleach Plant

As discussed in Section 4.2.4.6, a scrubber was selected as BACT for the No. 7 Mill Bleach Plant. A summary of the proposed VOC BACT is presented in Table 4-69. The Mill is proposing an annual emissions limit of 61.17 tpy for the chlorinated stages. The chlorinated stages will continue to be routed to the existing packed bed scrubber. This emissions limit is derived based on an emissions data from NCASI TB No. 1020.

To confirm that the proposed emissions limits are comparable to other bleach plant BACT determinations for VOC, a search of the RBLC database was conducted. The single VOC BACT entry for Process Code 30.242 is for the Georgia-Pacific Brewton Mill and is 3.4 lb/hr. This emissions limit was developed based on the same dataset from NCASI as the limit proposed in this application for the No. 7 Mill Bleach Plant. However, the furnish, washing steps, and bleaching sequences are different between the two mills. The Brewton Mill processes a mixture of hardwood and softwood wood species; whereas, the ARC Mill's No. 7 Line processes solely

softwood. Processing of hardwood results in lower VOC emissions released from the process. As such, the Brewton Mill's bleach plant operation and associated limit are not comparable or appropriate to the ARC's No. 7 Mill Bleach Plant. The emissions limit proposed for the No. 7 Mill Bleach Plant is based on processing of softwood furnish only.

No. 7 Mill Pulp Dryer

As discussed in Section 4.2.4.6, capturing, collecting, and incinerating the VOC emissions from the No. 7 Mill Pulp Dryer is not economically feasible, and good operating practices are the sole remaining control technology. A summary of the proposed VOC BACT is presented in Table 4-69. The Mill proposes an annual emissions limit of 47.73 tpy, based on an emissions factor from site-specific data from a similar GP operation.

To confirm that the proposed emissions limits are comparable to other pulp dryer BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT summary shows that the proposed BACT emissions limit of 47.73 tpy would be within the 42.71 - 249.9 tpy range of BACT emissions limits.

No. 7 Precipitator Mix Tank

As discussed in Section 4.2.4.6, capturing, collecting, and incinerating the VOC emissions from the No. 7 Precipitator Mix Tank is not economically feasible, and good operating practices are the sole remaining control technology. The Mill estimated the PTE as 0.62 tpy for the No. 7 Precipitator Mix Tank based on emissions factors referenced from NCASI TB No. 1020.

To confirm that the proposed emissions limits are comparable to other similar storage tank BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT summary shows that the proposed BACT emissions limit of 0.11 lb/hr would be within the 0.01 to 0.57 lb/hr range of BACT emissions limits. This range includes weak and heavy black liquor storage tanks. No entries in the RBLC database were specific to precipitator mix tanks.

No. 8 Mill Intermediate Black Liquor Storage Tank

As discussed in Section 4.2.4.6, capturing, collecting, and incinerating the VOC emissions from the No. 8 Mill Intermediate Black Liquor Storage Tank is not economically feasible, and good operating practices are the sole remaining control technology. The Mill estimated the PTE as 0.49 tpy for the No. 8 Mill Intermediate Black Liquor Storage Tank based on emissions factors referenced from the NCASI TB No. 1020.

To confirm that the proposed emissions limits are comparable to other black liquor storage tank BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT summary shows that the proposed BACT emissions limit of 0.11 lb/hr would be within the 0.01 to 0.57 lb/hr range of BACT emissions limits. This range includes weak and heavy black liquor storage tanks.

No. 8 Recovery Furnace

As discussed in Section 4.2.4.6, the addition of a thermal oxidizer to the No. 8 Recovery Furnace is not an economically feasible control technology, which leaves good combustion practices as the sole remaining control technology. A summary of the proposed VOC BACT is presented in Table 4-69. The Mill proposes an emissions limit of 20 ppmvd at 8% O_2 as BACT for VOC. The proposed emissions limit is based on vendor data.

To confirm that the proposed emissions limits are comparable to other recovery furnace BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT

summary shows that the proposed BACT emissions limit of 20 ppmvd at 8% O_2 would be within the 10 to 65 ppmvd at 8% O_2 range of BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. The Mill proposes routine emissions testing to demonstrate compliance with the concentration limit.

No. 7 Lime Kiln

As discussed in Section 4.2.4.6, the Mill is proposing to establish good combustion/operating practices as BACT for control of VOC emissions from the No. 7 Lime Kiln. A summary of the proposed VOC BACT is presented in Table 4-69. The Mill is proposing an emissions limit of 25 ppmvd at 10% O_2 based on vendor information.

To confirm that the proposed emissions limits are comparable to other lime kiln BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT summary shows that the proposed BACT emissions limit of 25 ppmvd at 10% O_2 would be within the 25 to 50 ppmvd at 8% O_2 range of BACT emissions limits.

The Mill anticipates that federally enforceable permit conditions will be developed to ensure compliance with the proposed BACT limit. The Mill proposes routine emissions testing to demonstrate compliance with the concentration limit.

Tall Oil Flash Tower Feed Tank

As discussed in Section 4.2.4.6, capturing, collecting, and incinerating the VOC emissions from the Tall Oil Flash Tower Feed Tank is not economically feasible, and good operating practices are the sole remaining control technology. The Mill estimated the PTE as 0.15 tpy for the Tall Oil Flash Tower Feed Tank based on emissions factors referenced from the NCASI TB No. 677, Table XI.A.5 for a wet oil drying tank.

4.2.5.7 GHG BACT

This section discusses the proposed GHG BACT for each new and modified source.

No. 8 Recovery Furnace

As discussed in Sections 4.2.2.7 and 4.2.3.7, the Mill proposes good operating practices as GHG BACT for the No. 8 Recovery Furnace. A summary of the proposed GHG BACT is presented in Table 4-69. The Mill proposes numeric limits of 1,830,307 tpy for emissions associated BLS and fuel combustion collectively and 4,965 tpy for control of NCGs.

The Mill will operate the No. 8 Recovery Furnace using good combustion/operating practices and will limit fossil fuel firing to less than a 10 percent annual capacity factor. Additionally, part of the project will include a design improvement to increase the as-fired solids and an upgraded air system, leading to increased steam generation efficiency. Records of BLS firing, fuel usage, and mill production will be used to demonstrate compliance with the numerical BACT emissions limits. The proposed emissions limits are based on the sum of emissions of CO_2, CH_4, and N_2O and data in 40 CFR 98, Subparts C and AA and NCASI data.

No. 7 Lime Kiln

As discussed in Sections 4.2.2.7 and 4.2.3.7, the Mill proposes good operating practices as GHG BACT for the No. 7 Lime Kiln. The Project includes multiple changes for the unit, including replacement of the wet scrubber with an ESP and retrofitting the unit with a lime mud flash dryer

to use flue gas to help dry the lime mud and improve fuel economy. A summary of the proposed GHG BACT is presented in Table 4-69. The Mill proposes numeric limits of 65,073 tpy for fuel (natural gas) combustion and 4,965 tpy for control of NCGs. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO_2 emissions from the conversion of $CaCO_3$ to CaO are included in the biogenic CO_2 estimates calculated for the No. 7 Recovery Furnace and thus, are not included in the calculation of the estimates.

The Mill will operate the No. 7 Lime Kiln using good combustion/operating practices. Records of fuel usage and mill production will be used to demonstrate compliance with the numerical BACT emissions limits. The proposed emissions limits are based on the sum of emissions of CO_2, CH_4, and N_2O and data in 40 CFR 98, Subparts C and AA and NCASI data.

5. AIR QUALITY ANALYSIS

The PSD regulations require that an owner or operator proposing a major modification perform the following air quality analyses for those pollutants subject to PSD review as enumerated in ADEM Admin Code r. 335-3-14-.04(10) through (15) to demonstrate that the project would not cause or contribute to air pollution in violation of applicable standards.

- Analysis of existing air quality in the vicinity of the source. This analysis performed through review of ambient monitoring data in the vicinity, or otherwise representative of, the mill.
- Analysis of air quality impacts resulting from pollutant emissions from the source relative to PSD Increments and NAAQS. This analysis is performed through dispersion modeling of emissions changes expected to result from the proposed major modification to determine whether ambient concentration changes will be significant, and if so, to demonstrate representative emissions after the major modification will not cause or contribute to violations of applicable standards.
- Assessment of additional impacts resulting from plume visibility, effects on soils and vegetation in the source's impact areas, and growth associated with the project. No adverse additional impacts on visibility, soils and vegetation, and growth are expected to result from this project because dispersion modeling analyses demonstrate attainment of secondary NAAQS that are established to protect welfare and ecological effects, and because the Mill will continue to comply with general requirements (e.g., fugitive emissions management) that minimize impacts on the surrounding environment.
- PSD increment consumption, visibility, and air quality related values (AQRV) impact analyses at federal Class I areas within 300 km of the facility where the project occurs. No adverse impacts on Class I AQRV or PSD Increments are expected to result from this major modification because the anticipated emissions increases are expected to cause *de minimis* impacts at distant (i.e., 215 km and beyond) Class I areas and regional-scale emissions reductions have improved air quality and expanded PSD Increment across the region including these areas.

GP submitted a detailed air quality modeling protocol on November 25, 2024, describing the relevant regulatory requirements, federal and Alabama guidance, analytical techniques, and data resources GP intends to use to complete the PSD air quality analyses and meet regulatory requirements by demonstrating attainment of all relevant air quality standards. The modeling protocol was prepared with extraordinary detail to demonstrate how the final analyses will demonstrate attainment of all relevant standards including the recently revised, more stringent annual average $PM_{2.5}$ NAAQS and associated lower significant impact level. ADEM provided comments on the modeling protocol on December 16, 2024. Following additional discussion between GP and ADEM beginning on December 18, 2024, GP submitted a revised modeling protocol on June 4, 2025, which was approved by ADEM on June 11, 2025. The modeling report and supporting information was submitted under separate cover on June 19, 2025. An updated AQA was submitted on July 7, 2025 that addressed increased CO emissions from the No. 7 Mill Bleach Plant. An updated AQA will be submitted concurrently with this application update that presents the proposed PM_{10} and $PM_{2.5}$ emission limits for the No. 8 Recovery Furnace and the No. 7 Lime Kiln and proposed VOC emission limit for the No. 7 Mill Bleach Plant.

APPENDIX A

AREA MAP AND PLOT PLAN

FIGURE A-1. AREA MAP
ALABAMA RIVER CELLULOSE LLC – PURDUE HILL, AL

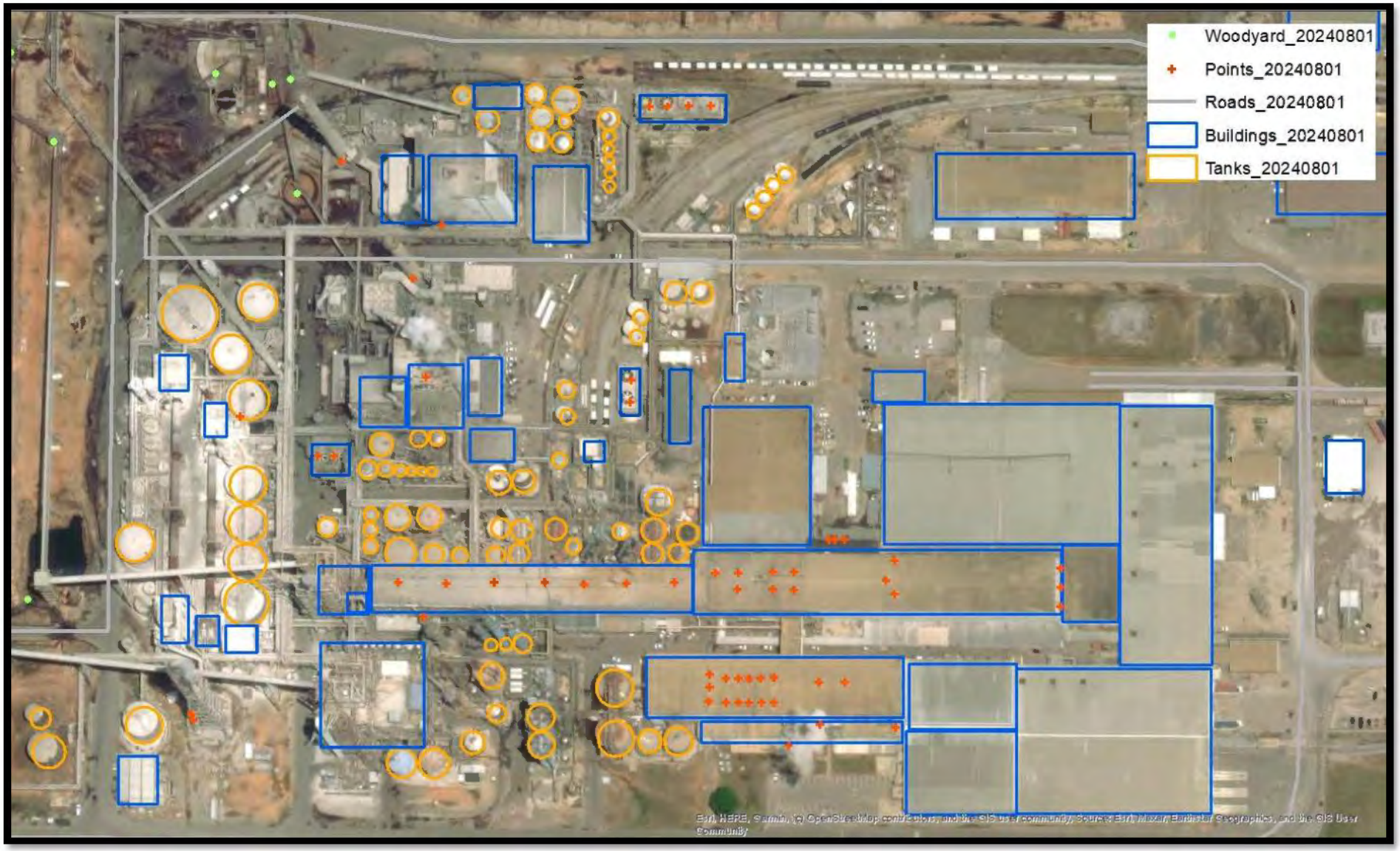

FIGURE A-2. PLOT PLAN
ALABAMA RIVER CELLULOSE LLC – PURDUE HILL, AL

APPENDIX B

EMISSIONS CALCULATIONS

Project Emissions Increases Summary and Calculations

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

PSD Project Increase Summary

	Emission Unit No.	Equipment ID	Pollutants													Notes
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	Pb	SAM	H_2S	TRS	Total GHG	Total CO_2e	
Baseline Information																
Start			Jan-18	May-17	Jan-17	Jan-15	Jan-20	Jan-16	Jun-19	May-16	May-22	Jul-19	Jun-19	Jun-19	Jun-19	
End			Dec-19	Apr-19	Dec-18	Dec-16	Dec-21	Dec-17	May-21	Apr-18	Apr-24	Jun-21	May-21	May-21	May-21	
Project Increases (at PTE) for New Emission Units[a] (tpy)																
Woodyard																
Transfer to Air Lock Screw Conveyor	WDYD	7RWC58	0.15	0.07	0.01											
No. 7 Pulp Mill																
New Chip Bin	Z004	206							5.68			1.96E-03	0.10			
New Continuous Digester	Z004	282, 283							0.37			0.19	1.18			Controlled to the LVHC System. This represents uncontrolled venting allowed by Subpart S.
New Flash Tank																Controlled to the LVHC System. This represents uncontrolled venting allowed by Subpart S.
New Digester Area Foul Condensate Tank		284														Controlled to the LVHC System. This represents uncontrolled
New Digester Evaporator		285														Controlled to the LVHC System. This represents uncontrolled
New Blow Tank	Z004	286							3.42			1.73	10.87			Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
New Knotter System	Z004 (Chip Meter only), Z007 (Rest)	104a, 104b, 104c, 104d							0.06				2.34			Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
New Chip Meter		207														
New Quaternary Screen	Z007	130, 131							0.04				0.00			
New Shive Cleaner																
No. 7 Mill Pulp Dryer - No. 7 Mill Pulp Dryer	X108	108	6.39	9.58	7.34				47.73							
No. 8 Mill Liquor Recovery																
New Soap Skimmer Tanks[b]	X033	424, 425							0.99			0.43	0.65			
New Intermediate Black Liquor Storage Tank	X033	426							0.49			0.21	0.33			
New No. 8 Smelt Dissolving Tank	X015	X015	0.55	0.59	0.59	0.02		0.03	4.88E-03	2.87E-06		0.04	0.07			Normally, the No. 8 Smelt Dissolving Tank emissions will be routed to the No. 8 Recovery Furnace and thus, those emissions are reflected with the No. 8 Recovery Furnace calculations. This row represents the alternative operating scenario in which the smelt dissolving tank will vent through its dedicated scrubber.
No. 7 Mill Recausticizing Area																
New Slaker	X030	132	2.22	2.22	2.22								8.08			
New No. 5 Causticizer	X030	261											0.85			
New White Liquor Pressure Disc Filter	X030	287														This equipment does not result in emissions, since 100% fresh water in the entire causticizing area (e.g., mud washing).
New No. 2 Lime Mud Storage Tank	X030	288														This equipment does not result in emissions, since 100% fresh water in the entire causticizing area (e.g., mud washing).
New Shrink Tank	--	--														This tank will only store water (i.e., does not emit regulated pollutants).
New Acid Tank	--	--														This tank will be used only intermittently to support maintnenace activities on the White Liquor Pressure Disc Filter.
Crude Tall Oil Plant																
New Tall Oil Reactor and Associated Equipment[c]	X321	320							3.50			0.03	0.07			
New Flash Tower Feed Tank	X321	475							0.15				0.00			
Turpentine Plant																
New No. 7 Turpentine Decanter	N/A	503							2.90E-03			7.87E-04	9.44E-03			
New No. 7 Turpentine Storage Tank	N/A	504							1.53E-03							
New No. 7 Turpentine Loading	N/A	N/A							0.09							
Project Decreases for Shutdown Units[a] (tpy)																
Woodyard - Digester Chip Conveyor No. 3	N/A	TA3-12	-0.10	-0.05	-0.01											
No. 7 Pulp Mill																
No. 1 & No. 2 Continuous Digesters Chip Bin	Z004	205							-163.13			-1.43E-03	-0.08			
No. 1 Presteamer	Z004	278							-0.04			-0.02	-0.13			
No. 2 Presteamer	Z004	279														
Nos. 1 and 2 Continuous Digesters	Z004	--														
#5 Flash Tank	Z004	276														
#5 Flash Tank	Z004	277														
Secondary Knotter Nos. 1 and 2 and Knot Press	Z007	103a, 103b, 213							-1.07				-41.34			
No. 7 Mill Pulp Dryer - No. 7 Mill Pulp Dryer	X109	109	-3.86	-5.65	-4.13				-30.89							
No. 8 Mill Liquor Recovery																
Soap Skimming Tank	X033	427							-0.50			-0.21	-0.33			
Smelt Dissolving Tank	X013	X013	-45.79	-51.17	-53.55	-1.61		-4.21		-3.86E-04		-5.97	-7.32			
No. 7 Mill Recausticzing Area - Slaker	X030	116	-1.63	-1.61	-1.54								-5.45			

	Emission Unit No.	Equipment ID	Pollutants													Notes
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	Pb	SAM	H_2S	TRS	Total GHG	Total CO_2e	
Baseline Information																
Start			Jan-18	May-17	Jan-17	Jan-15	Jan-20	Jan-16	Jun-19	May-16	May-22	Jul-19	Jun-19	Jun-19	Jun-19	
End			Dec-19	Apr-19	Dec-18	Dec-16	Dec-21	Dec-17	May-21	Apr-18	Apr-24	Jun-21	May-21	May-21	May-21	
Crude Tall Oil Plant																
Tall Oil Reactor[b] (Decanters & Feed Tank)	X321	321							-57.61			-0.56	-1.17			
Flash Tower w/ Condenser[b]	X321	497														
Flash Tower Feed Tank[b]	X321	474							-0.10				-1.17E-03			
Turpentine Plant																
Turpentine Decanter	N/A	LVHC							-9.96E-05			-2.87E-05	-3.25E-04			
Project Increases for Modified and Affected Emission Units (tpy)																
Woodyard	WDYD	Multiple														Digester Chip Conveyor No. 2 (TA3-11) will be modified; other sources are affected.
Baseline Actual Emissions			9.48	4.95	0.85											
Projected Actual Emissions			13.24	7.09	1.35											
Emissions Increase			3.76	2.15	0.49											
No. 7 Pulp Mill																
No. 7 Mill Brown Stock Transfer Tank	Z007	275														Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions									d			d	d			
Projected Actual Emissions									0.85			1.98E-03	0.09			
Emissions Increase									0.85			1.98E-03	0.09			
No. 7 Mill Brown Stock Washers	Z007	118a-118d														Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions									0.02			1.82E-04	5.11E-03			
Projected Actual Emissions									2.63			0.03	0.67			
Emissions Increase									2.61			0.03	0.67			
No. 7 Mill Foam Tower	Z007	119														Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions									0.01				5.03E-04			
Projected Actual Emissions									0.66				0.07			
Emissions Increase									0.66				0.07			
No. 7 Mill O2 Delignification	Z007	122														Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions								3.66E-03	0.02			2.03E-04	0.01			
Projected Actual Emissions								0.56	2.39			0.03	1.27			
Emissions Increase								0.55	2.38			0.03	1.26			
No. 7 Mill Screening	Z007	128, 120, 121, 129, 130, 131														
Baseline Actual Emissions									0.83				0.09			
Projected Actual Emissions									1.14				0.12			
Emissions Increase									0.31				0.03			
No. 7 Mill Decker System	Z007	105, 106, 214														Controlled to the HVLC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions									17.09			4.42	8.62			
Projected Actual Emissions									23.54			6.12	11.88			
Emissions Increase									6.45			1.71	3.26			
Bleach Plant and Associated Sources																
No. 7 Mill Bleach Plant	X020	X020a-X020l														
Baseline Actual Emissions								146.29	41.84			2.23	4.22			
Projected Actual Emissions								431.20	57.05			3.06	5.75			
Emissions Increase								284.92	15.21			0.83	1.53			
No. 7 Mill Bleach Plant E Stage Washers	X020	X020c, X020h														
Baseline Actual Emissions								6.42	4.34							
Projected Actual Emissions								10.34	5.92							
Emissions Increase								3.93	1.58							
No. 7 Mill Liquor Recovery																
No. 7 Multiple Effect Evaporator System	X006	X006														Controlled to the LVHC System. This represents uncontrolled venting allowed by Subpart S.
Baseline Actual Emissions									0.03			2.61E-03	2.38E-03			
Projected Actual Emissions									0.85			0.06	0.06			
Emissions Increase									0.81			0.06	0.06			
No. 7 Recovery Furnace	X001	X001														
Baseline Actual Emissions			155.80	107.62	80.98	10.60	710.03	399.55	10.80	4.70E-03	12.33	6.38	8.17	1,065,675	1,067,492	
Projected Actual Emissions			206.50	143.89	111.54	9.16	976.42	640.24	17.08	0.01	16.99	8.29	16.01	1,223,880	1,225,962	
Emissions Increase			50.70	36.27	30.56	Decrease	266.39	240.69	6.28	1.33E-03	4.67	1.91	7.85	158,205	158,469	
No. 7 Smelt Dissolving Tank/No. 7 Precipitator and Salt Cake Mix Tanks	X002, X032	X002, 127, 111														
Baseline Actual Emissions			20.26	19.15	17.69	0.58		3.15	1.07	2.93E-04		4.89	2.89			
Projected Actual Emissions			33.52	36.16	36.16	0.70		3.90	1.23	3.63E-04		5.60	7.12			
Emissions Increase			13.26	17.01	18.47	0.12		0.75	0.16	6.99E-05		0.71	4.23			
No. 8 Mill Liquor Recovery																
No. 8 Multiple Effect Evaporator System	X016	X016														
Baseline Actual Emissions									0.03			2.44E-03	2.10E-03			
Projected Actual Emissions									1.08			0.08	0.07			
Emissions Increase									1.05			0.07	0.07			
No. 8 Recovery Furnace	X012	X012														
Baseline Actual Emissions			154.55	118.80	94.99	32.69	729.40	351.54	2.49	6.18E-03	25.98	5.31	5.25	1,355,316	1,357,633	
Projected Actual Emissions			249.03	498.07	448.26	37.50	1,041.10	1,690.30	72.48	7.86E-03	147.97	41.14	51.42	1,664,729	1,667,560	
Emissions Increase			94.48	379.27	353.27	4.81	311.69	1,338.75	69.99	1.67E-03	121.99	35.82	46.17	309,413	309,926	

	Emission Unit No.	Equipment ID	Pollutants													Notes
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	Pb	SAM	H_2S	TRS	Total GHG	Total CO_2e	
Baseline Information																
Start			Jan-18	May-17	Jan-17	Jan-15	Jan-20	Jan-16	Jun-19	May-16	May-22	Jul-19	Jun-19	Jun-19	Jun-19	
End			Dec-19	Apr-19	Dec-18	Dec-16	Dec-21	Dec-17	May-21	Apr-18	Apr-24	Jun-21	May-21	May-21	May-21	
No. 7 Mill Recausticizing Area																
No. 7 Mill Nos. 1-4 Causticizers and Causticizer Sump Tank	X030	248-252														
Baseline Actual Emissions													3.44			
Projected Actual Emissions													4.14			
Emissions Increase													0.69			
No. 7 Lime Kiln	X003	X003														The decreases in PM and lead are creditable decreases associated with the proposed change in control device (i.e., wet scrubber to ESP).
Baseline Actual Emissions			27.87	28.25	25.76	0.48	104.61	0.37	2.30	0.01	1.70	2.16	2.17	49,443	49,511	
Projected Actual Emissions			12.98	38.95	35.06	1.95	121.59	33.05	7.09	1.10E-03	5.26	6.43	6.43	52,763	52,835	
Emissions Increase			-14.89	10.70	9.29	1.47	16.97	32.67	4.79	-0.01	3.56	4.27	4.26	3,320	3,324	
No. 7 Mill Reburned and Purchased Lime Silos/Bins	X030	259, 260														
Baseline Actual Emissions			0.08	0.04	0.01											
Projected Actual Emissions			0.10	0.05	0.01											
Emissions Increase			0.03	0.01	2.15E-03											
Green and White Liquor Swing Tank	X030	117a														
Baseline Actual Emissions												0.00	0.00			
Projected Actual Emissions												0.04	8.45E-04			
Emissions Increase												0.04	8.45E-04			
No. 2 White Liquor Storage Tank	X030	117b														
Baseline Actual Emissions												0.00	0.00			
Projected Actual Emissions												0.04	8.45E-04			
Emissions Increase												0.04	8.45E-04			
No. 8 Mill Recausticizing Area																
No. 8 Lime Kiln	X014	X14														
Baseline Actual Emissions			4.41	7.37	6.34	2.35E-03	99.64	3.16	3.44	9.39E-04	0.55	2.72	2.70	51,636	51,707	
Projected Actual Emissions			6.08	8.28	6.97	0.86	121.11	4.18	4.05	1.08E-03	0.73	3.44	3.44	59,691	59,773	
Emissions Increase			1.67	0.90	0.63	0.85	21.48	1.03	0.62	1.45E-04	0.19	0.72	0.74	8,055	8,066	
Crude Tall Oil Plant																
CTO Storage Tanks	X321	474, 476a, 476b														
Baseline Actual Emissions									0.19				2.34E-03			
Projected Actual Emissions									0.30				3.56E-03			
Emissions Increase									0.10				1.22E-03			
Brine Tank	X321	498														
Baseline Actual Emissions									2.19E-03							
Projected Actual Emissions									3.32E-03							
Emissions Increase									1.13E-03							
Tall Oil Loading	N/A	319														Conservatively, baseline actual emissions were not estimated.
Baseline Actual Emissions									--							
Projected Actual Emissions									0.19							
Emissions Increase									0.19							
No. 7 Mill Utilities																
No. 7 Power Boiler Bark Surge Bin	N/A	I-271														
Baseline Actual Emissions			0.20	0.10	0.02											
Projected Actual Emissions			0.27	0.13	0.02											
Emissions Increase			0.07	0.02	2.96E-03											
No. 7 Power Boiler	Z008	Z008														
Baseline Actual Emissions			47.42	58.48	62.78	1.45	314.54	3,586.69	6.85	0.06	0.00			384,844	388,853	
Projected Actual Emissions			130.72	142.05	142.05	1.62	471.78	3,678.09	8.45	0.06	0.01			487,226	492,371	
Emissions Increase			83.31	83.57	79.27	0.17	157.24	91.41	1.60	4.98E-03	0.01			102,383	103,518	
No. 7 Power Boiler Fly Ash Storage	N/A	I-272														
Baseline Actual Emissions			0.02	0.01	1.92E-03											
Projected Actual Emissions			0.03	0.01	1.98E-03											
Emissions Increase			0.01	1.07E-03	6.22E-05											
No. 7 Power Boiler Bottom Ash Storage	N/A	I-273														
Baseline Actual Emissions			0.01	0.01	1.28E-03											
Projected Actual Emissions			0.02	0.01	1.32E-03											
Emissions Increase			0.01	7.12E-04	4.15E-05											
Miscellaneous Sources																
ClO2 Generator	X024	X024														Includes ClO2 generated for both lines.
Baseline Actual Emissions									0.10							
Projected Actual Emissions									0.15							
Emissions Increase									0.05							
Methanol Storage Tank	X025	X025														Conservatively, baseline actual emissions were not estimated.
Baseline Actual Emissions									--							
Projected Actual Emissions									0.67							
Emissions Increase									0.67							
NCG Incinerator	X029	*Multiple*														
Baseline Actual Emissions			0.41	0.48	0.63	26.92	1.20	0.23	0.06	8.93E-06	0.13		2.37E-07	2,033	2,035	
Projected Actual Emissions			1.49	1.61	1.61	60.88	1.97	0.52	0.12	9.84E-06	0.21		0.02	2,348	2,351	
Emissions Increase			1.09	1.12	0.98	33.96	0.77	0.29	0.07	9.11E-07	0.08		0.02	315	315	
GHGs from Control of Nos. 7 and 8 NCGs																This entry includes control by LVHC NCGs in the Nos. 7 and 8 Lime Kilns and the Backup NCG Incinerator as well as control of HVLC NCG in the Nos. 7 and 8 Recovery Furnaces.
Baseline Actual Emissions														3,742	3,773	
Projected Actual Emissions														4,404	4,441	

	Emission Unit No.	Equipment ID	Pollutants												Notes
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	Pb	SAM	H_2S	TRS	Total GHG	Total CO_2e	
Baseline Information																
Start			Jan-18	May-17	Jan-17	Jan-15	Jan-20	Jan-16	Jun-19	May-16	May-22	Jul-19	Jun-19	Jun-19	Jun-19	
End			Dec-19	Apr-19	Dec-18	Dec-16	Dec-21	Dec-17	May-21	Apr-18	Apr-24	Jun-21	May-21	May-21	May-21	
Emissions Increase														662	668	
Wastewater Treatment System	704	704														
Baseline Actual Emissions									1,508.31			1.29	3.33			
Projected Actual Emissions									1,853.13			1.59	4.09			
Emissions Increase									344.83			0.30	0.76			
Wastewater Cooling Towers Nos. 1 -3	704	704a, 704b, 704c														
Baseline Actual Emissions			39.54	18.86	0.08											
Projected Actual Emissions			49.13	23.68	0.10											
Emissions Increase			9.60	4.83	0.02											
No. 7 Powerhouse Cooling Tower	N/A	N/A														
Baseline Actual Emissions			0.23	0.21	1.64E-01											
Projected Actual Emissions			0.33	0.31	2.60E-01											
Emissions Increase			0.11	0.11	9.60E-02											
No. 8 Powerhouse Cooling Tower	N/A	N/A														
Baseline Actual Emissions			0.37	0.34	2.87E-01											
Projected Actual Emissions			0.39	0.37	3.04E-01											
Emissions Increase			0.02	0.02	1.71E-02											
Chemical Prep Cooling Tower	N/A	N/A														
Baseline Actual Emissions			0.13	0.12	9.82E-02											
Projected Actual Emissions			0.16	0.15	1.25E-01											
Emissions Increase			0.03	0.03	2.70E-02											
Mill Road Fugitives	N/A	N/A														
Baseline Actual Emissions			71.57	15.29	3.03											
Projected Actual Emissions			95.94	20.81	4.26											
Emissions Increase			24.37	5.51	1.23											
Project Increases (tpy)			**225.53**	**495.51**	**445.31**	**39.79**	**774.54**	**1,990.82**	**270.31**	**9.25E-04**	**130.49**	**42.42**	**40.50**	**582,352**	**584,287**	
Significant Emission Rate (SER, tpy)			**25**	**15**	**10**	**40**	**40**	**100**	**40**	**0.6**	**7**	**10**	**10**	**75,000**	**75,000**	
Netting Required			**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	

[a]Some of these emission units are being replaced.

[b]Two existing tanks historically used to store biodiesel will be modified to skim soap and are referred to as the Nos. 1 and 2 Soap Skimmer Tanks. The analysis included herein considers these tanks as new, because the existing biodiesel tanks have been out of service for several years. The current design intends to utilize the existing tanks, but the final design may include construction of new two new tanks.

[c]Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be me modified or replaced. This summary represents replacement, which provides the most conservative estimate of emissions as PTE after minus BAE of existing equipment (i.e., PAE not used but could be if the existing equipment was modified).

[d]In current service, this tank is the No. 7 Mill Blow Tank that is collected and controlled as part of the LVHC system. Conservatively, no baseline emissions are claimed.

Woodyard

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Woodyard - Debarking Drum	202	FI-202
No. 8 Woodyard - Debarking Drum	302a	FI-302a
Bark Processing, Storage, and Transfer	*Multiple*	102WY
Chip Processing, Storage, and Transfer	*Multiple*	301WY

Emission Unit ID No.: WDYD
Control Device Description: N/A

Emission Factors

Activity	Emission Factors (lb/ton)			References
	PM	PM_{10}	$PM_{2.5}$	
Debarking with a Drum Debarker	2.55E-03	2.29E-03	6.18E-04	a
Transfer of Bark, Chips, or Fines	1.12E-03	5.28E-04	8.00E-05	b

a. PM, PM10, and PM2.5 emission factors for drum debarkers based on a an NCASI whitepaper on PM10 and PM2.5 Emission Measurements from Wood Debarking and Chipping Operations.
b. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are shown below. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-7. The moisture content represents the maximum moisture content the equation is valid for. The actual moisture content of the bark and chips is approximately 50%.

$$E = k(0.0032)\frac{\left(U/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

Where:
E (lb/ton) = particulate emission factor
k = particle size multiplier, dimensionless
0.74 for PM
0.35 for PM10
0.053 for PM2.5
U (mph) = mean wind speed = 7.2
M (%) = moisture content = 4.8

Emissions from the mill's chippers and bark hogs have been estimated based on the equation above. The chipping/hogging mechanism on these units is fully enclosed, and the only expected emissions are associated with the transfer of chipped/hogged material to the conveyers under the chippers and hoggers.

Transfers and PTE (includes unaffected sources/transfers)

Transfer Description			Equipment ID No.	Trivial/ Insignificant	Transfer Identification	Associated Mill	Maximum Throughput			Control Efficiency (%)	Controlled Emissions								
											PM			PM_{10}			$PM_{2.5}$		
From	To	Material					(ton/hr)	(ton/day)	(ton/yr)		(lb/hr)	(lb/day)	(tpy)	(lb/hr)	(lb/day)	(tpy)	(lb/hr)	(lb/day)	(tpy)
No. 7 Woodyard Roundwood Bark and Fines Transfers																			
No. 7 Debarking Drum		Logs	202	Insignificant - J.(1) - Log debarking	--	No. 7	199	4,318	1,576,136	--	0.51	10.99	2.01	0.45	9.87	1.80	0.12	2.67	0.49
No. 7 Debarking Drum	Bark Collecting Conveyor	Bark		Trivial - S.(3) - Bark conveyors	7RWB1	No. 7	23.9	518	189,136	90%	2.66E-03	0.06	0.01	1.26E-03	0.03	5.00E-03	1.91E-04	4.14E-03	7.56E-04
Bark Collecting Conveyor	Bark Conveyor R-8	Bark		Trivial - S.(3) - Bark conveyors	7RWB2	No. 7	23.9	518	189,136	90%	2.66E-03	0.06	0.01	1.26E-03	0.03	5.00E-03	1.91E-04	4.14E-03	7.56E-04
Bark Conveyor R-8	Bark Scalper	Bark	204a	Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWB3	No. 7	232	5,534	2,020,010	90%	0.03	0.62	0.11	0.01	0.29	0.05	1.85E-03	0.04	0.01
Bark Conveyor R-17		Bark			7RWB4	Both													
Bark Scalper	Bark Hogs	Bark	204b	Insignificant - J.(4) - Bark chippers	7RWB5	Both	208	4,981	1,818,009	90%	0.02	0.56	0.10	0.01	0.26	0.05	1.67E-03	0.04	0.01
	Bark Conveyor R-19	Bark		Trivial - S.(3) - Bark conveyors	7RWB6	Both	23	553	202,001	90%	2.59E-03	0.06	0.01	1.22E-03	0.03	0.01	1.85E-04	4.43E-03	8.08E-04
Bark Hogs	Bark Conveyor R-19	Bark		Trivial - S.(3) - Bark conveyors	7RWB7	Both	208	4,981	1,818,009	90%	0.02	0.56	0.10	0.01	0.26	0.05	1.67E-03	0.04	0.01
Bark Conveyor R-19	Bark Conveyor R-20	Bark		Trivial - S.(3) - Bark conveyors	7RWB8	Both	232	5,534	2,020,010	70%	0.08	1.85	0.34	0.04	0.88	0.16	0.01	0.13	0.02
Bark Conveyor R-20	Bark Pile	Bark		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWB9	Both	232	5,534	2,020,010	0%	0.26	6.18	1.13	0.12	2.92	0.53	0.02	0.44	0.08
Bark Pile (via Bulldozer)	Bark Conveyor R-5	Bark		Trivial - S.(3) - Bark conveyors	7RWB10	No. 7	71.1*	1,706	622,589	0%	0.08	1.90	0.35	0.04	0.90	0.16	0.01	0.14	0.02
Bark Conveyor R-5	Bark Conveyor R-6	Bark		Trivial - S.(3) - Bark conveyors	7RWB11	No. 7	71.1*	1,706	622,589	99%	7.94E-04	0.02	3.48E-03	3.75E-04	0.01	1.64E-03	5.68E-05	1.36E-03	2.49E-04
Bark Conveyor R-6	Bark Conveyor R-7	Bark		Trivial - S.(3) - Bark conveyors	7RWB12	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Conveyor R-7	Hog Disc Conveyor	Bark		Trivial - S.(3) - Bark conveyors	7RWB13	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Hog Disc Conveyor	Bark Conveyor R-14	Bark		Trivial - S.(3) - Bark conveyors	7RWB14	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Conveyor R-14	Bark Donut	Bark		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWB15	No. 7	71.1*	1,706	622,589	60%	0.03	0.76	0.14	0.02	0.36	0.07	2.27E-03	0.05	0.01
Bark Donut	Bark Reclaim Conveyor R-15	Bark		Trivial - S.(3) - Bark conveyors	7RWB16	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Reclaim Conveyor R-15	Bark Conveyor R-16	Bark		Trivial - S.(3) - Bark conveyors	7RWB17	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Conveyor R-16	Bark Conveyor R-10	Bark		Trivial - S.(3) - Bark conveyors	7RWB18	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Conveyor R-10	Bark Conveyor R-11	Bark		Trivial - S.(3) - Bark conveyors	7RWB19	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Bark Conveyor R-11	Overfeed Chain Conveyor	Bark		Trivial - S.(3) - Bark conveyors	7RWB20	No. 7	71.1*	1,706	622,589	90%	0.01	0.19	0.03	3.75E-03	0.09	0.02	5.68E-04	0.01	2.49E-03
Overfeed Chain Conveyor	Bark Conveyor R-17	Bark		Trivial - S.(3) - Bark conveyors	7RWB21	No. 7	35.5*	853	311,294	90%	3.97E-03	0.10	0.02	1.88E-03	0.05	0.01	2.84E-04	0.01	1.24E-03
Bark Conveyor R-17	Bark Conveyor R-18	Bark		Trivial - S.(3) - Bark conveyors	7RWB22	No. 7	35.5*	853	311,294	90%	3.97E-03	0.10	0.02	1.88E-03	0.05	0.01	2.84E-04	0.01	1.24E-03
Bark Conveyor R-18	Bark Donut	Bark		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWB23	No. 7	35.5*	853	311,294	60%	0.02	0.38	0.07	0.01	0.18	0.03	1.14E-03	0.03	4.98E-03
No. 8 Woodyard Roundwood Bark and Fines Transfers																			
No. 8 Debarking Drum		Logs	302a	Insignificant - J.(1) - Log debarking	--	No. 8	426	10,114	3,691,477	--	1.08	25.74	4.70	0.97	23.11	4.22	0.26	6.25	1.14
No. 8 Debarking Drum	Bark Conveyor R-57	Bark		Trivial - S.(3) - Bark conveyors	8RWB1	No. 8	51.1	1,214	442,977	90%	0.01	0.14	0.02	2.70E-03	0.06	0.01	4.09E-04	0.01	1.77E-03
Bark Conveyor R-57	Bark Conveyor R-2	Bark		Trivial - S.(3) - Bark conveyors	8RWB2	No. 8	51.1	1,214	442,977	90%	0.01	0.14	0.02	2.70E-03	0.06	0.01	4.09E-04	0.01	1.77E-03
Fines Conveyor R-27	Bark Conveyor R-2	Fines		Trivial - S.(3) - Bark conveyors	8RWF4	Both	12.5	289	105,352	90%	1.40E-03	0.03	0.01	6.60E-04	0.02	2.78E-03	1.00E-04	2.31E-03	4.21E-04
Bark Conveyor R-2	Bark Conveyor R-8	Bark and Fines		Trivial - S.(3) - Bark conveyors	8RWB3	Both	63.6	1,502	548,330	90%	0.01	0.17	0.03	3.36E-03	0.08	0.01	5.09E-04	0.01	2.19E-03
Bark Truck Unloading																			
Trucks	Bark Unloading Station Chain	Bark		Trivial - S.(3) - Bark conveyors	BTRK1	No. 7	168	4,032	1,471,680	90%	0.02	0.45	0.08	0.01	0.21	0.04	1.34E-03	0.03	0.01
Bark Unloading Station Chain	Bark Conveyor R-16	Bark		Trivial - S.(3) - Bark conveyors	BTRK2	No. 7	168	4,032	1,471,680	99%	1.88E-03	0.05	0.01	8.87E-04	0.02	3.89E-03	1.34E-04	3.22E-03	5.89E-04
Bark Conveyor R-16	Bark Conveyor R-17	Bark		Trivial - S.(3) - Bark conveyors	BTRK3	No. 7	168	4,032	1,471,680	90%	0.02	0.45	0.08	0.01	0.21	0.04	1.34E-03	0.03	0.01
Bark Truck Loading																			
Bark Conveyor R-20	Trucks	Bark		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	BTRKLD1	Both	84	1,008	83,200	0%	0.09	1.13	0.05	0.04	0.53	0.02	0.01	0.08	3.33E-03
Bark Pile (via Front End Loader)		Bark		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	BTRKLD2	Both													
No. 7 Woodyard Roundwood Chips and Fines Transfers																			
No. 7 Chipper	Chip Conveyor 40	Chips and Fines	203	Trivial - S.(1) - Mechanical conveying of chips	7RWC1	No. 7	175	3,800	1,387,000	90%	0.02	0.42	0.08	0.01	0.20	0.04	1.40E-03	0.03	0.01
Chip Conveyor 40	Chip Conveyor 3	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC2	No. 7	175	3,800	1,387,000	90%	0.02	0.42	0.08	0.01	0.20	0.04	1.40E-03	0.03	0.01
Chip Conveyor 3	Chip Scalping Screen	Chips and Fines	101h	Trivial - S.(2) - Green chip screening	7RWC3	No. 7	175	3,800	1,387,000	90%	0.02	0.42	0.08	0.01	0.20	0.04	1.40E-03	0.03	0.01
Chip Scalping Screen	Chip Conveyor 4	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC4	No. 7	175	3,800	1,387,000	90%	0.02	0.42	0.08	0.01	0.20	0.04	1.40E-03	0.03	0.01
	Chip Conveyor 5	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC5	No. 7													
	Oversize Chip Conveyor	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC6	No. 7	14	304	110,960	90%	1.56E-03	0.03	0.01	7.39E-04	0.02	2.93E-03	1.12E-04	2.43E-03	4.44E-04
Oversize Chip Conveyor	Chip Sizer	Chips and Fines	203b	Insignificant - J.(3) - Green wood chippers	7RWC7	No. 7	14	304	110,960	90%	1.56E-03	0.03	0.01	7.39E-04	0.02	2.93E-03	1.12E-04	2.43E-03	4.44E-04
Chip Sizer	Chip Sizer Accepts Conveyor	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC8	No. 7	14	304	110,960	90%	1.56E-03	0.03	0.01	7.39E-04	0.02	2.93E-03	1.12E-04	2.43E-03	4.44E-04
Chip Sizer Accepts Conveyor	Chip Conveyor 20	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC9	No. 7	14	304	110,960	90%	1.56E-03	0.03	0.01	7.39E-04	0.02	2.93E-03	1.12E-04	2.43E-03	4.44E-04
Chip Conveyor 20	Chip Conveyor 21	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC10	No. 7	14	304	110,960	90%	1.56E-03	0.03	0.01	7.39E-04	0.02	2.93E-03	1.12E-04	2.43E-03	4.44E-04
Chip Conveyor 4	Chip Conveyor 11	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC11	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 5		Chips and Fines			7RWC12	No. 7													
Chip Conveyor 14		Chips and Fines			7RWC13	No. 7													
Chip Conveyor C-18		Chips and Fines			7RWC56	No. 7													

No. 7 Mill Transformation Project

Emission Equipment Description:

	Equip ID No.:	Emission Release Point ID:
No. 7 Woodyard - Debarking Drum	202	FI-202
No. 8 Woodyard - Debarking Drum	302a	FI-302a
Bark Processing, Storage, and Transfer	*Multiple*	102WY
Chip Processing, Storage, and Transfer	*Multiple*	301WY

Emission Unit ID No.: WDYD
Control Device Description: N/A

Transfers and Emissions

Transfer Description			Equipment ID No.	Trivial/ Insignificant	Transfer Identification	Associated Mill	Maximum Throughput			Control Efficiency (%)	Controlled Emissions								
											PM [b, c, d]			PM_{10} [b, c, d]			$PM_{2.5}$ [b, c, d]		
From	To	Material					(ton/hr)	(ton/day)	(ton/yr)		(lb/hr)	(lb/day)	(tpy)	(lb/hr)	(lb/day)	(tpy)	(lb/hr)	(lb/day)	(tpy)
Chip Conveyor 4	Chip Conveyor 15	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC14	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 5		Chips and Fines			7RWC15	No. 7													
Chip Conveyor 14		Chips and Fines			7RWC16	No. 7													
Chip Conveyor C-18		Chips and Fines			7RWC57	No. 7													
Chip Conveyor 11	Chip Conveyor 12	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC17	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 15	Chip Conveyor C-30	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC18	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor 11		Chips and Fines			7RWC19	No. 7													
Chip Conveyor 12	Chip Conveyor 13	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC21	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 20		Chips and Fines			7RWC22	No. 7													
Chip Conveyor 21	Chip Conveyor 16	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC23	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 12		Chips and Fines			7RWC24	No. 7													
Chip Conveyor 15		Chips and Fines			7RWC25	No. 7													
Chip Conveyor C-18		Chips and Fines			7RWC55	No. 7													
Chip Conveyor 13	East Linear Chip Pile Stacker Conveyor	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC26	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
East Linear Chip Pile Stacker Conveyor	East Linear Chip Pile	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC27	No. 7	308	7,399	1,387,000	0%	0.34	8.26	0.77	0.16	3.91	0.37	0.02	0.59	0.06
Chip Conveyor 16	West Linear Chip Pile Stacker Conveyor	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC28	No. 7	308	7,399	1,387,000	90%	0.03	0.83	0.08	0.02	0.39	0.04	2.47E-03	0.06	0.01
West Linear Chip Pile Stacker Conveyor	West Linear Chip Pile	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC29	No. 7	308	7,399	1,387,000	0%	0.34	8.26	0.77	0.16	3.91	0.37	0.02	0.59	0.06
East Linear Chip Pile	Chip Conveyor 14	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC30	No. 7	308	7,399	1,329,701	90%	0.03	0.83	0.07	0.02	0.39	0.04	2.47E-03	0.06	0.01
West Linear Chip Pile	Chip Conveyor 17	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC31	No. 7	308	7,399	1,329,701	90%	0.03	0.83	0.07	0.02	0.39	0.04	2.47E-03	0.06	0.01
Chip Conveyor 17	Chip Conveyor C-24	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC32	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-30		Chips and Fines			7RWC33	No. 7													
Chip Conveyor C-24	Chip Conveyor C-5	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC34	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-4		Chips and Fines			7RWC35	Both													
Chip Conveyor C-6	Chip Conveyor C-19	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC36	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
	Chip Conveyor C-18	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC54	No. 7													
Chip Conveyor C-19	Chip Conveyor C-20	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC37	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-20	Chip Conveyor Stacker	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC38	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor Stacker	Chip Pile	Chips and Fines		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWC39	No. 7	308	7,399	2,659,401	0%	0.34	8.26	1.48	0.16	3.91	0.70	0.02	0.59	0.11
Chip Reclaimer	Chip Conveyor C-21	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC40	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-21	Chip Conveyor C-22	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC41	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-5	Chip Conveyor C-6	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	7RWC42	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
	No. 7 Chip Thickness Screening System	Chips and Fines		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWC43	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-22		Chips and Fines			7RWC44	No. 7													
No. 7 Chip Thickness Screening System	Fines Conveyor R-27	Fines		Trivial - S.(1) - Mechanical conveying of sawdust	7RWC45	No. 7	4.0	86	31,523	90%	4.44E-04	0.01	1.76E-03	2.10E-04	4.56E-03	8.33E-04	3.18E-05	6.91E-04	1.26E-04
No. 7 Chip Thickness Screening System	Chip Conveyor 55	Chips	301i	Trivial - S.(1) - Mechanical conveying of chips	7RWC46	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor 55	Chip Conveyor 56	Chips		Trivial - S.(1) - Mechanical conveying of chips	7RWC47	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor 54		Chips			7RWC48	No. 8													
Chip Conveyor 56	Digester Chip Conveyor 1	Chips		Trivial - S.(1) - Mechanical conveying of chips	7RWC49	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Digester Chip Conveyor 1	Digester Chip Conveyor 2	Chips		Trivial - S.(1) - Mechanical conveying of chips	7RWC50	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Sizer	Reject Bunker	Oversized Chips		Trivial - S.(1) - Mechanical conveying of chips	7RWC51	No. 7	14	304	5,548	0%	0.02	0.34	3.10E-03	0.01	0.16	1.47E-03	1.12E-03	0.02	2.22E-04
Reject Bunker	Transfer to Truck	Oversized Chips		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	7RWC52	No. 7	26	304	5,548	0%	0.03	0.34	3.10E-03	0.01	0.16	1.47E-03	2.08E-03	0.02	2.22E-04
Digester Chip Conveyor 2	Air Lock Screw Conveyor	Chips		Trivial - S.(1) - Mechanical conveying of chips	7RWC58	No. 7	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
No. 8 Woodyard Roundwood Chips and Fines Transfers																			
No. 8 Chipper	Chip Conveyor 50	Chips and Fines	302b	Trivial - S.(1) - Mechanical conveying of chips	8RWC1	No. 8	375	8,900	3,248,500	90%	0.04	0.99	0.18	0.02	0.47	0.09	3.00E-03	0.07	0.01
Chip Conveyor 50	Chip Scalping Screen	Chips and Fines	301d	Trivial - S.(2) - Green chip screening	8RWC2	No. 8	375	8,900	3,248,500	90%	0.04	0.99	0.18	0.02	0.47	0.09	3.00E-03	0.07	0.01
Chip Conveyor 60		Chips and Fines		Trivial - S.(2) - Green chip screening	CHTRK7	Both													
Chip Scalping Screen	Chip Conveyor 51	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	8RWC3	No. 8	375	8,900	3,248,500	90%	0.04	0.99	0.18	0.02	0.47	0.09	3.00E-03	0.07	0.01
Chip Conveyor 51	Chip Stacker	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	8RWC4	Both	375	8,900	3,248,500	90%	0.04	0.99	0.18	0.02	0.47	0.09	3.00E-03	0.07	0.01
Chip Stacker	Chip Pile	Chips and Fines		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	8RWC5	Both	375	8,900	3,248,500	0%	0.42	9.94	1.81	0.20	4.70	0.86	0.03	0.71	0.13
Chip Pile/Reclaimer	Chip Conveyor 52	Chips and Fines		Trivial - S.(1) - Mechanical conveying of chips	8RWC6	No. 8	388	9,306	3,396,690	99%	4.33E-03	0.10	0.02	2.05E-03	0.05	0.01	3.10E-04	0.01	1.36E-03
Chip Conveyor 52	Thickness Screens	Chips and Fines		Trivial - S.(2) - Green chip screening	8RWC7	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
Thickness Screens	ADS (Air Density Separator)	Chips and Fines		Trivial - S.(2) - Green chip screening	8RWC8	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
	Fines Screens	Chips and Fines		Trivial - S.(2) - Green chip screening	8RWC9	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
	Chip Conveyor 53	Chips		Trivial - S.(1) - Mechanical conveying of chips	8RWC10	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
Chip Crackers	Chip Conveyor 53	Chips			8RWC11	No. 8													
Fines Screens	Chip Conveyor 53	Chips			8RWC12	No. 8													
ADS	Chip Crackers	Chips	302d	Trivial - S.(1) - Mechanical conveying of chips	8RWC13	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
ADS	Rejects Hoppers	Chips		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	8RWC14	No. 8	5	121	44,298	0%	0.01	0.14	0.02	2.70E-03	0.06	0.01	4.09E-04	0.01	1.77E-03
Chip Scalping Screen		Overs		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	8RWC15	No. 8													
Fines Conveyor 58		Fines		Insignificant - Emissions less 5 tpy (335-3-16-.01(o))	8RWC16	No. 8													
Fines Screens	Fines Conveyor 58	Fines		Trivial - S.(1) - Mechanical conveying of sawdust	8RWF1	No. 8	8.5	202	73,830	90%	9.52E-04	0.02	4.12E-03	4.50E-04	0.01	1.95E-03	6.82E-05	1.62E-03	2.95E-04
Fines Conveyor 58	Fines Conveyor 59	Fines		Trivial - S.(1) - Mechanical conveying of sawdust	8RWF2	No. 8	8.5	202	73,830	90%	9.52E-04	0.02	4.12E-03	4.50E-04	0.01	1.95E-03	6.82E-05	1.62E-03	2.95E-04
Fines Conveyor 59	Fines Conveyor R-27	Fines		Trivial - S.(1) - Mechanical conveying of sawdust	8RWF3	No. 8	8.5	202	73,830	90%	9.52E-04	0.02	4.12E-03	4.50E-04	0.01	1.95E-03	6.82E-05	1.62E-03	2.95E-04
Chip Conveyor 53	Chip Conveyor 54	Chips		Trivial - S.(1) - Mechanical conveying of chips	8RWC17	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
Chip Conveyor 54	Chip Conveyor C-13	Chips		Trivial - S.(1) - Mechanical conveying of chips	8RWC18	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
Chip Conveyor 55		Chips			8RWC19	Both													
Chip Conveyor C-13	Chip Conveyor C-14	Chips		Trivial - S.(1) - Mechanical conveying of chips	8RWC20	No. 8	388	9,306	3,396,690	90%	0.04	1.04	0.19	0.02	0.49	0.09	3.10E-03	0.07	0.01
Chip Conveyor C-4	Chip Conveyor 60	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRK6	Both	308	7,399	2,659,401	90%	0.03	0.83	0.15	0.02	0.39	0.07	2.47E-03	0.06	0.01
Chip Conveyor C-24		Chips			7RWC53	No. 7													
Chip Truck Unloading																			
Trucks	Chip Unloading Station Chain Conveyors 1 and 2	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRK1	Both	250	6,000	2,190,000	90%	0.03	0.67	0.12	0.01	0.32	0.06	2.00E-03	0.05	0.01
Chip Unloading Station Chain Conveyors 1 and 2	Chip Conveyor C-15	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRK2	Both	250	6,000	2,190,000	90%	0.03	0.67	0.12	0.01	0.32	0.06	2.00E-03	0.05	0.01

No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Woodyard - Debarking Drum	202	FI-202
No. 8 Woodyard - Debarking Drum	302a	FI-302a
Bark Processing, Storage, and Transfer	*Multiple*	102WY
Chip Processing, Storage, and Transfer	*Multiple*	301WY

Emission Unit ID No.: WDYD
Control Device Description: N/A

Transfers and Emissions

Transfer Description			**Equipment ID No.**	**Trivial/ Insignificant**	**Transfer Identification**	**Associated Mill**	**Maximum Throughput**			**Control Efficiency (%)**	**Controlled Emissions**								
											PM [b, c, d]			**PM_{10} [b, c, d]**			**$PM_{2.5}$ [b, c, d]**		
From	**To**	**Material**					**(ton/hr)**	**(ton/day)**	**(ton/yr)**		**(lb/hr)**	**(lb/day)**	**(tpy)**	**(lb/hr)**	**(lb/day)**	**(tpy)**	**(lb/hr)**	**(lb/day)**	**(tpy)**
Chip Conveyor C-15	Chip Conveyor C-16	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRK3	Both	250	6,000	2,190,000	99%	2.79E-03	0.07	0.01	1.32E-03	0.03	0.01	2.00E-04	4.80E-03	8.76E-04
Chip Conveyor C-16	Purchased Chip Discalper	Chips		Trivial - S.(2) - Green chip screening	CHTRK4	Both	250	6,000	2,190,000	90%	0.03	0.67	0.12	0.01	0.32	0.06	2.00E-03	0.05	0.01
	Chip Conveyor C-4	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRK5	Both	250	6,000	2,190,000	90%	0.03	0.67	0.12	0.01	0.32	0.06	2.00E-03	0.05	0.01
Purchased Chip Discalper and Rechipper		Chips			CHTRK6	Both													
Trucks	Chip Unloading Station Screw Conveyors 1 and 2	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRKHW1	Both	84	2,016	174,720	90%	0.01	0.23	0.01	4.44E-03	0.11	4.61E-03	6.72E-04	0.02	6.99E-04
Chip Unloading Station Screw Conveyors 1 and 2	Chip Conveyor 8	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRKHW2	Both	84	2,016	174,720	99%	9.38E-04	0.02	9.76E-04	4.44E-04	0.01	4.61E-04	6.72E-05	1.61E-03	6.99E-05
Chip Conveyor 8	Chip Conveyor 20	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHTRKHW3	Both	84	2,016	174,720	90%	0.01	0.23	0.01	4.44E-03	0.11	4.61E-03	6.72E-04	0.02	6.99E-04
Chip Rail Unloading																			
Railcars	Chain Conveyor C-1	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHRL1	Both	85	2,040	353,600	90%	0.01	0.23	0.02	4.49E-03	0.11	0.01	6.80E-04	0.02	1.41E-03
Chain Conveyor C-1	Chip Conveyor C-2	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHRL2	Both	85	2,040	353,600	90%	0.01	0.23	0.02	4.49E-03	0.11	0.01	6.80E-04	0.02	1.41E-03
Chip Conveyor C-2	Chip Conveyor C-17	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHRL3	Both	85	2,040	353,600	90%	0.01	0.23	0.02	4.49E-03	0.11	0.01	6.80E-04	0.02	1.41E-03
Chip Conveyor C-17	Chip Conveyor C-4	Chips		Trivial - S.(1) - Mechanical conveying of chips	CHRL4	Both	85	2,040	353,600	90%	0.01	0.23	0.02	4.49E-03	0.11	0.01	6.80E-04	0.02	1.41E-03
Chip Conveyor C-17	Purchased Chip Discalper	Chips		Trivial - S.(2) - Green chip screening	CHRL5	Both	85	2,040	353,600	90%	0.01	0.23	0.02	4.49E-03	0.11	0.01	6.80E-04	0.02	1.41E-03
Total Emissions											**5.51**	**128.89**	**20.88**	**3.28**	**76.57**	**12.72**	**0.67**	**15.52**	**2.64**
Total Emissions - No. 7 Line											**2.77**	**64.63**	**9.49**	**1.52**	**35.24**	**5.34**	**0.28**	**6.51**	**1.02**
Total Emissions - No. 8 Line											**1.58**	**37.61**	**6.86**	**1.21**	**28.73**	**5.24**	**0.30**	**7.10**	**1.30**
Total Emissions - Both Lines (not separately included in No. 7 and No. 8 Line Totals)											**1.16**	**26.65**	**4.53**	**0.55**	**12.61**	**2.14**	**0.08**	**1.91**	**0.32**
Production-Based Emission Factor for No. 7 Line (lb/ADTUBP for No. 7 Line Production)													**0.030**			**0.017**			**3.25E-03**
Production-Based Emission Factor for Combined Lines (lb/ADTUBP for total Nos. 7 and 8 Lines Production)													**0.007**			**3.17E-03**			**4.80E-04**

*This hourly throughput is a daily average rate. Specific conveyors may run faster at times but the daily average hourly rate should not be over the value shown.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Woodyard - Debarking Drum	202	FI-202
No. 8 Woodyard - Debarking Drum	302a	FI-302a
Bark Processing, Storage, and Transfer	*Multiple*	102WY
Chip Processing, Storage, and Transfer	*Multiple*	301WY

Emission Unit ID No.: WDYD
Control Device Description: N/A

PTE Production Rate - No. 7 Mill: 629,529 ADTUBP/yr
PAE Production Rate - No. 7 Mill: 612,282 ADTUBP/yr
PTE Production Rate - No. 8 Mill: 722,700 ADTUBP/yr
PAE Production Rate - No. 8 Mill: 587,184 ADTUBP/yr

Pollutant	CAS No.	Emission Factor [a]		PTE (lb/hr)	PTE (tpy)	PAE (tpy)	BAE [b] (tpy)	Past Actual [b] (tpy)	Project Increase (PAE - BAE, tpy)
Processing and Transfers Specific No. 7 Line									
Filterable PM	N/A	0.030	lb/ADTUBP	2.77	9.49	9.23	--	--	--
Filterable PM10	N/A	0.017	lb/ADTUBP	1.52	5.34	5.19	--	--	--
Filterable PM2.5	N/A	3.25E-03	lb/ADTUBP	0.28	1.02	0.99	--	--	--
Processing and Transfers Shared Between Nos. 7 and 8 Lines									
Filterable PM	N/A	0.007	lb/ADTUBP	1.16	4.53	4.02	--	--	--
Filterable PM10	N/A	3.17E-03	lb/ADTUBP	0.55	2.14	1.90	--	--	--
Filterable PM2.5	N/A	4.80E-04	lb/ADTUBP	0.08	0.32	0.29	--	--	--
Total									
Filterable PM				3.93	14.01	13.24	9.48	8.85	3.76
Filterable PM10				2.07	7.48	7.09	4.95	4.71	2.15
Filterable PM2.5				0.37	1.35	1.28	0.85	0.84	0.43

a. Please refer to detail calculations for derivation of emission factors.
b. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Chip Conveyor 3 - To be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Digester Chip Conveyor 3	N/A	301WY

Emission Unit ID No.: WDYD
Control Device Description: N/A

Compound	**CAS No.**	**Emission Factor [a]**		**BAE [b] (tpy)**	**Past Actual Emissions [b] (tpy)**
Filterable PM	N/A	1.12E-03	lb/ton	0.10	0.09
Filterable PM10	N/A	5.28E-04	lb/ton	0.05	0.04
Filterable PM2.5	N/A	8.00E-05	lb/ton	0.01	0.01

a. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are included on the Woodyard tab. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-7. The moisture content represents the maximum moisture content the equation is valid for. The actual moisture content of the chips is approximately 50%.

b. Please refer to detailed baseline actual and past actual emissions for basis.

No. 7 Pulp Mill

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill - Chip Bin	206	206

Emission Unit ID No.: Z004
Number of Units (each mill): 1
Control Device Description: Condenser *(Inherent Process Equipment, per 40 CFR §64.1)*

PTE Production: 154 ODT/hr
1,329,701 ODT/yr

Compound	CAS No.	Emission Factor [a,b,c, d]		PTE		BAE [d]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(PTE - BAE, tpy)
VOC	N/A	8.54E-03	lb/ODT chips	1.32	5.68	0.00	5.68
TRS	N/A	1.56E-04	lb/ODT chips	0.02	0.10	0.00	0.10
H2S	7783064	2.95E-06	lb/ODT chips	4.55E-04	1.96E-03	0.00	0.00

a. For TRS and H2S only, emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - continuous digester chip bin exhaust (assuming fresh steam). The H2S emission factor is half of the single test which was non-detect.
b. For VOC only, emission factor developed based on sum of VOC species emission factors in Tables A6a and A6b for continuous digester chip bin exhausts using fresh steam. Since the chip bin will vent to a condenser that will maintained below 130°F during normal operation, only those VOC species with a boiling point less than 130°F were summed to calculate the total VOC emission factor.
c. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded, unless otherwise specified.
d. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill - Continuous Digester and Flash Tank	282, 283	LVHC
No. 7 Mill - Foul Condensate Tank	LVHC	LVHC
New No. 7 Mill - Digester Area Foul Condensate Tank	284	LVHC
New No. 7 Mill - Digester Evaporator	285	LVHC

Emission Unit ID No.: Z004
No. of Units: 1
Control Device Description: LVHC
Percent of Time Venting Can Occur: 1% LVHC

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr

Compound	**CAS No.**	**Emission Factor [a, b]**		**Digester Portion [c] (%wt)**	**Blow Tank Portion of Digester System [d] (%wt)**	**PTE - Digester System (excluding Blow Tank)**		**BAE [g] (tpy)**	**Project Increase (PTE - BAE, tpy)**
						(lb/hr) [e]	**(tpy) [f]**		
VOC	N/A	0.71	lb/ADTUBP	55%	70%	9.21	0.37	0.00	0.37
TRS	N/A	1.26	lb/ADTUBP	98%	70%	29.61	1.18	0.00	1.18
H2S	7783064	0.22	lb/ADTUBP	90%	70%	4.72	0.19	0.00	0.19

a. For emissions to LVHC, emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.2. All other emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - LVHC combined (digesters and evaporators).

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. The emission factors shown are for combined LVHC venting, which includes the digester and evaporator systems. The digester portion of the emissions were based on the total emission factor minus the evaporator portion. The evaporator portion of emissions was based on the uncontrolled evaporator venting emission factor from the 2018 NCASI Air Toxics Pulp and Paper Database divided by the emission factor for the combined LVHC stream. For VOC, methanol was used as a surrogate.

d. The digester portion of the digester system emissions was based on the total emission factor minus the blow tank portion, which was estimated based on NCASI data. For VOC, methanol was used as a surrogate for apportioning emissions. For VOC, methanol was used as a surrogate, and for TRS, H2S was used as a surrogate.

e. Emission rates represent uncontrolled venting.

f. Emission rates take into account the % of time that venting can occur - 1% for LVHC (per Subpart S). H2S emissions are shown as 0 tpy but are actually greater than this value. All digester system TRS emissions are conservatively accounted for at the new blow tank. Since the Blow tank is proposed to be routed to the HVLC system with a higher venting allowance under NESHAP S, this results in a higher PTE.

g. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill - Blow Tank	286	HVLC

Emission Unit ID No.: Z004
No. of Units: 1
Control Device Description: HVLC
Percent of Time Venting Can Occur: 4% HVLC

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b]		Digester System Portion [c]	Blow Tank Portion of Digester System [d] (%wt)	PTE (lb/hr) [e]	PTE (tpy) [f]	BAE [g] (tpy)	Project Increase (PTE - BAE, tpy)
VOC	N/A	0.71	lb/ADTUBP	55%	70%	21.47	3.42	0.00	3.42
TRS	N/A	1.26	lb/ADTUBP	98%	70%	68.25	10.87	0.00	10.87
H2S	7783064	0.22	lb/ADTUBP	90%	70%	10.88	1.73	0.00	1.73

a. For emissions to LVHC, emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.2. All other emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - LVHC combined (digesters and evaporators).
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. The emission factors shown are for combined LVHC venting, which includes the digester and evaporator systems. The digester portion of the emissions were based on the total emission factor minus the evaporator portion. The evaporator portion of emissions was based on the uncontrolled evaporator venting emission factor from the 2018 NCASI Air Toxics Pulp and Paper Database divided by the emission factor for the combined LVHC stream. For VOC, methanol was used as a surrogate for apportioning emissions.
d. The blow tank portion of the digester system emissions was estimated based on NCASI data. For VOC, methanol was used as a surrogate, and for TRS, H2S was used as a surrogate.
e. Emission rates represent uncontrolled venting.
f. Emission rates take into account the % of time that venting can occur - 4% for HVLC (per Subpart S).
g. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill - Primary (Pressure) Knotter	104a	HVLC
New No. 7 Mill - Secondary Knotter (Knotter Drainer)	104b	HVLC
New No. 7 Mill - Knotter Accepts Tank	104c	HVLC
New No. 7 Mill - Knot Conveyor	104d	HVLC
New No. 7 Mill - Chip Meter	207	HVLC

Emission Unit ID No.:	Z004 (Chip Meter only), Z007 (Rest)	
Number of Units:	4	
Control Device Description:	N/A	
Control Device Description:	HVLC	
Percent of Time Venting Can Occur:	4%	HVLC

PTE Production:	79.1	ADTUBP/hr
	629,529	ADTUBP/yr

Compound	**CAS No.**	**Emission Factor [a, b]**		**PTE**		**BAE [e] (tpy)**	**Project Increase (PTE - BAE, tpy)**
				(lb/hr) [c]	**(tpy) [d]**		
VOC	N/A	4.82E-03	lb/ADTUBP	0.38	0.06	0.00	0.06
TRS	N/A	0.186	lb/ADTUBP	14.70	2.34	0.00	2.34

a. Emission factor for VOC NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.5 for deknotters. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for deknotters. No emissions data available for chip meters. Since it is expected that the chip meter may be vented to the Knotter Accepts Tank, the emission unit is listed with the knotter system and emissions are expected to be accounted for.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Emission rates represent uncontrolled venting.
d. Emission rates take into account the % of time that venting can occur - 4% for HVHC (per Subpart S).
e. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Brown Stock Transfer Tank *(current No. 7 Mill Blow Tank)*	275	HVLC

Emission Unit ID No.:	Z007	
Number of Units:	1	
Control Device Description:	N/A	
Control Device Description:	HVLC	
Hours of Operation per Tank:	8760	hr/yr
Percent of Time Venting Can Occur:	4%	HVLC

Compound	**CAS No.**	**Emission Factor [a, b]**		**PTE**		**BAE [e]**	**Past Actual [e]**	**Project Increase**
				(lb/hr) [c]	**(tpy) [d]**	**(tpy)**	**(tpy)**	**(PTE - BAE, tpy)**
VOC	N/A	4.84	lb/hr/tank	4.84	0.85	0.00	0.00	0.85
TRS	N/A	0.533	lb/hr/tank	0.53	0.09	0.00	0.00	0.09
H2S	7783064	1.13E-02	lb/hr/tank	0.01	1.98E-03	0.00	0.00	1.98E-03

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for high density unbleached pulp storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for unbleached pulp storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Emission rates represent uncontrolled venting.
d. Emission rates take into account the % of time that venting can occur - 4% for HVHC (per Subpart S).
e. In current service, this tank is the No. 7 Mill Blow Tank that is collected and controlled as part of the LVHC system. Conservatively, baseline and past actual emissions are assumed as 0.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Brownstock Washers (4 stages)	118a-118d	HVLC

Emission Unit ID No.:	Z007	
Number of Units:	1	
Control Device Description:	HVLC	
Percent of Time Venting Can Occur:	4%	HVLC

PTE Production:	79.1	ADTUBP/hr
	629,529	ADTUBP/yr
PAE Production:	612,282	ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE [d] (tpy)	BAE [e] (tpy)	Past Actual [e] (tpy)	Project Increase (PAE - BAE, tpy)
				(lb/hr) [c]	(tpy) [d]				
VOC	N/A	0.215	lb/ADTUBP	17.00	2.71	2.63	0.02	0.04	2.61
TRS	N/A	5.49E-02	lb/ADTUBP	4.34	0.69	0.67	0.01	0.01	0.67
H2S	7783064	2.47E-03	lb/ADTUBP	0.20	0.03	0.03	1.82E-04	4.08E-04	0.03

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.6 for Vacuum Drum Type Brownstock Washers (using VOC for softwoods). Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for vacuum drum type brownstock washers.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. Emission rates represent uncontrolled venting.

d. Emission rates take into account the % of time that venting can occur - 4% for HVHC (per Subpart S).

e. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Foam Tower	119	HVLC

Emission Unit ID No.:	Z007	
Number of Units:	1	
Control Device Description:	HVLC	
Hours of Operation per Tank:	8760	hr/yr
Percent of Time Venting Can Occur:	4%	HVLC

PTE Production:	71.1	ODTUBP/hr
	566,576	ODTUBP/yr
PAE Production:	551,053	ODTUBP/yr

Compound	**CAS No.**	**Emission Factor** [a]		**PTE**		**PAE** [c] **(tpy)**	**BAE** [d] **(tpy)**	**Past Actual** [d] **(tpy)**	**Project Increase (PAE - BAE, tpy)**
				(lb/hr) [b]	**(tpy)** [c]				
VOC	N/A	6.00E-02	lb/ODTUBP	4.27	0.68	0.66	0.01	0.01	0.66
TRS	N/A	6.00E-03	lb/ODTUBP	0.43	0.07	0.07	0.00	0.00	0.07

a. Emission factor for VOC from NCASI Technical Bulletin No. 678, Volatile Organic Emissions from Pulp and Paper Mill Sources - Part IV - Kraft Brownstock Washing, Screening, and Rejects Refining Sources (October 1994), Table VI.A.13 for a foam tower.
b. Emission rates represent uncontrolled venting.
c. Emission rates take into account the % of time that venting can occur - 4% for HVHC (per Subpart S).
d. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Oxygen Delignification	122	HVLC

Emission Unit ID No.:	Z007	
Number of Units:	1	
Control Device Description:	HVLC	HVLC
Percent of Time that Venting Can Occur:	4%	

PTE Production:	79.1	ADTUBP/hr
	629,529	ADTUBP/yr
PAE Production:	612,282	ADTUBP/yr

Compound	**CAS No.**	**Emission Factor** [a, b]		**PTE**		**PAE** [d] **(tpy)**	**BAE** [e] **(tpy)**	**Past Actual** [e] **(tpy)**	**Project Increase (PAE - BAE, tpy)**
				(lb/hr) [c]	**(tpy)** [d]				
VOC	N/A	0.195	lb/ADTUBP	15.45	2.46	2.39	0.02	0.03	2.38
TRS	N/A	0.104	lb/ADTUBP	8.22	1.31	1.27	0.01	0.02	1.26
CO	N/A	4.55E-02	lb/ADTUBP	3.59	0.57	0.56	0.00	0.01	0.55
H2S	7783064	2.75E-03	lb/ADTUBP	0.22	0.03	0.03	0.00	0.00	0.03

a. Emission factors for VOC and CO are from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.8 for oxygen delignification system vents. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for oxygen delignification systems.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Emission rates represent uncontrolled venting.
d. Emission rates take into account the % of time that venting can occur - 4% for HVHC (per Subpart S).
e. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Mill - Decker	105	105
No. 7 Mill - Decker Filtrate Chest	106	106
No. 7 Mill - MC Standpipe	214	214

Emission Unit ID No.: Z007
Number of Units: 3
Control Device Description: N/A

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr
PAE Production: 612,282 ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE (tpy)	BAE[c] (tpy)	Past Actual[c] (tpy)	Project Increase (PAE - BAE, tpy)
				(lb/hr)	(tpy)				
VOC	N/A	7.69E-02	lb/ADTUBP	6.08	24.21	23.54	17.09	14.84	6.45
TRS	N/A	3.88E-02	lb/ADTUBP	3.07	12.21	11.88	8.62	7.49	3.26
H2S	7783064	2.00E-02	lb/ADTUBP	1.58	6.30	6.12	4.42	3.86	1.71

a. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.7 for pulp deckers. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for pulp deckers.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Mill - Washed Brown Stock Chest	128	128
No. 7 Mill - Primary Screens	133a-133d	--
No. 7 Mill - Primary Rejects Tank	120	120
No. 7 Mill - Secondary Screen	134	--
No. 7 Mill - Secondary Rejects Tank	121	121
No. 7 Mill - Swing Screen	135	--
No. 7 Mill - Tertiary Screen	136	--
No. 7 Mill - Tertiary Rejects Tank	129	129
New No. 7 Mill - Quaternary Screen	130	130
New No. 7 Mill - Shive Cleaner	131	131

Emission Unit ID No.: Z007
Number of Units: 1
Control Device Description: N/A

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr
PAE Production: 612,282 ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b, c, d]		PTE (lb/hr)	PTE (tpy)	PAE (tpy)	BAE [d] (tpy)	Past Actual [e] (tpy)	Project Increase (PAE - BAE, tpy)
VOC	N/A	3.73E-03	lb/ADTUBP	0.29	1.17	1.14	0.83	0.72	0.31
TRS	N/A	3.98E-04	lb/ADTUBP	0.03	0.13	0.12	0.09	0.08	0.03

a. For VOC, NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.5 for screening system.
b. For TRS, 2018 NCASI Air Toxics Pulp and Paper Database for pulp screening systems.
c. Both emission factors were developed based on screens located upstream of the brownstock washers. Therefore, emissions estimates are assumed to provide a conservative estimate.
d. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
e. Please refer to detailed baseline actual and past actual emissions for basis.

PTE of New Components of the Screening System

Since new equipment is being added as part of the No. 7 Mill Screening System, the PTE for those components is estimated below. These emissions are a subset of the PTE emissions shown above for the entire No. 7 Mill Screening System.

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
New Quaternary Screen	130	130
New Shive Cleaner	131	131

Emission Unit ID No.: Z007
Number of Units: 1
Control Device Description: N/A

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b, c, d]		New Equipment Portion of Screening System [e] (%wt)	PTE (lb/hr)	PTE (tpy)	BAE [f] (tpy)	Project Increase (PTE - BAE, tpy)
VOC	N/A	3.73E-03	lb/ADTUBP	4%	0.01	0.04	0.00	0.04
TRS	N/A	3.98E-04	lb/ADTUBP	0%	0.00	0.00	0.00	0.00

a. For VOC, NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin
b. For TRS, 2018 NCASI Air Toxics Pulp and Paper Database for pulp screening systems.
c. Both emission factors were developed based on screens located upstream of the brownstock washers. Therefore, emissions estimates are assumed to provide a conservative estimate.
d. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
e. Emissions for the new equipment based on the fraction of emissions associated with similar equipment in NCASI Technical Bulletin No. 678, Mill F. See details below.

No. 7 Mill Equipment	NCASI TB 678, Mill F Similar Equipment	VOC Emission Factor (lb/ADTUBP)	VOC Emissions (% Total)	Methyl Mercaptan Emission Factor (lb/ADTUBP)	DMS Emission Factor (lb/ADTUBP)	DMDS Emission Factor (lb/ADTUBP)	TRS (as S) Emission Factor (lb/ADTUBP)	TRS Emissions (% Total)
Washed Brown Stock Chest	Primary Supply Tank (FV10)	1.30E-03	31%	--	2.00E-04	7.70E-05	1.56E-04	33%
Primary Rejects Tank	Secondary Supply Tank (FV6)	2.60E-03	62%	--	6.20E-04	--	3.20E-04	67%
Secondary Rejects Tank	Tertiary Supply Tank (FV7)	1.30E-04	3%	--	--	--	0.00	0%
Tertiary Rejects Tank	Frotapulper Accepts Tank (FV8)	1.60E-04	4%	--	--	--	0.00	0%
Quaternary Screen								
Shive Cleaner								
Total		**4.19E-03**	**100%**				**4.76E-04**	**100%**

f. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(uu)3.

No. 7 Mill Pulp Mill - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Brown Stock High Density Storage No. 1	107a	107a

Emission Unit ID No.: N/A
Number of Units: 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
VOC	N/A	4.84	lb/hr/tank	4.84	21.20
TRS as S	N/A	0.53	lb/hr/tank	0.53	2.33
H2S	7783064	1.13E-02	lb/hr/tank	0.01	0.05

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for high density unbleached pulp storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for unbleached pulp storage tanks.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

No. 7 Mill Pulp Mill - Sources to be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	205	205

Emission Unit ID No.: Z004
Number of Units (each mill): 1
Control Device Description: N/A (fresh steam)

Compound	CAS No.	Emission Factor [a,b,c]		BAE [d] (tpy)	Past Actual [d] (tpy)
VOC	N/A	0.33	lb/ODT chips	163.13	141.62
TRS	N/A	1.56E-04	lb/ODT chips	0.08	0.07
H2S	7783064	2.95E-06	lb/ODT chips	1.43E-03	1.25E-03

a. For TRS and H2S only, emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - continuous digester chip bin exhaust (assuming fresh steam). The H2S emission factor is half of the single test which was non-detect.
b. For VOC only, emission factor developed based on sum of VOC species emission factors in Tables A6a and A6b for continuous digester chip bin exhausts using fresh steam.
c. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded, unless otherwise indicated.
d. Please refer to detailed baseline actual and past actual emissions for basis.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, & Flash Tanks	276-279	LVHC

Emission Unit ID No.: Z004
No. of Units: 1
Control Device Description: LVHC

Compound	CAS No.	Emission Factor [a, b]		Evaporator Portion [c] (%wt)	Digester Portion [c] (%wt)	BAE [d] (tpy)	Past Actual [d] (tpy)
VOC	N/A	0.71	lb/ADTUBP	45%	55%	0.04	0.11
TRS	N/A	1.26	lb/ADTUBP	2%	98%	0.13	0.35
H2S	7783064	0.22	lb/ADTUBP	10%	90%	0.02	0.06

a. For emissions to LVHC, emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.2. All other emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - LVHC combined (digesters and evaporators).
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. The emission factors shown are for combined LVHC venting, which includes the digester and evaporator systems. The evaporator portion of emissions was based on the uncontrolled evaporator venting emission factor from the 2018 NCASI Air Toxics Pulp and Paper Database divided by the emission factor for the combined LVHC stream. For VOC, methanol was used as a surrogate.
d. Please refer to detailed baseline actual and past actual emissions for basis.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Mill - Secondary Knotter No. 1	103a	103a
Existing No. 7 Mill - Secondary Knotter No. 2	103b	103b
Existing No. 7 Mill - Knot Press	213	213

Emission Unit ID No.: Z007
Number of Units: 3
Control Device Description: N/A

Compound	CAS No.	Emission Factor [a, b]		BAE [c] (tpy)	Past Actual [c] (tpy)
VOC	N/A	4.82E-03	lb/ADTUBP	1.07	0.93
TRS	N/A	0.186	lb/ADTUBP	41.34	35.89

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

No. 7 Mill Bleach Plant

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Bleach Plant	X020a-X020b, X020e-X020g, X020j-X020l	X020

Emission Unit ID No.: X020
Number of Units: 1
Control Device Description: Scrubber

PTE Production: 72.8 ADTBP/hr
604,409 ADTBP/yr
PAE Production: 563,661 ADTBP/yr

Compound	CAS No.	Emission Factor [a, b, c]		PTE		PAE	BAE[d]	Past Actual[d]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(PAE - BAE, tpy)
VOC	N/A	0.2	lb/ADTBP	14.73	61.17	57.05	41.84	36.32	15.21
CO	N/A	1.53	lb/ADTBP	111.34	462.37	431.20	146.29	152.33	284.92
TRS	N/A	0.02	lb/ADTBP	1.48	6.16	5.75	4.22	3.66	1.53
H2S	7783064	0.01	lb/ADTBP	0.79	3.28	3.06	2.23	1.95	0.83

a. Emission factor for VOC derived based on data from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table A-9a for a bleach plant scrubber processing softwood (average plus one standard deviation).
b. Emission factorfor CO was developed based on information in NCASI Technical Bulletin No. 760, Carbon Monoxide Emissions from Oxygen Delignification and Chlorine Dioxide Bleaching of Wood Pulp (July 1998), Table 28. The emission factor represents the average plus two standard deviations of the average measurement of full-scale tests conducted processing softwood. The values are shown in units of lb/ODTUBP. In more recent publications such as the 2015 NCASI Criteria Pollutant Database, the units are shown as lb/ADTBP. Therefore, those units are used in this analysis.
c. Emission factors for TRS compounds derived from 2018 NCASI Air Toxics Pulp and Paper Database for bleach plant scrubbers (ECF). No published data available for H2S. Therefore, assumed H2S emissions as equivalent to TRS as S published factor. The H2S factor was was added to the TRS as S value, after conversion to an as sulfur basis.
d. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
e. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Mill - 1st Extraction Stage Washer	X020c	228
No. 7 Mill - 1st Extraction Stage Seal Chest	X020d	228a
No. 7 Mill - 2nd Extraction Stage Washer	X020h	228
No. 7 Mill - 2nd Extraction Stage Seal Chest	X020i	228b

Emission Unit ID No.: X020
Number of Units: 4
Control Device Description: N/A

PTE Production: 72.8 ADTBP/hr
604,409 ADTBP/yr
PAE Production: 563,661 ADTBP/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE	BAE[d]	Past Actual[d]	Project Increase
				(lb/hr	(tpy)	(tpy)	(tpy)	(tpy)	(PAE - BAE, tpy)
VOC	N/A	0.021	lb/ADTBP	1.53	6.35	5.92	4.34	3.77	1.58
CO	N/A	0.037	lb/ADTBP	2.67	11.09	10.34	6.42	6.59	3.93

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.9 for bleach plant extraction stage vents.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

No. 7 Mill Pulp Drying

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill Pulp Dryer	108	108

Emission Unit ID No.: X108
Number of Units: 1
Control Device Description: N/A

PTE Production: 80.2 ADTFP/hr
638,620 ADTFP/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		BAE[c] (tpy)	Project Increase (PTE - BAE, tpy)
				(lb/hr)	(tpy)		
Condensable PM	N/A	0.018	lb/ADTFP	1.44	5.75	--	--
Filterable PM	N/A	0.020	lb/ADTFP	1.60	6.39	0.00	6.39
Filterable PM10	N/A	0.012	lb/ADTFP	0.96	3.83	--	--
Filterable PM2.5	N/A	0.005	lb/ADTFP	0.40	1.60	--	--
PM10	N/A	0.030	lb/ADTFP	2.41	9.58	0.00	9.58
PM2.5	N/A	0.023	lb/ADTFP	1.84	7.34	0.00	7.34
VOC	N/A	0.149	lb/ADTFP	11.99	47.73	0.00	47.73

a. NCASI Technical Bulletin No. 942, Measurement of PM, PM10, PM2.5 and CPM emissions from Paper Machine Sources (November 2007), Table F4. Factors for a linerboard machine were used.
b. VOC emission factor based on data from GP's Leaf River Mill.
c. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

No. 7 Mill Pulp Dryer - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Bleached HD Storage Chest No. 1	225	225
No. 7 Mill Bleached HD Storage Chest No. 2	226	226
No. 7 Mill Bleached HD Storage Chest No. 3	224	224
No. 7 Mill Bleached LD Surge Chest	227	227

Emission Unit ID No.: N/A
Number of Units (each mill): 4
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.48	lb/hr/tank	0.48	2.12	1.94	8.48
TRS as S	N/A	0.05	lb/hr/tank	0.05	0.23	0.21	0.93
H2S	7783064	1.13E-03	lb/hr/tank	1.13E-03	4.95E-03	4.52E-03	0.02

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for high density unbleached pulp storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for unbleached pulp storage tanks. A 10% factor was applied to emission factors for unbleached pulp storage tanks for use for bleached storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

No. 7 Mill Pulp Dryer - To be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Mill Pulp Dryer	109	109

Emission Unit ID No.: X109
Number of Units: 1
Control Device Description: N/A

Compound	CAS No.	Emission Factor [a, b]		BAE [c] (tpy)	Past Actual [c] (tpy)
Condensable PM	N/A	0.018	lb/ADTFP	--	--
Filterable PM	N/A	0.020	lb/ADTFP	3.86	3.59
Filterable PM10	N/A	0.012	lb/ADTFP	--	--
Filterable PM2.5	N/A	0.005	lb/ADTFP	--	--
PM10	N/A	0.030	lb/ADTFP	5.65	5.38
PM2.5	N/A	0.023	lb/ADTFP	4.13	4.13
VOC	N/A	0.149	lb/ADTFP	30.89	26.82

a. NCASI Technical Bulletin No. 942, Measurement of PM, PM10, PM2.5 and CPM emissions from Paper Machine Sources (November 2007), Table F4. Factors for a linerboard machine were used.
b. VOC emission factor based on data from GP's Leaf River Mill.
c. Please refer to detailed baseline actual and past actual emissions for basis.

No. 7 Mill Liquor Recovery

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Multiple Effect Evaporator System	X006	LVHC

Emission Unit ID No.: X006
No. of Units: 1
Control Device Description: LVHC
Percent of Time Venting Can Occur: 1% LVHC

PTE Production: 604,409 ADTUBP/yr
PAE Production: 526,562 ADTUBP/yr

Compound	CAS No.	Emission Factor [a, b]		Evaporator Portion [c]	PTE [d] (tpy)	PAE [d] (tpy)	BAE [e] (tpy)	Past Actual [e] (tpy)	Project Increase (PTE - BAE, tpy)
VOC	N/A	0.71	lb/ADTUBP	45%	0.97	0.85	0.03	0.09	0.81
TRS	N/A	1.26	lb/ADTUBP	2%	0.07	0.06	0.00	0.01	0.06
H2S	7783064	0.22	lb/ADTUBP	10%	0.07	0.06	0.00	0.01	0.06

a. For emissions to LVHC, emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.2. All other emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - LVHC combined (digesters and evaporators).
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. The emission factors shown are for combined LVHC venting, which includes the digester and evaporator systems. The evaporator portion of emissions was based on the uncontrolled evaporator venting emission factor from the 2018 NCASI Air Toxics Pulp and Paper Database divided by the emission factor for the combined LVHC stream. For VOC, methanol was used as a surrogate.
d. Emission rates take into account the % of time that venting can occur - 1% for LVHC (per Subpart S).
e. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Recovery Furnace	X001	X001

Emission Unit ID No.: X001
Number of Units: 1
Control Device Description: Two Parallel Electrostatic Precipitators
Fuels Processed/Fired: Black Liquor Solids (BLS), No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Natural Gas, and NCGs

Projected Actual BLS Firing Rate: 949,000 TBLS/yr; 11,382,306 MMBtu/yr
Projected Actual Exhaust Flow Rate: 333,028 dscfm at 8% O2
Projected Actual Operation: 8,760 hr/yr
Fuel Oil Maximum Sulfur Content: 0.25 %
Projected Actual Auxiliary Firing Rate: 657,161 MMBtu/yr; 615,359 MMBtu/yr (natural gas); 42,145 MMBtu/yr (fuel oil)
PAE Production: 526,562 ADTUBP/yr (for No. 7 Multiple Effect Evaporator); 612,282 ADTUBP/yr (for No. 7 Mill Digester)

Compound	CAS No.	Emission Factors																PTE [p, q] (tpy)	PAE [q] (tpy)	BAE [q, r] (tpy)	Past Actual [q, r] (tpy)	Project Increase [q] (PAE - BAE, tpy)
		Test/CEMS Data (BLS and Aux Fuels) - *Used for PAE Only* [a]			BLS			Fuel Oil			Natural Gas			NCG Incineration								
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference						
Condensable PM	N/A				0.083	lb/ton BLS	d	9.29E-03	lb/MMBtu	h	5.59E-03	lb/MMBtu	l				--	41.35	--	--	--
Filterable PM	N/A	0.43	lb/ton BLS	b				1.43E-02	lb/MMBtu	h	1.86E-03	lb/MMBtu	l				324.89	206.50	155.80	118.75	50.70
Filterable PM10	N/A	0.21	lb/ton BLS	b				9.00E-03	lb/MMBtu	j	1.86E-03	lb/MMBtu	l				--	102.55	--	--	--
Filterable PM2.5	N/A	0.15	lb/ton BLS	b				5.86E-03	lb/MMBtu	j	1.86E-03	lb/MMBtu	l				--	70.20	--	--	--
PM10	N/A	*Calculated as sum of CPM and FPM10*															205.94	143.89	107.62	90.03	36.27
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*															154.93	111.54	80.98	71.38	30.56
SO2	N/A	7.67E-03	lb/ton BLS	b				142*S / 140 = 0.25	lb/MMBtu	h	5.88E-04	lb/MMBtu	l				1,513.13	9.16	10.60	3.79	Decrease
NOX	N/A	1.93	lb/ton BLS	b				0.17	lb/MMBtu	h	0.18	lb/MMBtu	m				977.92	976.42	710.03	726.64	266.39
CO	N/A	1.29	lb/ton BLS	b				0.04	lb/MMBtu	h	0.08	lb/MMBtu	l				1,984.65	640.24	399.55	92.51	240.69
VOC	N/A	0.03	lb/ton BLS	b				1.43E-03	lb/MMBtu	h	5.39E-03	lb/MMBtu	l	7.10E-03	lb/ADTUBP (LVHC)	n	275.32	17.08	10.80	7.92	6.28
Lead	7439921				1.20E-05	lb/ton BLS	e	9.00E-06	lb/MMBtu	h	4.90E-07	lb/MMBtu	l				0.01	0.01	4.70E-03	4.67E-03	1.33E-03
TRS	N/A	0.026	lb/ton BLS	c										1.85E-03	lb/ADTUBP (HVLC)	o	40.25	16.01	8.17	4.79	7.85
														1.26E-02	lb/ADTUBP (LVHC)	o					
H2S	7783064				1.62E-02	lb/ton BLS	e							7.86E-05	lb/ADTUBP (HVLC)	o	8.38	8.29	6.38	4.60	1.91
														2.20E-03	lb/ADTUBP (LVHC)	o					
SAM	7664939	0.03	lb/ton BLS	b				2.45*S / 140 = 4.38E-03	lb/MMBtu	i							115.82	16.99	12.33	12.33	4.67
CO2	N/A				208.12	lb/MMBtu	f	163.05	lb/MMBtu	k	116.98	lb/MMBtu	k				--	1,223,850	--	--	--
CH4	N/A				4.19E-03	lb/MMBtu	f	6.61E-03	lb/MMBtu	k	2.20E-03	lb/MMBtu	k				--	24.66	--	--	--
N2O	N/A				9.26E-04	lb/MMBtu	f	1.32E-03	lb/MMBtu	k	2.20E-04	lb/MMBtu	k				--	5.37	--	--	--
GHGs	N/A				208.12	lb/MMBtu	f	163.06	lb/MMBtu	k	116.98	lb/MMBtu	k				1,278,607	1,223,880	1,065,675	934,799	158,205
CO2e	N/A				208.48	lb/MMBtu	g	163.59	lb/MMBtu	g	117.10	lb/MMBtu	g				1,280,943	1,225,962	1,067,492	936,383	158,469

a. BAE for these pollutants are calculated based on representative stack test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.
b. Emission factor based on stack test data.
c. Emission factor based on Mill's CEMS data.
d. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.12. Median value was used.
PM10: 49.5% Filterable PM
PM2.5: 33.8% Filterable PM
e. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills, Tables 4.53 and 4.54. Median value was used.
f. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart AA, Table AA-1, softwood factors.
g. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
h. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal.
i. Average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned (assuming complete conversion), where S is the fuel oil sulfur content in %. This emission factor is what is presented in the 2018 NCASI Toxics Database.
j. AP-42 Section 1.3, Fuel Oil Combustion (September 1998). The particle size distribution in Table 1.3-4 below is used and is representative of ESP control of utility boiler firing residual oil and applied to distillate and residual fuel oil firing.
PM10: 63% Filterable PM
PM2.5: 41% Filterable PM
k. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
l. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.
m. Vendor information.
n. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.2. Median value was used and a 99% control efficiency applied. In the baseline only HVLC NCGs were incinerated in the No. 8 Recovery Furnace. As part of a separate project that is expected to be implemented, the Mill intends to remove the Backup NCG Incinerator from service and incinerate LVHC NCGs in the No. 7 Recovery Furnace. Therefore, projected actual emissions reflect incineration of HVLC and LVHC NCGs.
o. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables D5 (HVLC NCGs) and 4.29 (LVHC NCGs). Median value was used and a 99% control efficiency applied. In the baseline only HVLC NCGs were incinerated in the No. 7 Recovery Furnace. As part of a separate project that is expected to be implemented, the Mill intends to remove the Backup NCG Incinerator from service and incinerate LVHC NCGs in the No. 7 Recovery Furnace. Therefore, projected actual emissions reflect incineration of HVLC and LVHC NCGs.
p. See separate calculation for PTE.
q. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
r. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Recovery Furnace	X001	X001

Emission Unit ID No.: X001
Number of Units: 1
Control Device Description: Two Parallel Electrostatic Precipitators
Fuels Processed/Fired: Black Liquor Solids (BLS), No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Natural Gas, and NCGs

PTE Calculations

Max BLS Firing:	114.6 TBLS/hr	**Max Fuel Oil Firing:**	600 MMBtu/hr	**Max Natural Gas Firing:**	375 MMBtu/hr	**PTE Production:**	79.1 ADTUBP/hr (for No. 7 Mill Digester)
	949,000 TBLS/yr		1,138,231 MMBtu/yr		1,138,231 MMBtu/yr		629,529 ADTUBP/yr (for No. 7 Mill Digester)
	1,374 MMBtu/hr			**Exhaust Flow:**	346,154 dscfm at 8% O2		69.0 ADTUBP/hr (for No. 7 Multiple Effect Evaporator)
	11,382,306 MMBtu/yr			**Max Operation:**	8,760 hr/yr		604,409 ADTUBP/yr (for No. 7 Multiple Effect Evaporator)

Compound	**CAS No.**	**Emission Factors**																		**PTE** [1]	
		All Fuels			**BLS**			**No. 2 Fuel Oil**			**No. 4-5 Fuel Oil**			**Natural Gas**			**NCG Incineration**				
		Value	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**(lb/hr**	**(tpy)**
Condensable PM	N/A				0.083	lb/ton BLS	b	9.29E-03	lb/MMBtu	f	1.00E-02	lb/MMBtu	h	5.59E-03	lb/MMBtu	i				15.52	45.12
Filterable PM	N/A	0.025	gr/dscf at 8% O2	a																74.18	324.89
Filterable PM10	N/A	0.012	gr/dscf at 8% O2	a, b																36.72	160.82
Filterable PM2.5	N/A	0.008	gr/dscf at 8% O2	a, b																25.07	109.81
PM10	N/A	*Calculated as sum of CPM and FPM10*																		52.24	205.94
PM2.5	N/A	*Calculated as sum of CPM and FPM10*																		40.59	154.93
SO2	N/A	100	ppmv at 8% O2	a				0.3	lb/MMBtu	a	0.3	lb/MMBtu	a							345.46	1,513.13
NOX	N/A	90	ppmv at 8% O2	a																223.27	977.92
CO	N/A	300	ppmv at 8% O2	a																453.12	1,984.65
VOC	N/A	0.048	lb/MMBtu	a													7.10E-03	lb/ADTUBP (LVHC)	j	66.46	275.32
Lead	7439921				1.20E-05	lb/ton BLS	c	9.00E-06	lb/MMBtu	f				4.90E-07	lb/MMBtu	i				0.01	0.01
TRS	N/A	5	ppmv at 8% O2	a																9.19	40.25
H2S	7783064				1.62E-02	lb/ton BLS	c										7.86E-05	lb/ADTUBP (HVLC)	k	2.01	8.38
																	2.20E-03	lb/ADTUBP (LVHC)	k		
SAM	7664939	5	ppmv at 8% O2	a																26.44	115.82
CO2	N/A				208.12	lb/MMBtu	d	163.05	lb/MMBtu	g	165.43	lb/MMBtu	g	116.98	lb/MMBtu	g				385,278	1,278,574
CH4	N/A				4.19E-03	lb/MMBtu	d	6.61E-03	lb/MMBtu	g	6.61E-03	lb/MMBtu	g	2.20E-03	lb/MMBtu	g				9.73	27.60
N2O	N/A				9.26E-04	lb/MMBtu	d	1.32E-03	lb/MMBtu	g	1.32E-03	lb/MMBtu	g	2.20E-04	lb/MMBtu	g				2.07	6.02
GHGs	N/A				208.12	lb/MMBtu	d	163.06	lb/MMBtu	g	165.44	lb/MMBtu	g	116.98	lb/MMBtu	g				385,290	1,278,607
CO2e	N/A				208.48	lb/MMBtu	e	163.59	lb/MMBtu	e	165.97	lb/MMBtu	e	117.10	lb/MMBtu	e				386,098	1,280,943

a. BACT limit.

b. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.12. Median value was used.
PM10: 49.5% Filterable PM
PM2.5: 33.8% Filterable PM

c. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables 4.53 and 4.54. Median value was used.

d. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart AA, Table AA-1, softwood factors.

e. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.

f. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal.

g. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.

h. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 6 fuel oil are used (assumed to be representative of Nos. 4 and 5 fuel oils). Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 150 MMBtu/gal.

i. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.

j. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.2. Median value was used and a 99% control efficiency applied. In the baseline only HVLC NCGs were incinerated in the No. 8 Recovery Furnace. As part of a separate project that is expected to be implemented, the Mill intends to remove the Backup NCG Incinerator from service and incinerate LVHC NCGs in the No. 7 Recovery Furnace. Therefore, the PTE reflects incineration of HVLC and LVHC NCGs.

k. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables D5 (HVLC NCGs) and 4.29 (LVHC NCGs). Median value was used and a 99% control efficiency applied. In the baseline only HVLC NCGs were incinerated in the No. 7 Recovery Furnace. As part of a separate project that is expected to be implemented, the Mill intends to remove the Backup NCG Incinerator from service and incinerate LVHC NCGs in the No. 7 Recovery Furnace. Therefore, projected actual emissions reflect incineration of HVLC and LVHC NCGs.

No. 7 Mill Liquor Recovery - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Weak Black Liquor Tank No. 1	110A	110A
No. 7 Mill - Weak Black Liquor Tank No. 2	110B	110B
No. 7 Mill - Weak Black Liquor Tank No. 3	110C	110C
No. 7 Mill - Boilout Tank	242	242

Emission Unit ID No.: X032
Number of Units: 4
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.54	lb/hr/tank	0.54	2.34	2.14	9.37
TRS as S	N/A	0.21	lb/hr/tank	0.21	0.90	0.82	3.61
H2S	7783064	3.28E-03	lb/hr/tank	3.28E-03	0.01	0.01	0.06

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for weak black liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for weak black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill Soap Skimmer Tank	123	123
No. 7 Mill Soap Storage Tank	124	124

Emission Unit ID No.: X032
Number of Units (each mill): 2
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.23	0.99
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33	0.15	0.65
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.10	0.43

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks. This is conservative as information from NCASI indicates the vapor pressure of soap is approximately 0.03 psia and the vapor pressure of heavy black liquor is approximately 0.05 psia.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

No. 7 Mill Liquor Recovery - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Intermediate (55%) Black Liquor Tank	239	239

Emission Unit ID No.: X032
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33
H2S	7783064	0.05	lb/hr/tank	0.05	0.21

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - No. 1 Heavy Black Liquor Storage Tank	240	240
No. 7 Mill - No. 2 Heavy Black Liquor Storage Tank	241	241
No. 7 Mill - Black Liquor Dump Tank	281	281

Emission Unit ID No.: X032
Number of Units: 3
Control Device Description: N/A N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.34	1.48
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33	0.22	0.98
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.15	0.64

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Smelt Dissolving Tank	X002	X002
No. 7 Precipitator Mix Tank	127	X002
No. 7 Salt Cake Mix Tank	111	X002

Emission Unit ID No.: X002, X032
Control Device Description: Venturi Scrubber

PTE BLS Firing Rate: 114.6 TBLS/hr
949,000 TBLS/yr
Projected Actual BLS Firing Rate: 949,000 TBLS/yr

Compound	CAS No.	Emission Factors						PTE		PAE (tpy)	BAE [h] (tpy)	Past Actual [h] (tpy)	Project Increase (PAE - BAE, tpy)
		Test Data - *Used for PAE Only* [a]			Other Emission Factors [c]								
		Value	Units	Reference	Value	Units	Reference	(lb/hr)	(tpy)				
Condensable PM	N/A	5.56E-03	lb/ton BLS	b	0.012	lb/ton BLS	d	1.38	5.70	2.64	--	--	--
Filterable PM	N/A	7.06E-02	lb/ton BLS	b	13.0	lb/hr	e	13.00	56.94	33.52	20.26	17.69	13.26
					0.12	lb/ton BLS	e						
Filterable PM10	N/A	7.06E-02	lb/ton BLS	b	13.0	lb/hr	d	13.00	56.94	33.52	--	--	--
					0.12	lb/ton BLS	d						
Filterable PM2.5	N/A	7.06E-02	lb/ton BLS	b	13.0	lb/hr	d	13.00	56.94	33.52	--	--	--
					0.12	lb/ton BLS	d						
PM10	*Calculated as sum of CPM and FPM10*							14.38	62.64	36.16	19.15	18.70	17.01
PM2.5	*Calculated as sum of CPM and FPM2.5*							14.38	62.64	36.16	17.69	18.70	18.47
SO2	N/A	1.47E-03	lb/ton BLS	b	0.05	lb/ton BLS	e	5.40	22.36	0.70	0.58	0.09	0.12
CO	N/A				8.22E-03	lb/ton BLS	d	0.94	3.90	3.90	3.15	3.09	0.75
VOC	N/A				2.60E-03	lb/ton BLS	f	0.30	1.23	1.23	1.07	0.98	0.16
Lead	7439921				7.64E-07	lb/ton BLS	g	8.75E-05	3.63E-04	3.63E-04	2.93E-04	2.87E-04	6.99E-05
TRS	N/A	1.50E-02	lb/ton BLS	b	0.031	lb/ton BLS	e	3.60	14.91	7.12	2.89	3.69	4.23
H2S	7783064				1.18E-02	lb/ton BLS	g	1.35	5.60	5.60	4.89	4.43	0.71

a. BAE for these pollutants are calculated based on representative stack test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.
b. Emission factor based on stack test data.
c. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
d. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.15 for smelt dissolving tanks. Consistent with footnote 9 of the table, the following particle size distribution was conservatively assumed.

PM10: 100% Filterable PM
PM2.5: 100% Filterable PM

Per NCASI guidance, there are no VOC emissions from smelt dissolving tanks when only fresh water is used for mud washing and/or smelt reduction. The mill uses fresh water for mud washing and weak wash from mud washing in the smelt dissolving tanks.
e. BACT limit. The filterable PM BACT limit is back-calculated based on the lb/hr limit and associated production rate.
f. Emission factor from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.16 for salt cake mix tank vents. Emission factor takes into account the number of tanks.
g. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for smelt dissolving tanks. Per NCASI guidance, there are no VOC emissions when only fresh water is used to wash lime mud.
h. Please refer to detailed baseline actual and past actual emissions for basis.

No. 8 Mill Liquor Recovery

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Multiple Effect Evaporator System	X016	LVHC

Emission Unit ID No.: X016
No. of Units: 1
Control Device Description: LVHC
Percent of Time Venting Can Occur: 1% LVHC

PTE Production: 810,834 ADTUBP/yr (for No. 8 Multiple Effect Evaporator)
PAE Production: 672,903 ADTUBP/yr (for No. 8 Multiple Effect Evaporator)

Compound	CAS No.	Emission Factor [a, b]		Evaporator Portion [c]	PTE [d] (tpy)	PAE [d] (tpy)	BAE [e] (tpy)	Past Actual [e] (tpy)	Project Increase (PAE - BAE, tpy)
VOC	N/A	0.71	lb/ADTUBP	45%	1.30	1.08	0.03	0.02	1.05
TRS as S	N/A	1.26	lb/ADTUBP	2%	0.09	0.07	0.00	0.00	0.07
H2S	7783064	0.22	lb/ADTUBP	10%	0.09	0.08	0.00	0.00	0.07

a. For emissions to LVHC, emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.2. All other emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for uncontrolled NCGs - LVHC combined (digesters and evaporators).
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. The emission factors shown are for combined LVHC venting, which includes the digester and evaporator systems. The evaporator portion of emissions was based on the uncontrolled evaporator venting emission factor from the 2018 NCASI Air Toxics Pulp and Paper Database divided by the emission factor for the combined LVHC stream. For VOC, methanol was used as a surrogate.
d. Emission rates take into account the % of time that venting can occur - 1% for LVHC (per Subpart S).
e. Please refer to detailed baseline actual and past actual emissions for basis.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 8 Mill Soap Skimmer Tank	424	424
New No. 8 Mill Soap Skimmer Tank	425	425

Emission Unit ID No.: X033
Number of Units (each mill): 2
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.23	0.99
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33	0.15	0.65
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.10	0.43

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources a An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pol Pulp and Paper Database for strong or heavy black liquor storage tanks. This is conservative as information from NCASI indicates the v 0.03 psia and the vapor pressure of heavy black liquor is approximately 0.05 psia.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in excluded.
c. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.0

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 8 Mill - Intermediate (55%) Black Liquor Tank	426	426

Emission Unit ID No.: X033
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		BAE [c]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(PTE - BAE, tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.00	0.49
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33	0.00	0.33
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.00	0.21

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Recovery Furnace	X012	X012
New No. 8 Smelt Dissolving Tank*	X015	X012
No. 8 Salt Cake Mix Tank*	310	X012

**As part of this project, the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace. The No. 8 Salt Cake Mix Tank has historically vented to the No. 8 Smelt Dissolving Tank scrubber and thus, now will vent through the No. 8 Recovery Furnace.*

Emission Unit ID No.: X012, X015
Number of Units: 1
Control Device Description: Two Parallel Electrostatic Precipitators
Fuels Processed/Fired: Black Liquor Solids (BLS), No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Natural Gas, and NCGs

Projected Actual BLS Firing Rate: 1,261,075 TBLS/yr
15,553,782 MMBtu/yr
Projected Actual Exhaust Flow Rate: 442,221 dscfm at 8% O2
Projected Actual Operation: 8,760 hr/yr

Fuel Oil Maximum Sulfur Content: 0.25 %
Projected Actual Auxiliary Firing Rate: 780,613 MMBtu/yr
757,497 MMBtu/yr (natural gas)
23,115 MMBtu/yr (fuel oil)

Compound	CAS No.	Emission Factors												PTE [n, o] (tpy)	PAE [o] (tpy)	BAE [o, p] (tpy)	Past Actual [o, p] (tpy)	Project Increase [o] (PAE - BAE, tpy)
		BLS, Auxiliary Fuels, and NCG Incineration - *Used for PAE Only* [a]			BLS			Fuel Oil			Natural Gas							
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference					
Condensable PM	N/A				0.083	lb/ton BLS	e	9.29E-03	lb/MMBtu	h	5.59E-03	lb/MMBtu	l	--	--	--	--	--
Filterable PM	N/A	0.015	gr/dscf at 8% O2	b				1.43E-02	lb/MMBtu	h	1.86E-03	lb/MMBtu	l	249.03	249.03	154.55	144.68	94.48
Filterable PM10	N/A							9.00E-03	lb/MMBtu	j				--	--	--	--	--
Filterable PM2.5	N/A							5.86E-03	lb/MMBtu	j				--	--	--	--	--
PM10	N/A	0.030	gr/dscf at 8% O2	b										498.07	498.07	118.80	109.54	379.27
PM2.5	N/A	0.027	gr/dscf at 8% O2	b										448.26	448.26	94.99	86.83	353.27
SO2	N/A	0.05	lb/ton BLS	d				142*S / 140 = 0.25	lb/MMBtu	h	5.88E-04	lb/MMBtu	l	592.36	37.50	32.69	1.49	4.81
NOX	N/A	75	ppmv @ 8% O2	b				0.17	lb/MMBtu	h	0.18	lb/MMBtu	m	1,041.10	1,041.10	729.40	517.37	311.69
CO	N/A	200	ppmv @ 8% O2	b				0.04	lb/MMBtu	h	0.08	lb/MMBtu	l	1,690.30	1,690.30	351.54	294.17	1,338.75
VOC	N/A	20	ppmv @ 8% O2	b				1.43E-03	lb/MMBtu	h	5.39E-03	lb/MMBtu	l	72.48	72.48	2.49	16.38	69.99
Lead	7439921				1.20E-05	lb/ton BLS	e	9.00E-06	lb/MMBtu	h	4.90E-07	lb/MMBtu	l	0.02	0.01	0.01	0.01	0.00
TRS	N/A	5	ppmv @ 8% O2	b										51.42	51.42	5.25	4.44	46.17
H2S	7783064	4	ppmv @ 8% O2	b	1.62E-02	lb/ton BLS	e							41.14	41.14	5.31	4.44	35.82
SAM	7664939	5	ppmv @ 8% O2	b				2.45*S / 140 = 4.38E-03	lb/MMBtu	i				147.97	147.97	25.98	25.98	121.99
CO2	N/A				208.12	lb/MMBtu	f	163.05	lb/MMBtu	k	116.98	lb/MMBtu	k	--	1,664,688	--	--	--
CH4	N/A				4.19E-03	lb/MMBtu	f	6.61E-03	lb/MMBtu	k	2.20E-03	lb/MMBtu	k	--	33.5	--	--	--
N2O	N/A				9.26E-04	lb/MMBtu	f	1.32E-03	lb/MMBtu	k	2.20E-04	lb/MMBtu	k	--	7.3	--	--	--
GHGs	N/A				208.12	lb/MMBtu	f	163.06	lb/MMBtu	k	116.98	lb/MMBtu	k	1,830,307	1,664,729	1,355,316	1,185,016	309,413
CO2e	N/A				208.48	lb/MMBtu	g	163.59	lb/MMBtu	g	117.10	lb/MMBtu	g	1,833,650	1,667,560	1,357,633	1,187,032	309,926

a. BAE for these pollutants are calculated based on representative stack test data for the subject year or CEMS data during the baseline period. Refer to the stack test summaries or baseline actual emission rate calculations for additional detail.
b. Proposed BACT limit.
c. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.12. Median value was used. The CPM emission factor is used to calculate baseline emissions only.
d. Emission factor based on stack test data.
e. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables 4.53 and 4.54. Median value was used. The H2S emission factor is used to calculate baseline emissions only.
f. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart AA, Table AA-1, softwood factors.
g. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
h. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal. The CPM emission factor is used to calculate baseline emissions only.
i. Average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned (assuming complete conversion), where S is the fuel oil sulfur content in %. This emission factor is what is presented in the 2018 NCASI Toxics Database.
j. AP-42 Section 1.3, Fuel Oil Combustion (September 1998). The particle size distribution in Table 1.3-4 below is used for calculation of baseline emissions only and is representative of ESP control of utility boiler firing residual oil and applied to distillate and residual fuel oil firing.
PM10: 63% Filterable PM
PM2.5: 41% Filterable PM
k. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
l. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables. The CPM emission factor is used to calculate baseline emissions only.
m. Vendor information.
n. See separate calculation for PTE.
o. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
p. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Recovery Furnace	X012	X012
New No. 8 Smelt Dissolving Tank*	X015	X012
No. 8 Salt Cake Mix Tank*	310	X012

**As part of this project, the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace. The No. 8 Salt Cake Mix Tank has historically vented to the No. 8 Smelt Dissolving Tank scrubber and thus, now will vent through the No. 8 Recovery Furnace.*

Emission Unit ID No.: X012, X015
Number of Units: 1
Control Device Description: Two Parallel Electrostatic Precipitators
Fuels Processed/Fired: Black Liquor Solids (BLS), No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Natural Gas, and NCGs

PTE Calculations

Max BLS Firing: 156.3 TBLS/hr; 1,314,000 TBLS/yr; 1,938 MMBtu/hr; 16,293,600 MMBtu/yr
Max Fuel Oil Firing: 750 MMBtu/hr; 1,629,360 MMBtu/yr
Max Natural Gas Firing: 525 MMBtu/hr; 1,629,360 MMBtu/yr
Exhaust Flow: 442,221 dscfm at 8% O2
Max Operation: 8,760 hr/yr

Compound	**CAS No.**	**Emission Factors**															**PTE** [i,j]	
		BLS, Auxiliary Fuels, and NCG Incineration			**BLS**			**No. 2 Fuel Oil**			**No. 4-5 Fuel Oil**			**Natural Gas**				
		Value	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**Value**	**Units**	**Reference**	**(lb/hr)**	**(tpy)**
Filterable PM	N/A	0.015	gr/dscf at 8% O2	a													56.86	249.03
PM10	N/A	0.030	gr/dscf at 8% O2	a													113.71	498.07
PM2.5	N/A	0.027	gr/dscf at 8% O2	a													102.34	448.26
SO2	N/A	20	ppmv at 8% O2	b				0.3	lb/MMBtu	a	0.3	lb/MMBtu	a				225.00	592.36
NOX	N/A	75	ppmv at 8% O2	a													237.69	1,041.10
CO	N/A	200	ppmv at 8% O2	a													385.91	1,690.30
VOC	N/A	20	ppmv at 8% O2	a													16.55	72.48
Lead	7439921				1.20E-05	lb/ton BLS	c	9.00E-06	lb/MMBtu	f				4.90E-07	lb/MMBtu	h	0.01	0.02
TRS	N/A	5	ppmv at 8% O2	a													11.74	51.42
H2S	7783064	4	ppmv at 8% O2	a													9.39	41.14
SAM	7664939	5	ppmv at 8% O2	a													33.78	147.97
CO2	N/A				208.12	lb/MMBtu	d	163.05	lb/MMBtu	g	165.43	lb/MMBtu	g	116.98	lb/MMBtu	g	527,302	1,830,259
CH4	N/A				4.19E-03	lb/MMBtu	d	6.61E-03	lb/MMBtu	g	6.61E-03	lb/MMBtu	g	2.20E-03	lb/MMBtu	g	13.08	39.51
N2O	N/A				9.26E-04	lb/MMBtu	d	1.32E-03	lb/MMBtu	g	1.32E-03	lb/MMBtu	g	2.20E-04	lb/MMBtu	g	2.79	8.62
GHGs	N/A				208.12	lb/MMBtu	d	163.06	lb/MMBtu	g	165.44	lb/MMBtu	g	116.98	lb/MMBtu	g	527,318	1,830,307
CO2e	N/A				208.48	lb/MMBtu	e	163.59	lb/MMBtu	e	165.97	lb/MMBtu	e	117.10	lb/MMBtu	e	528,406	1,833,650

a. Proposed BACT limit.
b. Vendor data.
c. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables 4.53 and 4.54. Median value was used.
d. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart AA, Table AA-1, softwood factors.
e Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
f. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal.
g. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
h. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.
i. As part of this project, the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace. The represented PTE and PAE for the No. 8 Recovery Furnace include the contribution from the No. 8 Smelt Dissolving Tank.
j. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 8 Smelt Dissolving Tank*	X015	X015
No. 8 Salt Cake Mix Tank*	310	X015

Emission Unit ID No.: X015
Control Device Description: Venturi Scrubber

In limited operating scenarios (e.g., when performing maintenance on the No. 8 Smelt Dissolving Tanks condenser or 'clean air' fan), the exhaust from the No. 8 Smelt Dissolving Tank will vent through the scrubber directly to atmosphere. This calculation represents the emissions when the No. 8 Smelt Dissolving Tank vents to the atmosphere after the scrubber.

PTE BLS Firing Rate: 156.3 TBLS/hr
7,500 TBLS/yr
Projected Actual BLS Firing Rate: 7,500 TBLS/yr

Compound	**CAS No.**	**Emission Factors [a]**			**PTE**		**PAE (tpy)**	**BAE [e] (tpy)**	**Past Actual [e] (tpy)**	**Project Increase (PTE - BAE, tpy)**
		Value	**Units**	**Reference**	**(lb/hr)**	**(tpy)**				
Condensable PM	N/A	0.012	lb/ton BLS	b	1.88	0.05	0.05	--	--	--
Filterable PM	N/A	0.146	lb/ton BLS	b	22.81	0.55	0.55	0.00	0.00	0.55
Filterable PM10	N/A	0.146	lb/ton BLS	b	22.81	0.55	0.55	--	--	--
Filterable PM2.5	N/A	0.146	lb/ton BLS	b	22.81	0.55	0.55	--	--	--
PM10	*Calculated as sum of CPM and FPM10*				24.69	0.59	0.59	0.00	0.00	0.59
PM2.5	*Calculated as sum of CPM and FPM10*				24.69	0.59	0.59	0.00	0.00	0.59
SO2	N/A	6.00E-03	lb/ton BLS	b	0.94	0.02	0.02	0.00	0.00	0.02
CO	N/A	8.22E-03	lb/ton BLS	b	1.28	0.03	0.03	0.00	0.00	0.03
VOC	N/A	1.30E-03	lb/ton BLS	b, c	0.20	4.88E-03	4.88E-03	0.00	0.00	4.88E-03
Lead	7439921	7.64E-07	lb/ton BLS	d	1.19E-04	2.87E-06	2.87E-06	0.00	0.00	2.87E-06
TRS	N/A	0.019	lb/ton BLS	d	2.92	0.07	0.07	0.00	0.00	0.07
H2S	7783064	1.18E-02	lb/ton BLS	d	1.84	0.04	0.04	0.00	0.00	0.04

a. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
b. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.15 for smelt dissolving tanks. Consistent with footnote 9 of the table, the following particle size distribution was conservatively assumed.
PM10: 100% Filterable PM
PM2.5: 100% Filterable PM
Per NCASI guidance, there are no VOC emissions from smelt dissolving tanks when only fresh water is used for mud washing and/or smelt reduction. The mill uses fresh water for mud washing and weak wash from mud washing in the smelt dissolving tanks.
c. Emission factor from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.16 for salt cake mix tank vents. Emission factor takes into account the number of tanks.
d. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for smelt dissolving tanks. Per NCASI guidance, there are no VOC emissions when only fresh water is used to wash lime mud.
e. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

No. 8 Mill Liquor Recovery - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill - Weak Black Liquor Tank	309	309
No. 8 Mill - Boilout Tank	432	432

Emission Unit ID No.: X033
Number of Units: 2
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr	(tpy)	(lb/hr	(tpy)
VOC	N/A	0.54	lb/hr	0.54	2.34	1.07	4.69
TRS	N/A	0.21	lb/hr	0.21	0.90	0.41	1.80
H2S	7783064	3.28E-03	lb/hr	3.28E-03	0.01	0.01	0.03

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for weak black liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for weak black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill Soap Storage Tank	429	429

Emission Unit ID No.: X033
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr	(tpy)
VOC	N/A	0.11	lb/hr	0.11	0.49
TRS	N/A	0.07	lb/hr	0.07	0.33
H2S	7783064	0.05	lb/hr	0.05	0.21

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks. This is conservative as information from NCASI indicates the vapor pressure of soap is approximately 0.03 psia and the vapor pressure of heavy black liquor is approximately 0.05 psia.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

No. 8 Mill Liquor Recovery - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill - Intermediate (55%) Black Liquor Tank	430	430

Emission Unit ID No.: X033
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49
TRS	N/A	0.07	lb/hr/tank	0.07	0.33
H2S	7783064	0.05	lb/hr/tank	0.05	0.21

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill - Heavy Black Liquor Storage Tank	431	431
No. 8 Mill - Black Liquor Dump Tank	479	479

Emission Unit ID No.: X033
Number of Units: 2
Control Device Description: N/A N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.23	0.99
TRS	N/A	0.07	lb/hr/tank	0.07	0.33	0.15	0.65
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.10	0.43

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

No. 8 Mill Liquor Recovery - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill - Black Liquor Spill Tank	433	433

Emission Unit ID No.: X033
Number of Units: 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
VOC	N/A	0.54	lb/hr/tank	0.54	2.34
TRS	N/A	0.21	lb/hr/tank	0.21	0.90
H2S	7783064	4.89E-02	lb/hr/tank	0.05	0.21

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for weak and strong black liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database. The maximum emission factor resulting from storage of weak or strong black liquor was used, since the tank can store either.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

No. 8 Liquor Recovery - To be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Smelt Dissolving Tank	X013	X013

Emission Unit ID No.: X013
Number of Units: 1
Control Device Description: Scrubber

Compound	CAS No.	Non-Test Data Emission Factors [a]			BAE [e] (tpy)	Past Actual [e] (tpy)
		Value	Units	Reference		
Condensable PM	N/A	--	--	b	--	--
Filterable PM	N/A	--	--	b	45.79	34.18
Filterable PM10	N/A	--	--	c	--	--
Filterable PM2.5	N/A	--	--	c	--	--
PM10	N/A	*Calculated as sum of CPM and FPM10*			51.17	35.18
PM2.5	N/A	*Calculated as sum of CPM and FPM10*			53.55	35.18
SO2	N/A	--	--	--	1.61	1.69
CO	N/A	8.22E-03	lb/ton BLS	c	4.21	3.75
Lead	7439921	7.64E-07	lb/ton BLS	d	3.86E-04	3.49E-04
TRS	N/A	--	--	--	7.32	3.67
H2S	7783064	1.18E-02	lb/ton BLS	d	5.97	5.39

a. NCASI emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

b. BAE for these pollutants are calculated based on representative stack test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.

c. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Table 4.15 for smelt dissolving tanks. Consistent with

PM10: 100% Filterable PM
PM2.5: 100% Filterable PM

Per NCASI guidance, there are no VOC emissions when only fresh water is used for mud washing and/or smelt reduction. The mill uses fresh water for mud washing and weak wash from mud washing in the smelt dissolving tanks.

d. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for smelt dissolving tanks. Per NCASI guidance, there are no VOC emissions when only fresh water is used to wash lime mud.

e. Please refer to detailed baseline actual and past actual emissions for basis.

No. 7 Mill Recausticizing

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Mill - Slaker	132	132

Emission Unit ID No.: X030
Number of Units (each mill): 1
Control Device Description: Scrubber

PTE Throughput: 19.3 TCaO/hr
153,300 TCaO/yr

Compound	CAS No.	Emission Factor [a, b, c]		PTE		BAE [d]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(PTE - BAE, tpy)
Filterable PM	N/A	0.029	lb/ton CaO	0.56	2.22	0.00	2.22
Filterable PM10	N/A	0.029	lb/ton CaO	0.56	2.22	0.00	2.22
Filterable PM2.5	N/A	0.029	lb/ton CaO	0.56	2.22	0.00	2.22
TRS	N/A	0.105	lb/ton CaO	2.03	8.08	0.00	8.08

a. Emission factor for PM from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.14, median. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.
b. TRS emission factor from 2018 NCASI Air Toxics Pulp and Paper Database for slaker emissions only (median plus 20%), consistent with recently established BACT limit.
c. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
d. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Mill - No. 1 Causticizer	248	I-248
No. 7 Mill - No. 2 Causticizer	249	I-249
No. 7 Mill - No. 3 Causticizer	250	I-250
No. 7 Mill - No. 4 Causticizer	251	I-251
No. 7 Mill - Causticizer Sump Tank	252	I-252
New No. 7 Mill - No. 5 Causticizer	261	261

Emission Unit ID No.: X030
Number of Units: 5
Control Device Description: N/A

PTE Throughput: 19.3 TCaO/hr
153,300 TCaO/yr
PAE Throughput: 149,100 TCaO/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (lb/hr)	PTE (tpy)	PAE (tpy)	BAE [c] (tpy)	Past Actual [c] (tpy)	Project Increase (PAE - BAE,
TRS	N/A	5.55E-02	lb/ton CaO	1.07	4.25	4.14	3.44	2.85	0.69

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for causticizer emissions only. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

PTE of New Components of the Causticizing System

Since new equipment is being added as part of the No. 7 Mill Causticizing System, the PTE for the new component is estimated below. These emissions are a subset of the PTE emissions shown above.

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
New No. 7 Mill - No. 5 Causticizer	261	261

Emission Unit ID No.: X030
Number of Units: 1
Control Device Descript N/A

PTE Throughput: 153,300 TCaO/yr (for all No. 7 Mill causticizers)

Compound	CAS No.	Emission Factor [a, b]		PTE [c] (tpy)	BAE[c] (tpy)	Project Increase (PTE - BAE, tpy)
TRS	N/A	5.55E-02	lb/ton CaO	0.85	0.00	0.85

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for causticizer emissions only. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Emissions for the single new causticizer estimated as 20% of causticizer emissions.
d. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 7 Lime Kiln	X003	X003

Emission Unit ID No.: X003
Number of Units: 1
Control Device Description: Venturi Scrubber *(Current)* ; ESP *(Proposed)*
Fuels Fired: No. 2-5 Fuel Oils*, Tall Oil*, Glycerin*, Biodiesel*, Hydrogen*, Natural Gas, & NCGs (LVHC)
**These fuels are proposed to be removed from the permit for the No. 7 Lime Kiln as part of this permit action.*

PAE Throughput: 149,100 TCaO/yr
PAE Exhaust Flow: 34,584 dscfm at 10% O2
PAE Auxiliary Firing Rate: 902,055 MMBtu/yr
PAE Operation: 8,760 hr/yr

Compound	CAS No.	Emission Factors												PTE [i, j] (tpy)	PAE [j] (tpy)	BAE [j, k] (tpy)	Past Actual [j, k] (tpy)	Project Increase j (PAE - BAE, tpy)
		Lime Production and Aux Fuel - *Used for PAE Only* [a]			Lime Production			Fuel Oil - *Used for BAE and Past Actual Emissions Only*			Natural Gas							
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference					
Condensable PM	N/A				9.51E-02	lb/ton CaO (scrubber)	c							--	--	--	--	--
Filterable PM	N/A	0.01	gr/dscf at 10% O2	b										12.98	12.98	27.87	23.62	-14.89
PM10	N/A	0.030	gr/dscf at 10% O2	b										38.95	38.95	28.25	28.51	10.70
PM2.5	N/A	0.027	gr/dscf at 10% O2	b										35.06	35.06	25.76	28.51	9.29
SO2	N/A	0.0262	lb/TCaO	c				142*S / 140	lb/MMBtu	e				24.19	1.95	0.48	3.03	1.47
NOX	N/A	112	ppmvd at 10% O2	b										121.59	121.59	104.61	43.20	16.97
CO	N/A	50	ppmvd at 10% O2	b										33.05	33.05	0.37	2.39	32.67
VOC	N/A	25	ppmvd at 10% O2	b										7.09	7.09	2.30	0.64	4.79
Lead	N/A				1.54E-04	lb/ton CaO (scrubber)	c							1.13E-03	1.10E-03	0.01	7.92E-03	-0.01
					1.48E-05	lb/ton CaO (ESP)	c											
TRS	N/A	8	ppmvd at 10% O2	b										6.43	6.43	2.17	1.29	4.26
H2S	7783064	8	ppmvd at 10% O2	b	5.64E-02	lb/ton CaO	c							6.43	6.43	2.16	1.28	4.27
SAM	N/A	1.2	lb/hr	b				2.45*S / 140	lb/MMBtu	f				5.26	5.26	1.70	1.70	3.56
CO2	N/A						d	163.05	lb/MMBtu	g	116.98	lb/MMBtu	g	--	52,760	--	--	--
CH4	N/A						d	5.95E-03	lb/MMBtu	g	5.95E-03	lb/MMBtu	g	--	2.68	--	--	--
N2O	N/A						d	0.00	lb/MMBtu	g	0.00	lb/MMBtu	g	--	0.00E+00	--	--	--
GHGs	N/A						d	163.06	lb/MMBtu	g	116.98	lb/MMBtu	g	65,073	52,763	49,443	46,075	3,320
CO2e	N/A						d	163.22	lb/MMBtu	h	117.14	lb/MMBtu	h	65,162	52,835	49,511	46,138	3,324

a. These emission factors represent future operation only. BAE for these pollutants are based on test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.
b. Proposed or existing BACT limit.
c. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.13. The CPM and H2S emission factors are only used for calculation of baseline emissions; the CPM emission factor represents control by a scrubber.
d. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO2 emissions from the conversion of CaCO3 to CaO are included in the biogenic CO2 estimates caclulated for the No. 7 Recovery Furnace.
e. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal.
f. Average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned (assuming complete conversion), where S is the fuel oil sulfur content in %. This emission factor is what is presented in the 2018 NCASI Toxics Database.
g. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 (for CO2) and AA-2 (for CH4 and N2O).
h. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
i. See separate calculation for PTE.
j. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
k. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Lime Kiln	X003	X003

Emission Unit ID No.: X003
Number of Units: 1
Control Device Description: Venturi Scrubber *(Current)* ; ESP *(Proposed)*
Fuels Fired: No. 2-5 Fuel Oils*, Tall Oil*, Glycerin*, Biodiesel*, Hydrogen*, Natural Gas, & NCGs (LVHC)
**These fuels are proposed to be removed from the permit for the No. 7 Lime Kiln as part of this permit action.*

PTE Calculations

Max Lime Production: 19.3 TCaO/hr; 153,300 TCaO/yr
PTE Exhaust Flow: 34,584 dscfm at 10% O2
PTE Operation: 8,760 hr/yr
Max Natural Gas Firing: 127 MMBtu/hr; 1,112,520 MMBtu/yr
No. 7 Mill Production: 79.1 ADTUBP/hr; 629,529 ADTUBP/yr

Compound	CAS No.	Emission Factors									PTE [g]	
		Lime Production and Aux Fuel			Lime Production			Natural Gas				
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	(lb/hr)	(tpy)
Filterable PM	N/A	0.01	gr/dscf at 10% O2	a							2.96	12.98
PM10	N/A	0.030	gr/dscf at 10% O2	a							8.89	38.95
PM2.5	N/A	0.027	gr/dscf at 10% O2	a							8.00	35.06
SO2	N/A	16	ppmvd at 10% O2	c							5.52	24.19
NOX	N/A	112	ppmvd at 10% O2	a							27.76	121.59
CO	N/A	50	ppmvd at 10% O2	a							7.55	33.05
VOC	N/A	25	ppmvd at 10% O2	a							1.62	7.09
Lead	7439921				1.48E-05	lb/ton CaO (ESP)	b				2.85E-04	1.13E-03
TRS	N/A	8	ppmvd at 10% O2	a							1.47	6.43
H2S	7783064	8	ppmvd at 10% O2	a							1.47	6.43
SAM	7664939	1.2	lb/hr	a							1.2	5.26
CO2	N/A						d	116.98	lb/MMBtu	e	14,856	65,070
CH4	N/A						d	5.95E-03	lb/MMBtu	e	0.76	3.31
N2O	N/A						d	0.00	lb/MMBtu	e	0.00	0.00
GHGs	N/A						d	116.98	lb/MMBtu	e	14,857	65,073
CO2e	N/A						d	117.14	lb/MMBtu	f	14,877	65,162

a. Proposed or existing BACT limit.
b. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.13.
c. Vendor data.
d. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO2 emissions from the conversion of CaCO3 to CaO are included in the biogenic CO2 estimates calculated for the No. 7 Recovery Furnace.
e. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 (for CO2) and AA-2 (for CH4 and N2O).
f. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
g. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Reburned Lime Silo/Bin	259	259
No. 7 Mill - Purchased Lime Silo/Bin	260	260

Emission Unit ID No.: X030
Number of Units: 2
Control Device Description: Baghouses
Control Device Efficiency: 98%

PTE Throughput: 30 TCaO/hr (both bins combined)
153,300 TCaO/yr (both bins combined)
PAE Throughput: 149,100 TCaO/yr (both bins combined)

Pollutant	**CAS No.**	**Lime Handling Emission Factor[a]**		**PTE [b]**		**PAE [b] (tpy)**	**BAE [b, c] (tpy)**	**Past Actual [b, c] (tpy)**	**Project Increase (PAE - BAE, tpy)**
				(lb/hr)	**(tpy)**				
Filterable PM	N/A	6.99E-02	lb/ton CaO	0.04	0.11	0.10	0.08	0.07	0.03
Filterable PM10	N/A	3.31E-02	lb/ton CaO	0.02	0.05	0.05	0.04	0.03	0.01
Filterable PM2.5	N/A	5.01E-03	lb/ton CaO	3.00E-03	0.01	0.01	0.01	5.15E-03	2.15E-03

a. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are shown below. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-7. The moisture content represents the minimum moisture content the equation is valid for.

$$E = k(0.0032)\frac{\left(U/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

Where:
E (lb/ton) = particulate emission factor
k = particle size multiplier, dimensionless
0.74 for PM
0.35 for PM10
0.053 for PM2.5
U (mph) = mean wind speed = 7.2
M (%) = moisture content = 0.25

b. These emissions estimates are representative of both bins combined.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Green and White Liquor Swing Tank *(current No. 7 Mill - No. 1 White Liquor Clarifier)*	117a	117a

Emission Unit ID No.: X030
Number of Units: 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE	BAE [c]	Past Actual [c]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(PTE - BAE,
TRS	N/A	1.93E-04	lb/hr/tank	1.93E-04	8.45E-04	8.45E-04	0.00	0.00	8.45E-04
H2S	7783064	9.19E-03	lb/hr/tank	9.19E-03	0.04	0.04	0.00	0.00	0.04

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for white liquor storage tanks. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud. Since this storage tank can store green liquor or white liquor, the maximum emissions for either service were used. Emissions of only organics are presented in the NCASI database for green liquor storage tanks; therefore, the emissions for white liquor storage tanks are shown.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. Baseline and past actual emissions are zero, since this emission unit currently servces as a white liquor clarifier. Since only fresh water is used to wash lime mud and only emissions of organics are expected from a white liquor clarifier, no baseline or past actual emissions are estimated for this tank.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - No. 2 White Liquor Storage Tank *(current No. 7 Mill - No. 2 White Liquor Clarifier)*	117b	117b

Emission Unit ID No.: X030
Number of Units: 1
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE	BAE [c]	Past Actual [c]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(PTE - BAE,
TRS	N/A	1.93E-04	lb/hr/tank	1.93E-04	8.45E-04	8.45E-04	0.00	0.00	8.45E-04
H2S	7783064	9.19E-03	lb/hr/tank	9.19E-03	0.04	0.04	0.00	0.00	0.04

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for white liquor storage tanks. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Baseline and past actual emissions are zero, since this emission unit currently servces as a white liquor clarifier. Since only fresh water is used to wash lime mud and only emissions of organics are expected from a white liquor clarifier, no baseline or past actual emissions are estimated for this tank.

Caustizicing Sources with No Emissions

As described in NCASI Technical Bulletin No. 973, organic emissions are not expected from the causticizing area sources at mills that use 100% fresh water in the entire causticizing area (e.g., mud washing). This includes all unit operations from the smelt dissolving tank to the white liquor storage tank, including all processes associated with green and white liquor processing and mud washing. Based on NCASI guidance, emissions are not estimated for the following emission units, since published data only includes organic emissions.

Emission Equipment Description+:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - No. 1 Green Liquor Clarifier	115a	115a
No. 7 Mill - No. 2 Green Liquor Clarifier	115b	115b
New No. 7 Mill - White Liquor Pressure Disc Filter	287	N/A (no emissions)
No. 7 Mill - No. 1 Lime Mud Storage Tank	255a	255a
New No. 7 Mill - No. 2 Lime Mud Storage Tank	288	N/A (no emissions)
No. 7 Mill - Lime Mud Precoat Filter	256	256
No. 7 Mill - Lime Mud Filter Vacuum Pump	257	257
No. 7 Mill - Weak Wash Storage Tank*	258	258
No. 7 Mill - Dregs Filter	246	246
No. 7 Mill - Dregs Filter Vacuum Pump	247	247

+The No. 7 Mill - No. 2 Lime Mud Storage Tank is no longer at the site, and thus, is not affected by the project.
*The asterisks indicate a change to the equipment.

Current Service	Proposed Service
Weak Wash Clarifier	Weak Wash Storage Tank

No. 7 Mill Recausticizing - Additional Affected Sources

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Green Liquor Blend Tank	278	278

Emission Unit ID No.: X030
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
TRS as S	N/A	4.37E-02	lb/hr/tank	0.04	0.19

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for green liquor storage tanks. Per NCASI guidance, there are no VOC emissions when only fresh water is used to wash lime mud.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - No. 1 White Liquor Storage Tank	253	I-253

Emission Unit ID No.: X030
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr)	(tpy)
TRS as S	N/A	1.93E-04	lb/hr/tank	1.93E-04	8.45E-04
H2S	7783064	9.19E-03	lb/hr/tank	0.01	0.04

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for white liquor storage tanks. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

No. 7 Mill Recausticizing Area - Sources to be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Mill - Slaker	116	116

Emission Unit ID No.: X030
Number of Units (each mill): 1
Control Device Description: Scrubber

Baseline Actual Emission Factors from Existing No. 7 Mill Slaker

Compound	CAS No.	Emission Factor [a, b]		BAE [c] (tpy)	Past Actual [c] (tpy)
Filterable PM	N/A	0.029	lb/ton CaO	1.63	1.49
Filterable PM10	N/A	0.029	lb/ton CaO	1.61	1.49
Filterable PM2.5	N/A	0.029	lb/ton CaO	1.54	1.49
TRS	N/A	8.78E-02	lb/ton CaO	5.45	4.51

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for slaker emissions only. Per NCASI guidance, there are no VOC emissions if only fresh water is used to wash lime mud.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Caustizicing Sources with No Emissions
As described in NCASI Technical Bulletin No. 973, organic emissions are not expected from the causticizing area sources at mills that use 100% fresh water in the entire causticizing area (e.g., mud washing). This includes all unit operations from the smelt dissolving tank to the white liquor storage tank, including all processes associated with green and white liquor processing and mud washing. Based on NCASI guidance, emissions are not estimated for the following emission units, since published data only includes organic emissions.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Mill - Lime Mud Mix Tank	254	254

No. 8 Mill Recausticizing

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 8 Lime Kiln	X014	X014

Emission Unit ID No.: X014
Number of Units: 1
Control Device Description: ESP
Fuels Fired: No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Hydrogen, Natural Gas, & NCGs (LVHC)

PAE Throughput: 146,448 TCaO/yr
PAE Exhaust Flow: 45,819 dscfm at 10% O2
PAE Operation: 8,512 hr/yr

PAE Auxiliary Firing Rate: 1,019,910 MMBtu/yr (Total)
99.85% Natural Gas (MMBtu basis)
0.15% Fuel Oil (MMBtu basis)
Fuel Oil Maximum Sulfur Content: 0.25 %

PAE No. 8 Mill Production: 672,903 ADTUBP/yr (max of No. 8 Evaporator and No. 8 Digester)

Compound	CAS No.	Emission Factors															PTE [i, j] (tpy)	PAE [j] (tpy)	BAE [j, k] (tpy)	Past Actual [j, k] (tpy)	Project Increase j (PAE - BAE, tpy)
		Lime Production and Aux Fuel - *Used for PAE Only* [a]			Lime Production			Fuel Oil			Natural Gas			LVHC NCG Incineration							
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference					
Condensable PM	N/A				8.67E-02	lb/ton CaO	d										--	6.35	--	--	--
Filterable PM	N/A	0.083	lb/TCaO (NG)	b													121.88	6.08	4.41	4.57	1.67
		0.157	lb/TCaO (FO)	b																	
Filterable PM10	N/A	0.026	lb/TCaO (NG)	b, d													--	1.93	--	--	--
		0.050	lb/TCaO (FO)	b, d																	
Filterable PM2.5	N/A	0.008	lb/TCaO (NG)	b, d													--	0.62	--	--	--
		0.016	lb/TCaO (FO)	b, d																	
PM10	N/A	*Calculated as sum of CPM and FPM10*															47.18	8.28	7.37	7.17	0.90
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*															20.97	6.97	6.34	6.19	0.63
SO2	N/A	0.009	lb/TCaO	b				142*S / 140 = 0.25	lb/MMBtu	f							110.87	0.86	0.00	0.49	0.85
NOX	N/A	1.65	lb/TCaO	b													159.23	121.11	99.64	66.52	21.48
CO	N/A	0.057	lb/TCaO	b													50.41	4.18	3.16	0.71	1.03
VOC	N/A	0.055	lb/TCaO	b													32.43	4.05	3.44	1.65	0.62
Lead	N/A				1.48E-05	lb/ton CaO	d										1.46E-03	1.08E-03	9.39E-04	9.77E-04	1.45E-04
TRS	N/A	0.047	lb/TCaO	c													9.44	3.44	2.70	1.67	0.74
H2S	7783064				5.64E-02	lb/ton CaO	d							2.20E-03	lb/ADTUBP	m	6.35	3.44	2.72	1.67	0.72
SAM	N/A	0.010	lb/TCaO	b				2.45*S / 140 = 4.38E-03	lb/MMBtu	g							5.69	0.73	0.55	0.55	0.19
CO2	N/A						e	163.05	lb/MMBtu	h	116.98	lb/MMBtu	h				--	59,688	--	--	--
CH4	N/A						e	5.95E-03	lb/MMBtu	h	5.95E-03	lb/MMBtu	h				--	3.04	--	--	--
N2O	N/A						e	0.00	lb/MMBtu	h	0.00	lb/MMBtu	h				--	0.00E+00	--	--	--
GHGs	N/A						e	163.06	lb/MMBtu	h	116.98	lb/MMBtu	h				74,296	59,691	51,636	48,745	8,055
CO2e	N/A						e	163.22	lb/MMBtu	i	117.14	lb/MMBtu	i				74,398	59,773	51,707	48,812	8,066

a. These emission factors represent future operation only. BAE for these pollutants are based on test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.
b. Emission factor based on stack test data.
c. Emission factor based on Mill's CEMS data.
d. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.13. The ESP emission factors were used. The particle size data below is reflect of ESP control only and are applied to the filterable PM emission factors.
Filterable PM10 = 31.7% of Filterable PM
Filterable PM2.5 = 10.2% of Filterable PM
e. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO2 emissions from the conversion of CaCO3 to CaO are included in the biogenic CO2 estimates caclulated for the No. 8 Recovery Furnace.
f. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/gal.
g. Average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned (assuming complete conversion), where S is the fuel oil sulfur content in %. This emission factor is what is presented in the 2018 NCASI Toxics Database.
h. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 (for CO2) and AA-2 (for CH4 and N2O).
i. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
j. See separate calculation for PTE.
k. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
l. Please refer to detailed baseline actual and past actual emissions for basis.
m. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables D5 (HVLC NCGs) and 4.29 (LVHC NCGs). Median value was used and a 99% control efficiency applied. LVHC NCGs can also be sent currently to the Backup NCG Incinerator. A separate project is being evaluated by the mill that would eliminate the Backup NCG Incinerator and send the No. 8 Mill LVHC NCGs to the No. 8 Recovery Furnace or either of the Lime Kilns as back-up. It is conservative to account for the entire No. 8 Mill LVHC NCGs at the No. 8 Lime Kiln, as shown.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 8 Lime Kiln	X014	X014

Emission Unit ID No.: X014
Number of Units: 1
Control Device Description: ESP
Fuels Fired: No. 2-5 Fuel Oils, Tall Oil, Glycerin, Biodiesel, Hydrogen, Natural Gas, & NCGs (LVHC)

PTE Calculations

Max Lime Production:	22.5 TCaO/hr	**PTE Exhaust Flow:**	50,727 dscfm at 10% O2	**Max Natural Gas Firing:**	145 MMBtu/hr	**No. 8 Mill Production:**	82.5 ADTUBP/hr
	197,100 TCaO/yr	**PTE Operation:**	8,760 hr/yr		1,270,200 MMBtu/yr		722,700 ADTUBP/yr

Compound	CAS No.	Emission Factors															PTE [f]	
		Lime Production and Aux Fuel			Lime Production			Fuel Oil			Natural Gas			LVHC NCG Incineration				
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	(lb/hr	(tpy)
Condensable PM	N/A				8.67E-02	lb/ton CaO	b										1.95	8.54
Filterable PM	N/A	0.035	gr/dscf at 10% O2 (NG)	a													27.83	121.88
		0.064	gr/dscf at 10% O2 (oil)	a														
Filterable PM10	N/A	2.03E-02	gr/dscf at 10% O2	b													8.82	38.64
Filterable PM2.5	N/A	6.53E-03	gr/dscf at 10% O2	b													2.84	12.43
PM10	N/A	*Calculated as sum of CPM and FPM10*															10.77	47.18
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*															4.79	20.97
SO2	N/A	50	ppmvd at 10% O2	a													25.31	110.87
NOX	N/A	100	ppmvd at 10% O2	a													36.35	159.23
CO	N/A	52	ppmvd at 10% O2	a													11.51	50.41
VOC	N/A	78	ppmvd at 10% O2	a													7.40	32.43
Lead	7439921				1.48E-05	lb/ton CaO	b										3.33E-04	1.46E-03
TRS	N/A	8	ppmvd at 10% O2	a													2.15	9.44
H2S	7783064				5.64E-02	lb/ton CaO	b							2.20E-03	lb/ADTUBP	g	1.45	6.35
SAM	7664939	1.3	lb/hr	a													1.3	5.69
CO2	N/A						c	163.05	lb/MMBtu	d	116.98	lb/MMBtu	d				16,962	74,292
CH4	N/A						c	5.95E-03	lb/MMBtu	d	5.95E-03	lb/MMBtu	d				0.86	3.78
N2O	N/A						c	0.00	lb/MMBtu	d	0.00	lb/MMBtu	d				0.00	0.00
GHGs	N/A						c	163.06	lb/MMBtu	d	116.98	lb/MMBtu	d				16,963	74,296
CO2e	N/A						c	163.22	lb/MMBtu	e	117.14	lb/MMBtu	e				16,986	74,398

a. Existing BACT limit. The filterable PM emission factor was lowered to the NESHAP MM emission limit.
b. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.13. For future operation, the ESP emission factors were used. The particle size data below is reflect of ESP control only and are applied to the filterable PM emission factors.
Filterable PM10 = 31.7% of Filterable PM
Filterable PM2.5 = 10.2% of Filterable PM
c. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO2 emissions from the conversion of CaCO3 to CaO are included in the biogenic CO2 estimates caclulated for the No. 8 Recovery Furnace.
d. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 (for CO2) and AA-2 (for CH4 and N2O).
e. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
f. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
g. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Sources at Pulp and Paper Mills , Tables D5 (HVLC NCGs) and 4.29 (LVHC NCGs). Median value was used and a 99% control efficiency applied. LVHC NCGs can also be sent currently to the Backup NCG Incinerator. A separate project is being evaluated by the mill that would eliminate the Backup NCG Incinerator and send the No. 8 Mill LVHC NCGs to the No. 8 Recovery Furnace or either of the Lime Kilns as back-up. It is conservative to account for the entire No. 8 Mill LVHC NCGs at the No. 8 Lime Kiln, as shown.

No. 8 Mill Recausticizing Area - Sources to be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 8 Mill - Green Liquor Blend Tank	435	435

Emission Unit ID No.: X031
Number of Units (each mill): 1
Control Device Description: N/A
Hours of Operation: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE	
				(lb/hr	(tpy)
TRS as S	N/A	4.37E-02	lb/hr/tank	0.04	0.19

a. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for green liquor storage tanks. Per NCASI guidance, there are no VOC emissions when only fresh water is used to wash lime mud.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. This tank is an affected source with respect to the project. Since emissions from this tank are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tank, emission increases were not quantified for this source.

No. 7 Mill Utilities

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Power Boiler - Bark Surge Bin	I-271	271

Emission Unit ID No.: N/A
Number of Units: 1
Control Device Description: N/A

PTE No. 7 Power Boiler Bark Firing: 71.07177409 ton/hr
622,589 ton/yr
Projected Actual No. 7 Power Boiler Bark Firing: 477,267 ton/yr

Pollutant	CAS No.	Emission Factor [a]		PTE		PAE (tpy)	BAE [b] (tpy)	Past Actual [b] (tpy)	Project Increase (PTE - BAE, tpy)
				(lb/hr)	(tpy)				
Filterable PM	N/A	1.12E-03	lb/ton bark	0.08	0.35	0.27	0.20	0.21	0.15
Filterable PM10	N/A	5.28E-04	lb/ton bark	0.04	0.16	0.13	0.10	0.10	0.06
Filterable PM2.5	N/A	8.00E-05	lb/ton bark	0.01	0.02	0.02	0.02	0.02	0.01

a. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are shown below. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-2. The moisture content represents themaximum moisture content the equation is valid for, since the wood residual moisture content is typically well over 4.8%.

$$E = k(0.0032)\frac{\left(U/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

Where:
E (lb/ton) = particulate emission factor
k = particle size multiplier, dimensionless
0.74 for PM
0.35 for PM10
0.053 for PM2.5
U (mph) = mean wind speed = 7.2
M (%) = moisture content = 4.8

b. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: No. 7 Power Boiler
Equip ID No.: Z008
Emission Release Point ID: Z008

Emission Unit ID No.: Z008
Number of Units: 1
Control Device Description: Venturi Scrubbers (parallel)
Fuels Processed/Fired: Wood Residuals, Natural Gas, No. 2-5 Fuel Oils, Glycerin, Biodiesel, Tall Oil

Fuel Oil Maximum Sulfur Content: 0.25 %
Projected Actual Heat Input: 5,241,984 MMBtu/yr (combination of all fuels)

PAE Wood Residuals Firing: 4,018,426 MMBtu/yr (estimated based on historical fuel mix)
PAE Natural Gas Firing: 1,218,086 MMBtu/yr (estimated based on historical fuel mix)
PAE Fuel Oil Firing: 5,473 MMBtu/yr (estimated based on historical fuel mix)

Compound	CAS No.	Emission Factors												PTE [1] (tpy)	PAE (tpy)	BAE [m] (tpy)	Past Actual [m] (tpy)	Project Increase (PAE - BAE, tpy)
		Test/CEMS Data - *Used for PAE Only* [a]			Wood Residuals			Natural Gas			Fuel Oil							
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference					
Condensable PM	N/A				3.93E-03	lb/MMBtu	d	5.59E-03	lb/MMBtu	h	9.29E-03	lb/MMBtu	i	--	11.33	--	--	--
Filterable PM	N/A	0.0499	lb/MMBtu	b				1.86E-03	lb/MMBtu	h	1.43E-02	lb/MMBtu	i	262.10	130.72	47.42	68.58	83.31
Filterable PM10	N/A	0.0499	lb/MMBtu	c				1.86E-03	lb/MMBtu	h	1.43E-02	lb/MMBtu	c	--	130.72	--	--	--
Filterable PM2.5	N/A	0.0499	lb/MMBtu	c				1.86E-03	lb/MMBtu	h	1.43E-02	lb/MMBtu	c	--	130.72	--	--	--
PM10	N/A	*Calculated as sum of CPM and FPM10*												285.69	142.05	58.48	74.75	83.57
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*												285.69	142.05	58.48	74.75	83.57
SO2	N/A	6.18E-04	lb/MMBtu	b				5.88E-04	lb/MMBtu	h	142*S / 140 = 0.25	lb/MMBtu	i	2,096.79	1.62	1.45	1.16	0.17
NOX	N/A	0.18	lb/MMBtu	b				0.098	lb/MMBtu	h	0.17	lb/MMBtu	i	786.30	471.78	314.54	293.67	157.24
CO	N/A	1.40	lb/MMBtu	b				0.082	lb/MMBtu	h	0.036	lb/MMBtu	i	6,928.91	3,678.09	3,586.69	335.49	91.41
VOC	N/A				2.57E-03	lb/MMBtu	d	5.39E-03	lb/MMBtu	h	1.43E-03	lb/MMBtu	i	12.92	8.45	6.85	7.23	1.60
SAM	N/A										2.45*S / 140 = 4.38E-03	lb/MMBtu	j	9.58	0.01	0.00	0.00	0.01
Lead	N/A				3.09E-05	lb/MMBtu	e	4.90E-10	lb/MMBtu	h	1.25E-06	lb/MMBtu	k	0.08	0.06	0.06	0.05	0.00
CO2	N/A				206.79	lb/MMBtu	f	116.98	lb/MMBtu	f	163.05	lb/MMBtu	f	--	487,177	--	--	--
CH4	N/A				1.59E-02	lb/MMBtu	f	2.20E-03	lb/MMBtu	f	6.61E-03	lb/MMBtu	f	--	33.25	--	--	--
N2O	N/A				7.94E-03	lb/MMBtu	f	2.20E-04	lb/MMBtu	f	1.32E-03	lb/MMBtu	f	--	16.08	--	--	--
GHGs	N/A				206.81	lb/MMBtu	f	116.98	lb/MMBtu	f	163.06	lb/MMBtu	f	542,214	487,226	384,844	394,142	102,383
CO2e	N/A				209.34	lb/MMBtu	g	117.10	lb/MMBtu	g	163.59	lb/MMBtu	g	553,613	492,371	388,853	398,177	103,518

a. BAE for these pollutants are calculated based on representative stack test data for the subject year during the baseline period. Refer to the stack test summaries for additional detail.
b. Emission factor based on stack test data.
c. Filterable PM10 and PM2.5 assumed equal to filterable PM.
d. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Tables 10.2 , 10.4, and 10.5. Median value was used.
e. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for a wood-fired boiler equipped with a wet scrubber.
f. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
g. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
h. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.
i. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/h'gal.
j. Emission factor for fuel oil firing is based on the average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned, where S is the fuel oil sulfur content in %. Emission factor converted from a lb/kgal basis to a lb/MMBtu basis using the emission factor of 140 MMBtu/kgal from AP-42.
k. 2018 NCASI Air Toxics Pulp and Paper Database for boilers firing No. 2 fuel oil tested as part of Boiler MACT.
l. See separate calculation for PTE.
m. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Power Boiler	Z008	Z008

Emission Unit ID No.: Z008
Number of Units: 1
Control Device Description: Venturi Scrubbers (parallel)
Fuels Processed/Fired: Wood Residuals, Natural Gas, No. 2-5 Fuel Oils, Glycerin, Biodiesel, Tall Oil

PTE Calculations

Max Firing Rate: 598.4 MMBtu/hr; 5,241,984 MMBtu/yr
Natural Gas Igniter Max Firing Rate: 48 MMBtu/hr; 420,480 MMBtu/yr
Max Exhaust Flow Rate: 103,587 dscfm at 3% O2
Max Operation: 8,760 hr/yr

Max Wood Firing: 598.4 MMBtu/hr; 5,241,984 MMBtu/yr

Max NG Firing*: 500 MMBtu/hr; 4,380,000 MMBtu/yr
**Excludes igniters*

Fuel Oil Maximum Sulfur Content: 0.25 %
Max Fuel Oil Firing: 500 MMBtu/hr; 4,380,000 MMBtu/yr

Compound	CAS No.	Emission Factors															PTE	
		All Fuels			Wood Residuals			Natural Gas			No. 2 Fuel Oil			No. 4-5 Fuel Oil				
		Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	Value	Units	Reference	(lb/hr	(tpy)
Condensable PM	N/A				3.93E-03	lb/MMBtu	d	5.59E-03	lb/MMBtu	e	9.29E-03	lb/MMBtu	f	1.00E-02	lb/MMBtu	g	5.39	23.59
Filterable PM	N/A	0.1	lb/MMBtu	a													59.84	262.10
Filterable PM10	N/A	0.1	lb/MMBtu	b													59.84	262.10
Filterable PM2.5	N/A	0.1	lb/MMBtu	b													59.84	262.10
PM10	N/A	*Calculated as sum of CPM and FPM10*															65.23	285.69
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*															65.23	285.69
SO2	N/A	0.8	lb/MMBtu	a													478.72	2,096.79
NOX	N/A	0.3	lb/MMBtu (wood and fossil fuel)	a													179.52	786.30
		0.2	lb/MMBtu (NG)	a														
CO	N/A	3,500	ppmvd at 3% O2	c													1,581.94	6,928.91
VOC	N/A				2.57E-03	lb/MMBtu	d	5.39E-03	lb/MMBtu	e	1.43E-03	lb/MMBtu	f	1.87E-03	lb/MMBtu	g	2.95	12.92
SAM	N/A										2.45*S / 140 = 4.38E-03	lb/MMBtu	h	2.45*S / 140 = 4.38E-03	lb/MMBtu	h	2.19	9.58
Lead	N/A				3.09E-05	lb/MMBtu	i	4.90E-10	lb/MMBtu	e	1.25E-06	lb/MMBtu	i	4.14E-06	lb/MMBtu	i	0.02	0.08
CO2	N/A				206.79	lb/MMBtu	j	116.98	lb/MMBtu	j	163.05	lb/MMBtu	j	165.43	lb/MMBtu	j	123,745	542,004
CH4	N/A				0.07	lb/MMBtu	j	2.20E-03	lb/MMBtu	j	6.61E-03	lb/MMBtu	j	6.61E-03	lb/MMBtu	j	42.22	184.91
N2O	N/A				0.01	lb/MMBtu	j	2.20E-04	lb/MMBtu	j	1.32E-03	lb/MMBtu	j	1.32E-03	lb/MMBtu	j	5.54	24.27
GHGs	N/A				206.87	lb/MMBtu	j	116.98	lb/MMBtu	j	163.06	lb/MMBtu	j	165.44	lb/MMBtu	j	123,793	542,214
CO2e	N/A				211.22	lb/MMBtu	k	117.10	lb/MMBtu	k	163.59	lb/MMBtu	k	165.97	lb/MMBtu	k	126,396	553,613

a. Emission limit in 40 CFR 60, Subpart D.
b. Filterable PM10 and PM2.5 assumed equal to filterable PM.
c. Emission limit in 40 CFR 63, Subpart DDDDD for a hybrid suspension/grate burners designed to burn wet biomass/bio-based solid.
d. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884, Tables 10.2 , 10.4, and 10.5. Median value was used.
e. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.
f. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-10. The factors for No. 2 fuel oil are used. Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 140 MMBtu/h/gal.

g. AP-42 Section 1.3, Fuel Oil Combustion (September 1998), Tables 1.3-1, 1.3-2, 1.3-3, and 1.3-11. The factors for No. 6 fuel oil are used (assumed to be representative of Nos. 4 and 5 fuel oils). Consistent with foonote d of Table 1.3-2, emission factors were converted from a lb/kgal basis to a lb/MMBtu basis using a higher heating value of 150 MMBtu/gal.

h. Emission factor for fuel oil firing is based on the average from literature (US EPA 1997, EPA/745-R-97-007): 2.0 x S lbs SO3/10e3 gal of fuel oil burned or 2.45 x S lbs H2SO4/10e3 gal fuel oil burned, where S is the fuel oil sulfur content in %. Emission factor converted from a lb/kgal basis to a
i. 2018 NCASI Air Toxics Pulp and Paper Database for boilers firing No. 2 or 6 fuel oil, as appropriate, tested as part of Boiler MACT.
j. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
k. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Power Boiler Fly Ash Storage	I-272	FI-272

Emission Unit ID No.: N/A
Number of Units: 1
Control Device Description: Wet Suppression

PTE Fly Ash Generation: 10.66 ton/hr
64,555 ton/yr
Projected Actual Fly Ash Generation: 49,487 ton/yr

Pollutant	**CAS No.**	**Emission Factor** [a]		**PTE**		**PAE**	**BAE** [b]	**Past Actual** [b]	**Project Increase**
				(lb/hr)	**(tpy)**	**(tpy)**	**(tpy)**	**(tpy)**	**(PTE - BAE, tpy)**
Filterable PM	N/A	1.12E-03	lb/ton Fly Ash	0.01	0.04	0.03	0.02	0.02	0.02
Filterable PM10	N/A	5.28E-04	lb/ton Fly Ash	0.01	0.02	0.01	0.01	0.01	0.01
Filterable PM2.5	N/A	8.00E-05	lb/ton Fly Ash	8.53E-04	2.58E-03	1.98E-03	1.92E-03	1.28E-03	6.65E-04

a. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are shown below. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-2. The moisture content represents the maximum moisture content the equation is valid for, since the ash moisture content is typically well over 4.8% .

$$E = k(0.0032)\frac{\left(U/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

Where:
E (lb/ton) = particulate emission factor
k = particle size multiplier, dimensionless
0.74 for PM
0.35 for PM10
0.053 for PM2.5
U (mph) = mean wind speed = 7.2
M (%) = moisture content = 4.8

b. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
No. 7 Power Boiler Bottom Ash Storage	I-273	FI-273

Emission Unit ID No.: N/A
Number of Units: 1
Control Device Description: Wet Suppression

PTE Fly Ash Generation: 7.11 ton/hr
43,037 ton/yr
Projected Actual Fly Ash Generation: 32,991 ton/yr

Pollutant	CAS No.	Emission Factor [a]		PTE (lb/hr)	PTE (tpy)	PAE (tpy)	BAE [b] (tpy)	Past Actual [b] (tpy)	Project Increase (PTE - BAE, tpy)
Filterable PM	N/A	1.12E-03	lb/ton Bottom Ash	0.01	0.02	0.02	0.01	0.01	0.01
Filterable PM10	N/A	5.28E-04	lb/ton Bottom Ash	3.75E-03	0.01	0.01	0.01	0.01	3.37E-03
Filterable PM2.5	N/A	8.00E-05	lb/ton Bottom Ash	5.68E-04	1.72E-03	1.32E-03	1.28E-03	8.53E-04	4.43E-04

a. Emission factors based on Equation 1 in AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles (Fifth Edition, 11/06). The inputs used to calculate the emission factors are shown below. The wind speed is based on information for Mobile, AL (nearest major city) in AP-42, Section 7.1, Table 7.1-2. The moisture content represents the maximum moisture content the equation is valid for, since the ash moisture content is typically well over 4.8% .

$$E = k(0.0032)\frac{\left(U/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

Where:
E (lb/ton) = particulate emission factor
k = particle size multiplier, dimensionless
0.74 for PM
0.35 for PM10
0.053 for PM2.5
U (mph) = mean wind speed = 7.2
M (%) = moisture content = 4.8

b. Please refer to detailed baseline actual and past actual emissions for basis.

Crude Tall Oil Plant

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: **Equip ID No.:** **Emission Release Point ID:**
New Tall Oil Reactor and Associated Equipment 320 320
Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be affected modified or replaced. The calculation immediately below assumes replacement, which provides the most conservative estimate of emissions. See the PSD Project Increase Summary for additional detail.

Emission Unit ID No.: X321
Number of Units: 1
Control Device Description: Tall Oil Scrubber, HVLC
Percent of Time Venting Can Occur: 4%

PTE Production: 7.6 tons TO/hr
60,352 tons TO/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		BAE[e]	Project Increase
				(lb/hr) [c]	(tpy) [d]	(tpy)	(PTE - BAE, tpy)
VOC	N/A	2.90	lb/ton TO	21.98	3.50	0.00	3.50
TRS as S	N/A	5.87E-02	lb/ton TO	0.44	0.07	0.00	0.07
H2S	7783064	2.83E-02	lb/ton TO	0.21	0.03	0.00	0.03

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.1. Emission factors for other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for tall oil reactors.

b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.

c. Emission rates represent uncontrolled venting.
d. Emission rates take into account the % of time that venting is proposed to occur. Venting is proposed to occur for up to 4% of the year, consistent with the requirements for HVLC NCGs requried to be collected by 40 CFR 63, Subpart S or 40 CFR 60, Subpart BB or BBa.
e. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Project Emissions Increases for Tall Oil Reactor as an Affected Source (No Control and Not Modified or Replaced)

PTE Production: 6.7 tons TO/hr
58,400 tons TO/yr
PAE Production: 48,077 tons TO/yr

Compound	CAS No.	Emission Factor [a, b]		PTE		PAE	BAE [c]	Past Actual [c]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(PAE - BAE, tpy)
VOC	N/A	2.90	lb/ton TO	19.33	84.68	69.71	57.61	49.13	12.10
TRS as S	N/A	5.87E-02	lb/ton TO	0.39	1.71	1.41	1.17	0.99	0.24
H2S	7783064	2.83E-02	lb/ton TO	0.19	0.83	0.68	0.56	0.48	0.12

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.1. Emission factors for other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for tall oil reactors.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 1 CTO Storage Tank	476a	I-476a
No. 2 CTO Storage Tank	476b	I-476b

Emission Unit ID No.: X321
Number of Units: 2
Control Device Description: N/A

PTE Production: 7.6 TTO/hr
60,352 TTO/yr
PAE Production: 60,352 TTO/yr

Compound	CAS No.	Emission Factor [a]		PTE [b]		PAE [b] (tpy)	BAE [b, c] (tpy)	Past Actual [b, c] (tpy)	Project Increase (PAE - BAE, tpy)
				(lb/hr)	(tpy)				
VOC	N/A	4.90E-03	lb/ton TO/tank	0.07	0.30	0.30	0.19	0.17	0.10
TRS	N/A	5.90E-05	lb/ton TO/tank	8.94E-04	3.56E-03	3.56E-03	2.34E-03	2.00E-03	1.22E-03

a. Emission factors were obtained from NCASI Technical Bulletin No. 677, Volatile Organic Emissions from Pulp and Paper Mill Sources, Part III - Miscellaneous Source at Kraft and TMP Mill (September 1994), Table XI.A.5 for a wet oil drying tank.
b. These emission rates are the sum of emissions from the two storage tanks.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: **Equip ID No.:** **Emission Release Point ID:**
New Flash Tower Feed Tank 475 475
Equipment in the Crude Tall Oil Plant, including the Flash Tower Feed Tank, may be modified or replaced. If replaced, it is possible that the tank would be routed to the Tall Oil Scrubber and HVLC System. The calculation below assumes replacement and that the tank will remain uncontrolled, which provides the most conservative estimate of emissions. See the PSD Project Increase Summary for additional detail.

Emission Unit ID No.: X321
Number of Units: 1
Control Device Description: N/A

PTE Production: 7.6 TTO/hr
60,352 TTO/yr

Compound	CAS No.	Emission Factor [a]		PTE		BAE [b] (tpy)	Project Increase (PTE - BAE, tpy)
				(lb/hr)	(tpy)		
VOC	N/A	4.90E-03	lb/ton TO/tank	0.04	0.15	0.00	0.15
TRS	N/A	5.90E-05	lb/ton TO/tank	4.47E-04	1.78E-03	0.00	1.78E-03

a. Emission factors were obtained from NCASI Technical Bulletin No. 677, Volatile Organic Emissions from Pulp and Paper Mill Sources, Part III - Miscellaneous Source at Kraft and TMP Mill (September 1994), Table XI.A.5 for a wet oil drying tank.
b. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Brine Tank	498	I-498

Emission Unit ID No.: X321
Number of Units: 1
Control Device Description: N/A

PTE Production: 7.6 TTO/hr
60,352 TTO/yr
PAE Production: 60,352 TTO/yr

Compound	CAS No.	Emission Factor [a]		PTE		PAE	BAE [b]	Past Actual [b]	Project Increase
				(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(PAE - BAE, tpy)
VOC	N/A	1.10E-04	lb/ton TO	8.34E-04	3.32E-03	3.32E-03	2.19E-03	1.86E-03	1.13E-03

a. Emission factors were obtained from NCASI Technical Bulletin No. 677, Volatile Organic Emissions from Pulp and Paper Mill Sources, Part III - Miscellaneous Source at Kraft and TMP Mill (September 1994), Table XI.A.5 for a brine storage tank.

b. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Tall Oil Loading	319	319

Emission Unit ID No.: N/A
Number of Units (each): 1
Control Device Description: N/A

PTE Throughput: 797,820 gal/yr

Compound	CAS No.	Emission Factor [a]		PTE (tpy)	BAE [b] (tpy)	Past Actual [b] (tpy)	Project Increase (PTE - BAE, tpy)
VOC	N/A	0.48	lb/Mgal	0.19	0.00	0.00	0.19

a. Emission factor calculated using Equation 1 below of AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids (June 2008) and represents tank truck and rail tank car loading.

$L_L = 12.46 * SPM / T$

where:

LL = Loading Loss (lb/mgal loaded)
S = Saturation Factor
= 1.45 for splash loading to a tank in dedicated normal service
P = True Vapor Pressure of Liquid Loaded (psia) = 0.053
M = Molecular Weight of Vapors (lb/lb-mol) = 273
T = Temperature of Bulk Liquid Loaded (°R) = 536 (for annual average daily maximum temperature)

b. Baseline actual and past actual emissions are conservatively assumed equal to zero for this analysis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Crude Tall Oil Plant - Additional Affected Sources

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
No. 1 Soap Tank	469	469
No. 2 Soap Tank	470	470
Soap Separator	472	472
No. 3 Soap Tank	477	477
No. 4 Soap Tank	500	500
No. 5 Soap Tank	501	501
No. 6 Soap Tank	502	502

Emission Unit ID No.: X321
Number of Units: 7
Control Device Description: N/A
Hours of Operation per Tank: 8,760 hr/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (per tank)		PTE (combined)	
				(lb/hr	(tpy)	(lb/hr	(tpy)
VOC	N/A	0.11	lb/hr/tank	0.11	0.49	0.79	3.46
TRS as S	N/A	0.07	lb/hr/tank	0.07	0.33	0.52	2.28
H2S	7783064	0.05	lb/hr/tank	0.05	0.21	0.34	1.50

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.3 for strong liquor storage tanks. Emission factors for all other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for strong or heavy black liquor storage tanks. This is conservative as information from NCASI indicates the vapor pressure of soap is approximately 0.03 psia and the vapor pressure of heavy black liquor is approximately 0.05 psia.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. These tanks are affected sources with respect to the project. Since emissions from these tanks are are based on a pound per hour emission factor and this project will not result in an increase in hours of operation for the tanks, emission increases were not quantified for these sources.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Crude Tall Oil Plant - Sources to be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Tall Oil Reactor (Decanters & Feed Tank)	321	321
Flash Tower w/ Condenser	497	I-497

Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be modified or replaced. See the PSD Project Increase Summary for additional detail.

Emission Unit ID No.: X321
Number of Units: 1
Control Device Description: Tall Oil Scrubber

Compound	CAS No.	Emission Factor [a, b]		BAE [c] (tpy)	Past Actual [c] (tpy)
VOC	N/A	2.90	lb/ton TO	57.61	49.13
TRS	N/A	5.87E-02	lb/ton TO	1.17	0.99
H2S	7783064	2.83E-02	lb/ton TO	0.56	0.48

a. Emission factor for VOC from NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.1. Emission factors for other pollutants from 2018 NCASI Air Toxics Pulp and Paper Database for tall oil reactors.
b. Emission factors based on the following values (in order of preference): median, mean, single detected value. If there were no detects in the testing, then the emission factor was excluded.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Flash Tower Feed Tank	474	I-474

Equipment in the Crude Tall Oil Plant, including the Flash Tower Feed Tank, may be modified or replaced. See the PSD Project Increase Summary for additional detail.

Emission Unit ID No.: X321
Number of Units: 1
Control Device Description: N/A

PTE Production: 7.6 TTO/hr
60,352 TTO/yr

Compound	CAS No.	Emission Factor [a]		BAE [b] (tpy)	Past Actual [b] (tpy)
VOC	N/A	4.90E-03	lb/ton TO/tank	0.10	0.08
TRS	N/A	5.90E-05	lb/ton TO/tank	1.17E-03	1.00E-03

a. Emission factors were obtained from NCASI Technical Bulletin No. 677, Volatile Organic Emissions from Pulp and Paper Mill Sources, Part III - Miscellaneous Source at Kraft and TMP Mill (September 1994), Table XI.A.5 for a wet oil drying tank.

b. Please refer to detailed baseline actual and past actual emissions for basis.

Turpentine Plant

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Turpentine Decanter	503	LVHC

Emission Unit ID No.:	N/A	
Number of Units (each):	1	
Control Device Description:	LVHC	
Hours of Operation (hr/yr):	8,760	
Percent of time that venting can occur:	1%	LVHC

PTE Production: 79.1 ADTUBP/hr
629,529 ADTUBP/yr

Compound	CAS No.	Emission Factor [a]		PTE		BAE [d]	Project Increase
				(lb/hr) [b]	(tpy) [c]	(tpy)	(PTE - BAE, tpy)
VOC	N/A	9.20E-04	lb/ADTUBP	0.07	2.90E-03	0.00	2.90E-03
TRS	N/A	3.00E-03	lb/ADTUBP	0.24	9.44E-03	0.00	9.44E-03
H2S	7783064	2.50E-04	lb/ADTUBP	0.02	7.87E-04	0.00	7.87E-04

a. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Pulp and Paper Sources - Publication Accompanying the 2018 Air Toxics Emission Database (September 2018), Background Table A6b. Only values for the turpentine decanter (Mill Code NCGS4) were used. VOC is assumed to equal methanol emissions. (Note: The only other VOC tested for was terpenes and was ND.)
b. Emission rates represent uncontrolled venting.
c. Emission rates take into account the % of time that venting can occur - 1% for LVHC (per Subpart S).
d. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:		**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Turpentine Storage Tank		504	LVHC
Emission Unit ID No.:	N/A		
Control Device Description:	N/A		
Percent of time that venting can occur:	1%	LVHC	

Compound	PTE		BAE [c]	Project Increase
	(lb/hr) [a]	(tpy) [b]	(tpy)	(PTE - BAE, tpy)
VOC	0.05	1.53E-03	0.00	1.53E-03

a. Hourly emission rate is calculated based on the average working and standing losses for the worst case month (July).
b. For new tank, emission rate takes into account the % of time that venting can occur - 1% for LVHC (per Subpart S).
c. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.

Notes and Assumptions

1. The throughput of the tank is consistent over the year (i.e., each month has equal usage).
2. All equations and factors from EPA's AP-42 Chapter 7.1, *Organic Liquid Storage Tanks* , version dated June 2020.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: New No. 7 Turpentine Storage Tank
Equip ID No.: 504
Emission Release Point ID: LVHC

Tank Data

Tank Type =	Horizontal	
Tank Diameter (D) =	12.0	ft
Tank Length (L) =	20.0	ft
Tank Effective Diameter (D_E) =	17.5	ft
Tank Effective Height (H_E) =	9.4	ft
Tank Shell Solar Absorptance (α_S) =	0.71	(for medium gray tank in average condition, Table 7.1-6)
Ideal Gas Constant (R) =	10.731	psia-ft^3/lb-mol-^{o}R
Tank Volume (V_{LX}) =	18,745	gal
	446.3	bbl
Breather Vent Pressure Setting Range (ΔP_B) =	0.00	psia
Atmospheric Pressure (P_A) =	14.59	psia (value for Montgomery, AL from Table 7.1-7)

Meterological Data

Month	Daily Minimum Ambient Temperature[1], T_{AN}		Daily Maximum Ambient Temperature[1], T_{AX}		Solar Insolation Factor[1], I (Btu/ft^2-day)	Daily Average Ambient Temp., T_{AA}[2] (°R)	Liquid Bulk Temperature, T_B[3] (°R)	Minimum Liquid Bulk Temperature, T_{BN} (°R)	Daily Average Liquid Surface Temperature, T_{LA}[4] (°R)	Daily Ambient Temperature Range, ΔT_A[5] (°R)	Average Vapor Temp., T_V[6] (°R)	Daily Vapor Temp. Range, ΔT_V[7] (°R)	Maximum Liquid Surface Temp., T_{LX}[8] (°R)	Minimum Liquid Surface Temp., T_{LN}[9] (°R)
	(°F)	(°R)	(°F)	(°R)										
January	37.1	496.77	57.7	517.37	823	507.1	508.8	--	511.0	20.6	512.9	26.1	517.6	504.5
February	39.9	499.57	62	521.67	1,076	510.6	512.9	--	515.8	22.1	518.2	30.7	523.5	508.1
March	46.1	505.77	69.4	529.07	1,421	517.4	520.4	--	524.3	23.3	527.4	36.5	533.4	515.2
April	52.6	512.27	76.6	536.27	1,766	524.3	528.0	--	532.8	24	536.7	41.9	543.3	522.3
May	61.8	521.47	83.9	543.57	1,952	532.5	536.7	--	541.9	22.1	546.2	43.2	552.7	531.1
June	68.9	528.57	89.4	549.07	1,951	538.8	543.0	--	548.2	20.5	552.5	42.1	558.8	537.7
July	72.2	531.87	91.8	551.47	1,943	541.7	545.8	--	551.1	19.6	555.3	41.3	561.4	540.7
August	71.7	531.37	91.5	551.17	1,781	541.3	545.1	--	549.9	19.8	553.8	39.2	559.7	540.1
September	66.2	525.87	86.9	546.57	1,530	536.2	539.5	--	543.6	20.7	547.0	36.2	552.7	534.6
October	54.4	514.07	77.7	537.37	1,223	525.7	528.3	--	531.6	23.3	534.3	33.7	540.0	523.2
November	44	503.67	67.9	527.57	950	515.6	517.6	--	520.2	23.9	522.3	30.2	527.8	512.7
December	38	497.67	59.1	518.77	749	508.2	509.8	--	511.8	21.1	513.5	25.4	518.2	505.5

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Turpentine Storage Tank	504	LVHC

[1]Table 7.1-7 for Montgomery, AL.

[2]T_{AA} is the average ambient temperature for each month and is calculated as follows:

$$T_{AA} = \left(\frac{T_{AX} + T_{AN}}{2}\right) \qquad \textit{Equation 1-30}$$

[3]For a heated tank or a tank with liquid entering at elevated temperature, the liquid bulk temperature is equal to the transfer temperature. For all other tanks, the liquid bulk temperature is calculated as follows:

$$T_B = T_{AA} + 0.003\alpha_S \mathrm{I} \qquad \textit{Equation 1-31}$$

[4]T_{LA} is the average vapor temperature. For an uninsulated tank, this temperature is calculated using Equation 1-27. For a partially insulated tank, this temperature is calculated using Equation 1-29. For a fully insulated tank, this temperature is equal to the bulk liquid temperature.

$$T_{LA} = \left(0.5 - \frac{0.8}{4.4\left(\frac{H_S}{D}\right)+3.8}\right)T_{AA} + \left(0.5 + \frac{0.8}{4.4\left(\frac{H_S}{D}\right)+3.8}\right)T_B + \left(\frac{0.021\alpha_R I + 0.013\left(\frac{H_S}{D}\right)\alpha_S I}{4.4\left(\frac{H_S}{D}\right)+3.8}\right) \qquad \textit{Equation 1-27}$$

$$T_{LA} = 0.3T_{AA} + 0.7T_B + 0.005\alpha_R \mathrm{I} \qquad \textit{Equation 1-29}$$

[5]ΔT_A is the daily ambient temperature range and is calculated as follows:

$$\Delta T_A = T_{AX} - T_{AN} \qquad \textit{Equation 1-11}$$

[6]T_V is the average vapor temperature. For an uninsulated tank, this temperature is calculated using Equation 1-32. For a partially insulated tank, this temperature is calculated using Equation 1-34. For a fully insulated tank, this temperature is equal to the liquid surface and bulk liquid temperatures.

$$T_V = \frac{[2.2(H_S/D) + 1.1]T_{AA} + 0.8T_B + 0.021\alpha_R I + 0.013(H_S/D)\alpha_S I}{2.2\left(\frac{H_S}{D}\right) + 1.9} \qquad \textit{Equation 1-32}$$

$$T_V = 0.6T_{AA} + 0.4T_B + 0.01\alpha_R \mathrm{I} \qquad \textit{Equation 1-34}$$

[7]ΔT_V is the daily vapor temperature range. For an uninsulated tank, this temperature is calculated using Equation 1-6. For a partially insulated tank, this temperature is calculated using Equation 1-8. For a tank that is fully insulated and receives heated liquids but is not maintained at constant temperature, this value can be calculated according to Equation 8-1 if measured temperature data are available (otherwise, assume no breathing losses). For a fully insulated tank that is maintained at constant temperature, this value is zero.

$$\Delta T_V = \left(1 - \frac{0.8}{2.2\left(\frac{H_S}{D}\right) + 1.9}\right)\Delta T_A + \left(\frac{0.042\alpha_R I + 0.026\left(\frac{H_S}{D}\right)\alpha_S I}{2.2\left(\frac{H_S}{D}\right) + 1.9}\right) \qquad \textit{Equation 1-6}$$

$$\Delta T_V = 0.6\Delta T_A + 0.02\alpha_R \mathrm{I} \qquad \textit{Equation 1-8}$$

$$\Delta T_V = T_{BX} - T_{BN} \qquad \textit{Equation 8-1}$$

where:

T_{BX} = Maximum liquid bulk temperature (assumed to equal transfer temperature)
T_{BN} = Minimum liquid bulk temperature (based on measured data if available)

[8]T_{LX} is the maximum liquid surface temperature and is calculated as follows:

$$T_{LX} = T_{LA} + 0.25\Delta T_V \qquad \textit{Equation from Figure 7.1-17}$$

[9]T_{LN} is the minimum liquid surface temperature and is calculated as follows:

$$T_{LN} = T_{LA} - 0.25\Delta T_V \qquad \textit{Equation from Figure 7.1-17}$$

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: New No. 7 Turpentine Storage Tank
Equip ID No.: 504
Emission Release Point ID: LVHC

Throughput Data

Month	Contents	Throughput (gal)	Throughput, Q (bbl)	Liquid Molecular Weight (lb/lb-mol)	Vapor Molecular Weight (lb/lb-mol)	Vapor Pressure Calculation Method
January	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
February	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
March	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
April	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
May	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
June	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
July	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
August	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
September	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
October	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
November	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation
December	Turpentine	66,485	1,583	136.0	136.0	Option 1: VP Interpolation

Vapor Pressure Calculations Using Option 1: Vapor Pressure Interpolation

Temperature (°F)	30	40	50	60	70	80	90	100	110
Vapor Pressure[1] (psia)	0.0347	0.0461	0.0606	0.0789	0.1016	0.1297	0.1640	0.2057	0.2560

[1]Vapor pressures were estimated using the Clausius–Clapeyron relation and the vapor pressure information provided in an SDS for turpentine.

Month	Average Liquid Surface Temperature, T_{LA}		Minimum Liquid Surface Temperature, T_{LN}		Maximum Liquid Surface Temperature, T_{LX}		Daily Vapor Pressure Range, ΔP_V (psia)
	Temp. (°F)	Vapor Pressure, P_{VA} (psia)	Temp. (°F)	Vapor Pressure, P_{VN} (psia)	Temp. (°F)	Vapor Pressure, P_{VX} (psia)	
January	51.4	0.0632	44.8	0.0532	57.9	0.0751	0.02
February	56.1	0.0719	48.5	0.0584	63.8	0.0876	0.03
March	64.6	0.0894	55.5	0.0707	73.7	0.1121	0.04
April	73.1	0.1104	62.7	0.0849	83.6	0.1420	0.06
May	82.3	0.1375	71.5	0.1058	93.1	0.1768	0.07
June	88.6	0.1591	78.1	0.1242	99.1	0.2019	0.08
July	91.4	0.1698	81.1	0.1333	101.7	0.2143	0.08
August	90.2	0.1649	80.4	0.1311	100.0	0.2057	0.07
September	83.9	0.1432	74.9	0.1153	93.0	0.1765	0.06
October	72.0	0.1071	63.5	0.0869	80.4	0.1310	0.04
November	60.5	0.0801	53.0	0.0661	68.1	0.0973	0.03
December	52.2	0.0646	45.8	0.0546	58.5	0.0762	0.02

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: New No. 7 Turpentine Storage Tank
Equip ID No.: 504
Emission Release Point ID: LVHC

Emission Calculations

Uncontrolled Emission Summary

Hourly Emissions[1] (lb/hr)	Annual Emissions (tpy)
0.05	0.15

[1]Hourly emissions calculated as a sum of the working and standing losses for the worst-case month (July) divided by the hours in that month.

Annual Emissions

Month	Calculation of Standing Storage Losses							Calculation of Working Losses			Total Emissions (lb)	Total Emissions (tons)
	Vapor Space Outage[1], H_{VO} (ft)	Vapor Space Volume[2], V_V (ft^3)	Stock Vapor Density[3], W_V (lb/ft^3)	Vapor Space Expansion Factor[4], K_E	Vented Vapor Saturation factor[5], K_S	Days Per Month (days)	Monthly Standing Storage Losses[6], L_S (lb)	Number of Turnovers[7], N	Working Loss Turnover Factor[8], K_N	Monthly Working Losses[9], L_W (lb)		
January	4.7	1131.0	1.56E-03	0.05	0.98	31	2.83	47.1	0.80	11.14	13.97	0.01
February	4.7	1131.0	1.76E-03	0.06	0.98	28	3.37			12.54	15.91	0.01
March	4.7	1131.0	2.15E-03	0.07	0.98	31	5.34			15.33	20.66	0.01
April	4.7	1131.0	2.61E-03	0.08	0.97	30	7.11			18.60	25.71	0.01
May	4.7	1131.0	3.19E-03	0.08	0.97	31	9.15			22.76	31.91	0.02
June	4.7	1131.0	3.65E-03	0.08	0.96	30	9.78			26.04	35.82	0.02
July	4.7	1131.0	3.87E-03	0.08	0.96	31	10.50			27.65	38.15	0.02
August	4.7	1131.0	3.77E-03	0.08	0.96	31	9.70			26.92	36.62	0.02
September	4.7	1131.0	3.32E-03	0.07	0.97	30	7.70			23.68	31.38	0.02
October	4.7	1131.0	2.54E-03	0.07	0.97	31	5.76			18.13	23.89	0.01
November	4.7	1131.0	1.94E-03	0.06	0.98	30	3.90			13.87	17.77	0.01
December	4.7	1131.0	1.59E-03	0.05	0.98	31	2.81			11.38	14.19	0.01
Total							**77.94**			**228.05**	**305.99**	**0.15**

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Turpentine Storage Tank	504	LVHC

[1]The vapor space outage, H_{VO}, for a vertical fixed roof tank with a cone roof is calculated as follows:

$$H_{VO} = H_S - H_L + \frac{1}{3} S_R R_S$$ *Combination of Equations 1-16, 1-17, and 1-18*

where:

H_{VO} = Vapor space outage in ft
H_S = Tank shell height in ft
H_L = Liquid height in ft
S_R = Tank cone roof slope in ft/ft
R_S = Tank shell radius (D/2) in ft

[2]The vapor space volume, V_V, is calculated according to the following equation:

$$V_V = \left(\frac{\pi}{4} D^2\right) H_{VO}$$ *Equation 1-3*

where:

D = Tank diameter in ft
H_{VO} = Vapor space outage in ft

[3]The stock vapor density, W_V, is calculated according to the following equation:

$$W_V = \frac{M_V \, P_{VA}}{R \, T_V}$$ *Equation 1-22*

where:

W_V = Stock vapor density in lb/ft^3
M_V = Vapor molecular weight in lb/lb-mole
P_{VA} = Vapor pressure at the daily average liquid surface temperature in psia
R = Ideal gas constant in psia-ft^3/lb-lbmole-^oR
T_V = Average vapor temperature in ^oR

[4]The vapor space expansion factor, K_E, is calculated according to the following equation:

$$K_E = \frac{\Delta T_V}{T_{LA}} + \frac{\Delta P_V - \Delta P_B}{P_A - P_{VA}}$$ *Equation 1-5*

where:

K_E = vapor space expansion factor, dimensionless
ΔT_V = Daily vapor temperature range in ^oR
T_{LA} = Daily average liquid surface temperature in ^oR
ΔP_V = Daily vapor pressure range in psi
ΔP_B = Breather vent pressure range in psi
P_A = Atmospheric pressure in psia
P_{VA} = Vapor pressure at daily average liquid surface temperature in psia

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
New No. 7 Turpentine Storage Tank	504	LVHC

[5]The standing idle vapor saturation factor, K_S, is calculated according to the following equation:

$$K_S = \frac{1}{1 + 0.053 P_{VA} H_{VO}}$$ *Equation 1-21*

where:

K_S = standing idle vapor saturation factor, dimensionless
P_{VA} = Vapor pressure at daily average liquid surface temperature in psia
H_{VO} = Vapor space outage in ft

[6]Annual standing storage losses are calculated according to the following equation:

$$L_S = 365 V_V W_V K_E K_S$$ *Equation 1-2*

where:

L_S = Annual standing storage losses in lb
365 = Number of days in the year
V_V = Vapor space volume in ft^3
W_V = Stock vapor density in lb/ft^3
K_E = vapor space expansion factor, dimensionless
K_S = vented vapor saturation factor, dimensionless

For calculation of monthly emissions, the number of days for each month is substituted for 365 above.

[7]The number of turnovers, N, is calculated according to the following equation:

$$N = \frac{5.614Q}{\left((\pi/4)D^2\right)(H_{LX} - H_{LN})}$$ *Combination of Equations 1-36 and 1-37*

where:

Q = Throughput in bbl
D = Tank diameter in ft
H_{LX} = Maximum liquid height in ft. If unknown, use the one foot less than the shell height for vertical tanks and for horizontal tanks, use (π/4)*D.
H_{LN} = Minimum liquid height in ft. If unknown, use 1 for vertical tanks and 0 for horizontal tanks.

[8]The working loss turnover factor, K_N, is based on the following relationships:

for turnovers >36, $K_N = (180 + N)/6N$
for turnovers <36, $K_N = 1$

[9]Working losses are calculated according to the following equation:

$$L_W = V_Q K_N K_P W_V K_B$$ *Equation 1-35*

where:

L_W = Working losses in lb
V_Q = Net working loss throughput, ft^3/yr
=5.614Q
Q = Throughput in bbl
K_N = Working loss turnover factor, dimensionless
K_P = Working loss product factor, dimensionless
for crude oils, $K_P = 0.75$
for all other organic liquids, $K_P = 1$
W_V = Vapor density, lb/ft^3
K_B = 1 for open vents and for a breather vent setting range up to +/- 0.03 psig

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: New No. 7 Turpentine Loading Station
Equip ID No.: N/A
Emission Release Point ID: *Trivial Activity*

Emission Unit ID No.: N/A
Number of Units (each): 1
Control Device Description: N/A

PTE Throughput: 797,820 gal/yr

Compound	CAS No.	Emission Factor [a]		PTE (tpy)	BAE [b] (tpy)	Project Increase (PTE - BAE,
VOC	N/A	0.23	lb/Mgal	0.09	0.00	0.09

a. Emission factor calculated using Equation 1 below of AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids (June 2008).

$L_L = 12.46 * SPM / T$

where:

LL = Loading Loss (lb/mgal loaded)
S = Saturation Factor
= 0.60 for submerged loading to a tank in dedicated normal service
P = True Vapor Pressure of Liquid Loaded (psia) = 0.12
M = Molecular Weight of Vapors (lb/lb-mol) = 136
T = Temperature of Bulk Liquid Loaded (°R) = 536 (for annual average daily maximum temperature)

b. Baseline actual emissions are equal to 0 tpy for initial construction and operation for a new emission unit, per ADEM Rule 335-3-14-.04(2)(uu)3.
c. Turpentine is a trivial activity as identified in ADEM's List of Trivial and Insignificant Activities dated September 9, 2023.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Turpentine Plant (No. 7 Line) - Sources to be Shutdown as Part of the Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Existing No. 7 Turpentine Decanter	N/A	LVHC

Emission Unit ID No.: N/A
Number of Units (each): 1
Control Device Description: LVHC

Compound	CAS No.	Emission Factor [a]		BAE [b] (tpy)	Past Actual [b] (tpy)
VOC	N/A	9.20E-04	lb/ADTUBP	9.96E-05	2.60E-04
TRS	N/A	3.00E-03	lb/ADTUBP	0.00	0.00
H2S	7783064	2.50E-04	lb/ADTUBP	0.00	0.00

a. NCASI Technical Bulletin No. 1050, Compilation of Air Toxics Emissions Data for Pulp and Paper Sources - Publication Accompanying the 2018 Air Toxics Emission Database (September 2018), Background Table A6b. Only values for the turpentine decanter (Mill Code NCGS4) were used. VOC is assumed to equal methanol emissions.
b. Please refer to detailed baseline actual and past actual emissions for basis.

Miscellaneous Sources

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
ClO2 Generator	X024	X024

Emission Unit ID No.: X024
Number of Units: 1
Control Device Description: Scrubber

PTE Production: 41,974 ton ClO2/yr
PAE Production: 31,428 ton ClO2/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (tpy)	PAE (tpy)	BAE [c] (tpy)	Past Actual [c] (tpy)	Project Increase (PAE - BAE, tpy)
VOC	N/A	9.38E-03	lb/ton ClO2	0.20	0.15	0.10	0.10	0.05

a. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers - An Update to Technical Bulletin No. 884 (December 2013), Table 4.9 for ClO2 generator scrubber vents.

b. Emission factor based on median value.

c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	Equip ID No.:	Emission Release Point ID:
Methanol Storage Tank	X025	X025

Emission Unit ID No.: X025
Control Device Description: N/A

Compound	PTE		BAE [b]	Past Actual [b]	Project Increase
	(lb/hr) [a]	(tpy)	(tpy)	(tpy)	(PTE - BAE, tpy)
VOC	0.23	0.67	0.00	0.00	0.67

a. Hourly emission rate is calculated based on the average working and standing losses for the worst case month (July).
b. Baseline actual and past actual emissions are conservatively assumed equal to zero for this analysis.

Notes and Assumptions

1. The throughput of the tank is consistent over the year (i.e., each month has equal usage).
2. All equations and factors from EPA's AP-42 Chapter 7.1, *Organic Liquid Storage Tanks* , version dated June 2020.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Methanol Storage Tank	X025	X025

Tank Data

Tank Type =	Vertical	
Tank Diameter (D) =	12.0	ft
Tank Shell Height (H_S) =	18.5	ft
Tank Liquid Height (H_L) =	9.3	ft (assumed to be half the shell height per notes for Equation 1-16)
Type of Roof =	Dome	
Dome Roof Height (H_R) =	3.0	ft
Tank Shell Solar Absorptance (α_S) =	0.25	(for white tanks in average condition, Table 7.1-6)
Tank Roof Solar Absorptance (α_R) =	0.25	(for white tanks in average condition, Table 7.1-6)
Ideal Gas Constant (R) =	10.731	psia-ft^3/lb-mol-^{o}R
Tank Volume (V_{LX}) =	16,000	gal
	381.0	bbl
Breather Vent Pressure Setting Range (ΔP_B) =	0.06	psia
Atmospheric Pressure (P_A) =	14.59	psia (value for Montgomery, AL from Table 7.1-7)

Meterological Data

Month	Daily Minimum Ambient Temperature[1], T_{AN}		Daily Maximum Ambient Temperature[1], T_{AX}		Solar Insolation Factor[1], I (Btu/ft^2-day)	Daily Average Ambient Temp., T_{AA}[2] (°R)	Liquid Bulk Temperature, T_B[3] (°R)	Minimum Liquid Bulk Temperature, T_{BN} (°R)	Daily Average Liquid Surface Temperature, T_{LA}[4] (°R)	Daily Ambient Temperature Range, ΔT_A[5] (°R)	Average Vapor Temp., T_V[6] (°R)	Daily Vapor Temp. Range, ΔT_V[7] (°R)	Maximum Liquid Surface Temp., T_{LX}[8] (°R)	Minimum Liquid Surface Temp., T_{LN}[9] (°R)
	(°F)	(°R)	(°F)	(°R)										
January	37.1	496.77	57.7	517.37	823	507.1	507.7	--	508.2	20.6	508.8	20.7	513.4	503.1
February	39.9	499.57	62	521.67	1,076	510.6	511.4	--	512.1	22.1	512.8	22.9	517.9	506.4
March	46.1	505.77	69.4	529.07	1,421	517.4	518.5	--	519.4	23.3	520.3	25.3	525.7	513.1
April	52.6	512.27	76.6	536.27	1,766	524.3	525.6	--	526.7	24	527.9	27.2	533.5	519.9
May	61.8	521.47	83.9	543.57	1,952	532.5	534.0	--	535.3	22.1	536.5	26.3	541.8	528.7
June	68.9	528.57	89.4	549.07	1,951	538.8	540.3	--	541.6	20.5	542.8	25.0	547.8	535.3
July	72.2	531.87	91.8	551.47	1,943	541.7	543.1	--	544.4	19.6	545.7	24.2	550.4	538.3
August	71.7	531.37	91.5	551.17	1,781	541.3	542.6	--	543.8	19.8	544.9	23.7	549.7	537.8
September	66.2	525.87	86.9	546.57	1,530	536.2	537.4	--	538.4	20.7	539.4	23.5	544.2	532.5
October	54.4	514.07	77.7	537.37	1,223	525.7	526.6	--	527.4	23.3	528.2	24.5	533.6	521.3
November	44	503.67	67.9	527.57	950	515.6	516.3	--	517.0	23.9	517.6	24.0	522.9	511.0
December	38	497.67	59.1	518.77	749	508.2	508.8	--	509.3	21.1	509.8	20.8	514.5	504.1

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Methanol Storage Tank	X025	X025

[1]Table 7.1-7 for Montgomery, AL.

[2]T_{AA} is the average ambient temperature for each month and is calculated as follows:

$$T_{AA} = \left(\frac{T_{AX} + T_{AN}}{2}\right)$$ *Equation 1-30*

[3]For a heated tank or a tank with liquid entering at elevated temperature, the liquid bulk temperature is equal to the transfer temperature. For all other tanks, the liquid bulk temperature is calculated as follows:

$$T_B = T_{AA} + 0.003\alpha_S \mathrm{I}$$ *Equation 1-31*

[4]T_{LA} is the average vapor temperature. For an uninsulated tank, this temperature is calculated using Equation 1-27. For a partially insulated tank, this temperature is calculated using Equation 1-29. For a fully insulated tank, this temperature is equal to the bulk liquid temperature.

$$T_{LA} = \left(0.5 - \frac{0.8}{4.4\left(\frac{H_S}{D}\right)+3.8}\right)T_{AA} + \left(0.5 + \frac{0.8}{4.4\left(\frac{H_S}{D}\right)+3.8}\right)T_B + \left(\frac{0.021\alpha_R I + 0.013\left(\frac{H_S}{D}\right)\alpha_S I}{4.4\left(\frac{H_S}{D}\right)+3.8}\right)$$ *Equation 1-27*

$$T_{LA} = 0.3T_{AA} + 0.7T_B + 0.005\alpha_R \mathrm{I}$$ *Equation 1-29*

[5]ΔT_A is the daily ambient temperature range and is calculated as follows:

$$\Delta T_A = T_{AX} - T_{AN}$$ *Equation 1-11*

[6]T_V is the average vapor temperature. For an uninsulated tank, this temperature is calculated using Equation 1-32. For a partially insulated tank, this temperature is calculated using Equation 1-34. For a fully insulated tank, this temperature is equal to the liquid surface and bulk liquid temperatures.

$$T_V = \frac{[2.2(H_S/D) + 1.1]T_{AA} + 0.8T_B + 0.021\alpha_R I + 0.013(H_S/D)\alpha_S I}{2.2\left(\frac{H_S}{D}\right) + 1.9}$$ *Equation 1-32*

$$T_V = 0.6T_{AA} + 0.4T_B + 0.01\alpha_R \mathrm{I}$$ *Equation 1-34*

[7]ΔT_V is the daily vapor temperature range. For an uninsulated tank, this temperature is calculated using Equation 1-6. For a partially insulated tank, this temperature is calculated using Equation 1-8. For a tank that is fully insulated and receives heated liquids but is not maintained at constant temperature, this value can be calculated according to Equation 8-1 if measured temperature data are available (otherwise, assume no breathing losses). For a fully insulated tank that is maintained at constant temperature, this value is zero.

$$\Delta T_V = \left(1 - \frac{0.8}{2.2\left(\frac{H_S}{D}\right) + 1.9}\right)\Delta T_A + \left(\frac{0.042\alpha_R I + 0.026\left(\frac{H_S}{D}\right)\alpha_S I}{2.2\left(\frac{H_S}{D}\right) + 1.9}\right)$$ *Equation 1-6*

$$\Delta T_V = 0.6\Delta T_A + 0.02\alpha_R \mathrm{I}$$ *Equation 1-8*

$$\Delta T_V = T_{BX} - T_{BN}$$ *Equation 8-1*

where:

T_{BX} = Maximum liquid bulk temperature (assumed to equal transfer temperature)
T_{BN} = Minimum liquid bulk temperature (based on measured data if available)

[8]T_{LX} is the maximum liquid surface temperature and is calculated as follows:

$$T_{LX} = T_{LA} + 0.25\Delta T_V$$ *Equation from Figure 7.1-17*

[9]T_{LN} is the minimum liquid surface temperature and is calculated as follows:

$$T_{LN} = T_{LA} - 0.25\Delta T_V$$ *Equation from Figure 7.1-17*

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Methanol Storage Tank
Equip ID No.: X025
Emission Release Point ID: X025

Throughput Data

Month	Contents	Throughput (gal)	Throughput, Q (bbl)	Liquid Molecular Weight (lb/lb-mol)	Vapor Molecular Weight (lb/lb-mol)	Vapor Pressure Calculation Method
January	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
February	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
March	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
April	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
May	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
June	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
July	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
August	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
September	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
October	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
November	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation
December	Methanol	172,300	4,102	32.04	32.04	Option 2: Antoine's Equation

Vapor Pressure Calculations Using Option 2: Antoine's Equation

Coefficient	A	B	C
Value	7.90	1,474.08	229.13

Month	Average Liquid Surface Temperature, T_{LA}		Minimum Liquid Surface Temperature, T_{LN}		Maximum Liquid Surface Temperature, T_{LX}		Daily Vapor Pressure Range, ΔP_V (psia)
	Temp. (°F)	Vapor Pressure, P_{VA} (psia)	Temp. (°F)	Vapor Pressure, P_{VN} (psia)	Temp. (°F)	Vapor Pressure, P_{VX} (psia)	
January	48.6	0.9962	43.4	0.8374	53.7	1.1804	0.34
February	52.5	1.1328	46.7	0.9373	58.2	1.3623	0.42
March	59.7	1.4308	53.4	1.1688	66.1	1.7415	0.57
April	67.1	1.7962	60.3	1.4548	73.9	2.2038	0.75
May	75.6	2.3175	69.0	1.9046	82.2	2.8041	0.90
June	81.9	2.7815	75.6	2.3213	88.1	3.3169	1.00
July	84.7	3.0151	78.7	2.5365	90.8	3.5683	1.03
August	84.1	2.9622	78.2	2.4990	90.0	3.4961	1.00
September	78.7	2.5375	72.8	2.1354	84.6	3.0022	0.87
October	67.8	1.8343	61.6	1.5184	73.9	2.2047	0.69
November	57.3	1.3234	51.3	1.0903	63.3	1.5980	0.51
December	49.6	1.0314	44.4	0.8666	54.8	1.2223	0.36

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Methanol Storage Tank	X025	X025

Emission Calculations

Uncontrolled Emission Summary

Hourly Emissions[1] (lb/hr)	**Annual Emissions (tpy)**
0.23	0.67

[1]Hourly emissions calculated as a sum of the working and standing losses for the worst-case month (July) divided by the hours in that month.

Annual Emissions

Month	**Calculation of Standing Storage Losses**							**Calculation of Working Losses**			**Total Emissions (lb)**	**Total Emissions (tons)**
	Vapor Space Outage[1], H_{VO} (ft)	**Vapor Space Volume[2], V_V (ft^3)**	**Stock Vapor Density[3], W_V (lb/ft^3)**	**Vapor Space Expansion Factor[4], K_E**	**Vented Vapor Saturation factor[5], K_S**	**Days Per Month (days)**	**Monthly Standing Storage Losses[6], L_S (lb)**	**Number of Turnovers[7], N**	**Working Loss Turnover Factor[8], K_N**	**Monthly Working Losses[9], L_W (lb)**		
January	10.9	1229.9	5.85E-03	0.06	0.64	31	8.71	148.1	0.37	49.72	58.43	0.03
February	10.9	1229.9	6.60E-03	0.07	0.60	28	9.88			56.08	65.96	0.03
March	10.9	1229.9	8.21E-03	0.09	0.55	31	15.04			69.82	84.85	0.04
April	10.9	1229.9	1.02E-02	0.11	0.49	30	19.44			86.39	105.83	0.05
May	10.9	1229.9	1.29E-02	0.12	0.43	31	24.76			109.67	134.43	0.07
June	10.9	1229.9	1.53E-02	0.13	0.38	30	27.18			130.10	157.28	0.08
July	10.9	1229.9	1.65E-02	0.13	0.37	31	29.49			140.30	169.79	0.08
August	10.9	1229.9	1.62E-02	0.12	0.37	31	28.39			138.02	166.41	0.08
September	10.9	1229.9	1.40E-02	0.11	0.41	30	23.28			119.45	142.73	0.07
October	10.9	1229.9	1.04E-02	0.10	0.49	31	18.37			88.17	106.54	0.05
November	10.9	1229.9	7.63E-03	0.08	0.57	30	12.80			64.92	77.72	0.04
December	10.9	1229.9	6.04E-03	0.06	0.63	31	9.05			51.37	60.42	0.03
Total							**226.38**			**1,104.00**	**1,330.38**	**0.67**

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Methanol Storage Tank	X025	X025

[1]The vapor space outage, H_{VO}, for a vertical fixed roof tank with a cone roof is calculated as follows:

$$H_{VO} = H_S - H_L + \frac{1}{3} S_R R_S$$ *Combination of Equations 1-16, 1-17, and 1-18*

where:

H_{VO} = Vapor space outage in ft
H_S = Tank shell height in ft
H_L = Liquid height in ft
S_R = Tank cone roof slope in ft/ft
R_S = Tank shell radius (D/2) in ft

[2]The vapor space volume, V_V, is calculated according to the following equation:

$$V_V = \left(\frac{\pi}{4} D^2\right) H_{VO}$$ *Equation 1-3*

where:

D = Tank diameter in ft
H_{VO} = Vapor space outage in ft

[3]The stock vapor density, W_V, is calculated according to the following equation:

$$W_V = \frac{M_V P_{VA}}{R T_V}$$ *Equation 1-22*

where:

W_V = Stock vapor density in lb/ft^3
M_V = Vapor molecular weight in lb/lb-mole
P_{VA} = Vapor pressure at the daily average liquid surface temperature in psia
R = Ideal gas constant in psia-ft^3/lb-lbmole-$^\circ$R
T_V = Average vapor temperature in $^\circ$R

[4]The vapor space expansion factor, K_E, is calculated according to the following equation:

$$K_E = \frac{\Delta T_V}{T_{LA}} + \frac{\Delta P_V - \Delta P_B}{P_A - P_{VA}}$$ *Equation 1-5*

where:

K_E = vapor space expansion factor, dimensionless
ΔT_V = Daily vapor temperature range in $^\circ$R
T_{LA} = Daily average liquid surface temperature in $^\circ$R
ΔP_V = Daily vapor pressure range in psi
ΔP_B = Breather vent pressure range in psi
P_A = Atmospheric pressure in psia
P_{VA} = Vapor pressure at daily average liquid surface temperature in psia

[5]The standing idle vapor saturation factor, K_S, is calculated according to the following equation:

$$K_S = \frac{1}{1 + 0.053 P_{VA} H_{VO}}$$ *Equation 1-21*

where:

K_S = standing idle vapor saturation factor, dimensionless
P_{VA} = Vapor pressure at daily average liquid surface temperature in psia
H_{VO} = Vapor space outage in ft

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Methanol Storage Tank	X025	X025

[6]Annual standing storage losses are calculated according to the following equation:

$$L_S = 365 V_V W_V K_E K_S \qquad \textit{Equation 1-2}$$

where:

L_S = Annual standing storage losses in lb
365 = Number of days in the year
V_V = Vapor space volume in ft^3
W_V = Stock vapor density in lb/ft^3
K_E = vapor space expansion factor, dimensionless
K_S = vented vapor saturation factor, dimensionless

For calculation of monthly emissions, the number of days for each month is substituted for 365 above.

[7]The number of turnovers, N, is calculated according to the following equation:

$$N = \frac{5.614Q}{\left((\pi/4)D^2\right)(H_{LX} - H_{LN})} \qquad \textit{Combination of Equations 1-36 and 1-37}$$

where:

Q = Throughput in bbl
D = Tank diameter in ft
H_{LX} = Maximum liquid height in ft. If unknown, use the one foot less than the shell height for vertical tanks and for horizontal tanks, use (π/4)*D.
H_{LN} = Minimum liquid height in ft. If unknown, use 1 for vertical tanks and 0 for horizontal tanks.

[8]The working loss turnover factor, K_N, is based on the following relationships:

for turnovers >36, $K_N = (180 + N)/6N$
for turnovers <36, $K_N = 1$

[9]Working losses are calculated according to the following equation:

$$L_W = V_Q K_N K_P W_V K_B \qquad \textit{Equation 1-35}$$

where:

L_W = Working losses in lb
V_Q= Net working loss throughput, ft^3/yr
=5.614Q
Q = Throughput in bbl
K_N = Working loss turnover factor, dimensionless
K_P = Working loss product factor, dimensionless
for crude oils, $K_P = 0.75$
for all other organic liquids, $K_P = 1$
W_V= Vapor density, lb/ft^3
K_B= 1 for open vents and for a breather vent setting range up to +/- 0.03 psig

Alabama River Cellulose LLC
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Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Backup NCG Incinerator	X029	X029
LVHC Streams from Nos. 7 and 8 Lines	Multiple	X029

Emission Unit ID: X029
Control Device Description: Backup NCG Incinerator

PTE Production Rate - No. 7 Mill:	79.1	ADTUBP/hr
	62,953	ADTUBP/yr*
PTE Production Rate - No. 8 Mill:	82.5	ADTUBP/hr
	72,270	ADTUBP/yr*
Backup NCG Incinerator PTE Natural Gas Firing:	7.7	MMBtu/hr
	67,452	MMBtu/yr
PAE Production Rate - No. 7 Mill:	42,860	ADTUBP/yr*
PAE Production Rate - No. 8 Mill:	41,103	ADTUBP/yr*
Backup NCG Incinerator PAE Natural Gas Firing:	40,152	MMBtu/yr

**Includes limitation of 10% of Nos. 7 and 8 Digester Digesters to the Incinerator*

Compound	CAS No.	Emission Factors						PTE [h]		PAE [h] (tpy)	BAE [h] (tpy)	Past Actual [h] (tpy)	Project Increase (PAE - BAE, tpy)
		Process and Combustion			Natural Gas Combustion								
		Value	Units	Reference	Value	Units	Reference	(lb/hr)	(tpy)				
Condensable PM	N/A				5.59E-03	lb/MMBtu	e	0.04	0.19	0.11	--	--	--
Filterable PM	N/A	0.036	lb/ADTUBP	a				5.75	2.41	1.49	0.41	0.91	1.09
Filterable PM10	N/A	0.036	lb/ADTUBP	b				5.75	2.41	1.49	--	--	--
Filterable PM2.5	N/A	0.036	lb/ADTUBP	b				5.75	2.41	1.49	--	--	--
PM10	N/A	*Calculated as sum of CPM and FPM10*						5.79	2.60	1.61	0.48	1.01	1.12
PM2.5	N/A	*Calculated as sum of CPM and FPM2.5*						5.79	2.60	1.61	0.63	1.01	0.98
SO2	N/A	1.92	lb/ADTUBP (No. 7 Mill)	i				230.99	95.13	60.88	26.92	35.82	33.96
		0.96	lb/ADTUBP (No. 8 Mill)	i									
NOX	N/A	0.047	lb/ADTUBP	a				7.58	3.17	1.97	1.20	1.20	0.77
CO	N/A	0.012	lb/ADTUBP	a				2.00	0.84	0.52	0.23	0.32	0.29
VOC	N/A	2.91E-03	lb/ADTUBP	a				0.47	0.20	0.12	0.06	0.07	0.07
Lead	N/A				4.90E-07	lb/MMBtu	e	3.77E-06	1.65E-05	9.84E-06	8.93E-06	8.60E-06	9.11E-07
TRS	N/A	4.55E-04	lb/ADTUBP	c				0.07	0.03	0.02	2.37E-07	4.28E-07	0.02
SAM	N/A	4.90E-03	lb/ADTUBP	c				0.79	0.33	0.21	0.13	0.13	0.08
CO2	N/A			d	116.98	lb/MMBtu	f	901	3,945	2,348	--	--	--
CH4	N/A			d	2.20E-03	lb/MMBtu	f	0.02	0.07	0.04	--	--	--
N2O	N/A			d	2.20E-04	lb/MMBtu	f	1.70E-03	0.01	4.43E-03	--	--	--
GHGs	N/A			d	116.98	lb/MMBtu	f	901	3,945	2,348	2,033	3,330	315
CO2e	N/A			d	117.10	lb/MMBtu	g	902	3,949	2,351	2,035	3,358	315

a. NCASI Technical Bulletin No. 1020, Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers (December 2013), Table 4.4.
b. Filterable PM10 and PM2.5 are assumed to be equal to Filterable PM.
c. Emission factors from 2018 NCASI Air Toxics Pulp and Paper Database for thermal oxidizers.
d. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
e. AP-42 Section 1.4, Natural Gas Combustion (July 1998), Tables 1.4-1 and 1.4-2. Emission factors were converted from lb/MMscf to lb/MMBtu using a higher heating value of 1,020 Btu/scf as noted in the AP-42 tables.
f. EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
g. Calculated using GWPs in effect January 1, 2025 from EPA's Mandatory Reporting Rule for Greenhouse Gases, 40 CFR Part 98, Table A-1.
h. Emission rates for GHGs exclude the contribution from control of NCGs. Those emissions are calculated separately.
i. Emission factor derived from TRS as S emission factor from NCASI Technical Bulletin No. 973, Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update, for uncontrolled digester and evaporator gases and converted to SO2 assuming 100% conversion. The emission factor for the No. 8 Mill was reduced by 50% since LVHC NCGs generated on the No. 8 Mill pass through a white liquor pre-scrubber prior to reaching the Backup NCG Incinerator.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

GHG Emissions from NCG Control

Noncondensable gases (LVHC and HVLC) at the mill are destroyed in a variety of combustion units. This emission rate calculation reflects the total GHG emissions resulting from the control of the NCG streams associated with the Nos. 7 and 8 Mills, since all control devices are modified or affected as a result of the project. The equipment listed below are only the control devices.

Emission Equipment Description:	Emission Unit ID No.:	Equip ID No.:	Emission Release Point ID:
No. 7 Recovery Furnace	X001	X001	X001
No. 8 Recovery Furnace	X012	X012	X012
No. 7 Lime Kiln	X003	X003	X003
No. 8 Lime Kiln	X014	X014	X014
Backup NCG Incinerator	X029	X029	X029

PTE Production Rate - Nos. 7 and 8 Mills: 1,352,229 ADTUBP/yr
PAE Production Rate - Nos. 7 and 8 Mills: 1,199,465 ADTUBP/yr

Compound	CAS No.	Emission Factor [a]		PTE	PAE	BAE [b]	Past Actual [b]	Project Increase
		Value	Units	(tpy)	(tpy)	(tpy)	(tpy)	(PAE - BAE, tpy)
CO2	N/A	7.34	lb/ADTUBP	4,965	4,404	--	--	--
CH4	N/A	4.65E-04	lb/ADTUBP	0.31	0.28	--	--	--
N2O	N/A	1.86E-04	lb/ADTUBP	0.13	0.11	--	--	--
GHGs	N/A	7.34	lb/ADTUBP	4,965	4,404	3,742	3,330	662
CO2e	N/A	7.41	lb/ADTUBP	5,007	4,441	3,773	3,358	668

a. Emission factors based on data in Table 1 of and NCASI memo from February 2011 (revised in March 2011). Emission factors represent HVLC and LVHC combustion only.
b. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Wastewater Treatment System	704	704

Emission Unit ID No.: 704
Number of Units: N/A
Control Device Description: N/A

PTE Production Rate - Nos. 7 and 8 Mills: 1,325,185 ADTFP/yr
PAE Production Rate - Nos. 7 and 8 Mills: 1,178,948 ADTFP/yr

Compound	CAS No.	Emission Factor [a, b]		PTE (tpy)	PAE (tpy)	BAE [c] (tpy)	Past Actual [c] (tpy)	Project Increase
VOC	N/A	3.14	lb/ADTFP	2,083.00	1,853.13	1,508.31	1,343.04	344.83
TRS	N/A	6.93E-03	lb/ADTFP	4.59	4.09	3.33	2.96	0.76
H2S	7783064	2.69E-03	lb/ADTFP	1.78	1.59	1.29	1.15	0.30

a. Emission factors based on the 2018 TRI report. The emission factors include contribution from the wastewater cooling towers.
b. TRS is estimated as the sums of the individual components identified in TRI calculations.
c. Please refer to detailed baseline actual and past actual emissions for basis.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**EU Release Point:**
WWT Cooling Tower No. 1	704a	704a
WWT Cooling Tower No. 2	704b	704b
WWT Cooling Tower No. 3	704c	704c
No. 7 Powerhouse Cooling Tower		
No. 8 Powerhouse Cooling Tower		
Chemical Prep Cooling Tower		

Emission Unit ID No.: 704
Number of Units: N/A
Control Device Description: N/A

PTE Production Rate - No. 7 Mill: 629,529 ADTUBP/yr
PAE Production Rate - No. 7 Mill: 612,282 ADTUBP/yr
PTE Production Rate - No. 8 Mill: 722,700 ADTUBP/yr
PAE Production Rate - No. 8 Mill: 587,184 ADTUBP/yr

Compound	CAS No.	Flow Rate (gpm)	TDS (ppm)	Drift Loss (%)	PTE		Production-Based Emission Factor [c] (lb/ADTUBP)	PAE (tpy)	BAE [d] (tpy)	Past Actual [d] (tpy)	Project Increase (PAE - BAE, tpy)
					(lb/hr)	(tpy)					
WWT Cooling Tower No. 1 [e]											
Filterable PM	N/A	12,400	3,276	0.02%	4.07	17.81	0.026	15.80	12.58	11.95	3.22
Filterable PM10	N/A				1.92	8.42	0.012	7.47	5.95	5.65	1.52
Filterable PM2.5	N/A				0.01	0.04	5.31E-05	0.03	0.03	0.02	0.01
WWT Cooling Tower No. 2 [e]											
Filterable PM	N/A	12,400	2,536	0.02%	3.15	13.78	0.020	12.23	9.73	9.25	2.49
Filterable PM10	N/A				1.74	7.63	0.011	6.77	5.39	5.12	1.38
Filterable PM2.5	N/A				0.01	0.03	4.23E-05	0.03	0.02	0.02	0.01
WWT Cooling Tower No. 3 [e]											
Filterable PM	N/A	15,200	3,572	0.02%	5.43	23.80	0.035	21.11	16.81	15.97	4.30
Filterable PM10	N/A				2.43	10.64	0.016	9.44	7.52	7.14	1.92
Filterable PM2.5	N/A				0.01	0.05	7.03E-05	0.04	0.03	0.03	0.01
No. 7 Powerhouse Cooling Tower											
Filterable PM	N/A	19,100	819	0.001%	0.08	0.34	1.09E-03	0.33	0.22	0.21	0.11
Filterable PM10	N/A				0.07	0.32	1.02E-03	0.31	0.21	0.20	0.11
Filterable PM2.5	N/A				0.06	0.27	8.50E-04	0.26	0.17	0.16	0.09
No. 8 Powerhouse Cooling Tower											
Filterable PM	N/A	44,000	249	0.002%	0.11	0.48	1.33E-03	0.39	0.37	0.35	0.02
Filterable PM10	N/A				0.10	0.45	1.25E-03	0.37	0.34	0.33	0.02
Filterable PM2.5	N/A				0.09	0.37	1.04E-03	0.30	0.29	0.27	0.02
Chemical Prep Cooling Tower											
Filterable PM	N/A	16,000	258	0.002%	0.04	0.18	2.68E-04	0.16	0.13	0.12	0.03
Filterable PM10	N/A				0.04	0.17	2.52E-04	0.15	0.12	0.11	0.03
Filterable PM2.5	N/A				0.03	0.14	2.09E-04	0.13	0.10	0.27	0.03

a. PM emission rates calculated based on TDS concentration, flow rate, density of water, and drift.
b. For cooling towers with TDS greater than 1,000 ppm, PM10 and PM2.5 emissions based on methodology from Reisman, J. and Frisbie, G., "Calculating Realistic PM10 Emissions from Cooling Towers." Values used for interpolation below.

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Emission Equipment Description:	Equip ID No.:	EU Release Point:
WWT Cooling Tower No. 1	704a	704a
WWT Cooling Tower No. 2	704b	704b
WWT Cooling Tower No. 3	704c	704c
No. 7 Powerhouse Cooling Tower		
No. 8 Powerhouse Cooling Tower		
Chemical Prep Cooling Tower		

	Droplet Diameter (µm)	Particle Mass - Solids (µg)	Solid Particle Volume[a] (μm^3)	Solid Particle Diameter (µm)	% Mass Smaller	Percent of TPM[b] (%)	
						PM_{10}	$PM_{2.5}$
WWT Cooling Tower No. 1						47.3	0.20
	20	1.37E-05	6.24	2.284	0.196		
	30	4.63E-05	21.05	3.426	0.226		
	90	1.25E-03	568.39	10.277	49.812		
	110	2.28E-03	1,037.76	12.561	70.509		
WWT Cooling Tower No. 2						55.4	0.21
	20	1.06E-05	4.83	2.097	0.196		
	30	3.59E-05	16.30	3.146	0.226		
	90	9.68E-04	439.99	9.437	49.812		
	110	1.77E-03	803.33	11.534	70.509		
WWT Cooling Tower No. 3						44.7	0.20
	20	1.50E-05	6.80	2.351	0.196		
	30	5.05E-05	22.95	3.526	0.226		
	90	1.36E-03	619.75	10.578	49.812		
	110	2.49E-03	1,131.54	12.929	70.509		

For cooling towers with TDS less than 1,000 ppm, PM10 and PM2.5 emissions based on EPA's PM Augmentation Tool speciation below for cooling towers (SCC 38500101).

PM_{10}:	94 % of PM
$PM_{2.5}$:	78 % of PM

c. Emission factor developed based on PTE and associated mill production rates for one or both lines, as applicable.
d. Please refer to detailed baseline actual and past actual emissions for basis.
e. Wastewater Cooling Towers Nos. 1-3 also emit VOC. Those emissions are quantified as part of the emission rate calculations for the Wastewater Treatment System.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Truck Traffic on Paved and Unpaved Roads

Equip ID No. N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Sitewide

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																			
							Loaded																																				
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
						Distance (ft)	2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
						Paved (P) or Unpaved (U)	P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7																													1		1			1	1
No. 8 Log Trucks	Logs	15	29	44	127,292	No. 8																																			
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both	1			1																				1											
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both																																	1	1
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7																																			
Bark Loading	Bark	15	26	41	3,200	Both																																			
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7		1	1	1																				1	1		1	1		1	1	1		
No. 8 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	147	--		1	1	1																				1	1		1	1	1					
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both																																	1	1
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both		1	1			1		1	1		1		1																					
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both						1	1	1	1		1		1																					
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both	1				1	1	1																											
Finished Product Trucks	Product	15	45	60	36,500	Both	1			1																	1		1	1										
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both	1				1			1	1		1		1	1	1	1	1	1																
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both	1				1			1	1	1																								
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																			
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both																																	1	1
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7		1	1		1			1	1		1		1	1	1	1																		
No. 8 Slaker Grits/Dregs Trucks	Grits/Dregs	11.2	27.2	38.3	676	No. 8		1	1		1			1	1		1		1																					
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7		1	1		1			1	1		1		1	1																				
No. 8 Mill Knots Trucks	Knots	11.2	12.9	24.0	524	No. 8		1	1		1			1	1		1	1																						
Spill Pond Trucks	Lime Mud	11.2	17.0	28.1	2750	General		1	1		1			1	1		1		1																					
Site Debris Trucks	Site Debris	11.2	10.0	21.2	263	General		1	1		1			1	1		1		1																				1	
Roll-off Trucks	General Landfill Waste	3.7	15.0	18.7	490	General		1	1		1			1	1		1	1																						
Roll-off Trucks	General Landfill Waste	3.7	10.0	13.7	735	General		1	1	1															1	1				1	1									
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both		1	1		1			1	1		1																							
Landfill Maintenance Trucks	Soil/Bark	11.2	14.0	25.2	247	General																																			
Water Treatment Coagulant Trucks	Coagulant	15	22.5	37.5	70	General	1				1			1	1		1		1																					

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Truck Traffic on Paved and Unpaved Roads

Equip ID No. N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Sitewide

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																		
							Loaded																																		
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
						Distance (ft)	227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
						Paved (P) or Unpaved (U)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7	1	1	1													1			1		1				1	1	1								
No. 8 Log Trucks	Logs	15	29	44	127,292	No. 8														1	1												1				1		1		
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both					1		1																												
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both	1														1					1	1				1	1	1								
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7									1	1	1		1	1	1												1								
Bark Loading	Bark	15	26	41	3,200	Both									1	1	1		1	1	1												1								
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7																																			
No. 8 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	147	--																																			
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both															1					1	1				1	1	1								
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both																1		1	1		1	1	1												
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both																1		1	1		1	1	1												
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both																																			
Finished Product Trucks	Product	15	45	60	36,500	Both																																			
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both																																			
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both																																			
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																			
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both															1					1	1				1	1	1								
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7																																			
No. 8 Slaker Grits/Dregs Trucks	Grits/Dregs	11.2	27.2	38.3	676	No. 8																	1		1	1		1			1										
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7																																			
No. 8 Mill Knots Trucks	Knots	11.2	12.9	24.0	524	No. 8																																			
Spill Pond Trucks	Lime Mud	11.2	17.0	28.1	2750	General																	1	1																	
Site Debris Trucks	Site Debris	11.2	10.0	21.2	263	General																1		1	1		1				1	1								
Roll-off Trucks	General Landfill Waste	3.7	15.0	18.7	490	General																																			
Roll-off Trucks	General Landfill Waste	3.7	10.0	13.7	735	General					1		1	1		1	1																								
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both																1	1		1											1		1			1
Landfill Maintenance Trucks	Soil/Bark	11.2	14.0	25.2	247	General																																			
Water Treatment Coagulant Trucks	Coagulant	15	22.5	37.5	70	General																1	1		1									1							

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Truck Traffic on Paved and Unpaved Roads

Equip ID No. N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Sitewide

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																	
							Unloaded																																		
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
						Distance (ft)	2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
						Paved (P) or Unpaved (U)	P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7																																		
No. 8 Log Trucks	Logs	15	29	44	127,292	No. 8																																		
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both																																		
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both	1			1																			1	1		1	1		1					
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7																																		
Bark Loading	Bark	15	26	41	3,200	Both																																		
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7		1	1	1																			1	1		1	1		1	1	1		
No. 8 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	147	--		1	1	1																			1	1		1	1						
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both																																	1	1
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both		1	1			1		1	1		1		1																					
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both						1	1	1	1		1		1																					
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both	1				1	1	1																											
Finished Product Trucks	Product	15	45	60	36,500	Both	1				1			1														1	1											
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both	1			1															1	1	1													
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both	1				1			1	1	1																								
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																		
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both																																	1	1
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7		1	1		1			1	1		1		1	1	1	1																	
No. 8 Slaker Grits/Dregs Trucks	Grits/Dregs	11.2	27.2	38.3	676	No. 8		1	1		1			1	1		1		1																				
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7		1	1		1			1	1		1		1	1																			
No. 8 Mill Knots Trucks	Knots	11.2	12.9	24.0	524	No. 8		1	1		1			1	1		1	1																					
Spill Pond Trucks	Lime Mud	11.2	17.0	28.1	2750	General		1	1		1			1	1		1		1																				
Site Debris Trucks	Site Debris	11.2	10.0	21.2	263	General		1	1	1																			1	1		1	1		1	1			
Roll-off Trucks	General Landfill Waste	3.7	15.0	18.7	490	General		1	1		1			1	1		1	1																					
Roll-off Trucks	General Landfill Waste	3.7	10.0	13.7	735	General		1	1	1																			1										
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both		1	1		1			1	1		1																						
Landfill Maintenance Trucks	Soil/Bark	11.2	14.0	25.2	247	General																																		
Water Treatment Coagulant Trucks	Coagulant	15	22.5	37.5	70	General	1				1			1	1		1		1																				

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Truck Traffic on Paved and Unpaved Roads

Equip ID No. N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Sitewide

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																
							Unloaded																																
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
						Distance (ft)	227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
						Paved (P) or Unpaved (U)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7				1							1	1														1		1	1					
No. 8 Log Trucks	Logs	15	29	44	127,292	No. 8																										1			1				1	1
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both								1		1	1	1														1		1	1					
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both		1																																
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7						1	1	1	1			1	1		1												1							
Bark Loading	Bark	15	26	41	3,200	Both						1	1	1	1			1	1		1												1							
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7																																		
No. 8 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	147	--																																		
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both															1						1	1			1	1	1							
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both																	1		1	1		1	1	1										
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both																	1		1	1		1	1	1										
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both																																		
Finished Product Trucks	Product	15	45	60	36,500	Both																																		
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both																																		
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both																																		
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																		
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both															1						1	1			1	1	1							
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7																																		
No. 8 Slaker Grits/Dregs Trucks	Grits/Dregs	11.2	27.2	38.3	676	No. 8																	1		1	1		1			1									
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7																																		
No. 8 Mill Knots Trucks	Knots	11.2	12.9	24.0	524	No. 8																																		
Spill Pond Trucks	Lime Mud	11.2	17.0	28.1	2750	General																		1	1															
Site Debris Trucks	Site Debris	11.2	10.0	21.2	263	General																																		
Roll-off Trucks	General Landfill Waste	3.7	15.0	18.7	490	General																																		
Roll-off Trucks	General Landfill Waste	3.7	10.0	13.7	735	General					1		1	1		1	1																							
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both														1	1	1	1		1												1			
Landfill Maintenance Trucks	Soil/Bark	11.2	14.0	25.2	247	General																																		
Water Treatment Coagulant Trucks	Coagulant	15	22.5	37.5	70	General																1	1		1									1						

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Traffic on Paved and Unpaved Roads

Equip ID No.: N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A

Emissions by Segment - PTE

Road Segment	Paved	Segment Length (miles)	Mean Weight, W (tons)	Silt Loading, sL or s		Emission Factors (lb/VMT)				VMT	PTE Annual Emissions (tpy)		
				(g/m^2)	(%)	PM	PM_{10}	$PM_{2.5}$	Reference	(miles/year)	PM	PM_{10}	$PM_{2.5}$
A	Paved	0.47	39.85	0.83	--	0.36	0.07	0.02	a	75,086	13.59	2.72	0.67
B	Paved	0.14	18.54	0.83	--	0.17	0.03	0.01	b	2,919	0.24	0.05	0.01
C	Unpaved	0.80	18.54	--	7.25	5.12	1.42	0.14	a	16,322	41.80	11.57	1.16
D	Paved	0.16	46.32	0.83	--	0.42	0.08	0.02	a	19,790	4.18	0.84	0.21
E	Paved	0.10	19.08	0.83	--	0.17	0.03	0.01	a	5,494	0.47	0.09	0.02
F	Paved	0.08	21.07	0.83	--	0.19	0.04	0.01	b	336	0.03	0.01	1.56E-03
G	Unpaved	0.61	21.07	--	7.25	5.43	1.50	0.15	a	1,409	3.82	1.06	0.11
H	Paved	0.14	19.19	0.83	--	0.17	0.03	0.01	a	8,591	0.74	0.15	0.04
I	Paved	0.22	25.54	0.83	--	0.23	0.05	0.01	a	5,254	0.60	0.12	0.03
J	Paved	0.34	34.00	0.83	--	0.31	0.06	0.02	a	293	0.05	0.01	2.21E-03
K	Paved	0.12	25.22	0.83	--	0.23	0.05	0.01	a	2,834	0.32	0.06	0.02
L	Paved	0.02	14.50	0.83	--	0.13	0.03	0.01	a	31	2.00E-03	4.00E-04	9.82E-05
M	Paved	0.03	28.04	0.83	--	0.25	0.05	0.01	a	479	0.06	0.01	2.98E-03
N	Paved	0.08	39.89	0.83	--	0.36	0.07	0.02	a	515	0.09	0.02	4.58E-03
O	Paved	0.02	43.29	0.83	--	0.39	0.08	0.02	a	102	0.02	4.02E-03	9.88E-04
P	Paved	0.03	43.29	0.83	--	0.39	0.08	0.02	a	149	0.03	0.01	1.44E-03
Q	Paved	0.06	53.50	0.83	--	0.49	0.10	0.02	a	221	0.05	0.01	2.65E-03
R	Paved	0.11	53.50	0.83	--	0.49	0.10	0.02	a	426	0.10	0.02	0.01
S	Paved	0.17	14.50	0.83	--	0.13	0.03	0.01	a	674	0.04	0.01	2.14E-03
T	Paved	0.03	14.37	0.83	--	0.13	0.03	0.01	a	159	0.01	2.04E-03	5.00E-04
U	Paved	0.15	54.87	0.83	--	0.50	0.10	0.02	a	6,145	1.54	0.31	0.08
V	Paved	0.09	15.00	0.83	--	0.13	0.03	0.01	a	3,263	0.22	0.04	0.01
W	Paved	0.10	37.50	0.83	--	0.34	0.07	0.02	a	7,203	1.23	0.25	0.06
X	Paved	0.04	60.00	0.83	--	0.55	0.11	0.03	a	1,286	0.35	0.07	0.02
Y	Paved	0.21	41.99	0.83	--	0.38	0.08	0.02	a	17,232	3.29	0.66	0.16
Z	Paved	0.05	15.71	0.83	--	0.14	0.03	0.01	a	375	0.03	0.01	1.29E-03
AA	Paved	0.07	13.70	0.83	--	0.12	0.02	0.01	a	49	2.97E-03	5.93E-04	1.46E-04
BB	Paved	0.10	15.91	0.83	--	0.14	0.03	0.01	a	738	0.05	0.01	2.57E-03
CC	Paved	0.15	40.65	0.83	--	0.37	0.07	0.02	a	9,198	1.70	0.34	0.08
DD	Paved	0.05	30.99	0.83	--	0.28	0.06	0.01	a	7	9.44E-04	1.89E-04	4.63E-05
EE	Paved	0.02	40.74	0.83	--	0.37	0.07	0.02	a	946	0.18	0.04	0.01
FF	Paved	0.11	18.96	0.83	--	0.17	0.03	0.01	a	136	0.01	2.31E-03	5.66E-04
GG	Paved	0.06	21.07	0.83	--	0.19	0.04	0.01	a	60	0.01	1.14E-03	2.80E-04
HH	Paved	0.03	42.94	0.83	--	0.39	0.08	0.02	a	2,297	0.45	0.09	0.02
II	Paved	0.05	43.02	0.83	--	0.39	0.08	0.02	a	3,461	0.68	0.14	0.03
JJ	Paved	0.04	44.10	0.83	--	0.40	0.08	0.02	a	2,587	0.52	0.10	0.03
KK	Paved	0.05	41.19	0.83	--	0.37	0.07	0.02	a	3,271	0.61	0.12	0.03
LL	Paved	0.13	44.00	0.83	--	0.40	0.08	0.02	a	6,897	1.38	0.28	0.07
MM	Paved	0.11	15.00	0.83	--	0.13	0.03	0.01	a	5,857	0.39	0.08	0.02
NN	Paved	0.19	44.28	0.83	--	0.40	0.08	0.02	a	13,822	2.79	0.56	0.14
OO	Paved	0.32	15.00	0.83	--	0.13	0.03	0.01	a	19,243	1.29	0.26	0.06
PP	Paved	0.04	31.24	0.83	--	0.28	0.06	0.01	a	5,824	0.82	0.16	0.04
QQ	Paved	0.06	14.93	0.83	--	0.13	0.03	0.01	a	7,400	0.49	0.10	0.02
RR	Paved	0.03	28.00	0.83	--	0.25	0.05	0.01	a	4,055	0.51	0.10	0.03
SS	Paved	0.02	26.51	0.83	--	0.24	0.05	0.01	a	2,594	0.31	0.06	0.02
TT	Paved	0.16	23.19	0.83	--	0.21	0.04	0.01	a	30,901	3.22	0.64	0.16
UU	Paved	0.08	15.00	0.83	--	0.13	0.03	0.01	a	14,036	0.94	0.19	0.05
VV	Paved	0.23	28.00	0.83	--	0.25	0.05	0.01	a	27,750	3.50	0.70	0.17
WW	Paved	0.02	42.72	0.83	--	0.39	0.08	0.02	a	3,401	0.66	0.13	0.03
XX	Paved	0.07	36.32	0.83	--	0.33	0.07	0.02	a	18,265	3.01	0.60	0.15
YY	Paved	0.09	42.26	0.83	--	0.38	0.08	0.02	a	5,357	1.03	0.21	0.05
ZZ	Paved	0.05	20.47	0.83	--	0.18	0.04	0.01	a	463	0.04	0.01	2.09E-03
AAA	Paved	0.03	19.64	0.83	--	0.18	0.04	0.01	a	167	0.01	2.93E-03	7.19E-04
BBB	Paved	0.01	20.16	0.83	--	0.18	0.04	0.01	a	149	0.01	2.69E-03	6.60E-04
CCC	Paved	0.06	42.09	0.83	--	0.38	0.08	0.02	a	3,517	0.67	0.13	0.03
DDD	Paved	0.09	39.98	0.83	--	0.36	0.07	0.02	a	1,612	0.29	0.06	0.01
EEE	Paved	0.02	41.61	0.83	--	0.38	0.08	0.02	a	1,460	0.28	0.06	0.01
FFF	Paved	0.03	21.07	0.83	--	0.19	0.04	0.01	a	95	0.01	1.79E-03	4.39E-04
GGG	Paved	0.04	21.07	0.83	--	0.19	0.04	0.01	a	130	0.01	2.45E-03	6.01E-04
HHH	Paved	0.05	42.60	0.83	--	0.39	0.08	0.02	a	3,873	0.75	0.15	0.04
III	Paved	0.05	42.94	0.83	--	0.39	0.08	0.02	a	3,665	0.72	0.14	0.04
JJJ	Paved	0.56	27.66	0.83	--	0.25	0.05	0.01	a	320,192	39.93	7.99	1.96
KKK	Paved	1.68	26.25	0.83	--	0.24	0.05	0.01	a	236	0.03	0.01	1.37E-03
LLL	Paved	0.34	15.00	0.83	--	0.13	0.03	0.01	a	43,053	2.88	0.58	0.14
MMM	Paved	0.58	15.08	0.83	--	0.13	0.03	0.01	a	149,658	10.05	2.01	0.49
NNN	Paved	0.21	43.51	0.83	--	0.40	0.08	0.02	a	27,432	5.43	1.09	0.27
OOO	Paved	0.19	25.15	0.83	--	0.23	0.05	0.01	a	370	0.04	0.01	2.05E-03
PPP	Paved	0.20	44.00	0.83	--	0.40	0.08	0.02	a	25,434	5.09	1.02	0.25
QQQ	Paved	0.02	15.00	0.83	--	0.13	0.03	0.01	a	2,941	0.20	0.04	0.01
RRR	Paved	0.08	15.15	0.83	--	0.13	0.03	0.01	H	10,180	0.69	0.14	0.03
Total											**164.59**	**36.42**	**7.10**

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:	**Equip ID No.:**	**Emission Release Point ID:**
Traffic on Paved and Unpaved Roads	N/A	N/A

Emission Unit ID No.: N/A

a. Emissions estimation for paved roads based on AP-42, Section 13.2.1, Equation 1 (Fifth Edition, 1/11) for vehicles traveling on a paved surface. The equation to calculate the emission factors is shown below. Note that rain correction factor [1-P/(4N)] only applies to annual, not hourly emissions.

$$E = [k \times (sL)^{.91} \times (W)^{1.02}] \times [1 - (P/4N)]$$

Where:

E = Size-specific emission factor (lb/VMT)

k = Particle size multiplier for particle size range and units of interest, AP-42, Section 13.2.1, Table 13.2.1-1.

Constant	PM*	PM_{10}	$PM_{2.5}$
k	0.011	0.0022	0.00054

*Assumed equivalent to total suspended particulate matter (TSP)

sL = Road surface silt loading (g/m2) = 0.83 (average result from Cedar Springs, GA and Leaf River, MS pulp and paper mills)

W = Mean vehicle weight (tons)

P = Days per year with 0.01 or more inches of precipitation = 126 (Available monthly data for the Evergreen-Middleton Airport (KGZH) available from the NOAA for 2018-2022)

N = Number of days in the averaging period = 365 days

b. Emissions estimate for unpaved roads based on AP-42, Section 13.2.2 (Fifth Edition, 11/06) for vehicles travelling on an unpaved surface. The equation to calculate the emission factors is shown below.

$$E = k \times (s/12)^{a} \times (W/3)^{b}] \times [(365 - P)/365]$$

Where:

E = Size-specific emission factor (lb/VMT)

k, a, and b = Empirical constants for particle size range, AP-42, Table 13.2.2-2.

Constant	PM*	PM_{10}	$PM_{2.5}$
k	4.9	1.5	0.15
a	0.7	0.9	0.9
b	0.45	0.45	0.45

s = Surface material silt content (%) = 7.25% (average result from Leaf River, MS pulp and paper mill)

W = Mean vehicle weight (tons)

P = Days per year with 0.01 or more inches of precipitation = 126 (Available monthly data for the Evergreen-Middleton Airport (KGZH) available from the NOAA for 2018-2022)

c. Many of the roads are watered daily. Conservatively, no control is claimed.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Truck Traffic on Paved and Unpaved Roads
Equip ID No. N/A **Emission Release Point ID:** N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Affected Paths Associated with No. 7 Mill

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel) Loaded																																		
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
						Distance (ft)	2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
						Paved (P) or Unpaved (U)	P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7																													1		1			1	1
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7																																			
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7		1	1	1																					1	1		1	1		1	1	1		
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7		1	1		1			1	1		1		1	1	1	1																			
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7		1	1		1			1	1		1		1	1																					

Truck Traffic Paths/Segments Summary - Affected Paths Shared Between Nos. 7 and 8 Lines

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel) Loaded																																		
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
						Distance (ft)	2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
						Paved (P) or Unpaved (U)	P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both	1			1																					1										
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both																																		1	1
Bark Loading	Bark	15	26	41	3,200	Both																																			
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both																																		1	1
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both		1	1			1		1	1		1		1																						
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both						1	1	1	1		1		1																						
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both	1				1	1	1																												
Finished Product Trucks	Product	15	45	60	36,500	Both	1			1																	1		1	1											
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both	1				1			1	1		1		1	1	1	1	1	1																	
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both	1				1			1	1	1																									
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																			
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both																																		1	1
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both		1	1		1			1	1		1																								

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Truck Traffic on Paved and Unpaved Roads
Equip ID No. N/A
Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Affected Paths Associated with No. 7 Mill

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel) Loaded																																		
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
						Distance (ft)	227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
						Paved (P) or Unpaved (U)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7	1	1	1													1				1		1			1	1	1								
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7									1	1	1		1	1	1												1								
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7																																			
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7																																			
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7																																			

Truck Traffic Paths/Segments Summary - Affected Paths Shared Between Nos. 7 and 8 Lines

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel) Loaded																																		
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
						Distance (ft)	227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
						Paved (P) or Unpaved (U)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both					1		1																												
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both	1														1						1	1			1	1	1								
Bark Loading	Bark	15	26	41	3,200	Both									1	1	1		1	1	1												1								
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both															1						1	1			1	1	1								
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both																	1		1	1		1	1	1											
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both																	1		1	1		1	1	1											
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both																																			
Finished Product Trucks	Product	15	45	60	36,500	Both																																			
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both																																			
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both																																			
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																			
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both															1						1	1			1	1	1								
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both																1	1		1											1		1			1

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Truck Traffic on Paved and Unpaved Roads

Equip ID No. N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Affected Paths Associated with No. 7 Mill

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																			
							Unloaded																																				
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
Distance (ft)							2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
Paved (P) or Unpaved (U)							P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7																																			
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7																																			
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7		1	1	1																				1	1		1	1		1	1	1		
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7		1	1		1			1	1		1		1	1	1	1																		
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7		1	1		1			1	1		1		1	1																				

Truck Traffic Paths/Segments Summary - Affected Paths Shared Between Nos. 7 and 8 Lines

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																			
							Unloaded																																				
		Unloaded	Capacity	Loaded			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II
Distance (ft)							2,462	760	4,250	855	505	447	3,201	749	1,153	1,788	645	81	146	416	95	139	300	579	916	182	789	472	521	186	1,122	245	350	530	787	242	81	579	327	168	254
Paved (P) or Unpaved (U)							P	P	U	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both																																			
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both	1			1																				1	1		1	1		1				
Bark Loading	Bark	15	26	41	3,200	Both																																			
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both																																		1	1
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both		1	1			1		1	1		1		1																					
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both						1	1	1	1		1		1																					
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both	1				1	1	1																											
Finished Product Trucks	Product	15	45	60	36,500	Both	1				1			1														1	1											
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both	1			1															1	1	1													
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both	1				1			1	1	1																								
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																			
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both																																		1	1
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both		1	1		1			1	1		1																								

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Truck Traffic on Paved and Unpaved Roads
Equip ID No. N/A
Emission Release Point ID: N/A

Emission Unit ID No.: N/A
Number of Units: N/A
Control Device Description: N/A

Truck Traffic Paths/Segments Summary - Affected Paths Associated with No. 7 Mill

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																		
							Unloaded																																			
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
Distance (ft)							227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
Paved (P) or Unpaved (U)							P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
No. 7 Log Trucks	Logs	15	29	44	54,350	No. 7				1							1	1															1			1	1					
Bark (Fuel) Trucks	Bark	15	26	41	56,603	No. 7						1	1	1	1			1	1		1												1									
No. 7 Power Boiler Ash Trucks (to 'New' Landfill)	Ash	11.2	19.8	31.0	488	No. 7																																				
No. 7 Slaker Grits/Dregs Tucks	Grits/Dregs	11.2	19.8	31.0	893	No. 7																																				
No. 7 Mill Knots Trucks	Knots	11.2	12.9	24.0	433	No. 7																																				

Truck Traffic Paths/Segments Summary - Affected Paths Shared Between Nos. 7 and 8 Lines

Type of Trucks	Material	Truck Weights (tons)			Number of Trucks (#/yr)	Associated Mill	Segments Travelled (1 = One Way Travel)																																		
							Unloaded																																			
		Unloaded	Capacity	Loaded			JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	CCC	DDD	EEE	FFF	GGG	HHH	III	JJJ	KKK	LLL	MMM	NNN	OOO	PPP	QQQ	RRR
Distance (ft)							227	287	670	569	980	1,699	229	291	179	102	865	396	1,225	95	362	485	268	160	54	312	484	100	141	193	278	268	2,948	8,883	1,785	3,080	1,121	1,019	1,055	122	416
Paved (P) or Unpaved (U)							P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chip Trucks (Main Unloading Station)	Chips	15	30	45	73,000	Both								1		1	1	1															1		1	1					
Chip Trucks (Secondary Unloading Station)	Chips	15	30	45	5,824	Both		1																									1									
Bark Loading	Bark	15	26	41	3,200	Both						1	1	1	1			1	1		1												1									
Ash Trucks (Beneficial Reuse)	Ash	15.0	45.0	60	2,123	Both															1						1	1			1	1	1									
Lime Trucks (to 'New' Landfill)	Lime	11.2	19.8	31.0	825	Both																	1		1	1		1	1	1												
Lime Trucks (to 'Old' Landfill)	Lime	11.2	19.8	31.0	948	Both																	1		1	1		1	1	1												
Lime Trucks (Beneficial Reuse)	Lime	11.2	19.8	31.0	214	Both																																				
Finished Product Trucks	Product	15	45	60	36,500	Both																																				
Chemical Trucks (Path 1)	Various	14.5	39.0	53.5	3887	Both																																				
Chemical Trucks (Path 2)	Various	14.5	39.0	53.5	432	Both																																				
Sludge Trucks (to 'New' Landfill)	Sludge	11.2	14.0	25.2	2824	Both																																				
Sludge Trucks (Beneficial Reuse)	Sludge	15.0	45.0	60	3759	Both															1						1	1			1	1	1									
Wood Residuals Trucks	Wood Residuals	11.2	14.0	25.2	1915	Both														1	1	1	1		1												1					

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Traffic on Paved and Unpaved Roads

Equip ID No.: N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A

Emissions by Segment - PTE for Affected Paths

Road Segment	Paved	Segment Length (miles)	Mean Weight, W (tons)	Silt Loading, sL or s		Emission Factors (lb/VMT)				VMT	PTE Annual Emissions (tpy)		
				(g/m^2)	(%)	PM	PM_{10}	$PM_{2.5}$	Reference	(miles/year)	PM	PM_{10}	$PM_{2.5}$
Affected Paths Associated with No. 7 Mill Only													
B	Paved	0.14	20.24	0.83	--	0.18	0.04	0.01	b	522	0.05	0.01	2.32E-03
C	Unpaved	0.80	20.24	--	7.25	5.33	1.47	0.15	a	2,920	7.78	2.15	0.22
D	Paved	0.16	21.07	0.83	--	0.19	0.04	0.01	a	158	0.01	2.99E-03	7.33E-04
E	Paved	0.10	19.93	0.83	--	0.18	0.04	0.01	a	254	0.02	4.53E-03	1.11E-03
H	Paved	0.14	19.93	0.83	--	0.18	0.04	0.01	a	376	0.03	0.01	1.65E-03
I	Paved	0.22	19.93	0.83	--	0.18	0.04	0.01	a	579	0.05	0.01	2.54E-03
K	Paved	0.12	19.93	0.83	--	0.18	0.04	0.01	a	324	0.03	0.01	1.42E-03
M	Paved	0.03	19.93	0.83	--	0.18	0.04	0.01	a	73	0.01	1.31E-03	3.21E-04
N	Paved	0.08	19.93	0.83	--	0.18	0.04	0.01	a	209	0.02	3.73E-03	9.16E-04
O	Paved	0.02	21.07	0.83	--	0.19	0.04	0.01	a	32	3.04E-03	6.08E-04	1.49E-04
P	Paved	0.03	21.07	0.83	--	0.19	0.04	0.01	a	47	4.44E-03	8.88E-04	2.18E-04
Y	Paved	0.21	21.07	0.83	--	0.19	0.04	0.01	a	207	0.02	3.92E-03	9.62E-04
Z	Paved	0.05	21.07	0.83	--	0.19	0.04	0.01	a	45	4.28E-03	8.56E-04	2.10E-04
BB	Paved	0.10	21.07	0.83	--	0.19	0.04	0.01	a	98	0.01	1.85E-03	4.54E-04
CC	Paved	0.15	43.60	0.83	--	0.40	0.08	0.02	a	8,246	1.64	0.33	0.08
EE	Paved	0.02	43.60	0.83	--	0.40	0.08	0.02	a	852	0.17	0.03	0.01
FF	Paved	0.11	21.07	0.83	--	0.19	0.04	0.01	a	107	0.01	2.02E-03	4.96E-04
GG	Paved	0.06	21.07	0.83	--	0.19	0.04	0.01	a	60	0.01	1.14E-03	2.80E-04
HH	Paved	0.03	44.00	0.83	--	0.40	0.08	0.02	a	1,729	0.35	0.07	0.02
II	Paved	0.05	44.00	0.83	--	0.40	0.08	0.02	a	2,615	0.52	0.10	0.03
JJ	Paved	0.04	44.00	0.83	--	0.40	0.08	0.02	a	2,337	0.47	0.09	0.02
KK	Paved	0.05	44.00	0.83	--	0.40	0.08	0.02	a	2,954	0.59	0.12	0.03
LL	Paved	0.13	44.00	0.83	--	0.40	0.08	0.02	a	6,897	1.38	0.28	0.07
MM	Paved	0.11	15.00	0.83	--	0.13	0.03	0.01	a	5,857	0.39	0.08	0.02
OO	Paved	0.32	15.00	0.83	--	0.13	0.03	0.01	a	18,214	1.22	0.24	0.06
PP	Paved	0.04	15.00	0.83	--	0.13	0.03	0.01	a	2,455	0.16	0.03	0.01
QQ	Paved	0.06	15.00	0.83	--	0.13	0.03	0.01	a	3,120	0.21	0.04	0.01
RR	Paved	0.03	28.00	0.83	--	0.25	0.05	0.01	a	3,838	0.48	0.10	0.02
SS	Paved	0.02	41.00	0.83	--	0.37	0.07	0.02	a	1,093	0.20	0.04	0.01
TT	Paved	0.16	28.26	0.83	--	0.25	0.05	0.01	a	18,177	2.32	0.46	0.11
UU	Paved	0.08	15.00	0.83	--	0.13	0.03	0.01	a	8,321	0.56	0.11	0.03
VV	Paved	0.23	28.00	0.83	--	0.25	0.05	0.01	a	26,265	3.32	0.66	0.16
WW	Paved	0.02	41.00	0.83	--	0.37	0.07	0.02	a	1,018	0.19	0.04	0.01
XX	Paved	0.07	28.00	0.83	--	0.25	0.05	0.01	a	7,761	0.98	0.20	0.05
YY	Paved	0.09	44.00	0.83	--	0.40	0.08	0.02	a	4,992	1.00	0.20	0.05
CCC	Paved	0.06	44.00	0.83	--	0.40	0.08	0.02	a	3,212	0.64	0.13	0.03
EEE	Paved	0.02	44.00	0.83	--	0.40	0.08	0.02	a	1,029	0.21	0.04	0.01
HHH	Paved	0.05	44.00	0.83	--	0.40	0.08	0.02	a	2,862	0.57	0.11	0.03
III	Paved	0.05	44.00	0.83	--	0.40	0.08	0.02	a	2,759	0.55	0.11	0.03
JJJ	Paved	0.56	28.73	0.83	--	0.26	0.05	0.01	a	123,897	16.06	3.21	0.79
LLL	Paved	0.34	15.00	0.83	--	0.13	0.03	0.01	a	18,374	1.23	0.25	0.06
MMM	Paved	0.58	15.00	0.83	--	0.13	0.03	0.01	a	31,704	2.12	0.42	0.10
Total - Affected Paths Associated with No. 7 Mill Only											**45.59**	**9.71**	**2.07**
Production-Based Emission Factor for No. 7 Line (lb/ADTUBP for No. 7 Line Production)											**0.14**	**0.03**	**0.01**

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description: Traffic on Paved and Unpaved Roads

Equip ID No.: N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A

Emissions by Segment - PTE for Affected Paths

Road Segment	Paved	Segment Length (miles)	Mean Weight, W (tons)	Silt Loading, sL or s		Emission Factors (lb/VMT)				VMT	PTE Annual Emissions (tpy)		
				(g/m^2)	(%)	PM	PM_{10}	$PM_{2.5}$	Reference	(miles/year)	PM	PM_{10}	$PM_{2.5}$
Affected Paths Shared Between Nos. 7 and 8 Lines													
A	Paved	0.47	39.86	0.83	--	0.36	0.07	0.02	a	75,021	13.58	2.72	0.67
B	Paved	0.14	19.03	0.83	--	0.17	0.03	0.01	b	789	0.07	0.01	3.30E-03
C	Unpaved	0.80	19.03	--	7.25	5.18	1.43	0.14	a	4,411	11.43	3.16	0.32
D	Paved	0.16	47.13	0.83	--	0.43	0.09	0.02	a	19,304	4.15	0.83	0.20
E	Paved	0.10	18.97	0.83	--	0.17	0.03	0.01	a	4,353	0.37	0.07	0.02
F	Paved	0.08	21.07	0.83	--	0.19	0.04	0.01	b	336	0.03	0.01	1.56E-03
G	Unpaved	0.61	21.07	--	7.25	5.43	1.50	0.15	a	1,409	3.82	1.06	0.11
H	Paved	0.14	19.11	0.83	--	0.17	0.03	0.01	a	6,898	0.59	0.12	0.03
I	Paved	0.22	31.46	0.83	--	0.28	0.06	0.01	a	2,648	0.38	0.08	0.02
J	Paved	0.34	34.00	0.83	--	0.31	0.06	0.02	a	293	0.05	0.01	2.21E-03
K	Paved	0.12	31.27	0.83	--	0.28	0.06	0.01	a	1,376	0.19	0.04	0.01
M	Paved	0.03	38.03	0.83	--	0.35	0.07	0.02	a	206	0.04	0.01	1.74E-03
N	Paved	0.08	53.50	0.83	--	0.49	0.10	0.02	a	306	0.07	0.01	3.67E-03
O	Paved	0.02	53.50	0.83	--	0.49	0.10	0.02	a	70	0.02	3.42E-03	8.40E-04
P	Paved	0.03	53.50	0.83	--	0.49	0.10	0.02	a	102	0.03	0.01	1.23E-03
Q	Paved	0.06	53.50	0.83	--	0.49	0.10	0.02	a	221	0.05	0.01	2.65E-03
R	Paved	0.11	53.50	0.83	--	0.49	0.10	0.02	a	426	0.10	0.02	0.01
S	Paved	0.17	14.50	0.83	--	0.13	0.03	0.01	a	674	0.04	0.01	2.14E-03
T	Paved	0.03	14.50	0.83	--	0.13	0.03	0.01	a	134	0.01	1.73E-03	4.24E-04
U	Paved	0.15	55.62	0.83	--	0.51	0.10	0.02	a	6,035	1.53	0.31	0.08
V	Paved	0.09	15.00	0.83	--	0.13	0.03	0.01	a	3,263	0.22	0.04	0.01
W	Paved	0.10	37.50	0.83	--	0.34	0.07	0.02	a	7,203	1.23	0.25	0.06
X	Paved	0.04	60.00	0.83	--	0.55	0.11	0.03	a	1,286	0.35	0.07	0.02
Y	Paved	0.21	42.78	0.83	--	0.39	0.08	0.02	a	16,750	3.26	0.65	0.16
Z	Paved	0.05	15.00	0.83	--	0.13	0.03	0.01	a	270	0.02	3.61E-03	8.86E-04
BB	Paved	0.10	15.00	0.83	--	0.13	0.03	0.01	a	585	0.04	0.01	1.92E-03
CC	Paved	0.15	15.00	0.83	--	0.13	0.03	0.01	a	868	0.06	0.01	2.85E-03
EE	Paved	0.02	15.00	0.83	--	0.13	0.03	0.01	a	90	0.01	1.20E-03	2.94E-04
HH	Paved	0.03	39.98	0.83	--	0.36	0.07	0.02	a	560	0.10	0.02	4.99E-03
II	Paved	0.05	39.98	0.83	--	0.36	0.07	0.02	a	846	0.15	0.03	0.01
JJ	Paved	0.04	45.00	0.83	--	0.41	0.08	0.02	a	250	0.05	0.01	2.52E-03
KK	Paved	0.05	15.00	0.83	--	0.13	0.03	0.01	a	317	0.02	4.23E-03	1.04E-03
NN	Paved	0.19	45.00	0.83	--	0.41	0.08	0.02	a	13,549	2.78	0.56	0.14
OO	Paved	0.32	15.00	0.83	--	0.13	0.03	0.01	a	1,030	0.07	0.01	3.38E-03
PP	Paved	0.04	43.74	0.83	--	0.40	0.08	0.02	a	3,305	0.66	0.13	0.03
QQ	Paved	0.06	15.00	0.83	--	0.13	0.03	0.01	a	4,200	0.28	0.06	0.01
RR	Paved	0.03	28.00	0.83	--	0.25	0.05	0.01	a	217	0.03	0.01	1.34E-03
SS	Paved	0.02	16.09	0.83	--	0.14	0.03	0.01	a	1,472	0.11	0.02	0.01
TT	Paved	0.16	16.09	0.83	--	0.14	0.03	0.01	a	12,484	0.90	0.18	0.04
UU	Paved	0.08	15.00	0.83	--	0.13	0.03	0.01	a	5,715	0.38	0.08	0.02
VV	Paved	0.23	28.00	0.83	--	0.25	0.05	0.01	a	1,485	0.19	0.04	0.01
WW	Paved	0.02	29.82	0.83	--	0.27	0.05	0.01	a	92	0.01	2.48E-03	6.08E-04
XX	Paved	0.07	34.89	0.83	--	0.32	0.06	0.02	a	1,776	0.28	0.06	0.01
YY	Paved	0.09	18.15	0.83	--	0.16	0.03	0.01	a	352	0.03	0.01	1.40E-03
ZZ	Paved	0.05	19.55	0.83	--	0.18	0.04	0.01	a	374	0.03	0.01	1.61E-03
BBB	Paved	0.01	19.55	0.83	--	0.18	0.04	0.01	a	75	0.01	1.31E-03	3.22E-04
CCC	Paved	0.06	21.07	0.83	--	0.19	0.04	0.01	a	210	0.02	3.96E-03	9.72E-04
DDD	Paved	0.09	39.98	0.83	--	0.36	0.07	0.02	a	1,612	0.29	0.06	0.01
EEE	Paved	0.02	36.81	0.83	--	0.33	0.07	0.02	a	400	0.07	0.01	3.28E-03
FFF	Paved	0.03	21.07	0.83	--	0.19	0.04	0.01	a	95	0.01	1.79E-03	4.39E-04
GGG	Paved	0.04	21.07	0.83	--	0.19	0.04	0.01	a	130	0.01	2.45E-03	6.01E-04
HHH	Paved	0.05	39.98	0.83	--	0.36	0.07	0.02	a	926	0.17	0.03	0.01
III	Paved	0.05	39.98	0.83	--	0.36	0.07	0.02	a	893	0.16	0.03	0.01
JJJ	Paved	0.56	20.39	0.83	--	0.18	0.04	0.01	a	54,152	4.95	0.99	0.24
LLL	Paved	0.34	15.00	0.83	--	0.13	0.03	0.01	a	24,679	1.65	0.33	0.08
MMM	Paved	0.58	15.26	0.83	--	0.14	0.03	0.01	a	43,700	2.97	0.59	0.15
NNN	Paved	0.21	11.15	0.83	--	0.10	0.02	0.00	a	407	0.02	4.01E-03	9.85E-04
OOO	Paved	0.19	25.15	0.83	--	0.23	0.05	0.01	a	370	0.04	0.01	2.05E-03
RRR	Paved	0.08	25.15	0.83	--	0.23	0.05	0.01	H	151	0.02	3.42E-03	8.38E-04
Total - Affected Paths Shared Between Nos. 7 and 8 Lines											**58.17**	**12.81**	**2.53**
Production-Based Emission Factor for Affected Paths Shared Between Nos. 7 and 8 Lines (lb/ADTUBP)											**0.09**	**0.02**	**3.74E-03**

a. Emissions estimation for paved roads based on AP-42, Section 13.2.1, Equation 1 (Fifth Edition, 1/11) for vehicles traveling on a paved surface. See basis of emission factor on PTE calculation.

b. Emissions estimate for unpaved roads based on AP-42, Section 13.2.2 (Fifth Edition, 11/06) for vehicles travelling on an unpaved surface. See basis of emission factor on PTE

c. Many of the roads are watered daily. Conservatively, no control is claimed.

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Emission Equipment Description:
Traffic on Paved and Unpaved Roads

Equip ID No.: N/A

Emission Release Point ID: N/A

Emission Unit ID No.: N/A

PTE Production Rate - No. 7 Mill: 629,529 ADTUBP/yr
PAE Production Rate - No. 7 Mill: 612,282 ADTUBP/yr
PTE Production Rate - No. 8 Mill: 722,700 ADTUBP/yr
PAE Production Rate - No. 8 Mill: 587,184 ADTUBP/yr

Pollutant	CAS No.	Emission Factor [a]		PTE (tpy)	PAE (tpy)	BAE [b] (tpy)	Past Actual [b] (tpy)	Project Increase (PAE - BAE, tpy)
Affected Paths Associated with No. 7 Mill Only								
Filterable PM	N/A	0.14	lb/ADTUBP	45.59	44.34	--	--	--
Filterable PM10	N/A	0.03	lb/ADTUBP	9.71	9.45	--	--	--
Filterable PM2.5	N/A	0.01	lb/ADTUBP	2.07	2.01	--	--	--
Affected Paths Shared Between Nos. 7 and 8 Lines								
Filterable PM	N/A	0.09	lb/ADTUBP	58.17	51.60	--	--	--
Filterable PM10	N/A	0.02	lb/ADTUBP	12.81	11.36	--	--	--
Filterable PM2.5	N/A	3.74E-03	lb/ADTUBP	2.53	2.24	--	--	--
Total								
Filterable PM				103.76	95.94	71.57	66.98	24.37
Filterable PM10				22.52	20.81	15.29	14.55	5.51
Filterable PM2.5				4.60	4.26	2.97	2.97	1.29

a. Please refer to detail calculations for derivation of emission factors.
b. Please refer to detailed baseline actual and past actual emissions for basis.

Baseline Actual Emissions Calculations

PM Baseline Actual Emission Rate Calculations

	No. 7 Mill Chips Production	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Production	No. 7 Power Boiler Bottom Ash Production	NCG Incinerator Natural Gas Usage	No. 7 Pulp Dryer	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester
	Green Chips Throughput	Lime Production	Natural Gas Usage	Lime Production	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Fly Ash Production	Bottom Ash Production	Natural Gas Usage	Finished Pulp Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator
	tons chips	*tons CaO*	*% MMBtu NG/Total MMBtu*	*tons CaO*	*% MMBtu NG/Total MMBtu*	*tons BLS*	*RF MMBTU (F.O.)*	*tons BLS*	*RF MMBTU (F.O.)*	*PB MMBTU (bark)*	*PB tons bark*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*tons fly ash*	*tons bottom ash*	*Incin. MMBTU*	*ADTFP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*
Jan-15	161,985	8,903	99%	11,396	100%	71,044	27,030	84,477	10,842	215,197	24,454	891	84,100	3,875	2,583	3,641	34,238	36,815	1,106	47,633	487
Feb-15	188,359	8,899	95%	10,547	100%	72,081	630	79,314	1,012	218,105	24,785	2,765	40,570	4,987	3,325	3,230	39,812	42,809	95	46,559	9,090
Mar-15	167,714	9,613	100%	11,280	100%	72,947	18,803	78,419	7,251	181,048	20,574	1,006	105,271	3,166	2,111	3,327	35,449	38,117	1,047	46,586	513
Apr-15	42,319	3,036	100%	11,527	100%	19,335	7,224	83,689	4,468	50,339	5,720	2,579	42,803	816	544	3,376	8,945	9,618	0	46,114	123
May-15	94,364	6,696	100%	11,266	100%	50,315	5,737	80,831	3,893	144,507	16,421	840	67,451	2,090	1,393	3,243	19,945	21,446	630	46,524	655
Jun-15	147,092	8,826	100%	10,641	100%	71,717	7,054	71,665	2,244	197,508	22,444	831	13,037	3,086	2,057	3,154	31,090	33,430	1,845	42,776	12
Jul-15	182,114	9,971	100%	13,287	100%	76,795	1,487	90,875	0	250,965	28,519	871	19,902	4,880	3,253	3,242	38,492	41,390	313	50,321	196
Aug-15	170,837	10,154	100%	13,411	100%	71,276	4,284	89,606	43	237,148	26,949	866	8,333	4,422	2,948	3,273	36,109	38,827	561	50,953	2
Sep-15	165,275	8,918	100%	5,940	100%	68,634	6,765	34,033	3,002	199,595	22,681	583	23,371	3,283	2,189	3,057	34,933	37,563	492	18,406	1,853
Oct-15	158,440	9,844	100%	12,305	100%	68,184	15,800	81,193	17,274	181,259	20,598	918	26,410	2,718	1,812	3,338	33,489	36,009	10	43,977	7,598
Nov-15	165,693	10,471	100%	13,192	100%	72,500	3,775	87,648	5,180	198,688	22,578	508	56,034	3,364	2,243	3,514	35,021	37,657	603	49,378	741
Dec-15	130,720	7,483	96%	12,962	100%	57,498	8,163	88,496	5,491	185,243	21,050	695	94,541	3,202	2,135	3,757	27,629	29,709	546	47,291	33
Jan-16	137,398	8,511	100%	13,148	100%	63,374	25,889	93,355	2,970	184,194	21,284	0	105,490	3,193	2,129	3,591	29,041	31,227	82	50,376	1,438
Feb-16	147,621	8,546	100%	12,933	100%	71,737	19,316	85,379	892	155,374	21,082	2	93,137	3,624	2,416	3,168	31,202	33,550	1,491	49,617	0
Mar-16	165,577	7,861	100%	13,902	100%	76,311	13,965	92,544	0	130,434	20,011	0	100,371	2,745	1,830	3,240	34,997	37,631	9,970	51,190	1,011
Apr-16	41,071	1,595	100%	10,861	100%	18,405	360	82,829	0	41,491	6,027	272	52,799	538	359	3,021	8,681	9,334	7,493	44,571	429
May-16	154,119	7,959	99%	9,940	100%	75,152	449	88,572	0	423,103	46,772	0	42,980	5,481	3,654	2,944	32,575	35,027	7,764	50,764	2,775
Jun-16	150,385	9,337	100%	10,436	100%	72,276	3,340	87,873	0	377,915	41,888	0	59,277	4,090	2,727	2,819	31,786	34,179	92	50,474	487
Jul-16	154,571	9,733	98%	10,644	100%	73,546	324	87,660	2,648	359,537	44,398	0	60,962	5,472	3,648	2,716	32,671	35,130	14	48,702	44
Aug-16	160,700	9,108	100%	10,326	100%	69,155	84	84,631	1,049	361,986	41,465	0	57,672	4,297	2,864	2,403	33,966	36,523	963	49,692	2,517
Sep-16	153,141	8,504	99%	5,931	100%	68,024	947	48,663	2,276	311,479	36,362	0	76,439	3,382	2,254	3,101	32,368	34,805	1,481	26,739	452
Oct-16	162,802	8,653	100%	10,308	100%	68,821	90	90,800	41	384,635	43,063	0	92,371	4,359	2,906	3,253	34,411	37,001	2,185	54,180	457
Nov-16	151,669	9,104	100%	9,705	100%	73,637	0	89,150	0	346,255	43,423	0	78,882	5,606	3,738	4,054	32,057	34,470	30	50,654	2,875
Dec-16	129,670	9,376	100%	10,710	100%	67,590	49	89,465	452	329,439	38,289	0	58,941	3,974	2,649	2,479	27,408	29,470	169	52,998	417
Jan-17	166,670	10,197	100%	10,880	100%	76,507	0	84,917	1,149	320,728	40,445	0	73,443	4,602	3,068	3,172	35,228	37,880	441	47,077	1,846
Feb-17	154,234	8,611	100%	10,537	100%	65,245	0	83,153	1,412	334,842	38,836	0	43,534	4,108	2,739	2,774	32,599	35,053	8,894	48,484	220
Mar-17	30,957	1,817	100%	11,781	100%	10,011	0	96,223	0	401,645	42,075	0	28,245	4,395	2,930	3,225	6,543	7,036	393	52,073	756
Apr-17	0	489	92%	10,808	100%	0	0	87,437	446	114,315	12,724	0	26,265	1,319	879	3,137	0	0	0	47,087	6,201
May-17	138,718	9,298	98%	11,444	100%	71,042	0	90,418	0	280,618	34,911	0	58,094	3,427	2,284	3,155	29,320	31,527	817	50,783	136
Jun-17	163,994	10,085	100%	12,777	100%	75,499	0	90,339	0	255,078	35,755	0	101,363	3,947	2,631	3,113	34,662	37,271	896	52,001	72
Jul-17	171,158	10,805	99%	13,263	100%	79,475	0	94,784	0	359,770	38,852	0	71,977	5,140	3,427	3,152	36,176	38,899	283	51,920	194
Aug-17	153,682	10,778	99%	12,121	100%	75,274	0	90,742	0	275,193	34,799	0	83,128	4,844	3,229	3,231	32,483	34,928	191	49,752	837
Sep-17	158,529	10,570	99%	10,666	100%	71,404	1,058	43,240	2,668	281,219	31,935	0	57,200	4,054	2,703	2,940	33,507	36,029	73	19,895	914
Oct-17	141,826	9,893	100%	10,613	100%	68,119	1,241	86,542	5,993	312,155	37,047	0	72,401	4,808	3,205	3,019	29,977	32,233	3,159	48,202	605
Nov-17	167,230	11,126	100%	10,880	100%	75,826	0	90,768	0	350,165	40,510	0	35,245	5,678	3,785	3,401	35,346	38,007	20	50,445	153
Dec-17	151,770	9,553	100%	10,562	100%	65,828	336	88,839	0	286,283	34,285	0	74,422	3,705	2,470	3,252	32,079	34,493	339	48,535	1,041
Jan-18	166,673	9,840	99%	7,878	100%	69,713	962	63,596	6,467	282,869	32,619	0	111,037	3,687	2,458	3,248	35,229	37,880	96	32,504	2,087
Feb-18	154,417	9,050	100%	10,338	100%	67,334	0	85,839	0	257,531	28,322	0	94,415	3,247	2,165	2,581	32,638	35,095	252	49,365	767
Mar-18	159,687	10,185	100%	11,145	100%	72,264	0	91,382	0	305,039	33,908	0	94,132	3,633	2,422	2,993	33,752	36,292	671	53,359	785
Apr-18	41,891	3,493	100%	10,100	100%	20,206	593	87,174	0	81,000	9,109	0	66,820	888	592	2,708	8,854	9,521	142	47,846	921
May-18	158,522	8,385	100%	10,764	98%	70,056	0	88,412	0	194,686	33,042	0	97,665	4,028	2,685	3,027	33,506	36,028	7,140	49,256	1,058
Jun-18	155,205	9,676	100%	10,602	100%	71,572	542	84,311	0	357,655	37,404	0	57,537	5,256	3,504	3,019	32,805	35,274	1,953	49,596	36
Jul-18	162,946	10,309	100%	11,241	100%	74,875	0	87,489	0	338,021	41,536	0	48,295	5,140	3,427	2,944	34,441	37,033	1,255	49,328	967
Aug-18	154,432	10,287	100%	11,686	100%	71,908	861	78,014	0	317,709	35,199	0	89,903	3,579	2,386	2,947	32,641	35,098	286	46,707	1,133
Sep-18	153,601	10,027	100%	15,791	100%	67,761	148	48,883	0	173,353	33,057	0	61,922	3,785	2,524	2,864	32,466	34,909	3,997	28,631	1
Oct-18	172,632	9,434	100%	11,243	100%	75,135	0	79,508	0	247,533	31,262	0	74,967	3,615	2,410	3,058	36,488	39,235	1,301	41,822	1,212
Nov-18	159,626	9,527	100%	11,441	100%	70,639	827	83,733	0	301,955	37,004	0	66,663	5,185	3,456	3,006	33,739	36,279	2,525	48,035	413
Dec-18	161,580	8,956	100%	11,210	100%	69,930	1,751	83,970	0	203,611	31,914	0	75,788	3,794	2,530	3,156	34,152	36,723	650	45,749	715
Jan-19	179,949	10,237	100%	10,069	100%	73,484	0	75,254	0	154,244	30,824	0	101,087	2,933	1,955	3,176	38,035	40,897	63	38,920	324
Feb-19	133,842	8,590	100%	11,139	100%	58,334	923	80,923	0	244,930	27,596	0	89,405	3,050	2,033	2,948	28,289	30,419	9	45,859	255
Mar-19	166,673	9,222	100%	13,183	100%	71,830	285	91,845	0	255,769	31,275	0	90,187	3,059	2,039	3,192	35,229	37,880	4	51,115	190
Apr-19	35,014	2,327	100%	11,639	100%	15,868	0	90,313	0	64,295	7,125	0	32,548	404	269	3,272	7,401	7,958	719	50,383	1,085
May-19	162,643	10,193	100%	12,055	100%	74,034	0	81,584	0	200,273	23,973	0	47,921	1,184	789	3,196	34,377	36,964	1,407	46,451	582
Jun-19	165,091	9,763	100%	12,335	100%	67,914	1,129	82,148	0	225,384	28,357	0	51,401	1,507	1,005	2,814	34,894	37,521	884	44,309	242
Jul-19	184,660	11,692	100%	13,778	100%	77,913	171	91,943	0	272,652	34,014	0	90,014	2,225	1,483	2,753	39,031	41,968	688	53,045	336
Aug-19	138,745	10,018	100%	13,908	100%	60,235	3,140	82,432	0	200,725	31,305	0	89,903	2,323	1,549	3,017	29,326	31,533	979	44,931	45
Sep-19	150,914	9,550	100%	12,619	100%	64,488	0	53,965	17	253,285	27,555	0	66,878	1,946	1,298	2,737	31,898	34,299	927	29,105	2,194
Oct-19	175,979	11,296	100%	12,536	100%	69,812	0	88,476	0	242,815	34,857	0	88,141	2,799	1,866	2,876	37,195	39,995	1,771	50,874	613
Nov-19	183,000	11,401	100%	12,287	100%	75,552	0	91,812	0	204,503	28,634	0	126,946	2,503	1,668	2,861	38,680	41,591	506	50,756	827
Dec-19	173,821	11,184	100%	13,644	100%	74,284	0	90,819	0	154,489	28,963	0	94,818	2,305	1,537	3,177	36,739	39,505	684	52,472	5
Jan-20	180,541	11,334	100%	13,680	100%	74,083	0	91,466	0	401,869	28,961	0	107,561	2,395	1,597	3,067	38,160	41,032	3	50,232	9,926
Feb-20	170,644	11,337	100%	12,869	100%	71,713	0	78,229	0	240,306	26,419	0	84,870	1,785	1,190	2,881	36,068	38,783	25	44,216	2,883
Mar-20	182,834	11,593	100%	12,605	100%	78,757	0	85,701	0	296,988	32,933	0	45,881	2,350	1,567	2,893	38,644	41,553	685	49,321	924
Apr-20	177,072	11,664	100%	12,767	100%	76,123	0	91,054	0	316,236	33,107	0	98,230	2,296	1,531	2,720	37,427	40,244	477	52,141	610
May-20	137,180	8,755	100%	13,141	100%	53,972	0	91,056	0	248,325	26,887	0	68,182	1,884	1,256	3,062	28,995	31,177	563	50,143	7
Jun-20	163,909	9,532	100%	11,841	100%	69,047	1,955	87,069	0	291,682	23,995	0	148,939	1,193	795	2,666	34,644	37,252	3,410	49,150	100

PM Baseline Actual Emission Rate Calculations

	No. 7 Mill Chips Production	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Production	No. 7 Power Boiler Bottom Ash Production	NCG Incinerator Natural Gas Usage	No. 7 Pulp Dryer	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester
	Green Chips Throughput	Lime Production	Natural Gas Usage	Lime Production	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Fly Ash Production	Bottom Ash Production	Natural Gas Usage	Finished Pulp Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator
	tons chips	*tons CaO*	*% MMBtu NG/Total MMBtu*	*tons CaO*	*% MMBtu NG/Total MMBtu*	*tons BLS*	*RF MMBTU (F.O.)*	*tons BLS*	*RF MMBTU (F.O.)*	*PB MMBTU (bark)*	*PB tons bark*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*tons fly ash*	*tons bottom ash*	*Incin. MMBTU*	*ADTFP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*
Jul-20	163,585	10,175	100%	12,222	100%	69,441	1,129	91,518	0	255,251	29,687	0	133,928	1,839	1,226	2,760	34,576	37,178	135	52,583	24
Aug-20	178,296	10,875	100%	12,531	100%	77,036	83	91,406	83	183,264	36,147	0	72,058	2,852	1,902	2,657	37,685	40,522	2,087	53,991	0
Sep-20	133,641	9,704	100%	8,522	100%	60,516	0	52,377	0	236,313	31,601	0	82,425	2,601	1,734	2,748	28,247	30,373	821	31,678	431
Oct-20	136,800	9,979	100%	10,292	100%	60,584	160	79,476	0	186,160	27,952	0	81,160	4,620	3,080	2,883	28,915	31,091	408	45,121	12,121
Nov-20	160,903	10,810	100%	12,307	100%	72,172	0	87,820	0	538,990	37,019	0	78,554	2,144	1,429	3,040	34,009	36,569	1,466	51,835	1,711
Dec-20	164,509	10,113	100%	12,225	100%	69,298	0	91,927	0	324,413	37,775	0	82,449	2,745	1,830	3,535	34,771	37,388	9,182	51,862	2,131
Jan-21	184,260	10,889	100%	12,837	100%	75,476	0	91,675	0	264,262	37,116	0	54,540	2,870	1,914	3,018	38,946	41,877	6,305	51,416	1
Feb-21	155,331	9,521	100%	11,991	100%	64,842	5,426	84,147	0	236,293	26,724	0	100,333	1,929	1,286	2,767	32,831	35,303	411	44,896	115
Mar-21	169,005	10,420	100%	13,606	100%	68,111	2,257	96,002	0	205,187	32,446	0	73,991	2,547	1,698	2,913	35,721	38,410	1,389	52,960	796
Apr-21	108,412	6,722	100%	11,426	100%	47,211	564	79,412	0	183,033	19,995	0	54,958	1,094	730	2,843	22,914	24,639	1,263	44,123	1,869
May-21	172,230	9,954	100%	12,049	100%	73,937	0	86,559	0	294,064	31,991	0	121,981	2,162	1,441	2,840	36,403	39,143	1,233	48,757	1,968
Jun-21	139,466	9,931	100%	9,744	100%	71,785	0	67,000	0	301,646	37,305	0	77,160	3,014	2,009	2,735	29,478	31,697	296	44,714	2,323
Jul-21	137,574	9,241	100%	11,993	100%	61,455	0	86,692	0	261,824	34,252	0	120,656	2,269	1,513	2,759	29,078	31,267	518	49,617	1,314
Aug-21	159,815	10,668	100%	11,466	100%	69,542	131	73,966	0	382,453	35,710	0	113,933	1,982	1,322	2,812	33,779	36,322	289	43,265	19,913
Sep-21	156,068	9,952	100%	15,335	100%	65,162	0	49,408	0	223,379	31,488	0	130,256	1,946	1,298	2,583	32,987	35,470	1,262	26,530	3,726
Oct-21	172,367	10,266	100%	11,458	100%	76,710	0	86,340	0	316,032	38,720	0	120,733	2,915	1,944	2,690	36,432	39,174	70	51,748	3,831
Nov-21	174,543	9,986	100%	11,098	100%	72,915	0	87,337	0	306,997	33,261	0	147,943	2,395	1,597	2,841	36,892	39,669	540	49,758	1,511
Dec-21	185,666	10,226	100%	11,147	100%	73,410	0	91,721	0	378,346	36,740	0	116,340	2,978	1,985	2,925	39,243	42,197	6	50,814	1,423
Jan-22	146,168	9,282	100%	11,027	100%	65,356	0	79,083	0	343,045	35,293	0	133,310	2,476	1,650	3,122	30,895	33,220	1,152	46,147	1,069
Feb-22	128,613	7,595	100%	9,962	100%	57,394	0	75,833	0	195,412	31,427	0	94,449	2,530	1,686	2,747	27,184	29,230	59	44,608	365
Mar-22	91,514	6,008	100%	12,737	100%	46,135	0	76,131	0	139,514	21,450	0	78,239	1,785	1,190	2,963	19,343	20,799	612	44,954	2,454
Apr-22	158,229	9,654	100%	12,499	100%	70,078	0	75,611	0	339,179	36,129	0	84,749	2,942	1,961	2,776	33,444	35,961	333	46,707	7,258
May-22	150,797	9,628	100%	12,101	100%	67,457	0	68,954	0	262,522	35,447	0	90,347	2,404	1,603	2,762	31,873	34,272	41	38,358	6,230
Jun-22	171,084	9,917	100%	11,676	100%	73,726	0	87,307	0	306,228	36,525	0	91,060	2,870	1,914	2,566	36,161	38,883	878	49,574	1,248
Jul-22	151,240	10,441	100%	10,557	100%	68,732	0	81,361	0	331,701	40,961	0	78,059	3,265	2,177	2,917	31,967	34,373	1,024	48,155	10,823
Aug-22	159,398	9,174	100%	10,582	100%	72,214	0	84,218	0	209,734	37,452	0	111,282	3,166	2,111	2,769	33,691	36,227	337	49,839	3,288
Sep-22	150,626	9,330	100%	2,973	100%	66,113	0	23,006	0	182,836	28,285	0	72,986	2,198	1,465	2,742	31,837	34,233	9,533	14,540	688
Oct-22	143,153	9,410	100%	10,627	100%	68,581	0	80,175	0	344,478	33,667	0	51,703	2,413	1,609	2,796	30,257	32,535	7,513	45,865	7,565
Nov-22	146,056	8,647	100%	10,821	100%	67,662	0	84,160	0	191,109	33,705	0	85,432	2,431	1,621	2,898	30,871	33,195	3	48,132	3,392
Dec-22	174,046	9,863	100%	11,379	100%	76,711	2	83,179	0	231,638	33,035	0	96,471	2,745	1,830	2,977	36,787	39,556	304	47,277	1,553
Jan-23	164,690	8,571	100%	11,921	100%	68,969	0	75,796	0	172,893	31,051	0	106,295	2,637	1,758	2,984	34,810	37,430	224	41,024	1,691
Feb-23	137,097	7,791	100%	10,944	100%	58,892	0	82,339	0	139,139	26,696	0	83,636	2,108	1,405	2,620	28,977	31,158	3	47,110	328
Mar-23	23,447	2,599	100%	9,705	100%	20,586	7,135	68,474	0	100,962	13,559	0	91,444	969	646	2,956	4,956	5,329	1,315	40,695	3,287
Apr-23	131,730	8,960	100%	11,778	100%	62,129	0	81,803	0	223,645	35,175	0	81,224	3,014	2,009	2,719	27,843	29,939	184	47,220	561
May-23	154,197	9,457	100%	13,971	100%	70,410	0	85,709	0	198,173	36,150	0	106,268	3,364	2,243	2,866	32,592	35,045	1,357	50,179	1,503
Jun-23	93,946	4,972	100%	11,455	100%	39,730	1,704	81,542	0	272,652	29,136	0	138,115	2,565	1,710	2,769	19,857	21,351	552	46,695	2,214
Jul-23	160,570	9,872	100%	11,604	100%	72,314	0	83,238	0	337,315	36,436	0	103,009	3,148	2,099	2,864	33,939	36,493	282	47,732	1,474
Aug-23	142,771	8,347	100%	11,185	100%	60,396	0	76,374	0	410,804	37,820	0	90,991	2,476	1,650	2,855	30,177	32,448	6,284	41,417	1,771
Sep-23	144,346	8,499	100%	7,351	100%	58,763	1,070	20,344	0	178,274	16,991	0	153,469	1,211	807	2,744	30,509	32,806	915	12,166	196
Oct-23	161,879	9,595	100%	11,525	100%	68,392	0	83,324	0	378,411	33,702	0	113,867	2,574	1,716	2,950	34,215	36,791	67	45,433	2,380
Nov-23	171,053	9,576	100%	12,073	100%	68,551	0	87,639	0	355,623	34,708	0	109,285	3,157	2,105	2,876	36,154	38,876	10	48,629	429
Dec-23	153,113	9,623	100%	12,577	100%	67,124	0	85,757	0	320,268	34,158	0	124,377	3,301	2,201	3,201	32,362	34,798	286	49,971	614
Jan-24	134,254	9,227	100%	11,657	100%	63,933	1,796	73,898	0	347,185	32,423	0	115,105	3,480	2,320	3,294	28,377	30,512	1,389	41,978	2,485
Feb-24	165,671	9,721	100%	11,761	100%	66,821	0	79,915	0	375,297	33,804	0	97,654	3,292	2,195	3,017	35,017	37,652	123	45,153	581
Mar-24	64,100	3,291	100%	12,661	100%	28,031	2,451	87,235	0	146,008	16,238	0	63,257	2,045	1,363	3,447	13,548	14,568	10,798	48,458	532
Apr-24	146,421	9,133	100%	11,096	100%	65,802	0	79,857	0	268,601	31,320	0	109,468	3,157	2,105	3,595	30,948	33,278	3,149	47,705	1,258

PM Baseline Actual Emission Rate Calculations

	Filterable PM Emission Factors																												
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jan-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-15	0.030	0.007	1.12E-04	0.029	0.332	0.722	0.135	0.047	1.40E-03	7.14E-02	1.26E-01	1.43E-02	1.15E-01	1.21E-01	1.43E-02	4.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-16	0.030	0.007	1.12E-04	0.029	0.332	0.431	0.135	0.070	1.40E-03	3.14E-02	1.99E-01	1.43E-02	8.40E-02	2.18E-01	1.43E-02	5.00E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-17	0.030	0.007	1.12E-04	0.029	0.332	0.256	0.135	0.072	1.40E-03	3.36E-02	1.45E-01	1.43E-02	1.13E-01	2.28E-01	1.43E-02	3.96E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-18	0.030	0.007	1.12E-04	0.029	0.332	0.517	0.032	0.072	1.40E-03	5.31E-02	5.91E-01	1.43E-02	9.76E-02	4.15E-01	1.43E-02	2.63E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-19	0.030	0.007	1.12E-04	0.029	0.332	0.477	0.032	0.054	1.40E-03	4.91E-02	1.90E-01	1.43E-02	8.91E-02	2.18E-01	1.43E-02	4.27E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09

PM Baseline Actual Emission Rate Calculations

	Filterable PM Emission Factors																														
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jul-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-20	0.030	0.007	1.12E-04	0.029	0.332	0.528	0.032	0.040	1.40E-03	5.30E-02	2.06E-01	1.43E-02	8.70E-02	2.71E-01	1.43E-02	2.49E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-21	0.030	0.007	1.12E-04	0.029	0.332	0.584	0.032	0.000	1.40E-03	8.07E-02	3.11E-01	1.43E-02	8.67E-02	2.33E-01	1.43E-02	3.92E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-22	0.030	0.007	1.12E-04	0.029	0.332	0.527	0.032	0.097	1.40E-03	4.88E-02	3.65E-01	1.43E-02	6.35E-02	2.90E-01	1.43E-02	3.40E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
May-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jun-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jul-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Aug-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Sep-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Oct-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Nov-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Dec-23	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.58E-02	2.13E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Jan-24	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.70E-02	5.23E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Feb-24	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.70E-02	5.23E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Mar-24	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.70E-02	5.23E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09
Apr-24	0.030	0.007	1.12E-04	0.029	0.332	0.420	0.032	0.057	1.40E-03	4.70E-02	5.23E-01	1.43E-02	8.02E-02	3.30E-01	1.43E-02	4.73E-02	1.43E-02	1.86E-03	1.12E-03	1.12E-03	1.12E-03	2.00E-02	0.036	0.082	0.001	0.001	2.68E-04	0.14	0.09

PM Baseline Actual Emission Rate Calculations

	Emission Factors																												
	Filterable PM10 Emission Factors																												
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jan-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-15	0.017	3.17E-03	5.28E-05	0.029	0.332	0.722	0.043	0.015	6.61E-04	7.14E-02	6.24E-02	9.00E-03	1.15E-01	5.98E-02	9.00E-03	4.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-16	0.017	3.17E-03	5.28E-05	0.029	0.332	0.431	0.043	0.022	6.61E-04	3.14E-02	9.85E-02	9.00E-03	8.40E-02	1.08E-01	9.00E-03	5.00E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-17	0.017	3.17E-03	5.28E-05	0.029	0.332	0.256	0.043	0.023	6.61E-04	3.36E-02	7.18E-02	9.00E-03	1.13E-01	1.13E-01	9.00E-03	3.96E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-18	0.017	3.17E-03	5.28E-05	0.029	0.332	0.517	0.010	0.023	6.61E-04	5.31E-02	2.93E-01	9.00E-03	9.76E-02	2.06E-01	9.00E-03	2.63E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-19	0.017	3.17E-03	5.28E-05	0.029	0.332	0.477	0.010	0.017	6.61E-04	4.91E-02	9.42E-02	9.00E-03	8.91E-02	1.08E-01	9.00E-03	4.27E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02

PM Baseline Actual Emission Rate Calculations

	Emission Factors																												
	Filterable PM10 Emission Factors																												
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Returned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jul-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-20	0.017	3.17E-03	5.28E-05	0.029	0.332	0.528	0.010	0.013	6.61E-04	5.30E-02	1.02E-01	9.00E-03	8.70E-02	1.34E-01	9.00E-03	2.49E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-21	0.017	3.17E-03	5.28E-05	0.029	0.332	0.584	0.010	0.000	6.61E-04	8.07E-02	1.54E-01	9.00E-03	8.67E-02	1.15E-01	9.00E-03	3.92E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-22	0.017	3.17E-03	5.28E-05	0.029	0.332	0.527	0.010	0.031	6.61E-04	4.88E-02	1.81E-01	9.00E-03	6.35E-02	1.44E-01	9.00E-03	3.40E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
May-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jun-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jul-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Aug-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Sep-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Oct-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Nov-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Dec-23	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.58E-02	1.05E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Jan-24	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.70E-02	2.59E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Feb-24	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.70E-02	2.59E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Mar-24	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.70E-02	2.59E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02
Apr-24	0.017	3.17E-03	5.28E-05	0.029	0.332	0.420	0.010	0.018	6.61E-04	4.70E-02	2.59E-01	9.00E-03	8.02E-02	1.63E-01	9.00E-03	4.73E-02	1.43E-02	1.86E-03	5.28E-04	5.28E-04	5.28E-04	1.20E-02	0.036	0.039	0.001	0.001	2.52E-04	0.03	0.02

PM Baseline Actual Emission Rate Calculations

	Filterable PM2.5 Emission Factors																												
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Lime Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jan-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-15	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.722	0.014	0.005	1.00E-04	7.14E-02	4.26E-02	5.86E-03	1.15E-01	4.09E-02	5.86E-03	4.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-16	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.431	0.014	0.007	1.00E-04	3.14E-02	6.72E-02	5.86E-03	8.40E-02	7.38E-02	5.86E-03	5.00E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-17	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.256	0.014	0.007	1.00E-04	3.36E-02	4.90E-02	5.86E-03	1.13E-01	7.72E-02	5.86E-03	3.96E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-18	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.517	0.003	0.007	1.00E-04	5.31E-02	2.00E-01	5.86E-03	9.76E-02	1.40E-01	5.86E-03	2.63E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-19	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.477	0.003	0.006	1.00E-04	4.91E-02	6.43E-02	5.86E-03	8.91E-02	7.38E-02	5.86E-03	4.27E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03

PM Baseline Actual Emission Rate Calculations

	Filterable PM2.5 Emission Factors																												
	Woodyard - Processing and Transfers Specific No. 7 Line (Excludes Chip Conveyor 3)	Woodyard - Processing and Transfers Shared Between Nos. 7 and 8 Lines	Woodyard - Digester Chip Conveyor No. 3 (TA3-12) Only	No. 7 Lime Slaker	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths for No. 7 Mill Only	Truck Traffic - Affected Paths Shared Between Nos. 7 and 8 Mills
	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5
	lb/ADTUBP	*lb/ADTUBP*	*lb/ton green chips*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ton Fly Ash*	*lb/ton Bottom Ash*	*lb/ton bark*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*
Jul-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-20	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.528	0.003	0.004	1.00E-04	5.30E-02	6.96E-02	5.86E-03	8.70E-02	9.16E-02	5.86E-03	2.49E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-21	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.584	0.003	0.000	1.00E-04	8.07E-02	1.05E-01	5.86E-03	8.67E-02	7.89E-02	5.86E-03	3.92E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-22	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.527	0.003	0.010	1.00E-04	4.88E-02	1.24E-01	5.86E-03	6.35E-02	9.81E-02	5.86E-03	3.40E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
May-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jun-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jul-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Aug-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Sep-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Oct-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Nov-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Dec-23	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.58E-02	7.19E-02	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Jan-24	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.70E-02	1.77E-01	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Feb-24	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.70E-02	1.77E-01	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Mar-24	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.70E-02	1.77E-01	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03
Apr-24	3.25E-03	4.80E-04	8.00E-06	0.029	0.332	0.420	0.003	0.006	1.00E-04	4.70E-02	1.77E-01	5.86E-03	8.02E-02	1.11E-01	5.86E-03	4.73E-02	1.43E-02	1.86E-03	8.00E-05	8.00E-05	8.00E-05	5.00E-03	0.036	1.66E-04	8.50E-04	1.04E-03	2.09E-04	0.01	3.74E-03

PM Baseline Actual Emission Rate Calculations

	Condensable PM/PM10/PM2.5 Emission Factors												
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	Backup NCG Incinerator
	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5 - Natural Gas	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5
	lb/ton CaO	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTFP*	*lb/MMBtu*
Jan-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-15	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-16	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-17	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-18	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-19	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03

PM Baseline Actual Emission Rate Calculations

	Condensable PM/PM10/PM2.5 Emission Factors												
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	Backup NCG Incinerator
	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5 - Natural Gas	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5
	lb/ton CaO	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTFP*	*lb/MMBtu*
Jul-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-20	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-21	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-22	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
May-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jun-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jul-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Aug-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Sep-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Oct-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Nov-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Dec-23	9.51E-02	8.67E-02	2.30E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Jan-24	9.51E-02	8.67E-02	5.00E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Feb-24	9.51E-02	8.67E-02	5.00E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Mar-24	9.51E-02	8.67E-02	5.00E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03
Apr-24	9.51E-02	8.67E-02	5.00E-03	8.31E-02	9.29E-03	2.30E-03	8.31E-02	9.29E-03	3.93E-03	9.29E-03	5.59E-03	1.80E-02	5.59E-03

PM Baseline Actual Emission Rate Calculations

	Filterable PM Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.84	0.01	0.13	3.20	0.27	0.01	2.54	4.48	0.19	4.85	5.11	0.08	5.34	0.01	0.08	2.16E-03	1.44E-03	0.01	0.34	0.03	3.46	0.02	0.03	0.01	6.30
Feb-15	0.94	0.01	0.13	3.12	0.25	0.01	2.57	4.55	4.50E-03	4.55	4.79	0.01	5.41	0.02	0.04	2.78E-03	1.86E-03	0.01	0.40	0.16	3.66	0.02	0.03	0.01	6.94
Mar-15	0.86	0.01	0.14	3.47	0.27	0.01	2.60	4.60	0.13	4.50	4.74	0.05	4.49	0.01	0.10	1.77E-03	1.18E-03	0.01	0.35	0.03	3.47	0.02	0.03	0.01	6.40
Apr-15	0.33	0.00	0.04	1.10	0.27	2.12E-03	0.69	1.22	0.05	4.80	5.06	0.03	1.25	0.02	0.04	4.56E-04	3.04E-04	3.19E-03	0.09	0.00	2.28	0.01	0.03	0.01	3.09
May-15	0.55	0.01	0.10	2.42	0.26	4.68E-03	1.80	3.17	0.04	4.64	4.89	0.03	3.58	0.01	0.06	1.17E-03	7.78E-04	0.01	0.20	0.02	2.78	0.01	0.03	0.01	4.48
Jun-15	0.76	0.01	0.13	3.19	0.25	0.01	2.56	4.52	0.05	4.11	4.33	0.02	4.90	0.01	0.01	1.72E-03	1.15E-03	0.01	0.31	0.03	3.12	0.02	0.03	0.01	5.70
Jul-15	0.93	0.01	0.14	3.60	0.31	0.01	2.74	4.84	0.01	5.22	5.49	0.00	6.22	0.01	0.02	2.72E-03	1.82E-03	0.02	0.38	0.01	3.76	0.02	0.03	0.01	6.94
Aug-15	0.89	0.01	0.15	3.67	0.32	0.01	2.54	4.50	0.03	5.14	5.42	3.07E-04	5.88	0.01	0.01	2.47E-03	1.65E-03	0.02	0.36	0.01	3.68	0.02	0.03	0.01	6.67
Sep-15	0.75	0.01	0.13	3.22	0.14	0.01	2.45	4.33	0.05	1.95	2.06	0.02	4.95	4.16E-03	0.02	1.83E-03	1.22E-03	0.01	0.35	0.04	2.29	0.02	0.01	0.01	5.13
Oct-15	0.81	0.01	0.14	3.56	0.29	0.01	2.43	4.30	0.11	4.66	4.91	0.12	4.50	0.01	0.02	1.52E-03	1.01E-03	0.01	0.33	0.14	3.28	0.02	0.03	0.01	6.05
Nov-15	0.86	0.01	0.15	3.78	0.31	0.01	2.59	4.57	0.03	5.03	5.30	0.04	4.93	3.63E-03	0.05	1.88E-03	1.25E-03	0.01	0.35	0.02	3.57	0.02	0.03	0.01	6.47
Dec-15	0.71	0.01	0.11	2.64	0.30	0.01	2.05	3.63	0.06	5.08	5.35	0.04	4.59	4.96E-03	0.09	1.79E-03	1.19E-03	0.01	0.28	0.01	3.15	0.02	0.03	0.01	5.46
Jan-16	0.74	0.01	0.12	1.84	0.46	0.01	0.99	6.30	0.18	3.92	10.19	0.02	4.60	1.41E-06	0.10	1.78E-03	1.19E-03	0.01	0.29	0.03	3.34	0.02	0.03	0.01	5.77
Feb-16	0.78	0.01	0.12	1.84	0.45	0.01	1.13	7.13	0.14	3.59	9.32	0.01	3.88	1.52E-05	0.09	2.02E-03	1.35E-03	0.01	0.31	0.03	3.41	0.02	0.03	0.01	6.01
Mar-16	0.86	0.01	0.11	1.70	0.49	0.01	1.20	7.59	0.10	3.89	10.10	0.00	3.26	0.00	0.09	1.53E-03	1.02E-03	0.01	0.35	0.20	3.64	0.02	0.03	0.01	6.55
Apr-16	0.32	0.00	0.02	0.34	0.38	1.12E-03	0.29	1.83	2.57E-03	3.48	9.04	0.00	1.04	1.94E-03	0.05	3.01E-04	2.00E-04	3.37E-03	0.09	0.14	2.21	0.01	0.03	0.01	2.99
May-16	0.82	0.01	0.12	1.71	0.35	0.01	1.18	7.47	3.20E-03	3.72	9.67	0.00	10.58	0.00	0.04	3.06E-03	2.04E-03	0.03	0.33	0.19	3.51	0.02	0.03	0.01	6.23
Jun-16	0.80	0.01	0.14	2.01	0.36	0.01	1.13	7.19	0.02	3.69	9.59	0.00	9.45	0.00	0.06	2.28E-03	1.52E-03	0.02	0.32	0.01	3.47	0.02	0.03	0.01	6.12
Jul-16	0.81	0.01	0.14	2.09	0.37	0.01	1.15	7.31	2.31E-03	3.68	9.57	0.02	8.99	0.00	0.06	3.06E-03	2.04E-03	0.02	0.33	0.00	3.43	0.02	0.03	0.01	6.15
Aug-16	0.84	0.01	0.13	1.96	0.36	0.01	1.09	6.88	6.02E-04	3.55	9.24	0.01	9.05	0.00	0.05	2.40E-03	1.60E-03	0.02	0.34	0.06	3.53	0.02	0.03	0.01	6.35
Sep-16	0.73	0.01	0.12	1.83	0.21	0.01	1.07	6.77	0.01	2.04	5.31	0.02	7.79	0.00	0.07	1.89E-03	1.26E-03	0.02	0.32	0.03	2.52	0.02	0.02	0.01	5.17
Oct-16	0.86	0.01	0.13	1.87	0.36	0.01	1.08	6.84	6.41E-04	3.81	9.91	2.96E-04	9.62	0.00	0.09	2.43E-03	1.62E-03	0.02	0.34	0.05	3.74	0.02	0.04	0.01	6.60
Nov-16	0.80	0.01	0.13	1.96	0.34	0.01	1.16	7.32	0.00	3.74	9.73	0.00	8.66	0.00	0.07	3.13E-03	2.09E-03	0.02	0.32	0.05	3.49	0.02	0.03	0.01	6.16
Dec-16	0.72	0.01	0.14	2.02	0.37	0.01	1.06	6.72	3.53E-04	3.76	9.76	3.23E-03	8.24	0.00	0.05	2.22E-03	1.48E-03	0.02	0.27	0.01	3.38	0.02	0.04	0.01	5.68
Jan-17	0.86	0.01	0.15	1.30	0.39	0.01	1.29	5.55	0.00	4.78	9.69	0.01	6.35	0.00	0.07	2.57E-03	1.71E-03	0.02	0.35	0.04	3.48	0.02	0.03	0.01	6.40
Feb-17	0.81	0.01	0.12	1.10	0.38	0.01	1.10	4.73	0.00	4.68	9.49	0.01	6.63	0.00	0.04	2.29E-03	1.53E-03	0.02	0.33	0.16	3.42	0.02	0.03	0.01	6.13
Mar-17	0.30	0.00	0.03	0.23	0.42	1.27E-03	0.17	0.73	0.00	5.42	10.99	0.00	7.95	0.00	0.03	2.45E-03	1.64E-03	0.02	0.07	0.02	2.42	3.83E-03	0.03	0.01	3.05
Apr-17	0.16	0.00	0.01	0.06	0.39	3.42E-04	2.09E-06	9.01E-06	0.00	4.92	9.98	3.19E-03	2.26	0.00	0.02	7.36E-04	4.91E-04	0.01	0.00	0.11	1.93	0.00	0.03	0.01	2.03
May-17	0.75	0.01	0.13	1.19	0.41	0.01	1.19	5.15	0.00	5.09	10.32	0.00	5.56	0.00	0.05	1.91E-03	1.28E-03	0.02	0.29	0.02	3.37	0.02	0.03	0.01	5.82
Jun-17	0.86	0.01	0.15	1.29	0.46	0.01	1.27	5.48	0.00	5.09	10.31	0.00	5.05	0.00	0.09	2.20E-03	1.47E-03	0.02	0.35	0.02	3.66	0.02	0.03	0.01	6.54
Jul-17	0.89	0.01	0.16	1.38	0.48	0.01	1.34	5.77	0.00	5.34	10.82	0.00	7.12	0.00	0.07	2.87E-03	1.91E-03	0.02	0.36	0.01	3.72	0.02	0.03	0.01	6.72
Aug-17	0.81	0.01	0.16	1.38	0.44	0.01	1.26	5.46	0.00	5.11	10.36	0.00	5.45	0.00	0.08	2.70E-03	1.80E-03	0.02	0.32	0.02	3.47	0.02	0.03	0.01	6.17
Sep-17	0.73	0.01	0.15	1.35	0.38	0.01	1.20	5.18	0.01	2.43	4.94	0.02	5.57	0.00	0.05	2.26E-03	1.51E-03	0.02	0.34	0.02	2.29	0.02	0.01	0.01	5.01
Oct-17	0.76	0.01	0.14	1.26	0.38	0.01	1.14	4.94	0.01	4.87	9.88	0.04	6.18	0.00	0.07	2.68E-03	1.79E-03	0.02	0.30	0.07	3.29	0.02	0.03	0.01	5.79
Nov-17	0.87	0.01	0.16	1.42	0.39	0.01	1.27	5.50	0.00	5.11	10.36	0.00	6.93	0.00	0.03	3.17E-03	2.11E-03	0.02	0.35	0.00	3.62	0.02	0.03	0.01	6.56
Dec-17	0.80	0.01	0.14	1.22	0.38	0.01	1.11	4.78	2.40E-03	5.00	10.14	0.00	5.67	0.00	0.07	2.07E-03	1.38E-03	0.02	0.32	0.02	3.40	0.02	0.03	0.01	6.07
Jan-18	0.81	0.01	0.14	2.53	0.28	0.01	1.85	20.61	0.01	3.10	13.20	0.05	3.72	0.00	0.10	2.06E-03	1.37E-03	0.02	0.35	0.04	2.88	0.02	0.02	0.01	5.77
Feb-18	0.81	0.01	0.13	2.34	0.37	0.01	1.79	19.91	0.00	4.19	17.82	0.00	3.39	0.00	0.09	1.81E-03	1.21E-03	0.02	0.33	0.02	3.46	0.02	0.03	0.01	6.17
Mar-18	0.85	0.01	0.15	2.63	0.40	0.01	1.92	21.36	0.00	4.46	18.97	0.00	4.01	0.00	0.09	2.03E-03	1.35E-03	0.02	0.34	0.03	3.67	0.02	0.04	0.01	6.48
Apr-18	0.34	0.00	0.05	0.90	0.36	2.44E-03	0.54	5.97	4.23E-03	4.25	18.10	0.00	1.07	0.00	0.06	4.96E-04	3.31E-04	0.01	0.09	0.02	2.35	0.01	0.03	0.01	3.16
May-18	0.83	0.01	0.12	2.17	0.38	0.01	1.86	20.71	0.00	4.31	18.35	0.00	2.56	0.00	0.09	2.25E-03	1.50E-03	0.02	0.34	0.15	3.49	0.02	0.03	0.01	6.28
Jun-18	0.82	0.01	0.14	2.50	0.38	0.01	1.90	21.16	3.87E-03	4.11	17.50	0.00	4.70	0.00	0.05	2.94E-03	1.96E-03	0.02	0.33	0.04	3.48	0.02	0.03	0.01	6.21
Jul-18	0.85	0.01	0.15	2.67	0.40	0.01	1.99	22.14	0.00	4.27	18.16	0.00	4.44	0.00	0.04	2.87E-03	1.91E-03	0.02	0.34	0.04	3.54	0.02	0.03	0.01	6.40
Aug-18	0.80	0.01	0.15	2.66	0.42	0.01	1.91	21.26	0.01	3.81	16.19	0.00	4.18	0.00	0.08	2.00E-03	1.33E-03	0.02	0.33	0.03	3.35	0.02	0.03	0.01	6.06
Sep-18	0.74	0.01	0.15	2.59	0.57	0.01	1.80	20.03	1.06E-03	2.39	10.15	0.00	2.28	0.00	0.06	2.11E-03	1.41E-03	0.02	0.32	0.07	2.60	0.02	0.02	0.01	5.26
Oct-18	0.86	0.01	0.14	2.44	0.40	0.01	1.99	22.21	0.00	3.88	16.50	0.00	3.26	0.00	0.07	2.02E-03	1.35E-03	0.02	0.36	0.04	3.32	0.02	0.03	0.01	6.33
Nov-18	0.83	0.01	0.14	2.46	0.41	0.01	1.88	20.88	0.01	4.09	17.38	0.00	3.97	0.00	0.06	2.89E-03	1.93E-03	0.02	0.34	0.05	3.45	0.02	0.03	0.01	6.25
Dec-18	0.83	0.01	0.13	2.32	0.40	0.01	1.86	20.67	0.01	4.10	17.43	0.00	2.68	0.00	0.07	2.12E-03	1.41E-03	0.02	0.34	0.02	3.38	0.02	0.03	0.01	6.21
Jan-19	0.88	0.01	0.15	2.44	0.27	0.01	1.80	6.99	0.00	3.35	8.21	0.00	3.29	0.00	0.09	1.64E-03	1.09E-03	0.02	0.38	0.01	3.27	0.02	0.03	0.01	6.40
Feb-19	0.71	0.01	0.12	2.05	0.30	0.01	1.43	5.55	0.01	3.61	8.83	0.00	5.23	0.00	0.08	1.70E-03	1.14E-03	0.02	0.28	0.00	3.12	0.02	0.03	0.01	5.48
Mar-19	0.87	0.01	0.13	2.20	0.36	0.01	1.76	6.84	2.04E-03	4.09	10.02	0.00	5.46	0.00	0.08	1.71E-03	1.14E-03	0.02	0.35	0.00	3.65	0.02	0.03	0.01	6.57
Apr-19	0.32	0.00	0.03	0.55	0.31	1.63E-03	0.39	1.51	0.00	4.02	9.86	0.00	1.37	0.00	0.03	2.25E-04	1.50E-04	3.98E-03	0.07	0.03	2.39	4.33E-03	0.03	0.01	3.09
May-19	0.84	0.01	0.15	2.43	0.33	0.01	1.82	7.05	0.00	3.63	8.90	0.00	4.28	0.00	0.04	6.61E-04	4.41E-04	0.01	0.34	0.04	3.42	0.02	0.03	0.01	6.27
Jun-19	0.84	0.01	0.14	2.33	0.33	0.01	1.67	6.46	0.01	3.66	8.96	0.00	4.81	0.00	0.05	8.41E-04	5.61E-04	0.02	0.35	0.02	3.35	0.02	0.03	0.01	6.24
Jul-19	0.95	0.01	0.17	2.79	0.37	0.01	1.91	7.41	1.22E-03	4.10	10.03	0.00	5.82	0.00	0.08	1.24E-03	8.28E-04	0.02	0.39	0.02	3.89	0.02	0.04	0.01	7.13
Aug-19	0.73	0.01	0.15	2.39	0.38	0.01	1.48	5.73	0.02	3.67	9.00	0.00	4.29	0.00	0.08	1.30E-03	8.65E-04	0.02	0.29	0.02	3.13	0.02	0.03	0.01	5.57
Sep-19	0.73	0.01	0.14	2.28	0.34	0.01	1.58	6.14	0.00	2.40	5.89	1.22E-04	5.41	0.00	0.06	1.09E-03	7.25E-04	0.02	0.32	0.06	2.60	0.02	0.02	0.01	5.21
Oct-19	0.91	0.01	0.16	2.69	0.34	0.01	1.71	6.64	0.00	3.94	9.66	0.00	5.18	0.00	0.08	1.56E-03	1.04E-03	0.02	0.37	0.04	3.72	0.02	0.03	0.01	6.81
Nov-19	0.94	0.01	0.17	2.72	0.33	0.01	1.86	7.19	0.00	4.09	10.02	0.00	4.37	0.00	0.12	1.40E-03	9.32E-04	0.02	0.39	0.02	3.78	0.02	0.03	0.01	6.98
Dec-19	0.90	0.01	0.16	2.67	0.37	0.01	1.82	7.07	0.00	4.05	9.91	0.00	3.30	0.00	0.09	1.29E-03	8.58E-04	0.02	0.37	0.01	3.77	0.02	0.03	0.01	6.82
Jan-20	0.92	0.01	0.16	2.99	0.28	0.01	1.96	7.63	0.00	3.98	12.39	0.00	5.00	0.00	0.10	1.34E-03	8.92E-04	0.02	0.38	0.18	3.74	0.02	0.03	0.01	6.90
Feb-20	0.86	0.01	0.16	3.00	0.26	0.01	1.90	7.39	0.00	3.40	10.60	0.00	2.99	0.00	0.08	9.97E-04	6.64E-04	0.01	0.36	0.05	3.40	0.02	0.03	0.01	6.38
Mar-20	0.93	0.01	0.17	3.06	0.25	0.01	2.09	8.11	0.00	3.73	11.61	0.00	3.70	0.00	0.04	1.31E-03	8.75E-04	0.02	0.39	0.03	3.72	0.02	0.03	0.01	6.92
Apr-20	0.92	0.01	0.17	3.08	0.26	0.01	2.02	7.84	0.00	3.96	12.33	0.00	3.94	0.00	0.09	1.28E-03	8.55E-04	0.02	0.37	0.02	3.78	0.02	0.03	0.01	6.89
May-20	0.74	0.01	0.13	2.31	0.26	0.01	1.43	5.56	0.00	3.96	12.33	0.00	3.09	0.00	0.06	1.05E-03	7.01E-04	0.02	0.29	0.01	3.33	0.02	0.03	0.01	5.76
Jun-20	0.85	0.01	0.14	2.52	0.24	0.01	1.83	7.11	0.01	3.79	11.79	0.00	3.63	0.00	0.14	6.66E-04	4.44E-04	0.01	0.35	0.06	3.54	0.02	0.03	0.01	6.41

PM Baseline Actual Emission Rate Calculations

	Filterable PM Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM	Filterable PM - Fuel Oil	Filterable PM	Filterable PM - Fuel Oil	Filterable PM - Natural Gas	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM	Filterable PM
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jul-20	0.86	0.01	0.15	2.69	0.25	0.01	1.84	7.15	0.01	3.98	12.40	0.00	3.18	0.00	0.12	1.03E-03	6.85E-04	0.02	0.35	0.00	3.68	0.02	0.03	0.01	6.55
Aug-20	0.93	0.01	0.16	2.87	0.25	0.01	2.04	7.94	5.91E-04	3.98	12.38	5.91E-04	2.28	0.00	0.07	1.59E-03	1.06E-03	0.02	0.38	0.04	3.87	0.02	0.04	0.01	7.00
Sep-20	0.67	0.01	0.14	2.56	0.17	0.01	1.60	6.23	0.00	2.28	7.09	0.00	2.94	0.00	0.08	1.45E-03	9.68E-04	0.02	0.28	0.02	2.54	0.02	0.02	0.01	4.87
Oct-20	0.72	0.01	0.14	2.64	0.21	0.01	1.61	6.24	1.14E-03	3.46	10.76	0.00	2.32	0.00	0.08	2.58E-03	1.72E-03	0.02	0.29	0.22	3.12	0.02	0.03	0.01	5.53
Nov-20	0.85	0.01	0.16	2.86	0.25	0.01	1.91	7.43	0.00	3.82	11.90	0.00	6.71	0.00	0.07	1.20E-03	7.98E-04	0.02	0.34	0.06	3.62	0.02	0.03	0.01	6.45
Dec-20	0.86	0.01	0.15	2.67	0.25	0.01	1.84	7.14	0.00	4.00	12.45	0.00	4.04	0.00	0.08	1.53E-03	1.02E-03	0.02	0.35	0.20	3.66	0.02	0.03	0.01	6.55
Jan-21	0.94	0.01	0.16	3.18	1.58E-04	0.01	3.05	11.75	0.00	3.97	10.69	0.00	5.18	0.00	0.05	1.60E-03	1.07E-03	0.02	0.39	0.11	3.82	0.02	0.03	0.01	7.05
Feb-21	0.80	0.01	0.14	2.78	1.47E-04	0.01	2.62	10.09	0.04	3.65	9.82	0.00	4.63	0.00	0.09	1.08E-03	7.18E-04	0.01	0.33	0.01	3.29	0.02	0.03	0.01	6.01
Mar-21	0.88	0.01	0.15	3.04	1.67E-04	0.01	2.75	10.60	0.02	4.16	11.20	0.00	4.02	0.00	0.07	1.42E-03	9.48E-04	0.02	0.36	0.04	3.74	0.02	0.04	0.01	6.71
Apr-21	0.60	0.01	0.10	1.96	1.40E-04	4.70E-03	1.90	7.35	4.03E-03	3.44	9.26	0.00	3.59	0.00	0.05	6.11E-04	4.07E-04	0.01	0.23	0.06	2.82	0.01	0.03	0.01	4.74
May-21	0.88	0.01	0.14	2.91	1.48E-04	0.01	2.98	11.51	0.00	3.75	10.10	0.00	5.76	0.00	0.11	1.21E-03	8.05E-04	0.02	0.36	0.06	3.60	0.02	0.03	0.01	6.62
Jun-21	0.73	0.01	0.14	2.90	1.20E-04	0.01	2.90	11.17	0.00	2.90	7.82	0.00	5.91	0.00	0.07	1.68E-03	1.12E-03	0.02	0.29	0.05	3.13	0.02	0.03	0.01	5.58
Jul-21	0.74	0.01	0.13	2.70	1.47E-04	0.01	2.48	9.57	0.00	3.76	10.11	0.00	5.13	0.00	0.11	1.27E-03	8.45E-04	0.02	0.29	0.03	3.31	0.02	0.03	0.01	5.74
Aug-21	0.81	0.01	0.15	3.12	1.41E-04	0.01	2.81	10.83	9.36E-04	3.21	8.63	0.00	7.50	0.00	0.11	1.11E-03	7.38E-04	0.02	0.34	0.36	3.26	0.02	0.03	0.01	6.05
Sep-21	0.74	0.01	0.14	2.91	1.88E-04	0.01	2.63	10.14	0.00	2.14	5.76	0.00	4.38	0.00	0.12	1.09E-03	7.25E-04	0.02	0.33	0.09	2.54	0.02	0.02	0.01	5.24
Oct-21	0.89	0.01	0.15	3.00	1.41E-04	0.01	3.10	11.94	0.00	3.74	10.07	0.00	6.19	0.00	0.11	1.63E-03	1.09E-03	0.02	0.36	0.07	3.72	0.02	0.03	0.01	6.75
Nov-21	0.90	0.01	0.14	2.92	1.36E-04	0.01	2.94	11.35	0.00	3.79	10.19	0.00	6.02	0.00	0.14	1.34E-03	8.92E-04	0.02	0.37	0.04	3.66	0.02	0.03	0.01	6.72
Dec-21	0.95	0.01	0.15	2.99	1.37E-04	0.01	2.96	11.43	0.00	3.98	10.70	0.00	7.42	0.00	0.11	1.66E-03	1.11E-03	0.02	0.39	0.03	3.81	0.02	0.03	0.01	7.06
Jan-22	0.77	0.01	0.13	2.44	0.53	0.01	1.59	11.94	0.00	2.51	11.48	0.00	5.83	0.00	0.12	1.38E-03	9.22E-04	0.02	0.31	0.04	3.25	0.02	0.03	0.01	5.82
Feb-22	0.69	0.01	0.11	2.00	0.48	0.01	1.40	10.49	0.00	2.41	11.01	0.00	3.32	0.00	0.09	1.41E-03	9.42E-04	0.02	0.27	0.01	3.02	0.02	0.03	0.01	5.29
Mar-22	0.53	0.01	0.09	1.58	0.62	4.20E-03	1.13	8.43	0.00	2.42	11.05	0.00	2.37	0.00	0.07	9.97E-04	6.64E-04	0.01	0.19	0.05	2.69	0.01	0.03	0.01	4.33
Apr-22	0.82	0.01	0.14	2.54	0.61	0.01	1.71	12.80	0.00	2.40	10.97	0.00	5.77	0.00	0.08	1.64E-03	1.10E-03	0.02	0.33	0.14	3.39	0.02	0.03	0.01	6.16
May-22	0.76	0.01	0.14	2.53	0.59	0.01	1.65	12.32	0.00	2.19	10.01	0.00	4.46	0.00	0.08	1.34E-03	8.95E-04	0.02	0.32	0.11	2.98	0.02	0.03	0.01	5.61
Jun-22	0.88	0.01	0.14	2.61	0.57	0.01	1.80	13.47	0.00	2.77	12.67	0.00	5.21	0.00	0.08	1.60E-03	1.07E-03	0.02	0.36	0.04	3.62	0.02	0.03	0.01	6.62
Jul-22	0.79	0.01	0.15	2.75	0.51	0.01	1.68	12.56	0.00	2.58	11.81	0.00	5.64	0.00	0.07	1.82E-03	1.22E-03	0.02	0.32	0.21	3.38	0.02	0.03	0.01	6.04
Aug-22	0.83	0.01	0.13	2.42	0.51	0.01	1.76	13.19	0.00	2.67	12.22	0.00	3.57	0.00	0.10	1.77E-03	1.18E-03	0.02	0.34	0.06	3.53	0.02	0.03	0.01	6.33
Sep-22	0.68	0.01	0.14	2.46	0.14	0.01	1.61	12.08	0.00	0.73	3.34	0.00	3.11	0.00	0.07	1.23E-03	8.18E-04	0.02	0.32	0.18	2.00	0.02	0.01	0.01	4.58
Oct-22	0.75	0.01	0.14	2.48	0.51	0.01	1.67	12.53	0.00	2.55	11.64	0.00	5.86	0.00	0.05	1.35E-03	8.98E-04	0.02	0.30	0.27	3.21	0.02	0.03	0.01	5.73
Nov-22	0.77	0.01	0.13	2.28	0.52	0.01	1.65	12.36	0.00	2.67	12.21	0.00	3.25	0.00	0.08	1.36E-03	9.05E-04	0.02	0.31	0.06	3.33	0.02	0.03	0.01	5.90
Dec-22	0.89	0.01	0.14	2.60	0.55	0.01	1.87	14.01	1.29E-05	2.64	12.07	0.00	3.94	0.00	0.09	1.53E-03	1.02E-03	0.02	0.37	0.03	3.56	0.02	0.03	0.01	6.60
Jan-23	0.83	0.01	0.12	1.80	0.34	0.01	1.58	7.33	0.00	3.04	12.50	0.00	4.09	0.00	0.10	1.47E-03	9.82E-04	0.02	0.35	0.03	3.21	0.02	0.03	0.01	6.09
Feb-23	0.73	0.01	0.11	1.64	0.31	0.01	1.35	6.26	0.00	3.30	13.58	0.00	3.29	0.00	0.08	1.18E-03	7.85E-04	0.01	0.29	0.01	3.21	0.02	0.03	0.01	5.62
Mar-23	0.23	0.00	0.04	0.55	0.28	1.82E-03	0.47	2.19	0.05	2.75	11.29	0.00	2.39	0.00	0.09	5.41E-04	3.61E-04	0.01	0.05	0.08	1.89	2.90E-03	0.03	0.01	2.37
Apr-23	0.71	0.01	0.13	1.88	0.34	0.01	1.42	6.60	0.00	3.28	13.49	0.00	5.29	0.00	0.08	1.68E-03	1.12E-03	0.02	0.28	0.01	3.16	0.02	0.03	0.01	5.49
May-23	0.81	0.01	0.14	1.99	0.40	0.01	1.61	7.48	0.00	3.44	14.14	0.00	4.69	0.00	0.10	1.88E-03	1.25E-03	0.02	0.33	0.05	3.49	0.02	0.03	0.01	6.20
Jun-23	0.55	0.01	0.07	1.04	0.33	3.48E-03	0.91	4.22	0.01	3.27	13.45	0.00	6.45	0.00	0.13	1.43E-03	9.55E-04	0.02	0.20	0.05	2.79	0.01	0.03	0.01	4.47
Jul-23	0.83	0.01	0.14	2.07	0.33	0.01	1.66	7.69	0.00	3.34	13.73	0.00	7.98	0.00	0.10	1.76E-03	1.17E-03	0.02	0.34	0.03	3.45	0.02	0.03	0.01	6.27
Aug-23	0.74	0.01	0.12	1.75	0.32	0.01	1.38	6.42	0.00	3.06	12.60	0.00	9.72	0.00	0.08	1.38E-03	9.22E-04	0.02	0.30	0.14	3.03	0.02	0.03	0.01	5.53
Sep-23	0.64	0.01	0.12	1.78	0.21	0.01	1.35	6.25	0.01	0.82	3.36	0.00	4.22	0.00	0.14	6.76E-04	4.51E-04	0.01	0.31	0.02	1.84	0.02	0.01	0.01	4.31
Oct-23	0.83	0.01	0.14	2.01	0.33	0.01	1.57	7.27	0.00	3.34	13.74	0.00	8.95	0.00	0.11	1.44E-03	9.58E-04	0.02	0.34	0.04	3.37	0.02	0.03	0.01	6.20
Nov-23	0.88	0.01	0.14	2.01	0.34	0.01	1.57	7.29	0.00	3.51	14.45	0.00	8.41	0.00	0.10	1.76E-03	1.18E-03	0.02	0.36	0.01	3.58	0.02	0.03	0.01	6.58
Dec-23	0.81	0.01	0.14	2.02	0.36	0.01	1.54	7.14	0.00	3.44	14.14	0.00	7.57	0.00	0.12	1.84E-03	1.23E-03	0.02	0.32	0.02	3.47	0.02	0.03	0.01	6.17
Jan-24	0.70	0.01	0.13	1.94	0.33	0.01	1.50	16.72	0.01	2.96	12.19	0.00	8.21	0.00	0.11	1.94E-03	1.30E-03	0.02	0.28	0.07	2.97	0.02	0.03	0.01	5.33
Feb-24	0.84	0.01	0.14	2.04	0.34	0.01	1.57	17.48	0.00	3.20	13.18	0.00	8.88	0.00	0.09	1.84E-03	1.23E-03	0.02	0.35	0.01	3.39	0.02	0.03	0.01	6.29
Mar-24	0.43	0.00	0.05	0.69	0.36	2.30E-03	0.66	7.33	0.02	3.50	14.39	0.00	3.45	0.00	0.06	1.14E-03	7.61E-04	0.01	0.14	0.20	2.58	0.01	0.03	0.01	3.77
Apr-24	0.77	0.01	0.13	1.92	0.32	0.01	1.55	17.21	0.00	3.20	13.17	0.00	6.35	0.00	0.10	1.76E-03	1.18E-03	0.02	0.31	0.08	3.32	0.02	0.03	0.01	5.89

PM Baseline Actual Emission Rate Calculations

	Filterable PM10 Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.45	0.00	0.13	3.20	0.08	2.94E-03	2.54	2.22	0.12	4.85	2.53	0.05	5.34	0.01	0.08	1.02E-03	6.82E-04	0.01	0.21	0.03	1.67	0.02	0.03	0.01	1.37
Feb-15	0.50	0.00	0.13	3.12	0.08	2.94E-03	2.57	2.25	2.83E-03	4.55	2.37	4.56E-03	5.41	0.02	0.04	1.32E-03	8.78E-04	0.01	0.24	0.16	1.76	0.02	0.03	0.01	1.51
Mar-15	0.46	0.00	0.14	3.47	0.08	3.18E-03	2.60	2.28	0.08	4.50	2.35	0.03	4.49	0.01	0.10	8.36E-04	5.57E-04	0.01	0.21	0.03	1.67	0.02	0.03	0.01	1.39
Apr-15	0.17	0.00	0.04	1.10	0.09	1.00E-03	0.69	0.60	0.03	4.80	2.50	0.02	1.25	0.02	0.04	2.16E-04	1.44E-04	1.51E-03	0.05	0.00	1.10	4.92E-03	0.03	0.01	0.68
May-15	0.29	0.00	0.10	2.42	0.08	2.21E-03	1.80	1.57	0.03	4.64	2.42	0.02	3.58	0.01	0.06	5.52E-04	3.68E-04	4.34E-03	0.12	0.02	1.34	0.01	0.03	0.01	0.97
Jun-15	0.40	0.00	0.13	3.19	0.08	2.92E-03	2.56	2.24	0.03	4.11	2.14	0.01	4.90	0.01	0.01	8.15E-04	5.43E-04	0.01	0.19	0.03	1.50	0.02	0.03	0.01	1.24
Jul-15	0.50	0.00	0.14	3.60	0.10	3.30E-03	2.74	2.40	0.01	5.22	2.72	0.00	6.22	0.01	0.02	1.29E-03	8.59E-04	0.01	0.23	0.01	1.81	0.02	0.03	0.01	1.51
Aug-15	0.47	0.00	0.15	3.67	0.10	3.36E-03	2.54	2.23	0.02	5.14	2.68	1.94E-04	5.88	0.01	0.01	1.17E-03	7.79E-04	0.01	0.22	0.01	1.77	0.02	0.03	0.01	1.45
Sep-15	0.41	0.00	0.13	3.22	0.04	2.95E-03	2.45	2.14	0.03	1.95	1.02	0.01	4.95	4.16E-03	0.02	8.67E-04	5.78E-04	0.01	0.21	0.04	1.11	0.02	0.01	0.01	1.11
Oct-15	0.43	0.00	0.14	3.56	0.09	3.26E-03	2.43	2.13	0.07	4.66	2.43	0.08	4.50	0.01	0.02	7.18E-04	4.79E-04	0.01	0.20	0.14	1.58	0.02	0.03	0.01	1.31
Nov-15	0.46	0.00	0.15	3.78	0.10	3.46E-03	2.59	2.26	0.02	5.03	2.62	0.02	4.93	3.63E-03	0.05	8.88E-04	5.92E-04	0.01	0.21	0.02	1.72	0.02	0.03	0.01	1.41
Dec-15	0.37	0.00	0.11	2.64	0.10	2.47E-03	2.05	1.80	0.04	5.08	2.65	0.02	4.59	4.96E-03	0.09	8.46E-04	5.64E-04	0.01	0.17	0.01	1.52	0.02	0.03	0.01	1.19
Jan-16	0.39	0.00	0.12	1.84	0.15	2.81E-03	0.99	3.12	0.12	3.92	5.04	0.01	4.60	1.41E-06	0.10	8.43E-04	5.62E-04	0.01	0.17	0.03	1.61	0.02	0.03	0.01	1.25
Feb-16	0.42	0.00	0.12	1.84	0.14	2.83E-03	1.13	3.53	0.09	3.59	4.61	4.02E-03	3.88	1.52E-05	0.09	9.57E-04	6.38E-04	0.01	0.19	0.03	1.64	0.02	0.03	0.01	1.31
Mar-16	0.46	0.00	0.11	1.70	0.15	2.60E-03	1.20	3.76	0.06	3.89	5.00	0.00	3.26	0.00	0.09	7.25E-04	4.83E-04	0.01	0.21	0.20	1.75	0.02	0.03	0.01	1.42
Apr-16	0.16	0.00	0.02	0.34	0.12	5.27E-04	0.29	0.91	1.62E-03	3.48	4.47	0.00	1.04	1.94E-03	0.05	1.42E-04	9.48E-05	1.59E-03	0.05	0.14	1.06	4.78E-03	0.03	0.01	0.65
May-16	0.43	0.00	0.12	1.71	0.11	2.63E-03	1.18	3.70	2.02E-03	3.72	4.78	0.00	10.58	0.00	0.04	1.45E-03	9.65E-04	0.01	0.20	0.19	1.69	0.02	0.03	0.01	1.35
Jun-16	0.42	0.00	0.14	2.01	0.12	3.09E-03	1.13	3.56	0.02	3.69	4.75	0.00	9.45	0.00	0.06	1.08E-03	7.20E-04	0.01	0.19	0.01	1.67	0.02	0.03	0.01	1.33
Jul-16	0.43	0.00	0.14	2.09	0.12	3.22E-03	1.15	3.62	1.46E-03	3.68	4.73	0.01	8.99	0.00	0.06	1.45E-03	9.63E-04	0.01	0.20	0.00	1.66	0.02	0.03	0.01	1.34
Aug-16	0.45	0.00	0.13	1.96	0.11	3.01E-03	1.09	3.40	3.79E-04	3.55	4.57	4.72E-03	9.05	0.00	0.05	1.13E-03	7.56E-04	0.01	0.20	0.06	1.70	0.02	0.03	0.01	1.38
Sep-16	0.39	0.00	0.12	1.83	0.07	2.81E-03	1.07	3.35	4.26E-03	2.04	2.63	0.01	7.79	0.00	0.07	8.93E-04	5.95E-04	0.01	0.19	0.03	1.22	0.02	0.02	0.01	1.12
Oct-16	0.46	0.00	0.13	1.87	0.11	2.86E-03	1.08	3.39	4.04E-04	3.81	4.90	1.86E-04	9.62	0.00	0.09	1.15E-03	7.68E-04	0.01	0.21	0.05	1.80	0.02	0.03	0.01	1.43
Nov-16	0.43	0.00	0.13	1.96	0.11	3.01E-03	1.16	3.63	0.00	3.74	4.82	0.00	8.66	0.00	0.07	1.48E-03	9.87E-04	0.01	0.19	0.05	1.68	0.02	0.03	0.01	1.34
Dec-16	0.38	0.00	0.14	2.02	0.12	3.10E-03	1.06	3.33	2.22E-04	3.76	4.83	2.03E-03	8.24	0.00	0.05	1.05E-03	7.00E-04	0.01	0.16	0.01	1.63	0.02	0.03	0.01	1.24
Jan-17	0.46	0.00	0.15	1.30	0.12	3.37E-03	1.29	2.75	0.00	4.78	4.80	0.01	6.35	0.00	0.07	1.22E-03	8.10E-04	0.01	0.21	0.04	1.68	0.02	0.03	0.01	1.39
Feb-17	0.43	0.00	0.12	1.10	0.12	2.85E-03	1.10	2.34	0.00	4.68	4.70	0.01	6.63	0.00	0.04	1.08E-03	7.23E-04	0.01	0.20	0.16	1.65	0.02	0.03	0.01	1.33
Mar-17	0.15	0.00	0.03	0.23	0.13	6.01E-04	0.17	0.36	0.00	5.42	5.44	0.00	7.95	0.00	0.03	1.16E-03	7.74E-04	0.01	0.04	0.02	1.17	3.60E-03	0.03	0.01	0.67
Apr-17	0.07	0.00	0.01	0.06	0.12	1.62E-04	2.09E-06	4.46E-06	0.00	4.92	4.94	2.01E-03	2.26	0.00	0.02	3.48E-04	2.32E-04	3.36E-03	0.00	0.11	0.93	0.00	0.03	0.01	0.45
May-17	0.40	0.00	0.13	1.19	0.13	3.07E-03	1.19	2.55	0.00	5.09	5.11	0.00	5.56	0.00	0.05	9.05E-04	6.03E-04	0.01	0.18	0.02	1.63	0.02	0.03	0.01	1.27
Jun-17	0.46	0.00	0.15	1.29	0.15	3.33E-03	1.27	2.71	0.00	5.09	5.11	0.00	5.05	0.00	0.09	1.04E-03	6.95E-04	0.01	0.21	0.02	1.76	0.02	0.03	0.01	1.42
Jul-17	0.47	0.00	0.16	1.38	0.15	3.57E-03	1.34	2.85	0.00	5.34	5.36	0.00	7.12	0.00	0.07	1.36E-03	9.05E-04	0.01	0.22	0.01	1.79	0.02	0.03	0.01	1.46
Aug-17	0.43	0.00	0.16	1.38	0.14	3.56E-03	1.26	2.70	0.00	5.11	5.13	0.00	5.45	0.00	0.08	1.28E-03	8.53E-04	0.01	0.19	0.02	1.67	0.02	0.03	0.01	1.34
Sep-17	0.39	0.00	0.15	1.35	0.12	3.50E-03	1.20	2.56	4.76E-03	2.43	2.44	0.01	5.57	0.00	0.05	1.07E-03	7.14E-04	0.01	0.20	0.02	1.10	0.02	0.01	0.01	1.09
Oct-17	0.40	0.00	0.14	1.26	0.12	3.27E-03	1.14	2.45	0.01	4.87	4.89	0.03	6.18	0.00	0.07	1.27E-03	8.47E-04	0.01	0.18	0.07	1.59	0.02	0.03	0.01	1.26
Nov-17	0.46	0.00	0.16	1.42	0.12	3.68E-03	1.27	2.72	0.00	5.11	5.13	0.00	6.93	0.00	0.03	1.50E-03	1.00E-03	0.01	0.21	0.00	1.75	0.02	0.03	0.01	1.42
Dec-17	0.42	0.00	0.14	1.22	0.12	3.16E-03	1.11	2.36	1.51E-03	5.00	5.02	0.00	5.67	0.00	0.07	9.78E-04	6.52E-04	0.01	0.19	0.02	1.64	0.02	0.03	0.01	1.32
Jan-18	0.43	0.00	0.14	2.53	0.09	3.25E-03	1.85	10.20	4.33E-03	3.10	6.53	0.03	3.72	0.00	0.10	9.74E-04	6.49E-04	0.01	0.21	0.04	1.39	0.02	0.02	0.01	1.25
Feb-18	0.43	0.00	0.13	2.34	0.12	2.99E-03	1.79	9.85	0.00	4.19	8.82	0.00	3.39	0.00	0.09	8.58E-04	5.72E-04	0.01	0.20	0.02	1.67	0.02	0.03	0.01	1.34
Mar-18	0.45	0.00	0.15	2.63	0.13	3.37E-03	1.92	10.58	0.00	4.46	9.39	0.00	4.01	0.00	0.09	9.59E-04	6.40E-04	0.01	0.20	0.03	1.77	0.02	0.03	0.01	1.41
Apr-18	0.17	0.00	0.05	0.90	0.11	1.16E-03	0.54	2.96	2.67E-03	4.25	8.96	0.00	1.07	0.00	0.06	2.35E-04	1.56E-04	2.41E-03	0.05	0.02	1.13	4.87E-03	0.03	0.01	0.69
May-18	0.44	0.00	0.12	2.17	0.12	2.77E-03	1.86	10.25	0.00	4.31	9.08	0.00	2.56	0.00	0.09	1.06E-03	7.09E-04	0.01	0.20	0.15	1.68	0.02	0.03	0.01	1.36
Jun-18	0.43	0.00	0.14	2.50	0.12	3.20E-03	1.90	10.47	2.44E-03	4.11	8.66	0.00	4.70	0.00	0.05	1.39E-03	9.25E-04	0.01	0.20	0.04	1.68	0.02	0.03	0.01	1.35
Jul-18	0.45	0.00	0.15	2.67	0.13	3.41E-03	1.99	10.96	0.00	4.27	8.99	0.00	4.44	0.00	0.04	1.36E-03	9.05E-04	0.01	0.21	0.04	1.71	0.02	0.03	0.01	1.39
Aug-18	0.43	0.00	0.15	2.66	0.13	3.40E-03	1.91	10.52	3.87E-03	3.81	8.02	0.00	4.18	0.00	0.08	9.45E-04	6.30E-04	0.01	0.20	0.03	1.62	0.02	0.03	0.01	1.32
Sep-18	0.40	0.00	0.15	2.59	0.18	3.32E-03	1.80	9.92	6.67E-04	2.39	5.02	0.00	2.28	0.00	0.06	1.00E-03	6.66E-04	0.01	0.19	0.07	1.25	0.02	0.02	0.01	1.14
Oct-18	0.46	0.00	0.14	2.44	0.13	3.12E-03	1.99	11.00	0.00	3.88	8.17	0.00	3.26	0.00	0.07	9.55E-04	6.36E-04	0.01	0.22	0.04	1.60	0.02	0.03	0.01	1.37
Nov-18	0.44	0.00	0.14	2.46	0.13	3.15E-03	1.88	10.34	3.72E-03	4.09	8.60	0.00	3.97	0.00	0.06	1.37E-03	9.13E-04	0.01	0.20	0.05	1.66	0.02	0.03	0.01	1.36
Dec-18	0.44	0.00	0.13	2.32	0.13	2.96E-03	1.86	10.23	0.01	4.10	8.63	0.00	2.68	0.00	0.07	1.00E-03	6.68E-04	0.01	0.20	0.02	1.63	0.02	0.03	0.01	1.35
Jan-19	0.47	0.00	0.15	2.44	0.09	3.39E-03	1.80	3.46	0.00	3.35	4.07	0.00	3.29	0.00	0.09	7.75E-04	5.16E-04	0.01	0.23	0.01	1.58	0.02	0.02	0.01	1.39
Feb-19	0.38	0.00	0.12	2.05	0.10	2.84E-03	1.43	2.75	4.16E-03	3.61	4.37	0.00	5.23	0.00	0.08	8.05E-04	5.37E-04	0.01	0.17	0.00	1.51	0.02	0.03	0.01	1.19
Mar-19	0.46	0.00	0.13	2.20	0.11	3.05E-03	1.76	3.38	1.28E-03	4.09	4.96	0.00	5.46	0.00	0.08	8.08E-04	5.39E-04	0.01	0.21	0.00	1.76	0.02	0.03	0.01	1.43
Apr-19	0.16	0.00	0.03	0.55	0.10	7.69E-04	0.39	0.75	0.00	4.02	4.88	0.00	1.37	0.00	0.03	1.07E-04	7.11E-05	1.88E-03	0.04	0.03	1.15	4.07E-03	0.03	0.01	0.68
May-19	0.45	0.00	0.15	2.43	0.10	3.37E-03	1.82	3.49	0.00	3.63	4.41	0.00	4.28	0.00	0.04	3.13E-04	2.08E-04	0.01	0.21	0.04	1.65	0.02	0.03	0.01	1.36
Jun-19	0.45	0.00	0.14	2.33	0.11	3.23E-03	1.67	3.20	0.01	3.66	4.44	0.00	4.81	0.00	0.05	3.98E-04	2.65E-04	0.01	0.21	0.02	1.62	0.02	0.03	0.01	1.35
Jul-19	0.51	0.00	0.17	2.79	0.12	3.87E-03	1.91	3.67	7.70E-04	4.10	4.97	0.00	5.82	0.00	0.08	5.87E-04	3.92E-04	0.01	0.23	0.02	1.88	0.02	0.03	0.01	1.55
Aug-19	0.39	0.00	0.15	2.39	0.12	3.31E-03	1.48	2.84	0.01	3.67	4.45	0.00	4.29	0.00	0.08	6.14E-04	4.09E-04	0.01	0.18	0.02	1.51	0.02	0.03	0.01	1.21
Sep-19	0.39	0.00	0.14	2.28	0.11	3.16E-03	1.58	3.04	0.00	2.40	2.92	7.70E-05	5.41	0.00	0.06	5.14E-04	3.43E-04	0.01	0.19	0.06	1.25	0.02	0.02	0.01	1.13
Oct-19	0.48	0.00	0.16	2.69	0.11	3.74E-03	1.71	3.29	0.00	3.94	4.78	0.00	5.18	0.00	0.08	7.39E-04	4.93E-04	0.01	0.22	0.04	1.79	0.02	0.03	0.01	1.48
Nov-19	0.50	0.00	0.17	2.72	0.11	3.77E-03	1.86	3.56	0.00	4.09	4.96	0.00	4.37	0.00	0.12	6.61E-04	4.41E-04	0.01	0.23	0.02	1.82	0.02	0.03	0.01	1.52
Dec-19	0.48	0.00	0.16	2.67	0.12	3.70E-03	1.82	3.50	0.00	4.05	4.91	0.00	3.30	0.00	0.09	6.09E-04	4.06E-04	0.01	0.22	0.01	1.82	0.02	0.03	0.01	1.48
Jan-20	0.49	0.00	0.16	2.99	0.09	3.75E-03	1.96	3.78	0.00	3.98	6.13	0.00	5.00	0.00	0.10	6.33E-04	4.22E-04	0.01	0.23	0.18	1.80	0.02	0.03	0.01	1.50
Feb-20	0.46	0.00	0.16	3.00	0.08	3.75E-03	1.90	3.66	0.00	3.40	5.25	0.00	2.99	0.00	0.08	4.71E-04	3.14E-04	0.01	0.22	0.05	1.64	0.02	0.03	0.01	1.38
Mar-20	0.50	0.00	0.17	3.06	0.08	3.83E-03	2.09	4.02	0.00	3.73	5.75	0.00	3.70	0.00	0.04	6.21E-04	4.14E-04	0.01	0.23	0.03	1.79	0.02	0.03	0.01	1.50
Apr-20	0.49	0.00	0.17	3.08	0.08	3.86E-03	2.02	3.88	0.00	3.96	6.10	0.00	3.94	0.00	0.09	6.06E-04	4.04E-04	0.01	0.22	0.02	1.82	0.02	0.03	0.01	1.50
May-20	0.39	0.00	0.13	2.31	0.08	2.90E-03	1.43	2.75	0.00	3.96	6.11	0.00	3.09	0.00	0.06	4.97E-04	3.32E-04	0.01	0.17	0.01	1.61	0.02	0.03	0.01	1.25
Jun-20	0.45	0.00	0.14	2.52	0.08	3.15E-03	1.83	3.52	0.01	3.79	5.84	0.00	3.63	0.00	0.14	3.15E-04	2.10E-04	0.01	0.21	0.06	1.71	0.02	0.03	0.01	1.39

PM Baseline Actual Emission Rate Calculations

	Filterable PM10 Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10	Filterable PM10 Fuel Oil	Filterable PM10 Natural Gas	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10	Filterable PM10
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jul-20	0.46	0.00	0.15	2.69	0.08	3.36E-03	1.84	3.54	0.01	3.98	6.14	0.00	3.18	0.00	0.12	4.86E-04	3.24E-04	0.01	0.21	0.00	1.77	0.02	0.03	0.01	1.42
Aug-20	0.49	0.00	0.16	2.87	0.08	3.60E-03	2.04	3.93	3.72E-04	3.98	6.13	3.72E-04	2.28	0.00	0.07	7.53E-04	5.02E-04	0.01	0.23	0.04	1.87	0.02	0.03	0.01	1.52
Sep-20	0.36	0.00	0.14	2.56	0.05	3.21E-03	1.60	3.09	0.00	2.28	3.51	0.00	2.94	0.00	0.08	6.87E-04	4.58E-04	0.01	0.17	0.02	1.23	0.02	0.02	0.01	1.06
Oct-20	0.38	0.00	0.14	2.64	0.07	3.30E-03	1.61	3.09	7.18E-04	3.46	5.33	0.00	2.32	0.00	0.08	1.22E-03	8.13E-04	0.01	0.17	0.22	1.50	0.02	0.03	0.01	1.20
Nov-20	0.45	0.00	0.16	2.86	0.08	3.57E-03	1.91	3.68	0.00	3.82	5.89	0.00	6.71	0.00	0.07	5.66E-04	3.77E-04	0.01	0.20	0.06	1.75	0.02	0.03	0.01	1.40
Dec-20	0.46	0.00	0.15	2.67	0.08	3.34E-03	1.84	3.53	0.00	4.00	6.16	0.00	4.04	0.00	0.08	7.25E-04	4.83E-04	0.01	0.21	0.20	1.76	0.02	0.03	0.01	1.42
Jan-21	0.50	0.00	0.16	3.18	5.00E-05	3.60E-03	3.05	5.82	0.00	3.97	5.29	0.00	5.18	0.00	0.05	7.58E-04	5.05E-04	0.01	0.23	0.11	1.84	0.02	0.03	0.01	1.53
Feb-21	0.43	0.00	0.14	2.78	4.67E-05	3.15E-03	2.62	5.00	0.02	3.65	4.86	0.00	4.63	0.00	0.09	5.09E-04	3.40E-04	0.01	0.20	0.01	1.58	0.02	0.03	0.01	1.30
Mar-21	0.47	0.00	0.15	3.04	5.30E-05	3.45E-03	2.75	5.25	0.01	4.16	5.54	0.00	4.02	0.00	0.07	6.73E-04	4.49E-04	0.01	0.21	0.04	1.80	0.02	0.03	0.01	1.46
Apr-21	0.32	0.00	0.10	1.96	4.45E-05	2.22E-03	1.90	3.64	2.54E-03	3.44	4.59	0.00	3.59	0.00	0.05	2.89E-04	1.93E-04	0.01	0.14	0.06	1.36	0.01	0.03	0.01	1.03
May-21	0.47	0.00	0.14	2.91	4.69E-05	3.29E-03	2.98	5.70	0.00	3.75	5.00	0.00	5.76	0.00	0.11	5.71E-04	3.81E-04	0.01	0.22	0.06	1.74	0.02	0.03	0.01	1.44
Jun-21	0.39	0.00	0.14	2.90	3.79E-05	3.28E-03	2.90	5.53	0.00	2.90	3.87	0.00	5.91	0.00	0.07	7.96E-04	5.31E-04	0.01	0.18	0.05	1.51	0.02	0.03	0.01	1.21
Jul-21	0.39	0.00	0.13	2.70	4.67E-05	3.06E-03	2.48	4.74	0.00	3.76	5.01	0.00	5.13	0.00	0.11	5.99E-04	4.00E-04	0.01	0.17	0.03	1.60	0.02	0.03	0.01	1.25
Aug-21	0.43	0.00	0.15	3.12	4.46E-05	3.53E-03	2.81	5.36	5.90E-04	3.21	4.27	0.00	7.50	0.00	0.11	5.24E-04	3.49E-04	0.01	0.20	0.36	1.57	0.02	0.03	0.01	1.31
Sep-21	0.40	0.00	0.14	2.91	5.97E-05	3.29E-03	2.63	5.02	0.00	2.14	2.85	0.00	4.38	0.00	0.12	5.14E-04	3.43E-04	0.01	0.20	0.09	1.22	0.02	0.02	0.01	1.13
Oct-21	0.48	0.00	0.15	3.00	4.46E-05	3.39E-03	3.10	5.91	0.00	3.74	4.99	0.00	6.19	0.00	0.11	7.70E-04	5.13E-04	0.01	0.22	0.07	1.80	0.02	0.03	0.01	1.47
Nov-21	0.48	0.00	0.14	2.92	4.32E-05	3.30E-03	2.94	5.62	0.00	3.79	5.04	0.00	6.02	0.00	0.14	6.33E-04	4.22E-04	0.01	0.22	0.04	1.77	0.02	0.03	0.01	1.46
Dec-21	0.51	0.00	0.15	2.99	4.34E-05	3.38E-03	2.96	5.66	0.00	3.98	5.30	0.00	7.42	0.00	0.11	7.86E-04	5.24E-04	0.01	0.24	0.03	1.84	0.02	0.03	0.01	1.53
Jan-22	0.41	0.00	0.13	2.44	0.17	3.07E-03	1.59	5.91	0.00	2.51	5.68	0.00	5.83	0.00	0.12	6.54E-04	4.36E-04	0.01	0.19	0.04	1.57	0.02	0.03	0.01	1.26
Feb-22	0.36	0.00	0.11	2.00	0.15	2.51E-03	1.40	5.19	0.00	2.41	5.45	0.00	3.32	0.00	0.09	6.68E-04	4.45E-04	0.01	0.16	0.01	1.46	0.01	0.03	0.01	1.15
Mar-22	0.28	0.00	0.09	1.58	0.20	1.99E-03	1.13	4.17	0.00	2.42	5.47	0.00	2.37	0.00	0.07	4.71E-04	3.14E-04	0.01	0.12	0.05	1.30	0.01	0.03	0.01	0.94
Apr-22	0.44	0.00	0.14	2.54	0.19	3.19E-03	1.71	6.34	0.00	2.40	5.43	0.00	5.77	0.00	0.08	7.77E-04	5.18E-04	0.01	0.20	0.14	1.63	0.02	0.03	0.01	1.34
May-22	0.41	0.00	0.14	2.53	0.19	3.18E-03	1.65	6.10	0.00	2.19	4.95	0.00	4.46	0.00	0.08	6.35E-04	4.23E-04	0.01	0.19	0.11	1.43	0.02	0.02	0.01	1.22
Jun-22	0.47	0.00	0.14	2.61	0.18	3.28E-03	1.80	6.67	0.00	2.77	6.27	0.00	5.21	0.00	0.08	7.58E-04	5.05E-04	0.01	0.22	0.04	1.75	0.02	0.03	0.01	1.44
Jul-22	0.42	0.00	0.15	2.75	0.16	3.45E-03	1.68	6.22	0.00	2.58	5.84	0.00	5.64	0.00	0.07	8.62E-04	5.75E-04	0.01	0.19	0.21	1.63	0.02	0.03	0.01	1.31
Aug-22	0.44	0.00	0.13	2.42	0.16	3.03E-03	1.76	6.53	0.00	2.67	6.05	0.00	3.57	0.00	0.10	8.36E-04	5.57E-04	0.01	0.20	0.06	1.70	0.02	0.03	0.01	1.37
Sep-22	0.37	0.00	0.14	2.46	0.05	3.09E-03	1.61	5.98	0.00	0.73	1.65	0.00	3.11	0.00	0.07	5.80E-04	3.87E-04	0.01	0.19	0.18	0.96	0.02	0.01	0.01	0.99
Oct-22	0.40	0.00	0.14	2.48	0.16	3.11E-03	1.67	6.20	0.00	2.55	5.76	0.00	5.86	0.00	0.05	6.37E-04	4.25E-04	0.01	0.18	0.27	1.55	0.02	0.03	0.01	1.24
Nov-22	0.41	0.00	0.13	2.28	0.17	2.86E-03	1.65	6.12	0.00	2.67	6.05	0.00	3.25	0.00	0.08	6.42E-04	4.28E-04	0.01	0.19	0.06	1.61	0.02	0.03	0.01	1.28
Dec-22	0.47	0.00	0.14	2.60	0.17	3.26E-03	1.87	6.94	8.10E-06	2.64	5.98	0.00	3.94	0.00	0.09	7.25E-04	4.83E-04	0.01	0.22	0.03	1.71	0.02	0.03	0.01	1.43
Jan-23	0.44	0.00	0.12	1.80	0.11	2.83E-03	1.58	3.63	0.00	3.04	6.19	0.00	4.09	0.00	0.10	6.96E-04	4.64E-04	0.01	0.21	0.03	1.55	0.02	0.03	0.01	1.32
Feb-23	0.39	0.00	0.11	1.64	0.10	2.58E-03	1.35	3.10	0.00	3.30	6.72	0.00	3.29	0.00	0.08	5.57E-04	3.71E-04	0.01	0.17	0.01	1.55	0.02	0.03	0.01	1.22
Mar-23	0.12	0.00	0.04	0.55	0.09	8.59E-04	0.47	1.08	0.03	2.75	5.59	0.00	2.39	0.00	0.09	2.56E-04	1.71E-04	3.58E-03	0.03	0.08	0.91	2.73E-03	0.03	0.01	0.52
Apr-23	0.38	0.00	0.13	1.88	0.11	2.96E-03	1.42	3.27	0.00	3.28	6.68	0.00	5.29	0.00	0.08	7.96E-04	5.31E-04	0.01	0.17	0.01	1.52	0.02	0.03	0.01	1.19
May-23	0.43	0.00	0.14	1.99	0.13	3.13E-03	1.61	3.70	0.00	3.44	7.00	0.00	4.69	0.00	0.10	8.88E-04	5.92E-04	0.01	0.20	0.05	1.68	0.02	0.03	0.01	1.35
Jun-23	0.29	0.00	0.07	1.04	0.10	1.64E-03	0.91	2.09	0.01	3.27	6.66	0.00	6.45	0.00	0.13	6.78E-04	4.52E-04	0.01	0.12	0.05	1.34	0.01	0.03	0.01	0.97
Jul-23	0.44	0.00	0.14	2.07	0.11	3.26E-03	1.66	3.80	0.00	3.34	6.80	0.00	7.98	0.00	0.10	8.32E-04	5.54E-04	0.01	0.20	0.03	1.66	0.02	0.03	0.01	1.36
Aug-23	0.39	0.00	0.12	1.75	0.10	2.76E-03	1.38	3.18	0.00	3.06	6.23	0.00	9.72	0.00	0.08	6.54E-04	4.36E-04	0.01	0.18	0.14	1.46	0.02	0.03	0.01	1.20
Sep-23	0.35	0.00	0.12	1.78	0.07	2.81E-03	1.35	3.09	4.81E-03	0.82	1.66	0.00	4.22	0.00	0.14	3.20E-04	2.13E-04	4.49E-03	0.18	0.02	0.89	0.02	0.01	0.01	0.93
Oct-23	0.44	0.00	0.14	2.01	0.10	3.17E-03	1.57	3.60	0.00	3.34	6.80	0.00	8.95	0.00	0.11	6.80E-04	4.53E-04	0.01	0.21	0.04	1.62	0.02	0.03	0.01	1.35
Nov-23	0.47	0.00	0.14	2.01	0.11	3.17E-03	1.57	3.61	0.00	3.51	7.15	0.00	8.41	0.00	0.10	8.34E-04	5.56E-04	0.01	0.22	0.01	1.73	0.02	0.03	0.01	1.43
Dec-23	0.43	0.00	0.14	2.02	0.11	3.18E-03	1.54	3.53	0.00	3.44	7.00	0.00	7.57	0.00	0.12	8.72E-04	5.81E-04	0.01	0.19	0.02	1.67	0.02	0.03	0.01	1.34
Jan-24	0.37	0.00	0.13	1.94	0.11	3.05E-03	1.50	8.28	0.01	2.96	6.03	0.00	8.21	0.00	0.11	9.19E-04	6.13E-04	0.01	0.17	0.07	1.43	0.02	0.03	0.01	1.16
Feb-24	0.45	0.00	0.14	2.04	0.11	3.21E-03	1.57	8.65	0.00	3.20	6.52	0.00	8.88	0.00	0.09	8.69E-04	5.80E-04	0.01	0.21	0.01	1.63	0.02	0.03	0.01	1.37
Mar-24	0.22	0.00	0.05	0.69	0.11	1.09E-03	0.66	3.63	0.01	3.50	7.12	0.00	3.45	0.00	0.06	5.40E-04	3.60E-04	4.29E-03	0.08	0.20	1.24	0.01	0.03	0.01	0.82
Apr-24	0.41	0.00	0.13	1.92	0.10	3.02E-03	1.55	8.52	0.00	3.20	6.52	0.00	6.35	0.00	0.10	8.34E-04	5.56E-04	0.01	0.19	0.08	1.60	0.02	0.03	0.01	1.28

PM Baseline Actual Emission Rate Calculations

	Filterable PM2.5 Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Natural Gas	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.08	0.00	0.13	3.20	0.03	4.46E-04	2.54	1.51	0.08	4.85	1.73	0.03	5.34	0.01	0.08	1.55E-04	1.03E-04	9.78E-04	0.09	0.03	0.01	0.02	0.02	0.01	0.28
Feb-15	0.09	0.00	0.13	3.12	0.03	4.46E-04	2.57	1.54	1.84E-03	4.55	1.62	2.96E-03	5.41	0.02	0.04	1.99E-04	1.33E-04	9.91E-04	0.10	0.16	0.01	0.02	0.02	0.01	0.31
Mar-15	0.08	0.00	0.14	3.47	0.03	4.81E-04	2.60	1.56	0.06	4.50	1.60	0.02	4.49	0.01	0.10	1.27E-04	8.44E-05	8.23E-04	0.09	0.03	0.01	0.02	0.02	0.01	0.28
Apr-15	0.03	0.00	0.04	1.10	0.03	1.52E-04	0.69	0.41	0.02	4.80	1.71	0.01	1.25	0.02	0.04	3.26E-05	2.18E-05	2.29E-04	0.02	0.00	4.62E-03	4.09E-03	0.02	0.01	0.14
May-15	0.05	0.00	0.10	2.42	0.03	3.35E-04	1.80	1.07	0.02	4.64	1.65	0.01	3.58	0.01	0.06	8.36E-05	5.57E-05	6.57E-04	0.05	0.02	0.01	0.01	0.02	0.01	0.20
Jun-15	0.07	0.00	0.13	3.19	0.03	4.42E-04	2.56	1.53	0.02	4.11	1.46	0.01	4.90	0.01	0.01	1.23E-04	8.23E-05	8.98E-04	0.08	0.03	0.01	0.01	0.02	0.01	0.25
Jul-15	0.09	0.00	0.14	3.60	0.03	4.99E-04	2.74	1.64	4.35E-03	5.22	1.86	0.00	6.22	0.01	0.02	1.95E-04	1.30E-04	1.14E-03	0.10	0.01	0.01	0.02	0.03	0.01	0.31
Aug-15	0.08	0.00	0.15	3.67	0.03	5.08E-04	2.54	1.52	0.01	5.14	1.83	1.26E-04	5.88	0.01	0.01	1.77E-04	1.18E-04	1.08E-03	0.09	0.01	0.01	0.02	0.03	0.01	0.30
Sep-15	0.07	0.00	0.13	3.22	0.01	4.47E-04	2.45	1.46	0.02	1.95	0.70	0.01	4.95	4.16E-03	0.02	1.31E-04	8.75E-05	9.07E-04	0.09	0.04	4.64E-03	0.02	0.01	0.01	0.23
Oct-15	0.08	0.00	0.14	3.56	0.03	4.93E-04	2.43	1.45	0.05	4.66	1.66	0.05	4.50	0.01	0.02	1.09E-04	7.25E-05	8.24E-04	0.08	0.14	0.01	0.02	0.02	0.01	0.27
Nov-15	0.08	0.00	0.15	3.78	0.03	5.24E-04	2.59	1.55	0.01	5.03	1.79	0.02	4.93	3.63E-03	0.05	1.35E-04	8.97E-05	9.03E-04	0.09	0.02	0.01	0.02	0.03	0.01	0.29
Dec-15	0.07	0.00	0.11	2.64	0.03	3.75E-04	2.05	1.23	0.02	5.08	1.81	0.02	4.59	4.96E-03	0.09	1.28E-04	8.54E-05	8.42E-04	0.07	0.01	0.01	0.01	0.02	0.01	0.24
Jan-16	0.07	0.00	0.12	1.84	0.05	4.26E-04	0.99	2.13	0.08	3.92	3.44	0.01	4.60	1.41E-06	0.10	1.28E-04	8.51E-05	8.51E-04	0.07	0.03	0.01	0.01	0.03	0.01	0.26
Feb-16	0.07	0.00	0.12	1.84	0.05	4.28E-04	1.13	2.41	0.06	3.59	3.15	2.61E-03	3.88	1.52E-05	0.09	1.45E-04	9.66E-05	8.43E-04	0.08	0.03	0.01	0.01	0.03	0.01	0.27
Mar-16	0.08	0.00	0.11	1.70	0.05	3.94E-04	1.20	2.57	0.04	3.89	3.41	0.00	3.26	0.00	0.09	1.10E-04	7.32E-05	8.00E-04	0.09	0.20	0.01	0.02	0.03	0.01	0.29
Apr-16	0.03	0.00	0.02	0.34	0.04	7.99E-05	0.29	0.62	1.05E-03	3.48	3.05	0.00	1.04	1.94E-03	0.05	2.15E-05	1.43E-05	2.41E-04	0.02	0.14	4.47E-03	3.97E-03	0.02	0.01	0.13
May-16	0.08	0.00	0.12	1.71	0.04	3.99E-04	1.18	2.53	1.31E-03	3.72	3.27	0.00	10.58	0.00	0.04	2.19E-04	1.46E-04	1.87E-03	0.08	0.19	0.01	0.01	0.03	0.01	0.28
Jun-16	0.08	0.00	0.14	2.01	0.04	4.68E-04	1.13	2.43	0.01	3.69	3.24	0.00	9.45	0.00	0.06	1.64E-04	1.09E-04	1.68E-03	0.08	0.01	0.01	0.01	0.03	0.01	0.27
Jul-16	0.08	0.00	0.14	2.09	0.04	4.87E-04	1.15	2.47	9.49E-04	3.68	3.23	0.01	8.99	0.00	0.06	2.19E-04	1.46E-04	1.78E-03	0.08	0.00	0.01	0.01	0.03	0.01	0.27
Aug-16	0.08	0.00	0.13	1.96	0.04	4.56E-04	1.09	2.32	2.47E-04	3.55	3.12	3.07E-03	9.05	0.00	0.05	1.72E-04	1.15E-04	1.66E-03	0.08	0.06	0.01	0.02	0.03	0.01	0.28
Sep-16	0.07	0.00	0.12	1.83	0.02	4.26E-04	1.07	2.29	2.77E-03	2.04	1.79	0.01	7.79	0.00	0.07	1.35E-04	9.02E-05	1.45E-03	0.08	0.03	0.01	0.01	0.01	0.01	0.23
Oct-16	0.08	0.00	0.13	1.87	0.04	4.33E-04	1.08	2.31	2.63E-04	3.81	3.35	1.21E-04	9.62	0.00	0.09	1.74E-04	1.16E-04	1.72E-03	0.09	0.05	0.01	0.02	0.03	0.01	0.29
Nov-16	0.08	0.00	0.13	1.96	0.03	4.56E-04	1.16	2.48	0.00	3.74	3.29	0.00	8.66	0.00	0.07	2.24E-04	1.49E-04	1.74E-03	0.08	0.05	0.01	0.01	0.03	0.01	0.27
Dec-16	0.07	0.00	0.14	2.02	0.04	4.70E-04	1.06	2.27	1.45E-04	3.76	3.30	1.32E-03	8.24	0.00	0.05	1.59E-04	1.06E-04	1.53E-03	0.07	0.01	0.01	0.01	0.03	0.01	0.25
Jan-17	0.08	0.00	0.15	1.30	0.04	5.11E-04	1.29	1.88	0.00	4.78	3.28	3.36E-03	6.35	0.00	0.07	1.84E-04	1.23E-04	1.62E-03	0.09	0.04	0.01	0.02	0.02	0.01	0.28
Feb-17	0.08	0.00	0.12	1.10	0.04	4.31E-04	1.10	1.60	0.00	4.68	3.21	4.14E-03	6.63	0.00	0.04	1.64E-04	1.10E-04	1.55E-03	0.08	0.16	0.01	0.01	0.03	0.01	0.27
Mar-17	0.03	0.00	0.03	0.23	0.04	9.10E-05	0.17	0.25	0.00	5.42	3.71	0.00	7.95	0.00	0.03	1.76E-04	1.17E-04	1.68E-03	0.02	0.02	4.90E-03	2.99E-03	0.03	0.01	0.13
Apr-17	0.01	0.00	0.01	0.06	0.04	2.45E-05	2.09E-06	3.05E-06	0.00	4.92	3.37	1.31E-03	2.26	0.00	0.02	5.27E-05	3.52E-05	5.09E-04	0.00	0.11	3.90E-03	0.00	0.02	4.91E-03	0.09
May-17	0.07	0.00	0.13	1.19	0.04	4.66E-04	1.19	1.74	0.00	5.09	3.49	0.00	5.56	0.00	0.05	1.37E-04	9.14E-05	1.40E-03	0.07	0.02	0.01	0.01	0.03	0.01	0.26
Jun-17	0.08	0.00	0.15	1.29	0.05	5.05E-04	1.27	1.85	0.00	5.09	3.49	0.00	5.05	0.00	0.09	1.58E-04	1.05E-04	1.43E-03	0.09	0.02	0.01	0.02	0.03	0.01	0.29
Jul-17	0.08	0.00	0.16	1.38	0.05	5.41E-04	1.34	1.95	0.00	5.34	3.66	0.00	7.12	0.00	0.07	2.06E-04	1.37E-04	1.55E-03	0.09	0.01	0.01	0.02	0.03	0.01	0.30
Aug-17	0.08	0.00	0.16	1.38	0.04	5.40E-04	1.26	1.85	0.00	5.11	3.50	0.00	5.45	0.00	0.08	1.94E-04	1.29E-04	1.39E-03	0.08	0.02	0.01	0.01	0.03	0.01	0.27
Sep-17	0.07	0.00	0.15	1.35	0.04	5.29E-04	1.20	1.75	3.10E-03	2.43	1.67	0.01	5.57	0.00	0.05	1.62E-04	1.08E-04	1.28E-03	0.08	0.02	4.64E-03	0.02	0.01	0.01	0.22
Oct-17	0.07	0.00	0.14	1.26	0.04	4.95E-04	1.14	1.67	3.63E-03	4.87	3.34	0.02	6.18	0.00	0.07	1.92E-04	1.28E-04	1.48E-03	0.07	0.07	0.01	0.01	0.02	0.01	0.26
Nov-17	0.08	0.00	0.16	1.42	0.04	5.57E-04	1.27	1.86	0.00	5.11	3.50	0.00	6.93	0.00	0.03	2.27E-04	1.51E-04	1.62E-03	0.09	0.00	0.01	0.02	0.03	0.01	0.29
Dec-17	0.08	0.00	0.14	1.22	0.04	4.78E-04	1.11	1.61	9.85E-04	5.00	3.43	0.00	5.67	0.00	0.07	1.48E-04	9.88E-05	1.37E-03	0.08	0.02	0.01	0.01	0.03	0.01	0.27
Jan-18	0.08	0.00	0.14	2.53	0.03	4.93E-04	1.85	6.97	2.82E-03	3.10	4.46	0.02	3.72	0.00	0.10	1.47E-04	9.83E-05	1.30E-03	0.09	0.04	0.01	0.02	0.02	0.01	0.26
Feb-18	0.08	0.00	0.13	2.34	0.04	4.53E-04	1.79	6.73	0.00	4.19	6.02	0.00	3.39	0.00	0.09	1.30E-04	8.66E-05	1.13E-03	0.08	0.02	0.01	0.01	0.03	0.01	0.27
Mar-18	0.08	0.00	0.15	2.63	0.04	5.10E-04	1.92	7.22	0.00	4.46	6.41	0.00	4.01	0.00	0.09	1.45E-04	9.69E-05	1.36E-03	0.08	0.03	0.01	0.02	0.03	0.01	0.29
Apr-18	0.03	0.00	0.05	0.90	0.04	1.75E-04	0.54	2.02	1.74E-03	4.25	6.12	0.00	1.07	0.00	0.06	3.55E-05	2.37E-05	3.64E-04	0.02	0.02	4.75E-03	4.04E-03	0.02	0.01	0.14
May-18	0.08	0.00	0.12	2.17	0.04	4.20E-04	1.86	7.00	0.00	4.31	6.20	0.00	2.56	0.00	0.09	1.61E-04	1.07E-04	1.32E-03	0.08	0.15	0.01	0.02	0.03	0.01	0.28
Jun-18	0.08	0.00	0.14	2.50	0.04	4.85E-04	1.90	7.15	1.59E-03	4.11	5.92	0.00	4.70	0.00	0.05	2.10E-04	1.40E-04	1.50E-03	0.08	0.04	0.01	0.01	0.03	0.01	0.27
Jul-18	0.08	0.00	0.15	2.67	0.04	5.16E-04	1.99	7.48	0.00	4.27	6.14	0.00	4.44	0.00	0.04	2.06E-04	1.37E-04	1.66E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.28
Aug-18	0.08	0.00	0.15	2.66	0.04	5.15E-04	1.91	7.19	2.52E-03	3.81	5.47	0.00	4.18	0.00	0.08	1.43E-04	9.54E-05	1.41E-03	0.08	0.03	0.01	0.01	0.02	0.01	0.27
Sep-18	0.07	0.00	0.15	2.59	0.06	5.02E-04	1.80	6.77	4.34E-04	2.39	3.43	0.00	2.28	0.00	0.06	1.51E-04	1.01E-04	1.32E-03	0.08	0.07	0.01	0.01	0.01	0.01	0.23
Oct-18	0.08	0.00	0.14	2.44	0.04	4.72E-04	1.99	7.51	0.00	3.88	5.58	0.00	3.26	0.00	0.07	1.45E-04	9.64E-05	1.25E-03	0.09	0.04	0.01	0.02	0.02	0.01	0.28
Nov-18	0.08	0.00	0.14	2.46	0.04	4.77E-04	1.88	7.06	2.42E-03	4.09	5.87	0.00	3.97	0.00	0.06	2.07E-04	1.38E-04	1.48E-03	0.08	0.05	0.01	0.02	0.02	0.01	0.28
Dec-18	0.08	0.00	0.13	2.32	0.04	4.48E-04	1.86	6.99	0.01	4.10	5.89	0.00	2.68	0.00	0.07	1.52E-04	1.01E-04	1.28E-03	0.09	0.02	0.01	0.02	0.02	0.01	0.28
Jan-19	0.09	0.00	0.15	2.44	0.03	5.13E-04	1.80	2.36	0.00	3.35	2.78	0.00	3.29	0.00	0.09	1.17E-04	7.82E-05	1.23E-03	0.10	0.01	0.01	0.02	0.02	0.01	0.28
Feb-19	0.07	0.00	0.12	2.05	0.03	4.30E-04	1.43	1.88	2.70E-03	3.61	2.98	0.00	5.23	0.00	0.08	1.22E-04	8.13E-05	1.10E-03	0.07	0.00	0.01	0.01	0.02	0.01	0.24
Mar-19	0.08	0.00	0.13	2.20	0.04	4.62E-04	1.76	2.31	8.35E-04	4.09	3.39	0.00	5.46	0.00	0.08	1.22E-04	8.16E-05	1.25E-03	0.09	0.00	0.01	0.02	0.03	0.01	0.29
Apr-19	0.03	0.00	0.03	0.55	0.03	1.17E-04	0.39	0.51	0.00	4.02	3.33	0.00	1.37	0.00	0.03	1.61E-05	1.08E-05	2.85E-04	0.02	0.03	4.84E-03	3.38E-03	0.03	0.01	0.14
May-19	0.08	0.00	0.15	2.43	0.03	5.10E-04	1.82	2.38	0.00	3.63	3.01	0.00	4.28	0.00	0.04	4.74E-05	3.16E-05	9.59E-04	0.09	0.04	0.01	0.02	0.02	0.01	0.28
Jun-19	0.08	0.00	0.14	2.33	0.03	4.89E-04	1.67	2.18	3.31E-03	3.66	3.03	0.00	4.81	0.00	0.05	6.03E-05	4.02E-05	1.13E-03	0.09	0.02	0.01	0.02	0.02	0.01	0.28
Jul-19	0.09	0.00	0.17	2.79	0.04	5.85E-04	1.91	2.51	5.01E-04	4.10	3.39	0.00	5.82	0.00	0.08	8.90E-05	5.93E-05	1.36E-03	0.10	0.02	0.01	0.02	0.03	0.01	0.32
Aug-19	0.07	0.00	0.15	2.39	0.04	5.02E-04	1.48	1.94	0.01	3.67	3.04	0.00	4.29	0.00	0.08	9.29E-05	6.19E-05	1.25E-03	0.07	0.02	0.01	0.01	0.02	0.01	0.25
Sep-19	0.07	0.00	0.14	2.28	0.03	4.78E-04	1.58	2.07	0.00	2.40	1.99	5.01E-05	5.41	0.00	0.06	7.78E-05	5.19E-05	1.10E-03	0.08	0.06	0.01	0.01	0.02	0.01	0.23
Oct-19	0.09	0.00	0.16	2.69	0.03	5.66E-04	1.71	2.25	0.00	3.94	3.26	0.00	5.18	0.00	0.08	1.12E-04	7.46E-05	1.39E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.30
Nov-19	0.09	0.00	0.17	2.72	0.03	5.71E-04	1.86	2.43	0.00	4.09	3.39	0.00	4.37	0.00	0.12	1.00E-04	6.67E-05	1.15E-03	0.10	0.02	0.01	0.02	0.03	0.01	0.31
Dec-19	0.09	0.00	0.16	2.67	0.04	5.60E-04	1.82	2.39	0.00	4.05	3.35	0.00	3.30	0.00	0.09	9.22E-05	6.15E-05	1.16E-03	0.09	0.01	0.01	0.02	0.03	0.01	0.30
Jan-20	0.09	0.00	0.16	2.99	0.03	5.68E-04	1.96	2.58	0.00	3.98	4.19	0.00	5.00	0.00	0.10	9.58E-05	6.39E-05	1.16E-03	0.10	0.18	0.01	0.02	0.03	0.01	0.31
Feb-20	0.08	0.00	0.16	3.00	0.03	5.68E-04	1.90	2.50	0.00	3.40	3.58	0.00	2.99	0.00	0.08	7.14E-05	4.76E-05	1.06E-03	0.09	0.05	0.01	0.02	0.02	0.01	0.28
Mar-20	0.09	0.00	0.17	3.06	0.03	5.81E-04	2.09	2.74	0.00	3.73	3.92	0.00	3.70	0.00	0.04	9.40E-05	6.27E-05	1.32E-03	0.10	0.03	0.01	0.02	0.03	0.01	0.31
Apr-20	0.09	0.00	0.17	3.08	0.03	5.84E-04	2.02	2.65	0.00	3.96	4.17	0.00	3.94	0.00	0.09	9.18E-05	6.12E-05	1.32E-03	0.09	0.02	0.01	0.02	0.03	0.01	0.31
May-20	0.07	0.00	0.13	2.31	0.03	4.38E-04	1.43	1.88	0.00	3.96	4.17	0.00	3.09	0.00	0.06	7.53E-05	5.02E-05	1.08E-03	0.07	0.01	0.01	0.01	0.03	0.01	0.25
Jun-20	0.08	0.00	0.14	2.52	0.02	4.77E-04	1.83	2.40	0.01	3.79	3.99	0.00	3.63	0.00	0.14	4.77E-05	3.18E-05	9.60E-04	0.09	0.06	0.01	0.02	0.03	0.01	0.28

PM Baseline Actual Emission Rate Calculations

	Filterable PM2.5 Monthly Emissions																							
	Modified and Affected Woodyard Sources (Excludes Chip Conveyor 3)	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Natural Gas	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5	Filterable PM2.5 - Fuel Oil	Filterable PM2.5 - Natural Gas	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5	Filterable PM2.5
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jul-20	0.08	0.00	0.15	2.69	0.03	5.10E-04	1.84	2.42	3.31E-03	3.98	4.19	0.00	3.18	0.00	0.12	7.35E-05	4.90E-05	1.19E-03	0.09	0.00	0.01	0.02	0.03	0.01	0.29
Aug-20	0.09	0.00	0.16	2.87	0.03	5.45E-04	2.04	2.68	2.42E-04	3.98	4.18	2.42E-04	2.28	0.00	0.07	1.14E-04	7.61E-05	1.45E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.31
Sep-20	0.06	0.00	0.14	2.56	0.02	4.86E-04	1.60	2.11	0.00	2.28	2.40	0.00	2.94	0.00	0.08	1.04E-04	6.94E-05	1.26E-03	0.07	0.02	0.01	0.01	0.02	0.01	0.22
Oct-20	0.07	0.00	0.14	2.64	0.02	5.00E-04	1.61	2.11	4.67E-04	3.46	3.64	0.00	2.32	0.00	0.08	1.85E-04	1.23E-04	1.12E-03	0.07	0.22	0.01	0.01	0.02	0.01	0.24
Nov-20	0.08	0.00	0.16	2.86	0.03	5.41E-04	1.91	2.51	0.00	3.82	4.02	0.00	6.71	0.00	0.07	8.57E-05	5.72E-05	1.48E-03	0.09	0.06	0.01	0.02	0.03	0.01	0.29
Dec-20	0.08	0.00	0.15	2.67	0.03	5.06E-04	1.84	2.41	0.00	4.00	4.21	0.00	4.04	0.00	0.08	1.10E-04	7.32E-05	1.51E-03	0.09	0.20	0.01	0.02	0.03	0.01	0.29
Jan-21	0.09	0.00	0.16	3.18	1.61E-05	5.45E-04	3.05	3.97	0.00	3.97	3.61	0.00	5.18	0.00	0.05	1.15E-04	7.65E-05	1.48E-03	0.10	0.11	0.01	0.02	0.03	0.01	0.31
Feb-21	0.08	0.00	0.14	2.78	1.50E-05	4.77E-04	2.62	3.41	0.02	3.65	3.32	0.00	4.63	0.00	0.09	7.71E-05	5.14E-05	1.07E-03	0.08	0.01	0.01	0.01	0.02	0.01	0.27
Mar-21	0.08	0.00	0.15	3.04	1.70E-05	5.22E-04	2.75	3.58	0.01	4.16	3.79	0.00	4.02	0.00	0.07	1.02E-04	6.79E-05	1.30E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.30
Apr-21	0.06	0.00	0.10	1.96	1.43E-05	3.37E-04	1.90	2.48	1.65E-03	3.44	3.13	0.00	3.59	0.00	0.05	4.38E-05	2.92E-05	8.00E-04	0.06	0.06	0.01	0.01	0.02	0.01	0.21
May-21	0.08	0.00	0.14	2.91	1.51E-05	4.98E-04	2.98	3.89	0.00	3.75	3.41	0.00	5.76	0.00	0.11	8.65E-05	5.76E-05	1.28E-03	0.09	0.06	0.01	0.02	0.03	0.01	0.29
Jun-21	0.07	0.00	0.14	2.90	1.22E-05	4.97E-04	2.90	3.78	0.00	2.90	2.64	0.00	5.91	0.00	0.07	1.21E-04	8.04E-05	1.49E-03	0.07	0.05	0.01	0.01	0.02	0.01	0.25
Jul-21	0.07	0.00	0.13	2.70	1.50E-05	4.63E-04	2.48	3.23	0.00	3.76	3.42	0.00	5.13	0.00	0.11	9.08E-05	6.05E-05	1.37E-03	0.07	0.03	0.01	0.01	0.03	0.01	0.25
Aug-21	0.08	0.00	0.15	3.12	1.44E-05	5.34E-04	2.81	3.66	3.84E-04	3.21	2.92	0.00	7.50	0.00	0.11	7.93E-05	5.29E-05	1.43E-03	0.08	0.36	0.01	0.02	0.02	0.01	0.27
Sep-21	0.07	0.00	0.14	2.91	1.92E-05	4.98E-04	2.63	3.43	0.00	2.14	1.95	0.00	4.38	0.00	0.12	7.78E-05	5.19E-05	1.26E-03	0.08	0.09	0.01	0.02	0.01	0.01	0.23
Oct-21	0.09	0.00	0.15	3.00	1.44E-05	5.14E-04	3.10	4.04	0.00	3.74	3.40	0.00	6.19	0.00	0.11	1.17E-04	7.77E-05	1.55E-03	0.09	0.07	0.01	0.02	0.03	0.01	0.30
Nov-21	0.09	0.00	0.14	2.92	1.39E-05	5.00E-04	2.94	3.84	0.00	3.79	3.44	0.00	6.02	0.00	0.14	9.58E-05	6.39E-05	1.33E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.30
Dec-21	0.09	0.00	0.15	2.99	1.40E-05	5.12E-04	2.96	3.86	0.00	3.98	3.62	0.00	7.42	0.00	0.11	1.19E-04	7.94E-05	1.47E-03	0.10	0.03	0.01	0.02	0.03	0.01	0.31
Jan-22	0.07	0.00	0.13	2.44	0.05	4.65E-04	1.59	4.04	0.00	2.51	3.88	0.00	5.83	0.00	0.12	9.90E-05	6.60E-05	1.41E-03	0.08	0.04	0.01	0.01	0.02	0.01	0.26
Feb-22	0.07	0.00	0.11	2.00	0.05	3.80E-04	1.40	3.54	0.00	2.41	3.72	0.00	3.32	0.00	0.09	1.01E-04	6.74E-05	1.26E-03	0.07	0.01	0.01	0.01	0.02	0.01	0.23
Mar-22	0.05	0.00	0.09	1.58	0.06	3.01E-04	1.13	2.85	0.00	2.42	3.73	0.00	2.37	0.00	0.07	7.14E-05	4.76E-05	8.58E-04	0.05	0.05	0.01	0.01	0.02	0.01	0.19
Apr-22	0.08	0.00	0.14	2.54	0.06	4.83E-04	1.71	4.33	0.00	2.40	3.71	0.00	5.77	0.00	0.08	1.18E-04	7.84E-05	1.44E-03	0.08	0.14	0.01	0.02	0.02	0.01	0.27
May-22	0.07	0.00	0.14	2.53	0.06	4.82E-04	1.65	4.17	0.00	2.19	3.38	0.00	4.46	0.00	0.08	9.61E-05	6.41E-05	1.42E-03	0.08	0.11	0.01	0.01	0.02	0.01	0.25
Jun-22	0.08	0.00	0.14	2.61	0.06	4.97E-04	1.80	4.55	0.00	2.77	4.28	0.00	5.21	0.00	0.08	1.15E-04	7.65E-05	1.46E-03	0.09	0.04	0.01	0.02	0.03	0.01	0.29
Jul-22	0.08	0.00	0.15	2.75	0.05	5.23E-04	1.68	4.24	0.00	2.58	3.99	0.00	5.64	0.00	0.07	1.31E-04	8.71E-05	1.64E-03	0.08	0.21	0.01	0.01	0.02	0.01	0.27
Aug-22	0.08	0.00	0.13	2.42	0.05	4.59E-04	1.76	4.46	0.00	2.67	4.13	0.00	3.57	0.00	0.10	1.27E-04	8.44E-05	1.50E-03	0.08	0.06	0.01	0.02	0.03	0.01	0.28
Sep-22	0.07	0.00	0.14	2.46	0.01	4.67E-04	1.61	4.08	0.00	0.73	1.13	0.00	3.11	0.00	0.07	8.79E-05	5.86E-05	1.13E-03	0.08	0.18	4.04E-03	0.01	0.01	0.01	0.20
Oct-22	0.07	0.00	0.14	2.48	0.05	4.71E-04	1.67	4.23	0.00	2.55	3.93	0.00	5.86	0.00	0.05	9.65E-05	6.43E-05	1.35E-03	0.08	0.27	0.01	0.01	0.02	0.01	0.25
Nov-22	0.07	0.00	0.13	2.28	0.05	4.33E-04	1.65	4.18	0.00	2.67	4.13	0.00	3.25	0.00	0.08	9.72E-05	6.48E-05	1.35E-03	0.08	0.06	0.01	0.01	0.02	0.01	0.26
Dec-22	0.09	0.00	0.14	2.60	0.06	4.94E-04	1.87	4.74	5.27E-06	2.64	4.08	0.00	3.94	0.00	0.09	1.10E-04	7.32E-05	1.32E-03	0.09	0.03	0.01	0.02	0.02	0.01	0.29
Jan-23	0.08	0.00	0.12	1.80	0.03	4.29E-04	1.58	2.48	0.00	3.04	4.23	0.00	4.09	0.00	0.10	1.05E-04	7.03E-05	1.24E-03	0.09	0.03	0.01	0.02	0.02	0.01	0.27
Feb-23	0.07	0.00	0.11	1.64	0.03	3.90E-04	1.35	2.12	0.00	3.30	4.59	0.00	3.29	0.00	0.08	8.43E-05	5.62E-05	1.07E-03	0.07	0.01	0.01	0.01	0.02	0.01	0.25
Mar-23	0.02	0.00	0.04	0.55	0.03	1.30E-04	0.47	0.74	0.02	2.75	3.82	0.00	2.39	0.00	0.09	3.87E-05	2.58E-05	5.42E-04	0.01	0.08	3.81E-03	2.26E-03	0.02	4.80E-03	0.10
Apr-23	0.07	0.00	0.13	1.88	0.03	4.49E-04	1.42	2.23	0.00	3.28	4.56	0.00	5.29	0.00	0.08	1.21E-04	8.04E-05	1.41E-03	0.07	0.01	0.01	0.01	0.02	0.01	0.24
May-23	0.08	0.00	0.14	1.99	0.04	4.74E-04	1.61	2.53	0.00	3.44	4.78	0.00	4.69	0.00	0.10	1.35E-04	8.97E-05	1.45E-03	0.08	0.05	0.01	0.01	0.03	0.01	0.27
Jun-23	0.05	0.00	0.07	1.04	0.03	2.49E-04	0.91	1.43	4.99E-03	3.27	4.55	0.00	6.45	0.00	0.13	1.03E-04	6.84E-05	1.17E-03	0.05	0.05	0.01	0.01	0.02	0.01	0.20
Jul-23	0.08	0.00	0.14	2.07	0.03	4.94E-04	1.66	2.60	0.00	3.34	4.64	0.00	7.98	0.00	0.10	1.26E-04	8.39E-05	1.46E-03	0.08	0.03	0.01	0.02	0.02	0.01	0.28
Aug-23	0.07	0.00	0.12	1.75	0.03	4.18E-04	1.38	2.17	0.00	3.06	4.26	0.00	9.72	0.00	0.08	9.90E-05	6.60E-05	1.51E-03	0.08	0.14	0.01	0.01	0.02	0.01	0.24
Sep-23	0.06	0.00	0.12	1.78	0.02	4.26E-04	1.35	2.11	3.13E-03	0.82	1.13	0.00	4.22	0.00	0.14	4.84E-05	3.23E-05	6.80E-04	0.08	0.02	3.73E-03	0.01	0.01	4.69E-03	0.19
Oct-23	0.08	0.00	0.14	2.01	0.03	4.80E-04	1.57	2.46	0.00	3.34	4.64	0.00	8.95	0.00	0.11	1.03E-04	6.86E-05	1.35E-03	0.09	0.04	0.01	0.02	0.02	0.01	0.27
Nov-23	0.08	0.00	0.14	2.01	0.04	4.80E-04	1.57	2.46	0.00	3.51	4.89	0.00	8.41	0.00	0.10	1.26E-04	8.42E-05	1.39E-03	0.09	0.01	0.01	0.02	0.03	0.01	0.29
Dec-23	0.08	0.00	0.14	2.02	0.04	4.82E-04	1.54	2.41	0.00	3.44	4.78	0.00	7.57	0.00	0.12	1.32E-04	8.80E-05	1.37E-03	0.08	0.02	0.01	0.01	0.03	0.01	0.27
Jan-24	0.07	0.00	0.13	1.94	0.03	4.62E-04	1.50	5.65	0.01	2.96	4.12	0.00	8.21	0.00	0.11	1.39E-04	9.28E-05	1.30E-03	0.07	0.07	0.01	0.01	0.02	0.01	0.24
Feb-24	0.08	0.00	0.14	2.04	0.03	4.87E-04	1.57	5.91	0.00	3.20	4.45	0.00	8.88	0.00	0.09	1.32E-04	8.78E-05	1.35E-03	0.09	0.01	0.01	0.02	0.02	0.01	0.28
Mar-24	0.04	0.00	0.05	0.69	0.04	1.65E-04	0.66	2.48	0.01	3.50	4.86	0.00	3.45	0.00	0.06	8.18E-05	5.45E-05	6.49E-04	0.03	0.20	0.01	0.01	0.03	0.01	0.17
Apr-24	0.07	0.00	0.13	1.92	0.03	4.57E-04	1.55	5.82	0.00	3.20	4.45	0.00	6.35	0.00	0.10	1.26E-04	8.42E-05	1.25E-03	0.08	0.08	0.01	0.01	0.02	0.01	0.26

PM Baseline Actual Emission Rate Calculations

	Condensable PM/PM10/PM2.5 Monthly Emissions												*Baseline Period and Emissions*		
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	Backup NCG Incinerator	**Filterable PM**	**Total PM10**	**Total PM2.5**
													583.72	**438.56**	**352.93**
													Jan-18	**May-17**	**Jan-17**
													--	**--**	**--**
	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	**Dec-19**	**Apr-19**	**Dec-18**
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*		
Jan-15	0.42	0.49	0.08	2.95	0.13	0.10	3.51	0.05	0.42	4.14E-03	0.31	0.01			
Feb-15	0.42	0.46	0.08	2.99	2.92E-03	0.09	3.30	4.70E-03	0.43	0.01	0.36	0.01			
Mar-15	0.46	0.49	0.08	3.03	0.09	0.09	3.26	0.03	0.36	4.67E-03	0.32	0.01			
Apr-15	0.14	0.50	0.02	0.80	0.03	0.10	3.48	0.02	0.10	0.01	0.08	0.01			
May-15	0.32	0.49	0.06	2.09	0.03	0.09	3.36	0.02	0.28	3.90E-03	0.18	0.01			
Jun-15	0.42	0.46	0.08	2.98	0.03	0.08	2.98	0.01	0.39	3.86E-03	0.28	0.01			
Jul-15	0.47	0.58	0.09	3.19	0.01	0.10	3.78	0.00	0.49	4.04E-03	0.35	0.01			
Aug-15	0.48	0.58	0.08	2.96	0.02	0.10	3.72	2.00E-04	0.47	4.02E-03	0.32	0.01			
Sep-15	0.42	0.26	0.08	2.85	0.03	0.04	1.41	0.01	0.39	2.71E-03	0.31	0.01			
Oct-15	0.47	0.53	0.08	2.83	0.07	0.09	3.37	0.08	0.36	4.26E-03	0.30	0.01			
Nov-15	0.50	0.57	0.08	3.01	0.02	0.10	3.64	0.02	0.39	2.36E-03	0.32	0.01			
Dec-15	0.36	0.56	0.07	2.39	0.04	0.10	3.68	0.03	0.36	3.23E-03	0.25	0.01			
Jan-16	0.40	0.57	0.07	2.63	0.12	0.11	3.88	0.01	0.36	9.15E-07	0.26	0.01			
Feb-16	0.41	0.56	0.08	2.98	0.09	0.10	3.55	4.14E-03	0.31	9.90E-06	0.28	0.01			
Mar-16	0.37	0.60	0.09	3.17	0.06	0.11	3.85	0.00	0.26	0.00	0.31	0.01			
Apr-16	0.08	0.47	0.02	0.76	1.67E-03	0.10	3.44	0.00	0.08	1.26E-03	0.08	0.01			
May-16	0.38	0.43	0.09	3.12	2.08E-03	0.10	3.68	0.00	0.83	0.00	0.29	0.01			
Jun-16	0.44	0.45	0.08	3.00	0.02	0.10	3.65	0.00	0.74	0.00	0.29	0.01			
Jul-16	0.46	0.46	0.08	3.06	1.50E-03	0.10	3.64	0.01	0.71	0.00	0.29	0.01			
Aug-16	0.43	0.45	0.08	2.87	3.91E-04	0.10	3.52	4.87E-03	0.71	0.00	0.31	0.01			
Sep-16	0.40	0.26	0.08	2.83	4.39E-03	0.06	2.02	0.01	0.61	0.00	0.29	0.01			
Oct-16	0.41	0.45	0.08	2.86	4.16E-04	0.10	3.77	1.92E-04	0.76	0.00	0.31	0.01			
Nov-16	0.43	0.42	0.08	3.06	0.00	0.10	3.70	0.00	0.68	0.00	0.29	0.01			
Dec-16	0.45	0.46	0.08	2.81	2.29E-04	0.10	3.72	2.10E-03	0.65	0.00	0.25	0.01	447.20	384.19	323.49
Jan-17	0.48	0.47	0.09	3.18	0.00	0.10	3.53	0.01	0.63	0.00	0.32	0.01	448.95	384.63	323.48
Feb-17	0.41	0.46	0.08	2.71	0.00	0.10	3.46	0.01	0.66	0.00	0.29	0.01	449.74	384.57	323.19
Mar-17	0.09	0.51	0.01	0.42	0.00	0.11	4.00	0.00	0.79	0.00	0.06	0.01	447.54	382.40	321.55
Apr-17	0.02	0.47	1.43E-07	5.16E-06	0.00	0.10	3.63	2.07E-03	0.22	0.00	0.00	0.01	448.29	382.34	321.43
May-17	0.44	0.50	0.08	2.95	0.00	0.10	3.76	0.00	0.55	0.00	0.26	0.01	453.47	385.73	323.90
Jun-17	0.48	0.55	0.09	3.14	0.00	0.10	3.75	0.00	0.50	0.00	0.31	0.01	456.78	387.33	324.72
Jul-17	0.51	0.57	0.09	3.30	0.00	0.11	3.94	0.00	0.71	0.00	0.33	0.01	458.55	387.83	324.74
Aug-17	0.51	0.53	0.09	3.13	0.00	0.10	3.77	0.00	0.54	0.00	0.29	0.01	459.17	387.30	323.85
Sep-17	0.50	0.46	0.08	2.97	4.91E-03	0.05	1.80	0.01	0.55	0.00	0.30	0.01	460.06	387.68	323.94
Oct-17	0.47	0.46	0.08	2.83	0.01	0.10	3.60	0.03	0.61	0.00	0.27	0.01	461.81	388.25	324.11
Nov-17	0.53	0.47	0.09	3.15	0.00	0.10	3.77	0.00	0.69	0.00	0.32	0.01	464.09	389.18	324.54
Dec-17	0.45	0.46	0.08	2.74	1.56E-03	0.10	3.69	0.00	0.56	0.00	0.29	0.01	466.88	390.39	325.15
Jan-18	0.47	0.34	0.08	2.90	4.47E-03	0.07	2.64	0.03	0.56	0.00	0.32	0.01	475.15	393.96	327.48
Feb-18	0.43	0.45	0.08	2.80	0.00	0.10	3.57	0.00	0.51	0.00	0.29	0.01	486.44	399.78	331.61
Mar-18	0.48	0.48	0.08	3.00	0.00	0.11	3.80	0.00	0.60	0.00	0.30	0.01	499.07	406.77	336.85
Apr-18	0.17	0.44	0.02	0.84	2.75E-03	0.10	3.62	0.00	0.16	0.00	0.08	0.01	506.59	411.06	340.05
May-18	0.40	0.47	0.08	2.91	0.00	0.10	3.67	0.00	0.38	0.00	0.30	0.01	514.45	413.05	340.32
Jun-18	0.46	0.46	0.08	2.97	2.51E-03	0.10	3.50	0.00	0.70	0.00	0.30	0.01	523.93	416.86	342.39
Jul-18	0.49	0.49	0.09	3.11	0.00	0.10	3.64	0.00	0.66	0.00	0.31	0.01	534.59	421.50	345.13
Aug-18	0.49	0.51	0.08	2.99	4.00E-03	0.09	3.24	0.00	0.62	0.00	0.29	0.01	543.48	425.08	347.11
Sep-18	0.48	0.68	0.08	2.82	6.88E-04	0.06	2.03	0.00	0.34	0.00	0.29	0.01	550.98	427.94	348.48
Oct-18	0.45	0.49	0.09	3.12	0.00	0.09	3.30	0.00	0.49	0.00	0.33	0.01	559.24	430.65	349.59
Nov-18	0.45	0.50	0.08	2.94	3.84E-03	0.10	3.48	0.00	0.59	0.00	0.30	0.01	568.37	434.19	351.45
Dec-18	0.43	0.49	0.08	2.91	0.01	0.10	3.49	0.00	0.40	0.00	0.31	0.01	577.49	437.45	352.93
Jan-19	0.49	0.44	0.08	3.05	0.00	0.09	3.13	0.00	0.30	0.00	0.34	0.01	575.91	435.52	351.06
Feb-19	0.41	0.48	0.07	2.42	4.29E-03	0.09	3.36	0.00	0.48	0.00	0.25	0.01	574.74	434.42	350.10
Mar-19	0.44	0.57	0.08	2.98	1.32E-03	0.11	3.82	0.00	0.50	0.00	0.32	0.01	580.04	437.97	352.49
Apr-19	0.11	0.50	0.02	0.66	0.00	0.10	3.75	0.00	0.13	0.00	0.07	0.01	581.10	438.56	352.73
May-19	0.48	0.52	0.09	3.08	0.00	0.09	3.39	0.00	0.39	0.00	0.31	0.01	581.17	438.19	352.25
Jun-19	0.46	0.53	0.08	2.82	0.01	0.09	3.41	0.00	0.44	0.00	0.31	0.01	580.47	437.45	351.66
Jul-19	0.56	0.60	0.09	3.24	7.94E-04	0.11	3.82	0.00	0.54	0.00	0.35	0.01	580.92	437.36	351.42
Aug-19	0.48	0.60	0.07	2.50	0.01	0.09	3.43	0.00	0.39	0.00	0.26	0.01	579.14	435.66	349.96
Sep-19	0.45	0.55	0.07	2.68	0.00	0.06	2.24	7.94E-05	0.50	0.00	0.29	0.01	580.88	436.84	350.91
Oct-19	0.54	0.54	0.08	2.90	0.00	0.10	3.68	0.00	0.48	0.00	0.33	0.01	582.44	437.60	351.33
Nov-19	0.54	0.53	0.09	3.14	0.00	0.11	3.81	0.00	0.40	0.00	0.35	0.01	582.63	437.16	350.70
Dec-19	0.53	0.59	0.09	3.09	0.00	0.10	3.77	0.00	0.30	0.00	0.33	0.01	583.72	437.53	350.73
Jan-20	0.54	0.59	0.09	3.08	0.00	0.11	3.80	0.00	0.79	0.00	0.34	0.01	579.31	436.88	350.84
Feb-20	0.54	0.56	0.08	2.98	0.00	0.09	3.25	0.00	0.47	0.00	0.32	0.01	569.32	431.87	347.37
Mar-20	0.55	0.55	0.09	3.27	0.00	0.10	3.56	0.00	0.58	0.00	0.35	0.01	559.02	426.71	343.76
Apr-20	0.55	0.55	0.09	3.16	0.00	0.10	3.78	0.00	0.62	0.00	0.34	0.01	563.25	431.82	348.34
May-20	0.42	0.57	0.06	2.24	0.00	0.10	3.78	0.00	0.49	0.00	0.26	0.01	552.06	426.09	344.40
Jun-20	0.45	0.51	0.08	2.87	0.01	0.10	3.62	0.00	0.57	0.00	0.31	0.01	541.60	420.54	340.37

PM Baseline Actual Emission Rate Calculations

	Condensable PM/PM10/PM2.5 Monthly Emissions												*Baseline Period and Emissions*		
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	Backup NCG Incinerator	**Filterable PM**	**Total PM10**	**Total PM2.5**
													583.72	**438.56**	**352.93**
													Jan-18	**May-17**	**Jan-17**
													--	**--**	**--**
	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - BLS	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5 - Fuel Oil	Condensable PM/PM10/PM2.5	Condensable PM/PM10/PM2.5	**Dec-19**	**Apr-19**	**Dec-18**
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*		
Jul-20	0.48	0.53	0.08	2.89	0.01	0.11	3.80	0.00	0.50	0.00	0.31	0.01	530.49	414.53	335.95
Aug-20	0.52	0.54	0.09	3.20	3.84E-04	0.11	3.80	3.84E-04	0.36	0.00	0.34	0.01	521.97	410.16	332.71
Sep-20	0.46	0.37	0.07	2.51	0.00	0.06	2.18	0.00	0.46	0.00	0.25	0.01	513.20	405.78	329.77
Oct-20	0.47	0.45	0.07	2.52	7.41E-04	0.09	3.30	0.00	0.37	0.00	0.26	0.01	500.96	399.09	324.96
Nov-20	0.51	0.53	0.08	3.00	0.00	0.10	3.65	0.00	1.06	0.00	0.31	0.01	493.07	396.31	323.63
Dec-20	0.48	0.53	0.08	2.88	0.00	0.11	3.82	0.00	0.64	0.00	0.31	0.01	484.96	393.04	321.73
Jan-21	0.52	0.56	0.09	3.14	0.00	0.11	3.81	0.00	0.52	0.00	0.35	0.01	491.37	397.88	325.82
Feb-21	0.45	0.52	0.07	2.69	0.03	0.10	3.50	0.00	0.46	0.00	0.30	0.01	495.10	400.31	327.73
Mar-21	0.50	0.59	0.08	2.83	0.01	0.11	3.99	0.00	0.40	0.00	0.32	0.01	497.78	401.78	328.81
Apr-21	0.32	0.50	0.05	1.96	2.62E-03	0.09	3.30	0.00	0.36	0.00	0.21	0.01	503.85	406.50	332.81
May-21	0.47	0.52	0.09	3.07	0.00	0.10	3.60	0.00	0.58	0.00	0.33	0.01	508.49	409.82	335.63
Jun-21	0.47	0.42	0.08	2.98	0.00	0.08	2.78	0.00	0.59	0.00	0.27	0.01	510.69	411.33	337.04
Jul-21	0.44	0.52	0.07	2.55	0.00	0.10	3.60	0.00	0.51	0.00	0.26	0.01	510.20	410.55	336.45
Aug-21	0.51	0.50	0.08	2.89	6.09E-04	0.09	3.07	0.00	0.75	0.00	0.30	0.01	515.32	414.53	340.01
Sep-21	0.47	0.66	0.07	2.71	0.00	0.06	2.05	0.00	0.44	0.00	0.30	0.01	517.33	415.64	340.85
Oct-21	0.49	0.50	0.09	3.19	0.00	0.10	3.59	0.00	0.62	0.00	0.33	0.01	521.25	418.38	343.19
Nov-21	0.47	0.48	0.08	3.03	0.00	0.10	3.63	0.00	0.60	0.00	0.33	0.01	524.35	420.53	345.09
Dec-21	0.49	0.48	0.08	3.05	0.00	0.11	3.81	0.00	0.74	0.00	0.35	0.01	529.68	424.72	348.87
Jan-22	0.44	0.48	0.08	2.72	0.00	0.09	3.29	0.00	0.67	0.00	0.28	0.01	529.75	423.80	347.92
Feb-22	0.36	0.43	0.07	2.38	0.00	0.09	3.15	0.00	0.38	0.00	0.24	0.01	529.63	422.70	346.75
Mar-22	0.29	0.55	0.05	1.92	0.00	0.09	3.16	0.00	0.27	0.00	0.17	0.01	525.02	418.16	342.80
Apr-22	0.46	0.54	0.08	2.91	0.00	0.09	3.14	0.00	0.67	0.00	0.30	0.01	526.10	418.13	342.63
May-22	0.46	0.52	0.08	2.80	0.00	0.08	2.87	0.00	0.52	0.00	0.29	0.01	528.34	419.12	343.33
Jun-22	0.47	0.51	0.08	3.06	0.00	0.10	3.63	0.00	0.60	0.00	0.33	0.01	532.56	421.42	344.97
Jul-22	0.50	0.46	0.08	2.86	0.00	0.09	3.38	0.00	0.65	0.00	0.29	0.01	535.21	422.85	346.14
Aug-22	0.44	0.46	0.08	3.00	0.00	0.10	3.50	0.00	0.41	0.00	0.30	0.01	536.95	423.27	346.30
Sep-22	0.44	0.13	0.08	2.75	0.00	0.03	0.96	0.00	0.36	0.00	0.29	0.01	536.91	422.29	345.30
Oct-22	0.45	0.46	0.08	2.85	0.00	0.09	3.33	0.00	0.68	0.00	0.27	0.01	542.08	425.78	348.15
Nov-22	0.41	0.47	0.08	2.81	0.00	0.10	3.50	0.00	0.38	0.00	0.28	0.01	541.63	423.61	345.68
Dec-22	0.47	0.49	0.09	3.19	8.36E-06	0.10	3.46	0.00	0.46	0.00	0.33	0.01	544.20	424.29	345.83
Jan-23	0.41	0.52	0.08	2.87	0.00	0.09	3.15	0.00	0.34	0.00	0.31	0.01	539.72	420.27	342.24
Feb-23	0.37	0.47	0.07	2.45	0.00	0.09	3.42	0.00	0.27	0.00	0.26	0.01	537.47	417.77	339.79
Mar-23	0.12	0.42	0.02	0.86	0.03	0.08	2.85	0.00	0.20	0.00	0.04	0.01	525.91	408.52	332.18
Apr-23	0.43	0.51	0.07	2.58	0.00	0.09	3.40	0.00	0.44	0.00	0.25	0.01	528.95	410.63	333.80
May-23	0.45	0.61	0.08	2.93	0.00	0.10	3.56	0.00	0.39	0.00	0.29	0.01	526.98	408.57	331.78
Jun-23	0.24	0.50	0.05	1.65	0.01	0.09	3.39	0.00	0.54	0.00	0.18	0.01	524.14	406.01	329.53
Jul-23	0.47	0.50	0.08	3.00	0.00	0.10	3.46	0.00	0.66	0.00	0.31	0.01	526.06	407.37	330.60
Aug-23	0.40	0.48	0.07	2.51	0.00	0.09	3.17	0.00	0.81	0.00	0.27	0.01	525.07	406.48	329.84
Sep-23	0.40	0.32	0.07	2.44	4.97E-03	0.02	0.85	0.00	0.35	0.00	0.27	0.01	519.16	401.64	325.75
Oct-23	0.46	0.50	0.08	2.84	0.00	0.10	3.46	0.00	0.74	0.00	0.31	0.01	518.22	400.97	325.27
Nov-23	0.46	0.52	0.08	2.85	0.00	0.10	3.64	0.00	0.70	0.00	0.33	0.01	518.26	400.89	325.18
Dec-23	0.46	0.55	0.08	2.79	0.00	0.10	3.56	0.00	0.63	0.00	0.29	0.01	515.90	398.77	323.29
Jan-24	0.44	0.51	0.16	2.66	0.01	0.08	3.07	0.00	0.68	0.00	0.26	0.01	519.24	400.99	325.23
Feb-24	0.46	0.51	0.17	2.78	0.00	0.09	3.32	0.00	0.74	0.00	0.32	0.01	527.86	407.44	330.75
Mar-24	0.16	0.55	0.07	1.16	0.01	0.10	3.62	0.00	0.29	0.00	0.12	0.01	528.88	408.06	331.33
Apr-24	0.43	0.48	0.16	2.73	0.00	0.09	3.32	0.00	0.53	0.00	0.28	0.01	532.12	409.78	332.62

PM Baseline Actual Emission Rate Calculations

	Filterable PM																				
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																				
Jan-15																					
Feb-15																					
Mar-15																					
Apr-15																					
May-15																					
Jun-15																					
Jul-15																					
Aug-15																					
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Jan-16																					
Feb-16																					
Mar-16																					
Apr-16																					
May-16																					
Jun-16																					
Jul-16																					
Aug-16																					
Sep-16																					
Oct-16																					
Nov-16																					
Dec-16	9.16	0.10	1.46	29.07	3.87	0.07	20.05	64.65	49.32	84.67	71.32	0.02	0.02	0.18	3.68	0.65	39.08	0.22	0.37	0.13	69.71
Jan-17	9.17	0.10	1.47	28.12	3.93	0.07	19.43	65.09	49.19	86.93	71.82	0.02	0.02	0.19	3.69	0.66	39.09	0.22	0.37	0.13	69.76
Feb-17	9.10	0.10	1.47	27.11	4.00	0.07	18.69	65.18	49.26	89.28	72.42	0.02	0.02	0.19	3.65	0.66	38.97	0.21	0.37	0.13	69.35
Mar-17	8.82	0.09	1.41	25.49	4.08	0.07	17.47	63.18	49.65	92.38	74.11	0.02	0.02	0.20	3.51	0.65	38.45	0.21	0.37	0.13	67.68
Apr-17	8.74	0.09	1.39	24.98	4.14	0.07	17.12	62.54	49.68	94.83	74.60	0.02	0.02	0.20	3.46	0.71	38.27	0.20	0.37	0.13	67.14
May-17	8.84	0.09	1.41	24.37	4.21	0.07	16.82	63.51	49.89	97.53	75.58	0.03	0.02	0.21	3.51	0.70	38.57	0.21	0.37	0.13	67.82
Jun-17	8.89	0.09	1.42	23.42	4.31	0.07	16.18	63.97	50.35	100.51	75.70	0.03	0.02	0.21	3.53	0.70	38.83	0.21	0.38	0.13	68.24
Jul-17	8.87	0.09	1.42	22.31	4.40	0.07	15.47	64.42	50.40	103.18	76.17	0.03	0.02	0.21	3.51	0.70	38.82	0.21	0.38	0.13	68.13
Aug-17	8.83	0.09	1.43	21.17	4.46	0.07	14.83	64.89	50.37	105.65	75.98	0.03	0.02	0.21	3.50	0.70	38.71	0.20	0.38	0.13	67.88
Sep-17	8.82	0.09	1.44	20.23	4.58	0.07	14.21	65.30	50.59	107.09	76.31	0.03	0.02	0.22	3.49	0.69	38.71	0.20	0.38	0.13	67.82
Oct-17	8.79	0.09	1.44	19.09	4.62	0.07	13.56	65.56	50.64	109.54	77.17	0.03	0.02	0.22	3.47	0.65	38.72	0.20	0.38	0.13	67.69
Nov-17	8.79	0.09	1.45	17.91	4.66	0.07	12.91	66.02	50.67	112.05	78.16	0.03	0.02	0.23	3.47	0.64	38.75	0.20	0.38	0.13	67.74
Dec-17	8.84	0.09	1.46	17.20	4.70	0.07	12.43	66.56	50.60	114.43	78.68	0.03	0.02	0.23	3.50	0.65	38.87	0.20	0.38	0.13	68.04
Jan-18	8.87	0.09	1.47	17.55	4.61	0.07	12.86	73.63	50.10	115.95	78.24	0.03	0.02	0.23	3.53	0.66	38.64	0.21	0.37	0.13	68.04
Feb-18	8.89	0.09	1.47	17.80	4.57	0.07	13.19	79.94	50.34	120.19	78.00	0.03	0.02	0.24	3.53	0.65	38.67	0.21	0.37	0.13	68.12
Mar-18	8.88	0.09	1.49	18.26	4.53	0.07	13.55	86.78	50.57	124.63	78.37	0.03	0.02	0.24	3.53	0.57	38.69	0.21	0.38	0.13	68.09
Apr-18	8.88	0.09	1.50	18.54	4.52	0.07	13.67	88.85	50.96	129.16	78.39	0.03	0.02	0.24	3.53	0.51	38.76	0.21	0.38	0.13	68.17
May-18	8.89	0.09	1.51	18.77	4.54	0.07	14.01	95.47	51.26	133.50	74.40	0.03	0.02	0.24	3.53	0.49	38.75	0.21	0.38	0.13	68.20
Jun-18	8.90	0.09	1.51	19.02	4.55	0.07	14.40	102.45	51.46	137.46	72.03	0.03	0.02	0.24	3.54	0.50	38.75	0.21	0.38	0.13	68.24
Jul-18	8.92	0.09	1.51	19.30	4.56	0.07	14.81	109.86	51.75	141.75	69.75	0.03	0.02	0.23	3.55	0.52	38.80	0.21	0.38	0.13	68.37
Aug-18	8.90	0.09	1.52	19.65	4.59	0.07	15.23	117.05	51.88	145.22	67.33	0.03	0.02	0.23	3.54	0.50	38.71	0.21	0.38	0.13	68.22
Sep-18	8.90	0.09	1.53	20.03	4.77	0.07	15.59	123.68	52.05	147.63	64.57	0.03	0.02	0.23	3.54	0.52	38.75	0.21	0.38	0.13	68.27
Oct-18	8.90	0.09	1.54	20.32	4.79	0.07	16.05	131.37	52.08	150.93	61.38	0.03	0.02	0.23	3.55	0.52	38.55	0.21	0.37	0.13	68.13
Nov-18	8.92	0.09	1.54	20.57	4.83	0.07	16.41	138.15	52.26	154.76	59.04	0.03	0.02	0.23	3.56	0.52	38.53	0.21	0.37	0.13	68.18
Dec-18	8.97	0.09	1.54	20.71	4.84	0.07	16.81	145.13	52.43	158.59	56.26	0.03	0.02	0.23	3.59	0.52	38.53	0.21	0.37	0.13	68.44
Jan-19	8.99	0.10	1.54	21.28	4.78	0.07	17.07	145.85	51.72	157.85	54.75	0.03	0.02	0.22	3.61	0.51	38.42	0.21	0.37	0.13	68.44
Feb-19	8.94	0.09	1.54	21.76	4.74	0.07	17.23	146.26	51.18	157.51	54.07	0.03	0.02	0.22	3.59	0.43	38.28	0.21	0.36	0.13	68.12
Mar-19	9.22	0.10	1.59	22.74	4.71	0.08	18.03	149.32	50.52	157.03	52.85	0.03	0.02	0.22	3.73	0.42	38.89	0.22	0.36	0.13	69.88
Apr-19	9.30	0.10	1.61	22.98	4.67	0.08	18.23	150.08	50.07	156.96	52.41	0.03	0.02	0.21	3.77	0.38	39.12	0.22	0.37	0.13	70.41
May-19	9.34	0.10	1.61	23.60	4.63	0.08	18.54	151.02	49.34	156.25	51.76	0.02	0.02	0.21	3.79	0.39	39.14	0.22	0.36	0.13	70.63
Jun-19	9.33	0.10	1.61	24.12	4.57	0.08	18.74	151.52	48.63	155.58	51.62	0.02	0.02	0.21	3.79	0.39	38.99	0.22	0.36	0.13	70.48
Jul-19	9.36	0.10	1.62	24.82	4.52	0.08	19.03	152.34	48.01	155.19	50.98	0.02	0.02	0.21	3.81	0.40	39.07	0.22	0.36	0.13	70.68
Aug-19	9.32	0.10	1.61	25.33	4.49	0.08	19.14	152.49	47.31	154.51	50.40	0.02	0.02	0.21	3.79	0.40	38.91	0.22	0.36	0.13	70.38
Sep-19	9.32	0.10	1.60	25.79	4.47	0.08	19.33	152.96	47.29	154.97	50.33	0.02	0.01	0.21	3.78	0.41	39.06	0.22	0.36	0.13	70.48
Oct-19	9.40	0.10	1.61	26.50	4.44	0.08	19.61	153.81	46.82	154.84	49.83	0.02	0.01	0.21	3.82	0.40	39.27	0.22	0.36	0.13	70.98
Nov-19	9.43	0.10	1.62	27.15	4.42	0.08	19.90	154.65	46.31	154.67	48.59	0.02	0.01	0.20	3.84	0.41	39.35	0.22	0.36	0.13	71.19
Dec-19	9.48	0.10	1.63	27.87	4.41	0.08	20.26	155.80	45.79	154.55	47.42	0.02	0.01	0.20	3.86	0.41	39.54	0.23	0.37	0.13	71.57
Jan-20	9.54	0.10	1.64	28.10	4.41	0.08	20.32	149.31	46.26	154.12	48.06	0.02	0.01	0.20	3.87	0.48	39.96	0.23	0.37	0.13	72.13
Feb-20	9.57	0.10	1.66	28.43	4.35	0.08	20.38	143.05	45.87	150.51	47.86	0.02	0.01	0.20	3.89	0.49	39.93	0.23	0.37	0.13	72.23
Mar-20	9.61	0.10	1.67	28.65	4.28	0.08	20.46	136.42	45.51	146.83	47.68	0.02	0.01	0.20	3.92	0.49	39.96	0.23	0.37	0.13	72.45
Apr-20	9.90	0.11	1.73	29.74	4.22	0.08	21.20	137.35	45.36	143.95	49.13	0.02	0.01	0.21	4.06	0.49	40.68	0.24	0.37	0.13	74.32
May-20	9.86	0.11	1.73	29.81	4.17	0.08	20.99	129.78	45.18	140.94	49.38	0.02	0.01	0.20	4.04	0.43	40.59	0.24	0.37	0.13	74.06
Jun-20	9.87	0.11	1.73	29.82	4.09	0.08	20.95	122.76	45.02	138.08	48.89	0.02	0.01	0.20	4.04	0.44	40.63	0.24	0.37	0.13	74.16

PM Baseline Actual Emission Rate Calculations

	Filterable PM																				
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																				
Jul-20	9.88	0.11	1.73	29.83	4.02	0.08	20.88	115.27	44.88	135.20	48.29	0.02	0.01	0.20	4.05	0.42	40.70	0.24	0.37	0.13	74.24
Aug-20	9.94	0.11	1.73	29.94	3.93	0.08	20.94	108.61	44.96	133.30	47.34	0.02	0.01	0.20	4.07	0.43	40.96	0.24	0.37	0.13	74.71
Sep-20	9.91	0.11	1.73	29.92	3.74	0.08	20.84	101.71	44.91	131.77	47.68	0.02	0.01	0.20	4.05	0.40	40.93	0.24	0.37	0.13	74.51
Oct-20	9.84	0.11	1.73	30.02	3.64	0.08	20.65	93.72	44.70	128.90	47.21	0.02	0.01	0.20	4.01	0.49	40.83	0.23	0.38	0.13	74.11
Nov-20	9.85	0.11	1.74	30.22	3.56	0.08	20.67	86.99	44.56	126.16	48.59	0.02	0.01	0.20	4.01	0.49	40.91	0.24	0.38	0.13	74.21
Dec-20	9.86	0.11	1.75	30.39	3.48	0.08	20.66	80.22	44.51	123.67	49.27	0.02	0.01	0.20	4.02	0.58	41.05	0.24	0.38	0.13	74.38
Jan-21	9.89	0.11	1.75	30.76	3.34	0.08	21.28	82.60	44.82	124.91	50.19	0.02	0.01	0.20	4.02	0.64	41.32	0.24	0.38	0.13	74.71
Feb-21	9.94	0.11	1.76	31.13	3.19	0.08	21.87	84.88	44.85	125.40	49.90	0.02	0.01	0.20	4.04	0.64	41.41	0.24	0.38	0.14	74.97
Mar-21	9.94	0.11	1.77	31.55	3.01	0.09	22.36	86.77	44.90	125.99	49.17	0.01	0.01	0.20	4.05	0.66	41.45	0.24	0.38	0.14	75.04
Apr-21	10.09	0.11	1.80	32.26	2.86	0.09	23.12	89.70	44.61	125.69	50.29	0.02	0.01	0.20	4.12	0.67	41.67	0.24	0.38	0.14	75.87
May-21	10.11	0.11	1.80	32.49	2.69	0.09	23.70	91.93	44.67	126.29	51.07	0.02	0.01	0.21	4.13	0.68	41.76	0.24	0.38	0.14	76.04
Jun-21	10.06	0.11	1.80	32.78	2.53	0.09	24.32	94.28	44.29	125.71	51.63	0.02	0.01	0.21	4.11	0.69	41.65	0.24	0.38	0.14	75.71
Jul-21	9.95	0.11	1.78	32.74	2.34	0.09	24.60	95.36	44.12	125.75	51.30	0.02	0.01	0.21	4.06	0.70	41.36	0.24	0.38	0.14	75.02
Aug-21	9.99	0.11	1.79	33.10	2.15	0.09	25.26	97.89	43.87	125.57	52.92	0.02	0.01	0.21	4.08	0.87	41.42	0.24	0.38	0.14	75.26
Sep-21	10.00	0.11	1.79	33.41	1.98	0.09	25.79	99.90	43.74	125.51	52.43	0.02	0.01	0.21	4.08	0.89	41.39	0.24	0.38	0.14	75.28
Oct-21	10.00	0.11	1.78	33.57	1.81	0.09	26.48	102.54	43.64	125.71	52.95	0.02	0.01	0.21	4.08	0.90	41.39	0.24	0.38	0.14	75.25
Nov-21	9.98	0.11	1.77	33.66	1.65	0.09	27.02	104.62	43.49	125.80	53.79	0.02	0.01	0.21	4.07	0.91	41.34	0.24	0.38	0.14	75.11
Dec-21	10.00	0.11	1.77	33.82	1.46	0.09	27.59	106.80	43.45	126.19	55.85	0.02	0.01	0.21	4.08	0.91	41.36	0.24	0.38	0.14	75.23
Jan-22	9.92	0.11	1.75	33.55	1.59	0.08	27.40	108.96	42.72	125.74	56.28	0.02	0.01	0.22	4.05	0.84	41.11	0.24	0.38	0.13	74.70
Feb-22	9.83	0.11	1.72	33.05	1.70	0.08	27.15	110.51	42.22	125.94	56.45	0.02	0.01	0.22	4.00	0.82	40.92	0.23	0.38	0.13	74.15
Mar-22	9.63	0.10	1.68	32.31	1.88	0.08	26.67	110.66	41.57	125.66	55.80	0.02	0.01	0.21	3.91	0.83	40.41	0.23	0.38	0.13	72.86
Apr-22	9.58	0.10	1.67	32.04	2.06	0.08	26.52	113.15	40.79	124.98	56.71	0.02	0.01	0.22	3.89	0.89	40.21	0.23	0.37	0.13	72.50
May-22	9.59	0.10	1.68	32.15	2.22	0.08	26.63	116.53	39.90	123.82	57.41	0.02	0.01	0.22	3.90	0.94	40.03	0.23	0.37	0.13	72.42
Jun-22	9.61	0.10	1.68	32.20	2.38	0.08	26.61	119.70	39.39	124.26	58.17	0.02	0.01	0.22	3.91	0.93	40.08	0.23	0.37	0.13	72.53
Jul-22	9.58	0.10	1.68	32.23	2.52	0.08	26.53	122.40	38.68	123.96	59.37	0.02	0.01	0.22	3.90	1.03	39.93	0.23	0.37	0.13	72.27
Aug-22	9.53	0.10	1.67	32.00	2.65	0.08	26.39	125.02	38.03	123.88	60.03	0.02	0.01	0.22	3.88	1.05	39.75	0.23	0.37	0.13	71.93
Sep-22	9.54	0.10	1.67	31.95	2.63	0.08	26.40	127.95	37.26	122.01	60.11	0.02	0.01	0.22	3.89	1.13	39.48	0.23	0.36	0.13	71.78
Oct-22	9.55	0.10	1.66	31.87	2.79	0.08	26.43	131.09	36.80	122.44	61.87	0.02	0.01	0.23	3.90	1.15	39.53	0.23	0.36	0.13	71.88
Nov-22	9.51	0.10	1.65	31.58	2.92	0.08	26.30	133.55	36.23	122.60	60.14	0.02	0.01	0.22	3.88	1.15	39.38	0.23	0.36	0.13	71.61
Dec-22	9.53	0.10	1.64	31.54	3.08	0.08	26.32	136.99	35.55	122.41	60.09	0.02	0.01	0.22	3.90	1.07	39.33	0.23	0.36	0.13	71.64
Jan-23	9.47	0.10	1.63	30.85	3.25	0.08	25.58	134.78	35.08	123.31	59.57	0.02	0.01	0.22	3.87	1.03	39.03	0.23	0.36	0.13	71.16
Feb-23	9.43	0.10	1.61	30.28	3.40	0.08	24.95	132.85	34.89	125.20	58.89	0.02	0.01	0.22	3.86	1.03	38.99	0.23	0.36	0.13	70.96
Mar-23	9.11	0.10	1.56	29.03	3.54	0.08	23.81	128.66	34.20	125.24	58.09	0.02	0.01	0.22	3.70	1.05	38.06	0.22	0.35	0.12	68.79
Apr-23	9.16	0.10	1.57	28.99	3.71	0.08	23.57	128.28	34.12	127.36	58.95	0.02	0.01	0.22	3.73	1.03	38.23	0.22	0.35	0.12	69.16
May-23	9.13	0.10	1.57	28.53	3.91	0.08	22.88	126.27	33.96	129.38	58.40	0.02	0.01	0.22	3.71	1.03	38.18	0.22	0.35	0.12	68.96
Jun-23	9.03	0.10	1.53	27.60	4.07	0.07	21.89	122.80	34.15	132.19	58.70	0.02	0.01	0.22	3.66	1.03	38.01	0.21	0.36	0.12	68.40
Jul-23	9.08	0.10	1.54	27.28	4.24	0.07	21.48	121.86	33.94	134.00	60.11	0.02	0.01	0.22	3.68	1.03	38.07	0.22	0.35	0.12	68.66
Aug-23	9.04	0.10	1.52	26.60	4.40	0.07	20.77	119.66	33.86	135.98	61.21	0.02	0.01	0.22	3.67	0.92	37.96	0.21	0.35	0.12	68.40
Sep-23	8.99	0.10	1.51	26.04	4.50	0.07	20.13	117.71	33.20	134.78	61.14	0.02	0.01	0.22	3.65	0.88	37.61	0.21	0.35	0.12	67.94
Oct-23	8.96	0.10	1.51	25.55	4.67	0.07	19.36	115.37	33.00	136.62	62.52	0.02	0.01	0.22	3.64	0.87	37.43	0.21	0.35	0.12	67.67
Nov-23	8.95	0.10	1.50	25.10	4.84	0.07	18.68	113.34	32.87	138.75	63.70	0.02	0.01	0.22	3.64	0.86	37.39	0.21	0.35	0.12	67.60
Dec-23	8.88	0.10	1.50	24.61	5.02	0.07	17.96	111.20	32.60	140.47	63.78	0.02	0.01	0.21	3.60	0.85	37.22	0.21	0.35	0.12	67.15
Jan-24	8.85	0.09	1.50	24.36	4.92	0.07	17.92	113.59	32.83	140.82	64.96	0.02	0.01	0.21	3.59	0.87	37.08	0.21	0.34	0.12	66.90
Feb-24	8.93	0.10	1.51	24.38	4.85	0.07	18.00	117.09	33.23	141.91	67.74	0.02	0.01	0.21	3.63	0.87	37.27	0.21	0.35	0.12	67.40
Mar-24	8.88	0.10	1.49	23.94	4.72	0.07	17.77	116.55	33.78	143.58	68.27	0.02	0.01	0.21	3.60	0.94	37.21	0.21	0.35	0.12	67.12
Apr-24	8.85	0.09	1.49	23.62	4.57	0.07	17.69	118.75	34.18	144.68	68.58	0.02	0.01	0.21	3.59	0.91	37.18	0.21	0.35	0.12	66.98

PM Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																				
	Total PM10																				
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																				
Jan-15																					
Feb-15																					
Mar-15																					
Apr-15																					
May-15																					
Jun-15																					
Jul-15																					
Aug-15																					
Sep-15																					
Oct-15																					
Nov-15																					
Dec-15																					
Jan-16																					
Feb-16																					
Mar-16																					
Apr-16																					
May-16																					
Jun-16																					
Jul-16																					
Aug-16																					
Sep-16																					
Oct-16																					
Nov-16																					
Dec-16	4.87	0.05	1.46	33.85	7.00	0.03	20.95	65.11	49.84	83.06	76.92	0.01	0.01	0.09	5.52	0.76	18.84	0.20	0.35	0.12	15.14
Jan-17	4.87	0.05	1.47	32.94	7.01	0.03	20.33	65.36	49.81	84.16	77.52	0.01	0.01	0.09	5.53	0.76	18.84	0.20	0.35	0.12	15.15
Feb-17	4.84	0.05	1.47	31.92	7.03	0.03	19.59	65.26	49.88	85.41	78.23	0.01	0.01	0.09	5.48	0.76	18.79	0.20	0.35	0.12	15.07
Mar-17	4.68	0.04	1.41	30.11	7.07	0.03	18.33	62.91	50.35	87.29	80.14	0.01	0.01	0.09	5.26	0.76	18.53	0.19	0.35	0.12	14.71
Apr-17	4.64	0.04	1.39	29.54	7.07	0.03	17.98	62.18	50.41	88.57	80.68	0.01	0.01	0.09	5.19	0.81	18.45	0.19	0.35	0.12	14.59
May-17	4.69	0.04	1.41	28.99	7.10	0.03	17.69	63.07	50.64	90.10	81.80	0.01	0.01	0.10	5.26	0.81	18.59	0.19	0.35	0.12	14.74
Jun-17	4.72	0.04	1.42	28.07	7.18	0.03	17.04	63.35	51.14	91.95	81.96	0.01	0.01	0.10	5.29	0.80	18.72	0.19	0.36	0.12	14.83
Jul-17	4.71	0.04	1.42	26.98	7.20	0.03	16.34	63.63	51.20	93.35	82.54	0.01	0.01	0.10	5.27	0.80	18.71	0.19	0.36	0.12	14.80
Aug-17	4.68	0.04	1.43	25.85	7.20	0.03	15.71	63.93	51.18	94.60	82.39	0.01	0.01	0.10	5.24	0.81	18.66	0.19	0.36	0.12	14.75
Sep-17	4.68	0.04	1.44	24.96	7.34	0.03	15.08	64.18	51.43	95.50	82.79	0.01	0.01	0.10	5.23	0.79	18.66	0.19	0.36	0.12	14.74
Oct-17	4.66	0.04	1.44	23.81	7.31	0.03	14.44	64.27	51.54	96.79	83.78	0.01	0.01	0.10	5.21	0.76	18.66	0.19	0.36	0.12	14.71
Nov-17	4.67	0.04	1.45	22.65	7.28	0.03	13.78	64.55	51.58	98.09	84.92	0.01	0.01	0.11	5.21	0.75	18.68	0.19	0.36	0.12	14.72
Dec-17	4.69	0.04	1.46	21.99	7.24	0.03	13.31	64.97	51.54	99.26	85.54	0.01	0.01	0.11	5.24	0.75	18.74	0.19	0.36	0.12	14.79
Jan-18	4.71	0.04	1.47	22.37	7.09	0.03	13.74	68.53	51.11	99.40	85.20	0.01	0.01	0.11	5.29	0.76	18.63	0.19	0.35	0.12	14.78
Feb-18	4.72	0.04	1.47	22.63	7.03	0.03	14.07	71.51	51.41	101.51	85.05	0.01	0.01	0.11	5.30	0.76	18.64	0.19	0.35	0.12	14.80
Mar-18	4.71	0.04	1.49	23.15	6.95	0.03	14.43	74.77	51.70	103.68	85.60	0.01	0.01	0.11	5.29	0.67	18.65	0.19	0.35	0.12	14.80
Apr-18	4.72	0.04	1.50	23.48	6.93	0.03	14.56	75.84	52.09	106.01	85.65	0.01	0.01	0.11	5.29	0.61	18.68	0.19	0.35	0.12	14.81
May-18	4.72	0.04	1.51	23.72	6.96	0.03	14.89	79.00	52.39	108.16	81.45	0.01	0.01	0.11	5.30	0.59	18.68	0.19	0.35	0.12	14.82
Jun-18	4.72	0.04	1.51	23.97	6.96	0.03	15.28	82.43	52.60	110.05	79.05	0.01	0.01	0.11	5.31	0.60	18.68	0.19	0.35	0.12	14.83
Jul-18	4.73	0.04	1.51	24.27	6.98	0.03	15.69	86.13	52.89	112.16	76.75	0.01	0.01	0.11	5.32	0.62	18.70	0.20	0.35	0.12	14.86
Aug-18	4.72	0.04	1.52	24.64	7.02	0.03	16.11	89.75	53.01	113.74	74.29	0.01	0.01	0.11	5.31	0.60	18.66	0.19	0.35	0.12	14.82
Sep-18	4.73	0.04	1.53	25.06	7.29	0.03	16.47	93.02	53.18	114.93	71.39	0.01	0.01	0.11	5.31	0.62	18.68	0.19	0.35	0.12	14.83
Oct-18	4.73	0.04	1.54	25.37	7.32	0.04	16.93	96.96	53.21	116.33	68.07	0.01	0.01	0.11	5.33	0.62	18.58	0.20	0.35	0.12	14.80
Nov-18	4.74	0.04	1.54	25.63	7.37	0.04	17.29	100.26	53.38	118.11	65.68	0.01	0.01	0.11	5.34	0.62	18.57	0.20	0.35	0.12	14.81
Dec-18	4.77	0.04	1.54	25.76	7.38	0.04	17.69	103.77	53.55	119.89	62.78	0.01	0.01	0.11	5.39	0.63	18.57	0.20	0.35	0.12	14.87
Jan-19	4.77	0.05	1.54	26.33	7.34	0.04	17.95	104.06	52.83	119.32	61.10	0.01	0.01	0.11	5.41	0.61	18.52	0.20	0.34	0.12	14.87
Feb-19	4.75	0.04	1.54	26.81	7.35	0.04	18.11	104.12	52.29	119.10	60.34	0.01	0.01	0.10	5.38	0.53	18.45	0.20	0.34	0.12	14.80
Mar-19	4.90	0.05	1.59	27.96	7.37	0.04	18.94	106.92	51.62	118.77	58.98	0.01	0.01	0.10	5.59	0.52	18.74	0.21	0.34	0.12	15.18
Apr-19	4.95	0.05	1.61	28.25	7.37	0.04	19.15	107.62	51.17	118.80	58.48	0.01	0.01	0.10	5.65	0.48	18.86	0.21	0.34	0.12	15.29
May-19	4.97	0.05	1.61	28.89	7.37	0.04	19.46	108.15	50.44	118.26	57.76	0.01	0.01	0.10	5.69	0.49	18.87	0.21	0.34	0.12	15.34
Jun-19	4.97	0.05	1.61	29.40	7.34	0.04	19.66	108.25	49.72	117.76	57.59	0.01	0.01	0.10	5.69	0.49	18.79	0.21	0.34	0.12	15.31
Jul-19	4.98	0.05	1.62	30.13	7.34	0.04	19.95	108.62	49.10	117.51	56.86	0.01	0.01	0.10	5.71	0.50	18.83	0.21	0.34	0.12	15.35
Aug-19	4.96	0.05	1.61	30.61	7.37	0.04	20.05	108.39	48.38	117.00	56.21	0.01	0.01	0.10	5.69	0.50	18.75	0.21	0.34	0.12	15.28
Sep-19	4.96	0.05	1.60	31.05	7.40	0.04	20.23	108.48	48.37	117.44	56.10	0.01	0.01	0.10	5.67	0.52	18.83	0.21	0.34	0.12	15.31
Oct-19	5.00	0.05	1.61	31.80	7.44	0.04	20.52	108.93	47.90	117.40	55.55	0.01	0.01	0.10	5.73	0.50	18.93	0.21	0.34	0.12	15.42
Nov-19	5.02	0.05	1.62	32.45	7.46	0.04	20.81	109.34	47.40	117.34	54.16	0.01	0.01	0.10	5.75	0.51	18.97	0.21	0.34	0.12	15.46
Dec-19	5.05	0.05	1.63	33.21	7.52	0.04	21.17	110.08	46.92	117.32	52.86	0.01	0.01	0.09	5.79	0.51	19.06	0.21	0.34	0.12	15.54
Jan-20	5.08	0.05	1.64	33.48	7.65	0.04	21.23	106.96	47.37	117.67	53.61	0.01	0.01	0.09	5.81	0.58	19.26	0.21	0.35	0.12	15.67
Feb-20	5.09	0.05	1.66	33.86	7.68	0.04	21.29	103.95	46.97	115.72	53.39	0.01	0.01	0.09	5.84	0.59	19.25	0.21	0.35	0.12	15.69
Mar-20	5.11	0.05	1.67	34.11	7.69	0.04	21.38	100.81	46.61	113.78	53.21	0.01	0.01	0.09	5.87	0.59	19.26	0.22	0.35	0.12	15.73
Apr-20	5.27	0.05	1.73	35.39	7.73	0.04	22.15	102.43	46.46	112.44	54.89	0.01	0.01	0.10	6.09	0.59	19.61	0.22	0.35	0.12	16.14
May-20	5.25	0.05	1.73	35.48	7.77	0.04	21.93	98.34	46.29	111.00	55.19	0.01	0.01	0.10	6.05	0.53	19.57	0.22	0.35	0.12	16.08
Jun-20	5.26	0.05	1.73	35.48	7.77	0.04	21.89	94.82	46.12	109.65	54.64	0.01	0.01	0.09	6.07	0.54	19.58	0.22	0.35	0.12	16.10

PM Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																				
	Total PM10																				
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																				
Jul-20	5.26	0.05	1.73	35.49	7.77	0.04	21.81	91.00	45.98	108.30	53.96	0.01	0.01	0.09	6.07	0.52	19.62	0.22	0.35	0.12	16.12
Aug-20	5.30	0.05	1.73	35.61	7.76	0.04	21.88	87.81	46.07	107.64	52.87	0.01	0.01	0.09	6.11	0.53	19.74	0.22	0.35	0.13	16.22
Sep-20	5.27	0.05	1.73	35.59	7.54	0.04	21.78	84.24	46.02	106.95	53.28	0.01	0.01	0.09	6.07	0.50	19.73	0.22	0.35	0.13	16.18
Oct-20	5.24	0.05	1.73	35.70	7.49	0.04	21.58	79.99	45.81	105.53	52.75	0.01	0.01	0.09	6.02	0.59	19.68	0.22	0.35	0.13	16.09
Nov-20	5.24	0.05	1.74	35.93	7.48	0.04	21.60	76.69	45.68	104.26	54.36	0.01	0.00	0.09	6.02	0.59	19.72	0.22	0.35	0.13	16.12
Dec-20	5.25	0.05	1.75	36.13	7.48	0.04	21.59	73.32	45.64	103.19	55.16	0.01	0.00	0.09	6.02	0.68	19.79	0.22	0.36	0.13	16.15
Jan-21	5.26	0.05	1.75	36.52	7.49	0.04	22.21	74.53	45.96	104.15	56.19	0.01	0.00	0.09	6.03	0.73	19.92	0.22	0.36	0.13	16.23
Feb-21	5.29	0.05	1.76	36.90	7.47	0.04	22.80	75.81	45.98	104.46	55.89	0.01	0.00	0.09	6.07	0.74	19.96	0.22	0.36	0.13	16.28
Mar-21	5.29	0.05	1.77	37.35	7.42	0.04	23.29	76.68	46.02	104.84	55.11	0.01	0.00	0.09	6.07	0.75	19.98	0.22	0.36	0.13	16.30
Apr-21	5.37	0.05	1.80	38.16	7.36	0.04	24.07	78.78	45.72	104.46	56.34	0.01	0.00	0.10	6.19	0.76	20.08	0.23	0.36	0.13	16.47
May-21	5.38	0.05	1.80	38.40	7.31	0.04	24.65	79.88	45.78	104.86	57.22	0.01	0.00	0.10	6.20	0.78	20.13	0.23	0.36	0.13	16.51
Jun-21	5.35	0.05	1.80	38.69	7.20	0.04	25.27	81.12	45.40	104.26	57.85	0.01	0.00	0.10	6.16	0.79	20.07	0.23	0.36	0.13	16.44
Jul-21	5.30	0.05	1.78	38.58	7.10	0.04	25.54	81.31	45.22	104.17	57.51	0.01	0.00	0.10	6.09	0.80	19.94	0.22	0.36	0.13	16.29
Aug-21	5.32	0.05	1.79	38.96	6.99	0.04	26.21	82.75	44.99	103.91	59.31	0.01	0.00	0.10	6.12	0.97	19.97	0.22	0.36	0.13	16.34
Sep-21	5.32	0.05	1.79	39.29	7.00	0.04	26.73	83.76	44.85	103.78	58.79	0.01	0.00	0.10	6.13	0.98	19.95	0.22	0.36	0.13	16.35
Oct-21	5.32	0.05	1.78	39.41	6.92	0.04	27.43	85.21	44.75	103.84	59.38	0.01	0.00	0.10	6.12	1.00	19.95	0.22	0.36	0.13	16.34
Nov-21	5.31	0.05	1.77	39.48	6.84	0.04	27.97	86.19	44.60	103.79	60.32	0.01	0.00	0.10	6.11	1.00	19.92	0.22	0.36	0.13	16.31
Dec-21	5.32	0.05	1.77	39.62	6.73	0.04	28.54	87.25	44.56	104.00	62.61	0.01	0.01	0.10	6.13	1.01	19.93	0.22	0.36	0.13	16.34
Jan-22	5.28	0.05	1.75	39.29	6.71	0.04	28.35	88.13	43.82	103.52	62.98	0.01	0.01	0.10	6.07	0.94	19.82	0.22	0.36	0.13	16.22
Feb-22	5.23	0.05	1.72	38.71	6.69	0.04	28.09	88.60	43.32	103.57	63.10	0.01	0.01	0.10	6.01	0.92	19.73	0.22	0.36	0.13	16.10
Mar-22	5.12	0.05	1.68	37.83	6.75	0.04	27.59	88.00	42.66	103.23	62.30	0.01	0.01	0.10	5.86	0.93	19.48	0.22	0.35	0.12	15.82
Apr-22	5.10	0.05	1.67	37.51	6.79	0.04	27.44	89.10	41.87	102.58	63.23	0.01	0.01	0.10	5.83	0.99	19.38	0.21	0.35	0.12	15.75
May-22	5.11	0.05	1.68	37.65	6.82	0.04	27.55	91.06	40.97	101.54	63.94	0.01	0.01	0.10	5.85	1.04	19.30	0.21	0.35	0.12	15.73
Jun-22	5.11	0.05	1.68	37.70	6.87	0.04	27.54	92.72	40.47	101.76	64.72	0.01	0.01	0.10	5.86	1.03	19.32	0.22	0.35	0.12	15.75
Jul-22	5.10	0.05	1.68	37.74	6.88	0.04	27.46	94.04	39.76	101.41	66.00	0.01	0.01	0.11	5.84	1.13	19.25	0.21	0.35	0.12	15.70
Aug-22	5.07	0.05	1.67	37.47	6.88	0.04	27.31	95.24	39.11	101.22	66.68	0.01	0.01	0.11	5.81	1.14	19.16	0.21	0.35	0.12	15.62
Sep-22	5.08	0.05	1.67	37.41	6.75	0.04	27.32	96.80	38.32	99.68	66.71	0.01	0.01	0.11	5.84	1.22	19.03	0.21	0.34	0.12	15.59
Oct-22	5.09	0.05	1.66	37.31	6.81	0.04	27.36	98.52	37.86	99.91	68.62	0.01	0.01	0.11	5.85	1.25	19.05	0.21	0.34	0.12	15.61
Nov-22	5.07	0.05	1.65	36.97	6.82	0.04	27.23	99.65	37.28	99.91	66.55	0.01	0.01	0.11	5.83	1.25	18.98	0.21	0.34	0.12	15.55
Dec-22	5.07	0.05	1.64	36.93	6.85	0.04	27.25	101.50	36.60	99.64	66.41	0.01	0.01	0.11	5.84	1.16	18.96	0.21	0.34	0.12	15.56
Jan-23	5.04	0.05	1.63	36.18	6.88	0.04	26.51	100.28	36.12	99.75	65.80	0.01	0.01	0.10	5.81	1.12	18.81	0.21	0.33	0.12	15.45
Feb-23	5.02	0.05	1.61	35.57	6.91	0.04	25.87	99.18	35.95	100.65	65.03	0.01	0.01	0.10	5.78	1.12	18.79	0.21	0.34	0.12	15.41
Mar-23	4.85	0.05	1.56	34.13	6.87	0.04	24.71	96.13	35.23	100.10	64.12	0.01	0.01	0.10	5.55	1.14	18.35	0.20	0.33	0.12	14.94
Apr-23	4.88	0.05	1.57	34.15	6.93	0.04	24.48	96.25	35.15	101.19	65.02	0.01	0.01	0.10	5.59	1.12	18.43	0.21	0.33	0.12	15.02
May-23	4.86	0.05	1.57	33.67	7.04	0.04	23.79	95.18	34.99	102.18	64.38	0.01	0.01	0.10	5.56	1.12	18.40	0.20	0.33	0.12	14.98
Jun-23	4.81	0.05	1.53	32.63	7.12	0.03	22.78	92.81	35.18	103.87	64.65	0.01	0.01	0.10	5.49	1.12	18.32	0.20	0.33	0.12	14.86
Jul-23	4.83	0.05	1.54	32.33	7.17	0.04	22.37	92.57	34.97	104.70	66.14	0.01	0.01	0.10	5.52	1.12	18.35	0.20	0.33	0.12	14.91
Aug-23	4.81	0.05	1.52	31.59	7.21	0.03	21.65	91.28	34.90	105.73	67.26	0.01	0.01	0.10	5.50	1.01	18.30	0.20	0.33	0.12	14.86
Sep-23	4.78	0.05	1.51	31.00	7.07	0.03	21.01	90.19	34.22	104.53	67.15	0.01	0.01	0.10	5.48	0.98	18.13	0.20	0.33	0.12	14.76
Oct-23	4.77	0.05	1.51	30.49	7.13	0.03	20.24	88.86	34.01	105.37	68.59	0.01	0.01	0.10	5.46	0.97	18.04	0.20	0.33	0.11	14.70
Nov-23	4.76	0.05	1.50	30.03	7.20	0.03	19.55	87.77	33.88	106.44	69.81	0.01	0.01	0.10	5.46	0.95	18.02	0.20	0.33	0.11	14.68
Dec-23	4.72	0.05	1.50	29.53	7.29	0.03	18.84	86.57	33.61	107.16	69.84	0.01	0.01	0.10	5.41	0.95	17.94	0.20	0.33	0.11	14.58
Jan-24	4.71	0.04	1.50	29.28	7.27	0.03	18.83	87.74	33.83	107.23	71.02	0.01	0.01	0.10	5.39	0.96	17.87	0.20	0.32	0.11	14.53
Feb-24	4.75	0.05	1.51	29.35	7.29	0.03	18.97	89.66	34.23	107.85	73.98	0.01	0.01	0.10	5.45	0.96	17.96	0.20	0.32	0.11	14.64
Mar-24	4.72	0.04	1.49	28.84	7.25	0.03	18.74	89.03	34.78	108.91	74.52	0.01	0.01	0.10	5.40	1.04	17.94	0.20	0.33	0.11	14.58
Apr-24	4.71	0.04	1.49	28.51	7.17	0.03	18.70	90.03	35.18	109.54	74.75	0.01	0.01	0.10	5.38	1.01	17.92	0.20	0.33	0.11	14.55

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

PM Baseline Actual Emission Rate Calculations

	Total PM2.5																				
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																				
Jan-15																					
Feb-15																					
Mar-15																					
Apr-15																					
May-15																					
Jun-15																					
Jul-15																					
Aug-15																					
Sep-15																					
Oct-15																					
Nov-15																					
Dec-15																					
Jan-16																					
Feb-16																					
Mar-16																					
Apr-16																					
May-16																					
Jun-16																					
Jul-16																					
Aug-16																					
Sep-16																					
Oct-16																					
Nov-16																					
Dec-16	0.87	0.01	1.46	33.85	6.17	0.01	20.95	54.92	49.84	69.75	76.92	0.00	0.00	0.01	4.23	0.76	0.08	0.17	0.29	0.10	3.09
Jan-17	0.87	0.01	1.47	32.94	6.17	0.01	20.33	55.11	49.81	70.50	77.52	0.00	0.00	0.01	4.24	0.76	0.08	0.17	0.29	0.10	3.09
Feb-17	0.87	0.01	1.47	31.92	6.17	0.01	19.59	55.00	49.88	71.38	78.23	0.00	0.00	0.01	4.20	0.76	0.08	0.17	0.29	0.10	3.07
Mar-17	0.84	0.01	1.41	30.11	6.19	0.00	18.33	52.97	50.35	72.77	80.14	0.00	0.00	0.01	4.03	0.76	0.08	0.16	0.29	0.10	3.00
Apr-17	0.83	0.01	1.39	29.54	6.18	0.00	17.98	52.33	50.41	73.67	80.68	0.00	0.00	0.01	3.98	0.81	0.08	0.16	0.29	0.10	2.97
May-17	0.84	0.01	1.41	28.99	6.19	0.00	17.69	53.07	50.64	74.77	81.80	0.00	0.00	0.01	4.03	0.81	0.08	0.16	0.29	0.10	3.00
Jun-17	0.84	0.01	1.42	28.07	6.25	0.00	17.04	53.29	51.14	76.16	81.96	0.00	0.00	0.02	4.05	0.80	0.08	0.16	0.29	0.10	3.02
Jul-17	0.84	0.01	1.42	26.98	6.26	0.00	16.34	53.49	51.20	77.14	82.54	0.00	0.00	0.02	4.04	0.80	0.08	0.16	0.30	0.10	3.02
Aug-17	0.84	0.01	1.43	25.85	6.24	0.00	15.71	53.72	51.18	78.00	82.39	0.00	0.00	0.02	4.02	0.81	0.08	0.16	0.29	0.10	3.00
Sep-17	0.84	0.01	1.44	24.96	6.35	0.00	15.08	53.90	51.43	78.68	82.79	0.00	0.00	0.02	4.01	0.79	0.08	0.16	0.30	0.10	3.00
Oct-17	0.83	0.01	1.44	23.81	6.32	0.00	14.44	53.95	51.54	79.59	83.78	0.00	0.00	0.02	3.99	0.76	0.08	0.16	0.30	0.10	3.00
Nov-17	0.83	0.01	1.45	22.65	6.27	0.00	13.78	54.17	51.58	80.49	84.92	0.00	0.00	0.02	3.99	0.75	0.08	0.16	0.30	0.10	3.00
Dec-17	0.84	0.01	1.46	21.99	6.23	0.01	13.31	54.50	51.54	81.29	85.54	0.00	0.00	0.02	4.02	0.75	0.08	0.16	0.30	0.10	3.01
Jan-18	0.84	0.01	1.47	22.37	6.10	0.01	13.74	56.96	51.11	81.19	85.20	0.00	0.00	0.02	4.06	0.76	0.08	0.16	0.29	0.10	3.01
Feb-18	0.84	0.01	1.47	22.63	6.04	0.01	14.07	58.95	51.41	82.63	85.05	0.00	0.00	0.02	4.06	0.76	0.08	0.16	0.29	0.10	3.02
Mar-18	0.84	0.01	1.49	23.15	5.98	0.01	14.43	61.14	51.70	84.11	85.60	0.00	0.00	0.02	4.06	0.67	0.08	0.16	0.29	0.10	3.01
Apr-18	0.84	0.01	1.50	23.48	5.96	0.01	14.56	61.88	52.09	85.73	85.65	0.00	0.00	0.02	4.06	0.61	0.08	0.16	0.29	0.10	3.02
May-18	0.84	0.01	1.51	23.72	5.98	0.01	14.89	64.01	52.39	87.20	81.45	0.00	0.00	0.02	4.06	0.59	0.08	0.16	0.29	0.10	3.02
Jun-18	0.85	0.01	1.51	23.97	5.98	0.01	15.28	66.35	52.60	88.46	79.05	0.00	0.00	0.02	4.07	0.60	0.08	0.16	0.29	0.10	3.02
Jul-18	0.85	0.01	1.51	24.27	6.00	0.01	15.69	68.88	52.89	89.90	76.75	0.00	0.00	0.02	4.08	0.62	0.08	0.16	0.29	0.10	3.03
Aug-18	0.85	0.01	1.52	24.64	6.03	0.01	16.11	71.37	53.01	90.93	74.29	0.00	0.00	0.02	4.07	0.60	0.08	0.16	0.29	0.10	3.02
Sep-18	0.85	0.01	1.53	25.06	6.26	0.01	16.47	73.60	53.18	91.75	71.39	0.00	0.00	0.02	4.07	0.62	0.08	0.16	0.29	0.10	3.02
Oct-18	0.85	0.01	1.54	25.37	6.29	0.01	16.93	76.33	53.21	92.63	68.07	0.00	0.00	0.02	4.08	0.62	0.08	0.16	0.29	0.10	3.02
Nov-18	0.85	0.01	1.54	25.63	6.33	0.01	17.29	78.57	53.38	93.81	65.68	0.00	0.00	0.02	4.09	0.62	0.08	0.16	0.29	0.10	3.02
Dec-18	0.85	0.01	1.54	25.76	6.34	0.01	17.69	80.98	53.55	94.99	62.78	0.00	0.00	0.02	4.13	0.63	0.08	0.16	0.29	0.10	3.03
Jan-19	0.86	0.01	1.54	26.33	6.32	0.01	17.95	81.16	52.83	94.53	61.10	0.00	0.00	0.02	4.15	0.61	0.08	0.16	0.29	0.10	3.03
Feb-19	0.85	0.01	1.54	26.81	6.33	0.01	18.11	81.16	52.29	94.37	60.34	0.00	0.00	0.02	4.12	0.53	0.08	0.16	0.28	0.10	3.02
Mar-19	0.88	0.01	1.59	27.96	6.35	0.01	18.94	83.48	51.62	94.11	58.98	0.00	0.00	0.02	4.29	0.52	0.08	0.17	0.28	0.10	3.09
Apr-19	0.89	0.01	1.61	28.25	6.37	0.01	19.15	84.06	51.17	94.15	58.48	0.00	0.00	0.02	4.33	0.48	0.08	0.17	0.29	0.10	3.12
May-19	0.89	0.01	1.61	28.89	6.38	0.01	19.46	84.44	50.44	93.73	57.76	0.00	0.00	0.02	4.36	0.49	0.08	0.17	0.28	0.10	3.13
Jun-19	0.89	0.01	1.61	29.40	6.36	0.01	19.66	84.46	49.72	93.33	57.59	0.00	0.00	0.02	4.36	0.49	0.08	0.17	0.28	0.10	3.12
Jul-19	0.89	0.01	1.62	30.13	6.37	0.01	19.95	84.70	49.10	93.14	56.86	0.00	0.00	0.01	4.38	0.50	0.08	0.17	0.28	0.10	3.13
Aug-19	0.89	0.01	1.61	30.61	6.40	0.01	20.05	84.45	48.38	92.73	56.21	0.00	0.00	0.01	4.36	0.50	0.08	0.17	0.28	0.10	3.12
Sep-19	0.89	0.01	1.60	31.05	6.44	0.01	20.23	84.46	48.37	93.11	56.10	0.00	0.00	0.01	4.35	0.52	0.08	0.17	0.28	0.10	3.12
Oct-19	0.90	0.01	1.61	31.80	6.48	0.01	20.52	84.78	47.90	93.09	55.55	0.00	0.00	0.01	4.39	0.50	0.08	0.17	0.28	0.10	3.14
Nov-19	0.90	0.01	1.62	32.45	6.51	0.01	20.81	85.06	47.40	93.05	54.16	0.00	0.00	0.01	4.41	0.51	0.08	0.18	0.28	0.10	3.15
Dec-19	0.91	0.01	1.63	33.21	6.57	0.01	21.17	85.62	46.92	93.05	52.86	0.00	0.00	0.01	4.44	0.51	0.08	0.18	0.29	0.10	3.17
Jan-20	0.91	0.01	1.64	33.48	6.70	0.01	21.23	83.51	47.37	93.47	53.61	0.00	0.00	0.01	4.45	0.58	0.08	0.18	0.29	0.10	3.20
Feb-20	0.91	0.01	1.66	33.86	6.75	0.01	21.29	81.49	46.97	92.09	53.39	0.00	0.00	0.01	4.47	0.59	0.08	0.18	0.29	0.10	3.20
Mar-20	0.92	0.01	1.67	34.11	6.77	0.01	21.38	79.39	46.61	90.73	53.21	0.00	0.00	0.01	4.50	0.59	0.08	0.18	0.29	0.10	3.21
Apr-20	0.95	0.01	1.73	35.39	6.83	0.01	22.15	80.86	46.46	89.84	54.89	0.00	0.00	0.01	4.67	0.59	0.08	0.19	0.29	0.10	3.29
May-20	0.94	0.01	1.73	35.48	6.87	0.01	21.93	77.97	46.29	88.87	55.19	0.00	0.00	0.01	4.64	0.53	0.08	0.18	0.29	0.10	3.28
Jun-20	0.94	0.01	1.73	35.48	6.89	0.01	21.89	75.54	46.12	87.97	54.64	0.00	0.00	0.01	4.65	0.54	0.08	0.18	0.29	0.10	3.29

PM Baseline Actual Emission Rate Calculations

	Total PM2.5																			
	Modified and Affected Woodyard Sources	Chip Conveyor 3	No. 7 Slaker	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Mill - Reburned and Purchased Lime Silos/Bins	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler Fly Ash Storage	No. 7 Power Boiler Bottom Ash Storage	No. 7 Mill - Bark Surge Bin	No. 7 Pulp Dryer	Backup NCG Incinerator	WWT Cooling Towers Nos. 1, 2, and 3	No. 7 Powerhouse Cooling Tower	No. 8 Powerhouse Cooling Tower	Chemical Prep Cooling Tower	Truck Traffic - Affected Paths Only
	tons (24-mo Rolling total)																			
Jul-20	0.95	0.01	1.73	35.49	6.90	0.01	21.81	72.90	45.98	87.08	53.96	0.00	0.00	0.01	4.65	0.52	0.08	0.18	0.29	0.10	3.29
Aug-20	0.95	0.01	1.73	35.61	6.91	0.01	21.88	70.76	46.07	86.71	52.87	0.00	0.00	0.01	4.68	0.53	0.08	0.19	0.29	0.10	3.31
Sep-20	0.95	0.01	1.73	35.59	6.74	0.01	21.78	68.27	46.02	86.27	53.28	0.00	0.00	0.01	4.66	0.50	0.08	0.18	0.29	0.10	3.30
Oct-20	0.94	0.01	1.73	35.70	6.71	0.01	21.58	65.27	45.81	85.30	52.75	0.00	0.00	0.01	4.61	0.59	0.08	0.18	0.29	0.10	3.28
Nov-20	0.94	0.01	1.74	35.93	6.72	0.01	21.60	63.03	45.68	84.45	54.36	0.00	0.00	0.01	4.62	0.59	0.08	0.18	0.29	0.10	3.29
Dec-20	0.94	0.01	1.75	36.13	6.73	0.01	21.59	60.72	45.64	83.78	55.16	0.00	0.00	0.01	4.62	0.68	0.08	0.18	0.30	0.10	3.30
Jan-21	0.94	0.01	1.75	36.52	6.78	0.01	22.21	61.56	45.96	84.54	56.19	0.00	0.00	0.01	4.62	0.73	0.08	0.18	0.30	0.11	3.31
Feb-21	0.95	0.01	1.76	36.90	6.78	0.01	22.80	62.48	45.98	84.77	55.89	0.00	0.00	0.01	4.65	0.74	0.08	0.18	0.30	0.11	3.32
Mar-21	0.95	0.01	1.77	37.35	6.77	0.01	23.29	63.05	46.02	85.06	55.11	0.00	0.00	0.01	4.65	0.75	0.08	0.18	0.30	0.11	3.32
Apr-21	0.96	0.01	1.80	38.16	6.75	0.01	24.07	64.69	45.72	84.73	56.34	0.00	0.00	0.01	4.74	0.76	0.08	0.19	0.30	0.11	3.36
May-21	0.97	0.01	1.80	38.40	6.73	0.01	24.65	65.44	45.78	85.04	57.22	0.00	0.00	0.01	4.75	0.78	0.08	0.19	0.30	0.11	3.37
Jun-21	0.96	0.01	1.80	38.69	6.66	0.01	25.27	66.32	45.40	84.53	57.85	0.00	0.00	0.01	4.72	0.79	0.08	0.19	0.30	0.11	3.35
Jul-21	0.95	0.01	1.78	38.58	6.60	0.01	25.54	66.34	45.22	84.43	57.51	0.00	0.00	0.01	4.67	0.80	0.08	0.19	0.30	0.11	3.32
Aug-21	0.96	0.01	1.79	38.96	6.53	0.01	26.21	67.38	44.99	84.19	59.31	0.00	0.00	0.01	4.69	0.97	0.08	0.19	0.30	0.11	3.33
Sep-21	0.96	0.01	1.79	39.29	6.57	0.01	26.73	68.07	44.85	84.08	58.79	0.00	0.00	0.02	4.70	0.98	0.08	0.19	0.30	0.11	3.34
Oct-21	0.96	0.01	1.78	39.41	6.53	0.01	27.43	69.11	44.75	84.10	59.38	0.00	0.00	0.02	4.69	1.00	0.08	0.19	0.30	0.11	3.33
Nov-21	0.95	0.01	1.77	39.48	6.49	0.01	27.97	69.76	44.60	84.04	60.32	0.00	0.00	0.02	4.68	1.00	0.08	0.19	0.30	0.11	3.33
Dec-21	0.96	0.01	1.77	39.62	6.41	0.01	28.54	70.48	44.56	84.19	62.61	0.00	0.00	0.02	4.70	1.01	0.08	0.19	0.30	0.11	3.33
Jan-22	0.95	0.01	1.75	39.29	6.37	0.01	28.35	71.02	43.82	83.78	62.98	0.00	0.00	0.02	4.66	0.94	0.08	0.18	0.29	0.10	3.31
Feb-22	0.94	0.01	1.72	38.71	6.32	0.01	28.09	71.25	43.32	83.80	63.10	0.00	0.00	0.02	4.60	0.92	0.08	0.18	0.29	0.10	3.29
Mar-22	0.92	0.01	1.68	37.83	6.34	0.01	27.59	70.63	42.66	83.50	62.30	0.00	0.00	0.02	4.49	0.93	0.08	0.18	0.29	0.10	3.23
Apr-22	0.91	0.01	1.67	37.51	6.35	0.01	27.44	71.34	41.87	82.95	63.23	0.00	0.00	0.02	4.47	0.99	0.08	0.18	0.29	0.10	3.21
May-22	0.92	0.01	1.68	37.65	6.35	0.01	27.55	72.76	40.97	82.10	63.94	0.00	0.00	0.02	4.49	1.04	0.08	0.18	0.29	0.10	3.21
Jun-22	0.92	0.01	1.68	37.70	6.36	0.01	27.54	73.93	40.47	82.26	64.72	0.00	0.00	0.02	4.50	1.03	0.08	0.18	0.29	0.10	3.21
Jul-22	0.91	0.01	1.68	37.74	6.34	0.01	27.46	74.82	39.76	81.94	66.00	0.00	0.00	0.02	4.48	1.13	0.08	0.18	0.29	0.10	3.20
Aug-22	0.91	0.01	1.67	37.47	6.31	0.01	27.31	75.61	39.11	81.77	66.68	0.00	0.00	0.02	4.46	1.14	0.08	0.18	0.29	0.10	3.19
Sep-22	0.91	0.01	1.67	37.41	6.19	0.01	27.32	76.71	38.32	80.52	66.71	0.00	0.00	0.02	4.48	1.22	0.08	0.18	0.28	0.10	3.18
Oct-22	0.91	0.01	1.66	37.31	6.21	0.01	27.36	77.94	37.86	80.69	68.62	0.00	0.00	0.02	4.49	1.25	0.08	0.18	0.28	0.10	3.18
Nov-22	0.91	0.01	1.65	36.97	6.19	0.01	27.23	78.68	37.28	80.66	66.55	0.00	0.00	0.02	4.47	1.25	0.08	0.18	0.28	0.10	3.17
Dec-22	0.91	0.01	1.64	36.93	6.19	0.01	27.25	80.00	36.60	80.42	66.41	0.00	0.00	0.02	4.48	1.16	0.08	0.18	0.28	0.10	3.17
Jan-23	0.91	0.01	1.63	36.18	6.19	0.01	26.51	79.11	36.12	80.39	65.80	0.00	0.00	0.02	4.46	1.12	0.08	0.18	0.28	0.10	3.15
Feb-23	0.90	0.01	1.61	35.57	6.18	0.01	25.87	78.32	35.95	80.99	65.03	0.00	0.00	0.02	4.43	1.12	0.08	0.18	0.28	0.10	3.14
Mar-23	0.87	0.01	1.56	34.13	6.11	0.01	24.71	75.93	35.23	80.44	64.12	0.00	0.00	0.02	4.26	1.14	0.08	0.17	0.28	0.10	3.05
Apr-23	0.87	0.01	1.57	34.15	6.13	0.01	24.48	76.11	35.15	81.20	65.02	0.00	0.00	0.02	4.28	1.12	0.08	0.17	0.28	0.10	3.06
May-23	0.87	0.01	1.57	33.67	6.20	0.01	23.79	75.36	34.99	81.86	64.38	0.00	0.00	0.02	4.26	1.12	0.08	0.17	0.28	0.10	3.05
Jun-23	0.86	0.01	1.53	32.63	6.25	0.01	22.78	73.52	35.18	83.12	64.65	0.00	0.00	0.02	4.21	1.12	0.08	0.17	0.28	0.10	3.03
Jul-23	0.87	0.01	1.54	32.33	6.26	0.01	22.37	73.43	34.97	83.66	66.14	0.00	0.00	0.02	4.24	1.12	0.08	0.17	0.28	0.10	3.04
Aug-23	0.86	0.01	1.52	31.59	6.27	0.01	21.65	72.50	34.90	84.38	67.26	0.00	0.00	0.02	4.21	1.01	0.08	0.17	0.28	0.10	3.03
Sep-23	0.86	0.01	1.51	31.00	6.11	0.01	21.01	71.71	34.22	83.37	67.15	0.00	0.00	0.02	4.20	0.98	0.08	0.17	0.27	0.10	3.01
Oct-23	0.86	0.01	1.51	30.49	6.12	0.01	20.24	70.75	34.01	83.92	68.59	0.00	0.00	0.02	4.19	0.97	0.08	0.17	0.27	0.10	3.00
Nov-23	0.85	0.01	1.50	30.03	6.16	0.01	19.55	69.97	33.88	84.65	69.81	0.00	0.00	0.02	4.18	0.95	0.08	0.17	0.27	0.10	2.99
Dec-23	0.85	0.01	1.50	29.53	6.21	0.01	18.84	69.11	33.61	85.11	69.84	0.00	0.00	0.02	4.14	0.95	0.08	0.16	0.27	0.09	2.97
Jan-24	0.84	0.01	1.50	29.28	6.22	0.01	18.83	69.90	33.83	85.12	71.02	0.00	0.00	0.02	4.13	0.96	0.08	0.16	0.27	0.09	2.96
Feb-24	0.85	0.01	1.51	29.35	6.25	0.01	18.97	71.28	34.23	85.57	73.98	0.00	0.00	0.02	4.17	0.96	0.08	0.17	0.27	0.09	2.99
Mar-24	0.85	0.01	1.49	28.84	6.23	0.01	18.74	70.72	34.78	86.37	74.52	0.00	0.00	0.02	4.14	1.04	0.08	0.16	0.27	0.09	2.97
Apr-24	0.84	0.01	1.49	28.51	6.19	0.01	18.70	71.38	35.18	86.83	74.75	0.00	0.00	0.02	4.13	1.01	0.08	0.16	0.27	0.09	2.97

Lead Baseline Actual Emission Rate Calculations

	Production Data												Emission Factors												
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	NCG Incinerator Natural Gas Usage	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Lime Production	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Natural Gas Usage	Lead	Lead	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead
	tons CaO	*tons CaO*	*tons BLS*	*MMBtu (FO)*	*MMBtu (NG)*	*tons BLS*	*MMBtu (FO)*	*MMBtu (NG)*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*Incin. MMBTU*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu (NG)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu (NG)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*
Jan-15	8,903	11,396	71,044	27,030	52,081	84,477	10,842	49,496	215,197	891	84,100	3,641	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-15	8,899	10,547	72,081	630	14,675	79,314	1,012	56,138	218,105	2,765	40,570	3,230	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-15	9,613	11,280	72,947	18,803	30,638	78,419	7,251	37,459	181,048	1,006	105,271	3,327	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-15	3,036	11,527	19,335	7,224	9,055	83,689	4,468	44,814	50,339	2,579	42,803	3,376	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-15	6,696	11,266	50,315	5,737	31,629	80,831	3,893	37,642	144,507	840	67,451	3,243	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-15	8,826	10,641	71,717	7,054	21,347	71,665	2,244	27,933	197,508	831	13,037	3,154	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-15	9,971	13,287	76,795	1,487	2,978	90,875	0	7,527	250,965	871	19,902	3,242	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-15	10,154	13,411	71,276	4,284	10,290	89,606	43	8,608	237,148	866	8,333	3,273	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-15	8,918	5,940	68,634	6,765	14,515	34,033	3,002	18,667	199,595	583	23,371	3,057	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-15	9,844	12,305	68,184	15,800	45,732	81,193	17,274	32,951	181,259	918	26,410	3,338	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-15	10,471	13,192	72,500	3,775	20,985	87,648	5,180	11,934	198,688	508	56,034	3,514	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-15	7,483	12,962	57,498	8,163	43,799	88,496	5,491	38,606	185,243	695	94,541	3,757	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-16	8,511	13,148	63,374	25,889	50,797	93,355	2,970	40,456	184,194	0	105,490	3,591	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-16	8,546	12,933	71,737	19,316	24,729	85,379	892	31,378	155,374	2	93,137	3,168	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-16	7,861	13,902	76,311	13,965	28,037	92,544	0	27,874	130,434	0	100,371	3,240	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-16	1,595	10,861	18,405	360	16,440	82,829	0	47,830	41,491	272	52,799	3,021	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-16	7,959	9,940	75,152	449	12,923	88,572	0	18,336	423,103	0	42,980	2,944	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-16	9,337	10,436	72,276	3,340	27,290	87,873	0	13,939	377,915	0	59,277	2,819	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-16	9,733	10,644	73,546	324	18,867	87,660	2,648	16,356	359,537	0	60,962	2,716	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-16	9,108	10,326	69,155	84	52,098	84,631	1,049	25,741	361,986	0	57,672	2,403	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-16	8,504	5,931	68,024	947	48,842	48,663	2,276	23,981	311,479	0	76,439	3,101	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-16	8,653	10,308	68,821	90	11,124	90,800	41	28,395	384,635	0	92,371	3,253	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-16	9,104	9,705	73,637	0	12,778	89,150	0	18,849	346,255	0	78,882	4,054	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-16	9,376	10,710	67,590	49	35,048	89,465	452	18,864	329,439	0	58,941	2,479	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-17	10,197	10,880	76,507	0	17,771	84,917	1,149	20,914	320,728	0	73,443	3,172	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-17	8,611	10,537	65,245	0	26,742	83,153	1,412	2,134	334,842	0	43,534	2,774	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-17	1,817	11,781	10,011	0	12,815	96,223	0	1,311	401,645	0	28,245	3,225	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-17	489	10,808	0	0	1,710	87,437	446	17,489	114,315	0	26,265	3,137	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-17	9,298	11,444	71,042	0	25,696	90,418	0	9,193	280,618	0	58,094	3,155	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-17	10,085	12,777	75,499	0	14,015	90,339	0	3,272	255,078	0	101,363	3,113	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-17	10,805	13,263	79,475	0	7,695	94,784	0	646	359,770	0	71,977	3,152	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-17	10,778	12,121	75,274	0	29,561	90,742	0	12,149	275,193	0	83,128	3,231	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-17	10,570	10,666	71,404	1,058	34,902	43,240	2,668	45,172	281,219	0	57,200	2,940	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-17	9,893	10,613	68,119	1,241	73,594	86,542	5,993	36,397	312,155	0	72,401	3,019	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-17	11,126	10,880	75,826	0	18,203	90,768	0	8,811	350,165	0	35,245	3,401	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-17	9,553	10,562	65,828	336	91,328	88,839	0	34,999	286,283	0	74,422	3,252	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-18	9,840	7,878	69,713	962	75,487	63,596	6,467	76,981	282,869	0	111,037	3,248	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-18	9,050	10,338	67,334	0	12,107	85,839	0	3,187	257,531	0	94,415	2,581	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-18	10,185	11,145	72,264	0	38,213	91,382	0	22,362	305,039	0	94,132	2,993	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-18	3,493	10,100	20,206	593	15,496	87,174	0	42,316	81,000	0	66,820	2,708	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-18	8,385	10,764	70,056	0	65,047	88,412	0	30,188	194,686	0	97,665	3,027	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-18	9,676	10,602	71,572	542	46,891	84,311	0	58,600	357,655	0	57,537	3,019	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-18	10,309	11,241	74,875	0	11,557	87,489	0	43,558	338,021	0	48,295	2,944	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-18	10,287	11,686	71,908	861	32,888	78,014	0	55,223	317,709	0	89,903	2,947	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-18	10,027	15,791	67,761	148	9,858	48,883	0	18,087	173,353	0	61,922	2,864	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-18	9,434	11,243	75,135	0	10,954	79,508	0	29,948	247,533	0	74,967	3,058	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-18	9,527	11,441	70,639	827	38,572	83,733	0	34,146	301,955	0	66,663	3,006	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-18	8,956	11,210	69,930	1,751	28,504	83,970	0	20,608	203,611	0	75,788	3,156	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-19	10,237	10,069	73,484	0	26,545	75,254	0	22,117	154,244	0	101,087	3,176	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-19	8,590	11,139	58,334	923	34,738	80,923	0	22,716	244,930	0	89,405	2,948	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-19	9,222	13,183	71,830	285	13,155	91,845	0	16,684	255,769	0	90,187	3,192	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-19	2,327	11,639	15,868	0	36,175	90,313	0	31,132	64,295	0	32,548	3,272	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-19	10,193	12,055	74,034	0	24,997	81,584	0	35,759	200,273	0	47,921	3,196	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-19	9,763	12,335	67,914	1,129	39,803	82,148	0	44,776	225,384	0	51,401	2,814	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-19	11,692	13,778	77,913	171	5,467	91,943	0	16,158	272,652	0	90,014	2,753	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-19	10,018	13,908	60,235	3,140	60,743	82,432	0	48,329	200,725	0	89,903	3,017	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-19	9,550	12,619	64,488	0	51,783	53,965	17	23,083	253,285	0	66,878	2,737	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-19	11,296	12,536	69,812	0	25,548	88,476	0	16,493	242,815	0	88,141	2,876	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-19	11,401	12,287	75,552	0	11,214	91,812	0	8,275	204,503	0	126,946	2,861	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-19	11,184	13,644	74,284	0	22,484	90,819	0	20,922	154,489	0	94,818	3,177	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-20	11,334	13,680	74,083	0	31,883	91,466	0	12,199	401,869	0	107,561	3,067	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-20	11,337	12,869	71,713	0	8,106	78,229	0	14,465	240,306	0	84,870	2,881	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-20	11,593	12,605	78,757	0	4,516	85,701	0	7,756	296,988	0	45,881	2,893	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-20	11,664	12,767	76,123	0	5,307	91,054	0	7,439	316,236	0	98,230	2,720	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-20	8,755	13,141	53,972	0	14,939	91,056	0	19,832	248,325	0	68,182	3,062	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07

Lead Baseline Actual Emission Rate Calculations

	Production Data													Emission Factors												
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	NCG Incinerator Natural Gas Usage	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Lime Production	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Natural Gas Usage	Lead	Lead	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead
	tons CaO	*tons CaO*	*tons BLS*	*MMBtu (FO)*	*MMBtu (NG)*	*tons BLS*	*MMBtu (FO)*	*MMBtu (NG)*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*Incin. MMBTU*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu (NG)*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu (NG)*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*
Jun-20	9,532	11,841	69,047	1,955	16,187	87,069	0	9,401	291,682	0	148,939	2,666	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-20	10,175	12,222	69,441	1,129	36,256	91,518	0	16,103	255,251	0	133,928	2,760	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-20	10,875	12,531	77,036	83	3,435	91,406	83	4,882	183,264	0	72,058	2,657	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-20	9,704	8,522	60,516	0	67,648	52,377	0	24,474	236,313	0	82,425	2,748	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-20	9,979	10,292	60,584	160	51,901	79,476	0	37,319	186,160	0	81,160	2,883	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-20	10,810	12,307	72,172	0	28,969	87,820	0	22,067	538,990	0	78,554	3,040	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-20	10,113	12,225	69,298	0	63,351	91,927	0	24,732	324,413	0	82,449	3,535	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-21	10,889	12,837	75,476	0	12,360	91,675	0	20,200	264,262	0	54,540	3,018	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-21	9,521	11,991	64,842	5,426	41,600	84,147	0	11,345	236,293	0	100,333	2,767	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-21	10,420	13,606	68,111	2,257	34,968	96,002	0	7,519	205,187	0	73,991	2,913	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-21	6,722	11,426	47,211	564	12,163	79,412	0	55,727	183,033	0	54,958	2,843	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-21	9,954	12,049	73,937	0	37,913	86,559	0	57,521	294,064	0	121,981	2,840	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-21	9,931	9,744	71,785	0	26,189	67,000	0	100,127	301,646	0	77,160	2,735	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-21	9,241	11,993	61,455	0	86,618	86,692	0	35,147	261,824	0	120,656	2,759	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-21	10,668	11,466	69,542	131	36,001	73,966	0	58,771	382,453	0	113,933	2,812	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-21	9,952	15,335	65,162	0	43,304	49,408	0	45,173	223,379	0	130,256	2,583	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-21	10,266	11,458	76,710	0	6,945	86,340	0	45,725	316,032	0	120,733	2,690	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-21	9,986	11,098	72,915	0	31,084	87,337	0	34,574	306,997	0	147,943	2,841	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-21	10,226	11,147	73,410	0	35,867	91,721	0	15,936	378,346	0	116,340	2,925	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-22	9,282	11,027	65,356	0	83,299	79,083	0	101,453	343,045	0	133,310	3,122	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-22	7,595	9,962	57,394	0	38,250	75,833	0	51,096	195,412	0	94,449	2,747	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-22	6,008	12,737	46,135	0	86,164	76,131	0	124,767	139,514	0	78,239	2,963	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-22	9,654	12,499	70,078	0	37,966	75,611	0	73,624	339,179	0	84,749	2,776	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-22	9,628	12,101	67,457	0	66,018	68,954	0	94,219	262,522	0	90,347	2,762	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-22	9,917	11,676	73,726	0	20,098	87,307	0	19,319	306,228	0	91,060	2,566	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-22	10,441	10,557	68,732	0	57,538	81,361	0	59,945	331,701	0	78,059	2,917	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-22	9,174	10,582	72,214	0	18,084	84,218	0	25,806	209,734	0	111,282	2,769	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-22	9,330	2,973	66,113	0	29,902	23,006	0	36,574	182,836	0	72,986	2,742	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-22	9,410	10,627	68,581	0	31,621	80,175	0	25,781	344,478	0	51,703	2,796	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-22	8,647	10,821	67,662	0	24,551	84,160	0	8,173	191,109	0	85,432	2,898	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-22	9,863	11,379	76,711	2	25,557	83,179	0	60,890	231,638	0	96,471	2,977	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-23	8,571	11,921	68,969	0	50,164	75,796	0	38,454	172,893	0	106,295	2,984	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-23	7,791	10,944	58,892	0	11,319	82,339	0	13,211	139,139	0	83,636	2,620	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-23	2,599	9,705	20,586	7,135	91,664	68,474	0	59,999	100,962	0	91,444	2,956	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-23	8,960	11,778	62,129	0	66,072	81,803	0	34,923	223,645	0	81,224	2,719	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
May-23	9,457	13,971	70,410	0	47,454	85,709	0	27,672	198,173	0	106,268	2,866	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jun-23	4,972	11,455	39,730	1,704	87,915	81,542	0	33,597	272,652	0	138,115	2,769	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jul-23	9,872	11,604	72,314	0	27,870	83,238	0	35,166	337,315	0	103,009	2,864	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Aug-23	8,347	11,185	60,396	0	75,606	76,374	0	61,195	410,804	0	90,991	2,855	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Sep-23	8,499	7,351	58,763	1,070	53,722	20,344	0	30,636	178,274	0	153,469	2,744	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Oct-23	9,595	11,525	68,392	0	35,446	83,324	0	33,228	378,411	0	113,867	2,950	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Nov-23	9,576	12,073	68,551	0	14,887	87,639	0	8,385	355,623	0	109,285	2,876	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Dec-23	9,623	12,577	67,124	0	40,537	85,757	0	39,841	320,268	0	124,377	3,201	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Jan-24	9,227	11,657	63,933	1,796	74,584	73,898	0	112,882	347,185	0	115,105	3,294	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Feb-24	9,721	11,761	66,821	0	29,700	79,915	0	36,437	375,297	0	97,654	3,017	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Mar-24	3,291	12,661	28,031	2,451	61,180	87,235	0	41,944	146,008	0	63,257	3,447	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07
Apr-24	9,133	11,096	65,802	0	32,771	79,857	0	40,896	268,601	0	109,468	3,595	1.54E-04	1.48E-05	7.64E-07	1.20E-05	9.00E-06	4.90E-07	7.64E-07	1.20E-05	9.00E-06	4.90E-07	3.09E-05	1.25E-06	4.90E-10	4.90E-07

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

Lead Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)													
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Lead	Lead	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	6.86E-04	8.43E-05	2.71E-05	4.26E-04	1.22E-04	1.28E-05	3.23E-05	5.07E-04	4.88E-05	1.21E-05	3.32E-03	5.57E-07	2.06E-08	8.92E-07
Feb-15	6.85E-04	7.81E-05	2.75E-05	4.32E-04	2.83E-06	3.60E-06	3.03E-05	4.76E-04	4.56E-06	1.38E-05	3.37E-03	1.73E-06	9.94E-09	7.92E-07
Mar-15	7.40E-04	8.35E-05	2.79E-05	4.38E-04	8.46E-05	7.51E-06	3.00E-05	4.71E-04	3.26E-05	9.18E-06	2.80E-03	6.29E-07	2.58E-08	8.15E-07
Apr-15	2.34E-04	8.53E-05	7.39E-06	1.16E-04	3.25E-05	2.22E-06	3.20E-05	5.02E-04	2.01E-05	1.10E-05	7.78E-04	1.61E-06	1.05E-08	8.27E-07
May-15	5.16E-04	8.34E-05	1.92E-05	3.02E-04	2.58E-05	7.75E-06	3.09E-05	4.85E-04	1.75E-05	9.23E-06	2.23E-03	5.25E-07	1.65E-08	7.95E-07
Jun-15	6.80E-04	7.87E-05	2.74E-05	4.30E-04	3.17E-05	5.23E-06	2.74E-05	4.30E-04	1.01E-05	6.85E-06	3.05E-03	5.19E-07	3.20E-09	7.73E-07
Jul-15	7.68E-04	9.83E-05	2.93E-05	4.61E-04	6.69E-06	7.30E-07	3.47E-05	5.45E-04	0.00	1.84E-06	3.88E-03	5.44E-07	4.88E-09	7.95E-07
Aug-15	7.82E-04	9.92E-05	2.72E-05	4.28E-04	1.93E-05	2.52E-06	3.42E-05	5.38E-04	1.94E-07	2.11E-06	3.66E-03	5.41E-07	2.04E-09	8.02E-07
Sep-15	6.87E-04	4.40E-05	2.62E-05	4.12E-04	3.04E-05	3.56E-06	1.30E-05	2.04E-04	1.35E-05	4.58E-06	3.08E-03	3.64E-07	5.73E-09	7.49E-07
Oct-15	7.58E-04	9.11E-05	2.60E-05	4.09E-04	7.11E-05	1.12E-05	3.10E-05	4.87E-04	7.77E-05	8.08E-06	2.80E-03	5.74E-07	6.47E-09	8.18E-07
Nov-15	8.06E-04	9.76E-05	2.77E-05	4.35E-04	1.70E-05	5.14E-06	3.35E-05	5.26E-04	2.33E-05	2.93E-06	3.07E-03	3.18E-07	1.37E-08	8.61E-07
Dec-15	5.76E-04	9.59E-05	2.20E-05	3.45E-04	3.67E-05	1.07E-05	3.38E-05	5.31E-04	2.47E-05	9.46E-06	2.86E-03	4.34E-07	2.32E-08	9.21E-07
Jan-16	6.55E-04	9.73E-05	2.42E-05	3.80E-04	1.17E-04	1.25E-05	3.57E-05	5.60E-04	1.34E-05	9.92E-06	2.85E-03	1.23E-10	2.59E-08	8.80E-07
Feb-16	6.58E-04	9.57E-05	2.74E-05	4.30E-04	8.69E-05	6.06E-06	3.26E-05	5.12E-04	4.02E-06	7.69E-06	2.40E-03	1.33E-09	2.28E-08	7.76E-07
Mar-16	6.05E-04	1.03E-04	2.92E-05	4.58E-04	6.28E-05	6.87E-06	3.54E-05	5.55E-04	0.00	6.83E-06	2.02E-03	0.00	2.46E-08	7.94E-07
Apr-16	1.23E-04	8.04E-05	7.03E-06	1.10E-04	1.62E-06	4.03E-06	3.16E-05	4.97E-04	0.00	1.17E-05	6.41E-04	1.70E-07	1.29E-08	7.40E-07
May-16	6.13E-04	7.36E-05	2.87E-05	4.51E-04	2.02E-06	3.17E-06	3.38E-05	5.31E-04	0.00	4.49E-06	0.01	0.00	1.05E-08	7.21E-07
Jun-16	7.19E-04	7.72E-05	2.76E-05	4.34E-04	1.50E-05	6.69E-06	3.36E-05	5.27E-04	0.00	3.42E-06	0.01	0.00	1.45E-08	6.91E-07
Jul-16	7.49E-04	7.88E-05	2.81E-05	4.41E-04	1.46E-06	4.62E-06	3.35E-05	5.26E-04	1.19E-05	4.01E-06	0.01	0.00	1.49E-08	6.66E-07
Aug-16	7.01E-04	7.64E-05	2.64E-05	4.15E-04	3.79E-07	1.28E-05	3.23E-05	5.08E-04	4.72E-06	6.31E-06	0.01	0.00	1.41E-08	5.89E-07
Sep-16	6.55E-04	4.39E-05	2.60E-05	4.08E-04	4.26E-06	1.20E-05	1.86E-05	2.92E-04	1.02E-05	5.88E-06	4.81E-03	0.00	1.87E-08	7.60E-07
Oct-16	6.66E-04	7.63E-05	2.63E-05	4.13E-04	4.04E-07	2.73E-06	3.47E-05	5.45E-04	1.86E-07	6.96E-06	0.01	0.00	2.26E-08	7.97E-07
Nov-16	7.01E-04	7.18E-05	2.81E-05	4.42E-04	0.00	3.13E-06	3.41E-05	5.35E-04	0.00	4.62E-06	0.01	0.00	1.93E-08	9.94E-07
Dec-16	7.22E-04	7.93E-05	2.58E-05	4.06E-04	2.22E-07	8.59E-06	3.42E-05	5.37E-04	2.03E-06	4.62E-06	0.01	0.00	1.44E-08	6.08E-07
Jan-17	7.85E-04	8.05E-05	2.92E-05	4.59E-04	0.00	4.36E-06	3.24E-05	5.09E-04	5.17E-06	5.13E-06	4.96E-03	0.00	1.80E-08	7.77E-07
Feb-17	6.63E-04	7.80E-05	2.49E-05	3.91E-04	0.00	6.55E-06	3.18E-05	4.99E-04	6.36E-06	5.23E-07	0.01	0.00	1.07E-08	6.80E-07
Mar-17	1.40E-04	8.72E-05	3.82E-06	6.01E-05	0.00	3.14E-06	3.68E-05	5.77E-04	0.00	3.21E-07	0.01	0.00	6.92E-09	7.90E-07
Apr-17	3.76E-05	8.00E-05	4.74E-11	7.45E-10	0.00	4.19E-07	3.34E-05	5.25E-04	2.01E-06	4.29E-06	1.77E-03	0.00	6.44E-09	7.69E-07
May-17	7.16E-04	8.47E-05	2.71E-05	4.26E-04	0.00	6.30E-06	3.45E-05	5.43E-04	0.00	2.25E-06	4.34E-03	0.00	1.42E-08	7.73E-07
Jun-17	7.77E-04	9.46E-05	2.88E-05	4.53E-04	0.00	3.44E-06	3.45E-05	5.42E-04	0.00	8.02E-07	3.94E-03	0.00	2.48E-08	7.63E-07
Jul-17	8.32E-04	9.81E-05	3.04E-05	4.77E-04	0.00	1.89E-06	3.62E-05	5.69E-04	0.00	1.58E-07	0.01	0.00	1.76E-08	7.73E-07
Aug-17	8.30E-04	8.97E-05	2.88E-05	4.52E-04	0.00	7.25E-06	3.47E-05	5.44E-04	0.00	2.98E-06	4.25E-03	0.00	2.04E-08	7.92E-07
Sep-17	8.14E-04	7.89E-05	2.73E-05	4.28E-04	4.76E-06	8.55E-06	1.65E-05	2.59E-04	1.20E-05	1.11E-05	4.34E-03	0.00	1.40E-08	7.21E-07
Oct-17	7.62E-04	7.85E-05	2.60E-05	4.09E-04	5.58E-06	1.80E-05	3.31E-05	5.19E-04	2.70E-05	8.92E-06	4.82E-03	0.00	1.77E-08	7.40E-07
Nov-17	8.57E-04	8.05E-05	2.90E-05	4.55E-04	0.00	4.46E-06	3.47E-05	5.45E-04	0.00	2.16E-06	0.01	0.00	8.64E-09	8.34E-07
Dec-17	7.36E-04	7.82E-05	2.51E-05	3.95E-04	1.51E-06	2.24E-05	3.39E-05	5.33E-04	0.00	8.58E-06	4.42E-03	0.00	1.82E-08	7.97E-07
Jan-18	7.58E-04	5.83E-05	2.66E-05	4.18E-04	4.33E-06	1.85E-05	2.43E-05	3.82E-04	2.91E-05	1.89E-05	4.37E-03	0.00	2.72E-08	7.96E-07
Feb-18	6.97E-04	7.65E-05	2.57E-05	4.04E-04	0.00	2.97E-06	3.28E-05	5.15E-04	0.00	7.81E-07	3.98E-03	0.00	2.31E-08	6.33E-07
Mar-18	7.84E-04	8.25E-05	2.76E-05	4.34E-04	0.00	9.37E-06	3.49E-05	5.48E-04	0.00	5.48E-06	4.71E-03	0.00	2.31E-08	7.34E-07
Apr-18	2.69E-04	7.47E-05	7.72E-06	1.21E-04	2.67E-06	3.80E-06	3.33E-05	5.23E-04	0.00	1.04E-05	1.25E-03	0.00	1.64E-08	6.64E-07
May-18	6.46E-04	7.97E-05	2.68E-05	4.20E-04	0.00	1.59E-05	3.38E-05	5.30E-04	0.00	7.40E-06	3.01E-03	0.00	2.39E-08	7.42E-07
Jun-18	7.45E-04	7.85E-05	2.73E-05	4.29E-04	2.44E-06	1.15E-05	3.22E-05	5.06E-04	0.00	1.44E-05	0.01	0.00	1.41E-08	7.40E-07
Jul-18	7.94E-04	8.32E-05	2.86E-05	4.49E-04	0.00	2.83E-06	3.34E-05	5.25E-04	0.00	1.07E-05	0.01	0.00	1.18E-08	7.22E-07
Aug-18	7.92E-04	8.65E-05	2.75E-05	4.31E-04	3.87E-06	8.06E-06	2.98E-05	4.68E-04	0.00	1.35E-05	4.91E-03	0.00	2.20E-08	7.22E-07
Sep-18	7.72E-04	1.17E-04	2.59E-05	4.07E-04	6.67E-07	2.42E-06	1.87E-05	2.93E-04	0.00	4.43E-06	2.68E-03	0.00	1.52E-08	7.02E-07
Oct-18	7.26E-04	8.32E-05	2.87E-05	4.51E-04	0.00	2.68E-06	3.04E-05	4.77E-04	0.00	7.34E-06	3.82E-03	0.00	1.84E-08	7.49E-07
Nov-18	7.34E-04	8.47E-05	2.70E-05	4.24E-04	3.72E-06	9.45E-06	3.20E-05	5.02E-04	0.00	8.37E-06	4.67E-03	0.00	1.63E-08	7.37E-07
Dec-18	6.90E-04	8.30E-05	2.67E-05	4.20E-04	7.88E-06	6.99E-06	3.21E-05	5.04E-04	0.00	5.05E-06	3.15E-03	0.00	1.86E-08	7.74E-07
Jan-19	7.88E-04	7.45E-05	2.81E-05	4.41E-04	0.00	6.51E-06	2.87E-05	4.52E-04	0.00	5.42E-06	2.38E-03	0.00	2.48E-08	7.78E-07
Feb-19	6.61E-04	8.24E-05	2.23E-05	3.50E-04	4.16E-06	8.51E-06	3.09E-05	4.86E-04	0.00	5.57E-06	3.78E-03	0.00	2.19E-08	7.23E-07
Mar-19	7.10E-04	9.76E-05	2.74E-05	4.31E-04	1.28E-06	3.22E-06	3.51E-05	5.51E-04	0.00	4.09E-06	3.95E-03	0.00	2.21E-08	7.82E-07
Apr-19	1.79E-04	8.61E-05	6.06E-06	9.52E-05	0.00	8.87E-06	3.45E-05	5.42E-04	0.00	7.63E-06	9.93E-04	0.00	7.98E-09	8.02E-07
May-19	7.85E-04	8.92E-05	2.83E-05	4.44E-04	0.00	6.13E-06	3.12E-05	4.90E-04	0.00	8.76E-06	3.09E-03	0.00	1.17E-08	7.83E-07
Jun-19	7.52E-04	9.13E-05	2.59E-05	4.07E-04	5.08E-06	9.76E-06	3.14E-05	4.93E-04	0.00	1.10E-05	3.48E-03	0.00	1.26E-08	6.90E-07
Jul-19	9.00E-04	1.02E-04	2.98E-05	4.67E-04	7.70E-07	1.34E-06	3.51E-05	5.52E-04	0.00	3.96E-06	4.21E-03	0.00	2.21E-08	6.75E-07
Aug-19	7.71E-04	1.03E-04	2.30E-05	3.61E-04	1.41E-05	1.49E-05	3.15E-05	4.95E-04	0.00	1.18E-05	3.10E-03	0.00	2.20E-08	7.39E-07
Sep-19	7.35E-04	9.34E-05	2.46E-05	3.87E-04	0.00	1.27E-05	2.06E-05	3.24E-04	7.70E-08	5.66E-06	3.91E-03	0.00	1.64E-08	6.71E-07
Oct-19	8.70E-04	9.28E-05	2.67E-05	4.19E-04	0.00	6.26E-06	3.38E-05	5.31E-04	0.00	4.04E-06	3.75E-03	0.00	2.16E-08	7.05E-07
Nov-19	8.78E-04	9.09E-05	2.89E-05	4.53E-04	0.00	2.75E-06	3.51E-05	5.51E-04	0.00	2.03E-06	3.16E-03	0.00	3.11E-08	7.01E-07
Dec-19	8.61E-04	1.01E-04	2.84E-05	4.46E-04	0.00	5.51E-06	3.47E-05	5.45E-04	0.00	5.13E-06	2.39E-03	0.00	2.32E-08	7.79E-07
Jan-20	8.73E-04	1.01E-04	2.83E-05	4.44E-04	0.00	7.81E-06	3.49E-05	5.49E-04	0.00	2.99E-06	0.01	0.00	2.64E-08	7.52E-07
Feb-20	8.73E-04	9.52E-05	2.74E-05	4.30E-04	0.00	1.99E-06	2.99E-05	4.69E-04	0.00	3.55E-06	3.71E-03	0.00	2.08E-08	7.06E-07
Mar-20	8.93E-04	9.33E-05	3.01E-05	4.73E-04	0.00	1.11E-06	3.27E-05	5.14E-04	0.00	1.90E-06	4.59E-03	0.00	1.12E-08	7.09E-07
Apr-20	8.98E-04	9.45E-05	2.91E-05	4.57E-04	0.00	1.30E-06	3.48E-05	5.46E-04	0.00	1.82E-06	4.89E-03	0.00	2.41E-08	6.67E-07
May-20	6.74E-04	9.72E-05	2.06E-05	3.24E-04	0.00	3.66E-06	3.48E-05	5.46E-04	0.00	4.86E-06	3.84E-03	0.00	1.67E-08	7.50E-07

	24-month Rolling Emission Rates (tons/yr)								
Baseline Period and Emissions	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
0.08								
May-16 -- Apr-18								
tons (24-mo Rolling total)	*tons (24-mo Rolling total)*							
0.06	7.74E-03	9.86E-04	3.00E-04	5.18E-03	3.76E-04	6.16E-03	4.38E-02	9.43E-06
0.07	7.79E-03	9.84E-04	3.01E-04	5.13E-03	3.77E-04	6.13E-03	4.46E-02	9.37E-06
0.07	7.78E-03	9.84E-04	3.00E-04	5.11E-03	3.77E-04	6.14E-03	4.55E-02	9.32E-06
0.07	7.38E-03	9.84E-04	2.84E-04	4.80E-03	3.81E-04	6.17E-03	4.77E-02	9.27E-06
0.07	7.48E-03	9.84E-04	2.88E-04	4.85E-03	3.83E-04	6.19E-03	4.87E-02	9.26E-06
0.07	7.53E-03	9.92E-04	2.89E-04	4.84E-03	3.87E-04	6.23E-03	4.92E-02	9.26E-06
0.07	7.56E-03	9.92E-04	2.89E-04	4.85E-03	3.88E-04	6.25E-03	5.00E-02	9.25E-06
0.07	7.59E-03	9.87E-04	2.90E-04	4.85E-03	3.88E-04	6.25E-03	5.03E-02	9.24E-06
0.07	7.65E-03	1.00E-03	2.90E-04	4.85E-03	3.90E-04	6.28E-03	5.09E-02	9.23E-06
0.07	7.65E-03	9.99E-04	2.90E-04	4.82E-03	3.91E-04	6.27E-03	5.20E-02	9.19E-06
0.07	7.68E-03	9.90E-04	2.91E-04	4.82E-03	3.91E-04	6.27E-03	5.31E-02	9.17E-06
0.07	7.76E-03	9.81E-04	2.93E-04	4.83E-03	3.91E-04	6.26E-03	5.39E-02	9.11E-06
0.08	7.81E-03	9.62E-04	2.94E-04	4.80E-03	3.86E-04	6.18E-03	5.47E-02	9.07E-06
0.08	7.83E-03	9.52E-04	2.93E-04	4.74E-03	3.86E-04	6.18E-03	5.55E-02	9.00E-06
0.08	7.92E-03	9.42E-04	2.92E-04	4.70E-03	3.85E-04	6.17E-03	5.68E-02	8.97E-06
0.08	7.99E-03	9.39E-04	2.93E-04	4.70E-03	3.86E-04	6.18E-03	5.71E-02	8.93E-06
0.08	8.01E-03	9.42E-04	2.92E-04	4.69E-03	3.86E-04	6.18E-03	5.53E-02	8.94E-06
0.08	8.02E-03	9.43E-04	2.91E-04	4.69E-03	3.86E-04	6.18E-03	5.52E-02	8.96E-06
0.08	8.04E-03	9.45E-04	2.92E-04	4.69E-03	3.85E-04	6.18E-03	5.50E-02	8.99E-06
0.08	8.09E-03	9.50E-04	2.92E-04	4.70E-03	3.84E-04	6.16E-03	5.47E-02	9.06E-06
0.07	8.15E-03	9.86E-04	2.92E-04	4.69E-03	3.84E-04	6.15E-03	5.36E-02	9.03E-06
0.07	8.18E-03	9.90E-04	2.93E-04	4.71E-03	3.82E-04	6.12E-03	5.26E-02	9.01E-06
0.07	8.19E-03	9.96E-04	2.93E-04	4.71E-03	3.81E-04	6.10E-03	5.22E-02	8.88E-06
0.07	8.18E-03	9.98E-04	2.93E-04	4.72E-03	3.80E-04	6.09E-03	5.12E-02	8.96E-06
0.07	8.18E-03	9.95E-04	2.93E-04	4.71E-03	3.78E-04	6.06E-03	5.00E-02	8.96E-06
0.07	8.18E-03	9.97E-04	2.91E-04	4.69E-03	3.78E-04	6.05E-03	4.93E-02	8.98E-06
0.07	8.46E-03	1.00E-03	3.03E-04	4.88E-03	3.77E-04	6.04E-03	4.81E-02	8.98E-06
0.07	8.53E-03	1.01E-03	3.06E-04	4.93E-03	3.77E-04	6.05E-03	4.77E-02	9.00E-06
0.07	8.57E-03	1.01E-03	3.07E-04	4.94E-03	3.76E-04	6.02E-03	4.71E-02	9.00E-06
0.07	8.56E-03	1.01E-03	3.05E-04	4.92E-03	3.74E-04	6.00E-03	4.69E-02	8.96E-06
0.07	8.59E-03	1.01E-03	3.05E-04	4.92E-03	3.74E-04	6.00E-03	4.62E-02	8.91E-06
0.07	8.56E-03	1.01E-03	3.02E-04	4.88E-03	3.72E-04	5.98E-03	4.56E-02	8.89E-06
0.07	8.52E-03	1.02E-03	3.01E-04	4.86E-03	3.74E-04	6.00E-03	4.54E-02	8.86E-06
0.07	8.58E-03	1.03E-03	3.01E-04	4.86E-03	3.75E-04	5.99E-03	4.49E-02	8.85E-06
0.06	8.59E-03	1.03E-03	3.01E-04	4.86E-03	3.75E-04	5.99E-03	4.38E-02	8.78E-06
0.06	8.65E-03	1.05E-03	3.03E-04	4.87E-03	3.75E-04	6.00E-03	4.28E-02	8.77E-06
0.07	8.71E-03	1.07E-03	3.04E-04	4.88E-03	3.80E-04	6.06E-03	4.37E-02	8.75E-06
0.07	8.79E-03	1.08E-03	3.04E-04	4.89E-03	3.79E-04	6.04E-03	4.35E-02	8.79E-06
0.07	8.85E-03	1.08E-03	3.06E-04	4.90E-03	3.78E-04	6.02E-03	4.35E-02	8.77E-06
0.07	9.16E-03	1.09E-03	3.16E-04	5.07E-03	3.79E-04	6.03E-03	4.53E-02	8.77E-06
0.07	9.18E-03	1.10E-03	3.13E-04	5.02E-03	3.79E-04	6.03E-03	4.57E-02	8.78E-06

Lead Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)														24-month Rolling Emission Rates (tons/yr)								
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	**Baseline Period and Emissions**	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	Lead	Lead	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	Lead - Fuel Oil	Lead - Natural Gas	Lead	**0.08** **May-16 -- Apr-18**								
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*	*tons (24-mo Rolling total)*							
Jun-20	7.34E-04	8.76E-05	2.64E-05	4.14E-04	8.80E-06	3.97E-06	3.33E-05	5.22E-04	0.00	2.30E-06	4.51E-03	0.00	3.65E-08	6.53E-07	0.07	9.17E-03	1.11E-03	3.13E-04	5.01E-03	3.80E-04	6.03E-03	4.52E-02	8.74E-06
Jul-20	7.83E-04	9.04E-05	2.65E-05	4.17E-04	5.08E-06	8.89E-06	3.50E-05	5.49E-04	0.00	3.95E-06	3.94E-03	0.00	3.28E-08	6.77E-07	0.07	9.17E-03	1.11E-03	3.12E-04	5.00E-03	3.80E-04	6.04E-03	4.46E-02	8.71E-06
Aug-20	8.37E-04	9.27E-05	2.94E-05	4.62E-04	3.72E-07	8.42E-07	3.49E-05	5.48E-04	3.72E-07	1.20E-06	2.83E-03	0.00	1.77E-08	6.51E-07	0.07	9.19E-03	1.11E-03	3.13E-04	5.01E-03	3.83E-04	6.08E-03	4.35E-02	8.68E-06
Sep-20	7.47E-04	6.31E-05	2.31E-05	3.63E-04	0.00	1.66E-05	2.00E-05	3.14E-04	0.00	6.00E-06	3.65E-03	0.00	2.02E-08	6.74E-07	0.07	9.18E-03	1.09E-03	3.11E-04	4.99E-03	3.84E-04	6.09E-03	4.40E-02	8.66E-06
Oct-20	7.68E-04	7.62E-05	2.31E-05	3.64E-04	7.18E-07	1.27E-05	3.04E-05	4.77E-04	0.00	9.15E-06	2.88E-03	0.00	1.99E-08	7.07E-07	0.07	9.20E-03	1.08E-03	3.09E-04	4.95E-03	3.84E-04	6.09E-03	4.35E-02	8.64E-06
Nov-20	8.32E-04	9.11E-05	2.76E-05	4.33E-04	0.00	7.10E-06	3.35E-05	5.27E-04	0.00	5.41E-06	0.01	0.00	1.93E-08	7.45E-07	0.07	9.25E-03	1.08E-03	3.09E-04	4.96E-03	3.84E-04	6.10E-03	4.54E-02	8.65E-06
Dec-20	7.79E-04	9.05E-05	2.65E-05	4.16E-04	0.00	1.55E-05	3.51E-05	5.52E-04	0.00	6.06E-06	0.01	0.00	2.02E-08	8.66E-07	0.07	9.29E-03	1.09E-03	3.09E-04	4.95E-03	3.86E-04	6.12E-03	4.63E-02	8.69E-06
Jan-21	8.38E-04	9.50E-05	2.88E-05	4.53E-04	0.00	3.03E-06	3.50E-05	5.50E-04	0.00	4.95E-06	4.08E-03	0.00	1.34E-08	7.40E-07	0.07	9.32E-03	1.10E-03	3.09E-04	4.96E-03	3.89E-04	6.17E-03	4.71E-02	8.67E-06
Feb-21	7.33E-04	8.87E-05	2.48E-05	3.89E-04	2.44E-05	1.02E-05	3.21E-05	5.05E-04	0.00	2.78E-06	3.65E-03	0.00	2.46E-08	6.78E-07	0.07	9.35E-03	1.10E-03	3.10E-04	4.99E-03	3.90E-04	6.18E-03	4.71E-02	8.65E-06
Mar-21	8.02E-04	1.01E-04	2.60E-05	4.09E-04	1.02E-05	8.57E-06	3.67E-05	5.76E-04	0.00	1.84E-06	3.17E-03	0.00	1.81E-08	7.14E-07	0.07	9.40E-03	1.10E-03	3.10E-04	4.98E-03	3.90E-04	6.19E-03	4.67E-02	8.62E-06
Apr-21	5.18E-04	8.46E-05	1.80E-05	2.83E-04	2.54E-06	2.98E-06	3.03E-05	4.76E-04	0.00	1.37E-05	2.83E-03	0.00	1.35E-08	6.97E-07	0.07	9.57E-03	1.10E-03	3.16E-04	5.08E-03	3.88E-04	6.16E-03	4.76E-02	8.56E-06
May-21	7.66E-04	8.92E-05	2.82E-05	4.44E-04	0.00	9.29E-06	3.31E-05	5.19E-04	0.00	1.41E-05	4.54E-03	0.00	2.99E-08	6.96E-07	0.07	9.56E-03	1.10E-03	3.16E-04	5.08E-03	3.89E-04	6.18E-03	4.83E-02	8.52E-06
Jun-21	7.65E-04	7.21E-05	2.74E-05	4.31E-04	0.00	6.42E-06	2.56E-05	4.02E-04	0.00	2.45E-05	4.66E-03	0.00	1.89E-08	6.70E-07	0.07	9.57E-03	1.09E-03	3.16E-04	5.09E-03	3.86E-04	6.14E-03	4.89E-02	8.51E-06
Jul-21	7.12E-04	8.87E-05	2.35E-05	3.69E-04	0.00	2.12E-05	3.31E-05	5.20E-04	0.00	8.61E-06	4.05E-03	0.00	2.96E-08	6.76E-07	0.07	9.47E-03	1.09E-03	3.13E-04	5.05E-03	3.85E-04	6.13E-03	4.88E-02	8.51E-06
Aug-21	8.21E-04	8.48E-05	2.66E-05	4.17E-04	5.90E-07	8.82E-06	2.83E-05	4.44E-04	0.00	1.44E-05	0.01	0.00	2.79E-08	6.89E-07	0.07	9.50E-03	1.08E-03	3.15E-04	5.06E-03	3.84E-04	6.10E-03	5.02E-02	8.49E-06
Sep-21	7.66E-04	1.13E-04	2.49E-05	3.91E-04	0.00	1.06E-05	1.89E-05	2.96E-04	0.00	1.11E-05	3.45E-03	0.00	3.19E-08	6.33E-07	0.07	9.51E-03	1.09E-03	3.15E-04	5.06E-03	3.83E-04	6.09E-03	5.00E-02	8.47E-06
Oct-21	7.91E-04	8.48E-05	2.93E-05	4.60E-04	0.00	1.70E-06	3.30E-05	5.18E-04	0.00	1.12E-05	4.88E-03	0.00	2.96E-08	6.59E-07	0.07	9.47E-03	1.08E-03	3.16E-04	5.08E-03	3.83E-04	6.09E-03	5.06E-02	8.45E-06
Nov-21	7.69E-04	8.21E-05	2.79E-05	4.37E-04	0.00	7.62E-06	3.34E-05	5.24E-04	0.00	8.47E-06	4.74E-03	0.00	3.63E-08	6.96E-07	0.07	9.42E-03	1.08E-03	3.16E-04	5.08E-03	3.82E-04	6.08E-03	5.14E-02	8.44E-06
Dec-21	7.87E-04	8.25E-05	2.80E-05	4.40E-04	0.00	8.79E-06	3.50E-05	5.50E-04	0.00	3.91E-06	0.01	0.00	2.85E-08	7.17E-07	0.08	9.38E-03	1.07E-03	3.16E-04	5.08E-03	3.82E-04	6.08E-03	5.31E-02	8.41E-06
Jan-22	7.15E-04	8.16E-05	2.50E-05	3.92E-04	0.00	2.04E-05	3.02E-05	4.74E-04	0.00	2.49E-05	0.01	0.00	3.27E-08	7.65E-07	0.07	9.30E-03	1.06E-03	3.14E-04	5.06E-03	3.80E-04	6.06E-03	5.26E-02	8.42E-06
Feb-22	5.85E-04	7.37E-05	2.19E-05	3.44E-04	0.00	9.38E-06	2.90E-05	4.55E-04	0.00	1.25E-05	3.02E-03	0.00	2.31E-08	6.73E-07	0.07	9.16E-03	1.05E-03	3.11E-04	5.02E-03	3.79E-04	6.05E-03	5.23E-02	8.40E-06
Mar-22	4.63E-04	9.43E-05	1.76E-05	2.77E-04	0.00	2.11E-05	2.91E-05	4.57E-04	0.00	3.06E-05	2.16E-03	0.00	1.92E-08	7.26E-07	0.07	8.94E-03	1.05E-03	3.05E-04	4.93E-03	3.77E-04	6.04E-03	5.11E-02	8.41E-06
Apr-22	7.43E-04	9.25E-05	2.68E-05	4.20E-04	0.00	9.31E-06	2.89E-05	4.54E-04	0.00	1.80E-05	0.01	0.00	2.08E-08	6.80E-07	0.07	8.86E-03	1.05E-03	3.04E-04	4.92E-03	3.74E-04	6.00E-03	5.13E-02	8.42E-06
May-22	7.41E-04	8.96E-05	2.58E-05	4.05E-04	0.00	1.62E-05	2.63E-05	4.14E-04	0.00	2.31E-05	4.06E-03	0.00	2.21E-08	6.77E-07	0.07	8.90E-03	1.04E-03	3.07E-04	4.96E-03	3.70E-04	5.94E-03	5.14E-02	8.38E-06
Jun-22	7.64E-04	8.64E-05	2.82E-05	4.42E-04	0.00	4.93E-06	3.34E-05	5.24E-04	0.00	4.74E-06	4.73E-03	0.00	2.23E-08	6.29E-07	0.07	8.91E-03	1.04E-03	3.07E-04	4.97E-03	3.70E-04	5.95E-03	5.15E-02	8.37E-06
Jul-22	8.04E-04	7.81E-05	2.63E-05	4.12E-04	0.00	1.41E-05	3.11E-05	4.88E-04	0.00	1.47E-05	0.01	0.00	1.91E-08	7.15E-07	0.07	8.92E-03	1.04E-03	3.07E-04	4.97E-03	3.68E-04	5.92E-03	5.21E-02	8.39E-06
Aug-22	7.06E-04	7.83E-05	2.76E-05	4.33E-04	0.00	4.43E-06	3.22E-05	5.05E-04	0.00	6.33E-06	3.24E-03	0.00	2.73E-08	6.79E-07	0.07	8.86E-03	1.03E-03	3.06E-04	4.96E-03	3.67E-04	5.90E-03	5.23E-02	8.40E-06
Sep-22	7.18E-04	2.20E-05	2.53E-05	3.97E-04	0.00	7.33E-06	8.79E-06	1.38E-04	0.00	8.96E-06	2.82E-03	0.00	1.79E-08	6.72E-07	0.07	8.84E-03	1.01E-03	3.07E-04	4.97E-03	3.61E-04	5.81E-03	5.19E-02	8.40E-06
Oct-22	7.25E-04	7.86E-05	2.62E-05	4.11E-04	0.00	7.75E-06	3.06E-05	4.81E-04	0.00	6.32E-06	0.01	0.00	1.27E-08	6.85E-07	0.07	8.82E-03	1.01E-03	3.09E-04	4.99E-03	3.61E-04	5.82E-03	5.31E-02	8.39E-06
Nov-22	6.66E-04	8.01E-05	2.58E-05	4.06E-04	0.00	6.02E-06	3.21E-05	5.05E-04	0.00	2.00E-06	2.95E-03	0.00	2.09E-08	7.10E-07	0.07	8.74E-03	1.01E-03	3.08E-04	4.98E-03	3.61E-04	5.80E-03	5.04E-02	8.37E-06
Dec-22	7.59E-04	8.42E-05	2.93E-05	4.60E-04	8.10E-09	6.26E-06	3.18E-05	4.99E-04	0.00	1.49E-05	3.58E-03	0.00	2.36E-08	7.30E-07	0.07	8.73E-03	1.00E-03	3.10E-04	4.99E-03	3.59E-04	5.78E-03	4.97E-02	8.30E-06
Jan-23	6.60E-04	8.82E-05	2.63E-05	4.14E-04	0.00	1.23E-05	2.90E-05	4.55E-04	0.00	9.43E-06	2.67E-03	0.00	2.61E-08	7.31E-07	0.07	8.64E-03	1.00E-03	3.08E-04	4.98E-03	3.56E-04	5.74E-03	4.90E-02	8.30E-06
Feb-23	6.00E-04	8.10E-05	2.25E-05	3.53E-04	0.00	2.77E-06	3.15E-05	4.94E-04	0.00	3.24E-06	2.15E-03	0.00	2.05E-08	6.42E-07	0.07	8.57E-03	9.96E-04	3.07E-04	4.95E-03	3.56E-04	5.73E-03	4.82E-02	8.28E-06
Mar-23	2.00E-04	7.18E-05	7.86E-06	1.24E-04	3.21E-05	2.25E-05	2.62E-05	4.11E-04	0.00	1.47E-05	1.56E-03	0.00	2.24E-08	7.25E-07	0.07	8.27E-03	9.81E-04	2.98E-04	4.82E-03	3.50E-04	5.65E-03	4.74E-02	8.29E-06
Apr-23	6.90E-04	8.72E-05	2.37E-05	3.73E-04	0.00	1.62E-05	3.12E-05	4.91E-04	0.00	8.56E-06	3.46E-03	0.00	1.99E-08	6.66E-07	0.07	8.36E-03	9.83E-04	3.01E-04	4.87E-03	3.51E-04	5.66E-03	4.77E-02	8.27E-06
May-23	7.28E-04	1.03E-04	2.69E-05	4.22E-04	0.00	1.16E-05	3.27E-05	5.14E-04	0.00	6.78E-06	3.06E-03	0.00	2.60E-08	7.02E-07	0.07	8.34E-03	9.90E-04	3.00E-04	4.86E-03	3.51E-04	5.65E-03	4.70E-02	8.28E-06
Jun-23	3.83E-04	8.48E-05	1.52E-05	2.38E-04	7.67E-06	2.15E-05	3.11E-05	4.89E-04	0.00	8.23E-06	4.21E-03	0.00	3.39E-08	6.79E-07	0.07	8.15E-03	9.96E-04	2.94E-04	4.78E-03	3.53E-04	5.69E-03	4.68E-02	8.28E-06
Jul-23	7.60E-04	8.59E-05	2.76E-05	4.34E-04	0.00	6.83E-06	3.18E-05	4.99E-04	0.00	8.62E-06	0.01	0.00	2.52E-08	7.02E-07	0.07	8.17E-03	9.95E-04	2.96E-04	4.80E-03	3.53E-04	5.68E-03	4.73E-02	8.29E-06
Aug-23	6.43E-04	8.28E-05	2.31E-05	3.62E-04	0.00	1.85E-05	2.92E-05	4.58E-04	0.00	1.50E-05	0.01	0.00	2.23E-08	7.00E-07	0.07	8.08E-03	9.94E-04	2.94E-04	4.78E-03	3.53E-04	5.69E-03	4.76E-02	8.30E-06
Sep-23	6.54E-04	5.44E-05	2.24E-05	3.53E-04	4.81E-06	1.32E-05	7.77E-06	1.22E-04	0.00	7.51E-06	2.75E-03	0.00	3.76E-08	6.73E-07	0.07	8.03E-03	9.64E-04	2.93E-04	4.76E-03	3.48E-04	5.60E-03	4.72E-02	8.32E-06
Oct-23	7.39E-04	8.53E-05	2.61E-05	4.10E-04	0.00	8.69E-06	3.18E-05	5.00E-04	0.00	8.14E-06	0.01	0.00	2.79E-08	7.23E-07	0.07	8.00E-03	9.64E-04	2.92E-04	4.74E-03	3.47E-04	5.59E-03	4.77E-02	8.35E-06
Nov-23	7.37E-04	8.93E-05	2.62E-05	4.11E-04	0.00	3.65E-06	3.35E-05	5.26E-04	0.00	2.06E-06	0.01	0.00	2.68E-08	7.05E-07	0.07	7.99E-03	9.68E-04	2.91E-04	4.73E-03	3.47E-04	5.58E-03	4.81E-02	8.35E-06
Dec-23	7.41E-04	9.31E-05	2.56E-05	4.03E-04	0.00	9.94E-06	3.28E-05	5.15E-04	0.00	9.76E-06	4.95E-03	0.00	3.05E-08	7.85E-07	0.07	7.96E-03	9.73E-04	2.90E-04	4.71E-03	3.46E-04	5.57E-03	4.76E-02	8.39E-06
Jan-24	7.10E-04	8.63E-05	2.44E-05	3.84E-04	8.08E-06	1.83E-05	2.82E-05	4.43E-04	0.00	2.77E-05	0.01	0.00	2.82E-08	8.07E-07	0.07	7.96E-03	9.76E-04	2.89E-04	4.71E-03	3.45E-04	5.55E-03	4.77E-02	8.41E-06
Feb-24	7.49E-04	8.70E-05	2.55E-05	4.01E-04	0.00	7.28E-06	3.05E-05	4.79E-04	0.00	8.93E-06	0.01	0.00	2.39E-08	7.39E-07	0.07	8.04E-03	9.82E-04	2.91E-04	4.73E-03	3.46E-04	5.56E-03	4.91E-02	8.44E-06
Mar-24	2.53E-04	9.37E-05	1.07E-05	1.68E-04	1.10E-05	1.50E-05	3.33E-05	5.23E-04	0.00	1.03E-05	2.26E-03	0.00	1.55E-08	8.45E-07	0.07	7.94E-03	9.82E-04	2.88E-04	4.68E-03	3.48E-04	5.59E-03	4.91E-02	8.50E-06
Apr-24	7.03E-04	8.21E-05	2.51E-05	3.95E-04	0.00	8.03E-06	3.05E-05	4.79E-04	0.00	1.00E-05	4.15E-03	0.00	2.68E-08	8.81E-07		7.92E-03	9.77E-04	2.87E-04	4.67E-03	3.49E-04	5.60E-03	4.86E-02	8.60E-06

VOC Baseline Actual Emission Rate Calculations

	Production Data																										
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester	No. 7 Mill Foam Tower	No. 7 Bleach Plant	No. 7 Pulp Dryer	Nos. 7 and 8 Mills ClO2 Production	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 8 Pulp Dryer (for Wastewater Treatment)	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2, Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower	No. 7 Mill Oxygen Delignification (to HVLC)
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Bleached Pulp Production	Finished Pulp Production	ClO2 Production	Lime Production	Lime Production	Tall Oil Production	BLS Throughput	BLS Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Finished Pulp Production	VOC	VOC	VOC	VOC	VOC	VOC
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ODTUBP*	*ADTBP*	*ADTFP*	*tons ClO2*	*tons CaO*	*tons CaO*	*tons TO*	*tons BLS*	*tons BLS*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*ADTFP*	*lb/ODT chips*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ODTUBP*	*lb/ADTUBP*
Jan-15	744	80,993	36,815	1,106	15.3	46.5	487	66.9	41.8	34,238	34,238	1,696	8,903	11,396	2,477	71,044	84,477	215,197	891	84,100	45,251	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-15	672	94,179	42,809	95	0.00	2.7	9,090	7.2	2.4	39,812	39,812	1,581	8,899	10,547	2,829	72,081	79,314	218,105	2,765	40,570	44,231	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-15	744	83,857	38,117	1,047	18.7	82.6	513	7.7	74.4	35,449	35,449	1,515	9,613	11,280	3,406	72,947	78,419	181,048	1,006	105,271	44,256	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-15	720	21,160	9,618	0	3.5	21.6	123	3.7	19.4	8,945	8,945	999	3,036	11,527	2,259	19,335	83,689	50,339	2,579	42,803	43,809	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-15	744	47,182	21,446	630	18.3	23.9	655	35.1	21.5	19,945	19,945	1,286	6,696	11,266	2,616	50,315	80,831	144,507	840	67,451	44,198	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-15	720	73,546	33,430	1,845	27.1	46.9	12	2.5	42.2	31,090	31,090	1,406	8,826	10,641	2,312	71,717	71,665	197,508	831	13,037	40,637	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-15	744	91,057	41,390	313	1.9	3.1	196	7.4	2.8	38,492	38,492	1,748	9,971	13,287	2,857	76,795	90,875	250,965	871	19,902	47,805	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-15	744	85,418	38,827	561	4.8	0.9	2	0.00	0.8	36,109	36,109	1,598	10,154	13,411	2,235	71,276	89,606	237,148	866	8,333	48,405	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-15	720	82,638	37,563	492	13.0	13.6	1,853	31.2	12.2	34,933	34,933	1,208	8,918	5,940	1,895	68,634	34,033	199,595	583	23,371	17,485	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-15	744	79,220	36,009	10	9.3	18.3	7,598	20.5	16.5	33,489	33,489	1,557	9,844	12,305	2,676	68,184	81,193	181,259	918	26,410	41,778	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-15	720	82,846	37,657	603	5.1	8.1	741	26.7	7.3	35,021	35,021	1,691	10,471	13,192	2,863	72,500	87,648	198,688	508	56,034	46,910	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-15	744	65,360	29,709	546	17.0	28.8	33	5.0	25.9	27,629	27,629	1,612	7,483	12,962	2,668	57,498	88,496	185,243	695	94,541	44,927	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-16	744	68,699	31,227	82	4.8	10.2	1,438	0.00	9.1	29,041	29,041	1,580	8,511	13,148	2,718	63,374	93,355	184,194	0	105,490	47,857	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-16	696	73,810	33,550	1,491	4.2	8.5	0	0.00	7.7	31,202	31,202	1,838	8,546	12,933	2,882	71,737	85,379	155,374	2	93,137	47,136	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-16	744	82,789	37,631	9,970	7.0	18.4	1,011	0.00	16.6	34,997	34,997	1,838	7,861	13,902	3,526	76,311	92,544	130,434	0.00	100,371	48,631	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-16	720	20,536	9,334	7,493	35.7	46.4	429	4.1	41.7	8,681	8,681	1,076	1,595	10,861	1,857	18,405	82,829	41,491	272	52,799	42,343	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-16	744	77,060	35,027	7,764	10.2	89.2	2,775	19.5	80.3	32,575	32,575	1,727	7,959	9,940	3,601	75,152	88,572	423,103	0.00	42,980	48,226	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-16	720	75,193	34,179	92	0.8	0.00	487	1.9	0.00	31,786	31,786	1,657	9,337	10,436	3,212	72,276	87,873	377,915	0.00	59,277	47,951	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-16	744	77,285	35,130	14	0.00	0.00	44	32.7	0.00	32,671	32,671	1,647	9,733	10,644	3,191	73,546	87,660	359,537	0.00	60,962	46,267	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-16	744	80,350	36,523	963	6.9	6.4	2,517	64.0	5.8	33,966	33,966	1,668	9,108	10,326	3,027	69,155	84,631	361,986	0.00	57,672	47,207	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-16	720	76,571	34,805	1,481	38.3	0.00	452	16.3	0.00	32,368	32,368	1,273	8,504	5,931	1,981	68,024	48,663	311,479	0.00	76,439	25,402	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-16	744	81,401	37,001	2,185	5.1	5.9	457	0.00	5.3	34,411	34,411	1,741	8,653	10,308	3,107	68,821	90,800	384,635	0.00	92,371	51,471	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-16	720	75,835	34,470	30	6.3	1.4	2,875	11.0	1.3	32,057	32,057	1,604	9,104	9,705	3,008	73,637	89,150	346,255	0.00	78,882	48,121	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-16	744	64,835	29,470	169	4.6	8.0	417	0.00	7.2	27,408	27,408	1,531	9,376	10,710	2,847	67,590	89,465	329,439	0.00	58,941	50,349	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-17	744	83,335	37,880	441	0.00	0.00	1,846	6.1	0.00	35,228	35,228	1,649	10,197	10,880	3,134	76,507	84,917	320,728	0.00	73,443	44,724	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-17	672	77,117	35,053	8,894	21.9	0.00	220	2.5	0.00	32,599	32,599	1,615	8,611	10,537	3,126	65,245	83,153	334,842	0.00	43,534	46,060	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-17	744	15,479	7,036	393	0.00	0.00	756	0.00	0.00	6,543	6,543	1,059	1,817	11,781	2,165	10,011	96,223	401,645	0.00	28,245	49,469	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-17	720	0.00	0.00	0	0.00	0.00	6,201	22.9	0.00	0.00	0.00	983	489	10,808	1,719	0	87,437	114,315	0.00	26,265	44,733	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-17	744	69,359	31,527	817	10.9	25.2	136	33.5	22.7	29,320	29,320	1,454	9,298	11,444	2,668	71,042	90,418	280,618	0.00	58,094	48,244	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-17	720	81,997	37,271	896	4.7	66.8	72	0.00	60.1	34,662	34,662	1,976	10,085	12,777	2,294	75,499	90,339	255,078	0.00	101,363	49,401	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-17	744	85,579	38,899	283	0.4	4.0	194	7.2	3.6	36,176	36,176	1,707	10,805	13,263	2,224	79,475	94,784	359,770	0.00	71,977	49,324	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-17	744	76,841	34,928	191	0.3	16.3	837	16.7	14.7	32,483	32,483	1,393	10,778	12,121	2,431	75,274	90,742	275,193	0.00	83,128	47,264	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-17	720	79,264	36,029	73	5.4	5.3	914	0.00	4.8	33,507	33,507	1,166	10,570	10,666	968	71,404	43,240	281,219	0.00	57,200	18,900	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-17	744	70,913	32,233	3,159	16.1	0.00	605	17.4	0.00	29,977	29,977	1,572	9,893	10,613	1,295	68,119	86,542	312,155	0.00	72,401	45,792	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-17	720	83,615	38,007	20	1.2	2.9	153	0.00	2.6	35,346	35,346	1,691	11,126	10,880	1,744	75,826	90,768	350,165	0.00	35,245	47,923	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-17	744	75,885	34,493	339	0.7	7.0	1,041	10.8	6.3	32,079	32,079	1,499	9,553	10,562	2,052	65,828	88,839	286,283	0.00	74,422	46,108	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-18	744	83,337	37,880	96	115.5	3.1	2,087	1.7	2.8	35,229	35,229	1,531	9,840	7,878	1,677	69,713	63,596	282,869	0.00	111,037	30,879	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-18	672	77,208	35,095	252	16.0	3.6	767	10.4	3.3	32,638	32,638	1,543	9,050	10,338	2,411	67,334	85,839	257,531	0.00	94,415	46,897	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-18	744	79,843	36,292	671	33.9	0.00	785	0.00	0.00	33,752	33,752	1,673	10,185	11,145	3,131	72,264	91,382	305,039	0.00	94,132	50,691	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-18	720	20,946	9,521	142	0.00	0.00	921	1.1	0.00	8,854	8,854	1,024	3,493	10,100	1,400	20,206	87,174	81,000	0.00	66,820	45,454	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-18	744	79,261	36,028	7,140	60.6	37.4	1,058	70.5	33.7	33,506	33,506	1,856	8,385	10,764	2,683	70,056	88,412	194,686	0.00	97,665	46,794	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-18	720	77,602	35,274	1,953	0.00	4.8	36	2.3	4.3	32,805	32,805	1,567	9,676	10,602	2,594	71,572	84,311	357,655	0.00	57,537	47,116	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-18	744	81,473	37,033	1,255	35.7	8.0	967	7.0	7.2	34,441	34,441	1,747	10,309	11,241	2,854	74,875	87,489	338,021	0.00	48,295	46,861	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-18	744	77,216	35,098	286	0.00	11.7	1,133	6.5	10.5	32,641	32,641	1,646	10,287	11,686	2,348	71,908	78,014	317,709	0.00	89,903	44,372	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-18	720	76,801	34,909	3,997	9.8	0.00	1	4.3	0.00	32,466	32,466	1,409	10,027	15,791	1,600	67,761	48,883	173,353	0.00	61,922	27,199	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-18	744	86,316	39,235	1,301	4.2	39.4	1,212	25.1	35.4	36,488	36,488	1,479	9,434	11,243	3,108	75,135	79,508	247,533	0.00	74,967	39,731	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-18	720	79,813	36,279	2,525	16.3	21.8	413	0.00	19.6	33,739	33,739	1,598	9,527	11,441	3,163	70,639	83,733	301,955	0.00	66,663	45,634	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-18	744	80,790	36,723	650	1.9	72.0	715	7.8	64.8	34,152	34,152	1,549	8,956	11,210	2,860	69,930	83,970	203,611	0.00	75,788	43,462	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-19	744	89,974	40,897	63	27.3	0.00	324	0.7	0.00	38,035	38,035	1,497	10,237	10,069	2,726	73,484	75,254	154,244	0.00	101,087	36,974	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-19	672	66,921	30,419	9	3.7	14.3	255	0.00	12.9	28,289	28,289	1,358	8,590	11,139	2,742	58,334	80,923	244,930	0.00	89,405	43,566	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-19	744	83,336	37,880	4	0.00	7.5	190	4.4	6.8	35,229	35,229	1,879	9,222	13,183	3,802	71,830	91,845	255,769	0.00	90,187	48,559	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-19	720	17,507	7,958	719	3.8	43.8	1,085	7.6	39.4	7,401	7,401	1,107	2,327	11,639	2,379	15,868	90,313	64,295	0.00	32,548	47,864	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-19	744	81,321	36,964	1,407	0.00	78.6	582	18.0	70.7	34,377	34,377	1,634	10,193	12,055	3,146	74,034	81,584	200,273	0.00	47,921	44,129	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-19	720	82,545	37,521	884	0.00	77.2	242	21.5	69.5	34,894	34,894	1,714	9,763	12,335	3,138	67,914	82,148	225,384	0.00	51,401	42,093	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-19	744	92,330	41,968	688	26.7	1.7	336	0.00	1.5	39,031	39,031	1,961	11,692	13,778	3,430	77,913	91,943	272,652	0.00	90,014	50,393	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-19	744	69,372	31,533	979	24.0	15.8	45	0.0	14.2	29,326	29,326	1,666	10,018	13,908	3,713	60,235	82,432	200,725	0.00	89,903	42,684	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-19	720	75,457	34,299	927	24.5	21.6	2,194	0.00	19.5	31,898	31,898	1,384	9,550	12,619	2,476	64,488	53,965	253,285	0.00	66,878	27,650	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-19	744	87,989	39,995	1,771	0.00	2.7	613	0.00	2.4	37,195	37,195	1,967	11,296	12,536	2,741	69,812	88,476	242,815	0.00	88,141	48,330	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-19	720	91,500	41,591	506	4.2	5.4	827	15.8	4.9	38,680	38,680	1,911	11,401	12,287	3,353	75,552	91,812	204,503	0.00	126,946	48,218	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-19	744	86,910	39,505	684	5.6	3.3	5	37.7	3.0	36,739	36,739	1,830	11,184	13,644	3,808	74,284	90,819	154,489	0.00	94,818	49,849	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-20	744	90,271	41,032	3	1.3	10.8	9,926	3.6	9.7	38,160	38,160	1,902	11,334	13,680	3,127	74,083	91,466	401,869	0.00	107,561	47,720	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-20	696	85,322	38,783	25	3.9	35.9	2,883	2.4	32.3	36,068	36,068	1,748	11,337	12,869	3,541	71,713	78,229	240,306	0.00	84,870	42,005	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-20	744	91,417	41,553	685	0.00	0.00	924	14.2	0.00	38,644	38,644	1,643	11,593	12,605	3,839	78,757	85,701	296,988	0.00	45,881	46,855	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-20	720	88,536	40,244	477	7.6	3.4	610	9.0	3.1	37,427	37,427	1,755	11,664	12,767	3,851	76,123	91,054	316,236	0.00	98,230	49,534	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-20	744	68,590	31,177	563	12.2	6.4	7	2.5	5.8	28,995	28,995	1,552	8,755	13,141	3,164	53,972	91,056	248,325	0.00	68,182	47,636	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-20	720	81,955	37,252	3,410	27.4	29.8	100	0.0	26.9	34,644	34,644	1,568	9,532	11,841	3,145	69,047	87,069	291,682	0.00	148,939	46,693	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-20	744	81,792	37,178	135	17.6	52.2	24	26.1	47.0	34,576	34,576	1,732	10,175	12,222	4,062	69,441	91,518	255,251	0.00	133,928	49,954	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-20	744	89,148	40,522	2,087	14.9	0.00	0	14.3	0.00	37,685	37,685	1,614	10,875	12,531	3,960	77,036	91,406	183,264	0.00	72,058	51,291	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20

VOC Baseline Actual Emission Rate Calculations

	Production Data																											
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester	No. 7 Mill Foam Tower	No. 7 Bleach Plant	No. 7 Pulp Dryer	Nos. 7 and 8 Mills ClO2 Production	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 8 Pulp Dryer (for Wastewater Treatment)	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2, Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower	No. 7 Mill Oxygen Delignification (to HVLC)
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Bleached Pulp Production	Finished Pulp Production	ClO2 Production	Lime Production	Lime Production	Tall Oil Production	BLS Throughput	BLS Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Finished Pulp Production	VOC	VOC	VOC	VOC	VOC	VOC
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ODTUBP*	*ADTBP*	*ADTFP*	*tons ClO2*	*tons CaO*	*tons CaO*	*tons TO*	*tons BLS*	*tons BLS*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*ADTFP*	*lb/ODT chips*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ODTUBP*	*lb/ADTUBP*
Sep-20	720	66,821	30,373	821	67.5	36.7	431	2.4	33.0	28,247	28,247	1,344	9,704	8,522	2,479	60,516	52,377	236,313	0.00	82,425	30,095	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-20	744	68,400	31,091	408	24.5	0.00	12,121	6.1	0.00	28,915	28,915	1,552	9,979	10,292	2,784	60,584	79,476	186,160	0.00	81,160	42,865	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-20	720	80,451	36,569	1,466	3.7	3.4	1,711	7.4	3.0	34,009	34,009	1,701	10,810	12,307	3,434	72,172	87,820	538,990	0.00	78,554	49,243	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-20	744	82,255	37,388	9,182	65.1	9.3	2,131	87.7	8.4	34,771	34,771	1,870	10,113	12,225	3,159	69,298	91,927	324,413	0.00	82,449	49,268	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-21	744	92,130	41,877	6,305	10.4	0.00	1	0.00	0.00	38,946	38,946	1,850	10,889	12,837	3,481	75,476	91,675	264,262	0.00	54,540	48,846	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-21	672	77,666	35,303	411	63.6	12.6	115	0.00	11.4	32,831	32,831	1,638	9,521	11,991	3,602	64,842	84,147	236,293	0.00	100,333	42,651	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-21	744	84,502	38,410	1,389	9.9	2.0	796	106.7	1.8	35,721	35,721	1,831	10,420	13,606	3,969	68,111	96,002	205,187	0.00	73,991	50,312	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-21	720	54,206	24,639	1,263	8.5	28.8	1,869	21.4	25.9	22,914	22,914	1,475	6,722	11,426	1,859	47,211	79,412	183,033	0.00	54,958	41,917	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-21	744	86,115	39,143	1,233	10.1	13.5	1,968	2.5	12.2	36,403	36,403	1,929	9,954	12,049	3,349	73,937	86,559	294,064	0.00	121,981	46,319	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-21	720	69,733	31,697	296	26.4	0.00	2,323	70.7	0.00	29,478	29,478	1,593	9,931	9,744	2,568	71,785	67,000	301,646	0.00	77,160	42,478	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-21	744	68,787	31,267	518	71.3	0.00	1,314	3.1	0.00	29,078	29,078	1,589	9,241	11,993	2,410	61,455	86,692	261,824	0.00	120,656	47,136	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-21	744	79,907	36,322	289	14.0	0.00	19,913	9.0	0.00	33,779	33,779	1,396	10,668	11,466	2,398	69,542	73,966	382,453	0.00	113,933	41,102	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-21	720	78,034	35,470	1,262	10.2	5.0	3,726	14.2	4.5	32,987	32,987	1,392	9,952	15,335	1,794	65,162	49,408	223,379	0.00	130,256	25,204	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-21	744	86,183	39,174	70	18.4	3.6	3,831	0.00	3.2	36,432	36,432	1,773	10,266	11,458	3,264	76,710	86,340	316,032	0.00	120,733	49,161	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-21	720	87,272	39,669	540	8.2	0.00	1,511	1.2	0.00	36,892	36,892	1,894	9,986	11,098	3,272	72,915	87,337	306,997	0.00	147,943	47,270	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-21	744	92,833	42,197	6	53.6	0.00	1,423	0.00	0.00	39,243	39,243	1,747	10,226	11,147	3,615	73,410	91,721	378,346	0.00	116,340	48,273	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-22	744	73,084	33,220	1,152	23.5	14.6	1,069	1.6	13.2	30,895	30,895	1,718	9,282	11,027	3,266	65,356	79,083	343,045	0.00	133,310	43,839	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-22	672	64,307	29,230	59	2.6	0.00	365	0.00	0.00	27,184	27,184	1,417	7,595	9,962	3,324	57,394	75,833	195,412	0.00	94,449	42,378	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-22	744	45,757	20,799	612	14.1	42.6	2,454	0.00	38.3	19,343	19,343	1,360	6,008	12,737	2,215	46,135	76,131	139,514	0.00	78,239	42,707	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-22	720	79,114	35,961	333	21.9	11.9	7,258	25.2	10.7	33,444	33,444	1,668	9,654	12,499	2,685	70,078	75,611	339,179	0.00	84,749	44,372	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-22	744	75,399	34,272	41	25.2	114.7	6,230	31.5	103.2	31,873	31,873	1,471	9,628	12,101	2,494	67,457	68,954	262,522	0.00	90,347	36,440	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-22	720	85,542	38,883	878	2.0	5.4	1,248	2.3	4.9	36,161	36,161	1,973	9,917	11,676	2,912	73,726	87,307	306,228	0.00	91,060	47,096	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-22	744	75,620	34,373	1,024	0.5	108.1	10,823	3.1	97.3	31,967	31,967	1,762	10,441	10,557	3,075	68,732	81,361	331,701	0.00	78,059	45,748	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-22	744	79,699	36,227	337	55.9	0.00	3,288	10.9	0.00	33,691	33,691	2,012	9,174	10,582	3,320	72,214	84,218	209,734	0.00	111,282	47,347	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-22	720	75,313	34,233	9,533	33.1	11.0	688	14.8	9.9	31,837	31,837	1,011	9,330	2,973	1,392	66,113	23,006	182,836	0.00	72,986	13,813	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-22	744	71,577	32,535	7,513	13.5	3.6	7,565	14.1	3.3	30,257	30,257	1,547	9,410	10,627	2,151	68,581	80,175	344,478	0.00	51,703	43,572	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-22	720	73,028	33,195	3	0.5	24.2	3,392	3.2	21.8	30,871	30,871	2,118	8,647	10,821	3,015	67,662	84,160	191,109	0.00	85,432	45,726	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-22	744	87,023	39,556	304	38.6	45.9	1,553	0.00	41.3	36,787	36,787	1,995	9,863	11,379	2,928	76,711	83,179	231,638	0.00	96,471	44,913	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-23	744	82,345	37,430	224	19.0	43.1	1,691	3.5	38.8	34,810	34,810	1,830	8,571	11,921	3,188	68,969	75,796	172,893	0.00	106,295	38,973	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-23	672	68,548	31,158	3	16.7	0.00	328	0.0	0.00	28,977	28,977	1,718	7,791	10,944	3,132	58,892	82,339	139,139	0.00	83,636	44,754	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-23	744	11,724	5,329	1,315	13.8	16.2	3,287	16.4	14.6	4,956	4,956	1,040	2,599	9,705	2,044	20,586	68,474	100,962	0.00	91,444	38,660	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-23	720	65,865	29,939	184	3.3	61.6	561	6.8	55.5	27,843	27,843	2,003	8,960	11,778	2,325	62,129	81,803	223,645	0.00	81,224	44,859	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
May-23	744	77,099	35,045	1,357	40.4	21.9	1,503	2.7	19.7	32,592	32,592	2,149	9,457	13,971	4,165	70,410	85,709	198,173	0.00	106,268	47,670	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jun-23	720	46,973	21,351	552	0.5	0.00	2,214	7.0	0.00	19,857	19,857	1,364	4,972	11,455	3,531	39,730	81,542	272,652	0.00	138,115	44,360	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jul-23	744	80,285	36,493	282	2.0	3.1	1,474	0.00	2.8	33,939	33,939	1,864	9,872	11,604	3,568	72,314	83,238	337,315	0.00	103,009	45,345	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Aug-23	744	71,385	32,448	6,284	803.6	33.2	1,771	48.1	29.9	30,177	30,177	1,753	8,347	11,185	3,528	60,396	76,374	410,804	0.00	90,991	39,347	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Sep-23	720	72,173	32,806	915	11.9	52.5	196	0.8	47.3	30,509	30,509	1,250	8,499	7,351	1,461	58,763	20,344	178,274	0.00	153,469	11,558	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Oct-23	744	80,940	36,791	67	0.00	28.5	2,380	5.9	25.7	34,215	34,215	1,866	9,595	11,525	2,450	68,392	83,324	378,411	0.00	113,867	43,162	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Nov-23	720	85,526	38,876	10	0.00	12.4	429	4.1	11.2	36,154	36,154	1,804	9,576	12,073	2,772	68,551	87,639	355,623	0.00	109,285	46,197	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Dec-23	744	76,556	34,798	286	6.1	11.1	614	5.9	10.0	32,362	32,362	2,130	9,623	12,577	2,899	67,124	85,757	320,268	0.00	124,377	47,473	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Jan-24	744	67,127	30,512	1,389	33.5	30.7	2,485	48.0	27.7	28,377	28,377	1,740	9,227	11,657	2,595	63,933	73,898	347,185	0.00	115,105	39,879	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Feb-24	696	82,835	37,652	123	8.1	0.00	581	0.00	0.00	35,017	35,017	1,692	9,721	11,761	2,989	66,821	79,915	375,297	0.00	97,654	42,895	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Mar-24	744	32,050	14,568	10,798	0.00	23.9	532	16.6	21.5	13,548	13,548	1,413	3,291	12,661	2,971	28,031	87,235	146,008	0.00	63,257	46,035	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20
Apr-24	720	73,211	33,278	3,149	2.9	8.7	1,258	4.6	7.8	30,948	30,948	2,011	9,133	11,096	2,859	65,802	79,857	268,601	0.00	109,468	45,320	0.33	0.39	4.82E-03	0.22	6.00E-02	0.20

VOC Baseline Actual Emission Rate Calculations

	Emission Factors																													
	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Mill Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks and Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow	No. 7 Mill - Secondary Knotters No. 1 & No. 2, Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System
	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC - Fuel Oil	VOC - Natural Gas	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	lb/ADTUBP	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTBP*	*lb/ton ClO2*	*lb/ADTUBP*	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton TO*	*lb/ton TO*	*lb/ton TO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTFP*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.51	2.98E-03	8.87E-02	4.99E-03	1.25E-03	4.54E-03	6.87E-02
Feb-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.71	0.00	0.10	2.85E-04	7.16E-05	2.59E-04	7.98E-02
Mar-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.99	3.63E-03	9.18E-02	8.88E-03	2.23E-03	8.08E-03	7.11E-02
Apr-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	3.53	6.79E-04	2.32E-02	2.32E-03	5.83E-04	2.11E-03	1.79E-02
May-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	7.87	3.55E-03	5.17E-02	2.57E-03	6.45E-04	2.33E-03	4.00E-02
Jun-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.27	5.25E-03	8.05E-02	5.04E-03	1.27E-03	4.59E-03	6.23E-02
Jul-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.19	3.60E-04	9.97E-02	3.28E-04	8.25E-05	2.99E-04	7.72E-02
Aug-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.25	9.32E-04	9.35E-02	9.23E-05	2.32E-05	8.39E-05	7.24E-02
Sep-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.79	2.52E-03	9.05E-02	1.46E-03	3.66E-04	1.33E-03	7.01E-02
Oct-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.22	1.80E-03	8.67E-02	1.97E-03	4.95E-04	1.79E-03	6.72E-02
Nov-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.82	9.97E-04	9.07E-02	8.69E-04	2.18E-04	7.90E-04	7.02E-02
Dec-15	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	10.90	3.30E-03	7.16E-02	3.09E-03	7.76E-04	2.81E-03	5.54E-02
Jan-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.46	9.30E-04	7.52E-02	1.09E-03	2.74E-04	9.92E-04	5.82E-02
Feb-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.31	8.14E-04	8.08E-02	9.16E-04	2.30E-04	8.33E-04	6.26E-02
Mar-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.81	1.36E-03	9.07E-02	1.98E-03	4.97E-04	1.80E-03	7.02E-02
Apr-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	3.43	6.93E-03	2.25E-02	4.98E-03	1.25E-03	4.53E-03	1.74E-02
May-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.86	1.98E-03	8.44E-02	9.59E-03	2.41E-03	8.72E-03	6.53E-02
Jun-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.54	1.62E-04	8.23E-02	0.00	0.00	0.00	6.37E-02
Jul-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.89	0.00	8.46E-02	0.00	0.00	0.00	6.55E-02
Aug-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.40	1.34E-03	8.80E-02	6.88E-04	1.73E-04	6.26E-04	6.81E-02
Sep-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.77	7.44E-03	8.38E-02	0.00	0.00	0.00	6.49E-02
Oct-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.58	9.87E-04	8.91E-02	6.34E-04	1.59E-04	5.76E-04	6.90E-02
Nov-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.65	1.23E-03	8.30E-02	1.49E-04	3.75E-05	1.36E-04	6.43E-02
Dec-16	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	4.76E-03	2.07E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	10.82	9.00E-04	7.10E-02	8.64E-04	2.17E-04	7.86E-04	5.50E-02
Jan-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.90	0.00	9.13E-02	0.00	0.00	0.00	7.06E-02
Feb-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.87	4.25E-03	8.44E-02	0.00	0.00	0.00	6.54E-02
Mar-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	2.58	0.00	1.69E-02	0.00	0.00	0.00	1.31E-02
Apr-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
May-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.57	2.12E-03	7.60E-02	2.71E-03	6.81E-04	2.46E-03	5.88E-02
Jun-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.68	9.21E-04	8.98E-02	7.18E-03	1.80E-03	6.52E-03	6.95E-02
Jul-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.28	7.54E-05	9.37E-02	4.27E-04	1.07E-04	3.88E-04	7.25E-02
Aug-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.82	5.58E-05	8.41E-02	1.76E-03	4.41E-04	1.60E-03	6.51E-02
Sep-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.22	1.04E-03	8.68E-02	5.69E-04	1.43E-04	5.17E-04	6.72E-02
Oct-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.83	3.12E-03	7.77E-02	0.00	0.00	0.00	6.01E-02
Nov-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.95	2.32E-04	9.16E-02	3.14E-04	7.88E-05	2.85E-04	7.09E-02
Dec-17	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.66	1.35E-04	8.31E-02	7.48E-04	1.88E-04	6.80E-04	6.43E-02
Jan-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.90	2.24E-02	9.13E-02	3.35E-04	8.41E-05	3.04E-04	7.06E-02
Feb-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.88	3.11E-03	8.45E-02	3.88E-04	9.75E-05	3.53E-04	6.55E-02
Mar-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.32	6.57E-03	8.74E-02	0.00	0.00	0.00	6.77E-02
Apr-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	3.49	0.00	2.29E-02	0.00	0.00	0.00	1.78E-02
May-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.22	1.18E-02	8.68E-02	4.02E-03	1.01E-03	3.66E-03	6.72E-02
Jun-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.95	0.00	8.50E-02	5.15E-04	1.29E-04	4.68E-04	6.58E-02
Jul-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.59	6.92E-03	8.92E-02	8.59E-04	2.16E-04	7.80E-04	6.91E-02
Aug-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.88	0.00	8.46E-02	1.25E-03	3.15E-04	1.14E-03	6.55E-02
Sep-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.81	1.91E-03	8.41E-02	0.00	0.00	0.00	6.51E-02
Oct-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.40	8.14E-04	9.45E-02	4.23E-03	1.06E-03	3.85E-03	7.32E-02
Nov-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.31	3.17E-03	8.74E-02	2.34E-03	5.89E-04	2.13E-03	6.77E-02
Dec-18	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.48	3.65E-04	8.85E-02	7.74E-03	1.94E-03	7.04E-03	6.85E-02
Jan-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.01	5.29E-03	9.85E-02	0.00	0.00	0.00	7.63E-02
Feb-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.16	7.14E-04	7.33E-02	1.54E-03	3.86E-04	1.40E-03	5.67E-02
Mar-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.90	0.00	9.13E-02	8.10E-04	2.04E-04	7.37E-04	7.06E-02
Apr-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	2.92	7.28E-04	1.92E-02	4.71E-03	1.18E-03	4.28E-03	1.48E-02
May-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.57	0.00	8.91E-02	8.44E-03	2.12E-03	7.68E-03	6.89E-02
Jun-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.77	0.00	9.04E-02	8.30E-03	2.09E-03	7.55E-03	7.00E-02
Jul-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.40	5.18E-03	0.10	1.79E-04	4.50E-05	1.63E-04	7.83E-02
Aug-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.57	4.65E-03	7.60E-02	1.70E-03	4.27E-04	1.55E-03	5.88E-02
Sep-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.59	4.76E-03	8.26E-02	2.32E-03	5.84E-04	2.11E-03	6.40E-02
Oct-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.68	0.00	9.64E-02	2.89E-04	7.27E-05	2.63E-04	7.46E-02
Nov-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.26	8.09E-04	0.10	5.82E-04	1.46E-04	5.29E-04	7.76E-02
Dec-19	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.50	1.08E-03	9.52E-02	3.58E-04	9.00E-05	3.26E-04	7.37E-02
Jan-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.06	2.46E-04	9.88E-02	1.16E-03	2.90E-04	1.05E-03	7.65E-02
Feb-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.23	7.54E-04	9.34E-02	3.86E-03	9.69E-04	3.51E-03	7.23E-02
Mar-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.25	0.00	0.10	0.00	0.00	0.00	7.75E-02
Apr-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.77	1.48E-03	9.70E-02	3.64E-04	9.15E-05	3.31E-04	7.51E-02
May-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.44	2.37E-03	7.51E-02	6.88E-04	1.73E-04	6.25E-04	5.81E-02
Jun-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.67	5.32E-03	8.97E-02	3.21E-03	8.06E-04	2.92E-03	6.95E-02
Jul-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.65	3.42E-03	8.96E-02	5.62E-03	1.41E-03	5.11E-03	6.93E-02
Aug-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.87	2.88E-03	9.76E-02	0.00	0.00	0.00	7.56E-02

VOC Baseline Actual Emission Rate Calculations

	Emission Factors																														
	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Mill Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks and Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Prestreamers, Continuous Digesters, Flash Tanks, & Blow	No. 7 Mill - No. 1 & No. 2 Knotters No. 1 & No. 2, Knot Press	No. 7 Mill - Secondary Knotters No. 1 & No. 2, Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System
	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC - Fuel Oil	VOC - Natural Gas	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC
	lb/ADTUBP	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTBP*	*lb/ton ClO2*	*lb/ADTUBP*	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton TO*	*lb/ton TO*	*lb/ton TO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTFP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTFP*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Sep-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.15	1.31E-02	7.32E-02	3.94E-03	9.90E-04	3.58E-03	5.66E-02
Oct-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.41	4.75E-03	7.49E-02	0.00	0.00	0.00	5.80E-02
Nov-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.42	7.27E-04	8.81E-02	3.62E-04	9.08E-05	3.29E-04	6.82E-02
Dec-20	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.72	1.26E-02	9.01E-02	9.98E-04	2.51E-04	9.07E-04	6.97E-02
Jan-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.37	2.03E-03	0.10	0.00	0.00	0.00	7.81E-02
Feb-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.96	1.24E-02	8.50E-02	1.36E-03	3.41E-04	1.23E-03	6.58E-02
Mar-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.10	1.93E-03	9.25E-02	2.16E-04	5.42E-05	1.96E-04	7.16E-02
Apr-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	9.04	1.64E-03	5.94E-02	3.09E-03	7.77E-04	2.81E-03	4.60E-02
May-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.37	1.96E-03	9.43E-02	1.45E-03	3.65E-04	1.32E-03	7.30E-02
Jun-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.63	5.13E-03	7.64E-02	0.00	0.00	0.00	5.91E-02
Jul-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.48	1.38E-02	7.53E-02	0.00	0.00	0.00	5.83E-02
Aug-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.33	2.72E-03	8.75E-02	0.00	0.00	0.00	6.77E-02
Sep-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.02	1.98E-03	8.55E-02	5.35E-04	1.34E-04	4.86E-04	6.62E-02
Oct-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.38	3.57E-03	9.44E-02	3.87E-04	9.72E-05	3.52E-04	7.31E-02
Nov-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.56	1.60E-03	9.56E-02	0.00	0.00	0.00	7.40E-02
Dec-21	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.037	0.046	2.90	4.90E-03	1.10E-04	2.60E-03	2.61E-02	4.88E-03	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	15.49	1.04E-02	0.10	0.00	0.00	0.00	7.87E-02
Jan-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.19	4.57E-03	8.00E-02	1.57E-03	3.95E-04	1.43E-03	6.20E-02
Feb-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	10.73	4.96E-04	7.04E-02	0.00	0.00	0.00	5.45E-02
Mar-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	7.63	2.74E-03	5.01E-02	4.58E-03	1.15E-03	4.16E-03	3.88E-02
Apr-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.20	4.25E-03	8.66E-02	1.28E-03	3.21E-04	1.16E-03	6.71E-02
May-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.58	4.90E-03	8.26E-02	1.23E-02	3.10E-03	1.12E-02	6.39E-02
Jun-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.27	3.94E-04	9.37E-02	5.85E-04	1.47E-04	5.32E-04	7.25E-02
Jul-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.62	8.76E-05	8.28E-02	1.16E-02	2.92E-03	1.06E-02	6.41E-02
Aug-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.30	1.09E-02	8.73E-02	0.00	0.00	0.00	6.76E-02
Sep-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.56	6.43E-03	8.25E-02	1.18E-03	2.96E-04	1.07E-03	6.38E-02
Oct-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.94	2.63E-03	7.84E-02	3.92E-04	9.84E-05	3.56E-04	6.07E-02
Nov-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.18	1.04E-04	8.00E-02	2.60E-03	6.53E-04	2.36E-03	6.19E-02
Dec-22	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.52	7.49E-03	9.53E-02	4.93E-03	1.24E-03	4.49E-03	7.38E-02
Jan-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.74	3.69E-03	9.02E-02	4.64E-03	1.17E-03	4.22E-03	6.98E-02
Feb-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.44	3.24E-03	7.51E-02	0.00	0.00	0.00	5.81E-02
Mar-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	1.96	2.67E-03	1.28E-02	1.75E-03	4.39E-04	1.59E-03	9.94E-03
Apr-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	10.99	6.41E-04	7.21E-02	6.63E-03	1.66E-03	6.02E-03	5.58E-02
May-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.86	7.85E-03	8.44E-02	2.35E-03	5.91E-04	2.14E-03	6.54E-02
Jun-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	7.84	8.86E-05	5.14E-02	0.00	0.00	0.00	3.98E-02
Jul-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.39	3.88E-04	8.79E-02	3.32E-04	8.34E-05	3.02E-04	6.81E-02
Aug-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.91	0.16	7.82E-02	3.57E-03	8.97E-04	3.25E-03	6.05E-02
Sep-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.04	2.32E-03	7.90E-02	5.65E-03	1.42E-03	5.13E-03	6.12E-02
Oct-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.50	0.00	8.86E-02	3.07E-03	7.70E-04	2.79E-03	6.86E-02
Nov-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	14.27	0.00	9.37E-02	1.33E-03	3.35E-04	1.21E-03	7.25E-02
Dec-23	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.77	1.18E-03	8.38E-02	1.19E-03	2.99E-04	1.08E-03	6.49E-02
Jan-24	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	11.20	6.51E-03	7.35E-02	3.30E-03	8.30E-04	3.00E-03	5.69E-02
Feb-24	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	13.82	1.58E-03	9.07E-02	0.00	0.00	0.00	7.02E-02
Mar-24	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	5.35	0.00	3.51E-02	2.57E-03	6.46E-04	2.34E-03	2.72E-02
Apr-24	3.73E-03	7.69E-02	0.20	2.10E-02	9.38E-03	0.32	0.11	0.32	0.013	0.025	2.90	4.90E-03	1.10E-04	2.60E-03	2.11E-02	3.59E-02	2.57E-03	1.43E-03	5.39E-03	0.15	9.20E-04	2.91E-03	3.14	12.21	5.66E-04	8.02E-02	9.35E-04	2.35E-04	8.50E-04	6.21E-02

VOC Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																						
	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Mill Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC - Fuel Oil	VOC - Natural Gas	VOC	VOC	VOC	VOC
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	1.42	3.47	0.36	7.95E-03	2.47E-03	4.20E-02	1.08E-02	0.16	0.26	3.59	1.21E-02	6.07E-03	1.36E-04	9.24E-02	0.17	0.87	0.28	6.36E-04	0.23	2.56	7.05E-06	2.32E-03	124.94
Feb-15	1.65	4.03	0.42	7.41E-03	0.00	3.80E-02	1.16E-03	0.16	0.24	4.10	1.39E-02	6.93E-03	1.56E-04	9.37E-02	0.17	0.82	0.28	1.98E-03	0.11	2.98	0.00	1.34E-02	132.10
Mar-15	1.47	3.59	0.37	7.11E-03	3.01E-03	4.20E-02	1.24E-03	0.18	0.26	4.94	1.67E-02	8.35E-03	1.87E-04	9.48E-02	0.17	0.81	0.23	7.19E-04	0.28	2.65	8.60E-06	2.27E-03	125.28
Apr-15	0.37	0.91	0.09	4.69E-03	5.63E-04	4.07E-02	6.02E-04	5.62E-02	0.27	3.28	1.11E-02	5.53E-03	1.24E-04	2.51E-02	4.60E-02	0.87	6.47E-02	1.84E-03	0.12	0.67	1.61E-06	1.79E-04	82.92
May-15	0.82	2.02	0.21	6.03E-03	2.95E-03	4.20E-02	5.66E-03	0.12	0.26	3.79	1.28E-02	6.41E-03	1.44E-04	6.54E-02	0.12	0.84	0.19	6.00E-04	0.18	1.49	8.42E-06	1.87E-03	100.82
Jun-15	1.29	3.15	0.33	6.59E-03	4.36E-03	4.07E-02	3.96E-04	0.16	0.25	3.35	1.13E-02	5.67E-03	1.27E-04	9.32E-02	0.17	0.74	0.25	5.94E-04	3.51E-02	2.32	1.25E-05	2.70E-03	112.74
Jul-15	1.59	3.90	0.40	8.20E-03	2.99E-04	4.20E-02	1.18E-03	0.18	0.31	4.14	1.40E-02	7.00E-03	1.57E-04	9.98E-02	0.18	0.94	0.32	6.22E-04	5.37E-02	2.88	8.54E-07	7.40E-04	135.65
Aug-15	1.49	3.65	0.38	7.49E-03	7.73E-04	4.20E-02	0.00	0.19	0.31	3.24	1.10E-02	5.48E-03	1.23E-04	9.27E-02	0.17	0.93	0.30	6.19E-04	2.25E-02	2.70	2.21E-06	8.19E-04	132.84
Sep-15	1.44	3.54	0.37	5.67E-03	2.09E-03	4.07E-02	5.02E-03	0.17	0.14	2.75	9.29E-03	4.64E-03	1.04E-04	8.92E-02	0.16	0.35	0.26	4.16E-04	6.30E-02	2.61	5.98E-06	3.41E-03	82.39
Oct-15	1.38	3.39	0.35	7.30E-03	1.49E-03	4.20E-02	3.31E-03	0.18	0.28	3.88	1.31E-02	6.56E-03	1.47E-04	8.86E-02	0.16	0.84	0.23	6.56E-04	7.12E-02	2.50	4.27E-06	1.11E-02	118.31
Nov-15	1.45	3.54	0.37	7.93E-03	8.27E-04	4.07E-02	4.30E-03	0.19	0.30	4.15	1.40E-02	7.01E-03	1.57E-04	9.42E-02	0.17	0.91	0.26	3.63E-04	0.15	2.62	2.36E-06	1.96E-03	128.78
Dec-15	1.14	2.80	0.29	7.56E-03	2.74E-03	4.20E-02	8.05E-04	0.14	0.30	3.87	1.31E-02	6.54E-03	1.47E-04	7.47E-02	0.14	0.92	0.24	4.96E-04	0.25	2.07	7.82E-06	8.42E-04	114.05
Jan-16	1.20	2.94	0.30	7.41E-03	7.71E-04	4.20E-02	0.00	0.16	0.30	3.94	1.33E-02	6.66E-03	1.49E-04	8.24E-02	0.15	0.97	0.24	1.41E-07	0.28	2.17	2.20E-06	2.21E-03	120.87
Feb-16	1.29	3.16	0.33	8.62E-03	6.75E-04	3.93E-02	0.00	0.16	0.30	4.18	1.41E-02	7.06E-03	1.59E-04	9.33E-02	0.17	0.88	0.20	1.52E-06	0.25	2.33	1.93E-06	2.17E-03	123.14
Mar-16	1.45	3.54	0.37	8.62E-03	1.13E-03	4.20E-02	0.00	0.15	0.32	5.11	1.73E-02	8.64E-03	1.94E-04	9.92E-02	0.18	0.96	0.17	0.00	0.27	2.62	3.23E-06	1.60E-02	131.45
Apr-16	0.36	0.88	0.09	5.05E-03	5.75E-03	4.07E-02	6.59E-04	2.95E-02	0.25	2.69	9.10E-03	4.55E-03	1.02E-04	2.39E-02	4.38E-02	0.86	5.33E-02	1.94E-04	0.14	0.65	1.64E-05	1.15E-02	80.20
May-16	1.35	3.30	0.34	8.10E-03	1.65E-03	4.20E-02	3.14E-03	0.15	0.23	5.22	1.76E-02	8.82E-03	1.98E-04	9.77E-02	0.18	0.92	0.54	0.00	0.12	2.43	4.70E-06	1.53E-02	127.01
Jun-16	1.31	3.22	0.33	7.77E-03	1.34E-04	4.07E-02	3.13E-04	0.17	0.24	4.66	1.57E-02	7.87E-03	1.77E-04	9.40E-02	0.17	0.91	0.49	0.00	0.16	2.38	3.83E-07	8.41E-04	125.33
Jul-16	1.35	3.31	0.34	7.73E-03	0.00	4.20E-02	5.26E-03	0.18	0.25	4.63	1.56E-02	7.82E-03	1.75E-04	9.56E-02	0.18	0.91	0.46	0.00	0.16	2.44	0.00	8.37E-05	124.08
Aug-16	1.40	3.44	0.36	7.82E-03	1.11E-03	4.20E-02	1.03E-02	0.17	0.24	4.39	1.48E-02	7.42E-03	1.66E-04	8.99E-02	0.16	0.88	0.47	0.00	0.16	2.54	3.18E-06	5.06E-03	127.59
Sep-16	1.34	3.28	0.34	5.97E-03	6.17E-03	4.07E-02	2.62E-03	0.16	0.14	2.87	9.71E-03	4.85E-03	1.09E-04	8.84E-02	0.16	0.50	0.40	0.00	0.21	2.42	1.76E-05	2.81E-03	90.81
Oct-16	1.42	3.48	0.36	8.17E-03	8.19E-04	4.20E-02	0.00	0.16	0.24	4.51	1.52E-02	7.61E-03	1.71E-04	8.95E-02	0.16	0.94	0.49	0.00	0.25	2.57	2.34E-06	3.84E-03	134.99
Nov-16	1.33	3.24	0.34	7.52E-03	1.02E-03	4.07E-02	1.76E-03	0.17	0.22	4.36	1.47E-02	7.37E-03	1.65E-04	9.57E-02	0.18	0.92	0.44	0.00	0.21	2.40	2.91E-06	4.23E-03	126.03
Dec-16	1.13	2.77	0.29	7.18E-03	7.46E-04	4.20E-02	0.00	0.17	0.25	4.13	1.39E-02	6.97E-03	1.57E-04	8.79E-02	0.16	0.93	0.42	0.00	0.16	2.05	2.13E-06	8.52E-04	122.22
Jan-17	1.46	3.57	0.37	7.73E-03	0.00	4.20E-02	9.89E-04	0.19	0.25	4.54	1.54E-02	7.68E-03	1.72E-04	9.95E-02	1.00	0.21	0.41	0.00	0.20	2.63	0.00	3.33E-03	125.67
Feb-17	1.35	3.30	0.34	7.57E-03	3.53E-03	3.80E-02	3.96E-04	0.16	0.24	4.53	1.53E-02	7.66E-03	1.72E-04	8.48E-02	0.85	0.20	0.43	0.00	0.12	2.44	1.01E-05	1.33E-02	123.64
Mar-17	0.27	0.66	0.07	4.97E-03	0.00	4.20E-02	0.00	3.36E-02	0.27	3.14	1.06E-02	5.30E-03	1.19E-04	1.30E-02	0.13	0.23	0.52	0.00	7.62E-02	0.49	0.00	1.67E-03	88.04
Apr-17	0.00	0.00	0.00	4.61E-03	0.00	4.07E-02	3.68E-03	9.05E-03	0.25	2.49	8.42E-03	4.21E-03	9.46E-05	1.61E-07	1.62E-06	0.21	0.15	0.00	7.08E-02	0.00	0.00	9.02E-03	70.31
May-17	1.21	2.97	0.31	6.82E-03	1.75E-03	4.20E-02	5.39E-03	0.17	0.26	3.87	1.31E-02	6.54E-03	1.47E-04	9.24E-02	0.93	0.22	0.36	0.00	0.16	2.19	5.01E-06	1.39E-03	121.92
Jun-17	1.43	3.51	0.36	9.27E-03	7.64E-04	4.07E-02	0.00	0.19	0.29	3.33	1.12E-02	5.62E-03	1.26E-04	9.81E-02	0.99	0.22	0.33	0.00	0.27	2.59	2.18E-06	1.41E-03	132.13
Jul-17	1.50	3.66	0.38	8.00E-03	6.25E-05	4.20E-02	1.16E-03	0.20	0.31	3.22	1.09E-02	5.45E-03	1.22E-04	0.10	1.04	0.23	0.46	0.00	0.19	2.70	1.79E-07	6.95E-04	134.39
Aug-17	1.34	3.29	0.34	6.53E-03	4.63E-05	4.20E-02	2.69E-03	0.20	0.28	3.52	1.19E-02	5.96E-03	1.34E-04	9.79E-02	0.98	0.22	0.35	0.00	0.22	2.43	1.32E-07	1.50E-03	125.35
Sep-17	1.39	3.39	0.35	5.47E-03	8.61E-04	4.07E-02	0.00	0.20	0.25	1.40	4.74E-03	2.37E-03	5.32E-05	9.28E-02	0.93	0.11	0.36	0.00	0.15	2.50	2.46E-06	1.44E-03	82.38
Oct-17	1.24	3.03	0.31	7.37E-03	2.59E-03	4.20E-02	2.80E-03	0.18	0.24	1.88	6.34E-03	3.17E-03	7.12E-05	8.86E-02	0.89	0.21	0.40	0.00	0.20	2.24	7.40E-06	5.48E-03	119.10
Nov-17	1.46	3.58	0.37	7.93E-03	1.93E-04	4.07E-02	0.00	0.21	0.25	2.53	8.55E-03	4.27E-03	9.59E-05	9.86E-02	0.99	0.22	0.45	0.00	9.50E-02	2.64	5.51E-07	2.51E-04	130.89
Dec-17	1.33	3.25	0.34	7.03E-03	1.12E-04	4.20E-02	1.74E-03	0.18	0.24	2.98	1.01E-02	5.03E-03	1.13E-04	8.56E-02	0.86	0.22	0.37	0.00	0.20	2.40	3.19E-07	2.01E-03	122.90
Jan-18	1.46	3.57	0.37	7.18E-03	1.86E-02	4.20E-02	2.66E-04	0.18	0.18	2.43	8.22E-03	4.11E-03	9.23E-05	9.06E-02	0.91	0.16	0.36	0.00	0.30	2.63	5.31E-05	3.18E-03	103.91
Feb-18	1.35	3.30	0.34	7.24E-03	2.58E-03	3.80E-02	1.68E-03	0.17	0.24	3.50	1.18E-02	5.91E-03	1.33E-04	8.75E-02	0.88	0.21	0.33	0.00	0.25	2.44	7.36E-06	1.48E-03	125.02
Mar-18	1.40	3.42	0.35	7.85E-03	5.45E-03	4.20E-02	0.00	0.19	0.26	4.54	1.53E-02	7.67E-03	1.72E-04	9.39E-02	0.94	0.22	0.39	0.00	0.25	2.52	1.56E-05	2.12E-03	132.73
Apr-18	0.37	0.90	0.09	4.80E-03	0.00	4.07E-02	1.73E-04	6.47E-02	0.23	2.03	6.86E-03	3.43E-03	7.70E-05	2.63E-02	0.26	0.21	0.10	0.00	0.18	0.66	0.00	1.55E-03	85.36
May-18	1.39	3.39	0.35	8.70E-03	9.75E-03	4.20E-02	1.14E-02	0.16	0.25	3.89	1.31E-02	6.57E-03	1.48E-04	9.11E-02	0.92	0.22	0.25	0.00	0.26	2.50	2.79E-05	1.19E-02	126.22
Jun-18	1.36	3.32	0.34	7.35E-03	0.00	4.07E-02	3.76E-04	0.18	0.24	3.76	1.27E-02	6.36E-03	1.43E-04	9.30E-02	0.94	0.21	0.46	0.00	0.16	2.45	0.00	2.89E-03	125.62
Jul-18	1.42	3.49	0.36	8.19E-03	5.74E-03	4.20E-02	1.12E-03	0.19	0.26	4.14	1.40E-02	6.99E-03	1.57E-04	9.73E-02	0.98	0.21	0.43	0.00	0.13	2.57	1.64E-05	3.23E-03	127.80
Aug-18	1.35	3.30	0.34	7.72E-03	0.00	4.20E-02	1.04E-03	0.19	0.27	3.40	1.15E-02	5.75E-03	1.29E-04	9.35E-02	0.94	0.19	0.41	0.00	0.24	2.44	0.00	2.06E-03	121.05
Sep-18	1.34	3.29	0.34	6.61E-03	1.58E-03	4.07E-02	6.93E-04	0.19	0.36	2.32	7.84E-03	3.92E-03	8.80E-05	8.81E-02	0.89	0.12	0.22	0.00	0.17	2.43	4.52E-06	5.81E-03	93.78
Oct-18	1.51	3.69	0.38	6.94E-03	6.75E-04	4.20E-02	4.04E-03	0.17	0.26	4.51	1.52E-02	7.62E-03	1.71E-04	9.77E-02	0.98	0.19	0.32	0.00	0.20	2.73	1.93E-06	3.65E-03	119.81
Nov-18	1.39	3.41	0.35	7.49E-03	2.63E-03	4.07E-02	0.00	0.18	0.26	4.59	1.55E-02	7.75E-03	1.74E-04	9.18E-02	0.92	0.20	0.39	0.00	0.18	2.52	7.52E-06	4.27E-03	124.76
Dec-18	1.41	3.46	0.36	7.27E-03	3.03E-04	4.20E-02	1.25E-03	0.17	0.26	4.15	1.40E-02	7.01E-03	1.57E-04	9.09E-02	0.91	0.21	0.26	0.00	0.20	2.55	8.65E-07	1.98E-03	122.00
Jan-19	1.57	3.85	0.40	7.02E-03	4.39E-03	4.20E-02	1.21E-04	0.19	0.23	3.95	1.34E-02	6.68E-03	1.50E-04	9.55E-02	0.96	0.18	0.20	0.00	0.27	2.84	1.25E-05	5.63E-04	117.90
Feb-19	1.17	2.86	0.30	6.37E-03	5.92E-04	3.80E-02	0.00	0.16	0.26	3.98	1.34E-02	6.72E-03	1.51E-04	7.58E-02	0.76	0.20	0.31	0.00	0.24	2.11	1.69E-06	3.83E-04	112.95
Mar-19	1.46	3.57	0.37	8.81E-03	0.00	4.20E-02	7.04E-04	0.17	0.30	5.51	1.86E-02	9.32E-03	2.09E-04	9.34E-02	0.94	0.22	0.33	0.00	0.24	2.63	0.00	2.81E-04	131.70
Apr-19	0.31	0.75	0.08	5.19E-03	6.04E-04	4.07E-02	1.22E-03	4.31E-02	0.27	3.45	1.17E-02	5.83E-03	1.31E-04	2.06E-02	0.21	0.22	8.26E-02	0.00	8.78E-02	0.55	1.73E-06	2.62E-03	86.87
May-19	1.42	3.48	0.36	7.67E-03	0.00	4.20E-02	2.89E-03	0.19	0.28	4.56	1.54E-02	7.71E-03	1.73E-04	9.62E-02	0.97	0.20	0.26	0.00	0.13	2.57	0.00	2.89E-03	123.40
Jun-19	1.44	3.53	0.37	8.04E-03	0.00	4.07E-02	3.47E-03	0.18	0.28	4.55	1.54E-02	7.69E-03	1.73E-04	8.83E-02	0.89	0.20	0.29	0.00	0.14	2.61	0.00	1.64E-03	121.01
Jul-19	1.61	3.95	0.41	9.20E-03	4.29E-03	4.20E-02	0.00	0.22	0.32	4.97	1.68E-02	8.40E-03	1.89E-04	0.10	1.02	0.22	0.35	0.00	0.24	2.92	1.23E-05	1.49E-03	140.56
Aug-19	1.21	2.97	0.31	7.81E-03	3.86E-03	4.20E-02	2.04E-13	0.19	0.32	5.38	1.82E-02	9.10E-03	2.04E-04	7.83E-02	0.79	0.20	0.26	0.00	0.24	2.19	1.10E-05	1.49E-03	113.19
Sep-19	1.32	3.23	0.33	6.49E-03	3.95E-03	4.07E-02	0.00	0.18	0.29	3.59	1.21E-02	6.07E-03	1.36E-04	8.38E-02	0.84	0.13	0.33	0.00	0.18	2.38	1.13E-05	4.54E-03	93.60
Oct-19	1.54	3.76	0.39	9.23E-03	0.00	4.20E-02	0.00	0.21	0.29	3.97	1.34E-02	6.72E-03	1.51E-04	9.08E-02	0.91	0.22	0.31	0.00	0.24	2.78	0.00	3.47E-03	134.43
Nov-19	1.60	3.91	0.41	8.96E-03	6.71E-04	4.07E-02	2.55E-03	0.21	0.28	4.86	1.64E-02	8.21E-03	1.84E-04	9.82E-02	0.99	0.22	0.26	0.00	0.34	2.89	1.92E-06	1.94E-03	136.59
Dec-19	1.52	3.72	0.39	8.58E-03	8.94E-04	4.20E-02	6.06E-03	0.21	0.31	5.52	1.87E-02	9.33E-03	2.09E-04	9.66E-02	0.97	0.22	0.20	0.00	0.26	2.75	2.56E-06	1.00E-03	136.10
Jan-20	1.58	3.86	0.40	8.92E-03	2.04E-04	4.20E-02	5.72E-04	0.21	0.32	4.53	1.53E-02	7.66E-03	1.72E-04	9.63E-02	0.97	0.22	0.52	0.00	0.29	2.85	5.84E-07	1.44E-02	134.99
Feb-20	1.49	3.65	0.38	8.20E-03	6.25E-04	3.93E-02	3.88E-04	0.21	0.30	5.13	1.74E-02	8.68E-03	1.95E-04	9.32E-02	0.94	0.19	0.31	0.00	0.23	2.70	1.79E-06	4.23E-03	122.72
Mar-20	1.60	3.91	0.41	7.70E-03	0.00	4.20E-02	2.29E-03	0.21	0.29	5.57	1.88E-02	9.41E-03	2.11E-04	0.10	1.03	0.21	0.38	0.00	0.12	2.89	0.00	2.34E-03	134.39
Apr-20	1.55	3.79	0.39	8.23E-03	1.23E-03	4.07E-02	1.44E-03	0.22	0.29	5.58	1.89E-02	9.44E-03	2.12E-04	9.90E-02	0.99	0.22	0.41	0.00	0.26	2.80	3.51E-06	1.58E-03	136.69
May-20	1.20	2.93	0.30	7.28E-03	1.96E-03	4.20E-02	4.07E-04	0.16	0.30	4.59	1.55E-02	7.75E-03	1.74E-04	7.02E-02	0.71	0.22	0.32	0.00	0.18	2.17	5.62E-06	8.29E-04	120.45
Jun-20	1.43	3.51	0.36	7.35E-03	4.41E-03	4.07E-02	3.34E-13	0.18	0.27	4.56	1.54E-02	7.71E-03	1.73E-04	8.98E-02	0.90	0.21	0.37	0.00	0.40	2.59	1.26E-05	5.11E-03	127.85
Jul-20	1.43	3.50	0.36	8.12E-03	2.84E-03	4.20E-02	4.20E-03	0.19	0.28	5.89	1.99E-02	9.95E-03	2.23E-04	9.03E-02	0.91	0.22	0.33	0.00	0.36	2.58	8.11E-06	2.31E-04	132.87
Aug-20	1.56	3.81	0.40	7.57E-03	2.39E-03	4.20E-02	2.29E-03	0.20	0.29	5.74	1.94E-02	9.70E-03	2.18E-04	0.10	1.01	0.22	0.24	0.00	0.19	2.82	6.84E-06	3.04E-03	139.86

	Baseline Period and Emissions	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers
	1,853.14										
	Jun-19										
	--										
	May-21										
	tons (24-mo Rolling total)										
Jan-15											
Feb-15											
Mar-15											
Apr-15											
May-15											
Jun-15											
Jul-15											
Aug-15											
Sep-15											
Oct-15											
Nov-15											
Dec-15											
Jan-16											
Feb-16											
Mar-16											
Apr-16											
May-16											
Jun-16											
Jul-16											
Aug-16											
Sep-16											
Oct-16											
Nov-16											
Dec-16	1,715.67	145.29	2.50E-02	0.95	2.64E-02	6.63E-03	2.40E-02	0.74	15.22	37.26	3.87
Jan-17	1,716.96	145.49	2.36E-02	0.95	2.39E-02	6.00E-03	2.17E-02	0.74	15.24	37.31	3.87
Feb-17	1,710.79	144.06	2.57E-02	0.95	2.38E-02	5.97E-03	2.16E-02	0.73	15.09	36.95	3.83
Mar-17	1,681.80	138.36	2.39E-02	0.91	1.93E-02	4.85E-03	1.76E-02	0.70	14.49	35.48	3.68
Apr-17	1,671.93	136.60	2.35E-02	0.90	1.82E-02	4.56E-03	1.65E-02	0.69	14.31	35.03	3.63
May-17	1,685.66	138.44	2.28E-02	0.91	1.82E-02	4.58E-03	1.66E-02	0.70	14.50	35.51	3.68
Jun-17	1,696.81	139.15	2.06E-02	0.91	1.93E-02	4.85E-03	1.75E-02	0.71	14.58	35.69	3.70
Jul-17	1,695.21	138.69	2.05E-02	0.91	1.93E-02	4.86E-03	1.76E-02	0.70	14.53	35.57	3.69
Aug-17	1,690.65	137.98	2.01E-02	0.91	2.02E-02	5.07E-03	1.83E-02	0.70	14.45	35.39	3.67
Sep-17	1,689.94	137.70	1.93E-02	0.90	1.97E-02	4.96E-03	1.79E-02	0.70	14.43	35.31	3.66
Oct-17	1,688.40	137.00	2.00E-02	0.90	1.87E-02	4.71E-03	1.70E-02	0.70	14.35	35.14	3.65
Nov-17	1,688.85	137.07	1.96E-02	0.90	1.85E-02	4.64E-03	1.68E-02	0.70	14.36	35.15	3.65
Dec-17	1,694.27	137.95	1.80E-02	0.91	1.73E-02	4.34E-03	1.57E-02	0.70	14.45	35.38	3.67
Jan-18	1,686.99	139.17	2.88E-02	0.91	1.69E-02	4.25E-03	1.54E-02	0.71	14.58	35.69	3.70
Feb-18	1,688.09	139.45	2.99E-02	0.92	1.67E-02	4.18E-03	1.51E-02	0.71	14.61	35.76	3.71
Mar-18	1,688.16	139.20	3.25E-02	0.91	1.57E-02	3.93E-03	1.42E-02	0.71	14.58	35.70	3.70
Apr-18	1,690.29	139.24	2.90E-02	0.91	1.32E-02	3.31E-03	1.20E-02	0.71	14.59	35.71	3.70
May-18	1,689.47	139.42	3.39E-02	0.92	1.04E-02	2.61E-03	9.45E-03	0.71	14.61	35.76	3.71
Jun-18	1,689.51	139.62	3.38E-02	0.92	1.06E-02	2.67E-03	9.68E-03	0.71	14.63	35.81	3.71
Jul-18	1,691.72	139.97	3.73E-02	0.92	1.11E-02	2.78E-03	1.01E-02	0.71	14.66	35.90	3.72
Aug-18	1,687.62	139.71	3.66E-02	0.92	1.14E-02	2.85E-03	1.03E-02	0.71	14.64	35.83	3.72
Sep-18	1,689.05	139.73	3.39E-02	0.92	1.14E-02	2.85E-03	1.03E-02	0.71	14.64	35.83	3.72
Oct-18	1,682.06	140.14	3.38E-02	0.92	1.32E-02	3.31E-03	1.20E-02	0.71	14.68	35.94	3.73
Nov-18	1,682.06	140.47	3.48E-02	0.92	1.43E-02	3.58E-03	1.30E-02	0.71	14.72	36.03	3.74
Dec-18	1,684.04	141.80	3.45E-02	0.93	1.77E-02	4.44E-03	1.61E-02	0.72	14.86	36.37	3.77
Jan-19	1,680.63	142.36	3.71E-02	0.93	1.77E-02	4.44E-03	1.61E-02	0.72	14.91	36.51	3.79
Feb-19	1,673.60	141.51	3.54E-02	0.93	1.85E-02	4.64E-03	1.68E-02	0.72	14.82	36.29	3.76
Mar-19	1,706.13	147.17	3.54E-02	0.97	1.89E-02	4.74E-03	1.72E-02	0.75	15.42	37.74	3.92
Apr-19	1,717.33	148.63	3.57E-02	0.98	2.12E-02	5.33E-03	1.93E-02	0.76	15.57	38.12	3.95
May-19	1,719.97	149.62	3.47E-02	0.98	2.41E-02	6.05E-03	2.19E-02	0.76	15.68	38.37	3.98
Jun-19	1,714.94	149.67	3.42E-02	0.98	2.47E-02	6.19E-03	2.24E-02	0.76	15.68	38.38	3.98
Jul-19	1,719.77	150.23	3.68E-02	0.99	2.45E-02	6.16E-03	2.23E-02	0.76	15.74	38.53	4.00
Aug-19	1,713.50	149.61	3.91E-02	0.98	2.45E-02	6.15E-03	2.23E-02	0.76	15.67	38.37	3.98
Sep-19	1,719.68	149.29	4.09E-02	0.98	2.54E-02	6.37E-03	2.31E-02	0.76	15.64	38.29	3.97
Oct-19	1,730.69	150.72	3.94E-02	0.99	2.55E-02	6.41E-03	2.32E-02	0.77	15.79	38.65	4.01
Nov-19	1,735.81	151.37	3.97E-02	0.99	2.57E-02	6.44E-03	2.33E-02	0.77	15.86	38.82	4.03
Dec-19	1,745.21	152.29	4.01E-02	1.00	2.55E-02	6.40E-03	2.31E-02	0.77	15.95	39.06	4.05
Jan-20	1,762.93	152.87	2.90E-02	1.00	2.59E-02	6.50E-03	2.35E-02	0.78	16.02	39.21	4.07
Feb-20	1,763.73	153.55	2.79E-02	1.01	2.76E-02	6.93E-03	2.51E-02	0.78	16.09	39.38	4.09
Mar-20	1,766.61	154.51	2.46E-02	1.01	2.76E-02	6.93E-03	2.51E-02	0.79	16.19	39.63	4.11
Apr-20	1,803.73	160.15	2.53E-02	1.05	2.78E-02	6.98E-03	2.53E-02	0.81	16.78	41.07	4.26
May-20	1,799.67	159.26	2.06E-02	1.05	2.61E-02	6.56E-03	2.37E-02	0.81	16.68	40.84	4.24
Jun-20	1,801.85	159.63	2.33E-02	1.05	2.75E-02	6.90E-03	2.50E-02	0.81	16.72	40.94	4.25
Jul-20	1,805.35	159.65	2.15E-02	1.05	2.98E-02	7.50E-03	2.71E-02	0.81	16.73	40.94	4.25
Aug-20	1,817.46	160.65	2.30E-02	1.05	2.92E-02	7.34E-03	2.66E-02	0.82	16.83	41.20	4.27

VOC Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																																
	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Mill Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System	**Baseline Period and Emissions**	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers
	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC	VOC - Fuel Oil	VOC - Natural Gas	VOC	VOC	VOC	VOC	**1,853.14**										
																								Jun-19										
																								-										
																								May-21										
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*										
Sep-20	1.17	2.86	0.30	6.30E-03	1.09E-02	4.07E-02	3.84E-04	0.18	0.20	3.59	1.21E-02	6.07E-03	1.36E-04	7.87E-02	0.79	0.13	0.30	0.00	0.22	2.11	3.10E-05	1.82E-03	91.70	1,815.69	159.82	2.86E-02	1.05	3.12E-02	7.83E-03	2.84E-02	0.81	16.74	40.99	4.25
Oct-20	1.20	2.93	0.30	7.28E-03	3.94E-03	4.20E-02	9.79E-04	0.18	0.24	4.04	1.36E-02	6.82E-03	1.53E-04	7.88E-02	0.79	0.19	0.24	0.00	0.22	2.16	1.12E-05	1.82E-02	112.83	1,809.45	158.32	3.05E-02	1.04	2.91E-02	7.30E-03	2.64E-02	0.80	16.59	40.60	4.21
Nov-20	1.41	3.44	0.36	7.98E-03	6.03E-04	4.07E-02	1.18E-03	0.20	0.28	4.98	1.68E-02	8.41E-03	1.89E-04	9.38E-02	0.94	0.21	0.69	0.00	0.21	2.54	1.72E-06	4.62E-03	130.86	1,812.99	158.37	2.93E-02	1.04	2.81E-02	7.05E-03	2.55E-02	0.80	16.59	40.62	4.21
Dec-20	1.44	3.52	0.37	8.77E-03	1.05E-02	4.20E-02	1.41E-02	0.19	0.28	4.58	1.55E-02	7.74E-03	1.74E-04	9.01E-02	0.91	0.22	0.42	0.00	0.22	2.60	2.99E-05	1.65E-02	132.10	1,818.58	158.50	3.54E-02	1.04	2.47E-02	6.21E-03	2.25E-02	0.81	16.60	40.65	4.22
Jan-21	1.61	3.94	0.41	8.68E-03	1.68E-03	4.20E-02	0.00	0.20	0.30	5.05	1.71E-02	8.53E-03	1.91E-04	9.81E-02	0.99	0.22	0.34	0.00	0.15	2.91	4.81E-06	9.17E-03	138.00	1,829.55	158.68	3.38E-02	1.04	2.47E-02	6.21E-03	2.25E-02	0.81	16.62	40.69	4.22
Feb-21	1.36	3.32	0.34	7.68E-03	1.02E-02	3.80E-02	0.00	0.18	0.28	5.22	1.76E-02	8.82E-03	1.98E-04	8.43E-02	0.85	0.21	0.30	0.00	0.27	2.45	2.93E-05	7.65E-04	118.65	1,834.54	159.57	3.96E-02	1.05	2.46E-02	6.18E-03	2.24E-02	0.81	16.72	40.92	4.25
Mar-21	1.48	3.62	0.38	8.59E-03	1.60E-03	4.20E-02	1.72E-02	0.19	0.31	5.76	1.95E-02	9.73E-03	2.18E-04	8.85E-02	0.89	0.23	0.26	0.00	0.20	2.67	4.57E-06	3.18E-03	135.23	1,836.53	159.67	4.06E-02	1.05	2.43E-02	6.11E-03	2.21E-02	0.81	16.73	40.95	4.25
Apr-21	0.95	2.32	0.24	6.92E-03	1.36E-03	4.07E-02	3.44E-03	0.12	0.26	2.69	9.11E-03	4.55E-03	1.02E-04	6.14E-02	0.62	0.19	0.24	0.00	0.15	1.71	3.89E-06	4.56E-03	101.91	1,848.89	162.73	4.10E-02	1.07	2.35E-02	5.91E-03	2.14E-02	0.83	17.05	41.73	4.33
May-21	1.51	3.68	0.38	9.05E-03	1.63E-03	4.20E-02	4.05E-04	0.18	0.28	4.86	1.64E-02	8.20E-03	1.84E-04	9.61E-02	0.97	0.21	0.38	0.00	0.33	2.72	4.66E-06	4.66E-03	130.03	1,853.14	163.13	4.20E-02	1.07	2.00E-02	5.03E-03	1.82E-02	0.83	17.09	41.84	4.34
Jun-21	1.22	2.98	0.31	7.47E-03	4.25E-03	4.07E-02	1.14E-02	0.18	0.22	3.72	1.26E-02	6.29E-03	1.41E-04	9.33E-02	0.94	0.16	0.39	0.00	0.21	2.20	1.22E-05	3.81E-03	113.10	1,847.14	162.06	4.46E-02	1.06	1.59E-02	3.99E-03	1.44E-02	0.82	16.98	41.56	4.31
Jul-21	1.20	2.94	0.31	7.45E-03	1.15E-02	4.20E-02	5.03E-04	0.17	0.28	3.49	1.18E-02	5.91E-03	1.33E-04	7.99E-02	0.80	0.21	0.34	0.00	0.33	2.17	3.28E-05	2.66E-03	119.80	1,832.77	160.10	4.89E-02	1.05	1.58E-02	3.96E-03	1.43E-02	0.81	16.77	41.06	4.26
Aug-21	1.40	3.42	0.35	6.55E-03	2.26E-03	4.20E-02	1.45E-03	0.20	0.26	3.48	1.17E-02	5.87E-03	1.32E-04	9.04E-02	0.91	0.18	0.49	0.00	0.31	2.52	6.45E-06	2.94E-02	117.70	1,835.66	160.98	4.80E-02	1.06	1.49E-02	3.75E-03	1.36E-02	0.82	16.86	41.28	4.28
Sep-21	1.36	3.34	0.35	6.53E-03	1.64E-03	4.07E-02	2.29E-03	0.18	0.35	2.60	8.79E-03	4.40E-03	9.87E-05	8.47E-02	0.85	0.12	0.29	0.00	0.35	2.47	4.69E-06	7.25E-03	91.47	1,834.54	161.19	4.66E-02	1.06	1.40E-02	3.53E-03	1.28E-02	0.82	16.89	41.34	4.29
Oct-21	1.51	3.69	0.38	8.32E-03	2.96E-03	4.20E-02	0.00	0.19	0.26	4.73	1.60E-02	8.00E-03	1.79E-04	9.97E-02	1.00	0.21	0.41	0.00	0.33	2.72	8.47E-06	5.67E-03	134.54	1,834.85	161.04	4.83E-02	1.06	1.41E-02	3.54E-03	1.28E-02	0.82	16.87	41.30	4.28
Nov-21	1.53	3.73	0.39	8.88E-03	1.32E-03	4.07E-02	1.92E-04	0.18	0.26	4.74	1.60E-02	8.02E-03	1.80E-04	9.48E-02	0.95	0.21	0.39	0.00	0.40	2.76	3.78E-06	2.98E-03	132.29	1,832.12	160.69	4.87E-02	1.05	1.38E-02	3.46E-03	1.25E-02	0.82	16.83	41.21	4.28
Dec-21	1.62	3.97	0.41	8.20E-03	8.62E-03	4.20E-02	0.00	0.19	0.26	5.24	1.77E-02	8.86E-03	1.99E-04	9.54E-02	0.96	0.22	0.49	0.00	0.31	2.93	2.46E-05	2.08E-03	137.56	1,833.63	161.18	5.34E-02	1.06	1.36E-02	3.42E-03	1.24E-02	0.82	16.89	41.34	4.29
Jan-22	1.28	3.13	0.32	8.06E-03	3.79E-03	4.20E-02	2.56E-04	5.80E-02	0.14	4.74	1.60E-02	8.00E-03	1.80E-04	8.50E-02	0.69	1.42	0.44	0.00	0.36	2.31	1.08E-05	3.23E-03	117.47	1,822.98	159.75	5.56E-02	1.05	1.38E-02	3.47E-03	1.26E-02	0.81	16.74	40.97	4.25
Feb-22	1.12	2.75	0.29	6.65E-03	4.12E-04	3.80E-02	0.00	4.75E-02	0.12	4.82	1.63E-02	8.14E-03	1.83E-04	7.46E-02	0.61	1.36	0.25	0.00	0.25	2.03	1.18E-06	6.18E-04	109.34	1,813.56	158.00	5.54E-02	1.04	1.19E-02	2.99E-03	1.08E-02	0.80	16.55	40.52	4.20
Mar-22	0.80	1.96	0.20	6.38E-03	2.27E-03	4.20E-02	0.00	3.76E-02	0.16	3.21	1.09E-02	5.43E-03	1.22E-04	6.00E-02	0.49	1.37	0.18	0.00	0.21	1.45	6.50E-06	4.46E-03	97.53	1,787.98	154.19	5.68E-02	1.01	1.42E-02	3.56E-03	1.29E-02	0.78	16.15	39.54	4.10
Apr-22	1.38	3.38	0.35	7.82E-03	3.52E-03	4.07E-02	4.05E-03	6.03E-02	0.16	3.89	1.32E-02	6.58E-03	1.48E-04	9.11E-02	0.74	1.36	0.44	0.00	0.23	2.50	1.01E-05	1.10E-02	122.32	1,778.99	153.40	5.82E-02	1.01	1.46E-02	3.68E-03	1.33E-02	0.78	16.07	39.34	4.08
May-22	1.32	3.23	0.33	6.90E-03	4.06E-03	4.20E-02	5.06E-03	6.02E-02	0.15	3.62	1.22E-02	6.11E-03	1.37E-04	8.77E-02	0.71	1.24	0.34	0.00	0.24	2.38	1.16E-05	9.12E-03	107.38	1,773.32	153.97	5.95E-02	1.01	2.05E-02	5.14E-03	1.86E-02	0.78	16.13	39.49	4.10
Jun-22	1.50	3.66	0.38	9.25E-03	3.27E-04	4.07E-02	3.69E-04	6.20E-02	0.15	4.22	1.43E-02	7.13E-03	1.60E-04	9.58E-02	0.78	1.57	0.39	0.00	0.25	2.70	9.34E-07	3.09E-03	130.87	1,775.55	154.27	5.70E-02	1.01	1.92E-02	4.81E-03	1.74E-02	0.78	16.16	39.56	4.10
Jul-22	1.32	3.24	0.34	8.26E-03	7.26E-05	4.20E-02	4.92E-04	6.53E-02	0.13	4.46	1.51E-02	7.53E-03	1.69E-04	8.94E-02	0.72	1.46	0.43	0.00	0.21	2.39	2.08E-07	1.72E-02	122.16	1,769.03	153.75	5.53E-02	1.01	2.22E-02	5.56E-03	2.01E-02	0.78	16.11	39.43	4.09
Aug-22	1.39	3.41	0.35	9.43E-03	9.00E-03	4.20E-02	1.76E-03	5.73E-02	0.13	4.81	1.63E-02	8.13E-03	1.83E-04	9.39E-02	0.76	1.51	0.27	0.00	0.30	2.52	2.57E-05	5.27E-03	127.38	1,761.52	152.97	5.93E-02	1.00	2.22E-02	5.56E-03	2.01E-02	0.78	16.03	39.23	4.07
Sep-22	1.32	3.22	0.33	4.74E-03	5.33E-03	4.07E-02	2.39E-03	5.83E-02	3.71E-02	2.02	6.82E-03	3.41E-03	7.66E-05	8.59E-02	0.70	0.41	0.23	0.00	0.20	2.38	1.52E-05	1.49E-02	71.76	1,751.79	153.67	5.60E-02	1.01	2.08E-02	5.22E-03	1.89E-02	0.78	16.10	39.41	4.09
Oct-22	1.25	3.06	0.32	7.26E-03	2.18E-03	4.20E-02	2.28E-03	5.88E-02	0.13	3.12	1.05E-02	5.27E-03	1.18E-04	8.92E-02	0.72	1.44	0.44	0.00	0.14	2.26	6.23E-06	2.19E-02	116.05	1,753.90	153.94	5.49E-02	1.01	2.10E-02	5.27E-03	1.91E-02	0.78	16.13	39.48	4.10
Nov-22	1.28	3.12	0.32	9.94E-03	8.60E-05	4.07E-02	5.20E-04	5.41E-02	0.14	4.37	1.48E-02	7.39E-03	1.66E-04	8.80E-02	0.71	1.51	0.25	0.00	0.23	2.31	2.46E-07	4.94E-03	120.40	1,747.55	153.32	5.46E-02	1.01	2.21E-02	5.55E-03	2.01E-02	0.78	16.06	39.32	4.08
Dec-22	1.52	3.72	0.39	9.36E-03	6.21E-03	4.20E-02	0.00	6.17E-02	0.14	4.25	1.43E-02	7.17E-03	1.61E-04	9.97E-02	0.81	1.49	0.30	0.00	0.26	2.75	1.77E-05	2.70E-03	128.42	1,746.58	153.72	5.20E-02	1.01	2.41E-02	6.04E-03	2.19E-02	0.78	16.10	39.42	4.09
Jan-23	1.44	3.52	0.37	8.58E-03	3.06E-03	4.20E-02	5.69E-04	5.36E-02	0.15	4.62	1.56E-02	7.81E-03	1.75E-04	8.97E-02	0.73	1.36	0.22	0.00	0.29	2.60	8.74E-06	2.78E-03	115.98	1,734.36	152.90	5.29E-02	1.00	2.64E-02	6.62E-03	2.40E-02	0.78	16.02	39.21	4.07
Feb-23	1.20	2.93	0.30	8.06E-03	2.69E-03	3.80E-02	5.44E-06	4.87E-02	0.14	4.54	1.53E-02	7.67E-03	1.72E-04	7.66E-02	0.62	1.48	0.18	0.00	0.23	2.17	7.68E-06	4.81E-04	115.90	1,731.73	152.14	4.83E-02	1.00	2.57E-02	6.45E-03	2.34E-02	0.77	15.94	39.02	4.05
Mar-23	0.20	0.50	0.05	4.88E-03	2.22E-03	4.20E-02	2.64E-03	1.62E-02	0.12	2.96	1.00E-02	5.01E-03	1.12E-04	2.68E-02	0.22	1.23	0.13	0.00	0.25	0.37	6.34E-06	6.69E-03	68.56	1,687.24	146.07	4.87E-02	0.96	2.65E-02	6.65E-03	2.41E-02	0.74	15.30	37.46	3.89
Apr-23	1.15	2.82	0.29	9.39E-03	5.31E-04	4.07E-02	1.09E-03	5.60E-02	0.15	3.37	1.14E-02	5.70E-03	1.28E-04	8.08E-02	0.66	1.47	0.29	0.00	0.22	2.08	1.52E-06	1.08E-03	114.28	1,695.94	147.04	4.82E-02	0.97	2.82E-02	7.09E-03	2.57E-02	0.75	15.40	37.71	3.91
May-23	1.35	3.30	0.34	1.01E-02	6.51E-03	4.20E-02	4.38E-04	5.91E-02	0.17	6.04	2.04E-02	1.02E-02	2.29E-04	9.15E-02	0.74	1.54	0.25	0.00	0.29	2.44	1.86E-05	4.16E-03	126.16	1,693.77	146.29	5.11E-02	0.96	2.87E-02	7.20E-03	2.61E-02	0.74	15.33	37.52	3.89
Jun-23	0.82	2.01	0.21	6.40E-03	7.35E-05	4.07E-02	1.12E-03	3.11E-02	0.14	5.12	1.73E-02	8.65E-03	1.94E-04	5.16E-02	0.42	1.46	0.35	0.00	0.37	1.48	2.10E-07	4.02E-03	100.94	1,685.68	144.39	4.86E-02	0.95	2.87E-02	7.20E-03	2.61E-02	0.73	15.13	37.03	3.84
Jul-23	1.40	3.43	0.36	8.74E-03	3.22E-04	4.20E-02	0.00	6.17E-02	0.14	5.17	1.75E-02	8.74E-03	1.96E-04	9.40E-02	0.76	1.49	0.43	0.00	0.28	2.54	9.20E-07	2.55E-03	124.62	1,690.98	145.35	4.19E-02	0.95	2.88E-02	7.24E-03	2.62E-02	0.74	15.23	37.28	3.87
Aug-23	1.25	3.05	0.32	8.22E-03	0.13	4.20E-02	7.75E-03	5.22E-02	0.14	5.12	1.73E-02	8.64E-03	1.94E-04	7.85E-02	0.64	1.37	0.53	0.00	0.25	2.26	3.70E-04	1.17E-02	109.28	1,686.90	144.64	0.12	0.95	3.06E-02	7.69E-03	2.78E-02	0.73	15.15	37.09	3.85
Sep-23	1.26	3.09	0.32	5.86E-03	1.92E-03	4.07E-02	1.22E-04	5.31E-02	9.19E-02	2.12	7.16E-03	3.58E-03	8.04E-05	7.64E-02	0.62	0.37	0.23	0.00	0.41	2.28	5.49E-06	1.62E-03	66.12	1,673.02	144.15	0.12	0.95	3.32E-02	8.33E-03	3.02E-02	0.73	15.10	36.97	3.84
Oct-23	1.41	3.46	0.36	8.75E-03	0.00	4.20E-02	9.49E-04	6.00E-02	0.14	3.55	1.20E-02	6.00E-03	1.35E-04	8.89E-02	0.72	1.49	0.49	0.00	0.31	2.56	0.00	3.56E-03	121.63	1,665.68	143.71	0.12	0.94	3.45E-02	8.67E-03	3.14E-02	0.73	15.06	36.86	3.82
Nov-23	1.49	3.66	0.38	8.46E-03	0.00	4.07E-02	6.60E-04	5.99E-02	0.15	4.02	1.36E-02	6.79E-03	1.52E-04	8.91E-02	0.72	1.57	0.46	0.00	0.29	2.70	0.00	6.39E-04	129.44	1,664.08	143.57	0.12	0.94	3.52E-02	8.84E-03	3.20E-02	0.73	15.04	36.82	3.82
Dec-23	1.34	3.28	0.34	9.99E-03	9.75E-04	4.20E-02	9.42E-04	6.02E-02	0.16	4.20	1.42E-02	7.10E-03	1.59E-04	8.73E-02	0.71	1.54	0.41	0.00	0.34	2.42	2.79E-06	1.31E-03	125.49	1,655.75	142.21	0.11	0.93	3.58E-02	8.99E-03	3.25E-02	0.72	14.90	36.47	3.78
Jan-24	1.17	2.87	0.30	8.16E-03	5.40E-03	4.20E-02	7.73E-03	5.77E-02	0.15	3.76	1.27E-02	6.36E-03	1.43E-04	8.31E-02	0.67	1.33	0.45	0.00	0.31	2.12	1.54E-05	5.63E-03	107.29	1,649.32	141.71	0.11	0.93	3.66E-02	9.21E-03	3.33E-02	0.72	14.85	36.34	3.77
Feb-24	1.45	3.54	0.37	7.94E-03	1.31E-03	3.93E-02	0.00	6.08E-02	0.15	4.33	1.46E-02	7.32E-03	1.64E-04	8.69E-02	0.70	1.43	0.48	0.00	0.26	2.62	3.75E-06	1.02E-03	122.47	1,658.32	143.26	0.11	0.94	3.66E-02	9.21E-03	3.33E-02	0.73	15.01	36.74	3.81
Mar-24	0.56	1.37	0.14	6.63E-03	0.00	4.20E-02	2.67E-03	2.06E-02	0.16	4.31	1.46E-02	7.28E-03	1.63E-04	3.64E-02	0.30	1.57	0.19	0.00	0.17	1.01	0.00	1.65E-02	93.66	1,655.09	142.12	0.11	0.93	3.56E-02	8.95E-03	3.24E-02	0.72	14.89	36.45	3.78
Apr-24	1.28	3.13	0.32	9.43E-03	4.69E-04	4.07E-02	7.36E-04	5.71E-02	0.14	4.14	1.40E-02	7.00E-03	1.57E-04	8.55E-02	0.69	1.43	0.35	0.00	0.30	2.31	1.34E-06	6.41E-03	119.88	1,653.20	141.62	0.11	0.93	3.55E-02	8.91E-03	3.23E-02	0.72	14.84	36.32	3.77

VOC Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																	
	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt Dissolving Tank)	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	tons (24-mo Rolling total)																	
Jan-15																		
Feb-15																		
Mar-15																		
Apr-15																		
May-15																		
Jun-15																		
Jul-15																		
Aug-15																		
Sep-15																		
Oct-15																		
Nov-15																		
Dec-15																		
Jan-16																		
Feb-16																		
Mar-16																		
Apr-16																		
May-16																		
Jun-16																		
Jul-16																		
Aug-16																		
Sep-16																		
Oct-16																		
Nov-16																		
Dec-16	8.69E-02	2.08E-02	0.50	2.92E-02	1.86	3.07	47.89	0.16	0.08	1.82E-03	1.02	1.87	10.20	5.61	27.52	5.93E-05	0.05	1,412.29
Jan-17	8.68E-02	1.95E-02	0.50	2.44E-02	1.87	3.07	48.36	0.16	0.08	1.83E-03	1.02	2.29	9.87	5.67	27.55	5.58E-05	0.05	1,412.65
Feb-17	8.69E-02	2.13E-02	0.50	2.40E-02	1.87	3.07	48.58	0.16	0.08	1.84E-03	1.02	2.63	9.56	5.75	27.28	6.09E-05	0.05	1,408.42
Mar-17	8.59E-02	1.98E-02	0.50	2.34E-02	1.80	3.07	47.68	0.16	0.08	1.81E-03	0.98	2.60	9.27	5.78	26.20	5.66E-05	0.05	1,389.80
Apr-17	8.58E-02	1.95E-02	0.50	2.49E-02	1.77	3.07	47.29	0.16	0.08	1.79E-03	0.97	2.58	8.94	5.80	25.87	5.58E-05	0.06	1,383.49
May-17	8.62E-02	1.89E-02	0.50	2.48E-02	1.80	3.07	47.32	0.16	0.08	1.80E-03	0.98	2.99	8.63	5.88	26.22	5.41E-05	0.06	1,394.04
Jun-17	8.75E-02	1.71E-02	0.50	2.46E-02	1.81	3.09	47.31	0.16	0.08	1.79E-03	0.98	3.39	8.37	6.03	26.35	4.89E-05	0.06	1,403.74
Jul-17	8.74E-02	1.70E-02	0.50	2.45E-02	1.82	3.09	46.85	0.16	0.08	1.78E-03	0.98	3.82	8.02	6.17	26.27	4.86E-05	0.06	1,403.11
Aug-17	8.70E-02	1.66E-02	0.50	2.59E-02	1.82	3.08	46.99	0.16	0.08	1.78E-03	0.99	4.23	7.67	6.30	26.13	4.75E-05	0.06	1,399.36
Sep-17	8.69E-02	1.60E-02	0.50	2.34E-02	1.84	3.13	46.32	0.16	0.08	1.76E-03	0.99	4.61	7.54	6.39	26.08	4.58E-05	0.06	1,399.35
Oct-17	8.69E-02	1.66E-02	0.50	2.31E-02	1.84	3.11	45.32	0.15	0.08	1.72E-03	0.99	4.98	7.23	6.54	25.95	4.73E-05	0.05	1,399.75
Nov-17	8.69E-02	1.62E-02	0.50	2.10E-02	1.85	3.08	44.51	0.15	0.08	1.69E-03	0.99	5.39	6.89	6.61	25.96	4.64E-05	0.05	1,400.80
Dec-17	8.66E-02	1.49E-02	0.50	2.15E-02	1.86	3.06	44.06	0.15	0.07	1.67E-03	1.00	5.75	6.54	6.65	26.13	4.27E-05	0.05	1,405.23
Jan-18	8.65E-02	2.38E-02	0.50	2.16E-02	1.88	3.00	43.31	0.15	0.07	1.64E-03	1.00	6.13	6.13	6.72	26.36	6.82E-05	0.05	1,396.75
Feb-18	8.58E-02	2.48E-02	0.49	2.24E-02	1.88	2.97	42.97	0.15	0.07	1.63E-03	1.00	6.48	5.79	6.78	26.41	7.09E-05	0.05	1,397.69
Mar-18	8.54E-02	2.70E-02	0.49	2.24E-02	1.90	2.93	42.68	0.14	0.07	1.62E-03	0.99	6.86	5.43	6.89	26.36	7.70E-05	0.05	1,398.33
Apr-18	8.53E-02	2.41E-02	0.49	2.22E-02	1.92	2.93	42.35	0.14	0.07	1.61E-03	1.00	6.98	5.10	6.93	26.37	6.88E-05	0.04	1,400.91
May-18	8.56E-02	2.81E-02	0.49	2.63E-02	1.92	2.94	41.68	0.14	0.07	1.58E-03	0.99	7.34	4.75	6.86	26.40	8.04E-05	0.04	1,400.51
Jun-18	8.54E-02	2.81E-02	0.49	2.63E-02	1.93	2.94	41.24	0.14	0.07	1.56E-03	0.99	7.73	4.40	6.84	26.44	8.02E-05	0.04	1,400.66
Jul-18	8.56E-02	3.09E-02	0.49	2.42E-02	1.93	2.94	40.99	0.14	0.07	1.55E-03	0.99	8.13	4.06	6.81	26.51	8.84E-05	0.04	1,402.52
Aug-18	8.56E-02	3.04E-02	0.49	1.96E-02	1.94	2.96	40.50	0.14	0.07	1.54E-03	0.99	8.51	3.71	6.83	26.46	8.68E-05	0.04	1,399.25
Sep-18	8.59E-02	2.81E-02	0.49	1.87E-02	1.96	3.07	40.22	0.14	0.07	1.53E-03	0.99	8.88	3.52	6.72	26.46	8.03E-05	0.04	1,400.74
Oct-18	8.53E-02	2.80E-02	0.49	2.07E-02	1.97	3.08	40.22	0.14	0.07	1.53E-03	1.00	9.29	3.15	6.61	26.54	8.01E-05	0.04	1,393.14
Nov-18	8.53E-02	2.88E-02	0.49	1.98E-02	1.97	3.10	40.34	0.14	0.07	1.53E-03	1.00	9.66	2.79	6.56	26.60	8.24E-05	0.04	1,392.51
Dec-18	8.53E-02	2.86E-02	0.49	2.04E-02	1.97	3.11	40.35	0.14	0.07	1.53E-03	1.00	10.04	2.43	6.51	26.86	8.18E-05	0.04	1,392.40
Jan-19	8.50E-02	3.08E-02	0.49	2.00E-02	1.97	3.10	40.05	0.14	0.07	1.52E-03	1.00	10.02	2.42	6.44	26.96	8.80E-05	0.04	1,388.51
Feb-19	8.44E-02	2.93E-02	0.49	1.98E-02	1.97	3.11	39.77	0.13	0.07	1.51E-03	0.99	9.97	2.41	6.44	26.80	8.38E-05	0.03	1,383.16
Mar-19	8.63E-02	2.93E-02	0.49	2.01E-02	2.03	3.12	40.96	0.14	0.07	1.55E-03	1.03	10.38	2.41	6.43	27.87	8.38E-05	0.03	1,404.99
Apr-19	8.66E-02	2.96E-02	0.49	1.89E-02	2.05	3.13	41.44	0.14	0.07	1.57E-03	1.04	10.48	2.41	6.41	28.15	8.47E-05	0.03	1,413.27
May-19	8.70E-02	2.88E-02	0.49	1.77E-02	2.06	3.14	41.78	0.14	0.07	1.58E-03	1.04	10.50	2.40	6.34	28.34	8.22E-05	0.03	1,414.01
Jun-19	8.64E-02	2.84E-02	0.49	1.94E-02	2.06	3.14	42.40	0.14	0.07	1.61E-03	1.04	10.45	2.39	6.25	28.35	8.11E-05	0.03	1,408.45
Jul-19	8.70E-02	3.05E-02	0.49	1.88E-02	2.06	3.14	43.27	0.15	0.07	1.64E-03	1.04	10.44	2.39	6.22	28.45	8.71E-05	0.03	1,411.53
Aug-19	8.76E-02	3.24E-02	0.49	1.75E-02	2.06	3.16	44.20	0.15	0.07	1.68E-03	1.03	10.34	2.38	6.18	28.33	9.26E-05	0.03	1,405.45
Sep-19	8.81E-02	3.39E-02	0.49	1.75E-02	2.05	3.18	45.29	0.15	0.08	1.72E-03	1.02	10.30	2.39	6.18	28.27	9.70E-05	0.03	1,411.06
Oct-19	8.91E-02	3.26E-02	0.49	1.61E-02	2.06	3.21	46.34	0.16	0.08	1.76E-03	1.03	10.31	2.39	6.16	28.54	9.33E-05	0.03	1,418.73
Nov-19	8.96E-02	3.29E-02	0.49	1.73E-02	2.06	3.22	47.51	0.16	0.08	1.80E-03	1.02	10.30	2.40	6.19	28.67	9.40E-05	0.03	1,421.59
Dec-19	9.04E-02	3.33E-02	0.49	1.95E-02	2.08	3.26	48.78	0.16	0.08	1.85E-03	1.03	10.36	2.40	6.13	28.84	9.51E-05	0.03	1,428.19
Jan-20	9.12E-02	2.41E-02	0.49	1.96E-02	2.09	3.33	49.83	0.17	0.08	1.89E-03	1.03	10.39	2.43	6.20	28.95	6.88E-05	0.04	1,443.73
Feb-20	9.17E-02	2.31E-02	0.50	1.90E-02	2.11	3.35	50.65	0.17	0.09	1.92E-03	1.04	10.42	2.42	6.18	29.08	6.60E-05	0.04	1,442.58
Mar-20	9.16E-02	2.04E-02	0.50	2.01E-02	2.13	3.37	51.16	0.17	0.09	1.94E-03	1.04	10.46	2.42	6.11	29.26	5.83E-05	0.04	1,443.41
Apr-20	9.33E-02	2.10E-02	0.50	2.08E-02	2.20	3.40	52.94	0.18	0.09	2.01E-03	1.08	10.82	2.42	6.30	30.33	6.00E-05	0.04	1,469.07
May-20	9.26E-02	1.71E-02	0.50	1.53E-02	2.21	3.43	53.29	0.18	0.09	2.02E-03	1.07	10.72	2.42	6.29	30.16	4.89E-05	0.03	1,466.19
Jun-20	9.26E-02	1.93E-02	0.50	1.51E-02	2.20	3.44	53.69	0.18	0.09	2.04E-03	1.06	10.70	2.43	6.38	30.23	5.52E-05	0.04	1,467.30
Jul-20	9.26E-02	1.79E-02	0.50	1.67E-02	2.20	3.46	54.56	0.18	0.09	2.07E-03	1.06	10.67	2.43	6.44	30.24	5.10E-05	0.03	1,469.84
Aug-20	9.25E-02	1.90E-02	0.50	1.73E-02	2.21	3.46	55.73	0.19	0.09	2.11E-03	1.06	10.70	2.45	6.33	30.42	5.44E-05	0.03	1,479.24

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

VOC Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																	
	ClO2 Generator	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	Brine Tank	No. 7 Mill - Precipitator and Salt Cake Mix Tanks (vented at No. 7 Smelt Dissolving Tank)	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Pulp Dryer	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	tons (24-mo Rolling total)																	
Sep-20	9.24E-02	2.37E-02	0.50	1.71E-02	2.21	3.38	56.37	0.19	0.10	2.14E-03	1.06	10.65	2.45	6.39	30.27	6.77E-05	0.03	1,478.20
Oct-20	9.25E-02	2.53E-02	0.50	1.56E-02	2.21	3.37	56.14	0.19	0.09	2.13E-03	1.05	10.56	2.45	6.36	29.98	7.24E-05	0.04	1,474.71
Nov-20	9.28E-02	2.43E-02	0.50	1.62E-02	2.22	3.38	56.33	0.19	0.10	2.14E-03	1.05	10.57	2.46	6.53	29.99	6.95E-05	0.04	1,477.76
Dec-20	9.35E-02	2.94E-02	0.50	2.26E-02	2.23	3.39	56.55	0.19	0.10	2.14E-03	1.05	10.56	2.47	6.62	30.02	8.40E-05	0.05	1,482.81
Jan-21	9.44E-02	2.80E-02	0.50	2.26E-02	2.24	3.42	57.10	0.19	0.10	2.17E-03	1.05	10.58	2.49	6.63	30.05	8.01E-05	0.05	1,492.86
Feb-21	9.50E-02	3.29E-02	0.50	2.26E-02	2.25	3.43	57.72	0.20	0.10	2.19E-03	1.06	10.62	2.49	6.64	30.22	9.39E-05	0.05	1,495.71
Mar-21	9.49E-02	3.37E-02	0.50	3.08E-02	2.26	3.44	57.84	0.20	0.10	2.19E-03	1.05	10.60	2.50	6.58	30.24	9.62E-05	0.05	1,497.47
Apr-21	9.58E-02	3.40E-02	0.50	3.19E-02	2.30	3.44	57.46	0.19	0.10	2.18E-03	1.07	10.80	2.48	6.69	30.82	9.73E-05	0.05	1,504.99
May-21	9.65E-02	3.49E-02	0.50	3.07E-02	2.30	3.44	57.61	0.19	0.10	2.19E-03	1.07	10.80	2.49	6.85	30.89	9.96E-05	0.06	1,508.31
Jun-21	9.62E-02	3.70E-02	0.50	3.46E-02	2.30	3.41	57.20	0.19	0.10	2.17E-03	1.08	10.83	2.47	6.93	30.69	1.06E-04	0.06	1,504.35
Jul-21	9.53E-02	4.06E-02	0.50	3.49E-02	2.28	3.39	56.46	0.19	0.10	2.14E-03	1.07	10.72	2.46	6.97	30.32	1.16E-04	0.06	1,493.97
Aug-21	9.47E-02	3.98E-02	0.50	3.56E-02	2.28	3.36	55.50	0.19	0.09	2.11E-03	1.07	10.78	2.45	7.12	30.49	1.14E-04	0.07	1,496.23
Sep-21	9.47E-02	3.86E-02	0.50	3.67E-02	2.29	3.39	55.01	0.19	0.09	2.09E-03	1.07	10.78	2.45	7.18	30.53	1.10E-04	0.07	1,495.16
Oct-21	9.42E-02	4.01E-02	0.50	3.67E-02	2.28	3.38	55.39	0.19	0.09	2.10E-03	1.08	10.83	2.45	7.27	30.50	1.15E-04	0.07	1,495.21
Nov-21	9.42E-02	4.04E-02	0.50	3.56E-02	2.26	3.36	55.33	0.19	0.09	2.10E-03	1.08	10.81	2.44	7.37	30.43	1.16E-04	0.07	1,493.06
Dec-21	9.40E-02	4.43E-02	0.50	3.25E-02	2.25	3.33	55.19	0.19	0.09	2.09E-03	1.07	10.81	2.44	7.54	30.53	1.27E-04	0.07	1,493.79
Jan-22	9.36E-02	4.61E-02	0.50	3.24E-02	2.18	3.24	55.29	0.19	0.09	2.10E-03	1.07	10.67	3.04	7.54	30.25	1.32E-04	0.07	1,485.03
Feb-22	9.28E-02	4.60E-02	0.49	3.22E-02	2.10	3.16	55.13	0.19	0.09	2.09E-03	1.06	10.50	3.62	7.52	29.92	1.31E-04	0.07	1,478.34
Mar-22	9.21E-02	4.71E-02	0.49	3.10E-02	2.01	3.09	53.96	0.18	0.09	2.05E-03	1.04	10.23	4.20	7.46	29.20	1.35E-04	0.07	1,459.91
Apr-22	9.19E-02	4.83E-02	0.49	3.23E-02	1.93	3.02	53.11	0.18	0.09	2.01E-03	1.03	10.10	4.77	7.46	29.05	1.38E-04	0.07	1,452.72
May-22	9.17E-02	4.93E-02	0.49	3.47E-02	1.88	2.95	52.62	0.18	0.09	2.00E-03	1.04	10.10	5.28	7.50	29.16	1.41E-04	0.08	1,446.19
Jun-22	9.27E-02	4.73E-02	0.49	3.49E-02	1.82	2.88	52.46	0.18	0.09	1.99E-03	1.05	10.04	5.95	7.43	29.22	1.35E-04	0.08	1,447.70
Jul-22	9.28E-02	4.59E-02	0.49	3.30E-02	1.76	2.81	51.74	0.17	0.09	1.96E-03	1.05	9.95	6.57	7.40	29.12	1.31E-04	0.08	1,442.34
Aug-22	9.37E-02	4.92E-02	0.49	3.27E-02	1.69	2.73	51.28	0.17	0.09	1.94E-03	1.04	9.83	7.22	7.47	28.97	1.41E-04	0.09	1,436.10
Sep-22	9.29E-02	4.64E-02	0.49	3.37E-02	1.63	2.65	50.49	0.17	0.09	1.92E-03	1.05	9.78	7.36	7.43	29.10	1.33E-04	0.09	1,426.13
Oct-22	9.29E-02	4.55E-02	0.49	3.44E-02	1.57	2.60	50.03	0.17	0.08	1.90E-03	1.05	9.74	7.98	7.49	29.15	1.30E-04	0.09	1,427.74
Nov-22	9.39E-02	4.53E-02	0.49	3.41E-02	1.49	2.52	49.73	0.17	0.08	1.89E-03	1.05	9.63	8.63	7.27	29.04	1.29E-04	0.09	1,422.51
Dec-22	9.42E-02	4.32E-02	0.49	2.70E-02	1.43	2.46	49.56	0.17	0.08	1.88E-03	1.05	9.58	9.26	7.23	29.11	1.23E-04	0.09	1,420.67
Jan-23	9.41E-02	4.38E-02	0.49	2.73E-02	1.36	2.38	49.35	0.17	0.08	1.87E-03	1.05	9.45	9.83	7.24	28.96	1.25E-04	0.08	1,409.66
Feb-23	9.43E-02	4.01E-02	0.49	2.73E-02	1.29	2.31	49.00	0.17	0.08	1.86E-03	1.05	9.34	10.47	7.16	28.81	1.15E-04	0.08	1,408.28
Mar-23	9.25E-02	4.04E-02	0.49	2.00E-02	1.20	2.22	47.61	0.16	0.08	1.81E-03	1.01	9.00	10.96	7.12	27.66	1.15E-04	0.09	1,374.94
Apr-23	9.37E-02	4.00E-02	0.49	1.88E-02	1.17	2.16	47.95	0.16	0.08	1.82E-03	1.02	9.02	11.60	7.18	27.85	1.14E-04	0.08	1,381.13
May-23	9.42E-02	4.24E-02	0.49	1.89E-02	1.11	2.11	48.54	0.16	0.08	1.84E-03	1.02	8.91	12.26	7.09	27.71	1.21E-04	0.08	1,379.20
Jun-23	9.37E-02	4.03E-02	0.49	1.37E-02	1.03	2.06	49.24	0.17	0.08	1.87E-03	1.00	8.65	12.91	7.16	27.35	1.15E-04	0.08	1,373.11
Jul-23	9.43E-02	3.47E-02	0.49	1.35E-02	0.98	2.00	50.08	0.17	0.08	1.90E-03	1.01	8.63	13.55	7.18	27.53	9.93E-05	0.08	1,375.53
Aug-23	9.52E-02	9.83E-02	0.49	1.66E-02	0.90	1.94	50.90	0.17	0.09	1.93E-03	1.00	8.49	14.15	7.17	27.39	2.81E-04	0.07	1,371.32
Sep-23	9.48E-02	9.84E-02	0.49	1.55E-02	0.84	1.81	50.66	0.17	0.09	1.92E-03	1.00	8.38	14.27	7.17	27.30	2.81E-04	0.07	1,358.64
Oct-23	9.50E-02	9.69E-02	0.49	1.60E-02	0.77	1.75	50.06	0.17	0.08	1.90E-03	0.99	8.24	14.91	7.20	27.22	2.77E-04	0.07	1,352.19
Nov-23	9.48E-02	9.63E-02	0.49	1.63E-02	0.71	1.69	49.70	0.17	0.08	1.89E-03	0.99	8.12	15.59	7.18	27.19	2.75E-04	0.07	1,350.76
Dec-23	9.57E-02	9.24E-02	0.49	1.67E-02	0.65	1.64	49.18	0.17	0.08	1.87E-03	0.99	7.99	16.25	7.16	26.93	2.64E-04	0.07	1,344.73
Jan-24	9.58E-02	9.32E-02	0.49	2.05E-02	0.65	1.65	48.70	0.16	0.08	1.85E-03	0.98	7.99	16.20	7.13	26.84	2.67E-04	0.07	1,339.64
Feb-24	9.64E-02	9.37E-02	0.50	2.05E-02	0.65	1.66	48.45	0.16	0.08	1.84E-03	0.99	8.04	16.24	7.25	27.13	2.68E-04	0.07	1,346.20
Mar-24	9.65E-02	9.26E-02	0.50	2.18E-02	0.64	1.66	49.00	0.17	0.08	1.86E-03	0.98	7.94	16.34	7.24	26.92	2.65E-04	0.08	1,344.26
Apr-24	9.74E-02	9.10E-02	0.50	2.01E-02	0.64	1.65	49.13	0.17	0.08	1.86E-03	0.98	7.92	16.38	7.23	26.82	2.60E-04	0.07	1,343.04

H2S Baseline Actual Emission Rate Calculations

	Production Data													
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Bleach Plant Scrubber	No. 7 Pulp Dryer	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Pulp Dryer (for Wastewater Treatment)
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Bleach Plant Production	Finished Pulp Production	Lime Production	Lime Production	Tall Oil Production	BLS Throughput	BLS Throughput	Finished Pulp Production
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTBP*	*ADTFP*	*tons CaO*	*tons CaO*	*tons TO*	*tons BLS*	*tons BLS*	*ADTFP*
Jan-15	744	80,993	36,815	15.3	46.5	66.9	34,238	34,238	8,903	11,396	2,477	71,044	84,477	45,251
Feb-15	672	94,179	42,809	0.00	2.7	7.2	39,812	39,812	8,899	10,547	2,829	72,081	79,314	44,231
Mar-15	744	83,857	38,117	18.7	82.6	7.7	35,449	35,449	9,613	11,280	3,406	72,947	78,419	44,256
Apr-15	720	21,160	9,618	3.5	21.6	3.7	8,945	8,945	3,036	11,527	2,259	19,335	83,689	43,809
May-15	744	47,182	21,446	18.3	23.9	35.1	19,945	19,945	6,696	11,266	2,616	50,315	80,831	44,198
Jun-15	720	73,546	33,430	27.1	46.9	2.5	31,090	31,090	8,826	10,641	2,312	71,717	71,665	40,637
Jul-15	744	91,057	41,390	1.9	3.1	7.4	38,492	38,492	9,971	13,287	2,857	76,795	90,875	47,805
Aug-15	744	85,418	38,827	4.8	0.9	0.00	36,109	36,109	10,154	13,411	2,235	71,276	89,606	48,405
Sep-15	720	82,638	37,563	13.0	13.6	31.2	34,933	34,933	8,918	5,940	1,895	68,634	34,033	17,485
Oct-15	744	79,220	36,009	9.3	18.3	20.5	33,489	33,489	9,844	12,305	2,676	68,184	81,193	41,778
Nov-15	720	82,846	37,657	5.1	8.1	26.7	35,021	35,021	10,471	13,192	2,863	72,500	87,648	46,910
Dec-15	744	65,360	29,709	17.0	28.8	5.0	27,629	27,629	7,483	12,962	2,668	57,498	88,496	44,927
Jan-16	744	68,699	31,227	4.8	10.2	0.00	29,041	29,041	8,511	13,148	2,718	63,374	93,355	47,857
Feb-16	696	73,810	33,550	4.2	8.5	0.00	31,202	31,202	8,546	12,933	2,882	71,737	85,379	47,136
Mar-16	744	82,789	37,631	7.0	18.4	0.00	34,997	34,997	7,861	13,902	3,526	76,311	92,544	48,631
Apr-16	720	20,536	9,334	35.7	46.4	4.1	8,681	8,681	1,595	10,861	1,857	18,405	82,829	42,343
May-16	744	77,060	35,027	10.2	89.2	19.5	32,575	32,575	7,959	9,940	3,601	75,152	88,572	48,226
Jun-16	720	75,193	34,179	0.8	0.00	1.9	31,786	31,786	9,337	10,436	3,212	72,276	87,873	47,951
Jul-16	744	77,285	35,130	0.00	0.00	32.7	32,671	32,671	9,733	10,644	3,191	73,546	87,660	46,267
Aug-16	744	80,350	36,523	6.9	6.4	64.0	33,966	33,966	9,108	10,326	3,027	69,155	84,631	47,207
Sep-16	720	76,571	34,805	38.3	0.00	16.3	32,368	32,368	8,504	5,931	1,981	68,024	48,663	25,402
Oct-16	744	81,401	37,001	5.1	5.9	0.00	34,411	34,411	8,653	10,308	3,107	68,821	90,800	51,471
Nov-16	720	75,835	34,470	6.3	1.4	11.0	32,057	32,057	9,104	9,705	3,008	73,637	89,150	48,121
Dec-16	744	64,835	29,470	4.6	8.0	0.00	27,408	27,408	9,376	10,710	2,847	67,590	89,465	50,349
Jan-17	744	83,335	37,880	0.00	0.00	6.1	35,228	35,228	10,197	10,880	3,134	76,507	84,917	44,724
Feb-17	672	77,117	35,053	21.9	0.00	2.5	32,599	32,599	8,611	10,537	3,126	65,245	83,153	46,060
Mar-17	744	15,479	7,036	0.00	0.00	0.00	6,543	6,543	1,817	11,781	2,165	10,011	96,223	49,469
Apr-17	720	0.00	0.00	0.00	0.00	22.9	0.00	0.00	489	10,808	1,719	0	87,437	44,733
May-17	744	69,359	31,527	10.9	25.2	33.5	29,320	29,320	9,298	11,444	2,668	71,042	90,418	48,244
Jun-17	720	81,997	37,271	4.7	66.8	0.00	34,662	34,662	10,085	12,777	2,294	75,499	90,339	49,401
Jul-17	744	85,579	38,899	0.4	4.0	7.2	36,176	36,176	10,805	13,263	2,224	79,475	94,784	49,324
Aug-17	744	76,841	34,928	0.3	16.3	16.7	32,483	32,483	10,778	12,121	2,431	75,274	90,742	47,264
Sep-17	720	79,264	36,029	5.4	5.3	0.00	33,507	33,507	10,570	10,666	968	71,404	43,240	18,900
Oct-17	744	70,913	32,233	16.1	0.00	17.4	29,977	29,977	9,893	10,613	1,295	68,119	86,542	45,792
Nov-17	720	83,615	38,007	1.2	2.9	0.00	35,346	35,346	11,126	10,880	1,744	75,826	90,768	47,923
Dec-17	744	75,885	34,493	0.7	7.0	10.8	32,079	32,079	9,553	10,562	2,052	65,828	88,839	46,108
Jan-18	744	83,337	37,880	115.5	3.1	1.7	35,229	35,229	9,840	7,878	1,677	69,713	63,596	30,879
Feb-18	672	77,208	35,095	16.0	3.6	10.4	32,638	32,638	9,050	10,338	2,411	67,334	85,839	46,897
Mar-18	744	79,843	36,292	33.9	0.00	0.00	33,752	33,752	10,185	11,145	3,131	72,264	91,382	50,691
Apr-18	720	20,946	9,521	0.00	0.00	1.1	8,854	8,854	3,493	10,100	1,400	20,206	87,174	45,454
May-18	744	79,261	36,028	60.6	37.4	70.5	33,506	33,506	8,385	10,764	2,683	70,056	88,412	46,794
Jun-18	720	77,602	35,274	0.00	4.8	2.3	32,805	32,805	9,676	10,602	2,594	71,572	84,311	47,116
Jul-18	744	81,473	37,033	35.7	8.0	7.0	34,441	34,441	10,309	11,241	2,854	74,875	87,489	46,861
Aug-18	744	77,216	35,098	0.00	11.7	6.5	32,641	32,641	10,287	11,686	2,348	71,908	78,014	44,372
Sep-18	720	76,801	34,909	9.8	0.00	4.3	32,466	32,466	10,027	15,791	1,600	67,761	48,883	27,199
Oct-18	744	86,316	39,235	4.2	39.4	25.1	36,488	36,488	9,434	11,243	3,108	75,135	79,508	39,731
Nov-18	720	79,813	36,279	16.3	21.8	0.00	33,739	33,739	9,527	11,441	3,163	70,639	83,733	45,634
Dec-18	744	80,790	36,723	1.9	72.0	7.8	34,152	34,152	8,956	11,210	2,860	69,930	83,970	43,462
Jan-19	744	89,974	40,897	27.3	0.00	0.7	38,035	38,035	10,237	10,069	2,726	73,484	75,254	36,974
Feb-19	672	66,921	30,419	3.7	14.3	0.00	28,289	28,289	8,590	11,139	2,742	58,334	80,923	43,566
Mar-19	744	83,336	37,880	0.00	7.5	4.4	35,229	35,229	9,222	13,183	3,802	71,830	91,845	48,559
Apr-19	720	17,507	7,958	3.8	43.8	7.6	7,401	7,401	2,327	11,639	2,379	15,868	90,313	47,864
May-19	744	81,321	36,964	0.00	78.6	18.0	34,377	34,377	10,193	12,055	3,146	74,034	81,584	44,129
Jun-19	720	82,545	37,521	0.00	77.2	21.5	34,894	34,894	9,763	12,335	3,138	67,914	82,148	42,093
Jul-19	744	92,330	41,968	26.7	1.7	0.00	39,031	39,031	11,692	13,778	3,430	77,913	91,943	50,393
Aug-19	744	69,372	31,533	24.0	15.8	0.0	29,326	29,326	10,018	13,908	3,713	60,235	82,432	42,684
Sep-19	720	75,457	34,299	24.5	21.6	0.00	31,898	31,898	9,550	12,619	2,476	64,488	53,965	27,650
Oct-19	744	87,989	39,995	0.00	2.7	0.00	37,195	37,195	11,296	12,536	2,741	69,812	88,476	48,330
Nov-19	720	91,500	41,591	4.2	5.4	15.8	38,680	38,680	11,401	12,287	3,353	75,552	91,812	48,218
Dec-19	744	86,910	39,505	5.6	3.3	37.7	36,739	36,739	11,184	13,644	3,808	74,284	90,819	49,849
Jan-20	744	90,271	41,032	1.3	10.8	3.6	38,160	38,160	11,334	13,680	3,127	74,083	91,466	47,720
Feb-20	696	85,322	38,783	3.9	35.9	2.4	36,068	36,068	11,337	12,869	3,541	71,713	78,229	42,005
Mar-20	744	91,417	41,553	0.00	0.00	14.2	38,644	38,644	11,593	12,605	3,839	78,757	85,701	46,855
Apr-20	720	88,536	40,244	7.6	3.4	9.0	37,427	37,427	11,664	12,767	3,851	76,123	91,054	49,534
May-20	744	68,590	31,177	12.2	6.4	2.5	28,995	28,995	8,755	13,141	3,164	53,972	91,056	47,636
Jun-20	720	81,955	37,252	27.4	29.8	0.0	34,644	34,644	9,532	11,841	3,145	69,047	87,069	46,693
Jul-20	744	81,792	37,178	17.6	52.2	26.1	34,576	34,576	10,175	12,222	4,062	69,441	91,518	49,954

H2S Baseline Actual Emission Rate Calculations

	Production Data													
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Bleach Plant Scrubber	No. 7 Pulp Dryer	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Pulp Dryer (for Wastewater Treatment)
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Bleach Plant Production	Finished Pulp Production	Lime Production	Lime Production	Tall Oil Production	BLS Throughput	BLS Throughput	Finished Pulp Production
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTBP*	*ADTFP*	*tons CaO*	*tons CaO*	*tons TO*	*tons BLS*	*tons BLS*	*ADTFP*
Aug-20	744	89,148	40,522	14.9	0.00	14.3	37,685	37,685	10,875	12,531	3,960	77,036	91,406	51,291
Sep-20	720	66,821	30,373	67.5	36.7	2.4	28,247	28,247	9,704	8,522	2,479	60,516	52,377	30,095
Oct-20	744	68,400	31,091	24.5	0.00	6.1	28,915	28,915	9,979	10,292	2,784	60,584	79,476	42,865
Nov-20	720	80,451	36,569	3.7	3.4	7.4	34,009	34,009	10,810	12,307	3,434	72,172	87,820	49,243
Dec-20	744	82,255	37,388	65.1	9.3	87.7	34,771	34,771	10,113	12,225	3,159	69,298	91,927	49,268
Jan-21	744	92,130	41,877	10.4	0.00	0.00	38,946	38,946	10,889	12,837	3,481	75,476	91,675	48,846
Feb-21	672	77,666	35,303	63.6	12.6	0.00	32,831	32,831	9,521	11,991	3,602	64,842	84,147	42,651
Mar-21	744	84,502	38,410	9.9	2.0	106.7	35,721	35,721	10,420	13,606	3,969	68,111	96,002	50,312
Apr-21	720	54,206	24,639	8.5	28.8	21.4	22,914	22,914	6,722	11,426	1,859	47,211	79,412	41,917
May-21	744	86,115	39,143	10.1	13.5	2.5	36,403	36,403	9,954	12,049	3,349	73,937	86,559	46,319
Jun-21	720	69,733	31,697	26.4	0.00	70.7	29,478	29,478	9,931	9,744	2,568	71,785	67,000	42,478
Jul-21	744	68,787	31,267	71.3	0.00	3.1	29,078	29,078	9,241	11,993	2,410	61,455	86,692	47,136
Aug-21	744	79,907	36,322	14.0	0.00	9.0	33,779	33,779	10,668	11,466	2,398	69,542	73,966	41,102
Sep-21	720	78,034	35,470	10.2	5.0	14.2	32,987	32,987	9,952	15,335	1,794	65,162	49,408	25,204
Oct-21	744	86,183	39,174	18.4	3.6	0.00	36,432	36,432	10,266	11,458	3,264	76,710	86,340	49,161
Nov-21	720	87,272	39,669	8.2	0.00	1.2	36,892	36,892	9,986	11,098	3,272	72,915	87,337	47,270
Dec-21	744	92,833	42,197	53.6	0.00	0.00	39,243	39,243	10,226	11,147	3,615	73,410	91,721	48,273
Jan-22	744	73,084	33,220	23.5	14.6	1.6	30,895	30,895	9,282	11,027	3,266	65,356	79,083	43,839
Feb-22	672	64,307	29,230	2.6	0.00	0.00	27,184	27,184	7,595	9,962	3,324	57,394	75,833	42,378
Mar-22	744	45,757	20,799	14.1	42.6	0.00	19,343	19,343	6,008	12,737	2,215	46,135	76,131	42,707
Apr-22	720	79,114	35,961	21.9	11.9	25.2	33,444	33,444	9,654	12,499	2,685	70,078	75,611	44,372
May-22	744	75,399	34,272	25.2	114.7	31.5	31,873	31,873	9,628	12,101	2,494	67,457	68,954	36,440
Jun-22	720	85,542	38,883	2.0	5.4	2.3	36,161	36,161	9,917	11,676	2,912	73,726	87,307	47,096
Jul-22	744	75,620	34,373	0.5	108.1	3.1	31,967	31,967	10,441	10,557	3,075	68,732	81,361	45,748
Aug-22	744	79,699	36,227	55.9	0.00	10.9	33,691	33,691	9,174	10,582	3,320	72,214	84,218	47,347
Sep-22	720	75,313	34,233	33.1	11.0	14.8	31,837	31,837	9,330	2,973	1,392	66,113	23,006	13,813
Oct-22	744	71,577	32,535	13.5	3.6	14.1	30,257	30,257	9,410	10,627	2,151	68,581	80,175	43,572
Nov-22	720	73,028	33,195	0.5	24.2	3.2	30,871	30,871	8,647	10,821	3,015	67,662	84,160	45,726
Dec-22	744	87,023	39,556	38.6	45.9	0.00	36,787	36,787	9,863	11,379	2,928	76,711	83,179	44,913
Jan-23	744	82,345	37,430	19.0	43.1	3.5	34,810	34,810	8,571	11,921	3,188	68,969	75,796	38,973
Feb-23	672	68,548	31,158	16.7	0.00	0.0	28,977	28,977	7,791	10,944	3,132	58,892	82,339	44,754
Mar-23	744	11,724	5,329	13.8	16.2	16.4	4,956	4,956	2,599	9,705	2,044	20,586	68,474	38,660
Apr-23	720	65,865	29,939	3.3	61.6	6.8	27,843	27,843	8,960	11,778	2,325	62,129	81,803	44,859
May-23	744	77,099	35,045	40.4	21.9	2.7	32,592	32,592	9,457	13,971	4,165	70,410	85,709	47,670
Jun-23	720	46,973	21,351	0.5	0.00	7.0	19,857	19,857	4,972	11,455	3,531	39,730	81,542	44,360
Jul-23	744	80,285	36,493	2.0	3.1	0.00	33,939	33,939	9,872	11,604	3,568	72,314	83,238	45,345
Aug-23	744	71,385	32,448	803.6	33.2	48.1	30,177	30,177	8,347	11,185	3,528	60,396	76,374	39,347
Sep-23	720	72,173	32,806	11.9	52.5	0.8	30,509	30,509	8,499	7,351	1,461	58,763	20,344	11,558
Oct-23	744	80,940	36,791	0.00	28.5	5.9	34,215	34,215	9,595	11,525	2,450	68,392	83,324	43,162
Nov-23	720	85,526	38,876	0.00	12.4	4.1	36,154	36,154	9,576	12,073	2,772	68,551	87,639	46,197
Dec-23	744	76,556	34,798	6.1	11.1	5.9	32,362	32,362	9,623	12,577	2,899	67,124	85,757	47,473
Jan-24	744	67,127	30,512	33.5	30.7	48.0	28,377	28,377	9,227	11,657	2,595	63,933	73,898	39,879
Feb-24	696	82,835	37,652	8.1	0.00	0.00	35,017	35,017	9,721	11,761	2,989	66,821	79,915	42,895
Mar-24	744	32,050	14,568	0.00	23.9	16.6	13,548	13,548	3,291	12,661	2,971	28,031	87,235	46,035
Apr-24	720	73,211	33,278	2.9	8.7	4.6	30,948	30,948	9,133	11,096	2,859	65,802	79,857	45,320

H2S Baseline Actual Emission Rate Calculations

	Emission Factors																	
	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant Scrubber	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter	Mill Wastewater Treatment System
	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S
	lb/ODT chips	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTUBP*	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton TO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ADTUBP*	*lb/ADTFP*
Jan-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-15	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-16	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-17	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-18	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-19	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03

H2S Baseline Actual Emission Rate Calculations

	Emission Factors																	
	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant Scrubber	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter	Mill Wastewater Treatment System
	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S
	lb/ODT chips	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTUBP*	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton TO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ADTUBP*	*lb/ADTFP*
Aug-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-20	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-21	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-22	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
May-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jun-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jul-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Aug-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Sep-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Oct-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Nov-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Dec-23	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Jan-24	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Feb-24	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Mar-24	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03
Apr-24	2.95E-06	0.20	2.47E-03	2.75E-03	2.00E-02	0.01	2.27E-02	0.05	2.27E-02	5.64E-02	5.64E-02	2.83E-02	1.18E-02	1.62E-02	1.18E-02	1.62E-02	2.50E-04	2.69E-03

H2S Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																	
	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant Scrubber	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Mill Wastewater Treatment System
	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	1.19E-04	1.51E-03	5.74E-05	6.39E-05	0.37	0.19	1.74E-04	1.82E-02	7.59E-04	7.60E-02	0.20	3.50E-02	0.42	0.17	0.50	0.19	1.92E-06	0.11
Feb-15	1.39E-04	0.00	3.27E-06	3.64E-06	0.43	0.22	0.00	1.64E-02	8.17E-05	6.61E-02	0.18	4.00E-02	0.43	0.15	0.47	0.13	0.00	0.11
Mar-15	1.24E-04	1.84E-03	1.02E-04	1.14E-04	0.38	0.19	2.12E-04	1.82E-02	8.74E-05	5.15E-02	0.15	4.82E-02	0.43	0.17	0.46	0.14	2.34E-06	0.11
Apr-15	3.12E-05	3.45E-04	2.67E-05	2.97E-05	9.62E-02	4.85E-02	3.97E-05	1.76E-02	4.24E-05	8.44E-03	0.18	3.20E-02	0.11	0.16	0.49	0.31	4.38E-07	7.10E-02
May-15	6.96E-05	1.81E-03	2.95E-05	3.28E-05	0.21	0.11	2.08E-04	1.82E-02	3.99E-04	3.92E-02	0.19	3.70E-02	0.30	0.22	0.48	0.25	2.29E-06	8.63E-02
Jun-15	1.08E-04	2.67E-03	5.79E-05	6.45E-05	0.33	0.17	3.07E-04	1.76E-02	2.79E-05	6.11E-02	0.21	3.27E-02	0.42	0.19	0.42	0.12	3.38E-06	9.65E-02
Jul-15	1.34E-04	1.83E-04	3.77E-06	4.20E-06	0.41	0.21	2.11E-05	1.82E-02	8.36E-05	5.55E-02	0.23	4.04E-02	0.45	0.20	0.54	0.18	2.32E-07	0.12
Aug-15	1.26E-04	4.74E-04	1.06E-06	1.18E-06	0.39	0.20	5.45E-05	1.82E-02	0.00	3.05E-02	0.27	3.16E-02	0.42	0.19	0.53	5.57E-02	6.00E-07	0.11
Sep-15	1.22E-04	1.28E-03	1.68E-05	1.87E-05	0.38	0.19	1.48E-04	1.76E-02	3.54E-04	2.56E-02	5.21E-02	2.68E-02	0.40	0.29	0.20	4.71E-02	1.63E-06	7.05E-02
Oct-15	1.17E-04	9.15E-04	2.27E-05	2.52E-05	0.36	0.18	1.05E-04	1.82E-02	2.33E-04	3.25E-02	0.11	3.79E-02	0.40	0.17	0.48	0.10	1.16E-06	0.10
Nov-15	1.22E-04	5.07E-04	9.98E-06	1.11E-05	0.38	0.19	5.83E-05	1.76E-02	3.04E-04	3.28E-02	0.15	4.05E-02	0.43	0.14	0.52	0.21	6.42E-07	0.11
Dec-15	9.64E-05	1.68E-03	3.55E-05	3.95E-05	0.30	0.15	1.93E-04	1.82E-02	5.68E-05	5.86E-02	0.18	3.78E-02	0.34	0.29	0.52	0.26	2.13E-06	9.76E-02
Jan-16	1.01E-04	4.73E-04	1.25E-05	1.40E-05	0.31	0.16	5.44E-05	1.82E-02	0.00	6.37E-02	0.17	3.85E-02	0.37	0.19	0.55	0.21	5.99E-07	0.10
Feb-16	1.09E-04	4.14E-04	1.05E-05	1.17E-05	0.34	0.17	4.76E-05	1.70E-02	0.00	6.02E-02	0.20	4.08E-02	0.42	0.44	0.50	0.13	5.24E-07	0.11
Mar-16	1.22E-04	6.92E-04	2.27E-05	2.53E-05	0.38	0.19	7.97E-05	1.82E-02	0.00	5.13E-02	0.21	4.99E-02	0.45	0.47	0.55	0.27	8.77E-07	0.11
Apr-16	3.03E-05	3.52E-03	5.73E-05	6.38E-05	9.33E-02	4.71E-02	4.05E-04	1.76E-02	4.65E-05	0.00	0.16	2.63E-02	0.11	0.15	0.49	0.27	4.46E-06	6.86E-02
May-16	1.14E-04	1.01E-03	1.10E-04	1.23E-04	0.35	0.18	1.16E-04	1.82E-02	2.21E-04	7.23E-02	0.15	5.10E-02	0.44	0.49	0.52	0.26	1.28E-06	0.11
Jun-16	1.11E-04	8.22E-05	0.00	0.00	0.34	0.17	9.46E-06	1.76E-02	2.21E-05	6.16E-02	0.12	4.54E-02	0.43	0.48	0.52	0.28	1.04E-07	0.11
Jul-16	1.14E-04	0.00	0.00	0.00	0.35	0.18	0.00	1.82E-02	3.71E-04	9.98E-02	0.15	4.51E-02	0.43	0.53	0.52	0.16	0.00	0.11
Aug-16	1.19E-04	6.81E-04	7.91E-06	8.80E-06	0.37	0.18	7.84E-05	1.82E-02	7.26E-04	0.13	0.23	4.28E-02	0.41	0.53	0.50	0.19	8.63E-07	0.11
Sep-16	1.13E-04	3.78E-03	0.00	0.00	0.35	0.18	4.35E-04	1.76E-02	1.85E-04	0.17	0.15	2.80E-02	0.40	0.47	0.29	5.86E-02	4.79E-06	7.77E-02
Oct-16	1.20E-04	5.02E-04	7.28E-06	8.10E-06	0.37	0.19	5.77E-05	1.82E-02	0.00	0.22	0.29	4.40E-02	0.41	0.56	0.54	0.13	6.36E-07	0.12
Nov-16	1.12E-04	6.23E-04	1.72E-06	1.91E-06	0.34	0.17	7.17E-05	1.76E-02	1.24E-04	0.17	0.27	4.26E-02	0.43	0.53	0.53	0.18	7.90E-07	0.11
Dec-16	9.56E-05	4.58E-04	9.93E-06	1.11E-05	0.29	0.15	5.26E-05	1.82E-02	0.00	0.16	0.27	4.03E-02	0.40	0.55	0.53	0.18	5.80E-07	0.10
Jan-17	1.23E-04	0.00	0.00	0.00	0.38	0.19	0.00	1.82E-02	6.98E-05	0.17	0.22	4.43E-02	0.45	0.62	0.50	0.13	0.00	0.11
Feb-17	1.14E-04	2.16E-03	0.00	0.00	0.35	0.18	2.49E-04	1.64E-02	2.79E-05	0.13	0.19	4.42E-02	0.38	0.53	0.49	0.11	2.74E-06	0.11
Mar-17	2.28E-05	0.00	0.00	0.00	7.04E-02	3.55E-02	0.00	1.82E-02	0.00	9.66E-03	0.21	3.06E-02	5.91E-02	8.11E-02	0.57	0.23	0.00	7.53E-02
Apr-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76E-02	2.60E-04	3.93E-03	0.24	2.43E-02	7.33E-07	0.00	0.52	0.19	0.00	6.02E-02
May-17	1.02E-04	1.08E-03	3.11E-05	3.47E-05	0.32	0.16	1.24E-04	1.82E-02	3.80E-04	0.19	0.24	3.78E-02	0.42	0.51	0.53	0.14	1.36E-06	0.10
Jun-17	1.21E-04	4.68E-04	8.25E-05	9.18E-05	0.37	0.19	5.39E-05	1.76E-02	0.00	0.19	0.30	3.25E-02	0.45	0.51	0.53	0.13	5.93E-07	0.11
Jul-17	1.26E-04	3.83E-05	4.91E-06	5.46E-06	0.39	0.20	4.41E-06	1.82E-02	8.19E-05	0.26	0.34	3.15E-02	0.47	0.52	0.56	0.13	4.86E-08	0.11
Aug-17	1.13E-04	2.84E-05	2.02E-05	2.25E-05	0.35	0.18	3.27E-06	1.82E-02	1.90E-04	0.15	0.30	3.44E-02	0.44	0.50	0.54	0.15	3.60E-08	0.11
Sep-17	1.17E-04	5.28E-04	6.54E-06	7.28E-06	0.36	0.18	6.07E-05	1.76E-02	0.00	0.15	0.10	1.37E-02	0.42	0.46	0.26	7.70E-02	6.69E-07	7.05E-02
Oct-17	1.05E-04	1.59E-03	0.00	0.00	0.32	0.16	1.83E-04	1.82E-02	1.97E-04	0.16	0.23	1.83E-02	0.40	0.53	0.51	0.11	2.01E-06	0.10
Nov-17	1.23E-04	1.18E-04	3.60E-06	4.01E-06	0.38	0.19	1.36E-05	1.76E-02	0.00	0.27	0.29	2.47E-02	0.45	0.51	0.54	0.12	1.50E-07	0.11
Dec-17	1.12E-04	6.85E-05	8.59E-06	9.57E-06	0.34	0.17	7.88E-06	1.82E-02	1.23E-04	0.19	0.22	2.90E-02	0.39	0.53	0.52	0.14	8.68E-08	0.11
Jan-18	1.23E-04	1.14E-02	3.85E-06	4.28E-06	0.38	0.19	1.31E-03	1.82E-02	1.87E-05	0.21	0.14	2.37E-02	0.41	0.49	0.38	0.22	1.44E-05	8.89E-02
Feb-18	1.14E-04	1.58E-03	4.46E-06	4.97E-06	0.35	0.18	1.82E-04	1.64E-02	1.18E-04	0.25	0.21	3.41E-02	0.40	0.50	0.51	0.18	2.00E-06	0.11
Mar-18	1.18E-04	3.34E-03	0.00	0.00	0.36	0.18	3.84E-04	1.82E-02	0.00	0.26	0.25	4.43E-02	0.43	0.59	0.54	0.14	4.23E-06	0.11
Apr-18	3.09E-05	0.00	0.00	0.00	9.52E-02	4.80E-02	0.00	1.76E-02	1.22E-05	6.09E-02	0.25	1.98E-02	0.12	0.16	0.51	0.18	0.00	7.30E-02
May-18	1.17E-04	5.98E-03	4.62E-05	5.15E-05	0.36	0.18	6.88E-04	1.82E-02	8.01E-04	0.21	0.24	3.80E-02	0.41	0.57	0.52	0.13	7.57E-06	0.11
Jun-18	1.14E-04	0.00	5.92E-06	6.59E-06	0.35	0.18	0.00	1.76E-02	2.65E-05	0.22	0.16	3.67E-02	0.42	0.58	0.50	0.23	0.00	0.11
Jul-18	1.20E-04	3.52E-03	9.86E-06	1.10E-05	0.37	0.19	4.05E-04	1.82E-02	7.89E-05	0.26	0.28	4.04E-02	0.44	0.61	0.52	0.32	4.46E-06	0.11
Aug-18	1.14E-04	0.00	1.44E-05	1.60E-05	0.35	0.18	0.00	1.82E-02	7.33E-05	0.25	0.32	3.32E-02	0.42	0.58	0.46	0.47	0.00	0.10
Sep-18	1.13E-04	9.70E-04	0.00	0.00	0.35	0.18	1.12E-04	1.76E-02	4.89E-05	0.25	0.12	2.26E-02	0.40	0.45	0.29	0.29	1.23E-06	8.02E-02
Oct-18	1.27E-04	4.14E-04	4.86E-05	5.41E-05	0.39	0.20	4.76E-05	1.82E-02	2.85E-04	0.21	0.31	4.40E-02	0.44	0.47	0.47	0.44	5.24E-07	0.10
Nov-18	1.18E-04	1.61E-03	2.69E-05	3.00E-05	0.36	0.18	1.86E-04	1.76E-02	0.00	0.21	0.29	4.47E-02	0.42	0.47	0.49	0.31	2.04E-06	0.11
Dec-18	1.19E-04	1.85E-04	8.89E-05	9.90E-05	0.37	0.19	2.13E-05	1.82E-02	8.82E-05	0.19	0.26	4.05E-02	0.41	0.46	0.50	0.49	2.35E-07	0.10
Jan-19	1.33E-04	2.69E-03	0.00	0.00	0.41	0.21	3.10E-04	1.82E-02	8.50E-06	0.12	0.23	3.86E-02	0.43	0.48	0.44	0.34	3.41E-06	0.10
Feb-19	9.87E-05	3.63E-04	1.76E-05	1.96E-05	0.30	0.15	4.18E-05	1.64E-02	0.00	0.11	0.25	3.88E-02	0.34	0.41	0.48	0.36	4.60E-07	9.66E-02
Mar-19	1.23E-04	0.00	9.31E-06	1.04E-05	0.38	0.19	0.00	1.82E-02	4.97E-05	0.16	0.32	5.38E-02	0.42	0.40	0.54	0.48	0.00	0.11
Apr-19	2.58E-05	3.70E-04	5.41E-05	6.02E-05	7.96E-02	4.01E-02	4.26E-05	1.76E-02	8.58E-05	5.53E-02	0.25	3.37E-02	9.36E-02	0.13	0.53	0.45	4.69E-07	7.43E-02
May-19	1.20E-04	0.00	9.70E-05	1.08E-04	0.37	0.19	0.00	1.82E-02	2.04E-04	0.20	0.15	4.45E-02	0.44	0.58	0.48	0.40	0.00	0.11
Jun-19	1.22E-04	0.00	9.54E-05	1.06E-04	0.38	0.19	0.00	1.76E-02	2.44E-04	0.19	0.15	4.44E-02	0.40	0.47	0.48	0.38	0.00	0.10
Jul-19	1.36E-04	2.63E-03	2.06E-06	2.29E-06	0.42	0.21	3.03E-04	1.82E-02	0.00	0.20	0.22	4.85E-02	0.46	0.47	0.54	0.41	3.33E-06	0.12
Aug-19	1.02E-04	2.36E-03	1.95E-05	2.18E-05	0.32	0.16	2.72E-04	1.82E-02	1.44E-14	0.20	0.24	5.25E-02	0.36	0.49	0.49	0.53	3.00E-06	9.69E-02
Sep-19	1.11E-04	2.42E-03	2.67E-05	2.97E-05	0.34	0.17	2.79E-04	1.76E-02	0.00	0.18	0.15	3.50E-02	0.38	0.36	0.32	0.31	3.07E-06	8.01E-02
Oct-19	1.30E-04	0.00	3.33E-06	3.70E-06	0.40	0.20	0.00	1.82E-02	0.00	0.22	0.28	3.88E-02	0.41	0.51	0.52	0.39	0.00	0.12
Nov-19	1.35E-04	4.11E-04	6.68E-06	7.44E-06	0.42	0.21	4.73E-05	1.76E-02	1.80E-04	0.20	0.21	4.74E-02	0.45	0.51	0.54	0.51	5.21E-07	0.12
Dec-19	1.28E-04	5.48E-04	4.12E-06	4.58E-06	0.40	0.20	6.31E-05	1.82E-02	4.28E-04	0.21	0.22	5.39E-02	0.44	0.55	0.54	0.52	6.94E-07	0.12
Jan-20	1.33E-04	1.25E-04	1.33E-05	1.48E-05	0.41	0.21	1.44E-05	1.82E-02	4.04E-05	0.19	0.26	4.42E-02	0.44	0.60	0.54	0.51	1.59E-07	0.12
Feb-20	1.26E-04	3.83E-04	4.43E-05	4.93E-05	0.39	0.20	4.41E-05	1.70E-02	2.73E-05	0.22	0.18	5.01E-02	0.42	0.58	0.46	0.46	4.86E-07	0.11
Mar-20	1.35E-04	0.00	0.00	0.00	0.42	0.21	0.00	1.82E-02	1.61E-04	0.19	0.24	5.43E-02	0.46	0.60	0.51	0.40	0.00	0.11
Apr-20	1.31E-04	7.52E-04	4.19E-06	4.66E-06	0.40	0.20	8.65E-05	1.76E-02	1.02E-04	0.19	0.20	5.45E-02	0.45	0.54	0.54	0.40	9.53E-07	0.12
May-20	1.01E-04	1.20E-03	7.90E-06	8.80E-06	0.31	0.16	1.39E-04	1.82E-02	2.87E-05	0.13	0.24	4.48E-02	0.32	0.44	0.54	0.39	1.53E-06	0.10
Jun-20	1.21E-04	2.70E-03	3.68E-05	4.10E-05	0.37	0.19	3.11E-04	1.76E-02	2.35E-14	0.22	0.25	4.45E-02	0.41	0.56	0.51	0.36	3.42E-06	0.11
Jul-20	1.21E-04	1.74E-03	6.45E-05	7.18E-05	0.37	0.19	2.00E-04	1.82E-02	2.96E-04	0.23	0.24	5.75E-02	0.41	0.56	0.54	0.45	2.20E-06	0.11

H2S Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																	
	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Prestreamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant Scrubber	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Mill Wastewater Treatment System
	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S	H2S
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Aug-20	1.31E-04	1.47E-03	0.00	0.00	0.41	0.20	1.69E-04	1.82E-02	1.62E-04	0.18	0.24	5.60E-02	0.45	0.62	0.54	0.50	1.86E-06	0.12
Sep-20	9.86E-05	6.65E-03	4.53E-05	5.04E-05	0.30	0.15	7.66E-04	1.76E-02	2.71E-05	0.14	0.16	3.51E-02	0.36	0.49	0.31	0.28	8.43E-06	7.85E-02
Oct-20	1.01E-04	2.41E-03	0.00	0.00	0.31	0.16	2.78E-04	1.82E-02	6.91E-05	0.18	0.19	3.94E-02	0.36	0.49	0.47	0.47	3.06E-06	9.65E-02
Nov-20	1.19E-04	3.69E-04	4.15E-06	4.62E-06	0.37	0.18	4.25E-05	1.76E-02	8.35E-05	0.22	0.28	4.86E-02	0.43	0.58	0.52	0.50	4.68E-07	0.11
Dec-20	1.21E-04	6.42E-03	1.15E-05	1.28E-05	0.37	0.19	7.38E-04	1.82E-02	9.95E-04	0.16	0.29	4.47E-02	0.41	0.56	0.54	0.47	8.13E-06	0.11
Jan-21	1.36E-04	1.03E-03	0.00	0.00	0.42	0.21	1.19E-04	1.82E-02	0.00	0.16	0.26	4.93E-02	0.45	0.61	0.54	0.42	1.31E-06	0.12
Feb-21	1.15E-04	6.28E-03	1.56E-05	1.74E-05	0.35	0.18	7.22E-04	1.64E-02	0.00	0.12	0.22	5.10E-02	0.38	0.53	0.50	0.36	7.96E-06	0.10
Mar-21	1.25E-04	9.79E-04	2.48E-06	2.76E-06	0.38	0.19	1.13E-04	1.82E-02	1.21E-03	0.12	0.26	5.62E-02	0.40	0.55	0.57	0.41	1.24E-06	0.12
Apr-21	8.00E-05	8.35E-04	3.55E-05	3.96E-05	0.25	0.12	9.61E-05	1.76E-02	2.43E-04	9.06E-02	0.18	2.63E-02	0.28	0.38	0.47	0.51	1.06E-06	8.72E-02
May-21	1.27E-04	9.98E-04	1.67E-05	1.86E-05	0.39	0.20	1.15E-04	1.82E-02	2.85E-05	0.20	0.26	4.74E-02	0.44	0.60	0.51	0.55	1.26E-06	0.11
Jun-21	1.03E-04	2.61E-03	0.00	0.00	0.32	0.16	3.00E-04	1.76E-02	8.02E-04	0.18	0.20	3.63E-02	0.42	0.58	0.40	0.51	3.30E-06	9.68E-02
Jul-21	1.01E-04	7.04E-03	0.00	0.00	0.31	0.16	8.09E-04	1.82E-02	3.55E-05	0.16	0.25	3.41E-02	0.36	0.50	0.51	0.47	8.91E-06	0.10
Aug-21	1.18E-04	1.38E-03	0.00	0.00	0.36	0.18	1.59E-04	1.82E-02	1.02E-04	0.13	0.11	3.39E-02	0.41	0.56	0.44	0.44	1.75E-06	0.10
Sep-21	1.15E-04	1.01E-03	6.15E-06	6.84E-06	0.35	0.18	1.16E-04	1.76E-02	1.61E-04	9.12E-02	0.12	2.54E-02	0.38	0.53	0.29	0.33	1.28E-06	7.83E-02
Oct-21	1.27E-04	1.82E-03	4.44E-06	4.95E-06	0.39	0.20	2.09E-04	1.82E-02	0.00	0.18	0.18	4.62E-02	0.45	0.62	0.51	0.49	2.30E-06	0.12
Nov-21	1.29E-04	8.11E-04	0.00	0.00	0.40	0.20	9.33E-05	1.76E-02	1.36E-05	0.12	0.17	4.63E-02	0.43	0.59	0.52	0.52	1.03E-06	0.11
Dec-21	1.37E-04	5.28E-03	0.00	0.00	0.42	0.21	6.08E-04	1.82E-02	0.00	9.06E-02	0.17	5.12E-02	0.43	0.59	0.54	0.74	6.70E-06	0.12
Jan-22	1.08E-04	2.32E-03	1.81E-05	2.01E-05	0.33	0.17	2.67E-04	1.82E-02	1.80E-05	9.42E-02	0.17	4.62E-02	0.39	0.53	0.47	0.62	2.94E-06	0.10
Feb-22	9.49E-05	2.52E-04	0.00	0.00	0.29	0.15	2.90E-05	1.64E-02	0.00	6.08E-02	0.13	4.70E-02	0.34	0.46	0.45	0.61	3.20E-07	9.36E-02
Mar-22	6.75E-05	1.39E-03	5.26E-05	5.85E-05	0.21	0.10	1.60E-04	1.82E-02	0.00	7.40E-02	0.12	3.13E-02	0.27	0.37	0.45	0.60	1.76E-06	8.35E-02
Apr-22	1.17E-04	2.16E-03	1.47E-05	1.64E-05	0.36	0.18	2.48E-04	1.76E-02	2.86E-04	0.14	0.15	3.80E-02	0.41	0.44	0.45	0.51	2.73E-06	0.10
May-22	1.11E-04	2.49E-03	1.42E-04	1.58E-04	0.34	0.17	2.86E-04	1.82E-02	3.57E-04	0.12	0.16	3.53E-02	0.40	0.41	0.41	0.37	3.15E-06	9.19E-02
Jun-22	1.26E-04	2.00E-04	6.72E-06	7.48E-06	0.39	0.20	2.30E-05	1.76E-02	2.60E-05	0.13	0.21	4.12E-02	0.43	0.44	0.52	0.58	2.54E-07	0.11
Jul-22	1.12E-04	4.45E-05	1.33E-04	1.49E-04	0.34	0.17	5.12E-06	1.82E-02	3.47E-05	0.11	0.18	4.35E-02	0.41	0.46	0.48	0.46	5.64E-08	0.10
Aug-22	1.18E-04	5.52E-03	0.00	0.00	0.36	0.18	6.35E-04	1.82E-02	1.24E-04	0.11	0.17	4.70E-02	0.43	0.50	0.50	0.41	6.99E-06	0.11
Sep-22	1.11E-04	3.27E-03	1.35E-05	1.51E-05	0.34	0.17	3.76E-04	1.76E-02	1.68E-04	0.12	8.26E-02	1.97E-02	0.39	0.47	0.14	0.14	4.14E-06	6.14E-02
Oct-22	1.06E-04	1.34E-03	4.50E-06	5.01E-06	0.33	0.16	1.54E-04	1.82E-02	1.60E-04	0.14	8.89E-02	3.04E-02	0.40	0.46	0.47	0.41	1.69E-06	9.93E-02
Nov-22	1.08E-04	5.27E-05	2.98E-05	3.32E-05	0.33	0.17	6.06E-06	1.76E-02	3.67E-05	0.12	0.15	4.27E-02	0.40	0.28	0.50	0.38	6.68E-08	0.10
Dec-22	1.28E-04	3.81E-03	5.67E-05	6.31E-05	0.40	0.20	4.38E-04	1.82E-02	0.00	0.14	0.16	4.14E-02	0.45	0.40	0.49	0.50	4.82E-06	0.11
Jan-23	1.21E-04	1.87E-03	5.33E-05	5.93E-05	0.37	0.19	2.16E-04	1.82E-02	4.01E-05	0.14	0.13	4.51E-02	0.41	0.46	0.45	0.43	2.37E-06	9.92E-02
Feb-23	1.01E-04	1.65E-03	0.00	0.00	0.31	0.16	1.90E-04	1.64E-02	3.84E-07	0.11	0.21	4.43E-02	0.35	0.33	0.49	0.43	2.09E-06	9.92E-02
Mar-23	1.73E-05	1.36E-03	2.01E-05	2.23E-05	5.33E-02	2.69E-02	1.56E-04	1.82E-02	1.86E-04	1.46E-02	0.16	2.89E-02	0.12	3.99E-02	0.40	0.40	1.72E-06	5.87E-02
Apr-23	9.72E-05	3.26E-04	7.61E-05	8.47E-05	0.30	0.15	3.75E-05	1.76E-02	7.70E-05	9.67E-02	0.15	3.29E-02	0.37	0.18	0.48	0.41	4.13E-07	9.78E-02
May-23	1.14E-04	3.99E-03	2.70E-05	3.01E-05	0.35	0.18	4.59E-04	1.82E-02	3.09E-05	0.13	0.20	5.89E-02	0.42	0.29	0.51	0.47	5.05E-06	0.11
Jun-23	6.93E-05	4.50E-05	0.00	0.00	0.21	0.11	5.18E-06	1.76E-02	7.90E-05	4.12E-02	0.17	5.00E-02	0.23	0.31	0.48	0.57	5.71E-08	8.64E-02
Jul-23	1.18E-04	1.97E-04	3.82E-06	4.25E-06	0.36	0.18	2.27E-05	1.82E-02	0.00	0.14	0.18	5.05E-02	0.43	0.38	0.49	0.48	2.50E-07	0.11
Aug-23	1.05E-04	7.93E-02	4.10E-05	4.57E-05	0.32	0.16	9.12E-03	1.82E-02	5.46E-04	0.24	0.25	4.99E-02	0.36	0.46	0.45	0.39	1.00E-04	9.35E-02
Sep-23	1.06E-04	1.18E-03	6.49E-05	7.22E-05	0.33	0.17	1.36E-04	1.76E-02	8.58E-06	0.13	1.65E-02	2.07E-02	0.35	0.48	0.12	0.11	1.49E-06	5.66E-02
Oct-23	1.19E-04	0.00	3.52E-05	3.92E-05	0.37	0.19	0.00	1.82E-02	6.69E-05	0.11	0.12	3.47E-02	0.40	0.55	0.49	0.11	0.00	0.10
Nov-23	1.26E-04	0.00	1.53E-05	1.70E-05	0.39	0.20	0.00	1.76E-02	4.66E-05	0.12	9.91E-02	3.92E-02	0.40	0.51	0.52	0.18	0.00	0.11
Dec-23	1.13E-04	5.98E-04	1.37E-05	1.52E-05	0.35	0.18	6.88E-05	1.82E-02	6.65E-05	9.49E-02	0.11	4.10E-02	0.40	0.54	0.51	0.32	7.57E-07	0.11
Jan-24	9.90E-05	3.31E-03	3.80E-05	4.23E-05	0.31	0.15	3.81E-04	1.82E-02	5.45E-04	0.11	0.10	3.67E-02	0.38	0.52	0.44	0.42	4.19E-06	9.18E-02
Feb-24	1.22E-04	8.03E-04	0.00	0.00	0.38	0.19	9.24E-05	1.70E-02	0.00	9.67E-02	9.96E-02	4.23E-02	0.39	0.54	0.47	0.45	1.02E-06	0.10
Mar-24	4.73E-05	0.00	2.96E-05	3.29E-05	0.15	7.34E-02	0.00	1.82E-02	1.88E-04	2.51E-03	0.15	4.20E-02	0.17	0.21	0.51	0.43	0.00	8.01E-02
Apr-24	1.08E-04	2.87E-04	1.07E-05	1.20E-05	0.33	0.17	3.31E-05	1.76E-02	5.19E-05	0.00	0.00	4.04E-02	0.39	0.00	0.47	0.00	3.64E-07	0.10

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

H2S Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																		
	Baseline Period and Emissions **36.17** **Jul-19** **–** **Jun-21**	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Mill Wastewater Treatment System
	tons (24-mo Rolling total)	*tons (24-mo Rolling total)*																	
Jan-15																			
Feb-15																			
Mar-15																			
Apr-15																			
May-15																			
Jun-15																			
Jul-15																			
Aug-15																			
Sep-15																			
Oct-15																			
Nov-15																			
Dec-15																			
Jan-16																			
Feb-16																			
Mar-16																			
Apr-16																			
May-16																			
Jun-16																			
Jul-16																			
Aug-16																			
Sep-16																			
Oct-16																			
Nov-16																			
Dec-16	27.47	1.28E-03	0.01	0.00	0.00	3.96	2.00	0.00	0.21	0.00	0.90	2.24	0.47	4.63	3.87	5.81	2.16	1.61E-05	1.21
Jan-17	27.75	1.29E-03	0.01	0.00	0.00	3.96	2.00	0.00	0.21	0.00	0.94	2.25	0.47	4.65	4.09	5.82	2.12	1.52E-05	1.21
Feb-17	27.90	1.27E-03	0.01	0.00	0.00	3.93	1.98	0.00	0.21	0.00	0.98	2.26	0.47	4.63	4.28	5.83	2.11	1.65E-05	1.21
Mar-17	27.52	1.22E-03	0.01	0.00	0.00	3.77	1.90	0.00	0.21	0.00	0.96	2.29	0.47	4.44	4.24	5.88	2.16	1.54E-05	1.19
Apr-17	27.28	1.21E-03	0.01	0.00	0.00	3.72	1.88	0.00	0.21	0.00	0.95	2.32	0.46	4.39	4.16	5.89	2.10	1.52E-05	1.18
May-17	27.65	1.22E-03	0.01	0.00	0.00	3.77	1.90	0.00	0.21	0.00	1.03	2.34	0.46	4.45	4.30	5.92	2.05	1.47E-05	1.19
Jun-17	28.01	1.23E-03	0.01	0.00	0.00	3.79	1.91	0.00	0.21	0.00	1.09	2.38	0.46	4.46	4.46	5.97	2.05	1.33E-05	1.20
Jul-17	28.31	1.23E-03	0.01	0.00	0.00	3.78	1.91	0.00	0.21	0.00	1.19	2.44	0.46	4.47	4.62	5.99	2.03	1.32E-05	1.20
Aug-17	28.58	1.22E-03	0.01	0.00	0.00	3.76	1.90	0.00	0.21	0.00	1.26	2.46	0.46	4.48	4.78	5.99	2.07	1.29E-05	1.20
Sep-17	28.78	1.22E-03	0.01	0.00	0.00	3.75	1.89	0.00	0.21	0.00	1.32	2.48	0.45	4.49	4.87	6.02	2.09	1.24E-05	1.20
Oct-17	29.07	1.21E-03	0.01	0.00	0.00	3.73	1.88	0.00	0.21	0.00	1.38	2.54	0.44	4.49	5.05	6.03	2.09	1.29E-05	1.20
Nov-17	29.41	1.21E-03	0.01	0.00	0.00	3.73	1.88	0.00	0.21	0.00	1.50	2.61	0.43	4.50	5.23	6.04	2.05	1.26E-05	1.20
Dec-17	29.62	1.22E-03	0.01	0.00	0.00	3.76	1.89	0.00	0.21	0.00	1.57	2.63	0.43	4.52	5.36	6.04	1.99	1.16E-05	1.20
Jan-18	29.80	1.23E-03	0.01	0.00	0.00	3.79	1.91	0.00	0.21	0.00	1.64	2.61	0.42	4.54	5.51	5.95	1.99	1.85E-05	1.20
Feb-18	29.96	1.23E-03	0.02	0.00	0.00	3.80	1.92	0.00	0.21	0.00	1.73	2.62	0.42	4.53	5.54	5.96	2.02	1.93E-05	1.20
Mar-18	30.05	1.23E-03	0.02	0.00	0.00	3.79	1.91	0.00	0.21	0.00	1.84	2.64	0.42	4.51	5.60	5.95	1.95	2.09E-05	1.20
Apr-18	30.11	1.23E-03	0.01	0.00	0.00	3.79	1.91	0.00	0.21	0.00	1.87	2.69	0.41	4.52	5.61	5.97	1.91	1.87E-05	1.20
May-18	30.18	1.23E-03	0.02	0.00	0.00	3.80	1.92	0.00	0.21	0.00	1.94	2.73	0.41	4.50	5.65	5.97	1.84	2.19E-05	1.20
Jun-18	30.30	1.23E-03	0.02	0.00	0.00	3.80	1.92	0.00	0.21	0.00	2.02	2.75	0.40	4.50	5.69	5.95	1.82	2.18E-05	1.20
Jul-18	30.58	1.24E-03	0.02	0.00	0.00	3.81	1.92	0.00	0.21	0.00	2.10	2.81	0.40	4.51	5.73	5.95	1.89	2.40E-05	1.20
Aug-18	30.81	1.24E-03	0.02	0.00	0.00	3.81	1.92	0.00	0.21	0.00	2.16	2.86	0.40	4.51	5.76	5.93	2.03	2.36E-05	1.20
Sep-18	30.95	1.24E-03	0.02	0.00	0.00	3.81	1.92	0.00	0.21	0.00	2.21	2.85	0.39	4.51	5.75	5.94	2.14	2.18E-05	1.20
Oct-18	31.06	1.24E-03	0.02	0.00	0.00	3.82	1.92	0.00	0.21	0.00	2.20	2.86	0.39	4.53	5.70	5.90	2.30	2.18E-05	1.19
Nov-18	31.12	1.24E-03	0.02	0.00	0.00	3.83	1.93	0.00	0.21	0.00	2.22	2.87	0.39	4.52	5.67	5.89	2.37	2.24E-05	1.19
Dec-18	31.28	1.25E-03	0.02	0.00	0.00	3.86	1.95	0.00	0.21	0.00	2.23	2.86	0.39	4.53	5.63	5.87	2.52	2.22E-05	1.19
Jan-19	31.28	1.26E-03	0.02	0.00	0.00	3.88	1.96	0.00	0.21	0.00	2.21	2.87	0.39	4.52	5.56	5.84	2.63	2.39E-05	1.19
Feb-19	31.30	1.25E-03	0.02	0.00	0.00	3.86	1.94	0.00	0.21	0.00	2.20	2.90	0.39	4.50	5.50	5.83	2.76	2.28E-05	1.18
Mar-19	32.14	1.30E-03	0.02	0.00	0.00	4.01	2.02	0.00	0.21	0.00	2.27	2.95	0.40	4.68	5.66	5.82	2.88	2.28E-05	1.20
Apr-19	32.50	1.31E-03	0.02	0.00	0.00	4.05	2.04	0.00	0.21	0.00	2.30	2.96	0.40	4.73	5.73	5.83	3.01	2.30E-05	1.21
May-19	32.65	1.32E-03	0.02	0.00	0.00	4.08	2.06	0.00	0.21	0.00	2.31	2.91	0.41	4.74	5.76	5.80	3.14	2.23E-05	1.21
Jun-19	32.64	1.32E-03	0.02	0.00	0.00	4.08	2.06	0.00	0.21	0.00	2.31	2.83	0.41	4.72	5.74	5.78	3.27	2.20E-05	1.21
Jul-19	32.68	1.33E-03	0.02	0.00	0.00	4.09	2.06	0.00	0.21	0.00	2.28	2.77	0.42	4.71	5.71	5.77	3.41	2.37E-05	1.21
Aug-19	32.76	1.32E-03	0.02	0.00	0.00	4.08	2.06	0.00	0.21	0.00	2.30	2.74	0.43	4.67	5.71	5.75	3.60	2.52E-05	1.20
Sep-19	32.88	1.32E-03	0.02	0.00	0.00	4.07	2.05	0.00	0.21	0.00	2.32	2.76	0.44	4.65	5.65	5.78	3.71	2.64E-05	1.21
Oct-19	33.15	1.33E-03	0.02	0.00	0.00	4.11	2.07	0.00	0.21	0.00	2.34	2.79	0.45	4.65	5.64	5.78	3.86	2.54E-05	1.21
Nov-19	33.31	1.34E-03	0.02	0.00	0.00	4.12	2.08	0.00	0.21	0.00	2.31	2.75	0.46	4.65	5.64	5.79	4.05	2.55E-05	1.22
Dec-19	33.60	1.35E-03	0.02	0.00	0.00	4.15	2.09	0.00	0.21	0.00	2.32	2.75	0.48	4.68	5.65	5.79	4.24	2.58E-05	1.22
Jan-20	33.98	1.35E-03	0.01	0.00	0.00	4.17	2.10	0.00	0.21	0.00	2.31	2.81	0.49	4.69	5.70	5.88	4.38	1.87E-05	1.24
Feb-20	34.15	1.36E-03	0.01	0.00	0.00	4.18	2.11	0.00	0.21	0.00	2.30	2.79	0.49	4.70	5.74	5.85	4.52	1.79E-05	1.23
Mar-20	34.30	1.37E-03	0.01	0.00	0.00	4.21	2.12	0.00	0.21	0.00	2.26	2.79	0.50	4.72	5.75	5.84	4.65	1.58E-05	1.24
Apr-20	35.08	1.42E-03	0.01	0.00	0.00	4.36	2.20	0.00	0.21	0.00	2.32	2.76	0.52	4.89	5.93	5.85	4.76	1.63E-05	1.26
May-20	35.03	1.41E-03	0.01	0.00	0.00	4.34	2.19	0.00	0.21	0.00	2.28	2.76	0.52	4.84	5.87	5.86	4.89	1.33E-05	1.25
Jun-20	35.15	1.41E-03	0.01	0.00	0.00	4.35	2.19	0.00	0.21	0.00	2.28	2.81	0.52	4.83	5.86	5.86	4.96	1.50E-05	1.26
Jul-20	35.17	1.41E-03	0.01	0.00	0.00	4.35	2.19	0.00	0.21	0.00	2.26	2.79	0.53	4.82	5.83	5.88	5.03	1.39E-05	1.26

H2S Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																		
	Baseline Period and Emissions **36.17** **Jul-19** **--** **Jun-21**	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Mill Wastewater Treatment System
	tons (24-mo Rolling total)	*tons (24-mo Rolling total)*																	
Aug-20	35.24	1.42E-03	0.01	0.00	0.00	4.38	2.21	0.00	0.21	0.00	2.23	2.75	0.54	4.83	5.86	5.92	5.05	1.48E-05	1.27
Sep-20	35.19	1.41E-03	0.01	0.00	0.00	4.35	2.20	0.00	0.21	0.00	2.17	2.77	0.55	4.81	5.88	5.93	5.04	1.84E-05	1.26
Oct-20	35.03	1.40E-03	0.02	0.00	0.00	4.31	2.17	0.00	0.21	0.00	2.16	2.71	0.55	4.77	5.88	5.93	5.05	1.97E-05	1.26
Nov-20	35.20	1.40E-03	0.01	0.00	0.00	4.32	2.18	0.00	0.21	0.00	2.16	2.70	0.55	4.77	5.94	5.94	5.15	1.89E-05	1.26
Dec-20	35.28	1.40E-03	0.02	0.00	0.00	4.32	2.18	0.00	0.21	0.00	2.15	2.71	0.55	4.77	5.99	5.96	5.14	2.28E-05	1.27
Jan-21	35.49	1.40E-03	0.02	0.00	0.00	4.32	2.18	0.00	0.21	0.00	2.17	2.73	0.56	4.77	6.06	6.01	5.18	2.18E-05	1.28
Feb-21	35.62	1.41E-03	0.02	0.00	0.00	4.35	2.19	0.00	0.21	0.00	2.17	2.71	0.56	4.79	6.11	6.02	5.18	2.55E-05	1.28
Mar-21	35.62	1.41E-03	0.02	0.00	0.00	4.35	2.19	0.00	0.21	0.00	2.15	2.68	0.56	4.78	6.19	6.03	5.15	2.61E-05	1.28
Apr-21	35.94	1.44E-03	0.02	0.00	0.00	4.43	2.24	0.00	0.21	0.00	2.17	2.64	0.56	4.88	6.32	6.00	5.18	2.64E-05	1.29
May-21	36.11	1.44E-03	0.02	0.00	0.00	4.44	2.24	0.00	0.21	0.00	2.17	2.70	0.56	4.87	6.33	6.01	5.25	2.71E-05	1.29
Jun-21	36.17	1.43E-03	0.02	0.00	0.00	4.42	2.23	0.00	0.21	0.00	2.16	2.72	0.56	4.89	6.38	5.97	5.31	2.87E-05	1.29
Jul-21	36.05	1.42E-03	0.02	0.00	0.00	4.36	2.20	0.00	0.21	0.00	2.14	2.74	0.55	4.84	6.40	5.95	5.34	3.15E-05	1.28
Aug-21	35.98	1.42E-03	0.02	0.00	0.00	4.39	2.21	0.00	0.21	0.00	2.11	2.67	0.54	4.87	6.43	5.93	5.30	3.09E-05	1.28
Sep-21	36.00	1.43E-03	0.02	0.00	0.00	4.39	2.21	0.00	0.21	0.00	2.06	2.66	0.54	4.87	6.52	5.91	5.31	3.00E-05	1.28
Oct-21	36.05	1.42E-03	0.02	0.00	0.00	4.39	2.21	0.00	0.21	0.00	2.05	2.61	0.54	4.89	6.57	5.91	5.36	3.11E-05	1.28
Nov-21	36.00	1.42E-03	0.02	0.00	0.00	4.38	2.21	0.00	0.21	0.00	2.01	2.59	0.54	4.88	6.62	5.90	5.37	3.14E-05	1.28
Dec-21	36.08	1.43E-03	0.03	0.00	0.00	4.39	2.21	0.00	0.21	0.00	1.95	2.56	0.54	4.88	6.64	5.90	5.48	3.44E-05	1.28
Jan-22	35.88	1.41E-03	0.03	0.00	0.00	4.35	2.19	0.00	0.21	0.00	1.90	2.52	0.54	4.85	6.60	5.86	5.54	3.58E-05	1.27
Feb-22	35.67	1.40E-03	0.03	0.00	0.00	4.30	2.17	0.00	0.21	0.00	1.82	2.50	0.54	4.81	6.55	5.85	5.62	3.57E-05	1.26
Mar-22	35.23	1.36E-03	0.03	0.00	0.00	4.20	2.12	0.00	0.21	0.00	1.76	2.44	0.53	4.71	6.43	5.83	5.72	3.66E-05	1.25
Apr-22	35.07	1.36E-03	0.03	0.00	0.00	4.18	2.11	0.00	0.21	0.00	1.73	2.41	0.52	4.70	6.38	5.78	5.77	3.75E-05	1.24
May-22	34.99	1.36E-03	0.03	0.00	0.00	4.20	2.11	0.00	0.21	0.00	1.73	2.37	0.51	4.73	6.37	5.72	5.76	3.83E-05	1.24
Jun-22	35.01	1.36E-03	0.03	0.00	0.00	4.20	2.12	0.00	0.21	0.00	1.69	2.35	0.51	4.75	6.31	5.72	5.87	3.67E-05	1.24
Jul-22	34.81	1.36E-03	0.03	0.00	0.00	4.19	2.11	0.00	0.21	0.00	1.63	2.32	0.50	4.75	6.26	5.69	5.87	3.56E-05	1.23
Aug-22	34.56	1.35E-03	0.03	0.00	0.00	4.17	2.10	0.00	0.21	0.00	1.60	2.29	0.50	4.73	6.20	5.67	5.83	3.82E-05	1.23
Sep-22	34.36	1.36E-03	0.03	0.00	0.00	4.19	2.11	0.00	0.21	0.00	1.58	2.25	0.49	4.75	6.19	5.58	5.76	3.61E-05	1.22
Oct-22	34.28	1.36E-03	0.03	0.00	0.00	4.19	2.11	0.00	0.21	0.00	1.56	2.19	0.49	4.77	6.17	5.58	5.73	3.54E-05	1.22
Nov-22	33.90	1.36E-03	0.03	0.00	0.00	4.18	2.11	0.00	0.21	0.00	1.51	2.13	0.49	4.76	6.02	5.57	5.67	3.52E-05	1.22
Dec-22	33.76	1.36E-03	0.03	0.00	0.00	4.19	2.11	0.00	0.21	0.00	1.50	2.06	0.48	4.78	5.94	5.54	5.68	3.35E-05	1.22
Jan-23	33.50	1.35E-03	0.03	0.00	0.00	4.17	2.10	0.00	0.21	0.00	1.49	2.00	0.48	4.76	5.86	5.50	5.69	3.41E-05	1.21
Feb-23	33.36	1.35E-03	0.02	0.00	0.00	4.15	2.09	0.00	0.21	0.00	1.48	1.99	0.48	4.74	5.77	5.49	5.72	3.11E-05	1.21
Mar-23	32.49	1.29E-03	0.02	0.00	0.00	3.98	2.01	0.00	0.21	0.00	1.43	1.94	0.46	4.60	5.51	5.41	5.72	3.14E-05	1.18
Apr-23	32.43	1.30E-03	0.02	0.00	0.00	4.01	2.02	0.00	0.21	0.00	1.43	1.93	0.47	4.65	5.41	5.42	5.67	3.10E-05	1.18
May-23	32.13	1.29E-03	0.03	0.00	0.00	3.99	2.01	0.00	0.21	0.00	1.40	1.90	0.47	4.64	5.25	5.42	5.63	3.29E-05	1.18
Jun-23	31.81	1.28E-03	0.02	0.00	0.00	3.93	1.98	0.00	0.21	0.00	1.33	1.88	0.48	4.54	5.12	5.46	5.66	3.13E-05	1.17
Jul-23	31.78	1.29E-03	0.02	0.00	0.00	3.96	2.00	0.00	0.21	0.00	1.32	1.85	0.49	4.58	5.06	5.45	5.67	2.70E-05	1.18
Aug-23	31.83	1.28E-03	0.06	0.00	0.00	3.94	1.99	0.01	0.21	0.00	1.37	1.93	0.50	4.55	5.01	5.45	5.64	7.63E-05	1.17
Sep-23	31.52	1.27E-03	0.06	0.00	0.00	3.93	1.98	0.01	0.21	0.00	1.39	1.88	0.49	4.53	4.98	5.37	5.53	7.64E-05	1.16
Oct-23	31.16	1.27E-03	0.06	0.00	0.00	3.92	1.97	0.01	0.21	0.00	1.35	1.84	0.49	4.50	4.94	5.36	5.34	7.53E-05	1.16
Nov-23	30.89	1.27E-03	0.06	0.00	0.00	3.91	1.97	0.01	0.21	0.00	1.35	1.81	0.49	4.49	4.90	5.36	5.17	7.48E-05	1.16
Dec-23	30.53	1.26E-03	0.06	0.00	0.00	3.87	1.95	0.01	0.21	0.00	1.35	1.78	0.48	4.47	4.88	5.34	4.96	7.18E-05	1.15
Jan-24	30.35	1.25E-03	0.06	0.00	0.00	3.86	1.95	0.01	0.21	0.00	1.36	1.75	0.48	4.47	4.87	5.33	4.86	7.24E-05	1.15
Feb-24	30.41	1.27E-03	0.06	0.00	0.00	3.90	1.97	0.01	0.21	0.00	1.38	1.73	0.47	4.50	4.91	5.34	4.78	7.28E-05	1.15
Mar-24	30.16	1.26E-03	0.06	0.00	0.00	3.87	1.95	0.01	0.21	0.00	1.35	1.75	0.48	4.44	4.83	5.37	4.69	7.19E-05	1.15
Apr-24	29.52	1.25E-03	0.06	0.00	0.00	3.86	1.95	0.01	0.21	0.00	1.28	1.67	0.48	4.43	4.60	5.39	4.44	7.07E-05	1.15

TRS Baseline Actual Emission Rate Calculations

	Production Data																																
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester	No. 7 Mill Foam Tower	No. 7 Bleach Plant	No. 7 Pulp Dryer	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Pulp Dryer (for Wastewater Treatment)	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank (to LVHC)	No. 7 Mill - Secondary Knotters No. 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages, to HVLC)	No. 7 Mill Foam Tower (to HVLC)	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Bleached Pulp Production	Finished Pulp Production	Lime Production	Operating Hours	Flowrate	Operating Hours	Flowrate	Tall Oil Production	BLS Throughput	Operating Hours	Flowrate	BLS Throughput	Operating Hours	Flowrate	Finished Pulp Production	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ODTUBP*	*ADTBP*	*ADTFP*	*tons CaO*	*hr*	*DSCFM at 10% O2 (LK)*	*hr*	*DSCFM at 10% O2 (LK)*	*tons TO*	*tons BLS*	*hr*	*DSCFM at 8% O2 (RF)*	*tons BLS*	*hr*	*DSCFM at 8% O2 (RF)*	*ADTFP*	*lb/ODT chips*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ODTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTBP*
Jan-15	744	80,993	36,815	1,106	15.3	46.5	487	66.9	41.8	34,238	34,238	8,903	678	23,503	704	38,934	2,477	71,044	722	318,731	84,477	718	334,968	45,251	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-15	672	94,179	42,809	95	0.00	2.7	9,090	7.2	2.4	39,812	39,812	8,899	669	23,503	547	38,934	2,829	72,081	667	318,731	79,314	672	334,968	44,231	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-15	744	83,857	38,117	1,047	18.7	82.6	513	7.7	74.4	35,449	35,449	9,613	726	23,503	676	38,934	3,406	72,947	740	318,731	78,419	701	334,968	44,256	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-15	720	21,160	9,618	0.00	3.5	21.6	123	3.7	19.4	8,945	8,945	3,036	242	23,503	666	38,934	2,259	19,335	212	318,731	83,689	669	334,968	43,809	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-15	744	47,182	21,446	630	18.3	23.9	655	35.1	21.5	19,945	19,945	6,696	545	23,503	668	38,934	2,616	50,315	556	318,731	80,831	674	334,968	44,198	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-15	720	73,546	33,430	1,845	27.1	46.9	12	2.5	42.2	31,090	31,090	8,826	685	23,503	645	38,934	2,312	71,717	716	318,731	71,665	625	334,968	40,637	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-15	744	91,057	41,390	313	1.9	3.1	196	7.4	2.8	38,492	38,492	9,971	736	23,503	743	38,934	2,857	76,795	740	318,731	90,875	744	334,968	47,805	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-15	744	85,418	38,827	561	4.8	0.9	2	0.00	0.8	36,109	36,109	10,154	708	23,503	744	38,934	2,235	71,276	744	318,731	89,606	744	334,968	48,405	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-15	720	82,638	37,563	492	13.0	13.6	1,853	31.2	12.2	34,933	34,933	8,918	689	23,503	247	38,934	1,895	68,634	695	318,731	34,033	302	334,968	17,485	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-15	744	79,220	36,009	10	9.3	18.3	7,598	20.5	16.5	33,489	33,489	9,844	722	23,503	553	38,934	2,676	68,184	707	318,731	81,193	703	334,968	41,778	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-15	720	82,846	37,657	603	5.1	8.1	741	26.7	7.3	35,021	35,021	10,471	709	23,503	699	38,934	2,863	72,500	719	318,731	87,648	698	334,968	46,910	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-15	744	65,360	29,709	546	17.0	28.8	33	5.0	25.9	27,629	27,629	7,483	610	23,503	719	38,934	2,668	57,498	585	318,731	88,496	723	334,968	44,927	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-16	744	68,699	31,227	82	4.8	10.2	1,438	0.00	9.1	29,041	29,041	8,511	698	27,402	720	37,822	2,718	63,374	633	321,157	93,355	741	332,125	47,857	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-16	696	73,810	33,550	1,491	4.2	8.5	0	0.00	7.7	31,202	31,202	8,546	672	27,402	696	37,822	2,882	71,737	696	321,157	85,379	696	332,125	47,136	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-16	744	82,789	37,631	9,970	7.0	18.4	1,011	0.00	16.6	34,997	34,997	7,861	494	27,402	730	37,822	3,526	76,311	736	321,157	92,544	743	332,125	48,631	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-16	720	20,536	9,334	7,493	35.7	46.4	429	4.1	41.7	8,681	8,681	1,595	0.00	27,402	651	37,822	1,857	18,405	205	321,157	82,829	679	332,125	42,343	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-16	744	77,060	35,027	7,764	10.2	89.2	2,775	19.5	80.3	32,575	32,575	7,959	543	27,402	710	37,822	3,601	75,152	722	321,157	88,572	744	332,125	48,226	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-16	720	75,193	34,179	92	0.8	0.00	487	1.9	0.00	31,786	31,786	9,337	718	27,402	715	37,822	3,212	72,276	720	321,157	87,873	720	332,125	47,951	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-16	744	77,285	35,130	14	0.00	0.00	44	32.7	0.00	32,671	32,671	9,733	709	27,402	733	37,822	3,191	73,546	708	321,157	87,660	729	332,125	46,267	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-16	744	80,350	36,523	963	6.9	6.4	2,517	64.0	5.8	33,966	33,966	9,108	724	27,402	700	37,822	3,027	69,155	738	321,157	84,631	726	332,125	47,207	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-16	720	76,571	34,805	1,481	38.3	0.00	452	16.3	0.00	32,368	32,368	8,504	692	27,402	428	37,822	1,981	68,024	720	321,157	48,663	418	332,125	25,402	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-16	744	81,401	37,001	2,185	5.1	5.9	457	0.00	5.3	34,411	34,411	8,653	697	27,402	742	37,822	3,107	68,821	734	321,157	90,800	744	332,125	51,471	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-16	720	75,835	34,470	30	6.3	1.4	2,875	11.0	1.3	32,057	32,057	9,104	700	27,402	683	37,822	3,008	73,637	695	321,157	89,150	721	332,125	48,121	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-16	744	64,835	29,470	169	4.6	8.0	417	0.00	7.2	27,408	27,408	9,376	720	27,402	737	37,822	2,847	67,590	730	321,157	89,465	735	332,125	50,349	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-17	744	83,335	37,880	441	0.00	0.00	1,846	6.1	0.00	35,228	35,228	10,197	727	33,744	719	42,773	3,134	76,507	744	332,500	84,917	686	355,750	44,724	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-17	672	77,117	35,053	8,894	21.9	0.00	220	2.5	0.00	32,599	32,599	8,611	487	33,744	671	42,773	3,126	65,245	672	332,500	83,153	672	355,750	46,060	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-17	744	15,479	7,036	393	0.00	0.00	756	0.00	0.00	6,543	6,543	1,817	118	33,744	741	42,773	2,165	10,011	116	332,500	96,223	743	355,750	49,469	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-17	720	0.00	0.00	0.00	0.00	0.00	6,201	22.9	0.00	0.00	0.00	489	37	33,744	607	42,773	1,719	0	0.00	332,500	87,437	686	355,750	44,733	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-17	744	69,359	31,527	817	10.9	25.2	136	33.5	22.7	29,320	29,320	9,298	710	33,744	726	42,773	2,668	71,042	690	332,500	90,418	744	355,750	48,244	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-17	720	81,997	37,271	896	4.7	66.8	72	0.00	60.1	34,662	34,662	10,085	690	33,744	719	42,773	2,294	75,499	712	332,500	90,339	720	355,750	49,401	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-17	744	85,579	38,899	283	0.4	4.0	194	7.2	3.6	36,176	36,176	10,805	744	33,744	743	42,773	2,224	79,475	744	332,500	94,784	744	355,750	49,324	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-17	744	76,841	34,928	191	0.3	16.3	837	16.7	14.7	32,483	32,483	10,778	721	33,744	727	42,773	2,431	75,274	744	332,500	90,742	744	355,750	47,264	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-17	720	79,264	36,029	73	5.4	5.3	914	0.00	4.8	33,507	33,507	10,570	713	33,744	376	42,773	968	71,404	715	332,500	43,240	399	355,750	18,900	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-17	744	70,913	32,233	3,159	16.1	0.00	605	17.4	0.00	29,977	29,977	9,893	635	33,744	722	42,773	1,295	68,119	724	332,500	86,542	742	355,750	45,792	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-17	720	83,615	38,007	20	1.2	2.9	153	0.00	2.6	35,346	35,346	11,126	716	33,744	719	42,773	1,744	75,826	721	332,500	90,768	721	355,750	47,923	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-17	744	75,885	34,493	339	0.7	7.0	1,041	10.8	6.3	32,079	32,079	9,553	706	33,744	728	42,773	2,052	65,828	707	332,500	88,839	728	355,750	46,108	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-18	744	83,337	37,880	0.29%	115.5	3.1	8.78%	1.7	2.8	35,229	35,229	9,840	742	31,775	544	44,289	1,677	69,713	737	315,307	63,596	593	379,510	30,879	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-18	672	77,208	35,095	0.95%	16.0	3.6	1.63%	10.4	3.3	32,638	32,638	9,050	660	31,775	671	44,289	2,411	67,334	662	315,307	85,839	672	379,510	46,897	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-18	744	79,843	36,292	2.20%	33.9	0.00	1.55%	0.00	0.00	33,752	33,752	10,185	725	31,775	743	44,289	3,131	72,264	743	315,307	91,382	743	379,510	50,691	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-18	720	20,946	9,521	1.87%	0.00	0.00	1.97%	1.1	0.00	8,854	8,854	3,493	239	31,775	678	44,289	1,400	20,206	230	315,307	87,174	710	379,510	45,454	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-18	744	79,261	36,028	22.99%	60.6	37.4	2.09%	70.5	33.7	33,506	33,506	8,385	581	31,775	718	44,289	2,683	70,056	731	315,307	88,412	731	379,510	46,794	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-18	720	77,602	35,274	6.10%	0.00	4.8	0.09%	2.3	4.3	32,805	32,805	9,676	686	31,775	720	44,289	2,594	71,572	720	315,307	84,311	720	379,510	47,116	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-18	744	81,473	37,033	3.95%	35.7	8.0	1.95%	7.0	7.2	34,441	34,441	10,309	726	31,775	738	44,289	2,854	74,875	735	315,307	87,489	742	379,510	46,861	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-18	744	77,216	35,098	1.18%	0.00	11.7	2.74%	6.5	10.5	32,641	32,641	10,287	699	31,775	740	44,289	2,348	71,908	744	315,307	78,014	711	379,510	44,372	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-18	720	76,801	34,909	13.27%	9.8	0.00	2.44%	4.3	0.00	32,466	32,466	10,027	635	31,775	428	44,289	1,600	67,761	719	315,307	48,883	431	379,510	27,199	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-18	744	86,316	39,235	3.84%	4.2	39.4	2.89%	25.1	35.4	36,488	36,488	9,434	693	31,775	727	44,289	3,108	75,135	744	315,307	79,508	679	379,510	39,731	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-18	720	79,813	36,279	7.69%	16.3	21.8	0.92%	0.00	19.6	33,739	33,739	9,527	670	31,775	711	44,289	3,163	70,639	717	315,307	83,733	693	379,510	45,634	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-18	744	80,790	36,723	2.36%	1.9	72.0	1.68%	7.8	64.8	34,152	34,152	8,956	699	31,775	701	44,289	2,860	69,930	709	315,307	83,970	680	379,510	43,462	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-19	744	89,974	40,897	0.18%	27.3	0.00	1.18%	0.7	0.00	38,035	38,035	10,237	738	31,194	599	47,171	2,726	73,484	744	270,857	75,254	617	324,831	36,974	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-19	672	66,921	30,419	0.04%	3.7	14.3	0.78%	0.00	12.9	28,289	28,289	8,590	600	31,194	658	47,171	2,742	58,334	588	270,857	80,923	659	324,831	43,566	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-19	744	83,336	37,880	0.01%	0.00	7.5	0.43%	4.4	6.8	35,229	35,229	9,222	708	31,194	733	47,171	3,802	71,830	697	270,857	91,845	743	324,831	48,559	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-19	720	17,507	7,958	11.17%	3.8	43.8	2.18%	7.6	39.4	7,401	7,401	2,327	191	31,194	716	47,171	2,379	15,868	209	270,857	90,313	720	324,831	47,864	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-19	744	81,321	36,964	4.45%	0.00	78.6	1.94%	18.0	70.7	34,377	34,377	10,193	713	31,194	595	47,171	3,146	74,034	744	270,857	81,584	700	324,831	44,129	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-19	720	82,545	37,521	2.80%	0.00	77.2	0.62%	21.5	69.5	34,894	34,894	9,763	688	31,194	702	47,171	3,138	67,914	702	270,857	82,148	705	324,831	42,093	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-19	744	92,330	41,968	1.87%	26.7	1.7	0.63%	0.00	1.5	39,031	39,031	11,692	732	31,194	743	47,171	3,430	77,913	744	270,857	91,943	744	324,831	50,393	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-19	744	69,372	31,533	3.76%	24.0	15.8	0.09%	0.0	14.2	29,326	29,326	10,018	651	31,194	695	47,171	3,713	60,235	664	270,857	82,432	704	324,831	42,684	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-19	720	75,457	34,299	2.99%	24.5	21.6	9.78%	0.00	19.5	31,898	31,898	9,550	685	31,194	453	47,171	2,476	64,488	713	270,857	53,965	461	324,831	27,650	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-19	744	87,989	39,995	5.09%	0.00	2.7	1.23%	0.00	2.4	37,195	37,195	11,296	717	31,194	738	47,171	2,741	69,812	744	270,857	88,476	742	324,831	48,330	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-19	720	91,500	41,591	1.55%	4.2	5.4	1.63%	15.8	4.9	38,680	38,680	11,401	709	31,194	712	47,171	3,353	75,552	721	270,857	91,812	721	324,831	48,218	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-19	744	86,910	39,505	2.31%	5.6	3.3	0.01%	37.7	3.0	36,739	36,739	11,184	711	31,194	742	47,171	3,808	74,284	728	270,857	90,819	744	324,831	49,849	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-20	744	90,271	41,032	0.01%	1.3	10.8	19.76%	3.6	9.7	38,160	38,160	11,334	727	31,638	686	46,424	3,127	74,083	743	322,961	91,466	744	310,740	47,720	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-20	696	85,322	38,783	0.11%	3.9	35.9	7.54%	2.4	32.3	36,068	36,068	11,337	679	31,638	584	46,424	3,541	71,713	688	322,961	78,229	620	310,740	42,005	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-20	744	91,417	41,553	1.82%	0.00	0.00	2.39%	14.2	0.00	38,644	38,644	11,593	729	31,638	663	46,424	3,839	78,757	743	322,961	85,701	678	310,740	46,855	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-20	720	88,536	40,244	1.31%	7.6	3.4	1.53%	9.0	3.1	37,427	37,427	11,664	703	31,638	711	46,424	3,851	76,123	720	322,961	91,054	720	310,740	49,534	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-20	744	68,590	31,177	2.24%	12.2	6.4	0.01%	2.5	5.8	28,995	28,995	8,755	526	31,638	737	46,424	3,164	53,972	540	322,961	91,056	737	310,740	47,636	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-20	720	81,955	37,252	10.87%	27.4	29.8	0.21%	0.0	26.9	34,644	34,644	9,532	638	31,638	717	46,424	3,145	69,047	711	322,961	87,069	703	310,740	46,693	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-20	744	81,792	37,178	0.55%	17.6	52.2	0.06%	26.1	47.0	34,576	34,576	10,175	716	31,638	731	46,424	4,062	69,441	734	322,961	91,518	736	310,740	49,954	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-20	744	89,148	40,522	5.57%	14.9	0.00	0.00%	14.3	0.00	37,685	37,685	10,875	702	31,638	743	46,424	3,960	77,036	742	322,961	91,406	742	310,740	51,291	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-20	720	66,821	30,373	2.81%	67.5	36.7	2.38%	2.4	33.0	28,247	28,247	9,704	681	31,638	453	46,424	2,479	60,516	703	322,961	52,377	469	310,740	30,095	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-20	744	68,400	31,091	1.58%	24.5	0.00	27.78%	6.1	0.00	28,915	28,915	9,979	648	31,638	535	46,424	2,784	60,584	673	322,961	79,476	694	310,740	42,865	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-20	720	80,451	36,569	4.14%	3.7	3.4	3.40%	7.4	3.0	34,009	34,009	10,810	706	31,638	711	46,424	3,434	72,172	717	322,961	87,820	718	310,740	49,243	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-20	744	82,255	37,388	27.65%	65.1	9.3	4.27%	87.7	8.4	34,771	34,771	10,113	562	31,638	727	46,424	3,159	69,298	741	322,961	91,927	740	310,740	49,268	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-21	744	92,130	41,877	17.49%	10.4	0.00	0.00%	0.00	0.00	38,946	38,946	10,889	631	31,259	739	42,330	3,481	75,476	744	307,054	91,675	744	320,113	48,846	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02

TRS Baseline Actual Emission Rate Calculations

	Production Data																														
	Total Hours of Operation	No. 7 Mill Chips Production	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 8 Continuous Digester	No. 7 Mill Foam Tower	No. 7 Bleach Plant	No. 7 Pulp Dryer	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Pulp Dryer (for Wastewater Treatment)	No. 7 Mill, No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank (to LVHC)	No. 7 Mill - No. 1 & No. 2 Knot Press	No. 7 Mill - Secondary Knotters No 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages to HVLC)	No. 7 Mill Foam Tower (to HVLC)	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant
	Hours per month	Dry Chips Production	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During LVHC System Uncontrolled Venting	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Bleached Pulp Production	Finished Pulp Production	Lime Production	Operating Hours	Flowrate	Operating Hours	Flowrate	Operating Hours	Tall Oil Production	BLS Throughput	Operating Hours	Flowrate	BLS Throughput	Operating Hours	Flowrate	Finished Pulp Production	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	hours (total)	*ODT Chips*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ODTUBP*	*ADTBP*	*ADTFP*	*tons CaO*	*hr*	*DSCFM at 10% O2 (LK)*	*hr*	*DSCFM at 10% O2 (LK)*	*tons TO*	*tons BLS*	*hr*	*DSCFM at 8% O2 (RF)*	*tons BLS*	*hr*	*DSCFM at 8% O2 (RF)*	*ADTFP*	*lb/ODT chips*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ODTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTBP*
Feb-21	672	77,666	35,303	1.64%	63.6	12.6	0.25%	0.00	11.4	32,831	32,831	9,521	646	31,259	670	42,330	3,602	64,842	671	307,054	84,147	672	320,113	42,651	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-21	744	84,502	38,410	4.74%	9.9	2.0	1.55%	106.7	1.8	35,721	35,721	10,420	666	31,259	726	42,330	3,969	68,111	707	307,054	96,002	743	320,113	50,312	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-21	720	54,206	24,639	6.75%	8.5	28.8	4.67%	21.4	25.9	22,914	22,914	6,722	435	31,259	648	42,330	1,859	47,211	462	307,054	79,412	673	320,113	41,917	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-21	744	86,115	39,143	3.66%	10.1	13.5	4.83%	2.5	12.2	36,403	36,403	9,954	693	31,259	722	42,330	3,349	73,937	740	307,054	86,559	740	320,113	46,319	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-21	720	69,733	31,697	1.94%	26.4	0.00	5.57%	70.7	0.00	29,478	29,478	9,931	716	31,259	638	42,330	2,568	71,785	720	307,054	67,000	677	320,113	42,478	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-21	744	68,787	31,267	2.35%	71.3	0.00	2.62%	3.1	0.00	29,078	29,078	9,241	678	31,259	739	42,330	2,410	61,455	717	307,054	86,692	739	320,113	47,136	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-21	744	79,907	36,322	1.03%	14.0	0.00	49.97%	9.0	0.00	33,779	33,779	10,668	732	31,259	432	42,330	2,398	69,542	744	307,054	73,966	682	320,113	41,102	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-21	720	78,034	35,470	4.16%	10.2	5.0	17.00%	14.2	4.5	32,987	32,987	9,952	697	31,259	410	42,330	1,794	65,162	711	307,054	49,408	427	320,113	25,204	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-21	744	86,183	39,174	0.19%	18.4	3.6	9.47%	0.00	3.2	36,432	36,432	10,266	729	31,259	691	42,330	3,264	76,710	744	307,054	86,340	744	320,113	49,161	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-21	720	87,272	39,669	1.50%	8.2	0.00	3.74%	1.2	0.00	36,892	36,892	9,986	708	31,259	717	42,330	3,272	72,915	721	307,054	87,337	721	320,113	47,270	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-21	744	92,833	42,197	0.02%	53.6	0.00	3.41%	0.00	0.00	39,243	39,243	10,226	738	31,259	740	42,330	3,615	73,410	744	307,054	91,721	744	320,113	48,273	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-22	744	73,084	33,220	4.03%	23.5	14.6	3.51%	1.6	13.2	30,895	30,895	9,282	634	25,533	727	37,697	3,266	65,356	726	317,259	79,083	744	322,347	43,839	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-22	672	64,307	29,230	0.30%	2.6	0.00	1.21%	0.00	0.00	27,184	27,184	7,595	600	25,533	671	37,697	3,324	57,394	607	317,259	75,833	672	322,347	42,378	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-22	744	45,757	20,799	4.18%	14.1	42.6	8.06%	0.00	38.3	19,343	19,343	6,008	527	25,533	705	37,697	2,215	46,135	548	317,259	76,131	724	322,347	42,707	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-22	720	79,114	35,961	1.28%	21.9	11.9	18.70%	25.2	10.7	33,444	33,444	9,654	714	25,533	594	37,697	2,685	70,078	713	317,259	75,611	712	322,347	44,372	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-22	744	75,399	34,272	0.18%	25.2	114.7	20.00%	31.5	103.2	31,873	31,873	9,628	706	25,533	687	37,697	2,494	67,457	739	317,259	68,954	677	322,347	36,440	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-22	720	85,542	38,883	3.07%	2.0	5.4	3.63%	2.3	4.9	36,161	36,161	9,917	690	25,533	719	37,697	2,912	73,726	719	317,259	87,307	716	322,347	47,096	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-22	744	75,620	34,373	3.04%	0.5	108.1	24.82%	3.1	97.3	31,967	31,967	10,441	708	25,533	632	37,697	3,075	68,732	722	317,259	81,361	726	322,347	45,748	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-22	744	79,699	36,227	1.59%	55.9	0.00	7.53%	10.9	0.00	33,691	33,691	9,174	694	25,533	739	37,697	3,320	72,214	733	317,259	84,218	739	322,347	47,347	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-22	720	75,313	34,233	26.90%	33.1	11.0	7.65%	14.8	9.9	31,837	31,837	9,330	523	25,533	222	37,697	1,392	66,113	720	317,259	23,006	230	322,347	13,813	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-22	744	71,577	32,535	23.13%	13.5	3.6	18.79%	14.1	3.3	30,257	30,257	9,410	586	25,533	633	37,697	2,151	68,581	738	317,259	80,175	725	322,347	43,572	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-22	720	73,028	33,195	0.02%	0.5	24.2	7.71%	3.2	21.8	30,871	30,871	8,647	696	25,533	715	37,697	3,015	67,662	702	317,259	84,160	721	322,347	45,726	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-22	744	87,023	39,556	1.30%	38.6	45.9	3.84%	0.00	41.3	36,787	36,787	9,863	729	25,533	742	37,697	2,928	76,711	744	317,259	83,179	744	322,347	44,913	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-23	744	82,345	37,430	0.93%	19.0	43.1	5.05%	3.5	38.8	34,810	34,810	8,571	698	31,918	678	44,614	3,188	68,969	730	310,218	75,796	672	329,800	38,973	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-23	672	68,548	31,158	0.01%	16.7	0.00	1.01%	0.0	0.00	28,977	28,977	7,791	588	31,918	671	44,614	3,132	58,892	581	310,218	82,339	671	329,800	44,754	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-23	744	11,724	5,329	19.11%	13.8	16.2	10.34%	16.4	14.6	4,956	4,956	2,599	223	31,918	620	44,614	2,044	20,586	352	310,218	68,474	631	329,800	38,660	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-23	720	65,865	29,939	1.37%	3.3	61.6	1.35%	6.8	55.5	27,843	27,843	8,960	704	31,918	717	44,614	2,325	62,129	710	310,218	81,803	718	329,800	44,859	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
May-23	744	77,099	35,045	4.26%	40.4	21.9	3.60%	2.7	19.7	32,592	32,592	9,457	686	31,918	733	44,614	4,165	70,410	744	310,218	85,709	744	329,800	47,670	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jun-23	720	46,973	21,351	3.83%	0.5	0.00	5.61%	7.0	0.00	19,857	19,857	4,972	387	31,918	679	44,614	3,531	39,730	438	310,218	81,542	697	329,800	44,360	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jul-23	744	80,285	36,493	1.15%	2.0	3.1	3.35%	0.00	2.8	33,939	33,939	9,872	729	31,918	739	44,614	3,568	72,314	744	310,218	83,238	744	329,800	45,345	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Aug-23	744	71,385	32,448	24.12%	803.6	33.2	5.10%	48.1	29.9	30,177	30,177	8,347	549	31,918	683	44,614	3,528	60,396	744	310,218	76,374	707	329,800	39,347	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Sep-23	720	72,173	32,806	4.27%	11.9	52.5	2.23%	0.8	47.3	30,509	30,509	8,499	677	31,918	194	44,614	1,461	58,763	744	310,218	20,344	194	329,800	11,558	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Oct-23	744	80,940	36,791	0.44%	0.00	28.5	7.00%	5.9	25.7	34,215	34,215	9,595	721	31,918	718	44,614	2,450	68,392	744	310,218	83,324	735	329,800	43,162	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Nov-23	720	85,526	38,876	0.03%	0.00	12.4	1.11%	4.1	11.2	36,154	36,154	9,576	721	31,918	720	44,614	2,772	68,551	744	310,218	87,639	721	329,800	46,197	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Dec-23	744	76,556	34,798	1.29%	6.1	11.1	1.61%	5.9	10.0	32,362	32,362	9,623	717	31,918	742	44,614	2,899	67,124	744	310,218	85,757	744	329,800	47,473	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Jan-24	744	67,127	30,512	5.15%	33.5	30.7	7.16%	48.0	27.7	28,377	28,377	9,227	703	31,918	740	44,614	2,595	63,933	744	336,654	73,898	739	329,800	39,879	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Feb-24	696	82,835	37,652	0.36%	8.1	0.00	1.79%	0.00	0.00	35,017	35,017	9,721	694	31,918	682	44,614	2,989	66,821	744	336,654	79,915	684	329,800	42,895	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Mar-24	744	32,050	14,568	85.15%	0.00	23.9	1.42%	16.6	21.5	13,548	13,548	3,291	79	31,918	732	44,614	2,971	28,031	744	336,654	87,235	743	329,800	46,035	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02
Apr-24	720	73,211	33,278	10.74%	2.9	8.7	3.38%	4.6	7.8	30,948	30,948	9,133	663	0.00	666	0.00	2,859	65,802	744	0.00	79,857	689	0.00	45,320	1.56E-04	1.24	0.186	5.49E-02	6.00E-03	1.04E-01	3.98E-04	3.88E-02	2.04E-02

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

TRS Baseline Actual Emission Rate Calculations

Emission Factors

Month	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks and Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	lb/ADTUBP	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*ppmv @ 10% O2*	*ppmv @ 10% O2*	*lb/ton TO*	*lb/ton TO*	*lb/ton BLS*	*ppmv @ 8% O2*	*lb/ton BLS*	*ppmv @ 8% O2*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTFP*
Jan-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.80	2.73	5.87E-02	5.90E-05	7.00E-03	0.28	1.38E-02	0.30	3.00E-03	4.55E-04	6.93E-03
Feb-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.58	3.18	5.87E-02	5.90E-05	7.00E-03	0.26	1.38E-02	0.22	3.00E-03	4.55E-04	6.93E-03
Mar-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.14	2.18	5.87E-02	5.90E-05	7.00E-03	0.27	1.38E-02	0.22	3.00E-03	4.55E-04	6.93E-03
Apr-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.56	2.66	5.87E-02	5.90E-05	7.00E-03	1.98	1.38E-02	0.52	3.00E-03	4.55E-04	6.93E-03
May-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.15	2.82	5.87E-02	5.90E-05	7.00E-03	0.47	1.38E-02	0.41	3.00E-03	4.55E-04	6.93E-03
Jun-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.43	3.22	5.87E-02	5.90E-05	7.00E-03	0.32	1.38E-02	0.22	3.00E-03	4.55E-04	6.93E-03
Jul-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.21	2.97	5.87E-02	5.90E-05	7.00E-03	0.32	1.38E-02	0.27	3.00E-03	4.55E-04	6.93E-03
Aug-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.69	3.51	5.87E-02	5.90E-05	7.00E-03	0.30	1.38E-02	0.08	3.00E-03	4.55E-04	6.93E-03
Sep-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.60	2.04	5.87E-02	5.90E-05	7.00E-03	0.49	1.38E-02	0.18	3.00E-03	4.55E-04	6.93E-03
Oct-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.72	1.93	5.87E-02	5.90E-05	7.00E-03	0.29	1.38E-02	0.16	3.00E-03	4.55E-04	6.93E-03
Nov-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.74	2.13	5.87E-02	5.90E-05	7.00E-03	0.23	1.38E-02	0.34	3.00E-03	4.55E-04	6.93E-03
Dec-15	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.54	2.41	5.87E-02	5.90E-05	7.00E-03	0.58	1.38E-02	0.40	3.00E-03	4.55E-04	6.93E-03
Jan-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.25	2.33	5.87E-02	5.90E-05	7.00E-03	0.34	1.60E-02	0.33	3.00E-03	4.55E-04	6.93E-03
Feb-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.23	2.80	5.87E-02	5.90E-05	7.00E-03	0.73	1.60E-02	0.22	3.00E-03	4.55E-04	6.93E-03
Mar-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.43	2.82	5.87E-02	5.90E-05	7.00E-03	0.75	1.60E-02	0.40	3.00E-03	4.55E-04	6.93E-03
Apr-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.00	2.40	5.87E-02	5.90E-05	7.00E-03	4.24	1.60E-02	0.46	3.00E-03	4.55E-04	6.93E-03
May-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.83	2.12	5.87E-02	5.90E-05	7.00E-03	0.80	1.60E-02	0.40	3.00E-03	4.55E-04	6.93E-03
Jun-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.18	1.73	5.87E-02	5.90E-05	7.00E-03	0.79	1.60E-02	0.44	3.00E-03	4.55E-04	6.93E-03
Jul-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.93	2.02	5.87E-02	5.90E-05	7.00E-03	0.88	1.60E-02	0.25	3.00E-03	4.55E-04	6.93E-03
Aug-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.42	3.29	5.87E-02	5.90E-05	7.00E-03	0.85	1.60E-02	0.30	3.00E-03	4.55E-04	6.93E-03
Sep-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.30	3.39	5.87E-02	5.90E-05	7.00E-03	0.77	1.60E-02	0.16	3.00E-03	4.55E-04	6.93E-03
Oct-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.33	4.13	5.87E-02	5.90E-05	7.00E-03	0.91	1.60E-02	0.20	3.00E-03	4.55E-04	6.93E-03
Nov-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.36	4.09	5.87E-02	5.90E-05	7.00E-03	0.90	1.60E-02	0.28	3.00E-03	4.55E-04	6.93E-03
Dec-16	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.07	3.59	5.87E-02	5.90E-05	7.00E-03	1.23	1.60E-02	0.28	3.00E-03	4.55E-04	6.93E-03
Jan-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.65	2.72	5.87E-02	5.90E-05	7.00E-03	1.15	1.60E-02	0.20	3.00E-03	4.55E-04	6.93E-03
Feb-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.01	2.56	5.87E-02	5.90E-05	7.00E-03	0.98	1.60E-02	0.17	3.00E-03	4.55E-04	6.93E-03
Mar-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.91	2.55	5.87E-02	5.90E-05	7.00E-03	1.37	1.60E-02	0.33	3.00E-03	4.55E-04	6.93E-03
Apr-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.18	3.49	5.87E-02	5.90E-05	7.00E-03	2.30	1.60E-02	0.29	3.00E-03	4.55E-04	6.93E-03
May-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.93	2.93	5.87E-02	5.90E-05	7.00E-03	0.85	1.60E-02	0.20	3.00E-03	4.55E-04	6.93E-03
Jun-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.01	3.68	5.87E-02	5.90E-05	7.00E-03	0.81	1.60E-02	0.19	3.00E-03	4.55E-04	6.93E-03
Jul-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.95	4.07	5.87E-02	5.90E-05	7.00E-03	0.80	1.60E-02	0.19	3.00E-03	4.55E-04	6.93E-03
Aug-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.39	3.65	5.87E-02	5.90E-05	7.00E-03	0.76	1.60E-02	0.22	3.00E-03	4.55E-04	6.93E-03
Sep-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.37	2.43	5.87E-02	5.90E-05	7.00E-03	0.73	1.60E-02	0.20	3.00E-03	4.55E-04	6.93E-03
Oct-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.87	2.76	5.87E-02	5.90E-05	7.00E-03	0.84	1.60E-02	0.16	3.00E-03	4.55E-04	6.93E-03
Nov-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.17	3.52	5.87E-02	5.90E-05	7.00E-03	0.81	1.60E-02	0.18	3.00E-03	4.55E-04	6.93E-03
Dec-17	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.05	2.61	5.87E-02	5.90E-05	7.00E-03	0.86	1.60E-02	0.20	3.00E-03	4.55E-04	6.93E-03
Jan-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.35	2.13	5.87E-02	5.90E-05	7.00E-03	0.80	1.60E-02	0.36	3.00E-03	4.55E-04	6.93E-03
Feb-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.41	2.66	5.87E-02	5.90E-05	7.00E-03	0.91	1.60E-02	0.27	3.00E-03	4.55E-04	6.93E-03
Mar-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.30	2.82	5.87E-02	5.90E-05	7.00E-03	1.04	1.60E-02	0.19	3.00E-03	4.55E-04	6.93E-03
Apr-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.02	3.19	5.87E-02	5.90E-05	7.00E-03	1.42	1.60E-02	0.25	3.00E-03	4.55E-04	6.93E-03
May-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.37	2.79	5.87E-02	5.90E-05	7.00E-03	1.03	1.60E-02	0.17	3.00E-03	4.55E-04	6.93E-03
Jun-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.89	1.94	5.87E-02	5.90E-05	7.00E-03	1.03	1.60E-02	0.31	3.00E-03	4.55E-04	6.93E-03
Jul-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.27	3.20	5.87E-02	5.90E-05	7.00E-03	1.05	1.60E-02	0.42	3.00E-03	4.55E-04	6.93E-03
Aug-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.22	3.73	5.87E-02	5.90E-05	7.00E-03	1.00	1.60E-02	0.65	3.00E-03	4.55E-04	6.93E-03
Sep-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.65	2.48	5.87E-02	5.90E-05	7.00E-03	0.75	1.60E-02	0.66	3.00E-03	4.55E-04	6.93E-03
Oct-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.57	3.60	5.87E-02	5.90E-05	7.00E-03	0.76	1.60E-02	0.65	3.00E-03	4.55E-04	6.93E-03
Nov-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.77	3.52	5.87E-02	5.90E-05	7.00E-03	0.79	1.60E-02	0.44	3.00E-03	4.55E-04	6.93E-03
Dec-18	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.18	3.16	5.87E-02	5.90E-05	7.00E-03	0.78	1.60E-02	0.72	3.00E-03	4.55E-04	6.93E-03
Jan-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.99	3.12	5.87E-02	5.90E-05	7.00E-03	0.89	1.60E-02	0.64	3.00E-03	4.55E-04	6.93E-03
Feb-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.13	3.08	5.87E-02	5.90E-05	7.00E-03	0.97	1.60E-02	0.63	3.00E-03	4.55E-04	6.93E-03
Mar-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.73	3.51	5.87E-02	5.90E-05	7.00E-03	0.80	1.60E-02	0.74	3.00E-03	4.55E-04	6.93E-03
Apr-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.49	2.77	5.87E-02	5.90E-05	7.00E-03	1.39	1.60E-02	0.73	3.00E-03	4.55E-04	6.93E-03
May-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.46	2.00	5.87E-02	5.90E-05	7.00E-03	1.08	1.60E-02	0.66	3.00E-03	4.55E-04	6.93E-03
Jun-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.37	1.67	5.87E-02	5.90E-05	7.00E-03	0.94	1.60E-02	0.63	3.00E-03	4.55E-04	6.93E-03
Jul-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.32	2.35	5.87E-02	5.90E-05	7.00E-03	0.87	1.60E-02	0.64	3.00E-03	4.55E-04	6.93E-03
Aug-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.64	2.71	5.87E-02	5.90E-05	7.00E-03	1.16	1.60E-02	0.87	3.00E-03	4.55E-04	6.93E-03
Sep-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.25	2.61	5.87E-02	5.90E-05	7.00E-03	0.69	1.60E-02	0.78	3.00E-03	4.55E-04	6.93E-03
Oct-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.66	3.05	5.87E-02	5.90E-05	7.00E-03	0.95	1.60E-02	0.62	3.00E-03	4.55E-04	6.93E-03
Nov-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.40	2.30	5.87E-02	5.90E-05	7.00E-03	0.98	1.60E-02	0.81	3.00E-03	4.55E-04	6.93E-03
Dec-19	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.54	2.33	5.87E-02	5.90E-05	7.00E-03	1.04	1.60E-02	0.80	3.00E-03	4.55E-04	6.93E-03
Jan-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.12	3.02	5.87E-02	5.90E-05	7.00E-03	1.07	1.60E-02	0.83	3.00E-03	4.55E-04	6.93E-03
Feb-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.94	2.47	5.87E-02	5.90E-05	7.00E-03	1.05	1.60E-02	0.89	3.00E-03	4.55E-04	6.93E-03
Mar-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.14	2.95	5.87E-02	5.90E-05	7.00E-03	0.95	1.60E-02	0.71	3.00E-03	4.55E-04	6.93E-03
Apr-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.16	2.27	5.87E-02	5.90E-05	7.00E-03	0.87	1.60E-02	0.68	3.00E-03	4.55E-04	6.93E-03
May-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.94	2.60	5.87E-02	5.90E-05	7.00E-03	0.95	1.60E-02	0.65	3.00E-03	4.55E-04	6.93E-03
Jun-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	4.07	2.86	5.87E-02	5.90E-05	7.00E-03	1.02	1.60E-02	0.63	3.00E-03	4.55E-04	6.93E-03
Jul-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.77	2.66	5.87E-02	5.90E-05	7.00E-03	1.19	1.60E-02	0.75	3.00E-03	4.55E-04	6.93E-03
Aug-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.09	2.66	5.87E-02	5.90E-05	7.00E-03	1.38	1.60E-02	0.81	3.00E-03	4.55E-04	6.93E-03
Sep-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.42	2.92	5.87E-02	5.90E-05	7.00E-03	1.64	1.60E-02	0.73	3.00E-03	4.55E-04	6.93E-03
Oct-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.39	2.90	5.87E-02	5.90E-05	7.00E-03	2.24	1.60E-02	0.82	3.00E-03	4.55E-04	6.93E-03
Nov-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.68	3.16	5.87E-02	5.90E-05	7.00E-03	1.41	1.60E-02	0.85	3.00E-03	4.55E-04	6.93E-03
Dec-20	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.30	3.26	5.87E-02	5.90E-05	7.00E-03	1.29	1.60E-02	0.77	3.00E-03	4.55E-04	6.93E-03
Jan-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.04	3.16	5.87E-02	5.90E-05	7.00E-03	1.37	8.40E-03	0.66	3.00E-03	4.55E-04	6.93E-03

Monthly Emission Rates (tons)

Month	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank (to LVHC)	No. 7 Mill - Secondary Knotters No. 1 & No. 2, Knot Press	No. 7 Mill Brownstock Washers (4 stages, to HVLC)	No. 7 Mill Foam Tower (to HVLC)	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker
	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.01	0.01	3.42	1.28E-03	1.25E-04	2.42E-03	0.01	0.71	0.35	1.69E-04	0.03	7.35E-04	0.39
Feb-15	0.01	0.00	3.98	7.28E-05	7.16E-06	1.38E-04	0.01	0.83	0.41	0.00	0.02	7.92E-05	0.39
Mar-15	0.01	0.01	3.54	2.27E-03	2.23E-04	4.30E-03	0.01	0.74	0.36	2.06E-04	0.03	8.47E-05	0.42
Apr-15	1.65E-03	2.17E-03	0.89	5.93E-04	5.83E-05	1.12E-03	1.91E-03	0.19	0.09	3.85E-05	0.03	4.11E-05	0.13
May-15	3.68E-03	0.01	1.99	6.55E-04	6.45E-05	1.24E-03	4.27E-03	0.42	0.20	2.01E-04	0.03	3.87E-04	0.29
Jun-15	0.01	0.02	3.11	1.29E-03	1.27E-04	2.44E-03	0.01	0.65	0.32	2.98E-04	0.03	2.70E-05	0.39
Jul-15	0.01	1.15E-03	3.85	8.39E-05	8.25E-06	1.59E-04	0.01	0.80	0.39	2.04E-05	0.03	8.10E-05	0.44
Aug-15	0.01	2.97E-03	3.61	2.36E-05	2.32E-06	4.46E-05	0.01	0.75	0.37	5.28E-05	0.03	0.00	0.45
Sep-15	0.01	0.01	3.49	3.72E-04	3.66E-05	7.05E-04	0.01	0.73	0.36	1.43E-04	0.03	3.43E-04	0.39
Oct-15	0.01	0.01	3.35	5.04E-04	4.95E-05	9.54E-04	0.01	0.70	0.34	1.02E-04	0.03	2.26E-04	0.43
Nov-15	0.01	3.18E-03	3.50	2.22E-04	2.18E-05	4.20E-04	0.01	0.73	0.36	5.65E-05	0.03	2.94E-04	0.46
Dec-15	0.01	0.01	2.76	7.89E-04	7.76E-05	1.50E-03	0.01	0.58	0.28	1.87E-04	0.03	5.50E-05	0.33
Jan-16	0.01	2.97E-03	2.90	2.79E-04	2.74E-05	5.28E-04	0.01	0.61	0.30	5.27E-05	0.03	0.00	0.37
Feb-16	0.01	2.60E-03	3.12	2.34E-04	2.30E-05	4.43E-04	0.01	0.65	0.32	4.61E-05	0.03	0.00	0.38
Mar-16	0.01	4.34E-03	3.50	5.05E-04	4.97E-05	9.57E-04	0.01	0.73	0.36	7.72E-05	0.03	0.00	0.35
Apr-16	1.60E-03	0.02	0.87	1.27E-03	1.25E-04	2.41E-03	1.86E-03	0.18	0.09	3.93E-04	0.03	4.50E-05	0.07
May-16	0.01	0.01	3.26	2.45E-03	2.41E-04	4.64E-03	0.01	0.68	0.33	1.12E-04	0.03	2.14E-04	0.35
Jun-16	0.01	5.16E-04	3.18	0.00	0.00	0.00	0.01	0.66	0.32	9.17E-06	0.03	2.14E-05	0.41
Jul-16	0.01	0.00	3.27	0.00	0.00	0.00	0.01	0.68	0.33	0.00	0.03	3.60E-04	0.43
Aug-16	0.01	4.27E-03	3.40	1.76E-04	1.73E-05	3.33E-04	0.01	0.71	0.35	7.59E-05	0.03	7.04E-04	0.40
Sep-16	0.01	0.02	3.24	0.00	0.00	0.00	0.01	0.68	0.33	4.22E-04	0.03	1.79E-04	0.37
Oct-16	0.01	3.15E-03	3.44	1.62E-04	1.59E-05	3.06E-04	0.01	0.72	0.35	5.59E-05	0.03	0.00	0.38
Nov-16	0.01	3.91E-03	3.21	3.81E-05	3.75E-06	7.22E-05	0.01	0.67	0.33	6.95E-05	0.03	1.21E-04	0.40
Dec-16	0.01	2.87E-03	2.74	2.21E-04	2.17E-05	4.18E-04	0.01	0.57	0.28	5.10E-05	0.03	0.00	0.41
Jan-17	0.01	0.00	3.52	0.00	0.00	0.00	0.01	0.73	0.36	0.00	0.03	6.76E-05	0.45
Feb-17	0.01	0.01	3.26	0.00	0.00	0.00	0.01	0.68	0.33	2.41E-04	0.02	2.70E-05	0.38
Mar-17	1.21E-03	0.00	0.65	0.00	0.00	0.00	1.40E-03	0.14	0.07	0.00	0.03	0.00	0.08
Apr-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	2.52E-04	0.02
May-17	0.01	0.01	2.93	6.92E-04	6.81E-05	1.31E-03	0.01	0.61	0.30	1.20E-04	0.03	3.68E-04	0.41
Jun-17	0.01	2.94E-03	3.47	1.83E-03	1.80E-04	3.47E-03	0.01	0.72	0.35	5.22E-05	0.03	0.00	0.44
Jul-17	0.01	2.41E-04	3.62	1.09E-04	1.07E-05	2.07E-04	0.01	0.75	0.37	4.27E-06	0.03	7.94E-05	0.47
Aug-17	0.01	1.78E-04	3.25	4.48E-04	4.41E-05	8.49E-04	0.01	0.68	0.33	3.17E-06	0.03	1.84E-04	0.47
Sep-17	0.01	3.31E-03	3.35	1.45E-04	1.43E-05	2.75E-04	0.01	0.70	0.34	5.89E-05	0.03	0.00	0.46
Oct-17	0.01	0.01	3.00	0.00	0.00	0.00	0.01	0.63	0.31	1.77E-04	0.03	1.91E-04	0.43
Nov-17	0.01	7.42E-04	3.53	8.01E-05	7.88E-06	1.52E-04	0.01	0.74	0.36	1.32E-05	0.03	0.00	0.49
Dec-17	0.01	4.30E-04	3.21	1.91E-04	1.88E-05	3.62E-04	0.01	0.67	0.33	7.64E-06	0.03	1.19E-04	0.42
Jan-18	0.01	0.07	3.52	8.55E-05	8.41E-06	1.62E-04	0.01	0.73	0.36	1.27E-03	0.03	1.82E-05	0.43
Feb-18	0.01	0.01	3.26	9.91E-05	9.75E-06	1.88E-04	0.01	0.68	0.33	1.76E-04	0.02	1.15E-04	0.40
Mar-18	0.01	0.02	3.38	0.00	0.00	0.00	0.01	0.70	0.34	3.72E-04	0.03	0.00	0.45
Apr-18	1.63E-03	0.00	0.89	0.00	0.00	0.00	1.89E-03	0.18	0.09	0.00	0.03	1.18E-05	0.15
May-18	0.01	0.04	3.35	1.03E-03	1.01E-04	1.95E-03	0.01	0.70	0.34	6.66E-04	0.03	7.76E-04	0.37
Jun-18	0.01	0.00	3.28	1.32E-04	1.29E-05	2.49E-04	0.01	0.68	0.33	0.00	0.03	2.57E-05	0.42
Jul-18	0.01	0.02	3.44	2.19E-04	2.16E-05	4.15E-04	0.01	0.72	0.35	3.92E-04	0.03	7.65E-05	0.45
Aug-18	0.01	0.00	3.26	3.20E-04	3.15E-05	6.07E-04	0.01	0.68	0.33	0.00	0.03	7.10E-05	0.45
Sep-18	0.01	0.01	3.25	0.00	0.00	0.00	0.01	0.68	0.33	1.08E-04	0.03	4.74E-05	0.44
Oct-18	0.01	2.60E-03	3.65	1.08E-03	1.06E-04	2.05E-03	0.01	0.76	0.37	4.61E-05	0.03	2.76E-04	0.41
Nov-18	0.01	0.01	3.37	5.99E-04	5.89E-05	1.13E-03	0.01	0.70	0.34	1.80E-04	0.03	0.00	0.42
Dec-18	0.01	1.16E-03	3.42	1.98E-03	1.94E-04	3.74E-03	0.01	0.71	0.35	2.07E-05	0.03	8.54E-05	0.39
Jan-19	0.01	0.02	3.80	0.00	0.00	0.00	0.01	0.79	0.39	3.00E-04	0.03	8.24E-06	0.45
Feb-19	0.01	2.28E-03	2.83	3.92E-04	3.86E-05	7.43E-04	0.01	0.59	0.29	4.05E-05	0.02	0.00	0.38
Mar-19	0.01	0.00	3.52	2.07E-04	2.04E-05	3.92E-04	0.01	0.73	0.36	0.00	0.03	4.81E-05	0.40
Apr-19	1.37E-03	2.32E-03	0.74	1.20E-03	1.18E-04	2.28E-03	1.58E-03	0.15	0.08	4.13E-05	0.03	8.31E-05	0.10
May-19	0.01	0.00	3.44	2.16E-03	2.12E-04	4.08E-03	0.01	0.72	0.35	0.00	0.03	1.98E-04	0.45
Jun-19	0.01	0.00	3.49	2.12E-03	2.09E-04	4.02E-03	0.01	0.73	0.36	0.00	0.03	2.37E-04	0.43
Jul-19	0.01	0.02	3.90	4.58E-05	4.50E-06	8.67E-05	0.01	0.81	0.40	2.93E-04	0.03	0.00	0.51
Aug-19	0.01	0.01	2.93	4.34E-04	4.27E-05	8.23E-04	0.01	0.61	0.30	2.64E-04	0.03	1.39E-14	0.44
Sep-19	0.01	0.02	3.19	5.93E-04	5.84E-05	1.12E-03	0.01	0.67	0.33	2.70E-04	0.03	0.00	0.42
Oct-19	0.01	0.00	3.72	7.39E-05	7.27E-06	1.40E-04	0.01	0.78	0.38	0.00	0.03	0.00	0.50
Nov-19	0.01	2.58E-03	3.87	1.48E-04	1.46E-05	2.81E-04	0.01	0.81	0.39	4.58E-05	0.03	1.74E-04	0.50
Dec-19	0.01	3.44E-03	3.67	9.15E-05	9.00E-06	1.73E-04	0.01	0.77	0.37	6.11E-05	0.03	4.14E-04	0.49
Jan-20	0.01	7.86E-04	3.82	2.95E-04	2.90E-05	5.59E-04	0.01	0.80	0.39	1.40E-05	0.03	3.91E-05	0.50
Feb-20	0.01	2.40E-03	3.61	9.85E-04	9.69E-05	1.87E-03	0.01	0.75	0.37	4.27E-05	0.03	2.65E-05	0.50
Mar-20	0.01	0.00	3.86	0.00	0.00	0.00	0.01	0.81	0.39	0.00	0.03	1.56E-04	0.51
Apr-20	0.01	4.72E-03	3.74	9.30E-05	9.15E-06	1.76E-04	0.01	0.78	0.38	8.39E-05	0.03	9.86E-05	0.51
May-20	0.01	0.01	2.90	1.76E-04	1.73E-05	3.33E-04	0.01	0.60	0.30	1.34E-04	0.03	2.78E-05	0.38
Jun-20	0.01	0.02	3.46	8.19E-04	8.06E-05	1.55E-03	0.01	0.72	0.35	3.01E-04	0.03	2.28E-14	0.42
Jul-20	0.01	0.01	3.46	1.43E-03	1.41E-04	2.72E-03	0.01	0.72	0.35	1.94E-04	0.03	2.87E-04	0.45
Aug-20	0.01	0.01	3.77	0.00	0.00	0.00	0.01	0.79	0.38	1.63E-04	0.03	1.57E-04	0.48
Sep-20	0.01	0.04	2.82	1.01E-03	9.90E-05	1.91E-03	0.01	0.59	0.29	7.42E-04	0.03	2.63E-05	0.43
Oct-20	0.01	0.02	2.89	0.00	0.00	0.00	0.01	0.60	0.29	2.69E-04	0.03	6.69E-05	0.44
Nov-20	0.01	2.32E-03	3.40	9.23E-05	9.08E-06	1.75E-04	0.01	0.71	0.35	4.12E-05	0.03	8.09E-05	0.47
Dec-20	0.01	0.04	3.48	2.55E-04	2.51E-05	4.83E-04	0.01	0.73	0.35	7.16E-04	0.03	9.65E-04	0.44
Jan-21	0.01	0.01	3.89	0.00	0.00	0.00	0.01	0.81	0.40	1.15E-04	0.03	0.00	0.48

Monthly Emission Rates (tons) (continued)

Month	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.25	0.08	0.20	0.07	1.46E-04	7.31E-05	0.25	0.17	0.58	0.19	2.30E-05	3.62E-04	0.28
Feb-15	0.25	0.07	0.18	0.08	1.67E-04	8.35E-05	0.25	0.15	0.55	0.13	0.00	2.09E-03	0.29
Mar-15	0.27	0.05	0.15	0.10	2.01E-04	1.00E-04	0.26	0.17	0.54	0.14	2.80E-05	3.55E-04	0.28
Apr-15	0.08	0.01	0.18	0.07	1.33E-04	6.66E-05	0.07	0.35	0.58	0.31	5.25E-06	2.81E-05	0.18
May-15	0.19	0.04	0.19	0.08	1.54E-04	7.72E-05	0.18	0.22	0.56	0.25	2.75E-05	2.92E-04	0.22
Jun-15	0.24	0.06	0.21	0.07	1.36E-04	6.82E-05	0.25	0.19	0.50	0.12	4.06E-05	4.22E-04	0.25
Jul-15	0.28	0.06	0.23	0.08	1.69E-04	8.43E-05	0.27	0.20	0.63	0.18	2.78E-06	1.16E-04	0.30
Aug-15	0.28	0.03	0.27	0.07	1.32E-04	6.59E-05	0.25	0.19	0.62	0.06	7.20E-06	1.28E-04	0.29
Sep-15	0.25	0.03	0.05	0.06	1.12E-04	5.59E-05	0.24	0.29	0.24	0.05	1.95E-05	5.33E-04	0.18
Oct-15	0.27	0.03	0.11	0.08	1.58E-04	7.89E-05	0.24	0.17	0.56	0.10	1.39E-05	1.73E-03	0.26
Nov-15	0.29	0.03	0.15	0.08	1.69E-04	8.45E-05	0.25	0.14	0.61	0.21	7.71E-06	3.06E-04	0.28
Dec-15	0.21	0.06	0.18	0.08	1.57E-04	7.87E-05	0.20	0.29	0.61	0.26	2.55E-05	1.32E-04	0.25
Jan-16	0.24	0.06	0.17	0.08	1.60E-04	8.02E-05	0.22	0.19	0.75	0.21	7.19E-06	3.46E-04	0.27
Feb-16	0.24	0.06	0.20	0.08	1.70E-04	8.50E-05	0.25	0.44	0.68	0.13	6.29E-06	3.39E-04	0.27
Mar-16	0.22	0.05	0.21	0.10	2.08E-04	1.04E-04	0.27	0.47	0.74	0.27	1.05E-05	2.50E-03	0.29
Apr-16	0.04	0.00	0.16	0.05	1.10E-04	5.48E-05	0.06	0.74	0.66	0.27	5.35E-05	1.80E-03	0.18
May-16	0.22	0.07	0.15	0.11	2.12E-04	1.06E-04	0.26	0.49	0.71	0.26	1.53E-05	2.40E-03	0.28
Jun-16	0.26	0.06	0.12	0.09	1.90E-04	9.48E-05	0.25	0.48	0.70	0.28	1.25E-06	1.32E-04	0.28
Jul-16	0.27	0.10	0.15	0.09	1.88E-04	9.41E-05	0.26	0.53	0.70	0.16	0.00	1.31E-05	0.27
Aug-16	0.25	0.13	0.23	0.09	1.79E-04	8.93E-05	0.24	0.53	0.68	0.19	1.04E-05	7.92E-04	0.28
Sep-16	0.24	0.17	0.15	0.06	1.17E-04	5.84E-05	0.24	0.47	0.39	0.06	5.75E-05	4.40E-04	0.20
Oct-16	0.24	0.22	0.31	0.09	1.83E-04	9.17E-05	0.24	0.57	0.73	0.13	7.63E-06	6.01E-04	0.30
Nov-16	0.25	0.17	0.28	0.09	1.77E-04	8.87E-05	0.26	0.53	0.71	0.18	9.48E-06	6.61E-04	0.28
Dec-16	0.26	0.16	0.27	0.08	1.68E-04	8.40E-05	0.24	0.77	0.72	0.18	6.96E-06	1.33E-04	0.27
Jan-17	0.28	0.17	0.22	0.09	1.85E-04	9.25E-05	0.27	0.75	0.68	0.13	0.00	5.20E-04	0.28
Feb-17	0.24	0.13	0.19	0.09	1.84E-04	9.22E-05	0.23	0.58	0.67	0.11	3.29E-05	2.07E-03	0.27
Mar-17	0.05	0.01	0.21	0.06	1.28E-04	6.39E-05	0.04	0.14	0.77	0.23	0.00	2.61E-04	0.19
Apr-17	0.01	3.93E-03	0.24	0.05	1.01E-04	5.07E-05	4.35E-07	0.00	0.70	0.19	0.00	1.41E-03	0.16
May-17	0.26	0.19	0.24	0.08	1.57E-04	7.87E-05	0.25	0.51	0.72	0.14	1.64E-05	2.17E-04	0.27
Jun-17	0.28	0.19	0.30	0.07	1.35E-04	6.77E-05	0.26	0.51	0.72	0.13	7.12E-06	2.20E-04	0.29
Jul-17	0.30	0.26	0.34	0.07	1.31E-04	6.56E-05	0.28	0.52	0.76	0.13	5.83E-07	1.09E-04	0.30
Aug-17	0.30	0.15	0.30	0.07	1.43E-04	7.17E-05	0.26	0.50	0.73	0.15	4.32E-07	2.34E-04	0.28
Sep-17	0.29	0.15	0.10	0.03	5.71E-05	2.86E-05	0.25	0.46	0.35	0.08	8.03E-06	2.25E-04	0.18
Oct-17	0.27	0.16	0.23	0.04	7.64E-05	3.82E-05	0.24	0.53	0.69	0.11	2.41E-05	8.56E-04	0.26
Nov-17	0.31	0.27	0.29	0.05	1.03E-04	5.14E-05	0.27	0.51	0.73	0.12	1.80E-06	3.93E-05	0.29
Dec-17	0.27	0.19	0.22	0.06	1.21E-04	6.05E-05	0.23	0.54	0.71	0.14	1.04E-06	3.14E-04	0.27
Jan-18	0.27	0.21	0.14	0.05	9.90E-05	4.95E-05	0.24	0.49	0.51	0.22	1.73E-04	2.06E-08	0.23
Feb-18	0.25	0.25	0.21	0.07	1.42E-04	7.11E-05	0.24	0.50	0.69	0.18	2.40E-05	5.85E-09	0.28
Mar-18	0.28	0.26	0.25	0.09	1.85E-04	9.24E-05	0.25	0.65	0.73	0.14	5.08E-05	8.51E-09	0.29
Apr-18	0.10	0.06	0.25	0.04	8.26E-05	4.13E-05	0.07	0.27	0.70	0.18	0.00	8.74E-09	0.19
May-18	0.23	0.21	0.24	0.08	1.58E-04	7.92E-05	0.25	0.63	0.71	0.13	9.09E-05	5.71E-08	0.28
Jun-18	0.27	0.22	0.16	0.08	1.53E-04	7.65E-05	0.25	0.62	0.67	0.23	0.00	1.41E-08	0.28
Jul-18	0.29	0.26	0.28	0.08	1.68E-04	8.42E-05	0.26	0.65	0.70	0.32	5.35E-05	1.34E-08	0.28
Aug-18	0.29	0.25	0.32	0.07	1.39E-04	6.93E-05	0.25	0.62	0.62	0.47	0.00	8.91E-09	0.27
Sep-18	0.28	0.25	0.12	0.05	9.44E-05	4.72E-05	0.24	0.45	0.39	0.29	1.47E-05	3.58E-08	0.21
Oct-18	0.26	0.21	0.31	0.09	1.83E-04	9.17E-05	0.26	0.47	0.64	0.44	6.29E-06	1.53E-08	0.26
Nov-18	0.26	0.21	0.29	0.09	1.87E-04	9.33E-05	0.25	0.47	0.67	0.31	2.45E-05	1.96E-08	0.28
Dec-18	0.25	0.19	0.26	0.08	1.69E-04	8.44E-05	0.24	0.46	0.67	0.49	2.82E-06	9.21E-09	0.27
Jan-19	0.28	0.12	0.23	0.08	1.61E-04	8.04E-05	0.26	0.48	0.60	0.34	4.09E-05	3.09E-09	0.26
Feb-19	0.24	0.11	0.25	0.08	1.62E-04	8.09E-05	0.20	0.41	0.65	0.36	5.52E-06	1.87E-09	0.25
Mar-19	0.26	0.16	0.32	0.11	2.24E-04	1.12E-04	0.25	0.40	0.73	0.48	0.00	9.96E-10	0.29
Apr-19	0.06	0.06	0.25	0.07	1.40E-04	7.02E-05	0.06	0.21	0.72	0.45	5.63E-06	3.04E-08	0.19
May-19	0.28	0.20	0.15	0.09	1.86E-04	9.28E-05	0.26	0.58	0.65	0.40	0.00	1.45E-08	0.27
Jun-19	0.27	0.19	0.15	0.09	1.85E-04	9.26E-05	0.24	0.47	0.66	0.38	0.00	7.78E-09	0.27
Jul-19	0.32	0.20	0.22	0.10	2.02E-04	1.01E-04	0.27	0.47	0.74	0.41	4.00E-05	5.69E-09	0.31
Aug-19	0.28	0.20	0.24	0.11	2.19E-04	1.10E-04	0.21	0.56	0.66	0.53	3.60E-05	8.77E-09	0.25
Sep-19	0.27	0.18	0.15	0.07	1.46E-04	7.30E-05	0.23	0.36	0.43	0.31	3.68E-05	2.91E-08	0.21
Oct-19	0.31	0.22	0.28	0.08	1.62E-04	8.09E-05	0.24	0.51	0.71	0.39	0.00	1.44E-08	0.30
Nov-19	0.32	0.20	0.21	0.10	1.98E-04	9.89E-05	0.26	0.51	0.73	0.51	6.25E-06	7.24E-09	0.30
Dec-19	0.31	0.21	0.22	0.11	2.25E-04	1.12E-04	0.26	0.55	0.73	0.52	8.33E-06	5.28E-09	0.30
Jan-20	0.31	0.19	0.26	0.09	1.84E-04	9.22E-05	0.26	0.68	0.73	0.51	1.90E-06	4.50E-08	0.30
Feb-20	0.31	0.22	0.18	0.10	2.09E-04	1.04E-04	0.25	0.62	0.63	0.46	5.83E-06	1.74E-08	0.27
Mar-20	0.32	0.19	0.24	0.11	2.27E-04	1.13E-04	0.28	0.60	0.69	0.40	0.00	9.57E-09	0.30
Apr-20	0.32	0.19	0.20	0.11	2.27E-04	1.14E-04	0.27	0.54	0.73	0.40	1.14E-05	6.47E-09	0.30
May-20	0.24	0.13	0.24	0.09	1.87E-04	9.33E-05	0.19	0.44	0.73	0.39	1.83E-05	5.12E-09	0.27
Jun-20	0.26	0.22	0.25	0.09	1.86E-04	9.28E-05	0.24	0.62	0.70	0.36	4.11E-05	2.52E-08	0.28
Jul-20	0.28	0.23	0.24	0.12	2.40E-04	1.20E-04	0.24	0.75	0.73	0.45	2.64E-05	1.37E-09	0.29
Aug-20	0.30	0.18	0.24	0.12	2.34E-04	1.17E-04	0.27	0.88	0.73	0.50	2.23E-05	1.27E-08	0.31
Sep-20	0.27	0.14	0.16	0.07	1.46E-04	7.31E-05	0.21	0.99	0.42	0.28	1.01E-04	1.18E-08	0.20
Oct-20	0.28	0.18	0.19	0.08	1.64E-04	8.21E-05	0.21	1.29	0.64	0.47	3.67E-05	6.68E-08	0.25
Nov-20	0.30	0.22	0.28	0.10	2.03E-04	1.01E-04	0.25	0.87	0.70	0.50	5.62E-06	1.72E-08	0.29
Dec-20	0.28	0.16	0.29	0.09	1.86E-04	9.32E-05	0.24	0.82	0.74	0.47	9.76E-05	7.26E-08	0.29
Jan-21	0.30	0.16	0.26	0.10	2.05E-04	1.03E-04	0.26	0.83	0.39	0.42	1.57E-05	3.98E-08	0.30

TRS Baseline Actual Emission Rate Calculations

	Emission Factors															Monthly Emission Rates (tons)																							
	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks and Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank (to LVHC)	No. 7 Mill - No. 1 & No. 2 Knot Press	No. 7 Mill - Secondary Knotters No. 1 & No. 2	No. 7 Mill Brownstock Washers (4 stages, to HVLC)	No. 7 Mill Foam Tower (to HVLC)	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS	TRS
	lb/ADTUBP	*lb/hr*	*lb/ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*ppmv @ 10% O2*	*ppmv @ 10% O2*	*lb/ton TO*	*lb/ton TO*	*lb/ton BLS*	*ppmv @ 8% O2*	*lb/ton BLS*	*ppmv @ 8% O2*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/ADTFP*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Feb-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.30	2.96	5.87E-02	5.90E-05	7.00E-03	1.32	8.40E-03	0.64	3.00E-03	4.55E-04	6.93E-03	0.01	0.04	3.28	3.47E-04	3.41E-05	6.57E-04	0.01	0.68	0.33	7.00E-04	0.02	0.00	0.42	0.26	0.12	0.22	0.11	2.13E-04	1.06E-04	0.23	0.72	0.35	0.36	9.55E-05	4.29E-09	0.26
Mar-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.14	3.14	5.87E-02	5.90E-05	7.00E-03	1.73	8.40E-03	0.66	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.57	5.51E-05	5.42E-06	1.04E-04	0.01	0.75	0.36	1.09E-04	0.03	1.17E-03	0.46	0.29	0.12	0.26	0.12	2.34E-04	1.17E-04	0.24	1.00	0.40	0.41	1.49E-05	1.43E-08	0.30
Apr-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.51	2.45	5.87E-02	5.90E-05	7.00E-03	1.50	8.40E-03	0.89	3.00E-03	4.55E-04	6.93E-03	4.23E-03	0.01	2.29	7.90E-04	7.77E-05	1.50E-03	4.90E-03	0.48	0.23	9.31E-05	0.03	2.35E-04	0.30	0.19	0.09	0.18	0.05	1.10E-04	5.48E-05	0.17	0.57	0.33	0.51	1.27E-05	2.60E-08	0.22
May-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.50	3.15	5.87E-02	5.90E-05	7.00E-03	1.15	8.40E-03	0.88	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.64	3.71E-04	3.65E-05	7.03E-04	0.01	0.76	0.37	1.11E-04	0.03	2.77E-05	0.44	0.28	0.20	0.26	0.10	1.98E-04	9.88E-05	0.26	0.69	0.36	0.55	1.52E-05	1.93E-08	0.29
Jun-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.01	2.73	5.87E-02	5.90E-05	7.00E-03	1.07	8.40E-03	0.89	3.00E-03	4.55E-04	6.93E-03	0.01	0.02	2.95	0.00	0.00	0.00	0.01	0.61	0.30	2.91E-04	0.03	7.77E-04	0.44	0.28	0.18	0.20	0.08	1.52E-04	7.58E-05	0.25	0.63	0.28	0.51	3.96E-05	1.71E-08	0.25
Jul-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.80	2.96	5.87E-02	5.90E-05	7.00E-03	1.65	8.40E-03	0.75	3.00E-03	4.55E-04	6.93E-03	0.01	0.04	2.91	0.00	0.00	0.00	0.01	0.61	0.30	7.84E-04	0.03	3.44E-05	0.41	0.26	0.16	0.25	0.07	1.42E-04	7.11E-05	0.22	0.97	0.36	0.47	1.07E-04	1.13E-08	0.26
Aug-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.22	2.20	5.87E-02	5.90E-05	7.00E-03	1.00	8.40E-03	0.77	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.38	0.00	0.00	0.00	0.01	0.70	0.34	1.54E-04	0.03	9.92E-05	0.47	0.30	0.13	0.11	0.07	1.41E-04	7.07E-05	0.24	0.60	0.31	0.44	2.10E-05	1.16E-07	0.26
Sep-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.58	2.51	5.87E-02	5.90E-05	7.00E-03	1.05	8.40E-03	0.92	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.30	1.37E-04	1.34E-05	2.59E-04	0.01	0.69	0.34	1.12E-04	0.03	1.56E-04	0.44	0.28	0.09	0.12	0.05	1.06E-04	5.29E-05	0.23	0.61	0.21	0.33	1.53E-05	4.81E-08	0.20
Oct-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.01	2.36	5.87E-02	5.90E-05	7.00E-03	1.05	8.40E-03	0.77	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.64	9.88E-05	9.72E-06	1.87E-04	0.01	0.76	0.37	2.02E-04	0.03	0.00	0.45	0.28	0.18	0.18	0.10	1.93E-04	9.63E-05	0.27	0.64	0.36	0.49	2.76E-05	2.20E-08	0.30
Nov-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.08	2.12	5.87E-02	5.90E-05	7.00E-03	1.21	8.40E-03	0.85	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.69	0.00	0.00	0.00	0.01	0.77	0.38	9.04E-05	0.03	1.31E-05	0.44	0.28	0.12	0.17	0.10	1.93E-04	9.65E-05	0.26	0.71	0.37	0.52	1.23E-05	1.19E-08	0.29
Dec-21	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.48	1.99	5.87E-02	5.90E-05	7.00E-03	1.35	8.40E-03	1.38	3.00E-03	4.55E-04	6.93E-03	0.01	0.03	3.92	0.00	0.00	0.00	0.01	0.82	0.40	5.89E-04	0.03	0.00	0.45	0.28	0.09	0.17	0.11	2.13E-04	1.07E-04	0.26	0.82	0.39	0.87	8.04E-05	7.79E-09	0.30
Jan-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.19	2.34	5.87E-02	5.90E-05	9.70E-03	1.37	8.40E-03	0.98	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.09	4.02E-04	3.95E-05	7.61E-04	0.01	0.64	0.32	2.59E-04	0.03	1.75E-05	0.41	0.26	0.09	0.17	0.10	1.93E-04	9.63E-05	0.32	0.84	0.33	0.62	3.53E-05	1.72E-08	0.26
Feb-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.50	1.96	5.87E-02	5.90E-05	9.70E-03	1.34	8.40E-03	1.48	3.00E-03	4.55E-04	6.93E-03	0.01	1.58E-03	2.72	0.00	0.00	0.00	0.01	0.57	0.28	2.81E-05	0.02	0.00	0.33	0.21	0.06	0.13	0.10	1.96E-04	9.81E-05	0.28	0.68	0.32	0.85	3.84E-06	3.44E-09	0.24
Mar-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.07	1.65	5.87E-02	5.90E-05	9.70E-03	1.03	8.40E-03	0.97	3.00E-03	4.55E-04	6.93E-03	3.57E-03	0.01	1.93	1.17E-03	1.15E-04	2.21E-03	4.14E-03	0.40	0.20	1.55E-04	0.03	0.00	0.26	0.17	0.07	0.12	0.07	1.31E-04	6.53E-05	0.22	0.47	0.32	0.60	2.12E-05	2.78E-08	0.22
Apr-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.80	2.52	5.87E-02	5.90E-05	9.70E-03	0.74	8.40E-03	0.83	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.34	3.26E-04	3.21E-05	6.18E-04	0.01	0.70	0.34	2.41E-04	0.03	2.77E-04	0.42	0.27	0.14	0.15	0.08	1.58E-04	7.92E-05	0.34	0.44	0.32	0.51	3.28E-05	4.55E-08	0.27
May-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.55	2.26	5.87E-02	5.90E-05	9.70E-03	0.66	8.40E-03	0.64	3.00E-03	4.55E-04	6.93E-03	0.01	0.02	3.19	3.15E-03	3.10E-04	0.01	0.01	0.66	0.33	2.78E-04	0.03	3.46E-04	0.42	0.27	0.12	0.16	0.07	1.47E-04	7.36E-05	0.33	0.41	0.29	0.37	3.78E-05	4.59E-08	0.24
Jun-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.79	2.92	5.87E-02	5.90E-05	9.70E-03	0.73	8.40E-03	0.95	3.00E-03	4.55E-04	6.93E-03	0.01	1.26E-03	3.62	1.49E-04	1.47E-05	2.83E-04	0.01	0.75	0.37	2.23E-05	0.03	2.52E-05	0.44	0.28	0.13	0.21	0.09	1.72E-04	8.59E-05	0.36	0.44	0.37	0.58	3.05E-06	1.53E-08	0.29
Jul-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.40	2.85	5.87E-02	5.90E-05	9.70E-03	0.76	8.40E-03	0.75	3.00E-03	4.55E-04	6.93E-03	0.01	2.79E-04	3.20	2.97E-03	2.92E-04	0.01	0.01	0.67	0.33	4.97E-06	0.03	3.36E-05	0.46	0.29	0.11	0.18	0.09	1.81E-04	9.07E-05	0.33	0.46	0.34	0.46	6.77E-07	6.34E-08	0.27
Aug-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.40	2.36	5.87E-02	5.90E-05	9.70E-03	0.81	8.40E-03	0.65	3.00E-03	4.55E-04	6.93E-03	0.01	0.03	3.37	0.00	0.00	0.00	0.01	0.70	0.34	6.15E-04	0.03	1.20E-04	0.40	0.25	0.11	0.17	0.10	1.96E-04	9.79E-05	0.35	0.50	0.35	0.41	8.39E-05	2.07E-08	0.28
Sep-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.24	3.71	5.87E-02	5.90E-05	9.70E-03	0.77	8.40E-03	0.72	3.00E-03	4.55E-04	6.93E-03	0.01	0.02	3.18	3.01E-04	2.96E-05	5.70E-04	0.01	0.66	0.32	3.65E-04	0.03	1.63E-04	0.41	0.26	0.12	0.08	0.04	8.22E-05	4.11E-05	0.32	0.47	0.10	0.14	4.97E-05	7.86E-08	0.16
Oct-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	3.56	1.40	5.87E-02	5.90E-05	9.70E-03	0.74	8.40E-03	0.66	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.03	1.00E-04	9.84E-06	1.90E-04	0.01	0.63	0.31	1.49E-04	0.03	1.56E-04	0.41	0.26	0.14	0.09	0.06	1.27E-04	6.35E-05	0.33	0.46	0.34	0.41	2.03E-05	9.54E-08	0.26
Nov-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.54	2.05	5.87E-02	5.90E-05	9.70E-03	0.47	8.40E-03	0.61	3.00E-03	4.55E-04	6.93E-03	0.01	3.31E-04	3.09	6.63E-04	6.53E-05	1.26E-03	0.01	0.64	0.31	5.88E-06	0.03	3.56E-05	0.38	0.24	0.12	0.15	0.09	1.78E-04	8.89E-05	0.33	0.28	0.35	0.38	8.01E-07	1.76E-08	0.27
Dec-22	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.77	2.10	5.87E-02	5.90E-05	9.70E-03	0.63	8.40E-03	0.79	3.00E-03	4.55E-04	6.93E-03	0.01	0.02	3.68	1.26E-03	1.24E-04	2.39E-03	0.01	0.77	0.38	4.24E-04	0.03	0.00	0.43	0.27	0.14	0.16	0.09	1.73E-04	8.64E-05	0.37	0.40	0.35	0.50	5.79E-05	1.17E-08	0.28
Jan-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.28	1.65	5.87E-02	5.90E-05	9.70E-03	0.76	8.40E-03	0.73	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.48	1.18E-03	1.17E-04	2.24E-03	0.01	0.73	0.36	2.09E-04	0.03	3.89E-05	0.38	0.24	0.14	0.13	0.09	1.88E-04	9.40E-05	0.33	0.46	0.32	0.43	2.85E-05	1.36E-08	0.26
Feb-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.15	2.63	5.87E-02	5.90E-05	9.70E-03	0.69	8.40E-03	0.74	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	2.90	0.00	0.00	0.00	0.01	0.60	0.30	1.84E-04	0.02	3.72E-07	0.34	0.22	0.11	0.21	0.09	1.85E-04	9.24E-05	0.29	0.33	0.35	0.43	2.51E-05	2.31E-09	0.26
Mar-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.77	2.20	5.87E-02	5.90E-05	9.70E-03	0.14	8.40E-03	0.73	3.00E-03	4.55E-04	6.93E-03	9.14E-04	0.01	0.50	4.46E-04	4.39E-05	8.45E-04	1.06E-03	0.10	0.05	1.52E-04	0.03	1.80E-04	0.11	0.07	0.01	0.16	0.06	1.21E-04	6.03E-05	0.10	0.04	0.29	0.40	2.07E-05	6.70E-08	0.15
Apr-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.62	1.76	5.87E-02	5.90E-05	9.70E-03	0.30	8.40E-03	0.66	3.00E-03	4.55E-04	6.93E-03	0.01	2.04E-03	2.78	1.69E-03	1.66E-04	3.20E-03	0.01	0.58	0.28	3.63E-05	0.03	7.46E-05	0.39	0.25	0.10	0.15	0.07	1.37E-04	6.86E-05	0.30	0.18	0.34	0.41	4.95E-06	6.18E-09	0.25
May-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.21	2.30	5.87E-02	5.90E-05	9.70E-03	0.47	8.40E-03	0.72	3.00E-03	4.55E-04	6.93E-03	0.01	0.03	3.26	6.00E-04	5.91E-05	1.14E-03	0.01	0.68	0.33	4.45E-04	0.03	2.99E-05	0.42	0.26	0.13	0.20	0.12	2.46E-04	1.23E-04	0.34	0.29	0.36	0.47	6.07E-05	1.79E-08	0.28
Jun-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.26	2.08	5.87E-02	5.90E-05	9.70E-03	0.87	8.40E-03	0.94	3.00E-03	4.55E-04	6.93E-03	3.66E-03	2.83E-04	1.99	0.00	0.00	0.00	4.25E-03	0.41	0.20	5.02E-06	0.03	7.66E-05	0.22	0.14	0.04	0.17	0.10	2.08E-04	1.04E-04	0.19	0.31	0.34	0.57	6.85E-07	2.15E-08	0.22
Jul-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.22	2.07	5.87E-02	5.90E-05	9.70E-03	0.62	8.40E-03	0.73	3.00E-03	4.55E-04	6.93E-03	0.01	1.24E-03	3.39	8.48E-05	8.34E-06	1.61E-04	0.01	0.71	0.35	2.20E-05	0.03	0.00	0.43	0.27	0.14	0.18	0.10	2.11E-04	1.05E-04	0.35	0.38	0.35	0.48	3.00E-06	1.02E-08	0.27
Aug-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	5.66	3.14	5.87E-02	5.90E-05	9.70E-03	0.76	8.40E-03	0.64	3.00E-03	4.55E-04	6.93E-03	0.01	0.50	3.02	9.12E-04	8.97E-05	1.73E-03	0.01	0.63	0.31	0.01	0.03	5.30E-04	0.37	0.23	0.26	0.25	0.10	2.08E-04	1.04E-04	0.29	0.46	0.32	0.39	1.21E-03	6.65E-08	0.24
Sep-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	2.30	0.72	5.87E-02	5.90E-05	9.70E-03	0.80	8.40E-03	0.63	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.05	1.44E-03	1.42E-04	2.73E-03	0.01	0.64	0.31	1.31E-04	0.03	8.31E-06	0.37	0.24	0.13	0.02	0.04	8.62E-05	4.31E-05	0.29	0.49	0.09	0.11	1.79E-05	1.48E-08	0.15
Oct-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.82	1.41	5.87E-02	5.90E-05	9.70E-03	0.89	8.40E-03	0.17	3.00E-03	4.55E-04	6.93E-03	0.01	0.00	3.42	7.83E-04	7.70E-05	1.48E-03	0.01	0.71	0.35	0.00	0.03	6.49E-05	0.42	0.27	0.11	0.12	0.07	1.45E-04	7.23E-05	0.33	0.55	0.35	0.11	0.00	1.69E-08	0.27
Nov-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.91	1.16	5.87E-02	5.90E-05	9.70E-03	0.83	8.40E-03	0.29	3.00E-03	4.55E-04	6.93E-03	0.01	0.00	3.62	3.40E-04	3.35E-05	6.45E-04	0.01	0.75	0.37	0.00	0.03	4.51E-05	0.42	0.27	0.12	0.10	0.08	1.64E-04	8.18E-05	0.33	0.51	0.37	0.18	0.00	2.59E-09	0.29
Dec-23	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.56	1.23	5.87E-02	5.90E-05	9.70E-03	0.96	8.40E-03	0.50	3.00E-03	4.55E-04	6.93E-03	0.01	3.75E-03	3.24	3.04E-04	2.99E-05	5.76E-04	0.01	0.68	0.33	6.66E-05	0.03	6.44E-05	0.42	0.27	0.09	0.11	0.09	1.71E-04	8.55E-05	0.33	0.59	0.36	0.32	9.09E-06	6.59E-09	0.28
Jan-24	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.87	1.19	5.87E-02	5.90E-05	1.50E-02	0.95	8.40E-03	0.65	3.00E-03	4.55E-04	6.93E-03	0.01	0.02	2.84	8.44E-04	8.30E-05	1.60E-03	0.01	0.59	0.29	3.69E-04	0.03	5.28E-04	0.41	0.26	0.11	0.10	0.08	1.53E-04	7.66E-05	0.48	0.63	0.31	0.42	5.03E-05	2.80E-08	0.24
Feb-24	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	1.65	1.23	5.87E-02	5.90E-05	1.50E-02	1.11	8.40E-03	0.75	3.00E-03	4.55E-04	6.93E-03	0.01	0.01	3.50	0.00	0.00	0.00	0.01	0.73	0.36	8.96E-05	0.03	0.00	0.43	0.27	0.10	0.10	0.09	1.76E-04	8.82E-05	0.50	0.74	0.34	0.45	1.22E-05	4.89E-09	0.27
Mar-24	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.38	1.68	5.87E-02	5.90E-05	1.50E-02	0.31	8.40E-03	0.66	3.00E-03	4.55E-04	6.93E-03	2.50E-03	0.00	1.35	6.57E-04	6.46E-05	1.24E-03	2.90E-03	0.28	0.14	0.00	0.03	1.82E-04	0.14	0.09	2.51E-03	0.15	0.09	1.75E-04	8.76E-05	0.21	0.21	0.37	0.43	0.00	1.97E-07	0.21
Apr-24	2.20E-02	7.43E-02	2.20E-02	8.78E-02	5.55E-02	0.00	0.00	5.87E-02	5.90E-05	0.00	0.00	0.00	0.00	3.00E-03	4.55E-04	6.93E-03	0.01	1.80E-03	3.09	2.39E-04	2.35E-05	4.52E-04	0.01	0.65	0.32	3.21E-05	0.03	5.03E-05	0.40	0.25	0.00	0.00	0.08	1.69E-04	8.43E-05	0.00	0.00	0.00	0.00	4.37E-06	3.21E-08	0.26

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

TRS Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																									
	Baseline Period and Emissions	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	96.71																									
	Jun-19 - May-21																									
	tons (24-mo Rolling total)	*tons (24-mo Rolling total)*																								
Jan-15																										
Feb-15																										
Mar-15																										
Apr-15																										
May-15																										
Jun-15																										
Jul-15																										
Aug-15																										
Sep-15																										
Oct-15																										
Nov-15																										
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May-16																										
Jun-16																										
Jul-16																										
Aug-16																										
Sep-16																										
Oct-16																										
Nov-16																										
Dec-16	79.92	0.07	0.08	36.82	0.01	0.00	0.01	0.08	7.68	3.76	0.00	0.33	0.00	4.41	2.79	0.90	2.25	0.97	1.95E-03	9.74E-04	2.75	4.38	7.37	2.16	0.00	0.01	3.11
Jan-17	80.41	0.07	0.08	36.87	0.01	0.00	0.01	0.08	7.69	3.76	0.00	0.33	0.00	4.44	2.81	0.94	2.26	0.98	1.97E-03	9.84E-04	2.76	4.67	7.41	2.12	0.00	0.01	3.11
Feb-17	80.22	0.07	0.08	36.50	0.01	0.00	0.01	0.08	7.61	3.72	0.00	0.33	0.00	4.44	2.80	0.98	2.27	0.98	1.98E-03	9.88E-04	2.75	4.89	7.47	2.11	0.00	0.01	3.11
Mar-17	78.02	0.06	0.08	35.06	0.00	0.00	0.01	0.08	7.31	3.58	0.00	0.33	0.00	4.27	2.70	0.96	2.30	0.97	1.94E-03	9.70E-04	2.64	4.87	7.59	2.16	0.00	0.01	3.06
Apr-17	77.13	0.06	0.08	34.61	0.00	0.00	0.01	0.07	7.22	3.53	0.00	0.33	0.00	4.21	2.66	0.95	2.33	0.96	1.92E-03	9.62E-04	2.60	4.69	7.65	2.10	0.00	0.01	3.05
May-17	78.17	0.06	0.07	35.08	0.00	0.00	0.01	0.08	7.32	3.58	0.00	0.33	0.00	4.27	2.70	1.03	2.35	0.96	1.93E-03	9.63E-04	2.64	4.84	7.73	2.05	0.00	0.01	3.07
Jun-17	78.86	0.07	0.07	35.26	0.00	0.00	0.01	0.08	7.36	3.60	0.00	0.33	0.00	4.29	2.71	1.09	2.40	0.96	1.93E-03	9.63E-04	2.64	5.00	7.84	2.05	0.00	0.01	3.10
Jul-17	79.09	0.06	0.07	35.14	0.00	0.00	0.01	0.08	7.33	3.58	0.00	0.33	0.00	4.31	2.73	1.19	2.45	0.95	1.91E-03	9.53E-04	2.65	5.16	7.91	2.03	0.00	0.01	3.09
Aug-17	79.21	0.06	0.06	34.96	0.01	0.00	0.01	0.07	7.29	3.57	0.00	0.33	0.00	4.33	2.73	1.26	2.47	0.95	1.91E-03	9.56E-04	2.66	5.32	7.96	2.07	0.00	0.01	3.09
Sep-17	79.41	0.06	0.06	34.89	0.01	0.00	0.01	0.07	7.28	3.56	0.00	0.33	0.00	4.36	2.76	1.32	2.50	0.94	1.88E-03	9.42E-04	2.66	5.40	8.02	2.09	0.00	0.01	3.09
Oct-17	79.54	0.06	0.06	34.72	0.00	0.00	0.01	0.07	7.24	3.54	0.00	0.33	0.00	4.36	2.76	1.38	2.55	0.92	1.84E-03	9.22E-04	2.66	5.58	8.08	2.09	0.00	0.01	3.09
Nov-17	79.96	0.06	0.06	34.73	0.00	0.00	0.01	0.07	7.25	3.54	0.00	0.33	0.00	4.38	2.77	1.50	2.62	0.90	1.81E-03	9.06E-04	2.67	5.77	8.14	2.05	0.00	0.01	3.09
Dec-17	80.53	0.06	0.06	34.95	0.00	0.00	0.01	0.07	7.29	3.57	0.00	0.33	0.00	4.42	2.80	1.57	2.64	0.89	1.79E-03	8.96E-04	2.68	5.89	8.19	1.99	0.00	0.01	3.10
Jan-18	81.09	0.07	0.09	35.26	0.00	0.00	0.01	0.08	7.36	3.60	0.00	0.33	0.00	4.45	2.81	1.64	2.62	0.88	1.76E-03	8.81E-04	2.69	6.05	8.07	1.99	0.00	0.01	3.08
Feb-18	81.36	0.07	0.10	35.34	0.00	0.00	0.01	0.08	7.37	3.60	0.00	0.33	0.00	4.46	2.82	1.73	2.63	0.87	1.75E-03	8.74E-04	2.68	6.08	8.08	2.02	0.00	0.01	3.08
Mar-18	81.50	0.07	0.10	35.27	0.00	0.00	0.01	0.08	7.36	3.60	0.00	0.33	0.00	4.51	2.85	1.84	2.65	0.86	1.74E-03	8.68E-04	2.68	6.17	8.07	1.95	0.00	0.01	3.08
Apr-18	81.39	0.07	0.09	35.28	0.00	0.00	0.01	0.08	7.36	3.60	0.00	0.33	0.00	4.56	2.88	1.87	2.70	0.86	1.72E-03	8.62E-04	2.68	5.94	8.09	1.91	0.00	0.01	3.09
May-18	81.57	0.07	0.11	35.33	0.00	0.00	0.01	0.08	7.37	3.60	0.00	0.33	0.00	4.57	2.89	1.94	2.74	0.84	1.70E-03	8.48E-04	2.67	6.01	8.09	1.84	0.00	0.00	3.09
Jun-18	81.77	0.07	0.11	35.38	0.00	0.00	0.01	0.08	7.38	3.61	0.00	0.33	0.00	4.57	2.89	2.02	2.76	0.83	1.68E-03	8.39E-04	2.67	6.08	8.07	1.82	0.00	0.00	3.09
Jul-18	82.20	0.07	0.12	35.47	0.00	0.00	0.01	0.08	7.40	3.62	0.00	0.33	0.00	4.59	2.90	2.10	2.82	0.83	1.67E-03	8.34E-04	2.67	6.13	8.07	1.89	0.00	0.00	3.09
Aug-18	82.40	0.07	0.12	35.40	0.00	0.00	0.01	0.08	7.38	3.61	0.00	0.33	0.00	4.61	2.91	2.16	2.87	0.82	1.65E-03	8.24E-04	2.68	6.18	8.05	2.03	0.00	0.00	3.09
Sep-18	82.58	0.07	0.11	35.41	0.00	0.00	0.01	0.08	7.39	3.61	0.00	0.33	0.00	4.64	2.94	2.21	2.86	0.81	1.64E-03	8.18E-04	2.68	6.17	8.05	2.14	0.00	0.00	3.09
Oct-18	82.80	0.07	0.11	35.51	0.00	0.00	0.01	0.08	7.41	3.62	0.00	0.33	0.00	4.66	2.95	2.20	2.86	0.81	1.64E-03	8.18E-04	2.69	6.12	8.00	2.30	0.00	0.00	3.07
Nov-18	82.96	0.07	0.11	35.59	0.00	0.00	0.01	0.08	7.43	3.63	0.00	0.33	0.00	4.67	2.95	2.22	2.87	0.82	1.64E-03	8.21E-04	2.68	6.09	7.98	2.37	0.00	0.00	3.07
Dec-18	83.39	0.07	0.11	35.93	0.00	0.00	0.01	0.08	7.50	3.67	0.00	0.33	0.00	4.66	2.95	2.23	2.86	0.82	1.64E-03	8.21E-04	2.69	5.93	7.96	2.52	0.00	0.00	3.07
Jan-19	83.48	0.07	0.12	36.07	0.00	0.00	0.01	0.08	7.52	3.68	0.00	0.33	0.00	4.66	2.95	2.21	2.87	0.81	1.63E-03	8.15E-04	2.68	5.80	7.92	2.63	0.00	0.00	3.06
Feb-19	83.21	0.07	0.11	35.86	0.00	0.00	0.01	0.08	7.48	3.66	0.00	0.33	0.00	4.66	2.95	2.20	2.90	0.81	1.62E-03	8.09E-04	2.67	5.71	7.91	2.76	0.00	0.00	3.05
Mar-19	85.90	0.07	0.11	37.29	0.00	0.00	0.01	0.08	7.78	3.80	0.00	0.33	0.00	4.82	3.05	2.27	2.95	0.83	1.67E-03	8.33E-04	2.78	5.84	7.89	2.88	0.00	0.00	3.10
Apr-19	86.79	0.07	0.11	37.66	0.01	0.00	0.01	0.08	7.86	3.84	0.00	0.33	0.00	4.87	3.08	2.30	2.96	0.84	1.69E-03	8.43E-04	2.81	5.95	7.91	3.01	0.00	0.00	3.12
May-19	87.26	0.07	0.11	37.91	0.01	0.00	0.01	0.08	7.91	3.87	0.00	0.33	0.00	4.88	3.09	2.31	2.91	0.85	1.70E-03	8.50E-04	2.81	5.98	7.87	3.14	0.00	0.00	3.12
Jun-19	87.25	0.07	0.11	37.93	0.01	0.00	0.01	0.08	7.91	3.87	0.00	0.33	0.00	4.88	3.08	2.31	2.83	0.86	1.73E-03	8.63E-04	2.80	5.96	7.84	3.27	0.00	0.00	3.11
Jul-19	87.51	0.07	0.12	38.07	0.01	0.00	0.01	0.08	7.94	3.88	0.00	0.33	0.00	4.90	3.10	2.28	2.77	0.88	1.76E-03	8.80E-04	2.80	5.94	7.83	3.41	0.00	0.00	3.11
Aug-19	87.43	0.07	0.12	37.91	0.01	0.00	0.01	0.08	7.91	3.87	0.00	0.33	0.00	4.88	3.09	2.30	2.74	0.89	1.80E-03	8.99E-04	2.77	5.96	7.79	3.60	0.00	0.00	3.10
Sep-19	87.46	0.07	0.13	37.83	0.01	0.00	0.01	0.08	7.89	3.86	0.00	0.33	0.00	4.88	3.07	2.32	2.76	0.92	1.84E-03	9.21E-04	2.76	5.91	7.84	3.71	0.00	0.00	3.11
Oct-19	88.22	0.07	0.13	38.19	0.01	0.00	0.01	0.08	7.97	3.90	0.00	0.33	0.00	4.89	3.09	2.34	2.79	0.94	1.89E-03	9.43E-04	2.76	5.90	7.84	3.86	0.00	0.00	3.13
Nov-19	88.59	0.07	0.13	38.36	0.01	0.00	0.01	0.08	8.00	3.91	0.00	0.33	0.00	4.90	3.09	2.31	2.75	0.96	1.93E-03	9.67E-04	2.76	5.90	7.85	4.05	0.00	0.00	3.13
Dec-19	89.22	0.07	0.13	38.59	0.01	0.00	0.01	0.08	8.05	3.94	0.00	0.33	0.00	4.93	3.12	2.32	2.75	0.99	1.98E-03	9.92E-04	2.77	5.90	7.86	4.24	0.00	0.00	3.15
Jan-20	89.90	0.07	0.09	38.74	0.01	0.00	0.01	0.08	8.08	3.95	0.00	0.33	0.00	4.96	3.14	2.31	2.81	1.01	2.03E-03	1.01E-03	2.78	5.99	7.97	4.38	0.00	0.00	3.18
Feb-20	90.36	0.07	0.09	38.91	0.01	0.00	0.01	0.08	8.12	3.97	0.00	0.33	0.00	5.01	3.17	2.30	2.79	1.03	2.06E-03	1.03E-03	2.79	6.05	7.94	4.52	0.00	0.00	3.18
Mar-20	90.79	0.07	0.08	39.15	0.01	0.00	0.01	0.08	8.17	3.99	0.00	0.33	0.00	5.04	3.19	2.26	2.79	1.04	2.08E-03	1.04E-03	2.80	6.03	7.91	4.65	0.00	0.00	3.18
Apr-20	93.45	0.07	0.08	40.58	0.01	0.00	0.01	0.09	8.47	4.14	0.00	0.33	0.00	5.22	3.30	2.32	2.76	1.07	2.15E-03	1.08E-03	2.90	6.16	7.93	4.76	0.00	0.00	3.24
May-20	93.13	0.07	0.07	40.36	0.01	0.00	0.01	0.09	8.42	4.12	0.00	0.33	0.00	5.23	3.31	2.28	2.76	1.08	2.17E-03	1.08E-03	2.87	6.06	7.94	4.89	0.00	0.00	3.23
Jun-20	93.38	0.07	0.07	40.45	0.01	0.00	0.01	0.09	8.44	4.13	0.00	0.33	0.00	5.23	3.31	2.28	2.81	1.09	2.18E-03	1.09E-03	2.87	6.06	7.95	4.96	0.00	0.00	3.24
Jul-20	93.50	0.07	0.07	40.45	0.01	0.00	0.01	0.09	8.44	4.13	0.00	0.33	0.00	5.23	3.30	2.26	2.79	1.10	2.22E-03	1.11E-03	2.86	6.12	7.97	5.03	0.00	0.00	3.24
Aug-20	94.03	0.08	0.07	40.71	0.01	0.00	0.01	0.09	8.49	4.15	0.00	0.33	0.00	5.24	3.31	2.23	2.75	1.13	2.27E-03	1.13E-03	2.87	6.25	8.02	5.05	0.00	0.00	3.26
Sep-20	94.00	0.07	0.09	40.50	0.01	0.00	0.02	0.09	8.45	4.13	0.00	0.33	0.00	5.23	3.31	2.17	2.77	1.14	2.29E-03	1.15E-03	2.85	6.52	8.03	5.04	0.00	0.00	3.26
Oct-20	93.84	0.07	0.10	40.12	0.01	0.00	0.01	0.09	8.37	4.09	0.00	0.33	0.00	5.24	3.31	2.16	2.71	1.14	2.28E-03	1.14E-03	2.83	6.92	8.03	5.05	0.00	0.00	3.25
Nov-20	94.22	0.07	0.09	40.13	0.01	0.00	0.01	0.09	8.37	4.09	0.00	0.33	0.00	5.27	3.33	2.16	2.70	1.14	2.29E-03	1.15E-03	2.83	7.12	8.05	5.15	0.00	0.00	3.26
Dec-20	94.54	0.07	0.11	40.16	0.01	0.00	0.01	0.09	8.38	4.10	0.00	0.33	0.00	5.30	3.35	2.15	2.71	1.14	2.30E-03	1.15E-03	2.83	7.30	8.08	5.14	0.00	0.00	3.27
Jan-21	94.79	0.07	0.11	40.21	0.01	0.00	0.01	0.09	8.39	4.10	0.00	0.33	0.00	5.31	3.36	2.17	2.73	1.16	2.32E-03	1.16E-03	2.83	7.48	7.97	5.18	0.00	0.00	3.29

TRS Baseline Actual Emission Rate Calculations

	24-month Rolling Emission Rates (tons/yr)																									
	Baseline Period and Emissions **96.71** **Jun-19** **-** **May-21**	No. 7 Mill - No. 1 & No. 2 Continuous Digesters Chip Bin	No. 7 Mill - No. 1 & No. 2 Presteamers, Continuous Digesters, Flash Tanks, & Blow Tank	No. 7 Mill - Secondary Knotters No. 1 & No. 2 , Knot Press	No. 7 Mill Brownstock Washers (4 stages) to HVLC	No. 7 Mill Foam Tower to HVLC	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill - Screening System	No. 7 Mill - Decker, Decker Filtrate Tank, and MC Standpipe	No. 7 Mill Bleach Plant	No. 7 Mill Multiple Effect Evaporator System (to LVHC)	No. 8 Soap Skimmer Tank	No. 8 Mill Multiple Effect Evaporator System (to LVHC)	No. 7 Mill - Slaker	No. 7 Mill - No. 1-4 Causticizers and Sump Tank	No. 7 Lime Kiln	No. 8 Lime Kiln	Tall Oil Reactor	No. 1-2 CTO Storage Tanks	Flash Tower Feed Tank	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Turpentine Decanter (to LVHC)	Backup NCG Incinerator	Mill Wastewater Treatment System
	tons (24-mo Rolling total)	*tons (24-mo Rolling total)*																								
Feb-21	95.17	0.07	0.13	40.43	0.01	0.00	0.01	0.09	8.43	4.12	0.00	0.33	0.00	5.33	3.37	2.17	2.71	1.17	2.35E-03	1.17E-03	2.84	7.63	7.83	5.18	0.00	0.00	3.30
Mar-21	95.30	0.07	0.13	40.46	0.01	0.00	0.01	0.09	8.44	4.13	0.00	0.33	0.00	5.36	3.39	2.15	2.68	1.17	2.35E-03	1.18E-03	2.84	7.93	7.66	5.15	0.00	0.00	3.30
Apr-21	96.54	0.08	0.13	41.23	0.01	0.00	0.01	0.09	8.60	4.21	0.00	0.33	0.00	5.46	3.45	2.17	2.64	1.16	2.34E-03	1.17E-03	2.89	8.11	7.47	5.18	0.00	0.00	3.32
May-21	96.71	0.08	0.13	41.34	0.01	0.00	0.01	0.09	8.62	4.22	0.00	0.33	0.00	5.45	3.44	2.17	2.70	1.17	2.34E-03	1.17E-03	2.89	8.17	7.32	5.25	0.00	0.00	3.33
Jun-21	96.33	0.08	0.14	41.07	0.00	0.00	0.01	0.09	8.57	4.19	0.00	0.33	0.00	5.45	3.45	2.16	2.72	1.16	2.33E-03	1.16E-03	2.90	8.25	7.13	5.31	0.00	0.00	3.32
Jul-21	95.62	0.07	0.16	40.57	0.00	0.00	0.01	0.09	8.46	4.14	0.00	0.33	0.00	5.40	3.41	2.14	2.74	1.14	2.30E-03	1.15E-03	2.87	8.50	6.95	5.34	0.00	0.00	3.29
Aug-21	95.64	0.08	0.15	40.79	0.00	0.00	0.01	0.09	8.51	4.16	0.00	0.33	0.00	5.41	3.42	2.11	2.67	1.12	2.26E-03	1.13E-03	2.89	8.52	6.77	5.30	0.00	0.00	3.30
Sep-21	95.68	0.08	0.15	40.84	0.00	0.00	0.01	0.09	8.52	4.17	0.00	0.33	0.00	5.42	3.43	2.06	2.66	1.11	2.24E-03	1.12E-03	2.89	8.65	6.66	5.31	0.00	0.00	3.30
Oct-21	95.49	0.08	0.15	40.81	0.00	0.00	0.01	0.09	8.51	4.16	0.00	0.33	0.00	5.40	3.41	2.05	2.61	1.12	2.25E-03	1.13E-03	2.90	8.71	6.49	5.36	0.00	0.00	3.30
Nov-21	95.18	0.08	0.16	40.72	0.00	0.00	0.01	0.09	8.49	4.15	0.00	0.33	0.00	5.37	3.39	2.01	2.59	1.12	2.25E-03	1.13E-03	2.89	8.81	6.31	5.37	0.00	0.00	3.29
Dec-21	95.38	0.08	0.17	40.84	0.00	0.00	0.01	0.09	8.52	4.17	0.00	0.33	0.00	5.35	3.38	1.95	2.56	1.12	2.25E-03	1.12E-03	2.89	8.95	6.13	5.54	0.00	0.00	3.29
Jan-22	94.69	0.07	0.18	40.48	0.00	0.00	0.01	0.09	8.44	4.13	0.00	0.33	0.00	5.30	3.35	1.90	2.52	1.12	2.25E-03	1.12E-03	2.92	9.03	5.94	5.60	0.00	0.00	3.27
Feb-22	93.94	0.07	0.18	40.03	0.00	0.00	0.01	0.09	8.35	4.08	0.00	0.33	0.00	5.22	3.30	1.82	2.50	1.12	2.24E-03	1.12E-03	2.94	9.06	5.78	5.80	0.00	0.00	3.26
Mar-22	92.12	0.07	0.18	39.07	0.00	0.00	0.01	0.08	8.15	3.99	0.00	0.33	0.00	5.10	3.22	1.76	2.44	1.09	2.20E-03	1.10E-03	2.91	9.00	5.60	5.90	0.00	0.00	3.22
Apr-22	91.54	0.07	0.19	38.87	0.00	0.00	0.01	0.08	8.11	3.96	0.00	0.33	0.00	5.05	3.19	1.73	2.41	1.08	2.16E-03	1.08E-03	2.95	8.95	5.39	5.95	0.00	0.00	3.20
May-22	91.53	0.07	0.19	39.01	0.01	0.00	0.01	0.08	8.14	3.98	0.00	0.33	0.00	5.07	3.21	1.73	2.37	1.07	2.14E-03	1.07E-03	3.02	8.93	5.17	5.94	0.00	0.00	3.19
Jun-22	91.48	0.07	0.18	39.09	0.00	0.00	0.01	0.08	8.15	3.99	0.00	0.33	0.00	5.08	3.21	1.69	2.35	1.06	2.13E-03	1.07E-03	3.07	8.85	5.01	6.05	0.00	0.00	3.19
Jul-22	90.91	0.07	0.18	38.96	0.01	0.00	0.01	0.08	8.13	3.97	0.00	0.33	0.00	5.09	3.22	1.63	2.32	1.05	2.11E-03	1.05E-03	3.12	8.70	4.81	6.06	0.00	0.00	3.18
Aug-22	90.13	0.07	0.19	38.76	0.01	0.00	0.01	0.08	8.09	3.95	0.00	0.33	0.00	5.05	3.19	1.60	2.29	1.04	2.09E-03	1.04E-03	3.16	8.51	4.62	6.01	0.00	0.00	3.17
Sep-22	89.81	0.07	0.18	38.94	0.01	0.00	0.01	0.08	8.12	3.97	0.00	0.33	0.00	5.04	3.19	1.58	2.25	1.02	2.05E-03	1.03E-03	3.21	8.25	4.46	5.94	0.00	0.00	3.14
Oct-22	89.26	0.07	0.18	39.01	0.01	0.00	0.01	0.08	8.14	3.98	0.00	0.33	0.00	5.03	3.18	1.56	2.19	1.01	2.04E-03	1.02E-03	3.27	7.83	4.31	5.91	0.00	0.00	3.15
Nov-22	88.36	0.07	0.17	38.85	0.01	0.00	0.01	0.08	8.10	3.96	0.00	0.33	0.00	4.98	3.15	1.51	2.13	1.01	2.02E-03	1.01E-03	3.31	7.54	4.14	5.85	0.00	0.00	3.14
Dec-22	88.06	0.07	0.17	38.95	0.01	0.00	0.01	0.08	8.13	3.97	0.00	0.33	0.00	4.98	3.15	1.50	2.06	1.00	2.02E-03	1.01E-03	3.38	7.33	3.95	5.87	0.00	0.00	3.13
Jan-23	87.43	0.07	0.17	38.74	0.01	0.00	0.01	0.08	8.08	3.95	0.00	0.33	0.00	4.93	3.11	1.49	2.00	1.00	2.01E-03	1.00E-03	3.41	7.14	3.91	5.87	0.00	0.00	3.11
Feb-23	86.94	0.07	0.15	38.55	0.01	0.00	0.01	0.08	8.04	3.93	0.00	0.33	0.00	4.89	3.09	1.48	1.99	0.99	1.99E-03	9.97E-04	3.44	6.95	3.91	5.91	0.00	0.00	3.11
Mar-23	83.82	0.07	0.16	37.01	0.01	0.00	0.01	0.08	7.72	3.78	0.00	0.33	0.00	4.72	2.98	1.43	1.94	0.96	1.94E-03	9.69E-04	3.37	6.47	3.85	5.90	0.00	0.00	3.03
Apr-23	84.06	0.07	0.15	37.26	0.01	0.00	0.01	0.08	7.77	3.80	0.00	0.33	0.00	4.77	3.01	1.43	1.93	0.97	1.95E-03	9.75E-04	3.44	6.27	3.86	5.85	0.00	0.00	3.05
May-23	83.55	0.07	0.16	37.07	0.01	0.00	0.01	0.08	7.73	3.78	0.00	0.33	0.00	4.75	3.01	1.40	1.90	0.98	1.98E-03	9.88E-04	3.48	6.07	3.85	5.81	0.00	0.00	3.04
Jun-23	82.52	0.07	0.16	36.59	0.01	0.00	0.01	0.08	7.63	3.73	0.00	0.33	0.00	4.65	2.94	1.33	1.88	1.00	2.00E-03	1.00E-03	3.45	5.91	3.89	5.85	0.00	0.00	3.03
Jul-23	82.59	0.07	0.13	36.83	0.01	0.00	0.01	0.08	7.68	3.76	0.00	0.33	0.00	4.66	2.95	1.32	1.85	1.01	2.04E-03	1.02E-03	3.52	5.62	3.88	5.85	0.00	0.00	3.03
Aug-23	82.60	0.07	0.38	36.65	0.01	0.00	0.01	0.08	7.65	3.74	0.01	0.33	0.00	4.61	2.91	1.38	1.93	1.03	2.07E-03	1.04E-03	3.54	5.55	3.88	5.82	0.00	0.00	3.02
Sep-23	82.12	0.07	0.38	36.53	0.01	0.00	0.02	0.08	7.62	3.73	0.01	0.33	0.00	4.58	2.89	1.40	1.88	1.03	2.06E-03	1.03E-03	3.57	5.48	3.82	5.71	0.00	0.00	3.00
Oct-23	81.64	0.07	0.37	36.42	0.01	0.00	0.02	0.08	7.60	3.71	0.01	0.33	0.00	4.56	2.88	1.37	1.84	1.01	2.04E-03	1.02E-03	3.60	5.44	3.82	5.52	0.00	0.00	2.98
Nov-23	81.29	0.07	0.37	36.38	0.01	0.00	0.02	0.08	7.59	3.71	0.01	0.33	0.00	4.55	2.88	1.37	1.81	1.01	2.02E-03	1.01E-03	3.64	5.34	3.82	5.35	0.00	0.00	2.98
Dec-23	80.39	0.07	0.36	36.04	0.01	0.00	0.02	0.08	7.52	3.68	0.01	0.33	0.00	4.54	2.87	1.37	1.78	1.00	2.00E-03	1.00E-03	3.68	5.22	3.80	5.08	0.00	0.00	2.97
Jan-24	80.05	0.07	0.36	35.91	0.01	0.00	0.02	0.08	7.49	3.66	0.01	0.33	0.00	4.54	2.87	1.38	1.75	0.99	1.98E-03	9.91E-04	3.76	5.12	3.79	4.98	0.00	0.00	2.95
Feb-24	80.60	0.07	0.36	36.30	0.01	0.00	0.02	0.08	7.57	3.70	0.01	0.33	0.00	4.58	2.90	1.39	1.73	0.98	1.97E-03	9.86E-04	3.87	5.14	3.80	4.78	0.00	0.00	2.97
Mar-24	79.90	0.07	0.36	36.01	0.01	0.00	0.02	0.08	7.51	3.67	0.01	0.33	0.00	4.53	2.86	1.36	1.75	0.99	1.99E-03	9.97E-04	3.86	5.01	3.82	4.69	0.00	0.00	2.96
Apr-24	78.76	0.07	0.35	35.89	0.01	0.00	0.02	0.08	7.49	3.66	0.01	0.33	0.00	4.51	2.85	1.29	1.67	0.99	2.00E-03	1.00E-03	3.69	4.79	3.67	4.44	0.00	0.00	2.96

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

SAM Baseline Actual Emission Rate Calculations

	Production Data												Emission Factors									
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Nos. 7 and 8 Recovery Furnaces/ No. 7 Power Boiler	No. 7 Continuous Digester	No. 8 Continuous Digester (for Backup NCG Incinerator)	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Fuel Oil Usage	Lime Production	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	FO Firing	FO Sulfur Content	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM
	tons CaO	*LK gal (F.O.)*	*tons CaO*	*LK gal (F.O.)*	*tons BLS*	*RF gal (F.O.)*	*tons BLS*	*RF gal (F.O.)*	*PB gal (F.O.)*	*F.O. Sulfur*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/kgal*	*lb/ton CaO*	*lb/kgal*	*lb/ton BLS*	*lb/kgal*	*lb/ton BLS*	*lb/kgal*	*lb/kgal*	*lb/ADTUBP*
Jan-15	8,903	4,410	11,396	0.00	71,044	175,110	84,477	70,240	5,772	0.09%	1,106	487	3.70E-03	0.22	0.00	0.22	0.00	0.22	1.66E-03	0.22	0.22	4.90E-03
Feb-15	8,899	24,623	10,547	0.00	72,081	3,937	79,314	6,329	17,290	0.08%	95	9,090	3.70E-03	0.19	0.00	0.19	0.00	0.19	1.66E-03	0.19	0.19	4.90E-03
Mar-15	9,613	0.00	11,280	0.00	72,947	117,566	78,419	45,339	6,290	0.08%	1,047	513	3.70E-03	0.19	0.00	0.19	0.00	0.19	1.66E-03	0.19	0.19	4.90E-03
Apr-15	3,036	0.00	11,527	0.00	19,335	45,166	83,689	27,939	16,128	0.08%	0.00	123	3.70E-03	0.19	0.00	0.19	0.00	0.19	1.66E-03	0.19	0.19	4.90E-03
May-15	6,696	0.00	11,266	0.00	50,315	42,270	80,831	28,680	6,191	0.24%	630	655	3.70E-03	0.59	0.00	0.59	0.00	0.59	1.66E-03	0.59	0.59	4.90E-03
Jun-15	8,826	0.00	10,641	0.00	71,717	51,738	71,665	16,459	6,095	0.22%	1,845	12	3.70E-03	0.54	0.00	0.54	0.00	0.54	1.66E-03	0.54	0.54	4.90E-03
Jul-15	9,971	0.00	13,287	0.00	76,795	10,906	90,875	0.00	6,388	0.22%	313	196	3.70E-03	0.54	0.00	0.54	0.00	0.54	1.66E-03	0.54	0.54	4.90E-03
Aug-15	10,154	0.00	13,411	0.00	71,276	32,276	89,606	324	6,525	0.21%	561	2	3.70E-03	0.51	0.00	0.51	0.00	0.51	1.66E-03	0.51	0.51	4.90E-03
Sep-15	8,918	0.00	5,940	0.00	68,634	49,946	34,033	22,164	4,304	0.23%	492	1,853	3.70E-03	0.56	0.00	0.56	0.00	0.56	1.66E-03	0.56	0.56	4.90E-03
Oct-15	9,844	0.00	12,305	0.00	68,184	116,619	81,193	127,498	6,776	0.23%	10	7,598	3.70E-03	0.56	0.00	0.56	0.00	0.56	1.66E-03	0.56	0.56	4.90E-03
Nov-15	10,471	0.00	13,192	0.00	72,500	27,854	87,648	38,221	3,748	0.23%	603	741	3.70E-03	0.56	0.00	0.56	0.00	0.56	1.66E-03	0.56	0.56	4.90E-03
Dec-15	7,483	25,000	12,962	0.00	57,498	60,270	88,496	40,542	5,131	0.24%	546	33	3.70E-03	0.59	0.00	0.59	0.00	0.59	1.66E-03	0.59	0.59	4.90E-03
Jan-16	8,511	774	13,148	0.00	63,374	191,007	93,355	21,915	1	0.21%	82	1,438	3.70E-03	0.51	0.00	0.51	0.00	0.51	1.66E-03	0.51	0.51	4.90E-03
Feb-16	8,546	0.00	12,933	0.00	71,737	142,346	85,379	6,576	16	0.23%	1,491	0.00E+00	3.70E-03	0.56	0.00	0.56	0.00	0.56	1.66E-03	0.56	0.56	4.90E-03
Mar-16	7,861	112	13,902	0.00	76,311	102,646	92,544	0.00	0.00	0.24%	9,970	1,011	3.70E-03	0.58	0.00	0.58	0.00	0.58	1.66E-03	0.58	0.58	4.90E-03
Apr-16	1,595	6	10,861	0.00	18,405	2,646	82,829	0.00	2,001	0.24%	7,493	429	3.70E-03	0.58	0.00	0.58	0.00	0.58	1.66E-03	0.58	0.58	4.90E-03
May-16	7,959	5,089	9,940	0.00	75,152	3,308	88,572	0.00	0.00	0.24%	7,764	2,775	3.70E-03	0.58	0.00	0.58	0.00	0.58	1.66E-03	0.58	0.58	4.90E-03
Jun-16	9,337	0.00	10,436	0.00	72,276	24,612	87,873	0.00	0.00	0.23%	92	487	3.70E-03	0.57	0.00	0.57	0.00	0.57	1.66E-03	0.57	0.57	4.90E-03
Jul-16	9,733	9,074	10,644	284	73,546	2,388	87,660	19,512	0.00	0.23%	14	44	3.70E-03	0.57	0.00	0.57	0.00	0.57	1.66E-03	0.57	0.57	4.90E-03
Aug-16	9,108	2,329	10,326	0.00	69,155	621	84,631	7,734	0.00	0.25%	963	2,517	3.70E-03	0.60	0.00	0.60	0.00	0.60	1.66E-03	0.60	0.60	4.90E-03
Sep-16	8,504	4,635	5,931	0.00	68,024	6,966	48,663	16,748	0.00	0.25%	1,481	452	3.70E-03	0.61	0.00	0.61	0.00	0.61	1.66E-03	0.61	0.61	4.90E-03
Oct-16	8,653	0.00	10,308	0.00	68,821	660	90,800	305	0.00	0.25%	2,185	457	3.70E-03	0.61	0.00	0.61	0.00	0.61	1.66E-03	0.61	0.61	4.90E-03
Nov-16	9,104	0.00	9,705	0.00	73,637	0.00	89,150	0.00	0.00	0.25%	30	2,875	3.70E-03	0.61	0.00	0.61	0.00	0.61	1.66E-03	0.61	0.61	4.90E-03
Dec-16	9,376	0.00	10,710	0.00	67,590	364	89,465	3,333	0.00	0.24%	169	417	3.70E-03	0.59	0.00	0.59	0.00	0.59	1.66E-03	0.59	0.59	4.90E-03
Jan-17	10,197	0.00	10,880	1,540	76,507	0.00	84,917	8,470	0.00	0.22%	441	1,846	3.70E-03	0.54	0.00	0.54	0.01	0.54	0.02	0.54	0.54	4.90E-03
Feb-17	8,611	0.00	10,537	0.00	65,245	0.00	83,153	10,416	0.00	0.22%	8,894	220	3.70E-03	0.54	0.00	0.54	0.01	0.54	0.02	0.54	0.54	4.90E-03
Mar-17	1,817	0.00	11,781	0.00	10,011	0.00	96,223	0.00	0.00	0.22%	393	756	3.70E-03	0.54	0.00	0.54	0.01	0.54	0.02	0.54	0.54	4.90E-03
Apr-17	489	3,724	10,808	2,176	0	0.00	87,437	3,288	0.00	0.22%	0.00	6,201	3.70E-03	0.54	0.00	0.54	0.01	0.54	0.02	0.54	0.54	4.90E-03
May-17	9,298	9,181	11,444	0.00	71,042	0.00	90,418	0.00	0.00	0.24%	817	136	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Jun-17	10,085	0.00	12,777	0.00	75,499	0.00	90,339	0.00	0.00	0.24%	896	72	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Jul-17	10,805	4,676	13,263	0.00	79,475	0.00	94,784	0.00	0.00	0.25%	283	194	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
Aug-17	10,778	6,000	12,121	0.00	75,274	0.00	90,742	0.00	0.00	0.23%	191	837	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Sep-17	10,570	2,773	10,666	0.00	71,404	7,767	43,240	19,590	0.00	0.25%	73	914	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
Oct-17	9,893	0.00	10,613	0.00	68,119	9,163	86,542	44,255	0.00	0.24%	3,159	605	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Nov-17	11,126	0.00	10,880	0.00	75,826	0.00	90,768	0.00	0.00	0.24%	20	153	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Dec-17	9,553	0.00	10,562	0.00	65,828	2,489	88,839	0.00	0.00	0.25%	339	1,041	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
Jan-18	9,840	5,941	7,878	0.00	69,713	7,069	63,596	47,512	0.00	0.25%	96	2,087	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
Feb-18	9,050	0.00	10,338	0.00	67,334	0.00	85,839	0.00	0.00	0.25%	252	767	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Mar-18	10,185	0.00	11,145	0.00	72,264	0.00	91,382	0.00	0.00	0.25%	671	785	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
Apr-18	3,493	0.00	10,100	0.00	20,206	4,355	87,174	0.00	0.00	0.25%	142	921	3.70E-03	0.62	0.00	0.62	0.01	0.62	0.02	0.62	0.62	4.90E-03
May-18	8,385	0.00	10,764	10,498	70,056	0.00	88,412	0.00	0.00	0.25%	7,140	1,058	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jun-18	9,676	0.00	10,602	0.00	71,572	3,989	84,311	0.00	0.00	0.25%	1,953	36	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jul-18	10,309	0.00	11,241	0.00	74,875	0.00	87,489	0.00	0.00	0.25%	1,255	967	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Aug-18	10,287	0.00	11,686	0.00	71,908	6,341	78,014	0.00	0.00	0.25%	286	1,133	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Sep-18	10,027	0.00	15,791	0.00	67,761	1,092	48,883	0.00	0.00	0.25%	3,997	1	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Oct-18	9,434	0.00	11,243	0.00	75,135	0.00	79,508	0.00	0.00	0.25%	1,301	1,212	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Nov-18	9,527	0.00	11,441	0.00	70,639	6,073	83,733	0.00	0.00	0.25%	2,525	413	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Dec-18	8,956	0.00	11,210	0.00	69,930	12,849	83,970	0.00	0.00	0.25%	650	715	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jan-19	10,237	0.00	10,069	0.00	73,484	0.00	75,254	0.00	0.00	0.24%	63	324	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Feb-19	8,590	0.00	11,139	0.00	58,334	7,241	80,923	0.00	0.00	0.24%	9	255	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Mar-19	9,222	0.00	13,183	0.00	71,830	2,235	91,845	0.00	0.00	0.24%	4	190	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Apr-19	2,327	0.00	11,639	0.00	15,868	0.00	90,313	0.00	0.00	0.24%	719	1,085	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
May-19	10,193	0.00	12,055	0.00	74,034	0.00	81,584	0.00	0.00	0.24%	1,407	582	3.70E-03	0.59	0.00	0.59	0.01	0.59	0.02	0.59	0.59	4.90E-03
Jun-19	9,763	0.00	12,335	0.00	67,914	8,294	82,148	0.00	0.00	0.24%	884	242	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Jul-19	11,692	0.00	13,778	0.00	77,913	1,257	91,943	0.00	0.00	0.24%	688	336	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Aug-19	10,018	0.00	13,908	0.00	60,235	23,035	82,432	0.00	0.00	0.24%	979	45	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Sep-19	9,550	0.00	12,619	0.00	64,488	0.00	53,965	125	0.00	0.24%	927	2,194	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Oct-19	11,296	0.00	12,536	0.00	69,812	0.00	88,476	0.00	0.00	0.24%	1,771	613	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Nov-19	11,401	0.00	12,287	0.00	75,552	0.00	91,812	0.00	0.00	0.24%	506	827	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Dec-19	11,184	0.00	13,644	0.00	74,284	0.00	90,819	0.00	0.00	0.24%	684	5	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Jan-20	11,334	0.00	13,680	0.00	74,083	0.00	91,466	0.00	0.00	0.24%	3	9,926	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Feb-20	11,337	0.00	12,869	0.00	71,713	0.00	78,229	0.00	0.00	0.24%	25	2,883	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Mar-20	11,593	0.00	12,605	0.00	78,757	0.00	85,701	0.00	0.00	0.24%	685	924	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Apr-20	11,664	0.00	12,767	0.00	76,123	0.00	91,054	0.00	0.00	0.24%	477	610	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
May-20	8,755	0.00	13,141	0.00	53,972	0.00	91,056	0.00	0.00	0.24%	563	7	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03
Jun-20	9,532	0.00	11,841	0.00	69,047	14,343	87,069	0.00	0.00	0.24%	3,410	100	3.70E-03	0.58	0.00	0.58	0.01	0.58	0.02	0.58	0.58	4.90E-03

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

SAM Baseline Actual Emission Rate Calculations

	Production Data												Emission Factors									
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Nos. 7 and 8 Recovery Furnaces/ No. 7 Power Boiler	No. 7 Continuous Digester	No. 8 Continuous Digester (for Backup NCG Incinerator)	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Fuel Oil Usage	Lime Production	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	FO Firing	FO Sulfur Content	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM
	tons CaO	*LK gal (F.O.)*	*tons CaO*	*LK gal (F.O.)*	*tons BLS*	*RF gal (F.O.)*	*tons BLS*	*RF gal (F.O.)*	*PB gal (F.O.)*	*F.O. Sulfur*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/kgal*	*lb/ton CaO*	*lb/kgal*	*lb/ton BLS*	*lb/kgal*	*lb/ton BLS*	*lb/kgal*	*lb/kgal*	*lb/ADTUBP*
Jul-20	10,175	0.00	12,222	0.00	69,441	8,292	91,518	0.00	0.00	0.23%	135	24	3.70E-03	0.57	0.00	0.57	0.01	0.57	0.02	0.57	0.57	4.90E-03
Aug-20	10,875	0.00	12,531	0.00	77,036	609	91,406	609	0.00	0.25%	2,087	0.00E+00	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Sep-20	9,704	0.00	8,522	0.00	60,516	0.00	52,377	0.00	0.00	0.25%	821	431	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Oct-20	9,979	0.00	10,292	0.00	60,584	1,175	79,476	0.00	0.00	0.25%	408	12,121	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Nov-20	10,810	0.00	12,307	0.00	72,172	0.00	87,820	0.00	0.00	0.25%	1,466	1,711	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Dec-20	10,113	0.00	12,225	0.00	69,298	0.00	91,927	0.00	0.00	0.25%	9,182	2,131	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Jan-21	10,889	0.00	12,837	0.00	75,476	0.00	91,675	0.00	0.00	0.25%	6,305	1	3.70E-03	0.60	0.00	0.60	0.01	0.60	0.02	0.60	0.60	4.90E-03
Feb-21	9,521	0.00	11,991	0.00	64,842	39,933	84,147	0.00	0.00	0.22%	411	115	3.70E-03	0.53	0.00	0.53	0.01	0.53	0.02	0.53	0.53	4.90E-03
Mar-21	10,420	0.00	13,606	0.00	68,111	16,550	96,002	0.00	0.00	0.25%	1,389	796	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Apr-21	6,722	0.00	11,426	0.00	47,211	4,133	79,412	0.00	0.00	0.25%	1,263	1,869	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
May-21	9,954	0.00	12,049	0.00	73,937	0.00	86,559	0.00	0.00	0.25%	1,233	1,968	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jun-21	9,931	0.00	9,744	0.00	71,785	0.00	67,000	0.00	0.00	0.25%	296	2,323	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jul-21	9,241	0.00	11,993	0.00	61,455	0.00	86,692	0.00	0.00	0.25%	518	1,314	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Aug-21	10,668	0.00	11,466	0.00	69,542	962	73,966	0.00	0.00	0.25%	289	19,913	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Sep-21	9,952	0.00	15,335	0.00	65,162	0.00	49,408	0.00	0.00	0.25%	1,262	3,726	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Oct-21	10,266	0.00	11,458	0.00	76,710	0.00	86,340	0.00	0.00	0.25%	70	3,831	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Nov-21	9,986	0.00	11,098	0.00	72,915	0.00	87,337	0.00	0.00	0.25%	540	1,511	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Dec-21	10,226	0.00	11,147	0.00	73,410	0.00	91,721	0.00	0.00	0.25%	6	1,423	3.70E-03	0.61	0.00	0.61	0.01	0.61	0.02	0.61	0.61	4.90E-03
Jan-22	9,282	0.00	11,027	0.00	65,356	0.00	79,083	0.00	0.00	0.25%	1,152	1,069	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Feb-22	7,595	0.00	9,962	0.00	57,394	0.00	75,833	0.00	0.00	0.25%	59	365	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Mar-22	6,008	0.00	12,737	0.00	46,135	0.00	76,131	0.00	0.00	0.25%	612	2,454	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Apr-22	9,654	0.00	12,499	0.00	70,078	0.00	75,611	0.00	0.00	0.25%	333	7,258	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
May-22	9,628	0.00	12,101	0.00	67,457	0.00	68,954	0.00	0.00	0.25%	41	6,230	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Jun-22	9,917	0.00	11,676	0.00	73,726	0.00	87,307	0.00	0.00	0.25%	878	1,248	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Jul-22	10,441	0.00	10,557	0.00	68,732	0.00	81,361	0.00	0.00	0.25%	1,024	10,823	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Aug-22	9,174	0.00	10,582	0.00	72,214	0.00	84,218	0.00	0.00	0.25%	337	3,288	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Sep-22	9,330	0.00	2,973	0.00	66,113	0.00	23,006	0.00	0.00	0.25%	9,533	688	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Oct-22	9,410	0.00	10,627	0.00	68,581	0.00	80,175	0.00	0.00	0.25%	7,513	7,565	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Nov-22	8,647	0.00	10,821	0.00	67,662	0.00	84,160	0.00	0.00	0.25%	3	3,392	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Dec-22	9,863	0.00	11,379	0.00	76,711	13	83,179	0.00	0.00	0.25%	304	1,553	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Jan-23	8,571	0.00	11,921	0.00	68,969	0.00	75,796	0.00	0.00	0.25%	224	1,691	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Feb-23	7,791	0.00	10,944	0.00	58,892	0.00	82,339	0.00	0.00	0.25%	3	328	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Mar-23	2,599	0.00	9,705	0.00	20,586	52,754	68,474	0.00	0.00	0.24%	1,315	3,287	0.033	0.60	0.008	0.60	0.03	0.60	0.06	0.60	0.60	4.90E-03
Apr-23	8,960	0.00	11,778	0.00	62,129	0.00	81,803	0.00	0.00	0.25%	184	561	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
May-23	9,457	0.00	13,971	0.00	70,410	0.00	85,709	0.00	0.00	0.25%	1,357	1,503	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Jun-23	4,972	0.00	11,455	0.00	39,730	12,601	81,542	0.00	0.00	0.25%	552	2,214	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Jul-23	9,872	0.00	11,604	0.00	72,314	0.00	83,238	0.00	0.00	0.24%	282	1,474	0.033	0.60	0.008	0.60	0.03	0.60	0.06	0.60	0.60	4.90E-03
Aug-23	8,347	0.00	11,185	0.00	60,396	0.00	76,374	0.00	0.00	0.24%	6,284	1,771	0.033	0.60	0.008	0.60	0.03	0.60	0.06	0.60	0.60	4.90E-03
Sep-23	8,499	0.00	7,351	0.00	58,763	7,860	20,344	0.00	0.00	0.24%	915	196	0.033	0.60	0.008	0.60	0.03	0.60	0.06	0.60	0.60	4.90E-03
Oct-23	9,595	0.00	11,525	0.00	68,392	0.00	83,324	0.00	0.00	0.24%	67	2,380	0.033	0.58	0.008	0.58	0.03	0.58	0.06	0.58	0.58	4.90E-03
Nov-23	9,576	0.00	12,073	0.00	68,551	0.00	87,639	0.00	0.00	0.24%	10	429	0.033	0.58	0.008	0.58	0.03	0.58	0.06	0.58	0.58	4.90E-03
Dec-23	9,623	0.00	12,577	0.00	67,124	0.00	85,757	0.00	0.00	0.24%	286	614	0.033	0.58	0.008	0.58	0.03	0.58	0.06	0.58	0.58	4.90E-03
Jan-24	9,227	0.00	11,657	0.00	63,933	13,181	73,898	0.00	0.00	0.24%	1,389	2,485	0.033	0.59	0.008	0.59	0.03	0.59	0.06	0.59	0.59	4.90E-03
Feb-24	9,721	0.00	11,761	0.00	66,821	0.00	79,915	0.00	0.00	0.25%	123	581	0.033	0.60	0.008	0.60	0.03	0.60	0.06	0.60	0.60	4.90E-03
Mar-24	3,291	0.00	12,661	0.00	28,031	17,979	87,235	0.00	0.00	0.25%	10,798	532	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03
Apr-24	9,133	0.00	11,096	0.00	65,802	0.00	79,857	0.00	0.00	0.25%	3,149	1,258	0.033	0.61	0.008	0.61	0.03	0.61	0.06	0.61	0.61	4.90E-03

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

SAM Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)										24-month Rolling Emission Rates (tons/yr)						
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator	Baseline Period and Emissions	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM	40.68 May-22 -- Apr-24						
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*						
Jan-15	0.02	4.86E-04	0.00	0.00	0.00	0.02	0.07	0.01	6.36E-04	3.90E-03							
Feb-15	0.02	2.32E-03	0.00	0.00	0.00	3.71E-04	0.07	5.97E-04	1.63E-03	0.02							
Mar-15	0.02	0.00	0.00	0.00	0.00	0.01	0.06	4.22E-03	5.86E-04	3.82E-03							
Apr-15	0.01	0.00	0.00	0.00	0.00	4.20E-03	0.07	2.60E-03	1.50E-03	3.02E-04							
May-15	0.01	0.00	0.00	0.00	0.00	0.01	0.07	0.01	1.82E-03	3.15E-03							
Jun-15	0.02	0.00	0.00	0.00	0.00	0.01	0.06	4.44E-03	1.64E-03	4.55E-03							
Jul-15	0.02	0.00	0.00	0.00	0.00	2.94E-03	0.08	0.00	1.72E-03	1.25E-03							
Aug-15	0.02	0.00	0.00	0.00	0.00	0.01	0.07	8.33E-05	1.68E-03	1.38E-03							
Sep-15	0.02	0.00	0.00	0.00	0.00	0.01	0.03	0.01	1.21E-03	0.01							
Oct-15	0.02	0.00	0.00	0.00	0.00	0.03	0.07	0.04	1.91E-03	0.02							
Nov-15	0.02	0.00	0.00	0.00	0.00	0.01	0.07	0.01	1.06E-03	3.29E-03							
Dec-15	0.01	0.01	0.00	0.00	0.00	0.02	0.07	0.01	1.51E-03	1.42E-03							
Jan-16	0.02	1.98E-04	0.00	0.00	0.00	0.05	0.08	0.01	3.73E-07	3.72E-03							
Feb-16	0.02	0.00	0.00	0.00	0.00	0.04	0.07	1.83E-03	4.38E-06	3.65E-03							
Mar-16	0.01	3.24E-05	0.00	0.00	0.00	0.03	0.08	0.00	0.00	0.03							
Apr-16	2.95E-03	1.60E-06	0.00	0.00	0.00	7.66E-04	0.07	0.00	5.79E-04	0.02							
May-16	0.01	1.47E-03	0.00	0.00	0.00	9.55E-04	0.07	0.00	0.00	0.03							
Jun-16	0.02	0.00	0.00	0.00	0.00	0.01	0.07	0.00	0.00	1.42E-03							
Jul-16	0.02	2.60E-03	0.00	8.12E-05	0.00	6.83E-04	0.07	0.01	0.00	1.41E-04							
Aug-16	0.02	7.00E-04	0.00	0.00	0.00	1.87E-04	0.07	2.32E-03	0.00	0.01							
Sep-16	0.02	1.41E-03	0.00	0.00	0.00	2.11E-03	0.04	0.01	0.00	4.74E-03							
Oct-16	0.02	0.00	0.00	0.00	0.00	2.00E-04	0.08	9.24E-05	0.00	0.01							
Nov-16	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.01							
Dec-16	0.02	0.00	0.00	0.00	0.00	1.08E-04	0.07	9.91E-04	0.00	1.43E-03	1.30	0.19	4.06E-05	0.14	0.87	0.01	0.09
Jan-17	0.02	0.00	0.00	4.13E-04	0.33	0.00	0.69	2.27E-03	0.00	0.01	1.77	0.19	2.47E-04	0.29	1.18	0.01	0.09
Feb-17	0.02	0.00	0.00	0.00	0.28	0.00	0.68	2.79E-03	0.00	0.02	2.22	0.19	2.47E-04	0.44	1.49	0.01	0.09
Mar-17	3.36E-03	0.00	0.00	0.00	0.04	0.00	0.79	0.00	0.00	2.81E-03	2.59	0.18	2.47E-04	0.45	1.85	0.01	0.09
Apr-17	9.05E-04	9.99E-04	0.00	5.84E-04	5.41E-07	0.00	0.72	8.82E-04	0.00	0.02	2.91	0.18	5.39E-04	0.45	2.17	0.01	0.10
May-17	0.02	2.70E-03	0.00	0.00	0.31	0.00	0.74	0.00	0.00	2.34E-03	3.40	0.18	5.39E-04	0.60	2.50	0.01	0.10
Jun-17	0.02	0.00	0.00	0.00	0.33	0.00	0.74	0.00	0.00	2.37E-03	3.89	0.18	5.39E-04	0.76	2.84	4.84E-03	0.10
Jul-17	0.02	1.45E-03	0.00	0.00	0.35	0.00	0.78	0.00	0.00	1.17E-03	4.41	0.18	5.39E-04	0.93	3.19	3.97E-03	0.10
Aug-17	0.02	1.73E-03	0.00	0.00	0.33	0.00	0.74	0.00	0.00	2.52E-03	4.91	0.18	5.39E-04	1.09	3.53	3.14E-03	0.10
Sep-17	0.02	8.54E-04	0.00	0.00	0.31	2.39E-03	0.35	0.01	0.00	2.42E-03	5.22	0.18	5.39E-04	1.24	3.69	2.53E-03	0.09
Oct-17	0.02	0.00	0.00	0.00	0.30	2.72E-03	0.71	0.01	0.00	0.01	5.66	0.18	5.39E-04	1.37	4.00	1.57E-03	0.09
Nov-17	0.02	0.00	0.00	0.00	0.33	0.00	0.74	0.00	0.00	4.23E-04	6.15	0.18	5.39E-04	1.53	4.33	1.05E-03	0.09
Dec-17	0.02	0.00	0.00	0.00	0.29	7.66E-04	0.73	0.00	0.00	3.38E-03	6.60	0.19	5.39E-04	1.67	4.65	2.92E-04	0.09
Jan-18	0.02	1.84E-03	0.00	0.00	0.30	2.19E-03	0.52	0.01	0.00	0.01	6.96	0.19	5.39E-04	1.80	4.87	2.92E-04	0.09
Feb-18	0.02	0.00	0.00	0.00	0.29	0.00	0.70	0.00	0.00	2.50E-03	7.40	0.19	5.39E-04	1.92	5.19	2.90E-04	0.09
Mar-18	0.02	0.00	0.00	0.00	0.31	0.00	0.75	0.00	0.00	3.57E-03	7.87	0.19	5.39E-04	2.07	5.52	2.90E-04	0.08
Apr-18	0.01	0.00	0.00	0.00	0.09	1.35E-03	0.71	0.00	0.00	2.60E-03	8.23	0.19	5.39E-04	2.11	5.85	0.00	0.07
May-18	0.02	0.00	0.00	3.20E-03	0.31	0.00	0.72	0.00	0.00	0.02	8.70	0.19	2.14E-03	2.26	6.17	0.00	0.07
Jun-18	0.02	0.00	0.00	0.00	0.31	1.22E-03	0.69	0.00	0.00	4.87E-03	9.17	0.19	2.14E-03	2.41	6.48	0.00	0.07
Jul-18	0.02	0.00	0.00	0.00	0.33	0.00	0.72	0.00	0.00	0.01	9.65	0.19	2.10E-03	2.58	6.80	0.00	0.07
Aug-18	0.02	0.00	0.00	0.00	0.31	1.93E-03	0.64	0.00	0.00	3.48E-03	10.09	0.19	2.10E-03	2.74	7.08	0.00	0.07
Sep-18	0.02	0.00	0.00	0.00	0.30	3.33E-04	0.40	0.00	0.00	0.01	10.41	0.20	2.10E-03	2.88	7.26	0.00	0.07
Oct-18	0.02	0.00	0.00	0.00	0.33	0.00	0.65	0.00	0.00	0.01	10.87	0.20	2.10E-03	3.05	7.55	0.00	0.07
Nov-18	0.02	0.00	0.00	0.00	0.31	1.84E-03	0.68	0.00	0.00	0.01	11.33	0.20	2.10E-03	3.20	7.85	0.00	0.07
Dec-18	0.02	0.00	0.00	0.00	0.30	3.95E-03	0.69	0.00	0.00	3.34E-03	11.79	0.20	2.10E-03	3.35	8.16	0.00	0.07
Jan-19	0.02	0.00	0.00	0.00	0.32	0.00	0.62	0.00	0.00	9.48E-04	11.74	0.20	1.89E-03	3.35	8.12	0.00	0.07
Feb-19	0.02	0.00	0.00	0.00	0.25	2.14E-03	0.66	0.00	0.00	6.46E-04	11.70	0.20	1.89E-03	3.33	8.11	0.00	0.06
Mar-19	0.02	0.00	0.00	0.00	0.31	6.60E-04	0.75	0.00	0.00	4.74E-04	11.83	0.20	1.89E-03	3.47	8.09	0.00	0.06
Apr-19	4.31E-03	0.00	0.00	0.00	0.07	0.00	0.74	0.00	0.00	4.42E-03	11.87	0.21	1.60E-03	3.50	8.10	0.00	0.05
May-19	0.02	0.00	0.00	0.00	0.32	0.00	0.67	0.00	0.00	4.87E-03	11.84	0.21	1.60E-03	3.51	8.06	0.00	0.05
Jun-19	0.02	0.00	0.00	0.00	0.30	2.48E-03	0.67	0.00	0.00	2.76E-03	11.79	0.21	1.60E-03	3.49	8.03	0.00	0.05
Jul-19	0.02	0.00	0.00	0.00	0.34	3.76E-04	0.75	0.00	0.00	2.51E-03	11.77	0.21	1.60E-03	3.49	8.02	0.00	0.05
Aug-19	0.02	0.00	0.00	0.00	0.26	0.01	0.67	0.00	0.00	2.51E-03	11.71	0.21	1.60E-03	3.46	7.98	0.00	0.05
Sep-19	0.02	0.00	0.00	0.00	0.28	0.00	0.44	3.65E-05	0.00	0.01	11.74	0.20	1.60E-03	3.45	8.03	0.00	0.06
Oct-19	0.02	0.00	0.00	0.00	0.30	0.00	0.72	0.00	0.00	0.01	11.74	0.21	1.60E-03	3.45	8.03	0.00	0.06
Nov-19	0.02	0.00	0.00	0.00	0.33	0.00	0.75	0.00	0.00	3.26E-03	11.74	0.21	1.60E-03	3.45	8.03	0.00	0.06
Dec-19	0.02	0.00	0.00	0.00	0.32	0.00	0.74	0.00	0.00	1.69E-03	11.77	0.21	1.60E-03	3.47	8.04	0.00	0.06
Jan-20	0.02	0.00	0.00	0.00	0.32	0.00	0.75	0.00	0.00	0.02	11.90	0.21	1.60E-03	3.47	8.15	0.00	0.07
Feb-20	0.02	0.00	0.00	0.00	0.31	0.00	0.64	0.00	0.00	0.01	11.88	0.21	1.60E-03	3.48	8.11	0.00	0.07
Mar-20	0.02	0.00	0.00	0.00	0.34	0.00	0.70	0.00	0.00	3.94E-03	11.87	0.21	1.60E-03	3.50	8.09	0.00	0.07
Apr-20	0.02	0.00	0.00	0.00	0.33	0.00	0.74	0.00	0.00	2.66E-03	12.02	0.22	1.60E-03	3.62	8.11	0.00	0.07
May-20	0.02	0.00	0.00	0.00	0.24	0.00	0.74	0.00	0.00	1.40E-03	11.98	0.22	0.00	3.58	8.12	0.00	0.06
Jun-20	0.02	0.00	0.00	0.00	0.30	4.18E-03	0.71	0.00	0.00	0.01	11.99	0.22	0.00	3.58	8.13	0.00	0.06

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

SAM Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)										24-month Rolling Emission Rates (tons/yr)						
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator	Baseline Period and Emissions	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM - FO Firing	SAM	SAM	40.68 May-22 -- Apr-24						
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*						
Jul-20	0.02	0.00	0.00	0.00	0.30	2.37E-03	0.75	0.00	0.00	3.90E-04	11.99	0.22	0.00	3.57	8.15	0.00	0.06
Aug-20	0.02	0.00	0.00	0.00	0.34	1.84E-04	0.75	1.84E-04	0.00	0.01	12.06	0.22	0.00	3.58	8.20	0.00	0.06
Sep-20	0.02	0.00	0.00	0.00	0.26	0.00	0.43	0.00	0.00	3.07E-03	12.05	0.22	0.00	3.56	8.21	0.00	0.06
Oct-20	0.02	0.00	0.00	0.00	0.26	3.55E-04	0.65	0.00	0.00	0.03	12.04	0.22	0.00	3.53	8.21	0.00	0.07
Nov-20	0.02	0.00	0.00	0.00	0.31	0.00	0.72	0.00	0.00	0.01	12.06	0.22	0.00	3.53	8.23	0.00	0.07
Dec-20	0.02	0.00	0.00	0.00	0.30	0.00	0.75	0.00	0.00	0.03	12.10	0.22	0.00	3.53	8.26	0.00	0.08
Jan-21	0.02	0.00	0.00	0.00	0.33	0.00	0.75	0.00	0.00	0.02	12.18	0.22	0.00	3.54	8.33	0.00	0.09
Feb-21	0.02	0.00	0.00	0.00	0.28	0.01	0.69	0.00	0.00	1.29E-03	12.21	0.22	0.00	3.55	8.34	0.00	0.09
Mar-21	0.02	0.00	0.00	0.00	0.30	0.01	0.79	0.00	0.00	0.01	12.23	0.23	0.00	3.55	8.36	0.00	0.09
Apr-21	0.01	0.00	0.00	0.00	0.21	1.25E-03	0.65	0.00	0.00	0.01	12.26	0.23	0.00	3.62	8.32	0.00	0.09
May-21	0.02	0.00	0.00	0.00	0.32	0.00	0.71	0.00	0.00	0.01	12.28	0.23	0.00	3.62	8.34	0.00	0.09
Jun-21	0.02	0.00	0.00	0.00	0.31	0.00	0.55	0.00	0.00	0.01	12.22	0.23	0.00	3.62	8.27	0.00	0.10
Jul-21	0.02	0.00	0.00	0.00	0.27	0.00	0.71	0.00	0.00	4.49E-03	12.17	0.23	0.00	3.59	8.25	0.00	0.10
Aug-21	0.02	0.00	0.00	0.00	0.30	2.94E-04	0.60	0.00	0.00	0.05	12.17	0.23	0.00	3.60	8.22	0.00	0.12
Sep-21	0.02	0.00	0.00	0.00	0.28	0.00	0.40	0.00	0.00	0.01	12.16	0.23	0.00	3.61	8.20	0.00	0.12
Oct-21	0.02	0.00	0.00	0.00	0.33	0.00	0.71	0.00	0.00	0.01	12.16	0.23	0.00	3.62	8.19	0.00	0.12
Nov-21	0.02	0.00	0.00	0.00	0.32	0.00	0.71	0.00	0.00	0.01	12.14	0.23	0.00	3.62	8.17	0.00	0.12
Dec-21	0.02	0.00	0.00	0.00	0.32	0.00	0.75	0.00	0.00	3.50E-03	12.14	0.23	0.00	3.61	8.18	0.00	0.13
Jan-22	0.15	0.00	0.05	0.00	1.07	0.00	2.25	0.00	0.00	0.01	13.35	0.29	0.02	3.99	8.93	0.00	0.12
Feb-22	0.13	0.00	0.04	0.00	0.94	0.00	2.16	0.00	0.00	1.04E-03	14.49	0.34	0.04	4.30	9.69	0.00	0.11
Mar-22	0.10	0.00	0.05	0.00	0.76	0.00	2.17	0.00	0.00	0.01	15.50	0.38	0.07	4.51	10.42	0.00	0.11
Apr-22	0.16	0.00	0.05	0.00	1.15	0.00	2.15	0.00	0.00	0.02	16.71	0.45	0.10	4.92	11.12	0.00	0.12
May-22	0.16	0.00	0.05	0.00	1.11	0.00	1.96	0.00	0.00	0.02	17.86	0.52	0.12	5.35	11.73	0.00	0.13
Jun-22	0.16	0.00	0.05	0.00	1.21	0.00	2.48	0.00	0.00	0.01	19.29	0.60	0.14	5.80	12.62	0.00	0.13
Jul-22	0.17	0.00	0.04	0.00	1.13	0.00	2.32	0.00	0.00	0.03	20.60	0.67	0.17	6.22	13.40	0.00	0.14
Aug-22	0.15	0.00	0.04	0.00	1.18	0.00	2.40	0.00	0.00	0.01	21.94	0.74	0.19	6.64	14.23	0.00	0.14
Sep-22	0.15	0.00	0.01	0.00	1.08	0.00	0.65	0.00	0.00	0.03	22.55	0.81	0.19	7.05	14.34	0.00	0.16
Oct-22	0.16	0.00	0.04	0.00	1.12	0.00	2.28	0.00	0.00	0.04	23.89	0.88	0.22	7.48	15.16	0.00	0.16
Nov-22	0.14	0.00	0.04	0.00	1.11	0.00	2.40	0.00	0.00	0.01	25.21	0.94	0.24	7.88	16.00	0.00	0.16
Dec-22	0.16	0.00	0.05	0.00	1.26	4.04E-06	2.37	0.00	0.00	4.55E-03	26.58	1.01	0.26	8.35	16.80	0.00	0.15
Jan-23	0.14	0.00	0.05	0.00	1.13	0.00	2.16	0.00	0.00	4.69E-03	27.76	1.07	0.29	8.75	17.51	0.00	0.14
Feb-23	0.13	0.00	0.05	0.00	0.97	0.00	2.34	0.00	0.00	8.10E-04	29.00	1.13	0.31	9.09	18.33	0.00	0.14
Mar-23	0.04	0.00	0.04	0.00	0.34	0.02	1.95	0.00	0.00	0.01	29.64	1.14	0.33	9.12	18.92	0.00	0.14
Apr-23	0.15	0.00	0.05	0.00	1.02	0.00	2.33	0.00	0.00	1.82E-03	30.98	1.20	0.35	9.52	19.76	0.00	0.14
May-23	0.16	0.00	0.06	0.00	1.15	0.00	2.44	0.00	0.00	0.01	32.36	1.27	0.38	9.94	20.62	0.00	0.14
Jun-23	0.08	0.00	0.05	0.00	0.65	3.85E-03	2.32	0.00	0.00	0.01	33.47	1.31	0.41	10.11	21.51	0.00	0.14
Jul-23	0.16	0.00	0.05	0.00	1.19	0.00	2.37	0.00	0.00	4.30E-03	34.86	1.38	0.43	10.57	22.34	0.00	0.14
Aug-23	0.14	0.00	0.05	0.00	0.99	0.00	2.17	0.00	0.00	0.02	36.05	1.44	0.45	10.91	23.12	0.00	0.13
Sep-23	0.14	0.00	0.03	0.00	0.96	2.36E-03	0.58	0.00	0.00	2.72E-03	36.55	1.50	0.47	11.25	23.21	0.00	0.12
Oct-23	0.16	0.00	0.05	0.00	1.12	0.00	2.37	0.00	0.00	0.01	37.87	1.57	0.49	11.65	24.04	0.00	0.12
Nov-23	0.16	0.00	0.05	0.00	1.12	0.00	2.49	0.00	0.00	1.08E-03	39.25	1.64	0.52	12.05	24.93	0.00	0.12
Dec-23	0.16	0.00	0.05	0.00	1.10	0.00	2.44	0.00	0.00	2.20E-03	40.59	1.71	0.54	12.44	25.78	0.00	0.12
Jan-24	0.15	0.00	0.05	0.00	1.05	3.86E-03	2.10	0.00	0.00	0.01	40.51	1.71	0.54	12.43	25.70	0.00	0.12
Feb-24	0.16	0.00	0.05	0.00	1.10	0.00	2.27	0.00	0.00	1.72E-03	40.66	1.73	0.55	12.51	25.76	0.00	0.12
Mar-24	0.05	0.00	0.05	0.00	0.46	0.01	2.48	0.00	0.00	0.03	40.66	1.70	0.55	12.36	25.92	0.00	0.13
Apr-24	0.15	0.00	0.05	0.00	1.08	0.00	2.27	0.00	0.00	0.01	40.68	1.70	0.55	12.33	25.98	0.00	0.13

NOx Baseline Actual Emission Rate Calculations

	Production Data											Emission Factors									
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Lime Production	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	NO_x	NO_x	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x - Natural Gas	NO_x
	tons CaO	*tons CaO*	*tons BLS*	*MMBtu (FO)*	*tons BLS*	*MMBtu (FO)*	*PB MMBTU (bark)*	*PB MMBtu (F.O.)*	*PB MMBtu (N.G.)*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu (F.O.)*	*lb/MMBtu (N.G.)*	*lb/ADTUBP*
Jan-15	8,903	11,396	71,044	27,030	84,477	10,842	215,197	890.9	84,100	1,106	487	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Feb-15	8,899	10,547	72,081	629.6	79,314	1,012	218,105	2,765	40,570	95	9,090	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Mar-15	9,613	11,280	72,947	18,803	78,419	7,251	181,048	1,006	105,271	1,047	513	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Apr-15	3,036	11,527	19,335	7,224	83,689	4,468	50,339	2,579	42,803	0	123	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
May-15	6,696	11,266	50,315	5,737	80,831	3,893	144,507	840.3	67,451	630	655	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jun-15	8,826	10,641	71,717	7,054	71,665	2,244	197,508	831.0	13,037	1,845	12	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jul-15	9,971	13,287	76,795	1,487	90,875	0.0	250,965	871.0	19,902	313	196	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Aug-15	10,154	13,411	71,276	4,284	89,606	43.0	237,148	866.0	8,333	561	2	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Sep-15	8,918	5,940	68,634	6,765	34,033	3,002	199,595	583.0	23,371	492	1,853	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Oct-15	9,844	12,305	68,184	15,800	81,193	17,274	181,259	918.0	26,410	10	7,598	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Nov-15	10,471	13,192	72,500	3,775	87,648	5,180	198,688	508.0	56,034	603	741	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Dec-15	7,483	12,962	57,498	8,163	88,496	5,491	185,243	695.0	94,541	546	33	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jan-16	8,511	13,148	63,374	25,889	93,355	2,970	184,194	0.2	105,490	82	1,438	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Feb-16	8,546	12,933	71,737	19,316	85,379	892.3	155,374	2.1	93,137	1,491	0	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Mar-16	7,861	13,902	76,311	13,965	92,544	0.0	130,434	0.0	100,371	9,970	1,011	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Apr-16	1,595	10,861	18,405	360.0	82,829	0.0	41,491	272.2	52,799	7,493	429	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
May-16	7,959	9,940	75,152	448.5	88,572	0.0	423,103	0.0	42,980	7,764	2,775	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jun-16	9,337	10,436	72,276	3,340	87,873	0.0	377,915	0.0	59,277	92	487	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jul-16	9,733	10,644	73,546	324.1	87,660	2,648	359,537	0.0	60,962	14	44	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Aug-16	9,108	10,326	69,155	84.3	84,631	1,049	361,986	0.0	57,672	963	2,517	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Sep-16	8,504	5,931	68,024	946.6	48,663	2,276	311,479	0.0	76,439	1,481	452	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Oct-16	8,653	10,308	68,821	89.7	90,800	41.4	384,635	0.0	92,371	2,185	457	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Nov-16	9,104	9,705	73,637	0.0	89,150	0.0	346,255	0.0	78,882	30	2,875	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Dec-16	9,376	10,710	67,590	49.4	89,465	452.2	329,439	0.0	58,941	169	417	1.72	1.38	1.60	0.17	1.22	0.17	0.15	0.17	0.098	0.047
Jan-17	10,197	10,880	76,507	0.0	84,917	1,149	320,728	0.0	73,443	441	1,846	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Feb-17	8,611	10,537	65,245	0.0	83,153	1,412	334,842	0.0	43,534	8,894	220	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Mar-17	1,817	11,781	10,011	0.0	96,223	0.0	401,645	0.0	28,245	393	756	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Apr-17	489.0	10,808	0.1	0.0	87,437	445.9	114,315	0.0	26,265	0	6,201	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
May-17	9,298	11,444	71,042	0.0	90,418	0.0	280,618	0.0	58,094	817	136	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jun-17	10,085	12,777	75,499	0.0	90,339	0.0	255,078	0.0	101,363	896	72	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jul-17	10,805	13,263	79,475	0.0	94,784	0.0	359,770	0.0	71,977	283	194	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Aug-17	10,778	12,121	75,274	0.0	90,742	0.0	275,193	0.0	83,128	191	837	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Sep-17	10,570	10,666	71,404	1,058	43,240	2,668	281,219	0.0	57,200	73	914	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Oct-17	9,893	10,613	68,119	1,241	86,542	5,993	312,155	0.0	72,401	3,159	605	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Nov-17	11,126	10,880	75,826	0.0	90,768	0.0	350,165	0.0	35,245	20	153	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Dec-17	9,553	10,562	65,828	336.3	88,839	0.0	286,283	0.0	74,422	339	1,041	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jan-18	9,840	7,878	69,713	962.2	63,596	6,467	282,869	0.0	111,037	96	2,087	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Feb-18	9,050	10,338	67,334	0.0	85,839	0.0	257,531	0.0	94,415	252	767	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Mar-18	10,185	11,145	72,264	0.0	91,382	0.0	305,039	0.0	94,132	671	785	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Apr-18	3,493	10,100	20,206	592.8	87,174	0.0	81,000	0.0	66,820	142	921	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
May-18	8,385	10,764	70,056	0.0	88,412	0.0	194,686	0.0	97,665	7,140	1,058	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jun-18	9,676	10,602	71,572	541.5	84,311	0.0	357,655	0.0	57,537	1,953	36	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jul-18	10,309	11,241	74,875	0.0	87,489	0.0	338,021	0.0	48,295	1,255	967	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Aug-18	10,287	11,686	71,908	860.7	78,014	0.0	317,709	0.0	89,903	286	1,133	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Sep-18	10,027	15,791	67,761	148.2	48,883	0.0	173,353	0.0	61,922	3,997	1	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Oct-18	9,434	11,243	75,135	0.0	79,508	0.0	247,533	0.0	74,967	1,301	1,212	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Nov-18	9,527	11,441	70,639	826.5	83,733	0.0	301,955	0.0	66,663	2,525	413	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Dec-18	8,956	11,210	69,930	1,751	83,970	0.0	203,611	0.0	75,788	650	715	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jan-19	10,237	10,069	73,484	0.0	75,254	0.0	154,244	0.0	101,087	63	324	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Feb-19	8,590	11,139	58,334	923.4	80,923	0.0	244,930	0.0	89,405	9	255	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Mar-19	9,222	13,183	71,830	285.0	91,845	0.0	255,769	0.0	90,187	4	190	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Apr-19	2,327	11,639	15,868	0.0	90,313	0.0	64,295	0.0	32,548	719	1,085	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
May-19	10,193	12,055	74,034	0.0	81,584	0.0	200,273	0.0	47,921	1,407	582	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jun-19	9,763	12,335	67,914	1,129	82,148	0.0	225,384	0.0	51,401	884	242	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jul-19	11,692	13,778	77,913	171.0	91,943	0.0	272,652	0.0	90,014	688	336	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Aug-19	10,018	13,908	60,235	3,140	82,432	0.0	200,725	0.0	89,903	979	45	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Sep-19	9,550	12,619	64,488	0.0	53,965	17.1	253,285	0.0	66,878	927	2,194	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Oct-19	11,296	12,536	69,812	0.0	88,476	0.0	242,815	0.0	88,141	1,771	613	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Nov-19	11,401	12,287	75,552	0.0	91,812	0.0	204,503	0.0	126,946	506	827	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Dec-19	11,184	13,644	74,284	0.0	90,819	0.0	154,489	0.0	94,818	684	5	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jan-20	11,334	13,680	74,083	0.0	91,466	0.0	401,869	0.0	107,561	3	9,926	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Feb-20	11,337	12,869	71,713	0.0	78,229	0.0	240,306	0.0	84,870	25	2,883	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Mar-20	11,593	12,605	78,757	0.0	85,701	0.0	296,988	0.0	45,881	685	924	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Apr-20	11,664	12,767	76,123	0.0	91,054	0.0	316,236	0.0	98,230	477	610	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
May-20	8,755	13,141	53,972	0.0	91,056	0.0	248,325	0.0	68,182	563	7	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047

NOx Baseline Actual Emission Rate Calculations

	Production Data											Emission Factors									
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Lime Production	Lime Production	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	NO_x	NO_x	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x - Natural Gas	NO_x
	tons CaO	*tons CaO*	*tons BLS*	*MMBtu (FO)*	*tons BLS*	*MMBtu (FO)*	*PB MMBTU (bark)*	*PB MMBtu (F.O.)*	*PB MMBtu (N.G.)*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/ton BLS*	*lb/MMBtu (FO)*	*lb/MMBtu*	*lb/MMBtu (F.O.)*	*lb/MMBtu (N.G.)*	*lb/ADTUBP*
Jun-20	9,532	11,841	69,047	1,955	87,069	0.0	291,682	0.0	148,939	3,410	100	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jul-20	10,175	12,222	69,441	1,129	91,518	0.0	255,251	0.0	133,928	135	24	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Aug-20	10,875	12,531	77,036	82.7	91,406	82.7	183,264	0.0	72,058	2,087	0	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Sep-20	9,704	8,522	60,516	0.0	52,377	0.0	236,313	0.0	82,425	821	431	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Oct-20	9,979	10,292	60,584	159.6	79,476	0.0	186,160	0.0	81,160	408	12,121	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Nov-20	10,810	12,307	72,172	0.0	87,820	0.0	538,990	0.0	78,554	1,466	1,711	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Dec-20	10,113	12,225	69,298	0.0	91,927	0.0	324,413	0.0	82,449	9,182	2,131	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jan-21	10,889	12,837	75,476	0.0	91,675	0.0	264,262	0.0	54,540	6,305	1	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Feb-21	9,521	11,991	64,842	5,426	84,147	0.0	236,293	0.0	100,333	411	115	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Mar-21	10,420	13,606	68,111	2,257	96,002	0.0	205,187	0.0	73,991	1,389	796	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Apr-21	6,722	11,426	47,211	564.3	79,412	0.0	183,033	0.0	54,958	1,263	1,869	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
May-21	9,954	12,049	73,937	0.0	86,559	0.0	294,064	0.0	121,981	1,233	1,968	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jun-21	9,931	9,744	71,785	0.0	67,000	0.0	301,646	0.0	77,160	296	2,323	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jul-21	9,241	11,993	61,455	0.0	86,692	0.0	261,824	0.0	120,656	518	1,314	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Aug-21	10,668	11,466	69,542	131.1	73,966	0.0	382,453	0.0	113,933	289	19,913	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Sep-21	9,952	15,335	65,162	0.0	49,408	0.0	223,379	0.0	130,256	1,262	3,726	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Oct-21	10,266	11,458	76,710	0.0	86,340	0.0	316,032	0.0	120,733	70	3,831	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Nov-21	9,986	11,098	72,915	0.0	87,337	0.0	306,997	0.0	147,943	540	1,511	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Dec-21	10,226	11,147	73,410	0.0	91,721	0.0	378,346	0.0	116,340	6	1,423	1.72	1.38	1.72	0.17	1.46	0.17	0.15	0.17	0.098	0.047
Jan-22	9,282	11,027	65,356	0.0	79,083	0.0	343,045	0.0	133,310	1,152	1,069	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Feb-22	7,595	9,962	57,394	0.0	75,833	0.0	195,412	0.0	94,449	59	365	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Mar-22	6,008	12,737	46,135	0.0	76,131	0.0	139,514	0.0	78,239	612	2,454	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Apr-22	9,654	12,499	70,078	0.0	75,611	0.0	339,179	0.0	84,749	333	7,258	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
May-22	9,628	12,101	67,457	0.0	68,954	0.0	262,522	0.0	90,347	41	6,230	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jun-22	9,917	11,676	73,726	0.0	87,307	0.0	306,228	0.0	91,060	878	1,248	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jul-22	10,441	10,557	68,732	0.0	81,361	0.0	331,701	0.0	78,059	1,024	10,823	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Aug-22	9,174	10,582	72,214	0.0	84,218	0.0	209,734	0.0	111,282	337	3,288	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Sep-22	9,330	2,973	66,113	0.0	23,006	0.0	182,836	0.0	72,986	9,533	688	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Oct-22	9,410	10,627	68,581	0.0	80,175	0.0	344,478	0.0	51,703	7,513	7,565	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Nov-22	8,647	10,821	67,662	0.0	84,160	0.0	191,109	0.0	85,432	3	3,392	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Dec-22	9,863	11,379	76,711	1.8	83,179	0.0	231,638	0.0	96,471	304	1,553	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jan-23	8,571	11,921	68,969	0.0	75,796	0.0	172,893	0.0	106,295	224	1,691	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Feb-23	7,791	10,944	58,892	0.0	82,339	0.0	139,139	0.0	83,636	3	328	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Mar-23	2,599	9,705	20,586	7,135	68,474	0.0	100,962	0.0	91,444	1,315	3,287	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Apr-23	8,960	11,778	62,129	0.0	81,803	0.0	223,645	0.0	81,224	184	561	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
May-23	9,457	13,971	70,410	0.0	85,709	0.0	198,173	0.0	106,268	1,357	1,503	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jun-23	4,972	11,455	39,730	1,704	81,542	0.0	272,652	0.0	138,115	552	2,214	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jul-23	9,872	11,604	72,314	0.0	83,238	0.0	337,315	0.0	103,009	282	1,474	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Aug-23	8,347	11,185	60,396	0.0	76,374	0.0	410,804	0.0	90,991	6,284	1,771	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Sep-23	8,499	7,351	58,763	1,070	20,344	0.0	178,274	0.0	153,469	915	196	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Oct-23	9,595	11,525	68,392	0.0	83,324	0.0	378,411	0.0	113,867	67	2,380	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Nov-23	9,576	12,073	68,551	0.0	87,639	0.0	355,623	0.0	109,285	10	429	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Dec-23	9,623	12,577	67,124	0.0	85,757	0.0	320,268	0.0	124,377	286	614	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Jan-24	9,227	11,657	63,933	1,796	73,898	0.0	347,185	0.0	115,105	1,389	2,485	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Feb-24	9,721	11,761	66,821	0.0	79,915	0.0	375,297	0.0	97,654	123	581	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Mar-24	3,291	12,661	28,031	2,451	87,235	0.0	146,008	0.0	63,257	10,798	532	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047
Apr-24	9,133	11,096	65,802	0.0	79,857	0.0	268,601	0.0	109,468	3,149	1,258	0.84	1.01	1.93	0.17	1.13	0.17	0.15	0.17	0.098	0.047

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

NOx Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)										24-month Rolling Emission Rates (tons/yr)						
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	**Baseline Period and Emissions**	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	NO_x	NO_x	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x - Natural Gas	NO_x	**1,959.42** **Jan-20** **--** **Dec-21**						
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*						
Jan-15	7.65	7.85	56.98	2.32	51.61	0.93	16.14	0.08	4.12	0.04							
Feb-15	7.64	7.27	57.82	0.05	48.46	0.09	16.36	0.24	1.99	0.22							
Mar-15	8.25	7.77	58.51	1.61	47.91	0.62	13.58	0.09	5.16	0.04							
Apr-15	2.61	7.94	15.51	0.62	51.13	0.38	3.78	0.22	2.10	0.00							
May-15	5.75	7.76	40.36	0.49	49.38	0.33	10.84	0.07	3.31	0.03							
Jun-15	7.58	7.33	57.52	0.60	43.78	0.19	14.81	0.07	0.64	0.04							
Jul-15	8.56	9.16	61.60	0.13	55.52	0.00	18.82	0.07	0.98	0.01							
Aug-15	8.72	9.24	57.17	0.37	54.75	0.00	17.79	0.07	0.41	0.01							
Sep-15	7.66	4.09	55.05	0.58	20.79	0.26	14.97	0.05	1.15	0.05							
Oct-15	8.45	8.48	54.69	1.35	49.61	1.48	13.59	0.08	1.29	0.18							
Nov-15	8.99	9.09	58.15	0.32	53.55	0.44	14.90	0.04	2.75	0.03							
Dec-15	6.43	8.93	46.12	0.70	54.07	0.47	13.89	0.06	4.63	0.01							
Jan-16	7.31	9.06	50.83	2.22	57.04	0.25	13.81	0.00	5.17	0.04							
Feb-16	7.34	8.91	57.54	1.66	52.16	0.08	11.65	0.00	4.57	0.03							
Mar-16	6.75	9.58	61.21	1.20	56.54	0.00	9.78	0.00	4.92	0.26							
Apr-16	1.37	7.48	14.76	0.03	50.61	0.00	3.11	0.02	2.59	0.19							
May-16	6.83	6.85	60.28	0.04	54.11	0.00	31.73	0.00	2.11	0.25							
Jun-16	8.02	7.19	57.97	0.29	53.69	0.00	28.34	0.00	2.91	0.01							
Jul-16	8.36	7.34	58.99	0.03	53.56	0.23	26.97	0.00	2.99	0.00							
Aug-16	7.82	7.12	55.47	0.01	51.71	0.09	27.15	0.00	2.83	0.08							
Sep-16	7.30	4.09	54.56	0.08	29.73	0.20	23.36	0.00	3.75	0.05							
Oct-16	7.43	7.10	55.20	0.01	55.48	0.00	28.85	0.00	4.53	0.06							
Nov-16	7.82	6.69	59.06	0.00	54.47	0.00	25.97	0.00	3.87	0.07							
Dec-16	8.05	7.38	54.21	0.00	54.66	0.04	24.71	0.00	2.89	0.01	1,670.26	86.34	91.86	637.14	605.20	248.85	0.86
Jan-17	8.76	7.50	65.67	0.00	61.96	0.10	24.05	0.00	3.60	0.05	1,682.24	86.90	91.69	640.33	609.95	252.51	0.87
Feb-17	7.39	7.26	56.00	0.00	60.67	0.12	25.11	0.00	2.13	0.21	1,691.64	86.78	91.68	639.39	616.08	256.84	0.87
Mar-17	1.56	8.12	8.59	0.00	70.21	0.00	30.12	0.00	1.38	0.03	1,679.87	83.43	91.86	613.63	626.92	263.18	0.86
Apr-17	0.42	7.45	0.00	0.00	63.80	0.04	8.57	0.00	1.29	0.15	1,678.58	82.34	91.61	605.56	633.08	265.07	0.93
May-17	7.98	7.89	60.98	0.00	65.97	0.00	21.05	0.00	2.85	0.02	1,702.79	83.45	91.67	615.63	641.20	269.90	0.93
Jun-17	8.66	8.81	64.80	0.00	65.91	0.00	19.13	0.00	4.97	0.02	1,722.65	83.99	92.41	618.96	652.17	274.19	0.92
Jul-17	9.28	9.14	68.21	0.00	69.16	0.00	26.98	0.00	3.53	0.01	1,738.38	84.35	92.40	622.21	658.99	279.51	0.92
Aug-17	9.26	8.35	64.61	0.00	66.21	0.00	20.64	0.00	4.07	0.02	1,750.69	84.62	91.95	625.74	664.72	282.73	0.92
Sep-17	9.08	7.35	61.29	0.09	31.55	0.23	21.09	0.00	2.80	0.02	1,765.12	85.33	93.58	628.62	670.08	286.60	0.91
Oct-17	8.50	7.31	58.47	0.11	63.14	0.51	23.41	0.00	3.55	0.09	1,778.06	85.35	93.00	629.88	676.37	292.60	0.86
Nov-17	9.55	7.50	65.08	0.00	66.23	0.00	26.26	0.00	1.73	0.00	1,792.10	85.63	92.20	633.19	682.49	297.74	0.85
Dec-17	8.20	7.28	56.50	0.03	64.82	0.00	21.47	0.00	3.65	0.03	1,805.43	86.52	91.37	638.04	687.63	301.01	0.86
Jan-18	8.45	5.43	59.84	0.08	46.40	0.55	21.22	0.00	5.44	0.05	1,806.30	87.09	89.56	641.48	682.46	304.85	0.87
Feb-18	7.77	7.12	57.79	0.00	62.63	0.00	19.31	0.00	4.63	0.02	1,813.97	87.31	88.66	640.77	687.66	308.71	0.86
Mar-18	8.75	7.68	62.03	0.00	66.68	0.00	22.88	0.00	4.61	0.03	1,825.18	88.30	87.71	640.58	692.72	315.10	0.75
Apr-18	3.00	6.96	17.34	0.05	63.61	0.00	6.08	0.00	3.28	0.02	1,835.26	89.12	87.45	641.88	699.22	316.92	0.67
May-18	7.20	7.42	60.13	0.00	64.51	0.00	14.60	0.00	4.79	0.19	1,833.58	89.30	87.74	641.79	704.42	309.69	0.64
Jun-18	8.31	7.31	61.43	0.05	61.52	0.00	26.82	0.00	2.82	0.05	1,838.52	89.45	87.79	643.40	708.34	308.89	0.66
Jul-18	8.85	7.75	64.27	0.00	63.84	0.00	25.35	0.00	2.37	0.05	1,845.53	89.70	88.00	646.02	713.36	307.77	0.68
Aug-18	8.83	8.05	61.72	0.07	56.92	0.00	23.83	0.00	4.41	0.03	1,851.34	90.20	88.47	649.18	715.92	306.90	0.66
Sep-18	8.61	10.88	58.16	0.01	35.67	0.00	13.00	0.00	3.04	0.09	1,854.51	90.86	91.87	650.95	718.79	301.37	0.68
Oct-18	8.10	7.75	64.49	0.00	58.01	0.00	18.57	0.00	3.67	0.06	1,855.51	91.19	92.19	655.59	720.06	295.80	0.68
Nov-18	8.18	7.88	60.63	0.07	61.09	0.00	22.65	0.00	3.27	0.07	1,858.46	91.37	92.79	656.41	723.37	293.84	0.68
Dec-18	7.69	7.73	60.02	0.15	61.27	0.00	15.27	0.00	3.72	0.03	1,860.41	91.19	92.96	659.38	726.66	289.53	0.69
Jan-19	8.79	6.94	63.07	0.00	54.91	0.00	11.57	0.00	4.96	0.01	1,849.69	91.21	92.68	658.09	723.08	283.97	0.67
Feb-19	7.38	7.68	50.07	0.08	59.04	0.00	18.37	0.00	4.38	0.01	1,843.74	91.20	92.89	655.16	722.21	281.72	0.56
Mar-19	7.92	9.09	61.65	0.02	67.01	0.00	19.18	0.00	4.42	0.00	1,868.38	94.38	93.37	681.70	720.61	277.77	0.55
Apr-19	2.00	8.02	13.62	0.00	65.90	0.00	4.82	0.00	1.60	0.04	1,875.53	95.17	93.66	688.51	721.64	276.05	0.50
May-19	8.75	8.31	63.55	0.00	59.53	0.00	15.02	0.00	2.35	0.05	1,870.93	95.55	93.87	689.80	718.42	272.78	0.51
Jun-19	8.38	8.50	58.29	0.10	59.94	0.00	16.90	0.00	2.52	0.03	1,862.11	95.41	93.71	686.59	715.43	270.44	0.52
Jul-19	10.04	9.50	66.87	0.01	67.08	0.00	20.45	0.00	4.41	0.02	1,858.15	95.79	93.89	685.93	714.40	267.62	0.52
Aug-19	8.60	9.59	51.70	0.27	60.15	0.00	15.05	0.00	4.41	0.02	1,846.46	95.47	94.51	679.61	711.36	264.99	0.52
Sep-19	8.20	8.70	55.35	0.00	39.37	0.00	19.00	0.00	3.28	0.07	1,846.70	95.03	95.18	676.59	715.16	264.18	0.55
Oct-19	9.70	8.64	59.92	0.00	64.55	0.00	18.21	0.00	4.32	0.06	1,846.86	95.63	95.84	677.27	715.61	261.97	0.53
Nov-19	9.79	8.47	64.85	0.00	66.99	0.00	15.34	0.00	6.22	0.03	1,844.52	95.75	96.33	677.15	715.99	258.75	0.54
Dec-19	9.60	9.40	63.76	0.00	66.26	0.00	11.59	0.00	4.65	0.02	1,846.17	96.45	97.39	680.76	716.72	254.31	0.54
Jan-20	9.73	9.43	63.59	0.00	66.74	0.00	30.14	0.00	5.27	0.23	1,865.00	97.09	99.39	682.60	726.61	258.69	0.63
Feb-20	9.74	8.87	61.55	0.00	57.08	0.00	18.02	0.00	4.16	0.07	1,865.10	98.07	100.26	684.48	723.83	257.81	0.65
Mar-20	9.96	8.69	67.60	0.00	62.53	0.00	22.27	0.00	2.25	0.04	1,865.44	98.68	100.76	687.26	721.76	256.32	0.65
Apr-20	10.02	8.80	65.34	0.00	66.44	0.00	23.72	0.00	4.82	0.03	1,904.85	102.19	101.68	711.24	723.17	265.92	0.65
May-20	7.52	9.06	46.33	0.00	66.44	0.00	18.62	0.00	3.34	0.01	1,901.08	102.35	102.50	704.33	724.14	267.20	0.56

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

NOx Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)										24-month Rolling Emission Rates (tons/yr)						
	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	**Baseline Period and Emissions**	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	NO_x	NO_x	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x	NO_x - Fuel Oil	NO_x - Natural Gas	NO_x	**1,959.42** **Jan-20** **--** **Dec-21**						
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*						
Jun-20	8.19	8.16	59.26	0.17	63.53	0.00	21.88	0.00	7.30	0.08	1,901.22	102.28	102.93	703.31	725.14	266.97	0.58
Jul-20	8.74	8.42	59.60	0.10	66.77	0.00	19.14	0.00	6.57	0.00	1,899.65	102.23	103.27	701.03	726.61	265.97	0.56
Aug-20	9.34	8.64	66.12	0.01	66.69	0.01	13.74	0.00	3.53	0.05	1,901.78	102.48	103.56	703.19	731.50	260.49	0.56
Sep-20	8.33	5.87	51.94	0.00	38.22	0.00	17.72	0.00	4.04	0.03	1,900.13	102.34	101.05	700.08	732.78	263.35	0.53
Oct-20	8.57	7.09	52.00	0.01	57.99	0.00	13.96	0.00	3.98	0.29	1,891.75	102.57	100.73	693.84	732.76	261.20	0.65
Nov-20	9.28	8.48	61.95	0.00	64.08	0.00	40.42	0.00	3.85	0.07	1,903.90	103.13	101.02	694.46	734.26	270.38	0.65
Dec-20	8.68	8.43	59.48	0.00	67.07	0.00	24.33	0.00	4.04	0.27	1,912.11	103.62	101.37	694.12	737.16	275.07	0.77
Jan-21	9.35	8.85	64.78	0.00	66.89	0.00	19.82	0.00	2.67	0.15	1,923.25	103.90	102.33	694.97	743.15	278.06	0.84
Feb-21	8.18	8.26	55.66	0.47	61.40	0.00	17.72	0.00	4.92	0.01	1,928.05	104.30	102.62	697.96	744.33	278.00	0.84
Mar-21	8.95	9.38	58.46	0.19	70.05	0.00	15.39	0.00	3.63	0.05	1,926.45	104.82	102.77	696.45	745.84	275.71	0.86
Apr-21	5.77	7.87	40.52	0.05	57.94	0.00	13.73	0.00	2.69	0.07	1,942.77	106.70	102.69	709.92	741.87	280.71	0.88
May-21	8.55	8.30	63.46	0.00	63.16	0.00	22.05	0.00	5.98	0.08	1,949.79	106.60	102.69	709.88	743.68	286.04	0.89
Jun-21	8.53	6.72	61.61	0.00	48.89	0.00	22.62	0.00	3.78	0.06	1,948.56	106.67	101.80	711.49	738.15	289.53	0.91
Jul-21	7.94	8.27	52.75	0.00	63.25	0.00	19.64	0.00	5.91	0.04	1,938.27	105.62	101.18	704.42	736.24	289.88	0.92
Aug-21	9.16	7.90	59.69	0.01	53.97	0.00	28.68	0.00	5.58	0.47	1,946.11	105.90	100.34	708.29	733.15	297.28	1.15
Sep-21	8.55	10.57	55.93	0.00	36.05	0.00	16.75	0.00	6.39	0.12	1,946.30	106.07	101.28	708.58	731.49	297.72	1.17
Oct-21	8.82	7.90	65.84	0.00	63.00	0.00	23.70	0.00	5.92	0.09	1,951.23	105.63	100.91	711.54	730.71	301.26	1.18
Nov-21	8.57	7.65	62.58	0.00	63.72	0.00	23.02	0.00	7.25	0.05	1,951.81	105.02	100.50	710.41	729.07	305.62	1.19
Dec-21	8.78	7.68	63.01	0.00	66.92	0.00	28.38	0.00	5.70	0.03	1,959.42	104.61	99.64	710.03	729.40	314.54	1.20
Jan-22	3.90	5.56	63.18	0.00	44.82	0.00	25.73	0.00	6.53	0.05	1,941.75	101.70	97.70	709.83	718.45	312.97	1.11
Feb-22	3.19	5.02	55.48	0.00	42.98	0.00	14.66	0.00	4.63	0.01	1,924.99	98.42	95.78	706.79	711.40	311.52	1.08
Mar-22	2.52	6.42	44.60	0.00	43.15	0.00	10.46	0.00	3.84	0.07	1,893.86	94.71	94.64	695.29	701.71	306.40	1.10
Apr-22	4.06	6.30	67.75	0.00	42.86	0.00	25.44	0.00	4.15	0.18	1,879.65	91.73	93.39	696.50	689.92	306.93	1.18
May-22	4.05	6.10	65.21	0.00	39.08	0.00	19.69	0.00	4.43	0.15	1,873.34	89.99	91.91	705.94	676.24	308.01	1.24
Jun-22	4.17	5.88	71.27	0.00	49.48	0.00	22.97	0.00	4.46	0.05	1,868.20	87.98	90.78	711.86	669.22	307.14	1.23
Jul-22	4.39	5.32	66.45	0.00	46.12	0.00	24.88	0.00	3.83	0.28	1,859.15	85.81	89.22	715.24	658.89	308.63	1.36
Aug-22	3.85	5.33	69.81	0.00	47.73	0.00	15.73	0.00	5.46	0.09	1,849.09	83.07	87.57	717.08	649.41	310.59	1.38
Sep-22	3.92	1.50	63.91	0.00	13.04	0.00	13.71	0.00	3.58	0.24	1,835.96	80.86	85.39	723.06	636.82	308.35	1.49
Oct-22	3.95	5.36	66.30	0.00	45.44	0.00	25.84	0.00	2.53	0.35	1,838.90	78.55	84.52	730.20	630.55	313.57	1.52
Nov-22	3.63	5.45	65.41	0.00	47.70	0.00	14.33	0.00	4.19	0.08	1,815.23	75.73	83.00	731.94	622.36	300.69	1.52
Dec-22	4.14	5.73	74.16	0.00	47.15	0.00	17.37	0.00	4.73	0.04	1,805.75	73.46	81.66	739.28	612.39	297.55	1.41
Jan-23	3.60	6.01	66.67	0.00	42.96	0.00	12.97	0.00	5.21	0.04	1,788.22	70.58	80.24	740.22	600.43	295.40	1.36
Feb-23	3.27	5.52	56.93	0.00	46.67	0.00	10.44	0.00	4.10	0.01	1,773.39	68.13	78.86	740.63	593.07	291.34	1.35
Mar-23	1.09	4.89	19.90	0.61	38.81	0.00	7.57	0.00	4.48	0.11	1,729.07	64.20	76.62	721.56	577.45	287.86	1.38
Apr-23	3.76	5.94	60.06	0.00	46.37	0.00	16.77	0.00	3.98	0.02	1,733.20	63.20	75.65	731.30	571.66	290.03	1.35
May-23	3.97	7.04	68.07	0.00	48.58	0.00	14.86	0.00	5.21	0.07	1,721.31	60.91	75.02	733.61	564.37	286.05	1.35
Jun-23	2.09	5.77	38.41	0.15	46.22	0.00	20.45	0.00	6.77	0.06	1,705.16	57.69	74.55	722.08	563.04	286.46	1.35
Jul-23	4.15	5.85	69.91	0.00	47.18	0.00	25.30	0.00	5.05	0.04	1,705.00	55.80	73.34	730.66	555.00	288.85	1.35
Aug-23	3.51	5.64	58.39	0.00	43.29	0.00	30.81	0.00	4.46	0.19	1,695.40	52.97	72.21	730.00	549.66	289.35	1.21
Sep-23	3.57	3.70	56.81	0.09	11.53	0.00	13.37	0.00	7.52	0.03	1,676.54	50.48	68.78	730.48	537.40	288.23	1.16
Oct-23	4.03	5.81	66.12	0.00	47.23	0.00	28.38	0.00	5.58	0.06	1,667.51	48.09	67.73	730.62	529.52	290.40	1.15
Nov-23	4.02	6.08	66.27	0.00	49.67	0.00	26.67	0.00	5.36	0.01	1,660.13	45.82	66.95	732.46	522.49	291.28	1.13
Dec-23	4.04	6.34	64.89	0.00	48.61	0.00	24.02	0.00	6.10	0.02	1,646.88	43.45	66.28	733.41	513.33	289.30	1.12
Jan-24	3.88	5.87	61.81	0.15	41.88	0.00	26.04	0.00	5.64	0.09	1,644.68	43.43	66.44	732.79	511.86	289.01	1.14
Feb-24	4.08	5.93	64.60	0.00	45.30	0.00	28.15	0.00	4.79	0.02	1,658.12	43.88	66.89	737.35	513.02	295.83	1.14
Mar-24	1.38	6.38	27.10	0.21	49.44	0.00	10.95	0.00	3.10	0.27	1,652.00	43.31	66.87	728.71	516.17	295.71	1.24
Apr-24	3.84	5.59	63.61	0.00	45.26	0.00	20.15	0.00	5.37	0.10		43.20	66.52	726.64	517.37	293.67	1.20

CO Baseline Actual Emission Rate Calculations

	Production Data													Emission Factors											
	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Bleach Plant	No. 7 Mill ClO2 Use	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Bleached Pulp Production	ClO2 Use	Lime Production	Lime Production	BLS Throughput	BLS Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO - Fuel Oil	CO - Natural Gas	CO
	ADTUBP	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTBP*	*lb ClO2 applied per 100 lb ODTURP*	*tons CaO*	*tons CaO*	*tons BLS*	*tons BLS*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*
Jan-15	36,815	1,106	46.5	487	34,238	2.03	8,903	11,396	71,044	84,477	215,197	891	84,100	4.55E-02	0.815	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Feb-15	42,809	95	2.7	9,090	39,812	2.23	8,899	10,547	72,081	79,314	218,105	2,765	40,570	4.55E-02	0.851	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Mar-15	38,117	1,047	82.6	513	35,449	2.15	9,613	11,280	72,947	78,419	181,048	1,006	105,271	4.55E-02	0.837	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Apr-15	9,618	0	21.6	123	8,945	0.52	3,036	11,527	19,335	83,689	50,339	2,579	42,803	4.55E-02	0.544	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
May-15	21,446	630	23.9	655	19,945	1.28	6,696	11,266	50,315	80,831	144,507	840	67,451	4.55E-02	0.680	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jun-15	33,430	1,845	46.9	12	31,090	1.88	8,826	10,641	71,717	71,665	197,508	831	13,037	4.55E-02	0.788	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jul-15	41,390	313	3.1	196	38,492	2.09	9,971	13,287	76,795	90,875	250,965	871	19,902	4.55E-02	0.826	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Aug-15	38,827	561	0.9	2	36,109	2.10	10,154	13,411	71,276	89,606	237,148	866	8,333	4.55E-02	0.828	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Sep-15	37,563	492	13.6	1,853	34,933	2.32	8,918	5,940	68,634	34,033	199,595	583	23,371	4.55E-02	0.868	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Oct-15	36,009	10	18.3	7,598	33,489	1.93	9,844	12,305	68,184	81,193	181,259	918	26,410	4.55E-02	0.797	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Nov-15	37,657	603	8.1	741	35,021	2.24	10,471	13,192	72,500	87,648	198,688	508	56,034	4.55E-02	0.853	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Dec-15	29,709	546	28.8	33	27,629	1.92	7,483	12,962	57,498	88,496	185,243	695	94,541	4.55E-02	0.796	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jan-16	31,227	82	10.2	1,438	29,041	1.90	8,511	13,148	63,374	93,355	184,194	0	105,490	4.55E-02	0.792	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Feb-16	33,550	1,491	8.5	0	31,202	2.33	8,546	12,933	71,737	85,379	155,374	2	93,137	4.55E-02	0.869	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Mar-16	37,631	9,970	18.4	1,011	34,997	2.38	7,861	13,902	76,311	92,544	130,434	0	100,371	4.55E-02	0.878	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Apr-16	9,334	7,493	46.4	429	8,681	0.54	1,595	10,861	18,405	82,829	41,491	272	52,799	4.55E-02	0.547	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
May-16	35,027	7,764	89.2	2,775	32,575	2.36	7,959	9,940	75,152	88,572	423,103	0	42,980	4.55E-02	0.875	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jun-16	34,179	92	0.0	487	31,786	2.08	9,337	10,436	72,276	87,873	377,915	0	59,277	4.55E-02	0.824	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jul-16	35,130	14	0.0	44	32,671	2.04	9,733	10,644	73,546	87,660	359,537	0	60,962	4.55E-02	0.817	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Aug-16	36,523	963	6.4	2,517	33,966	2.02	9,108	10,326	69,155	84,631	361,986	0	57,672	4.55E-02	0.814	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Sep-16	34,805	1,481	0.0	452	32,368	2.32	8,504	5,931	68,024	48,663	311,479	0	76,439	4.55E-02	0.868	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Oct-16	37,001	2,185	5.9	457	34,411	1.99	8,653	10,308	68,821	90,800	384,635	0	92,371	4.55E-02	0.808	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Nov-16	34,470	30	1.4	2,875	32,057	2.13	9,104	9,705	73,637	89,150	346,255	0	78,882	4.55E-02	0.833	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Dec-16	29,470	169	8.0	417	27,408	1.79	9,376	10,710	67,590	89,465	329,439	0	58,941	4.55E-02	0.772	0.037	7.40E-03	0.048	8.22E-03	0.84	8.22E-03	1.21	2.04	0.036	0.082	0.012
Jan-17	37,880	441	0.0	1,846	35,228	2.35	10,197	10,880	76,507	84,917	320,728	0	73,443	4.55E-02	0.873	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Feb-17	35,053	8,894	0.0	220	32,599	2.10	8,611	10,537	65,245	83,153	334,842	0	43,534	4.55E-02	0.828	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Mar-17	7,036	393	0.0	756	6,543	0.30	1,817	11,781	10,011	96,223	401,645	0	28,245	4.55E-02	0.504	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Apr-17	0	0	0.0	6,201	0	0.00	489	10,808	0	87,437	114,315	0	26,265	4.55E-02	0.450	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
May-17	31,527	817	25.2	136	29,320	2.20	9,298	11,444	71,042	90,418	280,618	0	58,094	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Jun-17	37,271	896	66.8	72	34,662	2.32	10,085	12,777	75,499	90,339	255,078	0	101,363	4.55E-02	0.868	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Jul-17	38,899	283	4.0	194	36,176	2.23	10,805	13,263	79,475	94,784	359,770	0	71,977	4.55E-02	0.851	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Aug-17	34,928	191	16.3	837	32,483	2.07	10,778	12,121	75,274	90,742	275,193	0	83,128	4.55E-02	0.823	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Sep-17	36,029	73	5.3	914	33,507	2.27	10,570	10,666	71,404	43,240	281,219	0	57,200	4.55E-02	0.859	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Oct-17	32,233	3,159	0.0	605	29,977	2.20	9,893	10,613	68,119	86,542	312,155	0	72,401	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Nov-17	38,007	20	2.9	153	35,346	2.53	11,126	10,880	75,826	90,768	350,165	0	35,245	4.55E-02	0.905	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Dec-17	34,493	339	7.0	1,041	32,079	2.20	9,553	10,562	65,828	88,839	286,283	0	74,422	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	2.04	0.036	0.082	0.012
Jan-18	37,880	96	3.1	2,087	35,229	2.34	9,840	7,878	69,713	63,596	282,869	0	111,037	4.55E-02	0.871	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Feb-18	35,095	252	3.6	767	32,638	2.31	9,050	10,338	67,334	85,839	257,531	0	94,415	4.55E-02	0.866	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Mar-18	36,292	671	0.0	785	33,752	2.29	10,185	11,145	72,264	91,382	305,039	0	94,132	4.55E-02	0.862	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Apr-18	9,521	142	0.0	921	8,854	0.68	3,493	10,100	20,206	87,174	81,000	0	66,820	4.55E-02	0.572	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
May-18	36,028	7,140	37.4	1,058	33,506	2.19	8,385	10,764	70,056	88,412	194,686	0	97,665	4.55E-02	0.844	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Jun-18	35,274	1,953	4.8	36	32,805	2.23	9,676	10,602	71,572	84,311	357,655	0	57,537	4.55E-02	0.851	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Jul-18	37,033	1,255	8.0	967	34,441	2.30	10,309	11,241	74,875	87,489	338,021	0	48,295	4.55E-02	0.864	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Aug-18	35,098	286	11.7	1,133	32,641	2.19	10,287	11,686	71,908	78,014	317,709	0	89,903	4.55E-02	0.844	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Sep-18	34,909	3,997	0.0	1	32,466	2.47	10,027	15,791	67,761	48,883	173,353	0	61,922	4.55E-02	0.895	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Oct-18	39,235	1,301	39.4	1,212	36,488	2.33	9,434	11,243	75,135	79,508	247,533	0	74,967	4.55E-02	0.869	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Nov-18	36,279	2,525	21.8	413	33,739	2.47	9,527	11,441	70,639	83,733	301,955	0	66,663	4.55E-02	0.895	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Dec-18	36,723	650	72.0	715	34,152	2.21	8,956	11,210	69,930	83,970	203,611	0	75,788	4.55E-02	0.848	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.17	0.036	0.082	0.012
Jan-19	40,897	63	0.0	324	38,035	2.33	10,237	10,069	73,484	75,254	154,244	0	101,087	4.55E-02	0.869	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Feb-19	30,419	9	14.3	255	28,289	2.14	8,590	11,139	58,334	80,923	244,930	0	89,405	4.55E-02	0.835	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Mar-19	37,880	4	7.5	190	35,229	2.33	9,222	13,183	71,830	91,845	255,769	0	90,187	4.55E-02	0.869	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Apr-19	7,958	719	43.8	1,085	7,401	0.54	2,327	11,639	15,868	90,313	64,295	0	32,548	4.55E-02	0.547	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
May-19	36,964	1,407	78.6	582	34,377	2.16	10,193	12,055	74,034	81,584	200,273	0	47,921	4.55E-02	0.839	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jun-19	37,521	884	77.2	242	34,894	2.10	9,763	12,335	67,914	82,148	225,384	0	51,401	4.55E-02	0.828	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jul-19	41,968	688	1.7	336	39,031	2.30	11,692	13,778	77,913	91,943	272,652	0	90,014	4.55E-02	0.864	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Aug-19	31,533	979	15.8	45	29,326	1.85	10,018	13,908	60,235	82,432	200,725	0	89,903	4.55E-02	0.783	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Sep-19	34,299	927	21.6	2,194	31,898	2.12	9,550	12,619	64,488	53,965	253,285	0	66,878	4.55E-02	0.832	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Oct-19	39,995	1,771	2.7	613	37,195	2.38	11,296	12,536	69,812	88,476	242,815	0	88,141	4.55E-02	0.878	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Nov-19	41,591	506	5.4	827	38,680	2.30	11,401	12,287	75,552	91,812	204,503	0	126,946	4.55E-02	0.864	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Dec-19	39,505	684	3.3	5	36,739	2.14	11,184	13,644	74,284	90,819	154,489	0	94,818	4.55E-02	0.835	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jan-20	41,032	3	10.8	9,926	38,160	2.15	11,334	13,680	74,083	91,466	401,869	0	107,561	4.55E-02	0.837	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Feb-20	38,783	25	35.9	2,883	36,068	2.25	11,337	12,869	71,713	78,229	240,306	0	84,870	4.55E-02	0.855	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Mar-20	41,553	685	0.0	924	38,644	2.20	11,593	12,605	78,757	85,701	296,988	0	45,881	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Apr-20	40,244	477	3.4	610	37,427	2.25	11,664	12,767	76,123	91,054	316,236	0	98,230	4.55E-02	0.855	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
May-20	31,177	563	6.4	7	28,995	1.60	8,755	13,141	53,972	91,056	248,325	0	68,182	4.55E-02	0.738	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jun-20	37,252	3,410	29.8	100	34,644	2.18	9,532	11,841	69,047	87,069	291,682	0	148,939	4.55E-02	0.842	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jul-20	37,178	135	52.2	24	34,576	2.03	10,175	12,222	69,441	91,518	255,251	0	133,928	4.55E-02	0.815	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

CO Baseline Actual Emission Rate Calculations

	Production Data													Emission Factors											
	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Bleach Plant	No. 7 Mill ClO2 Use	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator
	Unbleached Pulp Production	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Unbleached Pulp Production During HVLC System Uncontrolled Venting	Unbleached Pulp Production When LVHC NCGs to the Backup NCG Incinerator	Bleached Pulp Production	ClO2 Use	Lime Production	Lime Production	BLS Throughput	BLS Throughput	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO - Fuel Oil	CO - Natural Gas	CO
	ADTUBP	*ADTUBP*	*ADTUBP*	*ADTUBP*	*ADTBP*	*lb ClO2 applied per 100 lb ODTURP*	*tons CaO*	*tons CaO*	*tons BLS*	*tons BLS*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*lb/ADTUBP*	*lb/ADTBP*	*lb/ADTBP*	*lb/ton CaO*	*lb/ton CaO*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/ton BLS*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*
Aug-20	40,522	2,087	0.0	0	37,685	2.20	10,875	12,531	77,036	91,406	183,264	0	72,058	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Sep-20	30,373	821	36.7	431	28,247	1.98	9,704	8,522	60,516	52,377	236,313	0	82,425	4.55E-02	0.806	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Oct-20	31,091	408	0.0	12,121	28,915	1.78	9,979	10,292	60,584	79,476	186,160	0	81,160	4.55E-02	0.770	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Nov-20	36,569	1,466	3.4	1,711	34,009	2.13	10,810	12,307	72,172	87,820	538,990	0	78,554	4.55E-02	0.833	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Dec-20	37,388	9,182	9.3	2,131	34,771	2.20	10,113	12,225	69,298	91,927	324,413	0	82,449	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jan-21	41,877	6,305	0.0	1	38,946	3.19	10,889	12,837	75,476	91,675	264,262	0	54,540	4.55E-02	1.024	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Feb-21	35,303	411	12.6	115	32,831	2.20	9,521	11,991	64,842	84,147	236,293	0	100,333	4.55E-02	0.846	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Mar-21	38,410	1,389	2.0	796	35,721	2.23	10,420	13,606	68,111	96,002	205,187	0	73,991	4.55E-02	0.851	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Apr-21	24,639	1,263	28.8	1,869	22,914	1.55	6,722	11,426	47,211	79,412	183,033	0	54,958	4.55E-02	0.729	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
May-21	39,143	1,233	13.5	1,968	36,403	2.32	9,954	12,049	73,937	86,559	294,064	0	121,981	4.55E-02	0.868	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jun-21	31,697	296	0.0	2,323	29,478	1.91	9,931	9,744	71,785	67,000	301,646	0	77,160	4.55E-02	0.794	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jul-21	31,267	518	0.0	1,314	29,078	2.19	9,241	11,993	61,455	86,692	261,824	0	120,656	4.55E-02	0.844	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Aug-21	36,322	289	0.0	19,913	33,779	2.18	10,668	11,466	69,542	73,966	382,453	0	113,933	4.55E-02	0.842	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Sep-21	35,470	1,262	5.0	3,726	32,987	2.39	9,952	15,335	65,162	49,408	223,379	0	130,256	4.55E-02	0.880	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Oct-21	39,174	70	3.6	3,831	36,432	2.45	10,266	11,458	76,710	86,340	316,032	0	120,733	4.55E-02	0.891	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Nov-21	39,669	540	0.0	1,511	36,892	2.39	9,986	11,098	72,915	87,337	306,997	0	147,943	4.55E-02	0.880	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Dec-21	42,197	6	0.0	1,423	39,243	2.56	10,226	11,147	73,410	91,721	378,346	0	116,340	4.55E-02	0.911	0.037	7.40E-03	0.048	8.22E-03	1.26	8.22E-03	0.17	0.38	0.036	0.082	0.012
Jan-22	33,220	1,152	14.6	1,069	30,895	2.09	9,282	11,027	65,356	79,083	343,045	0	133,310	4.55E-02	0.826	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Feb-22	29,230	59	0.0	365	27,184	1.94	7,595	9,962	57,394	75,833	195,412	0	94,449	4.55E-02	0.799	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Mar-22	20,799	612	42.6	2,454	19,343	1.53	6,008	12,737	46,135	76,131	139,514	0	78,239	4.55E-02	0.725	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Apr-22	35,961	333	11.9	7,258	33,444	2.64	9,654	12,499	70,078	75,611	339,179	0	84,749	4.55E-02	0.925	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
May-22	34,272	41	114.7	6,230	31,873	2.40	9,628	12,101	67,457	68,954	262,522	0	90,347	4.55E-02	0.882	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Jun-22	38,883	878	5.4	1,248	36,161	2.69	9,917	11,676	73,726	87,307	306,228	0	91,060	4.55E-02	0.934	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Jul-22	34,373	1,024	108.1	10,823	31,967	2.62	10,441	10,557	68,732	81,361	331,701	0	78,059	4.55E-02	0.922	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Aug-22	36,227	337	0.0	3,288	33,691	2.65	9,174	10,582	72,214	84,218	209,734	0	111,282	4.55E-02	0.927	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Sep-22	34,233	9,533	11.0	688	31,837	2.77	9,330	2,973	66,113	23,006	182,836	0	72,986	4.55E-02	0.949	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Oct-22	32,535	7,513	3.6	7,565	30,257	2.24	9,410	10,627	68,581	80,175	344,478	0	51,703	4.55E-02	0.853	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Nov-22	33,195	3	24.2	3,392	30,871	2.59	8,647	10,821	67,662	84,160	191,109	0	85,432	4.55E-02	0.916	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Dec-22	39,556	304	45.9	1,553	36,787	2.76	9,863	11,379	76,711	83,179	231,638	0	96,471	4.55E-02	0.947	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.73	0.18	0.036	0.082	0.012
Jan-23	37,430	224	43.1	1,691	34,810	2.62	8,571	11,921	68,969	75,796	172,893	0	106,295	4.55E-02	0.922	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Feb-23	31,158	3	0.0	328	28,977	1.63	7,791	10,944	58,892	82,339	139,139	0	83,636	4.55E-02	0.743	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Mar-23	5,329	1,315	16.2	3,287	4,956	0.46	2,599	9,705	20,586	68,474	100,962	0	91,444	4.55E-02	0.533	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Apr-23	29,939	184	61.6	561	27,843	1.92	8,960	11,778	62,129	81,803	223,645	0	81,224	4.55E-02	0.796	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
May-23	35,045	1,357	21.9	1,503	32,592	2.08	9,457	13,971	70,410	85,709	198,173	0	106,268	4.55E-02	0.824	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Jun-23	21,351	552	0.0	2,214	19,857	1.25	4,972	11,455	39,730	81,542	272,652	0	138,115	4.55E-02	0.675	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Jul-23	36,493	282	3.1	1,474	33,939	2.28	9,872	11,604	72,314	83,238	337,315	0	103,009	4.55E-02	0.860	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Aug-23	32,448	6,284	33.2	1,771	30,177	2.03	8,347	11,185	60,396	76,374	410,804	0	90,991	4.55E-02	0.815	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Sep-23	32,806	915	52.5	196	30,509	2.14	8,499	7,351	58,763	20,344	178,274	0	153,469	4.55E-02	0.835	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Oct-23	36,791	67	28.5	2,380	34,215	2.13	9,595	11,525	68,392	83,324	378,411	0	113,867	4.55E-02	0.833	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Nov-23	38,876	10	12.4	429	36,154	2.13	9,576	12,073	68,551	87,639	355,623	0	109,285	4.55E-02	0.833	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Dec-23	34,798	286	11.1	614	32,362	2.08	9,623	12,577	67,124	85,757	320,268	0	124,377	4.55E-02	0.824	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Jan-24	30,512	1,389	30.7	2,485	28,377	1.74	9,227	11,657	63,933	73,898	347,185	0	115,105	4.55E-02	0.763	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Feb-24	37,652	123	0.0	581	35,017	1.67	9,721	11,761	66,821	79,915	375,297	0	97,654	4.55E-02	0.751	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Mar-24	14,568	10,798	23.9	532	13,548	1.74	3,291	12,661	28,031	87,235	146,008	0	63,257	4.55E-02	0.763	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012
Apr-24	33,278	3,149	8.7	1,258	30,948	2.17	9,133	11,096	65,802	79,857	268,601	0	109,468	4.55E-02	0.841	0.037	0.046	0.011	8.22E-03	0.25	8.22E-03	0.60	0.19	0.036	0.082	0.012

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

CO Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)													24-month Rolling Emission Rates (tons/yr)											
	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Baseline Period and Emissions	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO - Fuel Oil	CO - Natural Gas	CO	4,501.60 Jan-16 – Dec-17											
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*											
Jan-15	1.06E-03	13.96	0.63	0.03	0.27	0.29	29.85	0.35	50.91	219.19	0.02	3.46	0.01												
Feb-15	6.02E-05	16.95	0.73	0.03	0.25	0.30	30.28	0.33	47.80	222.15	0.05	1.67	0.06												
Mar-15	1.88E-03	14.84	0.65	0.04	0.27	0.30	30.65	0.32	47.26	184.41	0.02	4.33	0.01												
Apr-15	4.91E-04	2.43	0.16	0.01	0.27	0.08	8.12	0.34	50.44	51.27	0.05	1.76	7.65E-04												
May-15	5.43E-04	6.79	0.37	0.02	0.27	0.21	21.14	0.33	48.72	147.19	0.02	2.78	0.01												
Jun-15	1.07E-03	12.26	0.57	0.03	0.25	0.29	30.13	0.29	43.19	201.17	0.01	0.54	0.01												
Jul-15	6.94E-05	15.90	0.71	0.04	0.32	0.32	32.26	0.37	54.77	255.62	0.02	0.82	3.16E-03												
Aug-15	1.95E-05	14.95	0.66	0.04	0.32	0.29	29.94	0.37	54.00	241.55	0.02	0.34	3.49E-03												
Sep-15	3.08E-04	15.15	0.64	0.03	0.14	0.28	28.83	0.14	20.51	203.30	0.01	0.96	0.01												
Oct-15	4.17E-04	13.35	0.61	0.04	0.29	0.28	28.64	0.33	48.93	184.62	0.02	1.09	0.05												
Nov-15	1.84E-04	14.94	0.64	0.04	0.31	0.30	30.46	0.36	52.82	202.37	0.01	2.31	0.01												
Dec-15	6.53E-04	10.99	0.51	0.03	0.31	0.24	24.16	0.36	53.33	188.68	0.01	3.89	3.59E-03												
Jan-16	2.31E-04	11.50	0.53	0.03	0.31	0.26	26.62	0.38	56.26	187.61	3.52E-06	4.34	0.01												
Feb-16	1.94E-04	13.56	0.57	0.03	0.31	0.29	30.14	0.35	51.46	158.26	3.81E-05	3.84	0.01												
Mar-16	4.18E-04	15.37	0.64	0.03	0.33	0.31	32.06	0.38	55.77	132.85	0.00	4.13	0.07												
Apr-16	1.05E-03	2.38	0.16	0.01	0.26	0.08	7.73	0.34	49.92	42.26	4.86E-03	2.17	0.05												
May-16	2.03E-03	14.25	0.60	0.03	0.24	0.31	31.57	0.36	53.38	430.95	0.00	1.77	0.07												
Jun-16	0.00	13.10	0.58	0.03	0.25	0.30	30.36	0.36	52.96	384.93	0.00	2.44	3.59E-03												
Jul-16	0.00	13.35	0.60	0.04	0.25	0.30	30.90	0.36	52.83	366.21	0.00	2.51	3.57E-04												
Aug-16	1.46E-04	13.82	0.62	0.03	0.25	0.28	29.05	0.35	51.01	368.70	0.00	2.37	0.02												
Sep-16	0.00	14.04	0.59	0.03	0.14	0.28	28.58	0.20	29.33	317.26	0.00	3.15	0.01												
Oct-16	1.34E-04	13.91	0.63	0.03	0.25	0.28	28.91	0.37	54.72	391.77	0.00	3.80	0.02												
Nov-16	3.16E-05	13.36	0.59	0.03	0.23	0.30	30.93	0.37	53.73	352.68	0.00	3.25	0.02												
Dec-16	1.83E-04	10.58	0.50	0.03	0.25	0.28	28.39	0.37	53.92	335.55	0.00	2.43	3.63E-03	4,007.99	0.01	150.86	6.76	0.37	3.17	3.23	329.85	4.05	593.99	2,915.47	0.23
Jan-17	0.00	15.38	0.65	0.04	0.26	0.31	48.33	0.35	7.26	326.68	0.00	3.02	0.01	4,049.65	0.01	151.57	6.77	0.37	3.17	3.24	339.10	4.05	572.17	2,968.99	0.23
Feb-17	0.00	13.50	0.60	0.03	0.25	0.27	41.22	0.34	7.11	341.05	0.00	1.79	0.06	4,092.46	0.01	149.84	6.70	0.37	3.17	3.22	344.57	4.06	551.82	3,028.48	0.23
Mar-17	0.00	1.65	0.12	0.01	0.28	0.04	6.32	0.40	8.22	409.10	0.00	1.16	0.01	4,164.57	0.00	143.25	6.43	0.36	3.17	3.09	332.41	4.09	532.30	3,139.23	0.23
Apr-17	0.00	0.00	0.00	1.81E-03	0.26	5.10E-07	7.85E-05	0.36	7.47	116.44	0.00	1.08	0.04	4,169.92	0.00	142.03	6.35	0.35	3.16	3.05	328.35	4.10	510.82	3,171.45	0.25
May-17	5.73E-04	12.40	0.54	0.03	0.27	0.29	44.88	0.37	7.73	285.82	0.00	2.39	0.01	4,233.38	0.00	144.84	6.44	0.36	3.17	3.10	340.22	4.12	490.32	3,240.56	0.25
Jun-17	1.52E-03	15.04	0.64	0.04	0.30	0.31	47.70	0.37	7.72	259.81	0.00	4.17	0.01	4,257.05	0.00	146.23	6.47	0.36	3.19	3.10	349.00	4.16	472.59	3,271.69	0.24
Jul-17	9.03E-05	15.40	0.66	0.04	0.32	0.33	50.21	0.39	8.10	366.44	0.00	2.96	2.96E-03	4,298.91	0.00	145.98	6.45	0.36	3.19	3.11	357.98	4.17	449.25	3,328.17	0.24
Aug-17	3.71E-04	13.36	0.60	0.04	0.29	0.31	47.55	0.37	7.75	280.30	0.00	3.42	0.01	4,304.67	0.00	145.19	6.42	0.36	3.18	3.12	366.78	4.17	426.13	3,349.08	0.24
Sep-17	1.20E-04	14.38	0.61	0.04	0.25	0.29	45.11	0.18	3.70	286.44	0.00	2.36	0.01	4,346.34	0.00	144.80	6.40	0.37	3.23	3.12	374.92	4.19	417.72	3,391.34	0.24
Oct-17	0.00	12.68	0.55	0.04	0.25	0.28	43.03	0.36	7.40	317.95	0.00	2.98	0.02	4,399.98	0.00	144.47	6.37	0.37	3.21	3.12	382.12	4.20	396.95	3,458.94	0.23
Nov-17	6.63E-05	16.00	0.65	0.04	0.26	0.31	47.90	0.37	7.76	356.66	0.00	1.45	1.07E-03	4,463.39	0.00	145.00	6.37	0.37	3.18	3.13	390.84	4.21	374.42	3,535.65	0.22
Dec-17	1.58E-04	13.57	0.59	0.04	0.25	0.27	41.59	0.37	7.59	291.59	0.00	3.06	0.01	4,501.60	0.00	146.29	6.42	0.37	3.16	3.15	399.55	4.21	351.54	3,586.69	0.23
Jan-18	7.08E-05	15.35	0.65	0.04	0.19	0.29	44.04	0.26	5.43	23.81	0.00	4.57	0.01	4,404.98	0.00	148.21	6.47	0.38	3.09	3.16	408.26	4.15	326.13	3,504.90	0.23
Feb-18	8.21E-05	14.13	0.60	0.03	0.25	0.28	42.54	0.35	7.34	21.68	0.00	3.89	0.01	4,321.12	0.00	148.49	6.49	0.38	3.06	3.15	414.46	4.15	304.07	3,436.64	0.23
Mar-18	0.00	14.55	0.62	0.04	0.27	0.30	45.65	0.38	7.81	25.68	0.00	3.88	0.01	4,249.72	0.00	148.08	6.47	0.38	3.03	3.14	421.26	4.15	280.09	3,382.92	0.20
Apr-18	0.00	2.53	0.16	0.01	0.24	0.08	12.77	0.36	7.45	6.82	0.00	2.75	0.01	4,213.64	0.00	148.16	6.48	0.38	3.02	3.15	423.78	4.15	258.85	3,365.49	0.18
May-18	8.51E-04	14.14	0.61	0.03	0.26	0.29	44.26	0.36	7.56	16.39	0.00	4.02	0.05	3,990.86	0.00	148.11	6.48	0.38	3.03	3.14	430.12	4.15	235.94	3,159.33	0.17
Jun-18	1.09E-04	13.96	0.60	0.04	0.25	0.29	45.22	0.35	7.20	30.11	0.00	2.37	0.01	3,798.40	0.00	148.54	6.49	0.39	3.03	3.14	437.55	4.15	213.06	2,981.88	0.17
Jul-18	1.82E-04	14.88	0.63	0.04	0.27	0.31	47.30	0.36	7.48	28.45	0.00	1.99	0.01	3,615.59	0.00	149.30	6.51	0.39	3.04	3.14	445.75	4.15	190.38	2,812.75	0.18
Aug-18	2.65E-04	13.78	0.60	0.04	0.28	0.30	45.43	0.32	6.67	26.74	0.00	3.70	0.01	3,431.27	0.00	149.28	6.50	0.39	3.06	3.14	453.94	4.13	168.22	2,642.43	0.17
Sep-18	0.00	14.52	0.60	0.04	0.38	0.28	42.81	0.20	4.18	14.59	0.00	2.55	0.02	3,274.54	0.00	149.52	6.50	0.39	3.17	3.14	461.06	4.13	155.64	2,490.80	0.18
Oct-18	8.95E-04	15.86	0.67	0.03	0.27	0.31	47.47	0.33	6.79	20.84	0.00	3.09	0.02	3,075.03	0.00	150.50	6.52	0.39	3.18	3.16	470.33	4.11	131.68	2,304.98	0.18
Nov-18	4.96E-04	15.09	0.62	0.04	0.27	0.29	44.63	0.34	7.16	25.42	0.00	2.74	0.02	2,895.59	0.00	151.37	6.53	0.39	3.20	3.15	477.18	4.10	108.39	2,141.09	0.18
Dec-18	1.64E-03	14.48	0.63	0.03	0.27	0.29	44.18	0.35	7.18	17.14	0.00	3.12	0.01	2,723.27	0.00	153.32	6.59	0.39	3.21	3.15	485.07	4.09	85.02	1,982.24	0.18
Jan-19	0.00	16.53	0.70	0.04	0.24	0.30	46.42	0.31	6.43	29.19	0.00	4.16	2.40E-03	2,574.28	0.00	153.89	6.62	0.39	3.20	3.15	484.12	4.07	84.60	1,834.06	0.18
Feb-19	3.25E-04	11.81	0.52	0.03	0.27	0.24	36.85	0.33	6.92	46.35	0.00	3.68	1.63E-03	2,424.68	0.00	153.05	6.58	0.39	3.21	3.13	481.93	4.06	84.51	1,687.65	0.15
Mar-19	1.71E-04	15.31	0.65	0.03	0.31	0.30	45.38	0.38	7.85	48.40	0.00	3.71	1.20E-03	2,272.18	0.00	159.89	6.84	0.41	3.22	3.26	501.46	4.05	84.32	1,508.58	0.15
Apr-19	9.95E-04	2.02	0.14	0.01	0.28	0.07	10.02	0.37	7.72	12.17	0.00	1.34	0.01	2,226.43	0.00	160.90	6.91	0.41	3.23	3.29	506.47	4.06	84.44	1,456.57	0.13
May-19	1.79E-03	14.42	0.63	0.04	0.29	0.30	46.77	0.34	6.97	37.90	0.00	1.97	0.01	2,103.88	0.01	161.91	6.96	0.41	3.24	3.30	507.42	4.04	84.07	1,332.40	0.14
Jun-19	1.76E-03	14.45	0.64	0.04	0.29	0.28	42.91	0.34	7.02	42.65	0.00	2.12	0.01	1,991.20	0.01	161.61	6.96	0.41	3.24	3.28	505.02	4.03	83.72	1,222.79	0.14
Jul-19	3.79E-05	16.86	0.72	0.04	0.33	0.32	49.22	0.38	7.86	51.59	0.00	3.71	0.01	1,834.29	0.01	162.34	6.99	0.41	3.24	3.28	504.53	4.02	83.60	1,065.73	0.14
Aug-19	3.60E-04	11.48	0.54	0.04	0.33	0.25	38.05	0.34	7.04	37.98	0.00	3.70	0.01	1,707.16	0.01	161.40	6.96	0.41	3.26	3.25	499.78	4.00	83.24	944.72	0.14
Sep-19	4.91E-04	13.26	0.59	0.04	0.30	0.26	40.74	0.22	4.61	47.93	0.00	2.75	0.02	1,585.84	0.01	160.84	6.94	0.41	3.29	3.24	497.59	4.02	83.70	825.66	0.14
Oct-19	6.12E-05	16.34	0.68	0.04	0.30	0.29	44.10	0.36	7.56	45.95	0.00	3.63	0.01	1,452.71	0.01	162.67	7.01	0.41	3.31	3.24	498.13	4.03	83.78	689.99	0.14
Nov-19	1.23E-04	16.71	0.71	0.04	0.29	0.31	47.73	0.38	7.85	38.70	0.00	5.23	0.01	1,295.98	0.01	163.02	7.04	0.41	3.33	3.24	498.04	4.03	83.83	532.89	0.14
Dec-19	7.58E-05	15.34	0.67	0.04	0.32	0.31	46.93	0.37	7.76	29.23	0.00	3.90	4.27E-03	1,168.96	0.01	163.91	7.08	0.42	3.36	3.26	500.71	4.03	83.91	402.13	0.14
Jan-20	2.44E-04	15.97	0.70	0.04	0.33	0.30	46.80	0.38	7.82	76.04	0.00	4.43	0.06	1,198.08	0.01	164.22	7.11	0.42	3.43	3.27	502.09	4.09	85.10	428.18	0.17
Feb-20	8.15E-04	15.42	0.66	0.04	0.31	0.29	45.31	0.32	6.69	45.47	0.00	3.49	0.02	1,211.55	0.01	164.87	7.14	0.42	3.46	3.27	503.48	4.08	84.78	439.88	0.17
Mar-20	0.00	16.35	0.71	0.04	0.30	0.32	49.76	0.35	7.32	56.20	0.00	1.89	0.01	1,228.59	0.01	165.76	7.19	0.43	3.48	3.29	505.53	4.06	84.53	454.14	0.17
Apr-20	7.70E-05	16.00	0.69	0.04	0.30	0.31	48.09	0.37	7.78	59.84	0.00	4.04	0.01	1,280.74	0.01	172.50	7.45	0.44	3.51	3.40	523.19	4.07	84.70	481.30	0.17
May-20	1.45E-04	10.70	0.53	0.03	0.31	0.22	34.10	0.37	7.78	46.99	0.00	2.81	3.53E-03	1,288.68	0.01	170.78	7.41	0.44	3.54	3.37	518.11	4.08	84.81	495.99	0.15
Jun-20	6.78E-04	14.59	0.64	0.04	0.28	0.28	43.62	0.36	7.44	55.19	0.00	6.13	0.02	1,302.78	0.01	171.09	7.42	0.44	3.56	3.36	517.31	4.08	84.93	510.42	0.15
Jul-20	1.19E-03	14.10	0.63	0.04	0.29	0.29	43.87	0.38	7.82	48.30	0.00	5.51	9.86E-04	1,312.53	0.01	170.70	7.42	0.44	3.57	3.35	515.60	4.09	85.10	522.10	0.15

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

CO Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)													24-month Rolling Emission Rates (tons/yr)										
	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Baseline Period and Emissions	No. 7 Mill Oxygen Delignification (to HVLC)	No. 7 Mill Bleach Plant	No. 7 Mill - Extraction Stage Washers	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO	CO - Fuel Oil	CO - Natural Gas	CO	4,501.60 Jan-16 – Dec-17										
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons (24-mo Rolling total)*										
Aug-20	0.00	15.94	0.69	0.04	0.30	0.32	48.67	0.38	7.81	34.68	0.00	2.97	0.01	1,319.50	0.01	171.78	7.47	0.44	3.58	3.36	517.22	4.12	85.67	525.70	0.15
Sep-20	8.33E-04	11.39	0.52	0.04	0.20	0.25	38.23	0.22	4.48	44.72	0.00	3.39	0.01	1,331.14	0.01	170.21	7.43	0.44	3.49	3.35	514.93	4.13	85.82	541.19	0.14
Oct-20	0.00	11.14	0.53	0.04	0.24	0.25	38.27	0.33	6.79	35.23	0.00	3.34	0.08	1,331.42	0.01	167.85	7.36	0.44	3.48	3.32	510.33	4.13	85.82	548.51	0.17
Nov-20	7.64E-05	14.17	0.62	0.04	0.29	0.30	45.60	0.36	7.50	101.99	0.00	3.23	0.02	1,370.18	0.01	167.39	7.37	0.44	3.49	3.32	510.81	4.13	86.00	587.04	0.17
Dec-20	2.11E-04	14.71	0.64	0.04	0.29	0.28	43.78	0.38	7.86	61.39	0.00	3.39	0.07	1,392.76	0.01	167.51	7.37	0.45	3.50	3.32	510.62	4.15	86.34	609.30	0.20
Jan-21	0.00	19.94	0.71	0.04	0.31	0.31	47.68	0.38	7.83	50.00	0.00	2.25	0.04	1,405.34	0.01	169.21	7.38	0.45	3.53	3.32	511.24	4.18	87.04	618.75	0.22
Feb-21	2.87E-04	13.89	0.60	0.04	0.29	0.27	40.96	0.35	7.19	44.71	0.00	4.13	3.26E-03	1,408.06	0.01	170.25	7.42	0.45	3.54	3.34	513.30	4.19	87.18	618.16	0.22
Mar-21	4.57E-05	15.21	0.66	0.04	0.32	0.28	43.03	0.39	8.20	38.83	0.00	3.05	0.01	1,401.91	0.01	170.20	7.43	0.45	3.55	3.33	512.13	4.20	87.35	613.04	0.23
Apr-21	6.54E-04	8.35	0.42	0.02	0.27	0.19	29.83	0.33	6.79	34.63	0.00	2.26	0.02	1,426.39	0.00	173.36	7.57	0.46	3.55	3.40	522.03	4.18	86.89	624.74	0.23
May-21	3.07E-04	15.79	0.67	0.04	0.29	0.30	46.71	0.36	7.40	55.64	0.00	5.02	0.02	1,437.69	0.00	174.05	7.59	0.46	3.55	3.39	522.00	4.19	87.10	635.13	0.24
Jun-21	0.00	11.70	0.54	0.04	0.23	0.29	45.35	0.28	5.73	57.08	0.00	3.18	0.02	1,444.54	0.00	172.67	7.54	0.46	3.52	3.40	523.22	4.16	86.45	642.88	0.24
Jul-21	0.00	12.27	0.53	0.03	0.29	0.25	38.82	0.36	7.41	49.54	0.00	4.97	0.01	1,436.27	0.00	170.38	7.45	0.46	3.49	3.37	518.02	4.15	86.23	642.49	0.24
Aug-21	0.00	14.23	0.62	0.04	0.27	0.29	43.93	0.30	6.32	72.37	0.00	4.69	0.13	1,457.99	0.00	171.75	7.49	0.46	3.47	3.39	520.96	4.13	85.87	660.17	0.30
Sep-21	1.13E-04	14.52	0.61	0.04	0.37	0.27	41.17	0.20	4.22	42.27	0.00	5.36	0.03	1,457.15	0.00	172.38	7.50	0.46	3.50	3.39	521.17	4.12	85.67	658.65	0.31
Oct-21	8.18E-05	16.23	0.67	0.04	0.27	0.32	48.46	0.35	7.38	59.80	0.00	4.97	0.02	1,466.77	0.00	172.33	7.49	0.46	3.49	3.40	523.35	4.11	85.58	666.25	0.31
Nov-21	0.00	16.24	0.68	0.04	0.26	0.30	46.06	0.36	7.46	58.09	0.00	6.09	0.01	1,475.60	0.00	172.09	7.47	0.45	3.47	3.40	522.52	4.11	85.39	676.38	0.32
Dec-21	0.00	17.87	0.72	0.04	0.27	0.30	46.38	0.38	7.84	71.59	0.00	4.79	0.01	1,498.24	0.00	173.36	7.50	0.45	3.44	3.40	522.24	4.11	85.43	698.00	0.32
Jan-22	3.33E-04	12.76	0.57	0.22	0.06	0.27	8.05	0.32	28.88	30.34	0.00	5.49	0.01	1,465.29	0.00	171.75	7.43	0.54	3.31	3.38	502.87	4.08	95.96	675.68	0.29
Feb-22	0.00	10.86	0.50	0.18	0.05	0.24	7.07	0.31	27.69	17.28	0.00	3.89	2.63E-03	1,440.31	0.00	169.47	7.35	0.60	3.18	3.35	483.75	4.08	106.46	661.78	0.29
Mar-22	9.68E-04	7.02	0.35	0.14	0.07	0.19	5.68	0.31	27.80	12.34	0.00	3.22	0.02	1,402.26	0.00	164.81	7.17	0.65	3.07	3.28	461.71	4.06	116.70	640.52	0.29
Apr-22	2.70E-04	15.47	0.61	0.22	0.07	0.29	8.63	0.31	27.61	30.00	0.00	3.49	0.05	1,376.89	0.00	164.54	7.13	0.74	2.95	3.27	441.98	4.03	126.61	625.32	0.31
May-22	2.61E-03	14.06	0.58	0.22	0.07	0.28	8.31	0.28	25.18	23.22	0.00	3.72	0.04	1,362.94	0.00	166.22	7.16	0.84	2.82	3.30	429.09	3.98	135.31	613.89	0.33
Jun-22	1.24E-04	16.89	0.66	0.23	0.06	0.30	9.08	0.36	31.88	27.08	0.00	3.75	0.01	1,343.80	0.00	167.37	7.17	0.94	2.72	3.31	411.82	3.98	147.53	598.64	0.32
Jul-22	2.46E-03	14.73	0.59	0.24	0.06	0.28	8.47	0.33	29.71	29.34	0.00	3.21	0.07	1,326.71	0.00	167.69	7.15	1.04	2.60	3.31	394.12	3.96	158.47	588.01	0.36
Aug-22	0.00	15.62	0.62	0.21	0.06	0.30	8.90	0.35	30.75	18.55	0.00	4.58	0.02	1,310.78	0.00	167.53	7.11	1.13	2.48	3.30	374.23	3.95	169.94	580.75	0.37
Sep-22	2.49E-04	15.10	0.58	0.22	0.02	0.27	8.14	0.09	8.40	16.17	0.00	3.01	0.06	1,285.10	0.00	169.38	7.15	1.22	2.38	3.31	359.19	3.88	171.91	566.29	0.39
Oct-22	8.29E-05	12.91	0.56	0.22	0.06	0.28	8.45	0.33	29.28	30.47	0.00	2.13	0.09	1,279.36	0.00	170.27	7.16	1.31	2.29	3.32	344.27	3.89	183.15	563.30	0.40
Nov-22	5.49E-04	14.14	0.57	0.20	0.06	0.28	8.33	0.35	30.73	16.90	0.00	3.52	0.02	1,229.84	0.00	170.25	7.13	1.39	2.17	3.31	325.64	3.88	194.76	520.90	0.40
Dec-22	1.04E-03	17.41	0.68	0.23	0.06	0.32	9.45	0.34	30.37	20.49	0.00	3.97	0.01	1,205.09	0.01	171.60	7.15	1.48	2.06	3.33	308.48	3.86	206.02	500.74	0.37
Jan-23	9.81E-04	16.04	0.64	0.20	0.06	0.28	8.50	0.31	22.87	16.02	0.00	4.38	0.01	1,175.00	0.01	169.65	7.11	1.56	1.94	3.32	288.88	3.83	213.53	484.81	0.36
Feb-23	0.00	10.77	0.53	0.18	0.06	0.24	7.25	0.34	24.84	12.89	0.00	3.44	2.05E-03	1,149.06	0.01	168.09	7.08	1.63	1.83	3.30	272.03	3.82	222.36	468.55	0.36
Mar-23	3.69E-04	1.32	0.09	0.06	0.05	0.08	2.54	0.28	20.66	9.35	0.00	3.77	0.03	1,113.16	0.01	161.15	6.79	1.65	1.69	3.21	251.78	3.77	228.59	454.17	0.37
Apr-23	1.40E-03	11.08	0.51	0.21	0.06	0.26	7.65	0.34	24.68	20.72	0.00	3.34	4.62E-03	1,106.03	0.01	162.51	6.84	1.74	1.59	3.24	240.69	3.77	237.53	447.75	0.36
May-23	4.97E-04	13.43	0.60	0.22	0.08	0.29	8.67	0.35	25.86	18.36	0.00	4.38	0.02	1,076.04	0.01	161.33	6.80	1.83	1.48	3.23	221.68	3.77	246.76	428.79	0.36
Jun-23	0.00	6.70	0.36	0.12	0.06	0.16	4.89	0.34	24.60	25.26	0.00	5.69	0.02	1,047.92	0.01	158.84	6.71	1.87	1.40	3.16	201.45	3.80	256.20	414.13	0.36
Jul-23	7.02E-05	14.60	0.62	0.23	0.06	0.30	8.91	0.34	25.11	31.25	0.00	4.24	0.01	1,033.51	0.01	160.00	6.76	1.97	1.28	3.19	186.49	3.79	265.05	404.62	0.36
Aug-23	7.55E-04	12.30	0.55	0.19	0.06	0.25	7.44	0.31	23.04	38.05	0.00	3.75	0.05	1,004.92	0.01	159.04	6.73	2.04	1.18	3.17	168.24	3.80	273.41	386.99	0.32
Sep-23	1.19E-03	12.74	0.56	0.20	0.04	0.24	7.24	0.08	6.14	16.51	0.00	6.32	0.01	975.43	0.01	158.15	6.70	2.12	1.02	3.15	151.28	3.74	274.37	374.59	0.31
Oct-23	6.48E-04	14.26	0.63	0.22	0.06	0.28	8.42	0.34	25.14	35.05	0.00	4.69	0.02	950.73	0.01	157.16	6.68	2.22	0.91	3.14	131.26	3.73	283.25	362.08	0.30
Nov-23	2.82E-04	15.07	0.66	0.22	0.07	0.28	8.44	0.36	26.44	32.94	0.00	4.50	2.72E-03	927.43	0.01	156.58	6.68	2.31	0.81	3.13	112.45	3.73	292.73	348.70	0.30
Dec-23	2.52E-04	13.34	0.59	0.22	0.07	0.28	8.27	0.35	25.87	29.67	0.00	5.12	0.01	894.23	0.01	154.31	6.61	2.40	0.71	3.12	93.39	3.72	301.75	327.91	0.30
Jan-24	6.99E-04	10.83	0.52	0.21	0.06	0.26	7.88	0.30	22.29	32.16	0.00	4.74	0.02	890.39	0.01	153.34	6.59	2.40	0.71	3.11	93.31	3.71	298.46	328.44	0.30
Feb-24	0.00	13.14	0.64	0.23	0.06	0.27	8.23	0.33	24.11	34.76	0.00	4.02	4.36E-03	899.26	0.01	154.48	6.66	2.42	0.72	3.13	93.89	3.72	296.67	337.25	0.30
Mar-24	5.44E-04	5.17	0.25	0.08	0.07	0.12	3.45	0.36	26.32	13.52	0.00	2.60	0.07	896.69	0.01	153.56	6.61	2.39	0.72	3.09	92.77	3.74	295.93	337.54	0.33
Apr-24	1.98E-04	13.01	0.57	0.21	0.06	0.27	8.11	0.33	24.09	24.88	0.00	4.51	0.03		0.01	152.33	6.59	2.39	0.71	3.09	92.51	3.75	294.17	335.49	0.32

SO2 Baseline Actual Emission Rate Calculations

	Production Data														Emission Factors													
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Nos. 7 and 8 Recovery Furnaces/ No. 7 Power	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Backup NCG Incinerator
	Lime Production	Fuel Oil Usage	Lime Production	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	FO Sulfur Content	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2 - Natural Gas	SO_2 - No. 7 Mill	SO_2 - No. 8 Mill
	tons CaO	*gal (F.O.)*	*tons CaO*	*gal (F.O.)*	*tons BLS*	*gal (F.O.)*	*tons BLS*	*gal (F.O.)*	*PB MMBTU (bark)*	*gal (F.O.)*	*MMBtu (N.G.)*	*F.O. Sulfur*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/kgal (FO)*	*lb/ton CaO*	*lb/kgal (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/kgal (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/kgal (FO)*	*lb/MMBtu*	*lb/kgal*	*lb/MMBtu*	*lb/ADTUBP*	*lb/ADTUBP*
Jan-15	8,903	4,410	11,396	0	71,044	175,110	84,477	70,240	215,197	5,772	84,100	0.09%	1,106	487	0.000	12.78	0.000	12.78	1.47E-03	6.67E-03	12.78	5.69E-03	5.96E-02	12.78	5.15E-04	12.78	5.88E-04	1.92	0.96
Feb-15	8,899	24,623	10,547	0	72,081	3,937	79,314	6,329	218,105	17,290	40,570	0.08%	95	9,090	0.000	10.93	0.000	10.93	1.47E-03	6.67E-03	10.93	5.69E-03	5.96E-02	10.93	5.15E-04	10.93	5.88E-04	1.92	0.96
Mar-15	9,613	0	11,280	0	72,947	117,566	78,419	45,339	181,048	6,290	105,271	0.08%	1,047	513	0.000	10.79	0.000	10.79	1.47E-03	6.67E-03	10.79	5.69E-03	5.96E-02	10.79	5.15E-04	10.79	5.88E-04	1.92	0.96
Apr-15	3,036	0	11,527	0	19,335	45,166	83,689	27,939	50,339	16,128	42,803	0.08%	0	123	0.000	10.79	0.000	10.79	1.47E-03	6.67E-03	10.79	5.69E-03	5.96E-02	10.79	5.15E-04	10.79	5.88E-04	1.92	0.96
May-15	6,696	0	11,266	0	50,315	42,270	80,831	28,680	144,507	6,191	67,451	0.24%	630	655	0.000	34.08	0.000	34.08	1.47E-03	6.67E-03	34.08	5.69E-03	5.96E-02	34.08	5.15E-04	34.08	5.88E-04	1.92	0.96
Jun-15	8,826	0	10,641	0	71,717	51,738	71,665	16,459	197,508	6,095	13,037	0.22%	1,845	12	0.000	31.24	0.000	31.24	1.47E-03	6.67E-03	31.24	5.69E-03	5.96E-02	31.24	5.15E-04	31.24	5.88E-04	1.92	0.96
Jul-15	9,971	0	13,287	0	76,795	10,906	90,875	0.0	250,965	6,388	19,902	0.22%	313	196	0.000	31.24	0.000	31.24	1.47E-03	6.67E-03	31.24	5.69E-03	5.96E-02	31.24	5.15E-04	31.24	5.88E-04	1.92	0.96
Aug-15	10,154	0	13,411	0	71,276	32,276	89,606	324.0	237,148	6,525	8,333	0.21%	561	2	0.000	29.82	0.000	29.82	1.47E-03	6.67E-03	29.82	5.69E-03	5.96E-02	29.82	5.15E-04	29.82	5.88E-04	1.92	0.96
Sep-15	8,918	0	5,940	0	68,634	49,946	34,033	22,164	199,595	4,304	23,371	0.23%	492	1,853	0.000	32.66	0.000	32.66	1.47E-03	6.67E-03	32.66	5.69E-03	5.96E-02	32.66	5.15E-04	32.66	5.88E-04	1.92	0.96
Oct-15	9,844	0	12,305	0	68,184	116,619	81,193	127,498	181,259	6,776	26,410	0.23%	10	7,598	0.000	32.66	0.000	32.66	1.47E-03	6.67E-03	32.66	5.69E-03	5.96E-02	32.66	5.15E-04	32.66	5.88E-04	1.92	0.96
Nov-15	10,471	0	13,192	0	72,500	27,854	87,648	38,221	198,688	3,748	56,034	0.23%	603	741	0.000	32.66	0.000	32.66	1.47E-03	6.67E-03	32.66	5.69E-03	5.96E-02	32.66	5.15E-04	32.66	5.88E-04	1.92	0.96
Dec-15	7,483	25,000	12,962	0	57,498	60,270	88,496	40,542	185,243	5,131	94,541	0.24%	546	33	0.000	34.08	0.000	34.08	1.47E-03	6.67E-03	34.08	5.69E-03	5.96E-02	34.08	5.15E-04	34.08	5.88E-04	1.92	0.96
Jan-16	8,511	774	13,148	0	63,374	191,007	93,355	21,915	184,194	1	105,490	0.21%	82	1,438	0.000	29.70	0.000	29.70	1.47E-03	6.67E-03	29.70	1.00E-03	5.96E-02	29.70	5.15E-04	29.70	5.88E-04	1.92	0.96
Feb-16	8,546	0	12,933	0	71,737	142,346	85,379	6,576	155,374	16	93,137	0.23%	1,491	0	0.000	32.33	0.000	32.33	1.47E-03	6.67E-03	32.33	1.00E-03	5.96E-02	32.33	5.15E-04	32.33	5.88E-04	1.92	0.96
Mar-16	7,861	112	13,902	0	76,311	102,646	92,544	0.0	130,434	0	100,371	0.24%	9,970	1,011	0.000	33.54	0.000	33.54	1.47E-03	6.67E-03	33.54	1.00E-03	5.96E-02	33.54	5.15E-04	33.54	5.88E-04	1.92	0.96
Apr-16	1,595	6	10,861	0	18,405	2,646	82,829	0.0	41,491	2,001	52,799	0.24%	7,493	429	0.000	33.54	0.000	33.54	1.47E-03	6.67E-03	33.54	1.00E-03	5.96E-02	33.54	5.15E-04	33.54	5.88E-04	1.92	0.96
May-16	7,959	5,089	9,940	0	75,152	3,308	88,572	0.0	423,103	0	42,980	0.24%	7,764	2,775	0.000	33.46	0.000	33.46	1.47E-03	6.67E-03	33.46	1.00E-03	5.96E-02	33.46	5.15E-04	33.46	5.88E-04	1.92	0.96
Jun-16	9,337	0	10,436	0	72,276	24,612	87,873	0.0	377,915	0	59,277	0.23%	92	487	0.000	33.16	0.000	33.16	1.47E-03	6.67E-03	33.16	1.00E-03	5.96E-02	33.16	5.15E-04	33.16	5.88E-04	1.92	0.96
Jul-16	9,733	9,074	10,644	284	73,546	2,388	87,660	19,512	359,537	0	60,962	0.23%	14	44	0.000	33.16	0.000	33.16	1.47E-03	6.67E-03	33.16	1.00E-03	5.96E-02	33.16	5.15E-04	33.16	5.88E-04	1.92	0.96
Aug-16	9,108	2,329	10,326	0	69,155	621.0	84,631	7,734	361,986	0	57,672	0.25%	963	2,517	0.000	34.82	0.000	34.82	1.47E-03	6.67E-03	34.82	1.00E-03	5.96E-02	34.82	5.15E-04	34.82	5.88E-04	1.92	0.96
Sep-16	8,504	4,635	5,931	0	68,024	6,966	48,663	16,748	311,479	0	76,439	0.25%	1,481	452	0.000	35.16	0.000	35.16	1.47E-03	6.67E-03	35.16	1.00E-03	5.96E-02	35.16	5.15E-04	35.16	5.88E-04	1.92	0.96
Oct-16	8,653	0	10,308	0	68,821	660.2	90,800	304.6	384,635	0	92,371	0.25%	2,185	457	0.000	35.16	0.000	35.16	1.47E-03	6.67E-03	35.16	1.00E-03	5.96E-02	35.16	5.15E-04	35.16	5.88E-04	1.92	0.96
Nov-16	9,104	0	9,705	0	73,637	0.0	89,150	0.0	346,255	0	78,882	0.25%	30	2,875	0.000	35.16	0.000	35.16	1.47E-03	6.67E-03	35.16	1.00E-03	5.96E-02	35.16	5.15E-04	35.16	5.88E-04	1.92	0.96
Dec-16	9,376	0	10,710	0	67,590	364.3	89,465	3,333	329,439	0	58,941	0.24%	169	417	0.000	34.45	0.000	34.45	1.47E-03	6.67E-03	34.45	1.00E-03	5.96E-02	34.45	5.15E-04	34.45	5.88E-04	1.92	0.96
Jan-17	10,197	0	10,880	1,540	76,507	0.0	84,917	8,470	320,728	0	73,443	0.22%	441	1,846	0.000	31.08	0.000	31.08	0.00E+00	0.00E+00	31.08	1.00E-03	0.00E+00	31.08	5.15E-04	31.08	5.88E-04	1.92	0.96
Feb-17	8,611	0	10,537	0	65,245	0.0	83,153	10,416	334,842	0	43,534	0.22%	8,894	220	0.000	31.08	0.000	31.08	0.00E+00	0.00E+00	31.08	1.00E-03	0.00E+00	31.08	5.15E-04	31.08	5.88E-04	1.92	0.96
Mar-17	1,817	0	11,781	0	10,011	0.0	96,223	0.0	401,645	0	28,245	0.22%	393	756	0.000	31.08	0.000	31.08	0.00E+00	0.00E+00	31.08	1.00E-03	0.00E+00	31.08	5.15E-04	31.08	5.88E-04	1.92	0.96
Apr-17	489	3,724	10,808	2,176	0	0.0	87,437	3,288	114,315	0	26,265	0.22%	0	6,201	0.000	31.08	0.000	31.08	0.00E+00	0.00E+00	31.08	1.00E-03	0.00E+00	31.08	5.15E-04	31.08	5.88E-04	1.92	0.96
May-17	9,298	9,181	11,444	0	71,042	0.0	90,418	0.0	280,618	0	58,094	0.24%	817	136	0.000	34.15	0.000	34.15	0.00E+00	0.00E+00	34.15	1.00E-03	0.00E+00	34.15	5.15E-04	34.15	5.88E-04	1.92	0.96
Jun-17	10,085	0	12,777	0	75,499	0.0	90,339	0.0	255,078	0	101,363	0.24%	896	72	0.000	34.15	0.000	34.15	0.00E+00	0.00E+00	34.15	1.00E-03	0.00E+00	34.15	5.15E-04	34.15	5.88E-04	1.92	0.96
Jul-17	10,805	4,676	13,263	0	79,475	0.0	94,784	0.0	359,770	0	71,977	0.25%	283	194	0.000	35.99	0.000	35.99	0.00E+00	0.00E+00	35.99	1.00E-03	0.00E+00	35.99	5.15E-04	35.99	5.88E-04	1.92	0.96
Aug-17	10,778	6,000	12,121	0	75,274	0.0	90,742	0.0	275,193	0	83,128	0.23%	191	837	0.000	33.36	0.000	33.36	0.00E+00	0.00E+00	33.36	1.00E-03	0.00E+00	33.36	5.15E-04	33.36	5.88E-04	1.92	0.96
Sep-17	10,570	2,773	10,666	0	71,404	7,767	43,240	19,590	281,219	0	57,200	0.25%	73	914	0.000	35.68	0.000	35.68	0.00E+00	0.00E+00	35.68	1.00E-03	0.00E+00	35.68	5.15E-04	35.68	5.88E-04	1.92	0.96
Oct-17	9,893	0	10,613	0	68,119	9,163	86,542	44,255	312,155	0	72,401	0.24%	3,159	605	0.000	34.40	0.000	34.40	0.00E+00	0.00E+00	34.40	1.00E-03	0.00E+00	34.40	5.15E-04	34.40	5.88E-04	1.92	0.96
Nov-17	11,126	0	10,880	0	75,826	0.0	90,768	0.0	350,165	0	35,245	0.24%	20	153	0.000	34.40	0.000	34.40	0.00E+00	0.00E+00	34.40	1.00E-03	0.00E+00	34.40	5.15E-04	34.40	5.88E-04	1.92	0.96
Dec-17	9,553	0	10,562	0	65,828	2,489	88,839	0.0	286,283	0	74,422	0.25%	339	1,041	0.000	35.66	0.000	35.66	0.00E+00	0.00E+00	35.66	1.00E-03	0.00E+00	35.66	5.15E-04	35.66	5.88E-04	1.92	0.96
Jan-18	9,840	5,941	7,878	0	69,713	7,069	63,596	47,512	282,869	0	111,037	0.25%	96	2,087	0.000	35.87	0.000	35.87	0.00E+00	0.00E+00	35.87	1.00E-03	0.00E+00	35.87	5.15E-04	35.87	5.88E-04	1.92	0.96
Feb-18	9,050	0	10,338	0	67,334	0.0	85,839	0.0	257,531	0	94,415	0.25%	252	767	0.000	35.52	0.000	35.52	0.00E+00	0.00E+00	35.52	1.00E-03	0.00E+00	35.52	5.15E-04	35.52	5.88E-04	1.92	0.96
Mar-18	10,185	0	11,145	0	72,264	0.0	91,382	0.0	305,039	0	94,132	0.25%	671	785	0.000	35.98	0.000	35.98	0.00E+00	0.00E+00	35.98	1.00E-03	0.00E+00	35.98	5.15E-04	35.98	5.88E-04	1.92	0.96
Apr-18	3,493	0	10,100	0	20,206	4,355	87,174	0.0	81,000	0	66,820	0.25%	142	921	0.000	35.98	0.000	35.98	0.00E+00	0.00E+00	35.98	1.00E-03	0.00E+00	35.98	5.15E-04	35.98	5.88E-04	1.92	0.96
May-18	8,385	0	10,764	10,498	70,056	0.0	88,412	0.0	194,686	0	97,665	0.25%	7,140	1,058	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Jun-18	9,676	0	10,602	0	71,572	3,989	84,311	0.0	357,655	0	57,537	0.25%	1,953	36	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Jul-18	10,309	0	11,241	0	74,875	0.0	87,489	0.0	338,021	0	48,295	0.25%	1,255	967	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Aug-18	10,287	0	11,686	0	71,908	6,341	78,014	0.0	317,709	0	89,903	0.25%	286	1,133	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Sep-18	10,027	0	15,791	0	67,761	1,092	48,883	0.0	173,353	0	61,922	0.25%	3,997	1	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Oct-18	9,434	0	11,243	0	75,135	0.0	79,508	0.0	247,533	0	74,967	0.25%	1,301	1,212	0.000	35.37	0.000	35.37	0.00E+00	0.00E+00	35.37	1.00E-03	0.00E+00	35.37	5.15E-04	35.37	5.88E-04	1.92	0.96
Nov-18	9,527	0	11,441	0	70,639	6,073	83,733	0.0	301,955	0	66,663	0.25%	2,525	413	0.000	35.06	0.000	35.06	0.00E+00	0.00E+00	35.06	1.00E-03	0.00E+00	35.06	5.15E-04	35.06	5.88E-04	1.92	0.96
Dec-18	8,956	0	11,210	0	69,930	12,849	83,970	0.0	203,611	0	75,788	0.25%	650	715	0.000	35.61	0.000	35.61	0.00E+00	0.00E+00	35.61	1.00E-03	0.00E+00	35.61	5.15E-04	35.61	5.88E-04	1.92	0.96
Jan-19	10,237	0	10,069	0	73,484	0.0	75,254	0.0	154,244	0	101,087	0.24%	63	324	0.000	33.40	0.000	33.40	0.00E+00	0.00E+00	33.40	1.00E-03	0.00E+00	33.40	5.15E-04	33.40	5.88E-04	1.92	0.96
Feb-19	8,590	0	11,139	0	58,334	7,241	80,923	0.0	244,930	0	89,405	0.24%	9	255	0.000	34.25	0.000	34.25	0.00E+00	0.00E+00	34.25	1.00E-03	0.00E+00	34.25	5.15E-04	34.25	5.88E-04	1.92	0.96
Mar-19	9,222	0	13,183	0	71,830	2,235	91,845	0.0	255,769	0	90,187	0.24%	4	190	0.000	34.25	0.000	34.25	0.00E+00	0.00E+00	34.25	1.00E-03	0.00E+00	34.25	5.15E-04	34.25	5.88E-04	1.92	0.96
Apr-19	2,327	0	11,639	0	15,868	0.0	90,313	0.0	64,295	0	32,548	0.24%	719	1,085	0.000	34.25	0.000	34.25	0.00E+00	0.00E+00	34.25	1.00E-03	0.00E+00	34.25	5.15E-04	34.25	5.88E-04	1.92	0.96
May-19	10,193	0	12,055	0	74,034	0.0	81,584	0.0	200,273	0	47,921	0.24%	1,407	582	0.000	34.25	0.000	34.25	0.00E+00	0.00E+00	34.25	1.00E-03	0.00E+00	34.25	5.15E-04	34.25	5.88E-04	1.92	0.96
Jun-19	9,763	0	12,335	0	67,914	8,294	82,148	0.0	225,384	0	51,401	0.24%	884	242	0.000	34.69	0.000	34.69	0.00E+00	0.00E+00	34.69	1.00E-03	0.00E+00	34.69	5.15E-04	34.69	5.88E-04	1.92	0.96
Jul-19	11,692	0	13,778	0	77,913	1,257	91,943	0.0	272,652	0	90,014	0.24%	688	336	0.000	34.69	0.000	34.69	0.00E+00	0.00E+00	34.69	1.00E-03	0.00E+00	34.69	5.15E-04	34.69	5.88E-04	1.92	0.96
Aug-19	10,018	0	13,908	0	60,235	23,035	82,432	0.0	200,725	0	89,903	0.24%	979	45	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Sep-19	9,550	0	12,619	0	64,488	0.0	53,965	125.4	253,285	0	66,878	0.24%	927	2,194	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Oct-19	11,296	0	12,536	0	69,812	0.0	88,476	0.0	242,815	0	88,141	0.24%	1,771	613	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Nov-19	11,401	0	12,287	0	75,552	0.0	91,812	0.0	204,503	0	126,946	0.24%	506	827	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Dec-19	11,184	0	13,644	0	74,284	0.0	90,819	0.0	154,489	0	94,818	0.24%	684	5	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Jan-20	11,334	0	13,680	0	74,083	0.0	91,466	0.0	401,869	0	107,561	0.24%	3	9,926	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Feb-20	11,337	0	12,869	0	71,713	0.0	78,229	0.0	240,306	0	84,870	0.24%	25	2,883	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Mar-20	11,593	0	12,605	0	78,757	0.0	85,701	0.0	296,988	0	45,881	0.24%	685	924	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Apr-20	11,664	0	12,767	0	76,123	0.0	91,054	0.0	316,236	0	98,230	0.24%	477	610	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
May-20	8,755	0	13,141	0	53,972	0.0	91,056	0.0	248,325	0	68,182	0.24%	563	7	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96

SO2 Baseline Actual Emission Rate Calculations

	Production Data														Emission Factors													
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Nos. 7 and 8 Recovery Furnaces/ No. 7 Power Boiler	No. 7 Continuous Digester	No. 8 Continuous Digester	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Backup NCG Incinerator
	Lime Production	Fuel Oil Usage	Lime Production	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	BLS Throughput	Fuel Oil Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	FO Sulfur Content	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	Unbleached Pulp Production When LVHC NCGs to the Backup NCG	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2 - Natural Gas	SO_2 - No. 7 Mill	SO_2 - No. 8 Mill
	tons CaO	*gal (F.O.)*	*tons CaO*	*gal (F.O.)*	*tons BLS*	*gal (F.O.)*	*tons BLS*	*gal (F.O.)*	*PB MMBTU (bark)*	*gal (F.O.)*	*MMBtu (N.G.)*	*F.O. Sulfur*	*ADTUBP*	*ADTUBP*	*lb/ton CaO*	*lb/kgal (FO)*	*lb/ton CaO*	*lb/kgal (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/kgal (FO)*	*lb/ton BLS*	*lb/ton BLS*	*lb/kgal (FO)*	*lb/MMBtu*	*lb/kgal*	*lb/MMBtu*	*lb/ADTUBP*	*lb/ADTUBP*
Jun-20	9,532	0	11,841	0	69,047	14,343	87,069	0.0	291,682	0	148,939	0.24%	3,410	100	0.000	33.77	0.000	33.77	0.00E+00	0.00E+00	33.77	1.00E-03	0.00E+00	33.77	5.15E-04	33.77	5.88E-04	1.92	0.96
Jul-20	10,175	0	12,222	0	69,441	8,292	91,518	0.0	255,251	0	133,928	0.23%	135	24	0.000	33.07	0.000	33.07	0.00E+00	0.00E+00	33.07	1.00E-03	0.00E+00	33.07	5.15E-04	33.07	5.88E-04	1.92	0.96
Aug-20	10,875	0	12,531	0	77,036	609.0	91,406	609.0	183,264	0	72,058	0.25%	2,087	0	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	1.00E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Sep-20	9,704	0	8,522	0	60,516	0.0	52,377	0.0	236,313	0	82,425	0.25%	821	431	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	1.00E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Oct-20	9,979	0	10,292	0	60,584	1,175	79,476	0.0	186,160	0	81,160	0.25%	408	12,121	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	1.00E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Nov-20	10,810	0	12,307	0	72,172	0.0	87,820	0.0	538,990	0	78,554	0.25%	1,466	1,711	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	1.00E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Dec-20	10,113	0	12,225	0	69,298	0.0	91,927	0.0	324,413	0	82,449	0.25%	9,182	2,131	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	1.00E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Jan-21	10,889	0	12,837	0	75,476	0.0	91,675	0.0	264,262	0	54,540	0.25%	6,305	1	0.000	35.02	0.000	35.02	0.00E+00	0.00E+00	35.02	3.70E-03	0.00E+00	35.02	5.15E-04	35.02	5.88E-04	1.92	0.96
Feb-21	9,521	0	11,991	0	64,842	39,933	84,147	0.0	236,293	0	100,333	0.22%	411	115	0.000	30.70	0.000	30.70	0.00E+00	0.00E+00	30.70	3.70E-03	0.00E+00	30.70	5.15E-04	30.70	5.88E-04	1.92	0.96
Mar-21	10,420	0	13,606	0	68,111	16,550	96,002	0.0	205,187	0	73,991	0.25%	1,389	796	0.000	35.16	0.000	35.16	0.00E+00	0.00E+00	35.16	3.70E-03	0.00E+00	35.16	5.15E-04	35.16	5.88E-04	1.92	0.96
Apr-21	6,722	0	11,426	0	47,211	4,133	79,412	0.0	183,033	0	54,958	0.25%	1,263	1,869	0.000	35.17	0.000	35.17	0.00E+00	0.00E+00	35.17	3.70E-03	0.00E+00	35.17	5.15E-04	35.17	5.88E-04	1.92	0.96
May-21	9,954	0	12,049	0	73,937	0.0	86,559	0.0	294,064	0	121,981	0.25%	1,233	1,968	0.000	35.17	0.000	35.17	0.00E+00	0.00E+00	35.17	3.70E-03	0.00E+00	35.17	5.15E-04	35.17	5.88E-04	1.92	0.96
Jun-21	9,931	0	9,744	0	71,785	0.0	67,000	0.0	301,646	0	77,160	0.25%	296	2,323	0.000	35.17	0.000	35.17	0.00E+00	0.00E+00	35.17	3.70E-03	0.00E+00	35.17	5.15E-04	35.17	5.88E-04	1.92	0.96
Jul-21	9,241	0	11,993	0	61,455	0.0	86,692	0.0	261,824	0	120,656	0.25%	518	1,314	0.000	35.17	0.000	35.17	0.00E+00	0.00E+00	35.17	3.70E-03	0.00E+00	35.17	5.15E-04	35.17	5.88E-04	1.92	0.96
Aug-21	10,668	0	11,466	0	69,542	962.1	73,966	0.0	382,453	0	113,933	0.25%	289	19,913	0.000	35.44	0.000	35.44	0.00E+00	0.00E+00	35.44	3.70E-03	0.00E+00	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Sep-21	9,952	0	15,335	0	65,162	0.0	49,408	0.0	223,379	0	130,256	0.25%	1,262	3,726	0.000	35.44	0.000	35.44	0.00E+00	0.00E+00	35.44	3.70E-03	0.00E+00	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Oct-21	10,266	0	11,458	0	76,710	0.0	86,340	0.0	316,032	0	120,733	0.25%	70	3,831	0.000	35.44	0.000	35.44	0.00E+00	0.00E+00	35.44	3.70E-03	0.00E+00	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Nov-21	9,986	0	11,098	0	72,915	0.0	87,337	0.0	306,997	0	147,943	0.25%	540	1,511	0.000	35.44	0.000	35.44	0.00E+00	0.00E+00	35.44	3.70E-03	0.00E+00	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Dec-21	10,226	0	11,147	0	73,410	0.0	91,721	0.0	378,346	0	116,340	0.25%	6	1,423	0.000	35.44	0.000	35.44	0.00E+00	0.00E+00	35.44	3.70E-03	0.00E+00	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jan-22	9,282	0	11,027	0	65,356	0.0	79,083	0.0	343,045	0	133,310	0.25%	1,152	1,069	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Feb-22	7,595	0	9,962	0	57,394	0.0	75,833	0.0	195,412	0	94,449	0.25%	59	365	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Mar-22	6,008	0	12,737	0	46,135	0.0	76,131	0.0	139,514	0	78,239	0.25%	612	2,454	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Apr-22	9,654	0	12,499	0	70,078	0.0	75,611	0.0	339,179	0	84,749	0.25%	333	7,258	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
May-22	9,628	0	12,101	0	67,457	0.0	68,954	0.0	262,522	0	90,347	0.25%	41	6,230	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jun-22	9,917	0	11,676	0	73,726	0.0	87,307	0.0	306,228	0	91,060	0.25%	878	1,248	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jul-22	10,441	0	10,557	0	68,732	0.0	81,361	0.0	331,701	0	78,059	0.25%	1,024	10,823	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Aug-22	9,174	0	10,582	0	72,214	0.0	84,218	0.0	209,734	0	111,282	0.25%	337	3,288	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Sep-22	9,330	0	2,973	0	66,113	0.0	23,006	0.0	182,836	0	72,986	0.25%	9,533	688	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Oct-22	9,410	0	10,627	0	68,581	0.0	80,175	0.0	344,478	0	51,703	0.25%	7,513	7,565	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Nov-22	8,647	0	10,821	0	67,662	0.0	84,160	0.0	191,109	0	85,432	0.25%	3	3,392	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Dec-22	9,863	0	11,379	0	76,711	13.2	83,179	0.0	231,638	0	96,471	0.25%	304	1,553	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jan-23	8,571	0	11,921	0	68,969	0.0	75,796	0.0	172,893	0	106,295	0.25%	224	1,691	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Feb-23	7,791	0	10,944	0	58,892	0.0	82,339	0.0	139,139	0	83,636	0.25%	3	328	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Mar-23	2,599	0	9,705	0	20,586	52,754	68,474	0.0	100,962	0	91,444	0.24%	1,315	3,287	0.059	34.73	0.007	34.73	1.00E-04	7.67E-03	34.73	3.70E-03	3.26E-03	34.73	5.15E-04	34.73	5.88E-04	1.92	0.96
Apr-23	8,960	0	11,778	0	62,129	0.0	81,803	0.0	223,645	0	81,224	0.25%	184	561	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
May-23	9,457	0	13,971	0	70,410	0.0	85,709	0.0	198,173	0	106,268	0.25%	1,357	1,503	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jun-23	4,972	0	11,455	0	39,730	12,601	81,542	0.0	272,652	0	138,115	0.25%	552	2,214	0.059	35.44	0.007	35.44	1.00E-04	7.67E-03	35.44	3.70E-03	3.26E-03	35.44	5.15E-04	35.44	5.88E-04	1.92	0.96
Jul-23	9,872	0	11,604	0	72,314	0.0	83,238	0.0	337,315	0	103,009	0.24%	282	1,474	0.059	34.76	0.007	34.76	1.00E-04	7.67E-03	34.76	3.70E-03	3.26E-03	34.76	5.15E-04	34.76	5.88E-04	1.92	0.96
Aug-23	8,347	0	11,185	0	60,396	0.0	76,374	0.0	410,804	0	90,991	0.24%	6,284	1,771	0.059	34.76	0.007	34.76	1.00E-04	7.67E-03	34.76	3.70E-03	3.26E-03	34.76	5.15E-04	34.76	5.88E-04	1.92	0.96
Sep-23	8,499	0	7,351	0	58,763	7,860	20,344	0.0	178,274	0	153,469	0.24%	915	196	0.059	34.76	0.007	34.76	1.00E-04	7.67E-03	34.76	3.70E-03	3.26E-03	34.76	5.15E-04	34.76	5.88E-04	1.92	0.96
Oct-23	9,595	0	11,525	0	68,392	0.0	83,324	0.0	378,411	0	113,867	0.24%	67	2,380	0.059	33.75	0.007	33.75	1.00E-04	7.67E-03	33.75	3.70E-03	3.26E-03	33.75	5.15E-04	33.75	5.88E-04	1.92	0.96
Nov-23	9,576	0	12,073	0	68,551	0.0	87,639	0.0	355,623	0	109,285	0.24%	10	429	0.059	33.75	0.007	33.75	1.00E-04	7.67E-03	33.75	3.70E-03	3.26E-03	33.75	5.15E-04	33.75	5.88E-04	1.92	0.96
Dec-23	9,623	0	12,577	0	67,124	0.0	85,757	0.0	320,268	0	124,377	0.24%	286	614	0.059	33.75	0.007	33.75	1.00E-04	7.67E-03	33.75	3.70E-03	3.26E-03	33.75	5.15E-04	33.75	5.88E-04	1.92	0.96
Jan-24	9,227	0	11,657	0	63,933	13,181	73,898	0.0	347,185	0	115,105	0.24%	1,389	2,485	0.059	33.91	0.007	33.91	1.00E-03	7.67E-03	33.91	3.70E-03	3.26E-03	33.91	5.15E-04	33.91	5.88E-04	1.92	0.96
Feb-24	9,721	0	11,761	0	66,821	0.0	79,915	0.0	375,297	0	97,654	0.25%	123	581	0.059	35.00	0.007	35.00	1.00E-03	7.67E-03	35.00	3.70E-03	3.26E-03	35.00	5.15E-04	35.00	5.88E-04	1.92	0.96
Mar-24	3,291	0	12,661	0	28,031	17,979	87,235	0.0	146,008	0	63,257	0.25%	10,798	532	0.059	35.09	0.007	35.09	1.00E-03	7.67E-03	35.09	3.70E-03	3.26E-03	35.09	5.15E-04	35.09	5.88E-04	1.92	0.96
Apr-24	9,133	0	11,096	0	65,802	0.0	79,857	0.0	268,601	0	109,468	0.25%	3,149	1,258	0.059	35.09	0.007	35.09	1.00E-03	7.67E-03	35.09	3.70E-03	3.26E-03	35.09	5.15E-04	35.09	5.88E-04	1.92	0.96

SO2 Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)														24-month Rolling Emission Rates								
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	**Baseline Period and Emissions**	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2 - Natural Gas	SO_2	**74.33**								
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	**Jan-15 – Dec-16**	*tons (24-mo Rolling total)*							
Jan-15	0.00	0.03	0.00	0.00	0.05	0.24	1.12	0.24	2.52	0.45	0.06	0.04	0.02	1.30									
Feb-15	0.00	0.13	0.00	0.00	0.05	0.24	0.02	0.23	2.36	0.03	0.06	0.09	0.01	4.45									
Mar-15	0.00	0.00	0.00	0.00	0.05	0.24	0.63	0.22	2.34	0.24	0.05	0.03	0.03	1.25									
Apr-15	0.00	0.00	0.00	0.00	0.01	0.06	0.24	0.24	2.49	0.15	0.01	0.09	0.01	0.06									
May-15	0.00	0.00	0.00	0.00	0.04	0.17	0.72	0.23	2.41	0.49	0.04	0.11	0.02	0.92									
Jun-15	0.00	0.00	0.00	0.00	0.05	0.24	0.81	0.20	2.14	0.26	0.05	0.10	3.83E-03	1.78									
Jul-15	0.00	0.00	0.00	0.00	0.06	0.26	0.17	0.26	2.71	0.00	0.06	0.10	0.01	0.39									
Aug-15	0.00	0.00	0.00	0.00	0.05	0.24	0.48	0.25	2.67	4.83E-03	0.06	0.10	2.45E-03	0.54									
Sep-15	0.00	0.00	0.00	0.00	0.05	0.23	0.82	0.10	1.01	0.36	0.05	0.07	0.01	1.36									
Oct-15	0.00	0.00	0.00	0.00	0.05	0.23	1.90	0.23	2.42	2.08	0.05	0.11	0.01	3.66									
Nov-15	0.00	0.00	0.00	0.00	0.05	0.24	0.45	0.25	2.61	0.62	0.05	0.06	0.02	0.94									
Dec-15	0.00	0.43	0.00	0.00	0.04	0.19	1.03	0.25	2.64	0.69	0.05	0.09	0.03	0.54									
Jan-16	0.00	0.01	0.00	0.00	0.05	0.21	2.84	0.05	2.78	0.33	0.05	2.16E-05	0.03	0.77									
Feb-16	0.00	0.00	0.00	0.00	0.05	0.24	2.30	0.04	2.54	0.11	0.04	2.54E-04	0.03	1.43									
Mar-16	0.00	1.88E-03	0.00	0.00	0.06	0.25	1.72	0.05	2.76	0.00	0.03	0.00	0.03	10.06									
Apr-16	0.00	9.25E-05	0.00	0.00	0.01	0.06	0.04	0.04	2.47	0.00	0.01	0.03	0.02	7.40									
May-16	0.00	0.09	0.00	0.00	0.06	0.25	0.06	0.04	2.64	0.00	0.11	0.00	0.01	8.79									
Jun-16	0.00	0.00	0.00	0.00	0.05	0.24	0.41	0.04	2.62	0.00	0.10	0.00	0.02	0.32									
Jul-16	0.00	0.15	0.00	4.70E-03	0.05	0.25	0.04	0.04	2.61	0.32	0.09	0.00	0.02	0.03									
Aug-16	0.00	0.04	0.00	0.00	0.05	0.23	0.01	0.04	2.52	0.13	0.09	0.00	0.02	2.13									
Sep-16	0.00	0.08	0.00	0.00	0.05	0.23	0.12	0.02	1.45	0.29	0.08	0.00	0.02	1.64									
Oct-16	0.00	0.00	0.00	0.00	0.05	0.23	0.01	0.05	2.71	0.01	0.10	0.00	0.03	2.32									
Nov-16	0.00	0.00	0.00	0.00	0.05	0.25	0.00	0.04	2.66	0.00	0.09	0.00	0.02	1.41									
Dec-16	0.00	0.00	0.00	0.00	0.05	0.23	0.01	0.04	2.67	0.06	0.08	0.00	0.02	0.36	74.33	0.48	0.00	0.58	10.60	1.61	32.69	1.45	26.92
Jan-17	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.04	0.00	0.13	0.08	0.00	0.02	1.31	72.10	0.47	0.01	0.55	9.92	1.51	31.27	1.44	26.93
Feb-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.16	0.09	0.00	0.01	8.64	72.73	0.40	0.01	0.52	9.79	1.42	30.16	1.41	29.02
Mar-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.00	0.01	0.74	70.63	0.40	0.01	0.50	9.35	1.33	28.86	1.41	28.77
Apr-17	0.00	0.06	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.05	0.03	0.00	0.01	2.98	70.54	0.43	0.03	0.49	9.20	1.23	27.57	1.37	30.23
May-17	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.00	0.02	0.85	68.55	0.51	0.03	0.47	8.75	1.14	26.12	1.34	30.19
Jun-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.00	0.03	0.89	66.25	0.51	0.03	0.45	8.23	1.06	24.92	1.31	29.75
Jul-17	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.09	0.00	0.02	0.37	64.55	0.55	0.03	0.42	8.01	0.95	23.57	1.28	29.74
Aug-17	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.00	0.02	0.59	62.76	0.60	0.03	0.39	7.66	0.85	22.23	1.25	29.76
Sep-17	0.00	0.05	0.00	0.00	0.00	0.00	0.14	0.02	0.00	0.35	0.07	0.00	0.02	0.51	61.31	0.62	0.03	0.37	7.20	0.81	21.72	1.23	29.33
Oct-17	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.04	0.00	0.76	0.08	0.00	0.02	3.32	58.14	0.62	0.03	0.34	6.22	0.72	19.85	1.20	29.17
Nov-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.09	0.00	0.01	0.09	55.61	0.62	0.03	0.31	5.87	0.62	18.23	1.18	28.74
Dec-17	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.07	0.00	0.02	0.83	53.13	0.41	0.03	0.29	5.28	0.51	16.56	1.15	28.89
Jan-18	0.00	0.11	0.00	0.00	0.00	0.00	0.13	0.03	0.00	0.85	0.07	0.00	0.03	1.09	50.73	0.46	0.03	0.27	3.82	0.50	15.44	1.16	29.05
Feb-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.07	0.00	0.03	0.61	47.71	0.46	0.03	0.24	2.55	0.50	14.11	1.18	28.64
Mar-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08	0.00	0.03	1.02	40.82	0.46	0.03	0.22	1.56	0.50	12.73	1.20	24.12
Apr-18	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.04	0.00	0.00	0.02	0.00	0.02	0.58	36.15	0.46	0.03	0.21	1.55	0.51	11.50	1.19	20.71
May-18	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.04	0.00	0.00	0.05	0.00	0.03	7.36	33.96	0.41	0.12	0.18	1.39	0.51	10.18	1.17	20.00
Jun-18	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00	0.09	0.00	0.02	1.89	33.12	0.41	0.12	0.15	1.10	0.50	8.87	1.17	20.78
Jul-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.09	0.00	0.01	1.67	32.22	0.34	0.12	0.13	0.96	0.50	7.40	1.16	21.60
Aug-18	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.04	0.00	0.00	0.08	0.00	0.03	0.82	30.12	0.32	0.12	0.10	0.90	0.50	6.07	1.16	20.94
Sep-18	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.04	0.00	0.02	3.84	30.10	0.28	0.12	0.08	0.73	0.50	5.20	1.14	22.04
Oct-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.06	0.00	0.02	1.83	28.33	0.28	0.12	0.05	0.61	0.50	3.84	1.12	21.80
Nov-18	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.04	0.00	0.00	0.08	0.00	0.02	2.62	27.50	0.28	0.12	0.02	0.54	0.50	2.52	1.11	22.41
Dec-18	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.04	0.00	0.00	0.05	0.00	0.02	0.97	26.40	0.28	0.12	0.00	0.54	0.50	1.15	1.10	22.71
Jan-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.00	0.03	0.22	25.75	0.28	0.11	0.00	0.54	0.50	1.09	1.08	22.16
Feb-19	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.04	0.00	0.00	0.06	0.00	0.03	0.13	21.47	0.28	0.11	0.00	0.60	0.49	1.01	1.08	17.91
Mar-19	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.07	0.00	0.03	0.09	21.16	0.28	0.11	0.00	0.62	0.49	1.01	1.07	17.58
Apr-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.02	0.00	0.01	1.21	20.20	0.25	0.09	0.00	0.62	0.49	0.98	1.06	16.70
May-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.05	0.00	0.01	1.63	20.50	0.17	0.09	0.00	0.62	0.49	0.98	1.05	17.09
Jun-19	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.04	0.00	0.00	0.06	0.00	0.02	0.97	20.59	0.17	0.09	0.00	0.69	0.49	0.98	1.04	17.13
Jul-19	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.07	0.00	0.03	0.82	20.78	0.13	0.09	0.00	0.71	0.49	0.98	1.03	17.35
Aug-19	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.04	0.00	0.00	0.05	0.00	0.03	0.96	21.10	0.08	0.09	0.00	0.90	0.49	0.98	1.02	17.54
Sep-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	2.12E-03	0.07	0.00	0.02	1.94	21.55	0.05	0.09	0.00	0.83	0.49	0.81	1.02	18.26
Oct-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.06	0.00	0.03	1.99	20.42	0.05	0.09	0.00	0.75	0.49	0.43	1.01	17.59
Nov-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.04	0.88	20.81	0.05	0.09	0.00	0.75	0.49	0.43	1.01	17.99
Dec-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.04	0.00	0.03	0.66	20.69	0.05	0.09	0.00	0.73	0.49	0.43	0.99	17.91
Jan-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.00	0.03	4.77	22.01	0.00	0.09	0.00	0.67	0.50	0.00	1.01	19.74
Feb-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.06	0.00	0.02	1.41	22.40	0.00	0.09	0.00	0.67	0.50	0.00	1.00	20.14
Mar-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.08	0.00	0.01	1.10	22.43	0.00	0.09	0.00	0.67	0.49	0.00	1.00	20.18
Apr-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08	0.00	0.03	0.75	22.52	0.00	0.09	0.00	0.63	0.50	0.00	1.03	20.27
May-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.06	0.00	0.02	0.54	19.02	0.00	0.00	0.00	0.63	0.50	0.00	1.03	16.86

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

SO2 Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)														24-month Rolling Emission Rates								
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	**Baseline Period and Emissions**	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 7 Smelt Dissolving Tank	No. 7 Recovery Furnace	No. 8 Smelt Dissolving Tank	No. 8 Recovery Furnace	No. 7 Power Boiler	Backup NCG Incinerator
	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2	SO_2 - Fuel Oil	SO_2	SO_2 - Fuel Oil	SO_2 - Natural Gas	SO_2	**74.33**								
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	**Jan-15 – Dec-16**	*tons (24-mo Rolling total)*							
Jun-20	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.04	0.00	0.00	0.08	0.00	0.04	3.32	19.82	0.00	0.00	0.00	0.71	0.50	0.00	1.04	17.57
Jul-20	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.05	0.00	0.00	0.07	0.00	0.04	0.14	19.13	0.00	0.00	0.00	0.78	0.50	0.00	1.04	16.81
Aug-20	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.01	0.05	0.00	0.02	2.00	19.66	0.00	0.00	0.00	0.73	0.50	0.01	1.02	17.40
Sep-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.06	0.00	0.02	1.00	18.24	0.00	0.00	0.00	0.72	0.50	0.01	1.03	15.98
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.05	0.00	0.02	6.21	20.44	0.00	0.00	0.00	0.73	0.50	0.01	1.02	18.17
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.14	0.00	0.02	2.23	20.22	0.00	0.00	0.00	0.68	0.50	0.01	1.06	17.97
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08	0.00	0.02	9.84	24.56	0.00	0.00	0.00	0.56	0.51	0.01	1.07	22.41
Jan-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.07	0.00	0.02	6.05	27.55	0.00	0.00	0.00	0.56	0.57	0.01	1.08	25.33
Feb-21	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.16	0.00	0.00	0.06	0.00	0.03	0.45	28.01	0.00	0.00	0.00	0.81	0.63	0.01	1.08	25.49
Mar-21	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.18	0.00	0.00	0.05	0.00	0.02	1.72	29.01	0.00	0.00	0.00	0.93	0.69	0.01	1.07	26.30
Apr-21	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.15	0.00	0.00	0.05	0.00	0.02	2.11	29.56	0.00	0.00	0.00	0.97	0.75	0.01	1.09	26.75
May-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.08	0.00	0.04	2.13	29.89	0.00	0.00	0.00	0.97	0.81	0.01	1.11	27.00
Jun-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.08	0.00	0.02	1.40	30.09	0.00	0.00	0.00	0.90	0.85	0.01	1.13	27.21
Jul-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.07	0.00	0.04	1.13	30.30	0.00	0.00	0.00	0.89	0.90	0.01	1.13	27.37
Aug-21	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.14	0.00	0.00	0.10	0.00	0.03	9.84	34.62	0.00	0.00	0.00	0.70	0.95	0.01	1.16	31.81
Sep-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.06	0.00	0.04	3.00	35.19	0.00	0.00	0.00	0.70	0.98	0.01	1.16	32.33
Oct-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.08	0.00	0.04	1.91	35.22	0.00	0.00	0.00	0.70	1.04	0.01	1.18	32.29
Nov-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.08	0.00	0.04	1.24	35.47	0.00	0.00	0.00	0.70	1.10	0.01	1.19	32.47
Dec-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.10	0.00	0.03	0.69	35.58	0.00	0.00	0.00	0.70	1.16	0.01	1.23	32.49
Jan-22	0.27	0.00	0.04	0.00	3.27E-03	0.25	0.00	0.15	0.13	0.00	0.09	0.00	0.04	1.62	34.40	0.14	0.02	0.00	0.83	1.21	0.07	1.22	30.91
Feb-22	0.22	0.00	0.04	0.00	2.87E-03	0.22	0.00	0.14	0.12	0.00	0.05	0.00	0.03	0.23	34.16	0.25	0.04	0.00	0.94	1.26	0.13	1.22	30.32
Mar-22	0.18	0.00	0.05	0.00	2.31E-03	0.18	0.00	0.14	0.12	0.00	0.04	0.00	0.02	1.77	34.79	0.34	0.06	0.00	1.03	1.31	0.19	1.20	30.66
Apr-22	0.28	0.00	0.05	0.00	3.50E-03	0.27	0.00	0.14	0.12	0.00	0.09	0.00	0.02	3.80	36.73	0.48	0.09	0.01	1.16	1.36	0.26	1.20	32.18
May-22	0.28	0.00	0.05	0.00	3.37E-03	0.26	0.00	0.13	0.11	0.00	0.07	0.00	0.03	3.03	38.37	0.62	0.11	0.01	1.29	1.40	0.31	1.21	33.42
Jun-22	0.29	0.00	0.04	0.00	3.69E-03	0.28	0.00	0.16	0.14	0.00	0.08	0.00	0.03	1.44	37.75	0.77	0.13	0.01	1.31	1.46	0.38	1.20	32.48
Jul-22	0.31	0.00	0.04	0.00	3.44E-03	0.26	0.00	0.15	0.13	0.00	0.09	0.00	0.02	6.18	41.12	0.92	0.15	0.01	1.37	1.51	0.45	1.20	35.50
Aug-22	0.27	0.00	0.04	0.00	3.61E-03	0.28	0.00	0.16	0.14	0.00	0.05	0.00	0.03	1.90	41.49	1.06	0.17	0.01	1.51	1.57	0.51	1.21	35.45
Sep-22	0.27	0.00	0.01	0.00	3.31E-03	0.25	0.00	0.04	0.04	0.00	0.05	0.00	0.02	9.48	46.02	1.19	0.18	0.01	1.63	1.57	0.53	1.20	39.70
Oct-22	0.28	0.00	0.04	0.00	3.43E-03	0.26	0.00	0.15	0.13	0.00	0.09	0.00	0.02	10.84	48.76	1.33	0.20	0.02	1.75	1.63	0.60	1.22	42.01
Nov-22	0.25	0.00	0.04	0.00	3.38E-03	0.26	0.00	0.16	0.14	0.00	0.05	0.00	0.03	1.63	48.82	1.46	0.22	0.02	1.88	1.68	0.67	1.18	41.71
Dec-22	0.29	0.00	0.04	0.00	3.84E-03	0.29	2.34E-04	0.15	0.14	0.00	0.06	0.00	0.03	1.04	44.85	1.61	0.24	0.02	2.03	1.74	0.73	1.17	37.31
Jan-23	0.25	0.00	0.04	0.00	3.45E-03	0.26	0.00	0.14	0.12	0.00	0.04	0.00	0.03	1.03	42.66	1.73	0.26	0.02	2.16	1.72	0.79	1.16	34.80
Feb-23	0.23	0.00	0.04	0.00	2.94E-03	0.23	0.00	0.15	0.13	0.00	0.04	0.00	0.02	0.16	42.51	1.85	0.28	0.02	1.97	1.72	0.86	1.15	34.66
Mar-23	0.08	0.00	0.04	0.00	1.03E-03	0.08	0.92	0.13	0.11	0.00	0.03	0.00	0.03	2.84	43.50	1.88	0.30	0.02	2.32	1.70	0.92	1.14	35.22
Apr-23	0.26	0.00	0.04	0.00	3.11E-03	0.24	0.00	0.15	0.13	0.00	0.06	0.00	0.02	0.45	42.98	2.02	0.32	0.03	2.40	1.70	0.98	1.14	34.39
May-23	0.28	0.00	0.05	0.00	3.52E-03	0.27	0.00	0.16	0.14	0.00	0.05	0.00	0.03	2.02	43.29	2.16	0.35	0.03	2.54	1.70	1.05	1.13	34.33
Jun-23	0.15	0.00	0.04	0.00	1.99E-03	0.15	0.22	0.15	0.13	0.00	0.07	0.00	0.04	1.59	43.75	2.23	0.37	0.03	2.73	1.71	1.12	1.14	34.43
Jul-23	0.29	0.00	0.04	0.00	3.62E-03	0.28	0.00	0.15	0.14	0.00	0.09	0.00	0.03	0.98	44.06	2.37	0.39	0.03	2.87	1.71	1.19	1.14	34.35
Aug-23	0.25	0.00	0.04	0.00	3.02E-03	0.23	0.00	0.14	0.12	0.00	0.11	0.00	0.03	6.88	42.90	2.50	0.41	0.03	2.97	1.71	1.25	1.14	32.88
Sep-23	0.25	0.00	0.03	0.00	2.94E-03	0.23	0.14	0.04	0.03	0.00	0.05	0.00	0.05	0.97	42.19	2.62	0.43	0.03	3.15	1.68	1.27	1.14	31.86
Oct-23	0.28	0.00	0.04	0.00	3.42E-03	0.26	0.00	0.15	0.14	0.00	0.10	0.00	0.03	1.21	42.21	2.76	0.45	0.03	3.29	1.68	1.34	1.15	31.52
Nov-23	0.28	0.00	0.05	0.00	3.43E-03	0.26	0.00	0.16	0.14	0.00	0.09	0.00	0.03	0.22	42.07	2.91	0.47	0.04	3.42	1.68	1.41	1.15	31.00
Dec-23	0.28	0.00	0.05	0.00	3.36E-03	0.26	0.00	0.16	0.14	0.00	0.08	0.00	0.04	0.57	42.36	3.05	0.49	0.04	3.55	1.68	1.48	1.14	30.94
Jan-24	0.27	0.00	0.04	0.00	0.03	0.25	0.22	0.14	0.12	0.00	0.09	0.00	0.03	2.53	42.93	3.05	0.49	0.05	3.65	1.67	1.47	1.14	31.39
Feb-24	0.29	0.00	0.04	0.00	0.03	0.26	0.00	0.15	0.13	0.00	0.10	0.00	0.03	0.40	43.11	3.08	0.50	0.07	3.67	1.67	1.48	1.16	31.48
Mar-24	0.10	0.00	0.05	0.00	0.01	0.11	0.32	0.16	0.14	0.00	0.04	0.00	0.02	10.62	47.64	3.04	0.50	0.07	3.80	1.68	1.49	1.16	35.91
Apr-24	0.27	0.00	0.04	0.00	0.03	0.25	0.00	0.15	0.13	0.00	0.07	0.00	0.03	3.63		3.03	0.49	0.09	3.79	1.69	1.49	1.16	35.82

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

GHG Baseline Actual Emission Rate Calculations

	Production Data																CO2										
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	NCG Incinerator Natural Gas Usage	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	Nos. 7 and 8 Recovery Furnaces	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler
	Fuel Oil Usage	Natural Gas Usage	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Natural Gas Usage	Unbleached Pulp Production for Controlled LVHC NCGs	Unbleached Pulp Production for Controlled HVLC NCGs	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Wood Residuals	CO2 - Fuel Oil
	Kiln MMBTU (F.O.)	*Kiln MMBTU (N.G.)*	*Kiln MMBTU (F.O.)*	*Kiln MMBTU (N.G.)*	*RF MMBTU (BLS)*	*RF MMBTU (F.O.)*	*RF MMBTU (N.G.)*	*RF MMBTU (BLS)*	*RF MMBTU (F.O.)*	*RF MMBTU (N.G.)*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*Incin. MMBTU*	*ADTUBP*	*ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*
Jan-15	681	70,726	0	76,632	830,052	27,030	52,081	1,013,318	10,842	49,496	215,197	891	84,100	3,641	84,365	84,334	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-15	3,938	70,669	0	63,013	842,174	630	14,675	951,393	1,012	56,138	218,105	2,765	40,570	3,230	89,361	89,365	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-15	0	65,341	0	76,632	852,288	18,803	30,638	940,657	7,251	37,459	181,048	1,006	105,271	3,327	84,676	84,596	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-15	0	22,377	0	74,160	225,898	7,224	9,055	1,003,863	4,468	44,814	50,339	2,579	42,803	3,376	55,725	55,667	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-15	0	65,919	0	76,632	587,858	5,737	31,629	969,584	3,893	37,642	144,507	840	67,451	3,243	67,917	67,921	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-15	0	83,760	0	74,160	837,920	7,054	21,347	859,636	2,244	27,933	197,508	831	13,037	3,154	76,176	76,146	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-15	0	91,306	0	76,632	897,243	1,487	2,978	1,090,062	0	7,527	250,965	871	19,902	3,242	91,702	91,708	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-15	0	90,063	0	76,632	832,765	4,284	10,290	1,074,839	43	8,608	237,148	866	8,333	3,273	89,774	89,778	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-15	0	82,437	0	30,439	801,901	6,765	14,515	408,239	3,002	18,667	199,595	583	23,371	3,057	55,924	55,896	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-15	0	84,037	0	67,347	796,637	15,800	45,732	973,928	17,274	32,951	181,259	918	26,410	3,338	79,956	79,944	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-15	0	87,049	0	74,160	847,063	3,775	20,985	1,051,361	5,180	11,934	198,688	508	56,034	3,514	87,004	87,024	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-15	3,386	72,599	0	76,632	671,790	8,163	43,799	1,061,524	5,491	38,606	185,243	695	94,541	3,757	76,979	76,972	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-16	105	77,331	0	76,632	722,227	25,889	50,797	1,109,699	2,970	40,456	184,194	0	105,490	3,591	81,598	81,592	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-16	0	72,656	0	71,688	817,539	19,316	24,729	1,014,884	892	31,378	155,374	2	93,137	3,168	83,163	83,158	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-16	15	48,946	0	76,632	869,668	13,965	28,037	1,100,052	0	27,874	130,434	0	100,371	3,240	88,814	88,769	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-16	1	1,584	0	74,160	209,755	360	16,440	984,575	0	47,830	41,491	272	52,799	3,021	53,866	53,859	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-16	690	57,657	0	76,632	856,451	449	12,923	1,052,843	0	18,336	423,103	0	42,980	2,944	85,762	85,702	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-16	0	75,281	0	74,160	823,684	3,340	27,290	1,044,528	0	13,939	377,915	0	59,277	2,819	84,650	84,653	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-16	1,231	68,322	39	76,632	838,149	324	18,867	1,041,997	2,648	16,356	359,537	0	60,962	2,716	83,799	83,831	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-16	316	73,289	0	76,632	788,114	84	52,098	1,005,988	1,049	25,741	361,986	0	57,672	2,403	86,144	86,184	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-16	630	69,939	0	48,003	775,226	947	48,842	578,451	2,276	23,981	311,479	0	76,439	3,101	61,490	61,512	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-16	0	68,564	0	76,632	784,301	90	11,124	1,079,328	41	28,395	384,635	0	92,371	3,253	91,176	91,175	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-16	0	27,213	0	74,160	839,188	0	12,778	1,059,707	0	18,849	346,255	0	78,882	4,054	85,107	85,068	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-16	0	53,162	0	58,090	770,281	49	35,048	1,063,450	452	18,864	329,439	0	58,941	2,479	82,464	82,430	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-17	0	70,824	209	76,632	892,812	0	17,771	1,017,710	1,149	20,914	320,728	0	73,443	3,172	84,951	84,899	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-17	0	47,635	0	69,216	761,395	0	26,742	996,573	1,412	2,134	334,842	0	43,534	2,774	83,513	83,537	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-17	0	11,763	0	76,632	116,831	0	12,815	1,153,212	0	1,311	401,645	0	28,245	3,225	59,109	59,109	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-17	505	5,587	295	68,642	1	0	1,710	1,047,918	446	17,489	114,315	0	26,265	3,137	47,064	47,065	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-17	1,250	65,379	0	76,632	829,034	0	25,696	1,083,644	0	9,193	280,618	0	58,094	3,155	82,266	82,285	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-17	0	61,487	0	74,160	881,046	0	14,015	1,082,700	0	3,272	255,078	0	101,363	3,113	89,267	89,205	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-17	638	64,905	0	76,632	927,445	0	7,695	1,135,969	0	646	359,770	0	71,977	3,152	90,812	90,816	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-17	815	61,987	0	76,632	878,426	0	29,561	1,087,521	0	12,149	275,193	0	83,128	3,231	84,662	84,663	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-17	378	62,621	0	43,056	833,259	1,058	34,902	518,220	2,668	45,172	281,219	0	57,200	2,940	55,918	55,886	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-17	0	58,578	0	76,632	794,923	1,241	73,594	1,037,188	5,993	36,397	312,155	0	72,401	3,019	80,402	80,357	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-17	0	65,316	0	74,160	884,862	0	18,203	1,087,838	0	8,811	350,165	0	35,245	3,401	88,451	88,449	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-17	0	65,066	0	76,632	768,192	336	91,328	1,064,723	0	34,999	286,283	0	74,422	3,252	83,017	83,013	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-18	809	68,420	0	65,159	823,045	962	75,487	777,683	6,467	76,981	282,869	0	111,037	3,248	70,267	70,261	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-18	0	57,447	0	69,216	794,949	0	12,107	1,049,688	0	3,187	257,531	0	94,415	2,581	84,434	84,445	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-18	0	67,338	0	76,632	853,159	0	38,213	1,117,472	0	22,362	305,039	0	94,132	2,993	89,617	89,651	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-18	0	21,979	0	74,160	238,560	593	15,496	1,066,017	0	42,316	81,000	0	66,820	2,708	57,366	57,367	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-18	0	52,315	1,425	76,632	827,090	0	65,047	1,081,153	0	30,188	194,686	0	97,665	3,027	85,153	85,247	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-18	0	64,613	0	74,160	844,992	542	46,891	1,030,998	0	58,600	357,655	0	57,537	3,019	84,867	84,865	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-18	0	62,913	0	76,632	883,977	0	11,557	1,069,869	0	43,558	338,021	0	48,295	2,944	86,318	86,353	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-18	0	60,694	0	76,632	848,951	861	32,888	953,997	0	55,223	317,709	0	89,903	2,947	81,799	81,764	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-18	0	56,816	0	54,400	799,998	148	9,858	597,775	0	18,087	173,353	0	61,922	2,864	63,526	63,540	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-18	0	63,642	0	76,632	887,054	0	10,954	972,265	0	29,948	247,533	0	74,967	3,058	81,027	80,991	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-18	0	58,985	0	74,160	833,967	827	38,572	1,023,931	0	34,146	301,955	0	66,663	3,006	84,298	84,263	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-18	0	61,070	0	76,632	825,597	1,751	28,504	1,026,835	0	20,608	203,611	0	75,788	3,156	82,462	82,400	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-19	0	70,953	0	69,015	887,223	0	26,545	952,807	0	22,117	154,244	0	101,087	3,176	79,789	79,817	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-19	0	59,243	0	69,216	704,310	923	34,738	1,024,581	0	22,716	244,930	0	89,405	2,948	76,274	76,264	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-19	0	63,595	0	76,632	867,254	285	13,155	1,162,864	0	16,684	255,769	0	90,187	3,192	88,991	88,988	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-19	0	21,967	0	74,160	191,579	0	36,175	1,143,472	0	31,132	64,295	0	32,548	3,272	58,329	58,297	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-19	0	72,167	0	76,632	893,867	0	24,997	1,032,948	0	35,759	200,273	0	47,921	3,196	83,397	83,320	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-19	0	69,097	0	74,160	819,974	1,129	39,803	1,040,092	0	44,776	225,384	0	51,401	2,814	81,808	81,752	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-19	0	71,879	0	76,632	940,692	171	5,467	1,164,103	0	16,158	272,652	0	90,014	2,753	94,987	95,012	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-19	0	63,817	0	76,632	727,255	3,140	60,743	1,043,683	0	48,329	200,725	0	89,903	3,017	76,440	76,423	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-19	0	67,724	0	56,048	778,612	0	51,783	683,265	17	23,083	253,285	0	66,878	2,737	63,379	63,317	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-19	0	74,496	0	76,632	842,892	0	25,548	1,120,207	0	16,493	242,815	0	88,141	2,876	90,869	90,867	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-19	0	74,882	0	74,160	912,185	0	11,214	1,162,455	0	8,275	204,503	0	126,946	2,861	92,327	92,342	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-19	0	78,062	0	76,632	896,877	0	22,484	1,149,870	0	20,922	154,489	0	94,818	3,177	91,934	91,974	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-20	0	78,022	0	76,632	913,721	0	31,883	1,176,230	0	12,199	401,869	0	107,561	3,067	91,259	91,253	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-20	0	74,435	0	71,688	884,485	0	8,106	1,006,006	0	14,465	240,306	0	84,870	2,881	82,993	82,963	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-20	0	77,087	0	76,632	971,370	0	4,516	1,102,092	0	7,756	296,988	0	45,881	2,893	90,860	90,874	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-20	0	72,806	0	74,160	938,881	0	5,307	1,170,929	0	7,439	316,236	0	98,230	2,720	92,368	92,381	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-20	0	52,217	0	76,632	665,675	0	14,939	1,170,957	0	19,832	248,325	0	68,182	3,062	81,306	81,281	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-20	0	68,129	0	74,160	851,613	1,955	16,187	1,119,685	0	9,401	291,682	0	148,939	2,666	86,375	86,334	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-20	0	71,965	0	76,632	856,464	1,129	36,256	1,176,894	0	16,103	255,251	0	133,928	2,760	89,718	89,710	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-20	0	69,827	0	76,632	950,146	83	3,435	1,175,458	83	4,882	183,264	0	72,058	2,657	94,483	94,512	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05

GHG Baseline Actual Emission Rate Calculations

	Production Data																CO2											
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	NCG Incinerator Natural Gas Usage	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	Nos. 7 and 8 Recovery Furnaces	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler
	Fuel Oil Usage	Natural Gas Usage	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	BLS Throughput	Fuel Oil Usage	Natural Gas Usage	Bark Throughput	Fuel Oil Usage	Natural Gas Usage	Natural Gas Usage	Unbleached Pulp Production for Controlled LVHC NCGs	Unbleached Pulp Production for Controlled HVLC NCGs	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Wood Residuals	CO2 - Fuel Oil
	Kiln MMBTU (F.O.)	*Kiln MMBTU (N.G.)*	*Kiln MMBTU (F.O.)*	*Kiln MMBTU (N.G.)*	*RF MMBTU (BLS)*	*RF MMBTU (F.O.)*	*RF MMBTU (N.G.)*	*RF MMBTU (BLS)*	*RF MMBTU (F.O.)*	*RF MMBTU (N.G.)*	*PB MMBTU (bark)*	*PB MMBTU (F.O.)*	*PB MMBTU (N.G.)*	*Incin. MMBTU*	*ADTUBP*	*ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*
Sep-20	0	71,319	0	59,705	746,385	0	67,648	673,552	0	24,474	236,313	0	82,425	2,748	61,982	62,015	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-20	0	71,635	0	67,766	747,224	160	51,901	1,022,045	0	37,319	186,160	0	81,160	2,883	76,181	76,210	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-20	0	79,376	0	74,160	890,156	0	28,969	1,129,350	0	22,067	538,990	0	78,554	3,040	88,392	88,361	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-20	0	74,338	0	76,632	854,701	0	63,351	1,182,164	0	24,732	324,413	0	82,449	3,535	89,097	89,219	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-21	0	70,340	0	76,632	891,507	0	12,360	1,105,844	0	20,200	264,262	0	54,540	3,018	93,283	93,294	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-21	0	69,101	0	69,216	765,910	5,426	41,600	1,015,036	0	11,345	236,293	0	100,333	2,767	80,135	80,186	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-21	0	70,098	0	76,632	804,522	2,257	34,968	1,158,038	0	7,519	205,187	0	73,991	2,913	91,254	91,299	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-21	0	47,642	0	74,160	557,649	564	12,163	957,920	0	55,727	183,033	0	54,958	2,843	68,732	68,727	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-21	0	72,297	0	76,632	873,330	0	37,913	1,044,135	0	57,521	294,064	0	121,981	2,840	87,888	87,884	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-21	0	73,425	0	74,160	847,913	0	26,189	808,197	0	100,127	301,646	0	77,160	2,735	76,314	76,411	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-21	0	68,110	0	76,632	725,893	0	86,618	1,045,730	0	35,147	261,824	0	120,656	2,759	80,809	80,816	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-21	0	75,911	0	56,176	821,420	131	36,001	892,222	0	58,771	382,453	0	113,933	2,812	79,564	79,586	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-21	0	69,132	0	51,946	769,687	0	43,304	595,997	0	45,173	223,379	0	130,256	2,583	61,976	61,995	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-21	0	72,920	0	76,632	906,089	0	6,945	1,041,483	0	45,725	316,032	0	120,733	2,690	90,904	90,916	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-21	0	74,751	0	74,160	861,262	0	31,084	1,053,512	0	34,574	306,997	0	147,943	2,841	89,417	89,426	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-21	0	78,464	0	76,632	867,110	0	35,867	1,106,397	0	15,936	378,346	0	116,340	2,925	92,957	93,010	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-22	0	77,040	0	75,232	762,036	0	83,299	977,564	0	101,453	343,045	0	133,310	3,122	79,342	79,352	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-22	0	63,044	0	66,694	669,201	0	38,250	937,388	0	51,096	195,412	0	94,449	2,747	73,836	73,799	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-22	0	56,613	0	70,681	537,920	0	86,164	941,072	0	124,767	139,514	0	78,239	2,963	65,739	65,704	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-22	0	76,668	0	62,426	817,094	0	37,966	934,646	0	73,624	339,179	0	84,749	2,776	82,621	82,609	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-22	0	74,226	0	69,844	786,531	0	66,018	852,352	0	94,219	262,522	0	90,347	2,762	72,573	72,462	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-22	0	69,784	0	74,160	859,631	0	20,098	1,079,217	0	19,319	306,228	0	91,060	2,566	88,453	88,416	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-22	0	74,709	0	68,534	801,397	0	57,538	1,005,728	0	59,945	331,701	0	78,059	2,917	82,525	82,363	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-22	0	72,537	0	76,632	841,994	0	18,084	1,041,043	0	25,806	209,734	0	111,282	2,769	85,999	86,060	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-22	0	56,457	0	22,994	770,857	0	29,902	284,382	0	36,574	182,836	0	72,986	2,742	48,726	48,723	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-22	0	59,555	0	70,809	799,631	0	31,621	991,068	0	25,781	344,478	0	51,703	2,796	78,372	78,342	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-22	0	73,986	0	74,160	788,917	0	24,551	1,040,318	0	8,173	191,109	0	85,432	2,898	81,323	81,303	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-22	0	76,411	0	76,632	894,427	2	25,557	1,028,195	0	60,890	231,638	0	96,471	2,977	86,794	86,787	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-23	0	75,681	0	76,110	791,894	0	50,164	932,225	0	38,454	172,893	0	106,295	2,984	78,431	78,393	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-23	0	61,876	0	69,216	676,186	0	11,319	1,012,697	0	13,211	139,139	0	83,636	2,620	78,252	78,235	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-23	0	32,538	0	69,666	236,368	7,135	91,664	842,172	0	59,999	100,962	0	91,444	2,956	45,993	45,981	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-23	0	72,583	0	74,160	713,357	0	66,072	1,006,102	0	34,923	223,645	0	81,224	2,719	77,149	77,097	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
May-23	0	72,147	0	76,632	808,439	0	47,454	1,054,138	0	27,672	198,173	0	106,268	2,866	85,181	85,202	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jun-23	0	41,327	0	73,291	456,175	1,704	87,915	1,002,888	0	33,597	272,652	0	138,115	2,769	68,039	68,041	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jul-23	0	76,197	0	76,632	830,297	0	27,870	1,023,750	0	35,166	337,315	0	103,009	2,864	84,223	84,222	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Aug-23	0	58,995	0	71,185	693,458	0	75,606	939,332	0	61,195	410,804	0	90,991	2,855	73,014	73,832	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Sep-23	0	68,715	0	19,547	674,707	1,070	53,722	250,214	0	30,636	178,274	0	153,469	2,744	44,959	44,910	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Oct-23	0	73,561	0	76,632	785,270	0	35,446	1,024,806	0	33,228	378,411	0	113,867	2,950	82,218	82,196	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Nov-23	0	72,037	0	74,160	787,093	0	14,887	1,077,873	0	8,385	355,623	0	109,285	2,876	87,500	87,492	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Dec-23	0	75,633	0	76,632	770,712	0	40,537	1,054,737	0	39,841	320,268	0	124,377	3,201	84,758	84,759	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Jan-24	0	74,767	0	76,632	735,628	1,796	74,584	847,860	0	112,882	347,185	0	115,105	3,294	72,409	72,456	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Feb-24	0	77,254	0	71,688	768,864	0	29,700	916,897	0	36,437	375,297	0	97,654	3,017	82,797	82,695	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Mar-24	0	10,423	0	76,632	322,533	2,451	61,180	1,000,877	0	41,944	146,008	0	63,257	3,447	63,010	63,002	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05
Apr-24	0	74,038	0	74,160	757,130	0	32,771	916,234	0	40,896	268,601	0	109,468	3,595	80,975	80,930	163.05	116.98	163.05	116.98	208.12	163.05	116.98	208.12	163.05	116.98	206.79	163.05

GHG Baseline Actual Emission Rate Calculations

	Emission Factors																																	
					CH4															N2O														
	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	Nos. 7 and 8 Recovery Furnaces	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator
	CO2 - Natural Gas	CO2 - Natural Gas Combustion	CO2 - LVHC NCG Destruction	CO2 - HVLC NCG Destruction	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Wood Residuals	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Natural Gas Combustion	CO2 - LVHC NCG Destruction	N2O - Fuel Oil	N2O - Natural Gas	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - Wood Residuals	N2O - Fuel Oil	N2O - Natural Gas	N2O - Natural Gas Combustion	N2O - LVHC NCG Destruction
	lb/MMBtu	*lb/MMBtu*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*
Jan-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-15	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-16	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-17	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-18	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-19	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04

GHG Baseline Actual Emission Rate Calculations

	Emission Factors																																			
					CH4																N2O																
	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	Nos. 7 and 8 Recovery Furnaces	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns and Backup NCG Incinerator
	CO2 - Natural Gas	CO2 - Natural Gas Combustion	CO2 - LVHC NCG Destruction	CO2 - HVLC NCG Destruction	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Wood Residuals	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Natural Gas Combustion	CO2 - LVHC NCG Destruction	N2O - Fuel Oil	N2O - Natural Gas	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - Wood Residuals	N2O - Fuel Oil	N2O - Natural Gas	N2O - Natural Gas Combustion	N2O - LVHC NCG Destruction
	lb/MMBtu	*lb/MMBtu*	*lb/ADTUBP*	*lb/ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/MMBtu*	*lb/ADTUBP*
Sep-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-20	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-21	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-22	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
May-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jun-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jul-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Aug-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Sep-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Oct-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Nov-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Dec-23	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Jan-24	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Feb-24	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Mar-24	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04
Apr-24	116.98	116.98	3.25	4.09	5.95E-03	5.95E-03	5.95E-03	5.95E-03	4.19E-03	6.61E-03	2.20E-03	4.19E-03	6.61E-03	2.20E-03	1.59E-02	6.61E-03	2.20E-03	2.20E-03	4.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.26E-04	1.32E-03	2.20E-04	9.26E-04	1.32E-03	2.20E-04	7.94E-03	1.32E-03	2.20E-04	2.20E-04	1.86E-04

GHG Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																													
	CO2															CH4														
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Wood Residuals	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Natural Gas Combustion	CO2 - NCG Destruction	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Wood Residuals	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Natural Gas Combustion	CH4 - NCG Destruction
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	55.50	4,137	0.00	4,482	86,374	2,204	3,046	105,444	883.94	2,895	22,250	72.63	4,919	212.96	309.69	2.03E-03	2.10E-01	0.00	2.28E-01	1.74	8.94E-02	5.74E-02	2.12	3.59E-02	5.46E-02	1.71	2.95E-03	9.27E-02	4.01E-03	1.96E-02
Feb-15	321.05	4,133	0.00	3,686	87,635	51.33	858.32	99,000	82.53	3,283	22,551	225.44	2,373	188.92	328.10	1.17E-02	2.10E-01	0.00	1.88E-01	1.76	2.08E-03	1.62E-02	1.99	3.35E-03	6.19E-02	1.73	9.14E-03	4.47E-02	3.56E-03	2.08E-02
Mar-15	0.00	3,822	0.00	4,482	88,688	1,533	1,792	97,883	591.16	2,191	18,719	82.01	6,157	194.59	310.73	0.00	1.94E-01	0.00	2.28E-01	1.79	6.22E-02	3.38E-02	1.97	2.40E-02	4.13E-02	1.44	3.33E-03	1.16E-01	3.67E-03	1.97E-02
Apr-15	0.00	1,309	0.00	4,338	23,507	588.91	529.61	104,460	364.30	2,621	5,205	210.28	2,504	197.46	204.48	0.00	6.66E-02	0.00	2.21E-01	0.47	2.39E-02	9.98E-03	2.10	1.48E-02	4.94E-02	0.40	8.53E-03	4.72E-02	3.72E-03	1.29E-02
May-15	0.00	3,856	0.00	4,482	61,171	467.76	1,850	100,893	317.37	2,202	14,941	68.50	3,945	189.68	249.37	0.00	1.96E-01	0.00	2.28E-01	1.23	1.90E-02	3.49E-02	2.03	1.29E-02	4.15E-02	1.15	2.78E-03	7.44E-02	3.57E-03	1.58E-02
Jun-15	0.00	4,899	0.00	4,338	87,192	575.09	1,249	89,452	182.95	1,634	20,421	67.75	762.53	184.47	279.62	0.00	2.49E-01	0.00	2.21E-01	1.75	2.33E-02	2.35E-02	1.80	7.42E-03	3.08E-02	1.57	2.75E-03	1.44E-02	3.48E-03	1.77E-02
Jul-15	0.00	5,340	0.00	4,482	93,366	121.23	174.18	113,430	0.00	440.24	25,949	71.01	1,164	189.62	336.70	0.00	2.72E-01	0.00	2.28E-01	1.88	4.92E-03	3.28E-03	2.28	0.00	8.30E-03	1.99	2.88E-03	2.19E-02	3.57E-03	2.13E-02
Aug-15	0.00	5,268	0.00	4,482	86,656	349.26	601.85	111,846	3.51	503.47	24,520	70.60	487.40	191.43	329.62	0.00	2.68E-01	0.00	2.28E-01	1.74	1.42E-02	1.13E-02	2.25	1.42E-04	9.49E-03	1.88	2.86E-03	9.19E-03	3.61E-03	2.09E-02
Sep-15	0.00	4,822	0.00	1,780	83,444	551.53	848.96	42,481	244.74	1,092	20,637	47.53	1,367	178.80	205.27	0.00	2.45E-01	0.00	9.06E-02	1.68	2.24E-02	1.60E-02	0.86	9.93E-03	2.06E-02	1.58	1.93E-03	2.58E-02	3.37E-03	1.30E-02
Oct-15	0.00	4,915	0.00	3,939	82,897	1,288	2,675	101,345	1,408	1,927	18,741	74.84	1,545	195.24	293.54	0.00	2.50E-01	0.00	2.00E-01	1.67	5.22E-02	5.04E-02	2.04	5.71E-02	3.63E-02	1.44	3.04E-03	2.91E-02	3.68E-03	1.86E-02
Nov-15	0.00	5,091	0.00	4,338	88,144	307.76	1,227	109,403	422.31	698.00	20,543	41.41	3,277	205.53	319.48	0.00	2.59E-01	0.00	2.21E-01	1.77	1.25E-02	2.31E-02	2.20	1.71E-02	1.32E-02	1.58	1.68E-03	6.18E-02	3.87E-03	2.02E-02
Dec-15	276.05	4,246	0.00	4,482	69,905	665.50	2,562	110,460	447.66	2,258	19,153	56.66	5,530	219.74	282.62	1.01E-02	2.16E-01	0.00	2.28E-01	1.41	2.70E-02	4.83E-02	2.22	1.82E-02	4.26E-02	1.47	2.30E-03	1.04E-01	4.14E-03	1.79E-02
Jan-16	8.55	4,523	0.00	4,482	75,154	2,111	2,971	115,473	242.17	2,366	19,045	0.02	6,170	210.01	299.58	3.12E-04	2.30E-01	0.00	2.28E-01	1.51	8.56E-02	5.60E-02	2.32	9.82E-03	4.46E-02	1.46	6.52E-07	1.16E-01	3.96E-03	1.90E-02
Feb-16	0.00	4,250	0.00	4,193	85,072	1,575	1,446	105,607	72.75	1,835	16,065	0.17	5,448	185.29	305.33	0.00	2.16E-01	0.00	2.13E-01	1.71	6.39E-02	2.73E-02	2.13	2.95E-03	3.46E-02	1.23	7.05E-06	1.03E-01	3.49E-03	1.93E-02
Mar-16	1.24	2,863	0.00	4,482	90,496	1,139	1,640	114,469	0.00	1,630	13,486	0.00	5,871	189.51	325.99	4.53E-05	1.46E-01	0.00	2.28E-01	1.82	4.62E-02	3.09E-02	2.30	0.00	3.07E-02	1.04	0.00	1.11E-01	3.57E-03	2.06E-02
Apr-16	0.06	92.62	0.00	4,338	21,827	29.35	961.57	102,453	0.00	2,798	4,290	22.20	3,088	176.70	197.76	2.23E-06	4.71E-03	0.00	2.21E-01	0.44	1.19E-03	1.81E-02	2.06	0.00	5.27E-02	0.33	9.00E-04	5.82E-02	3.33E-03	1.25E-02
May-16	56.25	3,372	0.00	4,482	89,121	36.57	755.87	109,557	0.00	1,072	43,747	0.00	2,514	172.16	314.76	2.05E-03	1.72E-01	0.00	2.28E-01	1.79	1.48E-03	1.42E-02	2.21	0.00	2.02E-02	3.36	0.00	4.74E-02	3.24E-03	1.99E-02
Jun-16	0.00	4,403	0.00	4,338	85,711	272.27	1,596	108,692	0.00	815.30	39,075	0.00	3,467	164.89	310.80	0.00	2.24E-01	0.00	2.21E-01	1.73	1.10E-02	3.01E-02	2.19	0.00	1.54E-02	3.00	0.00	6.53E-02	3.11E-03	1.97E-02
Jul-16	100.38	3,996	3.14	4,482	87,216	26.42	1,104	108,428	215.86	956.65	37,174	0.00	3,566	158.87	307.74	3.66E-03	2.03E-01	1.15E-04	2.28E-01	1.76	1.07E-03	2.08E-02	2.18	8.76E-03	1.80E-02	2.85	0.00	6.72E-02	2.99E-03	1.95E-02
Aug-16	25.76	4,287	0.00	4,482	82,010	6.87	3,047	104,681	85.56	1,506	37,428	0.00	3,373	140.52	316.36	9.41E-04	2.18E-01	0.00	2.28E-01	1.65	2.79E-04	5.74E-02	2.11	3.47E-03	2.84E-02	2.87	0.00	6.36E-02	2.65E-03	2.00E-02
Sep-16	51.35	4,091	0.00	2,808	80,669	77.17	2,857	60,193	185.53	1,403	32,205	0.00	4,471	181.37	225.81	1.87E-03	2.08E-01	0.00	1.43E-01	1.62	3.13E-03	5.38E-02	1.21	7.53E-03	2.64E-02	2.47	0.00	8.43E-02	3.42E-03	1.43E-02
Oct-16	0.00	4,010	0.00	4,482	81,613	7.31	650.65	112,313	3.37	1,661	39,769	0.00	5,403	190.24	334.76	0.00	2.04E-01	0.00	2.28E-01	1.64	2.97E-04	1.23E-02	2.26	1.37E-04	3.13E-02	3.05	0.00	1.02E-01	3.59E-03	2.12E-02
Nov-16	0.00	1,592	0.00	4,338	87,324	0.00	747.38	110,271	0.00	1,102	35,801	0.00	4,614	237.11	312.40	0.00	8.10E-02	0.00	2.21E-01	1.76	0.00	1.41E-02	2.22	0.00	2.08E-02	2.75	0.00	8.70E-02	4.47E-03	1.98E-02
Dec-16	0.00	3,109	0.00	3,398	80,154	4.03	2,050	110,661	36.86	1,103	34,062	0.00	3,447	144.99	302.70	0.00	1.58E-01	0.00	1.73E-01	1.61	1.63E-04	3.86E-02	2.23	1.50E-03	2.08E-02	2.61	0.00	6.50E-02	2.73E-03	1.92E-02
Jan-17	0.00	4,142	17.02	4,482	92,904	0.00	1,039	105,901	93.63	1,223	33,162	0.00	4,296	185.53	311.80	0.00	2.11E-01	6.21E-04	2.28E-01	1.87	0.00	1.96E-02	2.13	3.80E-03	2.31E-02	2.55	0.00	8.10E-02	3.50E-03	1.97E-02
Feb-17	0.00	2,786	0.00	4,048	79,229	0.00	1,564	103,702	115.15	124.81	34,621	0.00	2,546	162.25	306.67	0.00	1.42E-01	0.00	2.06E-01	1.59	0.00	2.95E-02	2.09	4.67E-03	2.35E-03	2.66	0.00	4.80E-02	3.06E-03	1.94E-02
Mar-17	0.00	688.00	0.00	4,482	12,157	0.00	749.53	120,001	0.00	76.68	41,528	0.00	1,652	188.63	217.02	0.00	3.50E-02	0.00	2.28E-01	0.24	0.00	1.41E-02	2.42	0.00	1.45E-03	3.19	0.00	3.11E-02	3.55E-03	1.37E-02
Apr-17	41.17	326.78	24.06	4,015	0.15	0.00	100.02	109,044	36.35	1,023	11,820	0.00	1,536	183.48	172.80	1.50E-03	1.66E-02	8.78E-04	2.04E-01	3.04E-06	0.00	1.88E-03	2.19	1.47E-03	1.93E-02	0.91	0.00	2.90E-02	3.46E-03	1.09E-02
May-17	101.92	3,824	0.00	4,482	86,268	0.00	1,503	112,762	0.00	537.69	29,014	0.00	3,398	184.53	302.08	3.72E-03	1.95E-01	0.00	2.28E-01	1.74	0.00	2.83E-02	2.27	0.00	1.01E-02	2.23	0.00	6.40E-02	3.48E-03	1.91E-02
Jun-17	0.00	3,596	0.00	4,338	91,680	0.00	819.72	112,664	0.00	191.37	26,374	0.00	5,929	182.08	327.62	0.00	1.83E-01	0.00	2.21E-01	1.85	0.00	1.54E-02	2.27	0.00	3.61E-03	2.02	0.00	1.12E-01	3.43E-03	2.07E-02
Jul-17	52.01	3,796	0.00	4,482	96,508	0.00	450.07	118,207	0.00	37.78	37,198	0.00	4,210	184.36	333.43	1.90E-03	1.93E-01	0.00	2.28E-01	1.94	0.00	8.48E-03	2.38	0.00	7.12E-04	2.86	0.00	7.93E-02	3.47E-03	2.11E-02
Aug-17	66.45	3,626	0.00	4,482	91,407	0.00	1,729	113,165	0.00	710.57	28,454	0.00	4,862	189.01	310.84	2.43E-03	1.84E-01	0.00	2.28E-01	1.84	0.00	3.26E-02	2.28	0.00	1.34E-02	2.18	0.00	9.16E-02	3.56E-03	1.97E-02
Sep-17	30.79	3,663	0.00	2,518	86,707	86.25	2,041	53,925	217.55	2,642	29,077	0.00	3,346	171.96	205.24	1.12E-03	1.86E-01	0.00	1.28E-01	1.75	3.50E-03	3.85E-02	1.09	8.82E-03	4.98E-02	2.23	0.00	6.31E-02	3.24E-03	1.30E-02
Oct-17	0.00	3,426	0.00	4,482	82,718	101.16	4,304	107,928	488.55	2,129	32,275	0.00	4,235	176.58	295.11	0.00	1.74E-01	0.00	2.28E-01	1.66	4.10E-03	8.11E-02	2.17	1.98E-02	4.01E-02	2.48	0.00	7.98E-02	3.33E-03	1.87E-02
Nov-17	0.00	3,820	0.00	4,338	92,077	0.00	1,065	113,199	0.00	515.34	36,205	0.00	2,061	198.92	324.75	0.00	1.94E-01	0.00	2.21E-01	1.85	0.00	2.01E-02	2.28	0.00	9.71E-03	2.78	0.00	3.89E-02	3.75E-03	2.06E-02
Dec-17	0.00	3,806	0.00	4,482	79,937	27.42	5,342	110,793	0.00	2,047	29,600	0.00	4,353	190.21	304.79	0.00	1.94E-01	0.00	2.28E-01	1.61	1.11E-03	1.01E-01	2.23	0.00	3.86E-02	2.27	0.00	8.20E-02	3.58E-03	1.93E-02
Jan-18	65.92	4,002	0.00	3,811	85,645	78.45	4,415	80,924	527.21	4,503	29,247	0.00	6,495	189.95	257.98	2.41E-03	2.04E-01	0.00	1.94E-01	1.72	3.18E-03	8.32E-02	1.63	2.14E-02	8.49E-02	2.25	0.00	1.22E-01	3.58E-03	1.63E-02
Feb-18	0.00	3,360	0.00	4,048	82,721	0.00	708.15	109,229	0.00	186.41	26,627	0.00	5,522	150.94	310.03	0.00	1.71E-01	0.00	2.06E-01	1.66	0.00	1.33E-02	2.20	0.00	3.51E-03	2.04	0.00	1.04E-01	2.84E-03	1.96E-02
Mar-18	0.00	3,939	0.00	4,482	88,778	0.00	2,235	116,282	0.00	1,308	31,540	0.00	5,506	175.08	329.10	0.00	2.00E-01	0.00	2.28E-01	1.79	0.00	4.21E-02	2.34	0.00	2.47E-02	2.42	0.00	1.04E-01	3.30E-03	2.08E-02
Apr-18	0.00	1,286	0.00	4,338	24,824	48.33	906.32	110,928	0.00	2,475	8,375	0.00	3,908	158.36	210.62	0.00	6.54E-02	0.00	2.21E-01	0.50	1.96E-03	1.71E-02	2.23	0.00	4.66E-02	0.64	0.00	7.37E-02	2.98E-03	1.33E-02
May-18	0.00	3,060	116.18	4,482	86,065	0.00	3,805	112,503	0.00	1,766	20,130	0.00	5,712	177.05	312.84	0.00	1.56E-01	4.24E-03	2.28E-01	1.73	0.00	7.17E-02	2.26	0.00	3.33E-02	1.55	0.00	1.08E-01	3.34E-03	1.98E-02
Jun-18	0.00	3,779	0.00	4,338	87,928	44.15	2,743	107,284	0.00	3,427	36,980	0.00	3,365	176.60	311.59	0.00	1.92E-01	0.00	2.21E-01	1.77	1.79E-03	5.17E-02	2.16	0.00	6.46E-02	2.84	0.00	6.34E-02	3.33E-03	1.97E-02
Jul-18	0.00	3,680	0.00	4,482	91,985	0.00	675.95	111,329	0.00	2,548	34,950	0.00	2,825	172.21	316.99	0.00	1.87E-01	0.00	2.28E-01	1.85	0.00	1.27E-02	2.24	0.00	4.80E-02	2.68	0.00	5.32E-02	3.25E-03	2.01E-02
Aug-18	0.00	3,550	0.00	4,482	88,340	70.17	1,924	99,271	0.00	3,230	32,850	0.00	5,258	172.37	300.26	0.00	1.81E-01	0.00	2.28E-01	1.78	2.85E-03	3.63E-02	2.00	0.00	6.09E-02	2.52	0.00	9.91E-02	3.25E-03	1.90E-02
Sep-18	0.00	3,323	0.00	3,182	83,246	12.08	576.59	62,203	0.00	1,058	17,924	0.00	3,622	167.48	233.27	0.00	1.69E-01	0.00	1.62E-01	1.68	4.90E-04	1.09E-02	1.25	0.00	1.99E-02	1.38	0.00	6.83E-02	3.16E-03	1.48E-02
Oct-18	0.00	3,722	0.00	4,482	92,305	0.00	640.69	101,172	0.00	1,752	25,594	0.00	4,385	178.84	297.42	0.00	1.89E-01	0.00	2.28E-01	1.86	0.00	1.21E-02	2.04	0.00	3.30E-02	1.96	0.00	8.26E-02	3.37E-03	1.88E-02
Nov-18	0.00	3,450	0.00	4,338	86,781	67.38	2,256	106,548	0.00	1,997	31,221	0.00	3,899	175.84	309.43	0.00	1.76E-01	0.00	2.21E-01	1.75	2.73E-03	4.25E-02	2.14	0.00	3.76E-02	2.40	0.00	7.35E-02	3.31E-03	1.96E-02
Dec-18	0.00	3,572	0.00	4,482	85,910	142.76	1,667	106,851	0.00	1,205	21,052	0.00	4,433	184.59	302.64	0.00	1.82E-01	0.00	2.28E-01	1.73	5.79E-03	3.14E-02	2.15	0.00	2.27E-02	1.62	0.00	8.35E-02	3.48E-03	1.92E-02
Jan-19	0.00	4,150	0.00	4,037	92,323	0.00	1,553	99,147	0.00	1,294	15,948	0.00	5,913	185.75	293.01	0.00	2.11E-01	0.00	2.05E-01	1.86	0.00	2.93E-02	2.00	0.00	2.44E-02	1.22	0.00	1.11E-01	3.50E-03	1.85E-02
Feb-19	0.00	3,465	0.00	4,048	73,289	75.28	2,032	106,616	0.00	1,329	25,325	0.00	5,229	172.45	280.02	0.00	1.76E-01	0.00	2.06E-01	1.48	3.05E-03	3.83E-02	2.15	0.00	2.50E-02	1.94	0.00	9.86E-02	3.25E-03	1.77E-02
Mar-19	0.00	3,720	0.00	4,482	90,245	23.24	769.44	121,005	0.00	975.80	26,445	0.00	5,275	186.71	326.73	0.00	1.89E-01	0.00	2.28E-01	1.82	9.42E-04	1.45E-02	2.44	0.00	1.84E-02	2.03	0.00	9.94E-02	3.52E-03	2.07E-02
Apr-19	0.00	1,285	0.00	4,338	19,935	0.00	2,116	118,988	0.00	1,821	6,648	0.00	1,904	191.37	214.09	0.00	6.54E-02	0.00	2.21E-01	0.40	0.00	3.99E-02	2.39	0.00	3.43E-02	0.51	0.00	3.59E-02	3.61E-03	1.36E-02
May-19	0.00	4,221	0.00	4,482	93,014	0.00	1,462	107,487	0.00	2,091	20,707	0.00	2,803	186.92	306.04	0.00	2.15E-01	0.00	2.28E-01	1.87	0.00	2.76E-02	2.16	0.00	3.94E-02	1.59	0.00	5.28E-02	3.52E-03	1.94E-02
Jun-19	0.00	4,041	0.00	4,338	85,325	92.01	2,328	108,230	0.00	2,619	23,304	0.00	3,006	164.57	300.25	0.00	2.06E-01	0.00	2.21E-01	1.72	3.73E-03	4.39E-02	2.18	0.00	4.94E-02	1.79	0.00	5.67E-02	3.10E-03	1.90E-02
Jul-19	0.00	4,204	0.00	4,482	97,887	13.94	319.76	121,134	0.00	945.06	28,191	0.00	5,265	161.02	348.80	0.00	2.14E-01	0.00	2.28E-01	1.97	5.65E-04	6.03E-03	2.44	0.00	1.78E-02	2.16	0.00	9.92E-02	3.03E-03	2.21E-02
Aug-19	0.00	3,733	0.00	4,482	75,677	255.99	3,553	108,604	0.00	2,827	20,754	0.00	5,258	176.46	280.62	0.00	1.90E-01	0.00	2.28E-01	1.52	1.04E-02	6.70E-02	2.19	0.00	5.33E-02	1.59	0.00	9.91E-02	3.33E-03	1.78E-02
Sep-19	0.00	3,961	0.00	3,278	81,021	0.00	3,029	71,099	1.39	1,350	26,188	0.00	3,912	160.08	232.57	0.00	2.02E-01	0.00	1.67E-01	1.63	0.00	5.71E-02	1.43	5.65E-05	2.54E-02	2.01	0.00	7.37E-02	3.02E-03	1.47E-02
Oct-19	0.00	4,357	0.00	4,482	87,710	0.00	1,494	116,567	0.00	964.65	25,106	0.00	5,155	168.21	333.63	0.00	2.22E-01	0.00	2.28E-01	1.77	0.00	2.82E-02	2.35	0.00	1.82E-02	1.93	0.00	9.72E-02	3.17E-03	2.11E-02
Nov-19	0.00	4,380	0.00	4,338	94,920	0.00	655.89	120,963	0.00	483.99	21,145	0.00	7,425	167.34	339.01	0.00	2.23E-01	0.00	2.21E-01	1.91	0.00	1.24E-02	2.43	0.00	9.12E-03	1.62	0.00	1.40E-01	3.15E-03	2.15E-02
Dec-19	0.00	4,566	0.00	4,482	93,327	0.00	1,315	119,653	0.00	1,224	15,973	0.00	5,546	185.82	337.62	0.00	2.32E-01	0.00	2.28E-01	1.88	0.00	2.48E-02	2.41	0.00	2.31E-02	1.23	0.00	1.05E-01	3.50E-03	2.14E-02
Jan-20	0.00	4,563	0.00	4,482	95,080	0.00	1,865	122,396	0.00	713.49	41,551	0.00	6,291	179.41	335.05	0.00	2.32E-01	0.00	2.28E-01	1.91	0.00	3.51E-02	2.46	0.00	1.34E-02	3.19	0.00	1.19E-01	3.38E-03	2.12E-02
Feb-20	0.00	4,354	0.00	4,193	92,038	0.00	474.12	104,683	0.00	846.02	24,846	0.00	4,964	168.49	304.65	0.00	2.22E-01	0.00	2.13E-01	1.85	0.00	8.94E-03	2.11	0.00	1.59E-02	1.91	0.00	9.36E-02	3.18E-03	1.93E-02
Mar-20	0.00	4,509	0.00	4,482	101,079	0.00	264.13	114,682	0.00	453.64	30,707	0.00	2,684	169.21	333.63	0.00	2.29E-01	0.00	2.28E-01	2.03	0.00	4.98E-03	2.31	0.00	8.55E-03	2.36	0.00	5.06E-02	3.19E-03	2.11E-02
Apr-20	0.00	4,258	0.00	4,338	97,698	0.00	310.40	121,845	0.00	435.10	32,697	0.00	5,745	159.09	339.16	0.00	2.17E-01	0.00	2.21E-01	1.97	0.00	5.85E-03	2.45	0.00	8.20E-03	2.51	0.00	1.08E-01	3.00E-03	2.15E-02
May-20	0.00	3,054	0.00	4,482	69,269	0.00	873.76	121,848	0.00	1,160	25,676	0.00	3,988	179.09	298.47	0.00	1.55E-01	0.00	2.28E-01	1.39	0.00	1.65E-02	2.45	0.00	2.19E-02	1.97	0.00	7.52E-02	3.38E-03	1.89E-02
Jun-20	0.00	3,985	0.00	4,338	88,617	159.39	946.77	116,512	0.00	549.85	30,158	0.00	8,711	155.95	317.05	0.00	2.03E-01	0.00	2.21E-01	1.78	6.47E-03	1.78E-02	2.35	0.00	1.04E-02	2.31	0.00	1.64E-01	2.94E-03	2.01E-02
Jul-20	0.00	4,209	0.00	4,482	89,122	92.01	2,121	122,465	0.00	941.84	26,392	0.00	7,833	161.46	329.39	0.00	2.14E-01	0.00	2.28E-01	1.79	3.73E-03	4.00E-02	2.46	0.00	1.78E-02	2.03	0.00	1.48E-01	3.04E-03	2.08E-02
Aug-20	0.00	4,084	0.00	4,482	98,871	6.74	200.92	122,316	6.74	285.55	18,949	0.00	4,215	155.42	346.96	0.00	2.08E-01	0.00	2.28E-01	1.99	2.73E-04	3.79E-03	2.46	2.73E-04	5.38E-03	1.45	0.00	7.94E-02	2.93E-03	2.20E-02

GHG Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)																														
	CO2															CH4															
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - BLS	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Wood Residuals	CO2 - Fuel Oil	CO2 - Natural Gas	CO2 - Natural Gas Combustion	CO2 - NCG Destruction	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - BLS	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Wood Residuals	CH4 - Fuel Oil	CH4 - Natural Gas	CH4 - Natural Gas Combustion	CH4 - NCG Destruction
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Sep-20	0.00	4,171	0.00	3,492	77,668	0.00	3,957	70,089	0.00	1,431	24,434	0.00	4,821	160.73	227.64	0.00	2.12E-01	0.00	1.78E-01	1.56	0.00	7.46E-02	1.41	0.00	2.70E-02	1.88	0.00	9.09E-02	3.03E-03	1.44E-02
Oct-20	0.00	4,190	0.00	3,964	77,755	13.01	3,036	106,352	0.00	2,183	19,248	0.00	4,747	168.62	279.76	0.00	2.13E-01	0.00	2.02E-01	1.56	5.28E-04	5.72E-02	2.14	0.00	4.11E-02	1.48	0.00	8.95E-02	3.18E-03	1.77E-02
Nov-20	0.00	4,643	0.00	4,338	92,628	0.00	1,694	117,518	0.00	1,291	55,729	0.00	4,595	177.81	324.47	0.00	2.36E-01	0.00	2.21E-01	1.86	0.00	3.19E-02	2.37	0.00	2.43E-02	4.28	0.00	8.66E-02	3.35E-03	2.05E-02
Dec-20	0.00	4,348	0.00	4,482	88,939	0.00	3,705	123,014	0.00	1,447	33,543	0.00	4,822	206.76	327.38	0.00	2.21E-01	0.00	2.28E-01	1.79	0.00	6.98E-02	2.48	0.00	2.73E-02	2.57	0.00	9.09E-02	3.90E-03	2.07E-02
Jan-21	0.00	4,114	0.00	4,482	92,769	0.00	722.92	115,072	0.00	1,181	27,323	0.00	3,190	176.51	342.52	0.00	2.09E-01	0.00	2.28E-01	1.87	0.00	1.36E-02	2.32	0.00	2.23E-02	2.10	0.00	6.01E-02	3.33E-03	2.17E-02
Feb-21	0.00	4,042	0.00	4,048	79,699	442.40	2,433	105,623	0.00	663.55	24,432	0.00	5,869	161.86	294.33	0.00	2.06E-01	0.00	2.06E-01	1.60	1.79E-02	4.59E-02	2.13	0.00	1.25E-02	1.88	0.00	1.11E-01	3.05E-03	1.86E-02
Mar-21	0.00	4,100	0.00	4,482	83,717	184.02	2,045	120,503	0.00	439.76	21,215	0.00	4,328	170.40	335.14	0.00	2.09E-01	0.00	2.28E-01	1.68	7.46E-03	3.85E-02	2.43	0.00	8.29E-03	1.63	0.00	8.16E-02	3.21E-03	2.12E-02
Apr-21	0.00	2,787	0.00	4,338	58,028	46.01	711.37	99,679	0.00	3,259	18,925	0.00	3,214	166.31	252.34	0.00	1.42E-01	0.00	2.21E-01	1.17	1.87E-03	1.34E-02	2.01	0.00	6.14E-02	1.45	0.00	6.06E-02	3.13E-03	1.60E-02
May-21	0.00	4,229	0.00	4,482	90,877	0.00	2,217	108,651	0.00	3,364	30,405	0.00	7,135	166.12	322.68	0.00	2.15E-01	0.00	2.28E-01	1.83	0.00	4.18E-02	2.19	0.00	6.34E-02	2.33	0.00	1.34E-01	3.13E-03	2.04E-02
Jun-21	0.00	4,295	0.00	4,338	88,232	0.00	1,532	84,100	0.00	5,856	31,189	0.00	4,513	159.96	280.39	0.00	2.19E-01	0.00	2.21E-01	1.78	0.00	2.89E-02	1.69	0.00	1.10E-01	2.39	0.00	8.51E-02	3.01E-03	1.77E-02
Jul-21	0.00	3,984	0.00	4,482	75,535	0.00	5,066	108,817	0.00	2,056	27,071	0.00	7,057	161.39	296.71	0.00	2.03E-01	0.00	2.28E-01	1.52	0.00	9.55E-02	2.19	0.00	3.87E-02	2.08	0.00	1.33E-01	3.04E-03	1.88E-02
Aug-21	0.00	4,440	0.00	3,286	85,476	10.69	2,106	92,843	0.00	3,437	39,544	0.00	6,664	164.48	292.17	0.00	2.26E-01	0.00	1.67E-01	1.72	4.34E-04	3.97E-02	1.87	0.00	6.48E-02	3.04	0.00	1.26E-01	3.10E-03	1.85E-02
Sep-21	0.00	4,043	0.00	3,038	80,092	0.00	2,533	62,018	0.00	2,642	23,096	0.00	7,619	151.09	227.59	0.00	2.06E-01	0.00	1.55E-01	1.61	0.00	4.77E-02	1.25	0.00	4.98E-02	1.77	0.00	1.44E-01	2.85E-03	1.44E-02
Oct-21	0.00	4,265	0.00	4,482	94,286	0.00	406.20	108,375	0.00	2,674	32,676	0.00	7,062	157.33	333.78	0.00	2.17E-01	0.00	2.28E-01	1.90	0.00	7.66E-03	2.18	0.00	5.04E-02	2.51	0.00	1.33E-01	2.97E-03	2.11E-02
Nov-21	0.00	4,372	0.00	4,338	89,621	0.00	1,818	109,627	0.00	2,022	31,742	0.00	8,653	166.17	328.32	0.00	2.22E-01	0.00	2.21E-01	1.80	0.00	3.43E-02	2.21	0.00	3.81E-02	2.44	0.00	1.63E-01	3.13E-03	2.08E-02
Dec-21	0.00	4,589	0.00	4,482	90,230	0.00	2,098	115,130	0.00	932.07	39,119	0.00	6,805	171.08	341.41	0.00	2.34E-01	0.00	2.28E-01	1.82	0.00	3.95E-02	2.32	0.00	1.76E-02	3.00	0.00	1.28E-01	3.22E-03	2.16E-02
Jan-22	0.00	4,506	0.00	4,400	79,296	0.00	4,872	101,724	0.00	5,934	35,469	0.00	7,797	182.60	291.33	0.00	2.29E-01	0.00	2.24E-01	1.60	0.00	9.18E-02	2.05	0.00	1.12E-01	2.72	0.00	1.47E-01	3.44E-03	1.84E-02
Feb-22	0.00	3,687	0.00	3,901	69,636	0.00	2,237	97,543	0.00	2,989	20,205	0.00	5,524	160.67	271.02	0.00	1.88E-01	0.00	1.98E-01	1.40	0.00	4.22E-02	1.96	0.00	5.63E-02	1.55	0.00	1.04E-01	3.03E-03	1.72E-02
Mar-22	0.00	3,311	0.00	4,134	55,975	0.00	5,040	97,926	0.00	7,297	14,425	0.00	4,576	173.30	241.29	0.00	1.68E-01	0.00	2.10E-01	1.13	0.00	9.50E-02	1.97	0.00	1.38E-01	1.11	0.00	8.62E-02	3.27E-03	1.53E-02
Apr-22	0.00	4,484	0.00	3,651	85,025	0.00	2,221	97,258	0.00	4,306	35,069	0.00	4,957	162.36	303.32	0.00	2.28E-01	0.00	1.86E-01	1.71	0.00	4.19E-02	1.96	0.00	8.12E-02	2.69	0.00	9.34E-02	3.06E-03	1.92E-02
May-22	0.00	4,341	0.00	4,085	81,845	0.00	3,861	88,694	0.00	5,511	27,143	0.00	5,284	161.55	266.23	0.00	2.21E-01	0.00	2.08E-01	1.65	0.00	7.28E-02	1.79	0.00	1.04E-01	2.08	0.00	9.96E-02	3.04E-03	1.69E-02
Jun-22	0.00	4,082	0.00	4,338	89,452	0.00	1,176	112,301	0.00	1,130	31,662	0.00	5,326	150.08	324.69	0.00	2.08E-01	0.00	2.21E-01	1.80	0.00	2.22E-02	2.26	0.00	2.13E-02	2.43	0.00	1.00E-01	2.83E-03	2.06E-02
Jul-22	0.00	4,370	0.00	4,008	83,392	0.00	3,365	104,654	0.00	3,506	34,296	0.00	4,566	170.59	302.66	0.00	2.22E-01	0.00	2.04E-01	1.68	0.00	6.34E-02	2.11	0.00	6.61E-02	2.63	0.00	8.60E-02	3.22E-03	1.92E-02
Aug-22	0.00	4,243	0.00	4,482	87,616	0.00	1,058	108,329	0.00	1,509	21,685	0.00	6,509	161.96	315.87	0.00	2.16E-01	0.00	2.28E-01	1.76	0.00	1.99E-02	2.18	0.00	2.84E-02	1.66	0.00	1.23E-01	3.05E-03	2.00E-02
Sep-22	0.00	3,302	0.00	1,345	80,214	0.00	1,749	29,592	0.00	2,139	18,904	0.00	4,269	160.38	178.89	0.00	1.68E-01	0.00	6.84E-02	1.61	0.00	3.30E-02	0.60	0.00	4.03E-02	1.45	0.00	8.05E-02	3.02E-03	1.13E-02
Oct-22	0.00	3,483	0.00	4,142	83,208	0.00	1,849	103,129	0.00	1,508	35,617	0.00	3,024	163.53	287.69	0.00	1.77E-01	0.00	2.11E-01	1.67	0.00	3.49E-02	2.08	0.00	2.84E-02	2.73	0.00	5.70E-02	3.08E-03	1.82E-02
Nov-22	0.00	4,327	0.00	4,338	82,093	0.00	1,436	108,254	0.00	478.03	19,760	0.00	4,997	169.50	298.54	0.00	2.20E-01	0.00	2.21E-01	1.65	0.00	2.71E-02	2.18	0.00	9.01E-03	1.52	0.00	9.42E-02	3.19E-03	1.89E-02
Dec-22	0.00	4,469	0.00	4,482	93,072	0.15	1,495	106,992	0.00	3,561	23,950	0.00	5,643	174.12	318.66	0.00	2.27E-01	0.00	2.28E-01	1.87	5.95E-06	2.82E-02	2.15	0.00	6.71E-02	1.84	0.00	1.06E-01	3.28E-03	2.02E-02
Jan-23	0.00	4,426	0.00	4,452	82,403	0.00	2,934	97,006	0.00	2,249	17,876	0.00	6,217	174.53	287.89	0.00	2.25E-01	0.00	2.27E-01	1.66	0.00	5.53E-02	1.95	0.00	4.24E-02	1.37	0.00	1.17E-01	3.29E-03	1.82E-02
Feb-23	0.00	3,619	0.00	4,048	70,363	0.00	662.03	105,379	0.00	772.69	14,386	0.00	4,892	153.24	287.27	0.00	1.84E-01	0.00	2.06E-01	1.42	0.00	1.25E-02	2.12	0.00	1.46E-02	1.10	0.00	9.22E-02	2.89E-03	1.82E-02
Mar-23	0.00	1,903	0.00	4,075	24,596	581.67	5,361	87,635	0.00	3,509	10,439	0.00	5,349	172.89	168.84	0.00	9.68E-02	0.00	2.07E-01	0.50	2.36E-02	1.01E-01	1.76	0.00	6.61E-02	0.80	0.00	1.01E-01	3.26E-03	1.07E-02
Apr-23	0.00	4,245	0.00	4,338	74,231	0.00	3,864	104,693	0.00	2,043	23,124	0.00	4,751	159.03	283.15	0.00	2.16E-01	0.00	2.21E-01	1.49	0.00	7.28E-02	2.11	0.00	3.85E-02	1.77	0.00	8.95E-02	3.00E-03	1.79E-02
May-23	0.00	4,220	0.00	4,482	84,125	0.00	2,776	109,692	0.00	1,618	20,490	0.00	6,216	167.63	312.79	0.00	2.15E-01	0.00	2.28E-01	1.69	0.00	5.23E-02	2.21	0.00	3.05E-02	1.57	0.00	1.17E-01	3.16E-03	1.98E-02
Jun-23	0.00	2,417	0.00	4,287	47,469	138.95	5,142	104,359	0.00	1,965	28,191	0.00	8,078	161.96	249.81	0.00	1.23E-01	0.00	2.18E-01	0.96	5.64E-03	9.69E-02	2.10	0.00	3.70E-02	2.16	0.00	1.52E-01	3.05E-03	1.58E-02
Jul-23	0.00	4,457	0.00	4,482	86,399	0.00	1,630	106,530	0.00	2,057	34,877	0.00	6,025	167.51	309.23	0.00	2.27E-01	0.00	2.28E-01	1.74	0.00	3.07E-02	2.14	0.00	3.88E-02	2.68	0.00	1.14E-01	3.16E-03	1.96E-02
Aug-23	0.00	3,451	0.00	4,164	72,160	0.00	4,422	97,745	0.00	3,579	42,475	0.00	5,322	166.99	269.75	0.00	1.76E-01	0.00	2.12E-01	1.45	0.00	8.33E-02	1.97	0.00	6.75E-02	3.26	0.00	1.00E-01	3.15E-03	1.70E-02
Sep-23	0.00	4,019	0.00	1,143	70,209	87.21	3,142	26,037	0.00	1,792	18,433	0.00	8,976	160.49	164.97	0.00	2.05E-01	0.00	5.82E-02	1.41	3.54E-03	5.92E-02	0.52	0.00	3.38E-02	1.41	0.00	1.69E-01	3.02E-03	1.04E-02
Oct-23	0.00	4,302	0.00	4,482	81,714	0.00	2,073	106,639	0.00	1,943	39,126	0.00	6,660	172.54	301.82	0.00	2.19E-01	0.00	2.28E-01	1.64	0.00	3.91E-02	2.15	0.00	3.66E-02	3.00	0.00	1.26E-01	3.25E-03	1.91E-02
Nov-23	0.00	4,213	0.00	4,338	81,903	0.00	870.72	112,161	0.00	490.43	36,770	0.00	6,392	168.21	321.25	0.00	2.14E-01	0.00	2.21E-01	1.65	0.00	1.64E-02	2.26	0.00	9.24E-03	2.82	0.00	1.20E-01	3.17E-03	2.03E-02
Dec-23	0.00	4,424	0.00	4,482	80,199	0.00	2,371	109,754	0.00	2,330	33,114	0.00	7,275	187.22	311.19	0.00	2.25E-01	0.00	2.28E-01	1.61	0.00	4.47E-02	2.21	0.00	4.39E-02	2.54	0.00	1.37E-01	3.53E-03	1.97E-02
Jan-24	0.00	4,373	0.00	4,482	76,548	146.38	4,362	88,227	0.00	6,602	35,897	0.00	6,732	192.66	265.95	0.00	2.23E-01	0.00	2.28E-01	1.54	5.94E-03	8.22E-02	1.78	0.00	1.24E-01	2.76	0.00	1.27E-01	3.63E-03	1.68E-02
Feb-24	0.00	4,518	0.00	4,193	80,007	0.00	1,737	95,411	0.00	2,131	38,804	0.00	5,712	176.46	303.78	0.00	2.30E-01	0.00	2.13E-01	1.61	0.00	3.27E-02	1.92	0.00	4.02E-02	2.98	0.00	1.08E-01	3.33E-03	1.92E-02
Mar-24	0.00	609.63	0.00	4,482	33,562	199.82	3,578	104,149	0.00	2,453	15,096	0.00	3,700	201.61	231.33	0.00	3.10E-02	0.00	2.28E-01	0.68	8.11E-03	6.74E-02	2.10	0.00	4.62E-02	1.16	0.00	6.97E-02	3.80E-03	1.46E-02
Apr-24	0.00	4,330	0.00	4,338	78,786	0.00	1,917	95,342	0.00	2,392	27,772	0.00	6,403	210.27	297.21	0.00	2.20E-01	0.00	2.21E-01	1.59	0.00	3.61E-02	1.92	0.00	4.51E-02	2.13	0.00	1.21E-01	3.96E-03	1.88E-02

GHG Baseline Actual Emission Rate Calculations

	N2O														
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
	N2O - Fuel Oil	N2O - Natural Gas	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - Wood Residuals	N2O - Fuel Oil	N2O - Natural Gas	N2O - Natural Gas Combustion	N2O - NCG Destruction
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Jan-15	0.00	0.00	0.00	0.00	3.84E-01	1.79E-02	5.74E-03	4.69E-01	7.17E-03	5.46E-03	0.85	5.89E-04	9.27E-03	4.01E-04	7.84E-03
Feb-15	0.00	0.00	0.00	0.00	3.90E-01	4.16E-04	1.62E-03	4.40E-01	6.70E-04	6.19E-03	0.87	1.83E-03	4.47E-03	3.56E-04	8.31E-03
Mar-15	0.00	0.00	0.00	0.00	3.95E-01	1.24E-02	3.38E-03	4.35E-01	4.80E-03	4.13E-03	0.72	6.65E-04	1.16E-02	3.67E-04	7.86E-03
Apr-15	0.00	0.00	0.00	0.00	1.05E-01	4.78E-03	9.98E-04	4.65E-01	2.96E-03	4.94E-03	0.20	1.71E-03	4.72E-03	3.72E-04	5.17E-03
May-15	0.00	0.00	0.00	0.00	2.72E-01	3.79E-03	3.49E-03	4.49E-01	2.57E-03	4.15E-03	0.57	5.56E-04	7.44E-03	3.57E-04	6.31E-03
Jun-15	0.00	0.00	0.00	0.00	3.88E-01	4.67E-03	2.35E-03	3.98E-01	1.48E-03	3.08E-03	0.78	5.50E-04	1.44E-03	3.48E-04	7.08E-03
Jul-15	0.00	0.00	0.00	0.00	4.15E-01	9.83E-04	3.28E-04	5.05E-01	0.00	8.30E-04	1.00	5.76E-04	2.19E-03	3.57E-04	8.52E-03
Aug-15	0.00	0.00	0.00	0.00	3.86E-01	2.83E-03	1.13E-03	4.98E-01	2.84E-05	9.49E-04	0.94	5.73E-04	9.19E-04	3.61E-04	8.34E-03
Sep-15	0.00	0.00	0.00	0.00	3.71E-01	4.47E-03	1.60E-03	1.89E-01	1.99E-03	2.06E-03	0.79	3.86E-04	2.58E-03	3.37E-04	5.20E-03
Oct-15	0.00	0.00	0.00	0.00	3.69E-01	1.04E-02	5.04E-03	4.51E-01	1.14E-02	3.63E-03	0.72	6.07E-04	2.91E-03	3.68E-04	7.43E-03
Nov-15	0.00	0.00	0.00	0.00	3.92E-01	2.50E-03	2.31E-03	4.87E-01	3.43E-03	1.32E-03	0.79	3.36E-04	6.18E-03	3.87E-04	8.09E-03
Dec-15	0.00	0.00	0.00	0.00	3.11E-01	5.40E-03	4.83E-03	4.91E-01	3.63E-03	4.26E-03	0.74	4.60E-04	1.04E-02	4.14E-04	7.15E-03
Jan-16	0.00	0.00	0.00	0.00	3.34E-01	1.71E-02	5.60E-03	5.14E-01	1.96E-03	4.46E-03	0.73	1.30E-07	1.16E-02	3.96E-04	7.58E-03
Feb-16	0.00	0.00	0.00	0.00	3.78E-01	1.28E-02	2.73E-03	4.70E-01	5.90E-04	3.46E-03	0.62	1.41E-06	1.03E-02	3.49E-04	7.73E-03
Mar-16	0.00	0.00	0.00	0.00	4.03E-01	9.24E-03	3.09E-03	5.09E-01	0.00	3.07E-03	0.52	0.00	1.11E-02	3.57E-04	8.25E-03
Apr-16	0.00	0.00	0.00	0.00	9.71E-02	2.38E-04	1.81E-03	4.56E-01	0.00	5.27E-03	0.16	1.80E-04	5.82E-03	3.33E-04	5.01E-03
May-16	0.00	0.00	0.00	0.00	3.97E-01	2.97E-04	1.42E-03	4.87E-01	0.00	2.02E-03	1.68	0.00	4.74E-03	3.24E-04	7.97E-03
Jun-16	0.00	0.00	0.00	0.00	3.81E-01	2.21E-03	3.01E-03	4.84E-01	0.00	1.54E-03	1.50	0.00	6.53E-03	3.11E-04	7.87E-03
Jul-16	0.00	0.00	0.00	0.00	3.88E-01	2.14E-04	2.08E-03	4.82E-01	1.75E-03	1.80E-03	1.43	0.00	6.72E-03	2.99E-04	7.79E-03
Aug-16	0.00	0.00	0.00	0.00	3.65E-01	5.57E-05	5.74E-03	4.66E-01	6.94E-04	2.84E-03	1.44	0.00	6.36E-03	2.65E-04	8.01E-03
Sep-16	0.00	0.00	0.00	0.00	3.59E-01	6.26E-04	5.38E-03	2.68E-01	1.51E-03	2.64E-03	1.24	0.00	8.43E-03	3.42E-04	5.72E-03
Oct-16	0.00	0.00	0.00	0.00	3.63E-01	5.93E-05	1.23E-03	5.00E-01	2.74E-05	3.13E-03	1.53	0.00	1.02E-02	3.59E-04	8.47E-03
Nov-16	0.00	0.00	0.00	0.00	3.89E-01	0.00	1.41E-03	4.91E-01	0.00	2.08E-03	1.37	0.00	8.70E-03	4.47E-04	7.91E-03
Dec-16	0.00	0.00	0.00	0.00	3.57E-01	3.27E-05	3.86E-03	4.92E-01	2.99E-04	2.08E-03	1.31	0.00	6.50E-03	2.73E-04	7.66E-03
Jan-17	0.00	0.00	0.00	0.00	4.13E-01	0.00	1.96E-03	4.71E-01	7.60E-04	2.31E-03	1.27	0.00	8.10E-03	3.50E-04	7.89E-03
Feb-17	0.00	0.00	0.00	0.00	3.53E-01	0.00	2.95E-03	4.61E-01	9.34E-04	2.35E-04	1.33	0.00	4.80E-03	3.06E-04	7.76E-03
Mar-17	0.00	0.00	0.00	0.00	5.41E-02	0.00	1.41E-03	5.34E-01	0.00	1.45E-04	1.59	0.00	3.11E-03	3.55E-04	5.49E-03
Apr-17	0.00	0.00	0.00	0.00	6.71E-07	0.00	1.88E-04	4.85E-01	2.95E-04	1.93E-03	0.45	0.00	2.90E-03	3.46E-04	4.37E-03
May-17	0.00	0.00	0.00	0.00	3.84E-01	0.00	2.83E-03	5.02E-01	0.00	1.01E-03	1.11	0.00	6.40E-03	3.48E-04	7.65E-03
Jun-17	0.00	0.00	0.00	0.00	4.08E-01	0.00	1.54E-03	5.01E-01	0.00	3.61E-04	1.01	0.00	1.12E-02	3.43E-04	8.29E-03
Jul-17	0.00	0.00	0.00	0.00	4.29E-01	0.00	8.48E-04	5.26E-01	0.00	7.12E-05	1.43	0.00	7.93E-03	3.47E-04	8.44E-03
Aug-17	0.00	0.00	0.00	0.00	4.07E-01	0.00	3.26E-03	5.03E-01	0.00	1.34E-03	1.09	0.00	9.16E-03	3.56E-04	7.87E-03
Sep-17	0.00	0.00	0.00	0.00	3.86E-01	7.00E-04	3.85E-03	2.40E-01	1.76E-03	4.98E-03	1.12	0.00	6.31E-03	3.24E-04	5.19E-03
Oct-17	0.00	0.00	0.00	0.00	3.68E-01	8.21E-04	8.11E-03	4.80E-01	3.96E-03	4.01E-03	1.24	0.00	7.98E-03	3.33E-04	7.47E-03
Nov-17	0.00	0.00	0.00	0.00	4.10E-01	0.00	2.01E-03	5.04E-01	0.00	9.71E-04	1.39	0.00	3.89E-03	3.75E-04	8.22E-03
Dec-17	0.00	0.00	0.00	0.00	3.56E-01	2.22E-04	1.01E-02	4.93E-01	0.00	3.86E-03	1.14	0.00	8.20E-03	3.58E-04	7.72E-03
Jan-18	0.00	0.00	0.00	0.00	3.81E-01	6.36E-04	8.32E-03	3.60E-01	4.28E-03	8.49E-03	1.12	0.00	1.22E-02	3.58E-04	6.53E-03
Feb-18	0.00	0.00	0.00	0.00	3.68E-01	0.00	1.33E-03	4.86E-01	0.00	3.51E-04	1.02	0.00	1.04E-02	2.84E-04	7.85E-03
Mar-18	0.00	0.00	0.00	0.00	3.95E-01	0.00	4.21E-03	5.17E-01	0.00	2.47E-03	1.21	0.00	1.04E-02	3.30E-04	8.33E-03
Apr-18	0.00	0.00	0.00	0.00	1.10E-01	3.92E-04	1.71E-03	4.94E-01	0.00	4.66E-03	0.32	0.00	7.37E-03	2.98E-04	5.33E-03
May-18	0.00	0.00	0.00	0.00	3.83E-01	0.00	7.17E-03	5.01E-01	0.00	3.33E-03	0.77	0.00	1.08E-02	3.34E-04	7.92E-03
Jun-18	0.00	0.00	0.00	0.00	3.91E-01	3.58E-04	5.17E-03	4.77E-01	0.00	6.46E-03	1.42	0.00	6.34E-03	3.33E-04	7.89E-03
Jul-18	0.00	0.00	0.00	0.00	4.09E-01	0.00	1.27E-03	4.95E-01	0.00	4.80E-03	1.34	0.00	5.32E-03	3.25E-04	8.03E-03
Aug-18	0.00	0.00	0.00	0.00	3.93E-01	5.69E-04	3.63E-03	4.42E-01	0.00	6.09E-03	1.26	0.00	9.91E-03	3.25E-04	7.60E-03
Sep-18	0.00	0.00	0.00	0.00	3.70E-01	9.80E-05	1.09E-03	2.77E-01	0.00	1.99E-03	0.69	0.00	6.83E-03	3.16E-04	5.91E-03
Oct-18	0.00	0.00	0.00	0.00	4.11E-01	0.00	1.21E-03	4.50E-01	0.00	3.30E-03	0.98	0.00	8.26E-03	3.37E-04	7.53E-03
Nov-18	0.00	0.00	0.00	0.00	3.86E-01	5.47E-04	4.25E-03	4.74E-01	0.00	3.76E-03	1.20	0.00	7.35E-03	3.31E-04	7.83E-03
Dec-18	0.00	0.00	0.00	0.00	3.82E-01	1.16E-03	3.14E-03	4.75E-01	0.00	2.27E-03	0.81	0.00	8.35E-03	3.48E-04	7.66E-03
Jan-19	0.00	0.00	0.00	0.00	4.11E-01	0.00	2.93E-03	4.41E-01	0.00	2.44E-03	0.61	0.00	1.11E-02	3.50E-04	7.42E-03
Feb-19	0.00	0.00	0.00	0.00	3.26E-01	6.11E-04	3.83E-03	4.74E-01	0.00	2.50E-03	0.97	0.00	9.86E-03	3.25E-04	7.09E-03
Mar-19	0.00	0.00	0.00	0.00	4.02E-01	1.88E-04	1.45E-03	5.38E-01	0.00	1.84E-03	1.01	0.00	9.94E-03	3.52E-04	8.27E-03
Apr-19	0.00	0.00	0.00	0.00	8.87E-02	0.00	3.99E-03	5.29E-01	0.00	3.43E-03	0.26	0.00	3.59E-03	3.61E-04	5.42E-03
May-19	0.00	0.00	0.00	0.00	4.14E-01	0.00	2.76E-03	4.78E-01	0.00	3.94E-03	0.79	0.00	5.28E-03	3.52E-04	7.74E-03
Jun-19	0.00	0.00	0.00	0.00	3.80E-01	7.46E-04	4.39E-03	4.82E-01	0.00	4.94E-03	0.89	0.00	5.67E-03	3.10E-04	7.60E-03
Jul-19	0.00	0.00	0.00	0.00	4.36E-01	1.13E-04	6.03E-04	5.39E-01	0.00	1.78E-03	1.08	0.00	9.92E-03	3.03E-04	8.83E-03
Aug-19	0.00	0.00	0.00	0.00	3.37E-01	2.08E-03	6.70E-03	4.83E-01	0.00	5.33E-03	0.80	0.00	9.91E-03	3.33E-04	7.10E-03
Sep-19	0.00	0.00	0.00	0.00	3.60E-01	0.00	5.71E-03	3.16E-01	1.13E-05	2.54E-03	1.01	0.00	7.37E-03	3.02E-04	5.89E-03
Oct-19	0.00	0.00	0.00	0.00	3.90E-01	0.00	2.82E-03	5.19E-01	0.00	1.82E-03	0.96	0.00	9.72E-03	3.17E-04	8.45E-03
Nov-19	0.00	0.00	0.00	0.00	4.22E-01	0.00	1.24E-03	5.38E-01	0.00	9.12E-04	0.81	0.00	1.40E-02	3.15E-04	8.58E-03
Dec-19	0.00	0.00	0.00	0.00	4.15E-01	0.00	2.48E-03	5.32E-01	0.00	2.31E-03	0.61	0.00	1.05E-02	3.50E-04	8.55E-03
Jan-20	0.00	0.00	0.00	0.00	4.23E-01	0.00	3.51E-03	5.45E-01	0.00	1.34E-03	1.59	0.00	1.19E-02	3.38E-04	8.48E-03
Feb-20	0.00	0.00	0.00	0.00	4.09E-01	0.00	8.94E-04	4.66E-01	0.00	1.59E-03	0.95	0.00	9.36E-03	3.18E-04	7.71E-03
Mar-20	0.00	0.00	0.00	0.00	4.50E-01	0.00	4.98E-04	5.10E-01	0.00	8.55E-04	1.18	0.00	5.06E-03	3.19E-04	8.45E-03
Apr-20	0.00	0.00	0.00	0.00	4.35E-01	0.00	5.85E-04	5.42E-01	0.00	8.20E-04	1.25	0.00	1.08E-02	3.00E-04	8.59E-03
May-20	0.00	0.00	0.00	0.00	3.08E-01	0.00	1.65E-03	5.42E-01	0.00	2.19E-03	0.99	0.00	7.52E-03	3.38E-04	7.56E-03
Jun-20	0.00	0.00	0.00	0.00	3.94E-01	1.29E-03	1.78E-03	5.18E-01	0.00	1.04E-03	1.16	0.00	1.64E-02	2.94E-04	8.02E-03
Jul-20	0.00	0.00	0.00	0.00	3.97E-01	7.46E-04	4.00E-03	5.45E-01	0.00	1.78E-03	1.01	0.00	1.48E-02	3.04E-04	8.34E-03
Aug-20	0.00	0.00	0.00	0.00	4.40E-01	5.47E-05	3.79E-04	5.44E-01	5.47E-05	5.38E-04	0.73	0.00	7.94E-03	2.93E-04	8.79E-03

GHG Baseline Actual Emission Rate Calculations

	N2O														
	No. 7 Lime Kiln	No. 7 Lime Kiln	No. 8 Lime Kiln	No. 8 Lime Kiln	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 7 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 8 Recovery Furnace	No. 7 Power Boiler	No. 7 Power Boiler	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
	N2O - Fuel Oil	N2O - Natural Gas	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - BLS	N2O - Fuel Oil	N2O - Natural Gas	N2O - Wood Residuals	N2O - Fuel Oil	N2O - Natural Gas	N2O - Natural Gas Combustion	N2O - NCG Destruction
	tons	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*	*tons*
Sep-20	0.00	0.00	0.00	0.00	3.46E-01	0.00	7.46E-03	3.12E-01	0.00	2.70E-03	0.94	0.00	9.09E-03	3.03E-04	5.76E-03
Oct-20	0.00	0.00	0.00	0.00	3.46E-01	1.06E-04	5.72E-03	4.73E-01	0.00	4.11E-03	0.74	0.00	8.95E-03	3.18E-04	7.08E-03
Nov-20	0.00	0.00	0.00	0.00	4.12E-01	0.00	3.19E-03	5.23E-01	0.00	2.43E-03	2.14	0.00	8.66E-03	3.35E-04	8.21E-03
Dec-20	0.00	0.00	0.00	0.00	3.96E-01	0.00	6.98E-03	5.47E-01	0.00	2.73E-03	1.29	0.00	9.09E-03	3.90E-04	8.29E-03
Jan-21	0.00	0.00	0.00	0.00	4.13E-01	0.00	1.36E-03	5.12E-01	0.00	2.23E-03	1.05	0.00	6.01E-03	3.33E-04	8.67E-03
Feb-21	0.00	0.00	0.00	0.00	3.55E-01	3.59E-03	4.59E-03	4.70E-01	0.00	1.25E-03	0.94	0.00	1.11E-02	3.05E-04	7.45E-03
Mar-21	0.00	0.00	0.00	0.00	3.72E-01	1.49E-03	3.85E-03	5.36E-01	0.00	8.29E-04	0.81	0.00	8.16E-03	3.21E-04	8.49E-03
Apr-21	0.00	0.00	0.00	0.00	2.58E-01	3.73E-04	1.34E-03	4.43E-01	0.00	6.14E-03	0.73	0.00	6.06E-03	3.13E-04	6.39E-03
May-21	0.00	0.00	0.00	0.00	4.04E-01	0.00	4.18E-03	4.83E-01	0.00	6.34E-03	1.17	0.00	1.34E-02	3.13E-04	8.17E-03
Jun-21	0.00	0.00	0.00	0.00	3.93E-01	0.00	2.89E-03	3.74E-01	0.00	1.10E-02	1.20	0.00	8.51E-03	3.01E-04	7.10E-03
Jul-21	0.00	0.00	0.00	0.00	3.36E-01	0.00	9.55E-03	4.84E-01	0.00	3.87E-03	1.04	0.00	1.33E-02	3.04E-04	7.51E-03
Aug-21	0.00	0.00	0.00	0.00	3.80E-01	8.67E-05	3.97E-03	4.13E-01	0.00	6.48E-03	1.52	0.00	1.26E-02	3.10E-04	7.40E-03
Sep-21	0.00	0.00	0.00	0.00	3.56E-01	0.00	4.77E-03	2.76E-01	0.00	4.98E-03	0.89	0.00	1.44E-02	2.85E-04	5.76E-03
Oct-21	0.00	0.00	0.00	0.00	4.19E-01	0.00	7.66E-04	4.82E-01	0.00	5.04E-03	1.25	0.00	1.33E-02	2.97E-04	8.45E-03
Nov-21	0.00	0.00	0.00	0.00	3.99E-01	0.00	3.43E-03	4.88E-01	0.00	3.81E-03	1.22	0.00	1.63E-02	3.13E-04	8.31E-03
Dec-21	0.00	0.00	0.00	0.00	4.01E-01	0.00	3.95E-03	5.12E-01	0.00	1.76E-03	1.50	0.00	1.28E-02	3.22E-04	8.65E-03
Jan-22	0.00	0.00	0.00	0.00	3.53E-01	0.00	9.18E-03	4.53E-01	0.00	1.12E-02	1.36	0.00	1.47E-02	3.44E-04	7.38E-03
Feb-22	0.00	0.00	0.00	0.00	3.10E-01	0.00	4.22E-03	4.34E-01	0.00	5.63E-03	0.78	0.00	1.04E-02	3.03E-04	6.86E-03
Mar-22	0.00	0.00	0.00	0.00	2.49E-01	0.00	9.50E-03	4.36E-01	0.00	1.38E-02	0.55	0.00	8.62E-03	3.27E-04	6.11E-03
Apr-22	0.00	0.00	0.00	0.00	3.78E-01	0.00	4.19E-03	4.33E-01	0.00	8.12E-03	1.35	0.00	9.34E-03	3.06E-04	7.68E-03
May-22	0.00	0.00	0.00	0.00	3.64E-01	0.00	7.28E-03	3.95E-01	0.00	1.04E-02	1.04	0.00	9.96E-03	3.04E-04	6.74E-03
Jun-22	0.00	0.00	0.00	0.00	3.98E-01	0.00	2.22E-03	5.00E-01	0.00	2.13E-03	1.22	0.00	1.00E-02	2.83E-04	8.22E-03
Jul-22	0.00	0.00	0.00	0.00	3.71E-01	0.00	6.34E-03	4.66E-01	0.00	6.61E-03	1.32	0.00	8.60E-03	3.22E-04	7.66E-03
Aug-22	0.00	0.00	0.00	0.00	3.90E-01	0.00	1.99E-03	4.82E-01	0.00	2.84E-03	0.83	0.00	1.23E-02	3.05E-04	8.00E-03
Sep-22	0.00	0.00	0.00	0.00	3.57E-01	0.00	3.30E-03	1.32E-01	0.00	4.03E-03	0.73	0.00	8.05E-03	3.02E-04	4.53E-03
Oct-22	0.00	0.00	0.00	0.00	3.70E-01	0.00	3.49E-03	4.59E-01	0.00	2.84E-03	1.37	0.00	5.70E-03	3.08E-04	7.28E-03
Nov-22	0.00	0.00	0.00	0.00	3.65E-01	0.00	2.71E-03	4.82E-01	0.00	9.01E-04	0.76	0.00	9.42E-03	3.19E-04	7.56E-03
Dec-22	0.00	0.00	0.00	0.00	4.14E-01	1.19E-06	2.82E-03	4.76E-01	0.00	6.71E-03	0.92	0.00	1.06E-02	3.28E-04	8.07E-03
Jan-23	0.00	0.00	0.00	0.00	3.67E-01	0.00	5.53E-03	4.32E-01	0.00	4.24E-03	0.69	0.00	1.17E-02	3.29E-04	7.29E-03
Feb-23	0.00	0.00	0.00	0.00	3.13E-01	0.00	1.25E-03	4.69E-01	0.00	1.46E-03	0.55	0.00	9.22E-03	2.89E-04	7.27E-03
Mar-23	0.00	0.00	0.00	0.00	1.09E-01	4.72E-03	1.01E-02	3.90E-01	0.00	6.61E-03	0.40	0.00	1.01E-02	3.26E-04	4.27E-03
Apr-23	0.00	0.00	0.00	0.00	3.30E-01	0.00	7.28E-03	4.66E-01	0.00	3.85E-03	0.89	0.00	8.95E-03	3.00E-04	7.17E-03
May-23	0.00	0.00	0.00	0.00	3.74E-01	0.00	5.23E-03	4.88E-01	0.00	3.05E-03	0.79	0.00	1.17E-02	3.16E-04	7.92E-03
Jun-23	0.00	0.00	0.00	0.00	2.11E-01	1.13E-03	9.69E-03	4.64E-01	0.00	3.70E-03	1.08	0.00	1.52E-02	3.05E-04	6.32E-03
Jul-23	0.00	0.00	0.00	0.00	3.84E-01	0.00	3.07E-03	4.74E-01	0.00	3.88E-03	1.34	0.00	1.14E-02	3.16E-04	7.83E-03
Aug-23	0.00	0.00	0.00	0.00	3.21E-01	0.00	8.33E-03	4.35E-01	0.00	6.75E-03	1.63	0.00	1.00E-02	3.15E-04	6.86E-03
Sep-23	0.00	0.00	0.00	0.00	3.12E-01	7.07E-04	5.92E-03	1.16E-01	0.00	3.38E-03	0.71	0.00	1.69E-02	3.02E-04	4.17E-03
Oct-23	0.00	0.00	0.00	0.00	3.64E-01	0.00	3.91E-03	4.74E-01	0.00	3.66E-03	1.50	0.00	1.26E-02	3.25E-04	7.64E-03
Nov-23	0.00	0.00	0.00	0.00	3.64E-01	0.00	1.64E-03	4.99E-01	0.00	9.24E-04	1.41	0.00	1.20E-02	3.17E-04	8.13E-03
Dec-23	0.00	0.00	0.00	0.00	3.57E-01	0.00	4.47E-03	4.88E-01	0.00	4.39E-03	1.27	0.00	1.37E-02	3.53E-04	7.88E-03
Jan-24	0.00	0.00	0.00	0.00	3.41E-01	1.19E-03	8.22E-03	3.93E-01	0.00	1.24E-02	1.38	0.00	1.27E-02	3.63E-04	6.73E-03
Feb-24	0.00	0.00	0.00	0.00	3.56E-01	0.00	3.27E-03	4.24E-01	0.00	4.02E-03	1.49	0.00	1.08E-02	3.33E-04	7.69E-03
Mar-24	0.00	0.00	0.00	0.00	1.49E-01	1.62E-03	6.74E-03	4.63E-01	0.00	4.62E-03	0.58	0.00	6.97E-03	3.80E-04	5.86E-03
Apr-24	0.00	0.00	0.00	0.00	3.51E-01	0.00	3.61E-03	4.24E-01	0.00	4.51E-03	1.07	0.00	1.21E-02	3.96E-04	7.52E-03

GHG Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)		24-month Rolling Emission Rates (tons/yr)															
					Total GHG							Total CO2e						
	Total GHG	Total CO2e	Total GHG Baseline Period and Emissions	Total CO2e Baseline Period and Emissions	No. 7 Lime Kiln*	No. 8 Lime Kiln*	No. 7 Recovery Furnace*	No. 8 Recovery Furnace*	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator	No. 7 Lime Kiln*	No. 8 Lime Kiln*	No. 7 Recovery Furnace*	No. 8 Recovery Furnace*	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
			2,912,689	**2,921,006**														
			Jun-19 -- May-21	**Jun-19 -- May-21**	*Excludes combustion of LVHC and HVLC NCGs. The emissions resulting from the combustion of LVHC and HVLC NCGs are shown collectively.							*Excludes combustion of LVHC and HVLC NCGs. The emissions resulting from the combustion of LVHC and HVLC NCGs are shown collectively.						
	tons	*tons*	*tons (24-mo Rolling total)*	*tons (24-mo Rolling total)*														
Jan-15	237,293	237,930																
Feb-15	224,725	225,343																
Mar-15	226,453	227,034																
Apr-15	146,042	146,344																
May-15	194,639	195,125																
Jun-15	211,245	211,819																
Jul-15	245,072	245,763																
Aug-15	235,317	235,977																
Sep-15	157,706	158,191																
Oct-15	221,252	221,827																
Nov-15	234,026	234,640																
Dec-15	220,552	221,125																
Jan-16	233,063	233,657																
Feb-16	226,061	226,613																
Mar-16	236,600	237,143																
Apr-16	140,277	140,558																
May-16	255,211	256,105																
Jun-16	248,854	249,687																
Jul-16	247,745	248,556																
Aug-16	241,398	242,198																
Sep-16	189,424	190,080																
Oct-16	250,447	251,288																
Nov-16	246,348	247,142																
Dec-16	238,482	239,244	2,654,116	2,661,694	46,663	49,811	968,309	1,247,370	336,211	2,250	3,502	46,727	49,879	969,970	1,249,503	339,830	2,252	3,531
Jan-17	247,767	248,535	2,659,353	2,666,996	46,638	49,819	969,469	1,246,368	341,319	2,236	3,503	46,702	49,888	971,131	1,248,499	345,005	2,239	3,532
Feb-17	229,215	229,968	2,661,598	2,669,309	45,804	50,001	965,594	1,247,156	347,329	2,223	3,492	45,867	50,069	967,249	1,249,289	351,088	2,225	3,522
Mar-17	181,749	182,494	2,639,246	2,647,039	44,237	50,001	926,040	1,256,862	356,441	2,220	3,445	44,298	50,069	927,626	1,259,013	360,336	2,222	3,474
Apr-17	128,327	128,669	2,630,389	2,638,202	43,767	49,851	913,777	1,258,191	359,160	2,213	3,430	43,827	49,920	915,342	1,260,345	363,095	2,215	3,458
May-17	242,386	243,102	2,654,262	2,662,190	43,802	49,851	925,918	1,263,135	365,889	2,210	3,456	43,862	49,920	927,504	1,265,297	369,910	2,213	3,485
Jun-17	246,110	246,803	2,671,695	2,679,683	43,150	49,851	927,660	1,273,929	371,415	2,209	3,480	43,210	49,920	929,248	1,276,110	375,475	2,212	3,509
Jul-17	265,469	266,311	2,681,893	2,689,957	42,404	49,851	929,309	1,276,116	378,528	2,207	3,478	42,462	49,920	930,900	1,278,301	382,658	2,209	3,507
Aug-17	249,011	249,731	2,688,740	2,696,834	41,616	49,851	932,074	1,276,877	382,647	2,205	3,469	41,674	49,920	933,669	1,279,064	386,803	2,208	3,498
Sep-17	184,638	185,254	2,702,207	2,710,366	41,052	50,220	934,069	1,283,361	387,833	2,202	3,469	41,109	50,289	935,666	1,285,558	392,041	2,204	3,498
Oct-17	242,568	243,316	2,712,865	2,721,110	40,308	50,492	934,201	1,286,294	395,908	2,193	3,470	40,363	50,561	935,797	1,288,495	400,200	2,195	3,499
Nov-17	253,814	254,626	2,722,759	2,731,103	39,672	50,492	935,932	1,287,889	403,112	2,189	3,472	39,727	50,561	937,531	1,290,093	407,498	2,192	3,501
Dec-17	240,891	241,606	2,732,928	2,741,344	39,314	50,492	942,019	1,287,726	407,719	2,175	3,483	39,368	50,561	943,627	1,289,929	412,169	2,177	3,513
Jan-18	220,169	220,843	2,726,481	2,734,937	39,082	50,156	946,971	1,271,662	412,983	2,165	3,463	39,135	50,225	948,585	1,273,837	417,495	2,167	3,492
Feb-18	232,872	233,546	2,729,886	2,738,403	38,637	50,084	944,639	1,272,612	418,302	2,147	3,465	38,690	50,153	946,248	1,274,789	422,879	2,150	3,494
Mar-18	254,583	255,343	2,738,878	2,747,503	39,174	50,084	943,508	1,273,357	427,147	2,140	3,466	39,228	50,153	945,115	1,275,536	431,834	2,142	3,496
Apr-18	157,462	157,814	2,747,470	2,756,132	39,771	50,084	944,989	1,277,433	429,589	2,131	3,473	39,825	50,153	946,598	1,279,619	434,301	2,133	3,502
May-18	238,136	238,748	2,738,933	2,747,453	39,586	50,142	944,967	1,279,253	419,378	2,133	3,472	39,641	50,211	946,575	1,281,442	423,948	2,136	3,501
Jun-18	250,386	251,196	2,739,698	2,748,208	39,274	50,142	946,535	1,279,855	418,280	2,139	3,472	39,328	50,211	948,145	1,282,044	422,837	2,141	3,501
Jul-18	252,972	253,768	2,742,312	2,750,814	39,066	50,141	948,692	1,281,993	416,797	2,146	3,477	39,120	50,209	950,306	1,284,185	421,340	2,148	3,506
Aug-18	239,457	240,205	2,741,342	2,749,817	38,685	50,141	951,327	1,280,107	415,451	2,162	3,469	38,738	50,209	952,946	1,282,295	419,966	2,164	3,498
Sep-18	175,554	176,039	2,734,406	2,742,797	38,275	50,328	951,444	1,280,848	407,884	2,155	3,473	38,328	50,397	953,064	1,283,037	412,313	2,157	3,502
Oct-18	234,537	235,203	2,726,451	2,734,754	38,131	50,328	956,781	1,275,321	400,287	2,149	3,454	38,184	50,397	958,410	1,277,500	404,628	2,151	3,483
Nov-18	241,052	241,787	2,723,803	2,732,076	39,061	50,328	957,298	1,273,907	397,639	2,119	3,453	39,114	50,397	958,927	1,276,083	401,952	2,121	3,481
Dec-18	229,810	230,420	2,719,467	2,727,664	39,292	50,870	960,054	1,272,034	391,626	2,138	3,452	39,346	50,940	961,688	1,274,208	395,860	2,141	3,481
Jan-19	224,849	225,396	2,708,008	2,716,094	39,296	50,639	960,020	1,268,646	383,826	2,139	3,443	39,350	50,708	961,654	1,270,813	387,956	2,141	3,472
Feb-19	221,869	222,508	2,704,335	2,712,364	39,635	50,639	957,321	1,270,647	380,519	2,144	3,430	39,690	50,708	958,950	1,272,818	384,594	2,146	3,459
Mar-19	253,463	254,170	2,740,192	2,748,202	41,151	50,639	996,387	1,271,599	374,788	2,143	3,485	41,207	50,708	998,084	1,273,771	378,773	2,145	3,514
Apr-19	157,444	157,779	2,754,750	2,762,757	41,609	50,788	1,007,363	1,276,951	372,386	2,147	3,505	41,667	50,858	1,009,078	1,279,132	376,339	2,149	3,535
May-19	236,769	237,387	2,751,941	2,759,899	41,757	50,788	1,010,716	1,275,091	367,934	2,148	3,507	41,814	50,858	1,012,436	1,277,268	371,836	2,150	3,537
Jun-19	233,756	234,395	2,745,764	2,753,695	41,980	50,788	1,008,339	1,274,088	364,938	2,139	3,494	42,037	50,858	1,010,054	1,276,262	368,820	2,141	3,523
Jul-19	262,961	263,703	2,744,510	2,752,391	42,158	50,788	1,008,970	1,276,005	360,961	2,127	3,501	42,215	50,858	1,010,687	1,278,182	364,788	2,130	3,531
Aug-19	225,608	226,204	2,732,809	2,740,627	42,178	50,788	1,002,144	1,274,782	357,309	2,121	3,486	42,236	50,858	1,003,849	1,276,957	361,090	2,123	3,515
Sep-19	194,240	194,841	2,737,609	2,745,421	42,312	51,168	999,751	1,282,616	356,148	2,115	3,500	42,370	51,238	1,001,452	1,284,804	359,911	2,117	3,529
Oct-19	246,346	247,026	2,739,499	2,747,276	42,777	51,168	1,000,791	1,286,109	353,023	2,111	3,519	42,836	51,238	1,002,495	1,288,303	356,743	2,113	3,549
Nov-19	254,825	255,477	2,740,004	2,747,702	43,057	51,168	1,002,009	1,289,975	348,174	2,095	3,526	43,116	51,238	1,003,714	1,292,176	351,804	2,097	3,556
Dec-19	246,618	247,202	2,742,868	2,750,500	43,437	51,168	1,006,677	1,293,994	341,956	2,093	3,543	43,497	51,238	1,008,392	1,296,202	345,504	2,095	3,572
Jan-20	277,468	278,373	2,771,517	2,779,266	43,685	51,504	1,010,081	1,312,572	348,007	2,088	3,581	43,745	51,574	1,011,802	1,314,813	351,630	2,090	3,611
Feb-20	236,880	237,542	2,773,521	2,781,264	44,182	51,576	1,014,622	1,310,629	346,837	2,097	3,578	44,242	51,647	1,016,352	1,312,867	350,449	2,099	3,608
Mar-20	259,372	260,136	2,775,916	2,783,660	44,467	51,576	1,019,787	1,309,402	345,010	2,094	3,581	44,528	51,647	1,021,526	1,311,637	348,615	2,096	3,611
Apr-20	267,835	268,633	2,831,103	2,839,069	45,953	51,576	1,055,903	1,313,841	358,091	2,094	3,645	46,016	51,647	1,057,704	1,316,084	361,846	2,096	3,676
May-20	230,836	231,497	2,827,453	2,835,444	45,951	51,518	1,046,039	1,318,210	360,002	2,095	3,638	46,014	51,589	1,047,825	1,320,462	363,790	2,097	3,668
Jun-20	254,460	255,206	2,829,490	2,837,448	46,053	51,518	1,045,543	1,321,386	359,264	2,085	3,641	46,117	51,589	1,047,329	1,323,644	363,013	2,087	3,671
Jul-20	258,158	258,870	2,832,083	2,839,999	46,318	51,518	1,044,880	1,326,151	357,489	2,079	3,647	46,382	51,589	1,046,664	1,328,418	361,188	2,081	3,677
Aug-20	253,926	254,557	2,839,317	2,847,175	46,585	51,518	1,049,252	1,336,205	350,016	2,071	3,670	46,649	51,589	1,051,044	1,338,490	353,630	2,073	3,701

Alabama River Cellulose LLC
No. 7 Mill Transformation Project

GHG Baseline Actual Emission Rate Calculations

	Monthly Emission Rates (tons)		24-month Rolling Emission Rates (tons/yr)															
					Total GHG							Total CO2e						
	Total GHG	Total CO2e	Total GHG Baseline Period and Emissions	Total CO2e Baseline Period and Emissions	No. 7 Lime Kiln*	No. 8 Lime Kiln*	No. 7 Recovery Furnace*	No. 8 Recovery Furnace*	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator	No. 7 Lime Kiln*	No. 8 Lime Kiln*	No. 7 Recovery Furnace*	No. 8 Recovery Furnace*	No. 7 Power Boiler	Backup NCG Incinerator	Nos. 7 and 8 Lime Kilns, Nos. 7 and 8 Recovery Furnaces, and Backup NCG Incinerator
			2,912,689	**2,921,006**														
			Jun-19 -- May-21	**Jun-19 -- May-21**	*Excludes combustion of LVHC and HVLC NCGs. The emissions resulting from the combustion of LVHC and HVLC NCGs are shown collectively.							*Excludes combustion of LVHC and HVLC NCGs. The emissions resulting from the combustion of LVHC and HVLC NCGs are shown collectively.						
	tons	*tons*	*tons (24-mo Rolling total)*	*tons (24-mo Rolling total)*														
Sep-20	190,458	191,033	2,846,769	2,854,672	47,009	51,673	1,048,147	1,340,335	353,871	2,067	3,667	47,074	51,744	1,049,935	1,342,627	357,525	2,070	3,698
Oct-20	221,942	222,518	2,840,472	2,848,330	47,243	51,414	1,042,076	1,343,140	350,879	2,062	3,658	47,308	51,484	1,043,853	1,345,437	354,494	2,064	3,689
Nov-20	282,949	284,013	2,861,421	2,869,443	47,839	51,414	1,044,685	1,348,272	363,482	2,063	3,666	47,905	51,484	1,046,466	1,350,578	367,247	2,065	3,697
Dec-20	264,843	265,642	2,878,938	2,887,054	48,227	51,414	1,047,147	1,356,475	369,923	2,074	3,678	48,294	51,484	1,048,932	1,358,794	373,765	2,076	3,709
Jan-21	249,383	250,093	2,891,204	2,899,403	48,210	51,636	1,046,955	1,364,381	374,250	2,070	3,703	48,276	51,707	1,048,740	1,366,715	378,160	2,072	3,734
Feb-21	227,715	228,356	2,894,128	2,902,327	48,498	51,636	1,050,544	1,363,552	374,123	2,064	3,710	48,564	51,707	1,052,335	1,365,884	378,028	2,067	3,741
Mar-21	241,528	242,160	2,888,160	2,896,322	48,688	51,636	1,047,998	1,363,033	371,034	2,056	3,714	48,755	51,707	1,049,785	1,365,364	374,906	2,058	3,746
Apr-21	191,413	191,934	2,905,145	2,913,399	49,439	51,636	1,066,366	1,354,098	377,828	2,044	3,734	49,507	51,707	1,068,185	1,356,413	381,776	2,046	3,765
May-21	251,858	252,599	2,912,689	2,921,006	49,443	51,636	1,065,675	1,355,316	384,844	2,033	3,742	49,511	51,707	1,067,492	1,357,633	388,853	2,035	3,773
Jun-21	224,503	225,206	2,908,062	2,916,411	49,569	51,636	1,066,685	1,344,869	389,540	2,031	3,732	49,637	51,707	1,068,504	1,347,168	393,598	2,033	3,763
Jul-21	234,535	235,210	2,893,849	2,902,164	49,459	51,636	1,057,875	1,339,266	389,876	2,031	3,706	49,527	51,707	1,059,677	1,341,554	393,929	2,033	3,737
Aug-21	238,272	239,086	2,900,181	2,908,606	49,813	51,038	1,061,928	1,331,690	399,975	2,025	3,712	49,881	51,108	1,063,738	1,333,965	404,143	2,027	3,743
Sep-21	185,468	186,018	2,895,795	2,904,194	49,854	50,918	1,061,216	1,327,795	400,282	2,021	3,709	49,922	50,988	1,063,024	1,330,063	404,433	2,023	3,740
Oct-21	254,727	255,499	2,899,985	2,908,430	49,808	50,918	1,063,960	1,324,554	405,021	2,015	3,709	49,876	50,988	1,065,774	1,326,816	409,219	2,017	3,740
Nov-21	252,697	253,454	2,898,921	2,907,419	49,804	50,918	1,061,891	1,319,655	410,934	2,015	3,704	49,872	50,988	1,063,701	1,321,908	415,197	2,017	3,735
Dec-21	263,907	264,763	2,907,566	2,916,199	49,816	50,918	1,060,734	1,317,247	423,138	2,007	3,706	49,884	50,988	1,062,542	1,319,496	427,543	2,009	3,737
Jan-22	244,481	245,259	2,891,073	2,899,642	49,787	50,877	1,054,345	1,309,521	420,850	2,009	3,684	49,855	50,947	1,056,141	1,311,754	425,218	2,011	3,715
Feb-22	206,160	206,718	2,875,713	2,884,230	49,454	50,731	1,044,026	1,307,022	418,809	2,005	3,667	49,522	50,801	1,045,803	1,309,250	423,149	2,007	3,698
Mar-22	193,106	193,575	2,842,580	2,850,949	48,855	50,557	1,023,861	1,302,066	411,613	2,007	3,621	48,922	50,627	1,025,602	1,304,283	415,855	2,009	3,651
Apr-22	237,446	238,213	2,827,386	2,835,740	48,968	50,214	1,018,479	1,291,707	412,405	2,009	3,603	49,035	50,283	1,020,210	1,293,906	416,661	2,011	3,633
May-22	221,201	221,854	2,822,568	2,830,919	49,612	50,015	1,026,261	1,277,306	413,787	2,000	3,587	49,680	50,084	1,028,005	1,279,478	418,053	2,002	3,617
Jun-22	249,950	250,705	2,820,313	2,828,668	49,660	50,015	1,026,713	1,275,490	412,847	1,997	3,591	49,728	50,084	1,028,457	1,277,659	417,120	1,999	3,621
Jul-22	242,640	243,408	2,812,554	2,820,937	49,740	49,779	1,024,424	1,267,867	415,165	2,002	3,577	49,809	49,847	1,026,164	1,270,021	419,485	2,004	3,607
Aug-22	235,917	236,543	2,803,550	2,811,930	49,820	49,779	1,019,222	1,261,481	417,681	2,005	3,562	49,888	49,847	1,020,952	1,263,625	422,019	2,007	3,592
Sep-22	141,859	142,295	2,779,250	2,787,561	49,385	48,705	1,019,392	1,241,587	414,640	2,005	3,537	49,453	48,772	1,021,123	1,243,696	418,944	2,007	3,567
Oct-22	236,421	237,195	2,786,490	2,794,900	49,032	48,794	1,021,519	1,239,638	421,964	2,002	3,541	49,099	48,861	1,023,254	1,241,743	426,367	2,004	3,571
Nov-22	226,158	226,748	2,758,094	2,766,267	48,874	48,794	1,016,122	1,234,599	404,179	1,998	3,528	48,941	48,861	1,017,848	1,236,696	408,362	2,000	3,558
Dec-22	244,166	244,828	2,747,755	2,755,860	48,935	48,794	1,017,084	1,227,645	399,792	1,982	3,524	49,002	48,861	1,018,812	1,229,730	403,917	1,984	3,554
Jan-23	218,033	218,586	2,732,080	2,740,106	49,091	48,779	1,013,006	1,219,146	396,581	1,981	3,497	49,158	48,846	1,014,727	1,221,215	400,651	1,983	3,526
Feb-23	204,569	205,066	2,720,508	2,728,461	48,880	48,779	1,007,231	1,219,078	391,070	1,976	3,493	48,947	48,846	1,008,943	1,221,148	395,077	1,978	3,523
Mar-23	143,795	144,141	2,671,641	2,679,452	47,781	48,575	979,527	1,204,179	386,191	1,978	3,410	47,847	48,642	981,190	1,206,222	390,134	1,980	3,439
Apr-23	221,738	222,353	2,686,804	2,694,661	48,511	48,575	989,182	1,206,077	389,059	1,974	3,425	48,577	48,642	990,860	1,208,124	393,028	1,976	3,454
May-23	234,106	234,715	2,677,928	2,685,719	48,506	48,575	986,085	1,205,725	383,642	1,975	3,421	48,573	48,642	987,757	1,207,771	387,550	1,977	3,449
Jun-23	202,466	203,098	2,666,910	2,674,665	47,567	48,550	967,577	1,213,909	383,926	1,976	3,405	47,633	48,616	969,217	1,215,971	387,817	1,978	3,434
Jul-23	246,942	247,724	2,673,113	2,680,922	47,804	48,550	971,291	1,212,766	387,313	1,979	3,412	47,870	48,616	972,938	1,214,826	391,251	1,981	3,440
Aug-23	233,764	234,601	2,670,860	2,678,679	47,309	48,988	965,786	1,215,288	388,107	1,980	3,400	47,374	49,056	967,423	1,217,352	392,063	1,982	3,429
Sep-23	134,169	134,582	2,645,210	2,652,961	47,297	48,041	961,193	1,196,871	386,454	1,985	3,369	47,362	48,107	962,822	1,198,904	390,382	1,987	3,397
Oct-23	247,425	248,251	2,641,559	2,649,337	47,316	48,041	955,740	1,195,638	389,479	1,992	3,353	47,381	48,107	957,359	1,197,669	393,446	1,994	3,381
Nov-23	247,638	248,442	2,639,029	2,646,831	47,236	48,041	951,407	1,196,140	390,862	1,993	3,349	47,301	48,107	953,019	1,198,172	394,859	1,995	3,378
Dec-23	244,456	245,214	2,629,304	2,637,057	47,154	48,041	946,528	1,194,151	388,094	2,001	3,334	47,218	48,107	948,131	1,196,180	392,054	2,003	3,362
Jan-24	227,838	228,592	2,620,982	2,628,724	47,087	48,082	944,972	1,187,737	387,776	2,007	3,322	47,152	48,148	946,573	1,189,754	391,738	2,009	3,350
Feb-24	233,002	233,802	2,634,403	2,642,265	47,503	48,228	949,908	1,186,242	397,171	2,014	3,338	47,568	48,294	951,517	1,188,257	401,246	2,016	3,366
Mar-24	168,270	168,710	2,621,986	2,629,833	46,152	48,402	938,070	1,186,931	397,068	2,029	3,333	46,215	48,468	939,660	1,188,949	401,147	2,031	3,361
Apr-24	221,794	222,458	2,614,159	2,621,955	46,075	48,745	934,799	1,185,016	394,142	2,053	3,330	46,138	48,812	936,383	1,187,032	398,177	2,055	3,358

APPENDIX C

BEST AVAILABLE CONTROL TECHNOLOGY REFERENCE MATERIALS

RBLC Queries

RBLC Queries for PM, PM_{10}, and $PM_{2.5}$

Table C-1
RBLC Search Results for Kraft Paper Machine Dryer PM (Process Code 30.241)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Pollutant	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BREWTON LLC	AL	6/11/2014	No.1 Paper Machine - Paper Machines		343830	mdt	Particulate matter, fugitive		0.139	LB/MDTFP
GEORGIA PACIFIC BREWTON LLC	AL	6/11/2014	No. 2 Paper Machine - Paper Machines		492020	mdt	Particulate matter, fugitive		0.139	LB/MDTFP
KIMBERLY-CLARK MOBILE MILL	AL	5/30/2018	TM7 Process Vents		0		Particulate matter, filterable (FPM)		0.94	LB
KIMBERLY-CLARK MOBILE MILL	AL	5/30/2018	TM7 Yankee Dryer	Natural Gas	0		Particulate matter, filterable (FPM)		0.21	LB
KIMBERLY-CLARK MOBILE MILL	AL	5/30/2018	TM7 Reel Section		0		Particulate matter, filterable (FPM)	Wet Scrubber	0.06	LB
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	PAPER MACHINE #4		173	MACHINE DRIED TONS/D	Particulate Matter (PM)	THE MOST COST EFFECTIVE BACT FOR PM/PM10 EMISSIONS FROM ALL THREE MACHINES SHOULD BE THE USE OF A WET SCRUBBER FOR DUST CONTROL WITH THE SAME PM/PM10 EMISSION RATES AS THOSE SPECIFIED FOR THE DUST CONTROL SYSTEMS	0.5	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	PAPER MACHINE #5		97	MACHINE DRIED TONS/D	Particulate Matter (PM)	THE MOST COST EFFECTIVE BACT FOR PM/PM10 EMISSIONS FROM ALL THREE MACHINES SHOULD BE THE USE OF A WET SCRUBBER FOR DUST CONTROL WITH THE SAME PM/PM10 EMISSION RATES AS THOSE SPECIFIED FOR THE DUST CONTROL SYSTEMS	0.3	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	PAPER MACHINE #6		270	MDT/DAY, 30-DAY AV	Particulate Matter (PM)	THE MOST COST EFFECTIVE BACT FOR PM/PM10 EMISSIONS FROM ALL THREE MACHINES SHOULD BE THE USE OF A WET SCRUBBER FOR DUST CONTROL WITH THE SAME PM/PM10 EMISSION RATES AS THOSE SPECIFIED FOR THE DUST CONTROL SYSTEMS	0.7	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	PAPER MACHINE #7		250	MDT/DAY, 30-DAY AV	Particulate Matter (PM)	THE MOST COST EFFECTIVE BACT FOR PM/PM10 EMISSIONS FROM ALL THREE MACHINES SHOULD BE THE USE OF A WET SCRUBBER FOR DUST CONTROL WITH THE SAME PM/PM10 EMISSION RATES AS THOSE SPECIFIED FOR THE DUST CONTROL SYSTEMS	0.7	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	PAPER MACHINE #8		212	MDT/DAY, 30-DAY AV	Particulate Matter (PM)	THE MOST COST EFFECTIVE BACT FOR PM/PM10 EMISSIONS FROM ALL THREE MACHINES SHOULD BE THE USE OF A WET SCRUBBER FOR DUST CONTROL WITH THE SAME PM/PM10 EMISSION RATES AS THOSE SPECIFIED FOR THE DUST CONTROL SYSTEMS	7.2	LB/H
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Board Machines		0		Particulate matter, filterable (FPM)	Use of virgin (not recycled) fiber	0.04	LB/ADTFP
SAPPI NORTH AMERICA, INC.	ME	9/7/2023	Paper Machine #2 and Dryers		0		Particulate matter, filterable (FPM)		0.11	LB/H
VERSO CORPORATION--QUINNESEC, MI MILL	MI	7/14/2022	EU1227-1: Paper Machine	Natural gas	1800	ADTFP	Particulate matter, filterable (FPM)		13.14	T/YR
APPLETON COATED - COMBINED LOCKS MILL	WI	6/8/2004	PAPER MACHINE #6 (S62A, P62A)	NATURAL GAS	498	ADT/D	Particulate Matter (PM)	GOOD OPERATING PRACTICES, (INCLUDING USE OF NATURAL GAS TO FIRE THE IR DRYER)	0.078	LB/ADT

Table C-2
RBLC Search Results for Kraft Paper Machine Dryer PM_{10} (Process Code 30.241)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Board Machines		0		Use of virgin (not recycled) fiber	0.06	LB/ADTFP
SAPPI NORTH AMERICA, INC.	ME	9/7/2023	Paper Machine #2 and Dryers		0			0.42	LB/H
VERSO CORPORATION--QUINNESEC, MI MILL	MI	7/14/2022	EU1227-1: Paper Machine	Natural gas	1800	ADTFP		126	LB/D

Table C-3
RBLC Search Results for Kraft Paper Machine Dryer $PM_{2.5}$ (Process Code 30.241)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Board Machines		0		Use of virgin (not recycled) fiber	0.06	LB/ADTFP
SAPPI NORTH AMERICA, INC.	ME	9/7/2023	Paper Machine #2 and Dryers		0			0.42	LB/H
VERSO CORPORATION--QUINNESEC, MI MILL	MI	7/14/2022	EU1227-1: Paper Machine	Natural gas	1800	ADTFP		108	LB/D
SAPPI CLOQUET LLC	MN	10/28/2009	PAPER MACHINE	NATURAL GAS	671000	T/YR (paper)		1.82	LB/H

Table C-4
RBLC Search Results for Kraft Recovery Furnace PM (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ROCK-TENN MILL COMPANY, LLC	AL	09/15/2003	RECOVERY FURNACE		4.32	mmlb/day	ELECTROSTATIC PRECIPITATOR	0.021	GR/DSCF @ 8% O2
ALABAMA RIVER PULP	AL	02/05/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY	ESP	0.021	GR/DSCF
GEORGIA PACIFIC BREWTON LLC	AL	06/11/2014	No. 4 Recovery; Smelt Dissolving Tank	Black Liquor	1355	MMBTU	ESP	0.015	GR/DSCF @ 8% O2
GP BREWTON	AL	01/03/2018	No. 4 Recovery Furnace	Black Liqour	1355	MMBtu/hr	ESP	0.015	GR/DSCF @ 8% O2
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	WET ESP	0.02	G/DSCF @ 8% O2
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	ESP	0.015	GR/DSCF @ 8% O2
GEORGIA PACIFIC PALATKA MILL	FL	05/29/2007	NO. 4 RECOVERY BOILER	BLACK LIQUORS SOLID	210000	LB/H		0.03	GR/DSCF
MANSFIELD MILL	LA	07/22/2004	RECOVERY BOILERS NO. 1; 2 (EQT036; 037)		961.3	MMBTU/H	ELECTROSTATIC PRECIPITATOR	100.5	LB/H
WOODLAND PULP LLC	ME	01/05/2022	Recovery Boiler #3	BLS	5.35	MMLB BLS/D	ESP	0.021	GR/DSCF @ 8% O2
VERSO CORPORATION--QUINNESEC, MI MILL	MI	07/14/2022	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Electrostatic precipitator (ESP) and good combustion practices.	48.6	LB/H
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	07/09/2003	RECOVERY BOILER NO. 2	BLACK LIQUOR	861.4	MMBTU/H	ESP	194.3	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 15		1150	TBLS/D	NONE INDICATED	182.5	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 18		1200	TBLS/D	FACILITY WILL HAVE A FEDERAL LIMIT OF PM10 REPRESENTING A 20% REDUCTION FROM THE CURRENTLY ALLOWED EMISSION LIEVELS. WITH THIS	219	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 19		2000	T BLS/D	FACILITY WILL HAVE A LIMIT ON PM10 REPRESENTING A 20% REDUCTION FROM THE CURRENTLY ALLOWED EMISSION LEVELS. WITH THIS NEW	292	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 22		1950	T BLS/D		256	T/YR
DOMTAR NEKOOSA MILL	WI	04/23/2004	KRAFT BLACK LIQUOR RECOVERY FURNACE, B14	STRONG BLACK LIQUOR	37.5	bl	EXISTING ESP	0.03	GR/DSCF @ 8% O2

Table C-5
RBLC Search Results for Kraft Recovery Furnace PM_{10} (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	ESP	0.03	GR/DSCF @ 8% O2
BUCKEYE FOLEY MILL	*FL*	*08/22/2008*	*RECOVERY BOILER NO.2*	*BLACK LIQUOR SOLID (BLS)*	*625*	*MMBTU/H*		*0.03*	*GR/DSCF @ 8% O2*
BUCKEYE FOLEY MILL	*FL*	*08/22/2008*	*RECOVERY BOILER NO. 3*	*BLACK LIQUOR SOLID (BLS)*	*527*	*MMBTU/H*		*0.03*	*GR/DSCF @ 8% O2*
VERSO CORPORATION--QUINNESEC, MI MILL	MI	07/14/2022	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Electrostatic precipitator (ESP) and good combustion practices.	45.7	LB/H

Note: The *italicized* limits are for filterable PM. The RBLC indicates the compliance demonstration method as EPA Method 5, and the last Title V permit for the mill indicates the limits are filterable PM.

Table C-5a
RBLC Search Results for Kraft Recovery Furnace Filterable PM_{10} (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ID COURTLAND	AL	05/09/2005	NO. 3 RECOVERY FURNACE	BLACK LIQUER	950	MMBTU/H	ESP	0.015	GR/DSCF
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	07/09/2003	RECOVERY BOILER NO. 1	BLACK LIQUOR	861.4	MMBTU/H	ESP	194.3	LB/H
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	TWO ELECTROSTATIC PRECIPITATORS	194.3	LB/H
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	TWO ESP	194.3	LB/H
INTERNATIONAL PAPER - ROANOKE RAPIDS MILL	NC	03/03/2004	NO. 7 RECOVERY FURNACE	BLACK LIQUOR SOLIDS	3	MMLB/D	EXISTING MULTIFIELD ELECTROSTATIC PRECIPITATOR	0.021	GR/DSCF
RESOLUTE FP US INC	SC	03/16/2006	NO. 3 RECOVERY FUNRACE	BLACK LIQUOR	2040	T/D BLS	ELECTROSTATIC PRECIPITATOR	0.025	GR/DSCF@8%O2
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/05/2004	NO.1 AND NO. 2 RECOVERY FURNACE	NATURAL GAS				56	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK-MSS					52	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					42.59	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					26.58	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK-MSS					79	LB/H

Table C-6
RBLC Search Results for Kraft Recovery Furnace $PM_{2.5}$ (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H		0.027	GR/DSCF @ 8% O2
VERSO CORPORATION--QUINNESEC, MI MILL	MI	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Electrostatic precipitator (ESP) and good combustion practices	42.1	LB/H

Table C-7
RBLC Search Results for Other Kraft Material Recovery Processes PM (Process Code 30.219)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	WET ESP	0.02	G/DSCF @ 8% O2

Table C-8
RBLC Search Results for Kraft Lime Kiln Slaker PM (Process Code 30.239)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
MANSFIELD MILL	LA	7/22/2004	LIME SLAKER (EQT014)				WET SCRUBBER	2.1	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Lime Slaker; Causticizer - No.3 Lime Kiln				No info was entered on type of add-on control. Contact permitting agency.	1.54	LB/H

Table C-9
RBLC Search Results for Kraft Lime Kiln PM (Process Code 30.231)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BRETON LLC	AL	06/11/2014	No.3 Lime Kiln	Natural Gas	35417	LB CaO/H	No info was entered on type of add-on control. Contact permitting agency.	0.01	GRAIN/SDCF@10%
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	ESP	0.01	GR/DSCF @ 10% O2
GEORGIA PACIFIC PALATKA MILL	FL	05/29/2007	NO. 4 LIME KILN	NO. 6 FUEL OIL	41.5	T/H	EXISTING MECHANICAL PRE-CLEANER CYCLONES FOLLOWED BY A VENTURI WET SCRUBBER SYSTEM.	0.55	LB/T
WEYERHAEUSER - FLINT RIVER OPERATIONS	GA	05/28/2003	ROTARY LIME KILN	NO. 6 FUEL OIL	370	T/D	ESP	0.01	GR/DSCF @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	LIME KILNS 1 AND 2		140	T CAO/D EACH		20	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	LIME KILN 3		240	T CAO/D		34	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	LIME KILN 4		250	T CAO/D		35.6	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	LIME KILN 5		325	T CAO/D		0.06	GR/DSCF @ 10% O2

Table C-10
RBLC Search Results for Kraft Lime Kiln PM_{10} (Process Code 30.231)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	ESP	0.03	GR/DSCF @ 10% O2

Table C-10a
RBLC Search Results for Kraft Lime Kiln Filterable PM_{10} (Process Code 30.231)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	7/9/2003	LIME KILN	NATURAL GAS	200	MMBTU/H	SCRUBBER	21.2	LB/H
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	3/4/2005	LIME KILN	NATURAL GAS	145.9	MMBTU/H	VENTURI SCRUBBER	29.9	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	LIME KILN	NATURAL GAS				30	LB/H

Table C-11
RBLC Search Results for Kraft Lime Kiln $PM_{2.5}$ (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	ESP	0.027	GR/DSCF @ 10% O2

RBLC Queries for CO

Table C-12
RBLC Search Results for Kraft Recovery Furnace CO (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER CORPERATION - COURTLAND MILL	AL	5/9/2005	NO. 3 RECOVERY FURNACE	BLACK LIQUER	950	MMBTU/H		200	PPM@8%O2
ALABAMA RIVER PULP	AL	2/5/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY		200	PPM
ROCKTENN CP, LLC	AL	4/29/2015	Recovery Boiler	Black Liquid	58334	LB/LB BL		213	PPM@8%O2
WESTROCK CP, LLC	AL	8/22/2017	Recovery Boiler	Black Liquor	58334	lb/hr		200	PPM
GEORGIA-PACIFIC CORPORATION	AR	5/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	BOILER DESIGN AND COMBUSTION CONTROL	930	PPMVD
CLEARWATER PAPER CORPORATION	AR	10/16/2012	RECOVERY FURNACE	BLACK LIQUOR SOLIDS (BLS)	62.5	T/H	GOOD COMBUSTION PRACTICES	200	PPMDV
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Good Combustion Practices	200	PPMVD @ 8% O2
GEORGIA-PACIFIC CONSUMER OPERATIONS LLC	FL	5/29/2007	NO. 4 RECOVERY BOILER	BLACK LIQUORS SOLID	210000	LB/H	NEW OFA SYSTEM (QUARTENARY AIR)COMBUSTION IMPROVEMENTS	400	PPMVD
BUCKEYE FLORIDA, LP	FL	8/22/2008	RECOVERY BOILER NO.2	BLACK LIQUOR SOLID (BLS)	625	MMBTU/H		400	PPMVD @ 8 %
BUCKEYE FLORIDA, LP	FL	8/22/2008	RECOVERY BOILER NO. 3	BLACK LIQUOR SOLID (BLS)	527	MMBTU/H		400	PPMVD @ 8% O2
TEMPLE INLAND, INC.	GA	10/13/2004	RECOVERY FURNACE, BLS FUEL	BLS	5.3	MMLB/D	STAGED COMBUSTION AND GOOD COMBUSTION PRACTICES	650	PPM @ 8% O2
INTERNATIONAL PAPER CO	LA	7/22/2004	RECOVERY BOILERS NO. 1 & 2 (EQT036 & 037)		961.3	MMBTU/H	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	396.5	LB/H
WOODLAND PULP LLC	ME	9/29/2017	#3 Recovery Boiler	Black Liquor	1207	MMBTU/H		429	LB/H
WOODLAND PULP LLC	ME	1/5/2022	Recovery Boiler #3	BLS	5.35	MMLB BLS/D		300	PPMVD @ 8% O2
VERSO CORPORATION	MI	7/14/2022	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Good combustion practices	425	PPM
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	735.6	LB/H
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	735.6	LB/H
INTERNATIONAL PAPER	NC	3/18/2004	NO. 5 RECOVERY BOILER	BLACK LIQUOR SOLIDS	140	T/H	PROPER DESIGN AND GOOD COMBUSTION CONTROL	300	PPMV

Table C-12
RBLC Search Results for Kraft Recovery Furnace CO (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER	NC	3/3/2004	NO. 7 RECOVERY FURNACE	BLACK LIQUOR SOLIDS	3	MMLB/D	FURNACE DESIGN AND COMBUSTION OPTIMIZATION	300	PPM
INLAND PAPERBOARD AND PACKAGING INC	TX	10/5/2004	NO.1 AND NO. 2 RECOVERY FURNACE	NATURAL GAS				1375	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					219.02	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					122.97	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 15		1150	TBLS/D		630	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 18		1200	TBLS/D	GOOD COMBUSTION CONTROL OF FLAME TEMPERATURE AND EXCESS AIR.	360	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 19		2000	T BLS/D	GOOD COMBUSTION CONTROL OF FLAME TEMPERATURE AND EXCESS AIR.	600	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 22		1950	T BLS/D		300	PPMDV @ 8% O2
DOMTAR INDUSTRIES INC.	WI	4/23/2004	KRAFT BLACK LIQUOR RECOVERY FURNACE, B14	STRONG BLACK LIQUOR	37.5	bl	GOOD COMBUSTION CONTROL	300	PPMDV @ 8% O2

Table C-13
RBLC Search Results for Kraft Lime Kiln CO (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	50	PPMVD @ 10% O2
GEORGIA-PACIFIC CONSUMER OPERATIONS LLC	FL	5/29/2007	NO. 4 LIME KILN	NO. 6 FUEL OIL	41.5	T/H		69	PPMVD
INTERNATIONAL PAPER	OK	4/25/2008	Lime Kiln		0		good combustion practice	0.2	LB/MMBTU
INLAND PAPERBOARD AND PACKAGING INC	TX	10/5/2004	LIME KILN	NATURAL GAS				337	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	LIME KILN NO2					4.44	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILNS 1 AND 2		140	T CAO/D EACH		1400	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 3		240	T CAO/D		1400	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 4		250	T CAO/D		1400	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 5		325	T CAO/D		500	PPMDV @ 10% O2

RBLC Queries for TRS and H_2S

Table C-14
RBLC Search Results for Kraft Recovery Furnace TRS (Liquor Tanks) (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER CO	LA	7/22/2004	PROCESS LIQUOR TANKS (3)					0	
DOMTAR INDUSTRIES INC.	WI	4/23/2004	KRAFT PULPING PROCESS, P14		550	T/D	EMISSIONS FROM DIGESTERS SENT TO LVHC SYSTEM (FOR COMBUSTION IN BOILERS); EMISSIONS FROM BROWNSTOCK WASHER SENT TO HVLC SYSTEM (FOR COMBUSTION IN BLRF).	0	

Table C-15
RBLC Search Results for Kraft Recovery Furnace H_2S (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Good Combustion Practices	3	PPMVD @ 8% O2
TEMPLE INLAND, INC.	GA	10/13/2004	RECOVERY FURNACE, BLS FUEL	BLS	5.3	MMLB/D	SYSTEM DESIGN AND GOOD OPERATION PRACTICES	4	PPM @ 8% O2

Table C-16
RBLC Search Results for Kraft Recovery Furnace TRS (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER CORPERATION - COURTLAND MILL	AL	5/9/2005	NO. 3 RECOVERY FURNACE	BLACK LIQUER	950	MMBTU/H		5	PPM@8%O2
ALABAMA RIVER PULP	AL	2/5/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY		5	PPM
CLEARWATER PAPER CORPORATION	AR	10/16/2012	RECOVERY FURNACE	BLACK LIQUOR SOLIDS (BLS)	62.5	T/H	GOOD COMBUSTION PRACTICES	3	PPMDV
TEMPLE INLAND, INC.	GA	10/13/2004	RECOVERY FURNACE, BLS FUEL	BLS	5.3	MMLB/D	SYSTEM DESIGN AND GOOD OPERATION PRACTICES	5	PPM @ 8% O2
WEYERHAEUSER CO	LA	5/24/2006	RECOVERY BOILER NO. 3	BLACK LIQUOR	6.4	MM LB/D	PROPER BOILER DESIGN AND OPERATION	3	PPM @ 8% O2
INTERNATIONAL PAPER CO	LA	7/22/2004	RECOVERY BOILERS NO. 1 & 2 (EQT036 & 037)		961.3	MMBTU/H	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	25.1	T/YR
WOODLAND PULP LLC	ME	1/5/2022	Recovery Boiler #3	BLS	5.35	MMLB BLS/D	Upgraded air system	5	PPMVD @ 8% O2
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	31.5	LB/H
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	31.5	LB/H
INTERNATIONAL PAPER	NC	3/3/2004	NO. 7 RECOVERY FURNACE	BLACK LIQUOR SOLIDS	3	MMLB/D	FURNACE DESIGN AND COMBUSTION OPTIMIZATION	5	PPM
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					3.33	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					1.87	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 15		1150	TBLS/D		17.5	PPMDV @ 8% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 18		1200	TBLS/D	NO FURTHER CONTROL APPLICATION IS EITHER FEASIBLE OR ECONOMICALLY JUSTIFIABLE.	17.5	PPMDV @ 8% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 19		2000	T BLS/D	FURTHER CONTROL IS EITHER INFEASIBLE OR NOT ECONOMICALLY JUSTIFIABLE.	10	PPMDV @ 8% O2

Table C-16
RBLC Search Results for Kraft Recovery Furnace TRS (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 22		1950	T BLS/D		3	PPMDV @ 8% O2
DOMTAR INDUSTRIES INC.	WI	4/23/2004	KRAFT BLACK LIQUOR RECOVERY FURNACE, B14	STRONG BLACK LIQUOR	37.5	bl	GOOD OPERATING PRACTICES	5	PPMDV @ 8% O2

Table C-17
RBLC Search Results for Kraft Lime Kiln Slaker TRS (Process Code 30.239)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER CO	LA	7/22/2004	LIME SLAKER (EQT014)				WET SCRUBBER	0.14	LB/H
INTERNATIONAL PAPER CO	LA	7/22/2004	CAUSTICIZING AREA PROCESS TANKS & NO. 4 CAUSTICIZER					0	

Table C-18
RBLC Search Results for Kraft Lime Kiln TRS (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
WEYERHAEUSER CO	LA	5/24/2006	LIME KILN NO. 2	NATURAL GAS	191625	TONS CaO/YR	PROPER KILN DESIGN AND OPERATION WITH OPTIMIZED MUD WASHING	8	PPM @ 10% O2
GEORGIA PACIFIC CORPORATION	MS	3/4/2005	LIME KILN	NATURAL GAS	145.9	MMBTU/H	WET (VENTURI) SCRUBBER WITH OPTIONAL MUD WASHING	20	PPMV @ 10% O2
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	LIME KILN NO2					2.5	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILNS 1 AND 2		140	T CAO/D EACH		20	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 3		240	T CAO/D		20	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 4		250	T CAO/D		20	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 5		325	T CAO/D		20	PPMDV @ 10% O2

Table C-19
RBLC Search Results for Kraft Lime Kiln H_2S (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	8	PPMVD @ 10% O2

RBLC Queries for
Sulfuric Acid Mist

Table C-20
RBLC Search Results for Kraft Recovery Furnace Sulfuric Acid Mist (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ALABAMA RIVER PULP	AL	2/5/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY		0.024	LB/TON BLS
GEORGIA-PACIFIC CORPORATION	AR	5/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	BOILER DESIGN AND COMBUSTION CONTROL WET ESP MAY ALSO REDUCE EMISSIONS AS WELL. SOURCE ALREADY EMPLOYS A WET ESP.	7.3	LB/H
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Good Combustion Practices	1.2	PPMVD @ 8% O2
INTERNATIONAL PAPER CO	LA	7/22/2004	RECOVERY BOILERS NO. 1 & 2 (EQT036 & 037)		961.3	MMBTU/H	PROPER DESIGN, GOOD COMBUSTION PRACTICES, FIRING LOW SULFUR FUEL, AND A 10% ANNUAL CAPACITY FACTOR FOR FOSSIL FUELS	6	LB/H
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROLS	0	
GEORGIA PACIFIC CORPORATION	MS	5/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	0	
INTERNATIONAL PAPER	OK	4/25/2008	Chemical Recovery Furnace		0		Good combustion practices/High solids firing	0.5	PPM @8% O2
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					17.25	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					9.69	LB/H

Table C-21
RBLC Search Results for Kraft Lime Kiln Sulfuric Acid Mist (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	1.2	PPMVD @ 10% O2
GEORGIA PACIFIC CORPORATION	MS	3/4/2005	LIME KILN	NATURAL GAS	145.9	MMBTU/H		2.5	LB/H
INTERNATIONAL PAPER	OK	4/25/2008	Lime Kiln		0		wet scrubbing	0.002	LB/MMBTU
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	LIME KILN NO2					0.25	LB/H

RBLC Queries for NO_X

Table C-22
RBLC Search Results for Kraft Recovery Furnace NO_X (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ROCK-TENN MILL COMPANY, LLC	AL	09/15/2003	RECOVERY FURNACE		4.32	mmlb/day		110	PPMV @ 8% O2
ID COURTLAND	AL	05/09/2005	NO. 3 RECOVERY FURNACE	BLACK LIQUER	950	MMBTU/H		75	PPM@8%O2
ALABAMA RIVER PULP	AL	02/05/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY		75	PPM
GEORGIA PACIFIC BREWTON LLC	AL	06/11/2014	No.4 Recovery; Smelt Tank	Black Liquor	1355	MMBTU/ hr	Staged air combustion	90	PPM@8%O2
BOISE WHITE PAPER, LLC	AL	02/04/2015	Recovery Furnace - Non-Direct Contact with Dry -bottom ESP	Black Liquor Solids (BLS)	2.88	million lbs. of BLS		90	PPMDV
ROCKTENN STEVENSON	AL	04/29/2015	Recovery Boiler	Black Liquid	58334	LB/LB BL		120	PPM@8%O2
GP BREWTON	AL	01/03/2018	No. 4 Recovery Furnace	Black Liqour	1355	MMBtu/hr		90	PPMV @8% O2
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	STAGED COMBUSTION WITH FOUR LEVELS OF COMBUSTION AIR	110	PPMV @ 8% O2
GREEN BAY PACKAGING - ARKANSAS KRAFT DIVISION	AR	02/08/2019	Recovery Boiler	black liquor solids	401400	T/YR		80	LB/H
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Quaternary Air/Staged Combustion	85	PPMVD @ 8% O2
GEORGIA PACIFIC PALATKA MILL	FL	05/29/2007	NO. 4 RECOVERY BOILER	BLACK LIQUORS SOLID	210000	LB/H	NEW OFA YSTEM (QUARTENARY AIR) COMBUSTION IMPROVEMENTS	80	PPMVD
BUCKEYE FOLEY MILL	FL	08/22/2008	RECOVERY BOILER NO.2	BLACK LIQUOR SOLID (BLS)	625	MMBTU/H	OVERFIRED AIR AT STAGED COMBUSTION	80	PPMVD @8% O2
BUCKEYE FOLEY MILL	FL	08/22/2008	RECOVERY BOILER NO. 3	BLACK LIQUOR SOLID (BLS)	527	MMBTU/H	OVERFIRED AIR AND STAGED COMBUSTION	80	PPMVD @ 8% O2
RED RIVER MILL	LA	05/24/2006	RECOVERY BOILER NO. 3	BLACK LIQUOR	6.4	MM LB/D	PROPER COMBUSTION CONTROL AND AIR COMBUSTION OPTIMIZATION	80	PPM @ 8% O2
MANSFIELD MILL	LA	07/22/2004	RECOVERY BOILERS NO. 1; 2 (EQT036; 037)		961.3	MMBTU/H	LOW NOX BURNERS (FOR FOSSIL FUELS) & PROPER BOILER DESIGN AND GOOD COMBUSTION PRACTICES (BLACK LIQUOR SOLIDS FIRING)	135	LB/H
WOODLAND PULP LLC	ME	01/05/2022	Recovery Boiler #3	BLS	5.35	MMLB BLS/D	Quaternary air system	85	PPMVD @ 8% O2
VERSO CORPORATION--QUINNESEC, MI MILL	MI	07/14/2022	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Good combustion practices	110	PPM
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	STAGED AIR COMBUSTION	200.2	LB/H
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	STAGED AIR COMBUSTION	200.2	LB/H

Table C-22
RBLC Search Results for Kraft Recovery Furnace NO_X (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER - RIEGELWOOD MILL	NC	03/18/2004	NO. 5 RECOVERY BOILER	BLACK LIQUOR SOLIDS	140	T/H	PROPER DESIGN AND GOOD COMBUSTION CONTROL	100	PPMV
INTERNATIONAL PAPER - ROANOKE RAPIDS MILL	NC	03/03/2004	NO. 7 RECOVERY FURNACE	BLACK LIQUOR SOLIDS	3	MMLB/D	FURNACE DESIGN AND COMBUSTION OPTIMIZATION	100	PPM
RESOLUTE FP US INC	SC	03/16/2006	NO. 3 RECOVERY FUNRACE	BLACK LIQUOR	2040	T/D BLS	ADDITION OF A 4TH LEVEL OF AIR TO THE RECOVERY FURNACE TO AID IN GOOD COMBUSTION CONTROL THAT INCLUDES THE INSTALLATION OF A NOX CEMS	78	PPMV@8% O2
INLAND PAPERBOARD & PACKAGING ORANGE MILL	TX	09/02/2005	Recovery furnance	black liquor solids	1.98	MMLB/D	Staged combustion and good combustion practices	95	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					112.42	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					63.12	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 15		1150	TBLS/D		95	PPMDV @ 8% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 18		1200	TBLS/D	GOOD COMBUSTION PRACTICE.	95	PPMDV @ 8% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 19		2000	T BLS/D	GOOD COMBUSTION PRACTICES.	95	PPMDV @ 8% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	RECOVERY FURNACE 22		1950	T BLS/D		95	PPMDV @ 8% O2
DOMTAR NEKOOSA MILL	WI	4/23/2004	KRAFT BLACK LIQUOR RECOVERY FURNACE, B14	STRONG BLACK LIQUOR	37.5	bl	GOOD COMBUSTION CONTROL	90	PPMDV @ 8% O2

Table C-22a
RBLC Search Results for Kraft Recovery Furnace NO_X (Process Code 30.219)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	1/11/2006	NCG OXIDATION UNIT SCRUBBER					3.08	LB/H

Table C-23
RBLC Search Results for Kraft Lime Kiln NO_X (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ROCK-TENN COMPANY	AL	3/25/2009	LIME KILN	NATURAL GAS	54167	LB/H LIME		94.8	LB/H
GEORGIA PACIFIC LLC	AL	6/11/2014	No.3 Lime Kiln	Natural Gas	35417	LB CaO/H		112	PPMV @10% O2
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	180	PPMVD @ 10% O2
GEORGIA-PACIFIC CONSUMER OPERATIONS LLC	FL	5/29/2007	NO. 4 LIME KILN	NO. 6 FUEL OIL	41.5	T/H		140	PPMVD
WEYERHAEUSER CO	LA	5/24/2006	LIME KILN NO. 2	NATURAL GAS	191625	TONS CaO/YR	PROPER KILN DESIGN AND OPTIMIZED COMBUSTION PRACTICES	190	PPM @ 10% O2
GEORGIA PACIFIC CORPORATION	MS	3/4/2005	LIME KILN	NATURAL GAS	145.9	MMBTU/H	GOOD COMBUSTION	95.6	LB/H
POPE & TALBOT, INC.	OR	1/22/2004	LIME KILN	NATURAL GAS	78320	TONS CAO/YEAR	GOOD COMBUSTION CONTROL	112	PPM@10% O2
RESOLUTE FP US INC	SC	3/16/2006	NO. 2 LIME KILN	NATURAL GAS, PROPANE, NO. 6 FUEL OIL	600	T/D CAO	GOOD COMBUSTION CONTROL WITH LOW NOX BURNERS AND REQUIRED NOX CEMS (PART OF BACT)	138	PPMV@10%O2
INLAND PAPERBOARD AND PACKAGING INC	TX	10/5/2004	LIME KILN	NATURAL GAS				42	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	LIME KILN NO2					38.91	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILNS 1 AND 2		140	T CAO/D EACH		340	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 3		240	T CAO/D		340	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 4		250	T CAO/D		340	PPMDV @ 10% O2
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/1/2006	LIME KILN 5		325	T CAO/D		275	PPMDV @ 10% O2

Table C-24
RBLC Search Results for Other Kraft Lime Kiln Processes NO_X (Process Code 30.239)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
BOISE WHITE PAPER	AL	3/23/2010	LIME KILN	FUEL OIL	84315	T/YR CAO	PROPER DESIGN/ GOOD COMBUSTION PRACTICES	3.5	LB/TON CAO

RBLC Queries for VOC

Table C-25
RBLC Search Results for Other Kraft Processes VOC (Process Code 30.290)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Pollutant	Control Method Description	Emissions Limit	Emissions Limit Units
MANSFIELD MILL	LA	7/22/2004	WOODYARD (FUG004)			Volatile Organic Compounds (VOC)		47.4	LB/H

Table C-26
RBLC Search Results for Kraft Digesters VOC (Process Code 30.221)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA - PACIFIC BRETON LLC	AL	6/11/2014	Barch Digester System	178.3	ADTUBP/day	Vent to #4 or lime kiles	0	
DELTA NATURAL KRAFT	AR	10/20/2003	DIGESTER	15066	ADTP/MO	EMISSIONS TO THE LIME KILN FOR THERMAL OXIDATION	2.8	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	9/19/2005	DIGESTERS (SN-59)	2200	ADTP/D	INCINERATOR CONTROLS DIGESTER RELIEF AND BLOW GAS EMISSIONS. HOWEVER, PERMITTED EMISSIONS ARE DURING FILL AND ARE UNCONTROLLED. CONTROLLED EMISSIONS ARE BASED UPON 15.5 LB VOC/ADTP (FROM NCASI 858, TABLES 9A-9F AND 9I)	55.9	LB/H
INTERNATIONAL PAPER CO. - PINE BLUFF MILL	AR	8/23/2005	DIGESTERS AND BLOW TANK	0		NCGS ARE ROUTED TO A LIME KILN OPERATED AT A MINIMIUM OF 1200OF FOR 0.5 SECONDS PER NSPS SUBPART BB. THE LIME KILN IS NOT SUBJECT TO NSPS SUBPART BB.	1.2	T/YR
DOMTAR A.W. LLC - ASHDOWN MILL	AR	4/15/2020	Batch Digester (SN-40 A and B)	0			0	
LOUISIANA MILL	LA	11/20/2003	A & B-LINE DIGESTER SYSTEMS	780	ODTP/D PER DIGESTER	EMISSIONS ROUTED TO EXISTING LIME KILN OR NCG INCINERATOR	0	
MANSFIELD MILL	LA	7/22/2004	DIGESTER SYSTEMS, PRIMARY, SECONDARY, & SEMI-CHEMICAL			THERMAL INCINERATION IN THE LIME KILN OR NCG INCINERATOR	0	
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	7/9/2003	DIGESTER SYSTEM	4100	T/D	EMISSIONS COLLECTED AND COMBUSTED IN THE NCG SYSTEM	0	

Table C-27
RBLC Search Results for Kraft Bleaching VOC (Process Code 30.242)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC LLC	AL	6/11/2014	Bleach Plant - Bleaching System		126667	LB/H		3.4	LB/H
GEORGIA PACIFIC LLC	AL	6/11/2014	CLO2 Plant		45	T/YR		0.017	LB/TON

Table C-28
RBLC Search Results for Kraft Paper Machine Dryer VOC (Process Code 30.241)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BRETON LLC	AL	06/11/2014	No.1 Paper Machine - Paper Machines		343830	mdt		0.51	LB/ADTP
GEORGIA PACIFIC BRETON LLC	AL	06/11/2014	No. 1 PM Coating Section - Paper Machines	Natural Gas	10.5	MMBTU/H		0.0053	LB/MMBTU
GEORGIA PACIFIC BRETON LLC	AL	06/11/2014	No. 2 Paper Machine - Paper Machines		492020	mdt		0.51	LB/ADTFP
INTERNATIONAL PAPER - RIVERDALE MILL	AL	03/16/2018	No. 15 Paper Machine		0			2.36	LB/ADTP
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #3		850	MACHINE DRIED TONS/D	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	0.31	LB/MDT VOC
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	FINE PAPER MACHINE #1 AND #2		1050	MACHINE DRIED TONS P	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	0.89	LB VOC/MDT, NO. 1
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #4		173	MACHINE DRIED TONS/D	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	2.47	LB/MDT VOC
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #5		97	MACHINE DRIED TONS/D	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	3.37	LB/MDT VOC
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #6		270	MDT/DAY, 30-DAY AV	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	2.48	LB/MDT VOC
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #7		250	MDT/DAY, 30-DAY AV	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	1.78	LB/MDT VOC
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	PAPER MACHINE #8		212	MDT/DAY, 30-DAY AV	THE FACILITY ALSO PROPOSES THAT ITS NEW SUBSTANCE REVIEW PROGRAM BE CONSIDERED BACT. THE MILL WILL UTILIZE A LOWER VOC-CONTAINING CHEMICAL WHENEVER ONE IS AVAILABLE AS A SUBSTITUTE FOR THE CHEMICALS BEING USED.	1.29	LB/MDT VOC
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Board Machines		0		No wet end slurry additives will be used	0.51	LB/ADTFP

Table C-28
RBLC Search Results for Kraft Paper Machine Dryer VOC (Process Code 30.241)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GREEN BAY PACKAGING INC. - ARKANSAS KRAFT DIVISION	AR	10/26/2022	Paper Machine #1		0		Good Operating Practices	1.6	LB/ADTFP
PHOENIX PAPER WICKLIFFE LLC	KY	12/18/2019	Paper Machine System		67	tons/h (short term)	i.Good operating practices; ii.Use of low-VOC or non-VOC containing materials and additives; and iii.New Chemical Approval Process.	246.9	TON/YEAR
LOUISIANA MILL	LA	11/20/2003	PAPER MACHINES NO. 1; 2		136200	SWT/YR EA.		55.1	LB/H
LOUISIANA MILL	LA	11/20/2003	PAPER MACHINE NO. 3		225800	SWT/YR		12	LB/H
LOUISIANA MILL	LA	11/20/2003	PAPER MACHINE NO. 4		118300	SWT/YR		47.9	LB/H
VERSO CORPORATION--QUINNESEC, MI MILL	MI	07/14/2022	EU1227-1: Paper Machine	Natural gas	1800	ADTFP		42.71	T/YR
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/05/2004	NO. 2 PAPER MACHINE					32.3	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/05/2004	NO. 1 PAPER MACHINE					26.7	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	PAPER MACHINES				USE OF LOW VOC ADDITIVES. THERE IS NO ASSOCIATED PERMIT LIMIT ON VOC EMISSIONS. ANTICIPATED NET EMISSIONS INCREASE IS 72.5 TPY.	0	
THE NORTH PACIFIC PAPER CORPORATION (NORPAC)	WA	05/11/2004	PAPER MACHINES	NATURAL GAS	623685	ADMT/year of paper	THE PROJECT NETTED OUT OF PSD THE ONLY REASON FOR THE PERMIT WAS THE INCREASE IN THROUGHPUT	6488	POUNDS PER DAY
APPLETON COATED - COMBINED LOCKS MILL	WI	06/08/2004	PAPER MACHINE #6 (S62A, P62A)	NATURAL GAS	498	ADT/D	LIMITS ON THE RAW MATERIALS VOC ADDITIVES AND USE OF MARKET PULP.	1.4	LB/ADT

Table C-29
RBLC Search Results for Other Kraft Material Recovery Processes VOC (Liquor Tanks) (Process Code 30.219)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	50% BLS Tank - No.4 Multiple Effect Evaporator System				0.113	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	73% BLS Tank - No.4 Multiple Effect Evaporator System				0.113	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Weak BLS Tank - No.4 Multiples Effect Evaporator System				4.84	LB/H

Table C-30
RBLC Search Results for Other Kraft Paper Making Processes VOC (Liquor Tanks) (Process Code 30.249)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	BLACK LIQUOR STORAGE (EAST, WEST, CENTER)				0.38	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	NO.1/NO.2 HEAVY BLACK LIQUOR STORAGE TANK			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.23	LB/H

Table C-31
RBLC Search Results for Kraft Recovery Furnace VOC (Liquor Tanks) (Process Code 30.211)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
MANSFIELD MILL	LA	7/22/2004	PROCESS LIQUOR TANKS (3)						
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	NO.1/NO.2 WEAK BLACK LIQUOUR STORAGE TANK				VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.38	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	BLACK LIQUOR STORAGE (EAST, WEST, CENTER)					0.38	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	WEAK BLACK LIQUOR STORAGE TANK				VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.11	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	NO.1/NO.2 HEAVY BLACK LIQUOR STORAGE TANK				VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.23	LB/H

Table C-32
RBLC Search Results for Other Kraft Processes VOC (Liquor Tanks) (Process Code 30.290)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	NO.1/NO.2 WEAK BLACK LIQUOUR STORAGE TANK			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.38	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	STORAGE TANKS (3)			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.01	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	STORAGE TANKS (3)			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.57	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	38265	BLACK LIQUOR STORAGE (EAST, WEST, CENTER)				0.38	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	WEAK BLACK LIQUOR STORAGE TANK			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.11	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	NO.1/NO.2 HEAVY BLACK LIQUOR STORAGE TANK			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.23	LB/H
INLAND PAPERBOARD AND PACKAGING ORANGE MILL	TX	10/5/2004	BOILOUT TANK			VOC EMISSIONS ARE SIGNIFICANTLY LOWER THAN THE PULPING PROCESS OF VIRGIN FIBER BECAUSE MOST OF THE ORGANICS CONTAINED IN THE FIBER HAVE BEEN RELEASED ALREADY	0.31	LB/H

Table C-33
RBLC Search Results for Kraft Recovery Furnace VOC (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
ROCK-TENN MILL COMPANY, LLC	AL	09/15/2003	RECOVERY FURNACE		4.32	mmlb/day		0.04	LB/MMBTU
ID COURTLAND	AL	05/09/2005	NO. 3 RECOVERY FURNACE	BLACK LIQUER	950	MMBTU/H		50	PPM@8%O2
ALABAMA RIVER PULP	AL	02/05/2008	RECOVERY FURNACE	BLACK LIQUOR	7.5	MMLB BLS/DAY		0.03	LB/MMBTU
GEORGIA PACIFIC BREWTON LLC	AL	6/11/2014	No. 4 REC	BL	1355	MMBTU/H	Staged air combustion.	40	PPMV@8% O2
ROCKTENN STEVENSON	AL	04/29/2015	Recovery Boiler	Black Liquid	58334	LB/LB BL		50	PPM@8%O2
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	05/31/2007	8R RECOVERY BOILER	BLACK LIQUOR SOLIDS AND NO. 6 FUEL OIL	6.9	MMLB BLS/D	BOILER DESIGN AND COMBUSTION CONTROL	25.9	LB/H
CLEARWATER PAPER CORPORATION	AR	10/16/2012	RECOVERY FURNACE	BLACK LIQUOR SOLIDS (BLS)	62.5	T/H	GOOD COMBUSTION PRACTICES	9.5	LB/H
SUN BIO MATERIAL COMPANY	AR	09/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Good Combustion Practices	10	PPMVD @ 8% O2
GEORGIA PACIFIC PALATKA MILL	FL	05/29/2007	NO. 4 RECOVERY BOILER	BLACK LIQUORS SOLID	210000	LB/H	NEW PFA SYSTEM (QUARTENARY) COMBUSTION IMPROVEMENTS	0.2	LB/T
INLAND PAPERBOARD AND PACKAGING, INC. - ROME LINERBOARD	GA	10/13/2004	RECOVERY FURNACE, BLS FUEL	BLS	5.3	MMLB/D	STAGED COMBUSTION AND GOOD COMBUSTION PRACTICES	0.04	LB/MMBTU
RED RIVER MILL	LA	05/24/2006	RECOVERY BOILER NO. 3	BLACK LIQUOR	6.4	MM LB/D	PROPER BOILER OPERATION	10	PPM @ 8% O2
MANSFIELD MILL	LA	07/22/2004	RECOVERY BOILERS NO. 1; 2 (EQT036; 037)		961.3	MMBTU/H	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	32.1	LB/H

Table C-33
RBLC Search Results for Kraft Recovery Furnace VOC (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 1 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	0	
GEORGIA PACIFIC CORPORATION, MONTICELLO MILL	MS	05/14/2004	BOILER, NO. 2 RECOVERY	BLS	861.4	MMBTU/H	COMBUSTION CONTROL	0	
INTERNATIONAL PAPER - ROANOKE RAPIDS MILL	NC	03/03/2004	NO. 7 RECOVERY FURNACE	BLACK LIQUOR SOLIDS	3	MMLB/D	FURNACE DESIGN AND COMBUSTION OPTIMIZATION	50	PPM
IP VALLIANT PAPER MILL	OK	04/25/2008	Chemical Recovery Furnace		0		Staged Combustion/Nondirect contact evaporator (NDCE)	40	PPM@8% O2
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 2 RECOVERY FURNACE EAST/WEST STACK					23.92	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	01/11/2006	NO 1 RECOVERY FURNACE NORTH/SOUTH STACK					13.13	LB/H
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 18		1200	TBLS/D	GOOD COMBUSTION CONTROL OF FLAME TEMPERATURE AND EXCESS AIR.	612	T/YR
LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	11/01/2006	RECOVERY FURNACE 19		2000	T BLS/D	GOOD COMBUSTION CONTROL OF FLAME TEMPERATURE AND EXCESS AIR.	1020	T/YR
DOMTAR NEKOOSA MILL	WI	04/23/2004	KRAFT BLACK LIQUOR RECOVERY FURNACE, B14	STRONG BLACK LIQUOR	37.5	bl	GOOD COMBUSTION CONTROL	65	PPMDV @ 8% O2

Table C-34
RBLC Search Results for Other Kraft Material Recovery Processes VOC(Process Code 30.219)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	No. 4 Multiple Effect Evaporator System	BL	225000	LB/H BLS	INCINERATE in No. 4 REC or No.3 Lime Kiln	0	
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	50% BLS Tank - No.4 Multiple Effect Evaporator System		0			0.113	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	73% BLS Tank - No.4 Multiple Effect Evaporator System		0			0.113	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Weak BLS Tank - No.4 Multiples Effect Evaporator System		0			4.84	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Stripped Condensate - No.4 Multple Effect Evaporator System		0			0.187	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Condensate A Tank - No.4 Multiple Effect Evaporator System		0			0.187	LB/H
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	Condensate B Tank - No.4 Multiple Effect Evaporator System		0			0.485	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	CAUSTICISING AREA, NEW GREEN LIQUOR CLARIFIER -SN-103		83.08	ADTP/D		0.2	LB/H
GEORGIA-PACIFIC CORPORATION - CROSSETT PAPER OPERATIONS	AR	5/31/2007	CAUSTICISING AREA, WHITE LIQUOR SPLITTER BOX SN-110		83.08	ADTP/D		0.2	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	1/11/2006	NCG OXIDATION UNIT SCRUBBER					0.12	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	1/11/2006	BATCH DIGESTOR FUGITIVES					4.8	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	1/11/2006	WASTE WATER TREATMENT FUGITIVES					348.16	LB/H
INTERNATIONAL PAPER COMPANY PULP AND PAPER MILL	TX	1/11/2006	B-LINE LEACH PLANT SCRUBBER-NORTH/SOUTH					3.06	LB/H

Table C-35
RBLC Search Results for Kraft Lime Kiln VOC (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC LLC	AL	6/11/2014	No.3 Lime Kiln	Natural Gas	35417	LB CaO/H		25	PPMV@ 10% O2
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	25	PPMVD @ 10% O2
WEYERHAEUSER CO	LA	5/24/2006	LIME KILN NO. 2	NATURAL GAS	191625	TONS CaO/YR	PROPER KILN DESIGN AND GOOD COMBUSTION PRACTICES	50	PPM @ 10% O2
INTERNATIONAL PAPER	OK	4/25/2008	Lime Kiln		0		good combustion practices	0.0488	LB/MMBTU
INLAND PAPERBOARD AND PACKAGING INC	TX	10/5/2004	LIME KILN	NATURAL GAS			BEST MANAGEMENT PRACTICES FOR PULP WASHING, AND THE REDUCTION OF VOC ADDITIVES TO THE PAPERMAKING SYSTEM	4.78	LB/H
INTERNATIONAL PAPER COMPANY	TX	1/11/2006	LIME KILN NO2					4	LB/H

Table C-36
RBLC Search Results for Other Kraft Lime Kiln Processes VOC (Process Code 30.239)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
BOISE WHITE PAPER	AL	3/23/2010	LIME KILN	84315	T/YR CAO	PROPER DESIGN/ GOOD COMBUSTION PRACTICES	50	PPM @ 10 % O2
BOISE WHITE PAPER	AL	3/23/2010	LIME KILN	84315	T/YR CAO	PROPER DESIGN/ GOOD COMBUSTION PRACTICES	3.5	LB/TON CAO
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	No.3 Lime Kiln	35417	LB CaO/H		134.74	LB/MMBTU
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	No.3 Lime Kiln	35417	LB CaO/H	No info was entered on type of add-on control. Contact permitting agency.	0.01	GRAIN/SDCF@10%
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	No.3 Lime Kiln	35417	LB CaO/H		25	PPMV@ 10% O2
GEORGIA PACIFIC BRETON LLC	AL	6/11/2014	No.3 Lime Kiln	35417	LB CaO/H		112	PPMV @10% O2

Table C-37
RBLC Search Results for Other Kraft VOC Tall Oil (Process Code 30.290)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
INLAND PAPERBOARD AND PACKAGING INC	TX	10/5/2004	TALL OIL REACTOR					46.3	LB/H

RBLC Queries for GHGs

Table C-38
RBLC Search Results for Kraft Recovery Furnace CO_2e (Process Code 30.211)
Georgia Pacific Alabama River Cellulose, LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC BREWTON LLC	AL	6/11/2014	No. 4 REC	BL	1355	MMBTU		210.1	LB/MMBTU
GEORGIA PACIFIC BREWTON LLC	AL	6/11/2014	No. 4 REC & Smelt	Natural Gas	1355	MMBTU/H		117.1	LB/MMBTU/H
BOISE WHITE PAPER, LLC	AL	2/4/2015	Recovery Furnace - Non-Direct Contact with Dry-bottom ESP	Black Liquor Solids (BLS)	2.89	Million lbs.		210	LB/MMBTU CO2E
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Recovery Boiler	Black Liquor Solids	2900	MMBtu/H	Good Combustion Practices	208	LB/MMBTU
VERSO CORPORATION--QUINNESEC, MI MILL	MI	7/14/2022	EU0185-1: Chemical Recovery Furnace	Black liquor solids (BLS)	823440	T/YR	Efficient operation of recovery furnace with previously implemented technologies.	210	LB/MMBTU

Table C-39
RBLC Search Results for Kraft Lime Kiln CO_2e (Process Code 30.231)
Georgia Pacific Alabama River Cellulose LLC - Purdue Hill, AL

Facility Name	State	Permit Date	Process Name	Primary Fuel	Throughput	Throughput Units	Control Method Description	Emissions Limit	Emissions Limit Units
GEORGIA PACIFIC LLC	AL	6/11/2014	No.3 Lime Kiln	Natural Gas	35417	LB CaO/H		134.74	LB/MMBTU
SUN BIO MATERIAL COMPANY	AR	9/23/2019	Lime Kiln	Natural Gas	225	MMBtu/hr	Good Combustion Practices	117	LB/MMBTU

Control Technology Economic Cost Assessments

Table C-40
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - Digester Chip Conveyor No. 2 to Baghouse
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 10,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$16.00	/scfm (2002$)	EPA-CICA Fact Sheet for Fabric Filters/Baghouses (average of range)
	$32.27	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$322,710	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$14.50	/scfm (2002$)	EPA-CICA Fact Sheet for Fabric Filters/Baghouses (average of range)
	$29.25	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$292,456	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$32,260	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$324,715	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	0.30	tons/year	Assumes 99.9% control efficiency
PM10 Removed	0.14	tons/year	Conservatively assumes 99.9% control efficiency (same as PM)
PM2.5 Removed	0.02	tons/year	Conservatively assumes 99.9% control efficiency (same as PM)
Cost Effectiveness for PM	**$1,094,451**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$2,313,982**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$15,281,013**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

Table C-41
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - Digester Chip Conveyor No. 2 to Dry ESP
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 10,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$21.50	/scfm (2002$)	EPA-CICA Fact Sheet for Dry Electrostatic Precipitators (average of range)
	$43.36	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$433,641	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$19.00	/scfm (2002$)	EPA-CICA Fact Sheet for Dry Electrostatic Precipitators (average of range)
	$38.32	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$383,218	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$43,349	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$426,567	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	0.29	tons/year	Assumes 99% control efficiency
PM10 Removed	0.14	tons/year	Conservatively assumes 99% control efficiency (same as PM)
PM2.5 Removed	0.02	tons/year	Conservatively assumes 99% control efficiency (same as PM)
Cost Effectiveness for PM	**$1,450,811**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$3,067,428**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$20,256,602**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

Table C-42
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - Digester Chip Conveyor No. 2 to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 10,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$80,677	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$317,667	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$8,065	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$325,732	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	0.29	tons/year	Assumes 99% control efficiency
PM10 Removed	0.14	tons/year	Conservatively assumes 99% control efficiency (same as PM)
PM2.5 Removed	0.02	tons/year	Conservatively assumes 99% control efficiency (same as PM)
Cost Effectiveness for PM	**$1,107,859**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$2,342,331**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$15,468,227**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

Table C-43
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - No. 7 Pulp Dryer to Wet ESP
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,299,692 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$30.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$60.51	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$78,641,897	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$22.50	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$45.38	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$58,981,423	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$7,861,416	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$66,842,839	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	6.32	tons/year	Assumes 99% control efficiency
PM10 Removed*	9.48	tons/year	Conservatively assumes 99% control efficiency (same as PM)
PM2.5 Removed*	7.27	tons/year	Conservatively assumes 99% control efficiency (same as PM)
Cost Effectiveness for PM	**$10,572,485**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$7,048,323**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$9,193,465**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

*Includes condensable PM since the control device will provide some control.

Table C-44
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - No. 7 Pulp Dryer to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,299,692 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$10,485,586	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$41,286,996	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$1,048,189	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$42,335,185	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	6.32	tons/year	Assumes 99% control efficiency
PM10 Removed*	9.48	tons/year	Conservatively assumes 99% control efficiency (same as PM)
PM2.5 Removed*	7.27	tons/year	Conservatively assumes 99% control efficiency (same as PM)
Cost Effectiveness for PM	**$6,696,126**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$4,464,084**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$5,822,719**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

*Includes condensable PM since the control device will provide some control.

Table C-45
Detailed PM, PM10, and PM2.5 Control Technology Economic Cost Assessment - No. 7 Pulp Dryer to Cyclones
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,299,692 scfm

Parameter	Value		Value	Units	Basis
	Min	Max			
Total Capital Investment (TCI)	$2.20	$3.50	$2.85	/scfm (2002$)	EPA-CICA Fact Sheet for Cyclones (average of range)
	$4.44	$7.06	$5.75	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$5,767,072	$9,174,888	$7,470,980	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$0.70	$8.50	$4.60	/scfm (2002$)	EPA-CICA Fact Sheet for Cyclones (average of range)
	$1.41	$17.14	$9.28	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$1,834,978	$22,281,871	$12,058,424	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$576,504	$917,165	$746,835	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$2,411,481	$23,199,036	$12,805,259	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
PM Removed	6.32	6.32	6.32	tons/year	Assumes 99% control efficiency
PM10 Removed*	3.79	3.79	3.79	tons/year	Conservatively assumes 99% control efficiency (same as PM)
PM2.5 Removed*	1.58	1.58	1.58	tons/year	Conservatively assumes 99% control efficiency (same as PM)
Cost Effectiveness for PM	**$381,422**	**$3,669,375**	**$2,025,399**	/ton	Total Annual Cost/Annual Quantity of PM Removed
Cost Effectiveness for PM10	**$635,704**	**$6,115,625**	**$3,375,665**	/ton	Total Annual Cost/Annual Quantity of PM10 Removed
Cost Effectiveness for PM2.5	**$1,525,689**	**$14,677,501**	**$8,101,595**	/ton	Total Annual Cost/Annual Quantity of PM2.5 Removed

*Only filterable fraction included as the control device is not expected to reduce condensable PM emissions

Table C-46
Detailed CO Control Technology Economic Cost Assessment - No. 7 Bleach Plant Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2024 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer[b]	= ($1,690,000 * (53,621 acfm / 1,761 acfm) ^ 0.6) * 4 + $5,000,000	$57,491,868	in 2024 dollars
Instrumentation[c] =	0.10 × A =	Included in Equipment Cost	
Sales taxes =	0.03 × A =	Included in Equipment Cost	
Freight =	0.05 × A =	Included in Equipment Cost	
	Total Purchased equipment costs (B) =	$57,491,868	in 2024 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b - Cost based on a April 2024 quote for replacement of an RTO with an inlet flow of 1,761 acfm. The quote was adjusted based on flow for the No. 7 Bleach Plant, using the 0.6 power rule, Lang factor of 4 (to account for all direct and indirect equipment and installation costs), and the cost of the associated stack.
c - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =	Included in Total Purchased Equipment Price	
Handling and Erection =	0.14 × B =	Included in Total Purchased Equipment Price	
Electrical =	0.04 × B =	Included in Total Purchased Equipment Price	
Piping =	0.02 × B =	Included in Total Purchased Equipment Price	
Insulation for Ductwork =	0.01 × B =	Included in Total Purchased Equipment Price	
Painting =	0.01 × B =	Included in Total Purchased Equipment Price	
Site Preparation (SP) =		Included in Total Purchased Equipment Price	
Buildings (Bldg) =		Included in Total Purchased Equipment Price	
	Total Direct Installaton Costs =	$0	
Total Direct Costs (DC) =	B + C + SP + Bldg =	$57,491,868	in 2024 dollars
Total Indirect Installation Costs (in 2024 dollars)			
Engineering =	0.10 × B =	Included in Total Purchased Equipment Price	
Construction and field expenses =	0.05 × B =	Included in Total Purchased Equipment Price	
Contractor fees =	0.10 × B =	Included in Total Purchased Equipment Price	
Start-up =	0.02 × B =	Included in Total Purchased Equipment Price	
Performance test =	0.01 × B =	Included in Total Purchased Equipment Price	
	Total Indirect Costs (IC) =	$0	
Continency Cost (C) =	CF(IC+DC)=	Included in Total Purchased Equipment Price	
Total Capital Investment =	**DC + IC +C =**	**$57,491,868**	**in 2024 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =	$502,949	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$163,909	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491	
	Supervisor = 15% of Operator	$2,924	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146	
	Materials = 100% of maintenance labor	$22,146	
Direct Annual Costs (DC) =		**$733,565**	**in 2024 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$40,024	
Administrative Charges	= 2% of TCI	$1,149,837	
Property Taxes	= 1% of TCI	$574,919	
Insurance	= 1% of TCI	$574,919	
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$5,747,159	
Indirect Annual Costs (IC) =		**$8,086,858**	**in 2024 dollars**
Total Annual Cost =	**DC + IC =**	**$8,820,424**	**in 2024 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of CO Pollutant Destroyed)

Total Annual Cost (TAC) =	$8,820,424	per year in 2024 dollars
CO Pollutant Destroyed =	468.73	tons/year
Cost Effectiveness =	**$18,818**	**per ton of pollutants removed in 2024 dollars**

Table C-47
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Chip Bin to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$4,100,000	0.10	$409,855	0.10	$3,991,600

a. Estimated capital cost in 2024$.

b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.

c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 7 Mill Chip Bin and a 99% control efficiency of an existing combustion unit.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Pollutants Destroyed)

Table C-48
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Chip Bin to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,920 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$15,490	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$60,991	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$1,548	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$62,539	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.10	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$615,286**	/ton	Total Annual Cost/Annual Quantity of TRS Removed

Table C-49
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$773,670	0.10	$77,340	0.12	$623,589

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Pollutants Destroyed)

Table C-50
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$8,068	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$31,767	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$806	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$32,573	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed*	0.12	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$265,318**	/ton	Total Annual Cost/Annual Quantity of TRS Removed

*Conservatively uses entire screening system emissions, not just the new and modified equipment.

Table C-51
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Bleach Plant Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2024 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer[b]	= ($1,690,000 * (53,621 acfm / 1,761 acfm) ^ 0.6) * 4 + $5,000,000	$57,491,868	in 2024 dollars
Instrumentation[c] =	0.10 × A =	Included in Equipment Cost	
Sales taxes =	0.03 × A =	Included in Equipment Cost	
Freight =	0.05 × A =	Included in Equipment Cost	
	Total Purchased equipment costs (B) =	$57,491,868	in 2024 dollars

Footnotes

a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.

b - Cost based on a April 2024 quote for replacement of an RTO with an inlet flow of 1,761 acfm. The quote was adjusted based on flow for the No. 7 Bleach Plant, using the 0.6 power rule, Lang factor of 4 (to account for all direct and indirect equipment and installation costs), and the cost of the associated stack.

c - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =	Included in Total Purchased Equipment Price	
Handling and Erection =	0.14 × B =	Included in Total Purchased Equipment Price	
Electrical =	0.04 × B =	Included in Total Purchased Equipment Price	
Piping =	0.02 × B =	Included in Total Purchased Equipment Price	
Insulation for Ductwork =	0.01 × B =	Included in Total Purchased Equipment Price	
Painting =	0.01 × B =	Included in Total Purchased Equipment Price	
Site Preparation (SP) =		Included in Total Purchased Equipment Price	
Buildings (Bldg) =		Included in Total Purchased Equipment Price	
	Total Direct Installaton Costs =	$0	
Total Direct Costs (DC) =	B + C + SP + Bldg =	$57,491,868	in 2024 dollars
Total Indirect Installation Costs (in 2024 dollars)			
Engineering =	0.10 × B =	Included in Total Purchased Equipment Price	
Construction and field expenses =	0.05 × B =	Included in Total Purchased Equipment Price	
Contractor fees =	0.10 × B =	Included in Total Purchased Equipment Price	
Start-up =	0.02 × B =	Included in Total Purchased Equipment Price	
Performance test =	0.01 × B =	Included in Total Purchased Equipment Price	
	Total Indirect Costs (IC) =	$0	
Continency Cost (C) =	CF(IC+DC)=	Included in Total Purchased Equipment Price	
Total Capital Investment =	**DC + IC +C =**	**$57,491,868**	**in 2024 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =	$502,949	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$167,037	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491	
	Supervisor = 15% of Operator	$2,924	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146	
	Materials = 100% of maintenance labor	$22,146	
Direct Annual Costs (DC) =		**$736,693**	**in 2024 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$40,024	
Administrative Charges	= 2% of TCI	$1,149,837	
Property Taxes	= 1% of TCI	$574,919	
Insurance	= 1% of TCI	$574,919	
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$5,747,159	
Indirect Annual Costs (IC) =		**$8,086,858**	**in 2024 dollars**
Total Annual Cost =	**DC + IC =**	**$8,823,551**	**in 2024 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of TRS Pollutant Destroyed)

Total Annual Cost (TAC) =	$8,823,551	per year in 2024 dollars
TRS Destroyed =	6.10	tons/year
Cost Effectiveness =	**$1,446,863**	**per ton of pollutants removed in 2024 dollars**

Table C-52
Detailed TRS Control Technology Economic Cost Assessment - No. 8 Mill Intermediate Black Liquor Storage Tank to Mill Combustion Unit or Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$528,360	0.10	$52,817	0.32	$163,938

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 8 Mill Intermediate Black Liquor Storage Tank and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Pollutants Destroyed)

Table C-53
Detailed TRS Control Technology Economic Cost Assessment - No. 8 Mill Intermediate Black Liquor Storage Tank to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$8,068	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$31,767	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$806	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$32,573	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed*	0.32	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$100,721**	/ton	Total Annual Cost/Annual Quantity of TRS Removed

*Conservatively uses entire screening system emissions, not just the new and modified equipment.

Table C-54
Detailed TRS Control Technology Economic Cost Assessment - No. 8 Recovery Furnace to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 428,823 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$3,459,632	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$13,622,300	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$345,841	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$13,968,142	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	50.39	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$277,199**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-55
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Slaker Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2023 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer	=(2.204 x 100,000 + 11.57 Qtot) x (2023 CEPI/1999 CEPCI) =	$581,332	in 2023 dollars
Instrumentation[b] =	0.10 × A =	$58,133	
Sales taxes =	0.03 × A =	$17,440	
Freight =	0.05 × A =	$29,067	
	Total Purchased equipment costs (B) =	$685,972	in 2023 dollars
Footnotes			
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.			
b - Includes the instrumentation and controls furnished by the incinerator vendor.			
Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =	$54,878	
Handling and Erection =	0.14 × B =	$96,036	
Electrical =	0.04 × B =	$27,439	
Piping =	0.02 × B =	$13,719	
Insulation for Ductwork =	0.01 × B =	$6,860	
Painting =	0.01 × B =	$6,860	
Site Preparation (SP) =		$0	
Buildings (Bldg) =		$0	
	Total Direct Installaton Costs =	$205,792	
Total Direct Costs (DC) =	B + C + SP + Bldg =	$891,764	in 2023 dollars
Total Indirect Installation Costs (in 2023 dollars)			
Engineering =	0.10 × B =	$68,597	
Construction and field expenses =	0.05 × B =	$34,299	
Contractor fees =	0.10 × B =	$68,597	
Start-up =	0.02 × B =	$13,719	
Performance test =	0.01 × B =	$6,860	
	Total Indirect Costs (IC) =	$192,072	
Continency Cost (C) =	CF(IC+DC)=	$108,384	
Total Capital Investment =	**DC + IC +C =**	**$1,192,220**	**in 2023 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =	$13,060	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$4,256	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491	
	Supervisor = 15% of Operator	$2,924	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146	
	Materials = 100% of maintenance labor	$22,146	
Direct Annual Costs (DC) =		**$84,023**	**in 2023 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$40,024	
Administrative Charges	= 2% of TCI	$23,844	
Property Taxes	= 1% of TCI	$11,922	
Insurance	= 1% of TCI	$11,922	
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$119,180	
Indirect Annual Costs (IC) =		**$206,893**	**in 2023 dollars**
Total Annual Cost =	**DC + IC =**	**$290,916**	**in 2023 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of TRS Destroyed)

Total Annual Cost (TAC) =	$290,916	per year in 2023 dollars
TRS Destroyed =	8.0	tons/year
Cost Effectiveness =	$36,368	per ton of pollutants removed in 2023 dollars

Table C-56
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Slaker Equipped with a Wet Scrubber

Total Capital Investment (TCI)		
TCI = Direct Costs + Indirect Costs + Contingency Costs		
Total Direct Costs (DC) =	PEC + Total Direct Installation Costs =	$109,331
Total Indirect Costs (IC) =		$18,911
Contingency Costs =	CF(DC + IC) =	$12,824
Total Capital Investment (TCI) =		$141,066 in 2023 dollars

Equipment Costs		
Tower Cost (TC) =	115 x S x CF x SF =	$32,650
Packing Cost =	V x $Cost_{packing}$ x SF =	1,560
Where CF = material conversion factor; S = surface area of absorber; V = packing volume; and SF = Scaling factor		
Auxiliary Equipment Costs		
Pump Cost =	L x 16 x SF =	$593
Fan Cost =	$57.9(d)^{1.38}$ x SF =	$14,734
Fan Motor Cost =	$104(hp_{fan})^{0.821}$ x SF =	$545
Total Auxiliary Equipment Cost =		$15,872
Where L = flow rate; d = diameter of impeller; hp_{fan} = fan motor size; and SF = scaling factor		
Purchase Equipment Cost (PEC)		
Equipment Costs (EC)* =	TC + Packing Cost + Auxiliary Equipment =	$50,083
Instrumentation Costs** =	0.1 x EC =	$5,008
Sales Tax =	0.03 x EC =	$1,502
Freight =	0.05 x EC =	$2,504
Purchase Equipment Cost (B) =		$59,098 in 2023 dollars

* Includes the initial quantity of packing, as well as items normally not included with the unit supplied by vendors, such as ductwork, fan, piping, etc.

** Instrumentation costs cover pH monitor and liquid level indicator in sump.

Total Direct Installation Costs		
Foundations & Supports =	0.12 x B =	$7,092
Handling & Erection =	0.4 x B =	$23,639
Electrical =	0.01 x B =	$591
Piping =	0.3 x B =	$17,729
Insulation =	0.01 x B =	$591
Painting =	0.01 x B =	$591
Site Preparation Cost (SP) =		$0
Building Costs (Bldg) =		$0
Total Direct Installation Costs =	(0.85 x B) + SP + Bldg =	$50,233 in 2023 dollars

Total Indirect Capital Costs (Installation)		
Engineering =	0.1 x B =	$5,910
Construction and field expenses =	0.1 x B =	$5,910
Contractor fees =	0.1 x B =	$5,910
Start-up =	0.01 x B =	$591
Performance test =	0.01 x B =	$591
Total Indirect Capital Costs (IC) =	0.32 x B =	$18,911 in 2023 dollars

Annual Costs

Direct Annual Costs (DAC)		
DAC = Annual Operator Cost + Annual Reagent Cost + Annual Solvent Cost + Annual Waste Disposal Cost + Annual Maintenance Costs + Annual Auxiliary Power Cost		
Annual Operator Labor Cost =	0.5 hours per shift x Labor Rate = 0.5 hours x (t_{op}/8) x Labor Rate =	$19,491
Annual Supervisor Labor Cost =	0.15 x Annual Operator Labor Cost =	$2,924
Annual Sodium hydroxide Cost =	$Q_{sorbent}$ x $Cost_{sorbent}$ x t_{op} =	$9,753
Annual Solvent Cost =	$q_{solvent}$ x $Cost_{Solvent}$ x t_{op} =	$219
Annual Wastewater Disposal Cost =	Q_{ww} x $Cost_{ww}$ x t_{op} =	$297
Annual Maintenance Labor Cost =	0.5 hours per shift x Labor Rate = 0.5 hours x (t_{op}/8) x Labor Rate =	$22,146
Annual Maintenance Materials Cost =	100% x Annual Maintenance Labor Cost =	$22,146
Annual Electricity Cost =	E_{total} x $Cost_{elect}$ x t_{op} =	$7,172
Direct Annual Cost =		$84,149 in 2023 dollars

Indirect Annual Cost (IAC)		
IAC = Overhead + Administrative Charges + Property Tax + Insurance + Capital Recovery Costs		
Overhead =	0.6 x (Total Labor Costs + Material Cost) =	$40,024
Administrative Charges =	0.02 x TCI =	$2,821
Property Tax =	0.01 x TCI =	$1,411
Insurance =	0.01 x TCI =	$1,411
Capital Recovery Costs (CR)=	CRF x TCI =	$14,107
Indirect Annual Cost (IAC) =		$59,774 in 2023 dollars

Total Annual Cost (TAC)	
TAC = Direct Annual Costs + Indirect Annual Costs	
Direct Annual Costs (DAC) =	$84,149
Indirect Annual Costs (IAC) =	$59,774
Total annual costs (TAC) = DAC + IAC	$143,923 in 2023 dollars

Cost Effectiveness

Cost Effectiveness = Total Annual Cost/ton of TRS Removed/year	
Total Annual Cost (TAC) =	$143,923 per year in 2023 dollars
TRS Removed =	7.92 tons/year
Cost Effectiveness =	**$18,176 per ton of TRS removed in 2023 dollars**

Table C-57
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill - No. 5 Causticizer to Mill Combustion Unit or Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$750,000	0.10	$74,974	0.84	$89,010

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 7 Mill - No. 5 Causticizer and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Pollutants Destroyed)

Table C-58
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill - No. 5 Causticizer to Regenerative Thermal Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$88,241	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$7.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$14.12	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$7,059	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$8,821	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$15,880	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.84	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$18,853**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-59
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill - No. 5 Causticizer to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$4,034	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$15,883	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$403	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$16,287	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.83	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$19,533**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-60

Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Green and White Liquor Swing Tank to Mill Combustion Unit

Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$750,000	0.10	$74,974	3.98E-02	$1,881,409

a. Estimated capital cost in 2023$.

b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%

c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 7 Green and White Liquor Swing Tank and a 99% control efficiency of an existing combustion control device.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Removed)

Table C-61
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Green and White Liquor Swing Tank to Regenerative Thermal
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$88,241	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$7.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$14.12	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$7,059	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$8,821	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$15,880	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.04	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$398,504**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-62
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill Green and White Liquor Swing Tank to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$4,034	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$15,883	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$403	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$16,287	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.04	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$412,872**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-63

Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill No. 2 White Liquor Storage Tank to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$750,000	0.10	$74,974	3.98E-02	$1,881,409

a. Estimated capital cost in 2023$.

b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%

c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 7 Mill No. 2 White Liquor Storage Tank and a 99% control efficiency of an existing combustion control device.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Removed)

Table C-64
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill No. 2 White Liquor Storage Tank to Regenerative Thermal Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$88,241	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$7.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$14.12	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$7,059	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$8,821	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$15,880	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.04	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$398,504**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-65
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Mill No. 2 White Liquor Storage Tank to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$4,034	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$15,883	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$403	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$16,287	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	0.04	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$412,872**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-66
Detailed TRS Control Technology Economic Cost Assessment - No. 7 Lime Kiln to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 39,616 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$319,615	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$1,258,482	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$31,950	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$1,290,432	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed	6.31	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$204,660**		Total Annual Cost/Annual Quantity of TRS Removed

Table C-67
Detailed TRS Control Technology Economic Cost Assessment - Tall Oil Flash Tower Feed Tank Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2024 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer[b]	=($1,690,000 * ((210 acfm)/ 1,761 acfm) ^ 0.6) * 4 + $2,000,000	$3,887,221	in 2024 dollars
Instrumentation[c] =	0.10 × A =	Included in Equipment Cost	
Sales taxes =	0.03 × A =	Included in Equipment Cost	
Freight =	0.05 × A =	Included in Equipment Cost	
	Total Purchased equipment costs (B) =	$3,887,221	in 2024 dollars

Footnotes

a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.

b - Cost based on a April 2024 quote for replacement of an RTO with an inlet flow of 1,761 acfm. The quote was adjusted based on flow for the Tall Oil Flash Tower Feed Tank, using the 0.6 power rule, Lang factor of 4 (to account for all direct and indirect equipment and installation costs), and the cost of the associated stack.

c - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =	Included in Total Purchased Equipment Price	
Handling and Erection =	0.14 × B =	Included in Total Purchased Equipment Price	
Electrical =	0.04 × B =	Included in Total Purchased Equipment Price	
Piping =	0.02 × B =	Included in Total Purchased Equipment Price	
Insulation for Ductwork =	0.01 × B =	Included in Total Purchased Equipment Price	
Painting =	0.01 × B =	Included in Total Purchased Equipment Price	
Site Preparation (SP) =		Included in Total Purchased Equipment Price	
Buildings (Bldg) =		Included in Total Purchased Equipment Price	
	Total Direct Installaton Costs =	$0	
Total Direct Costs (DC) =	B + C + SP + Bldg =	$3,887,221	in 2024 dollars
Total Indirect Installation Costs (in 2024 dollars)			
Engineering =	0.10 × B =	Included in Total Purchased Equipment Price	
Construction and field expenses =	0.05 × B =	Included in Total Purchased Equipment Price	
Contractor fees =	0.10 × B =	Included in Total Purchased Equipment Price	
Start-up =	0.02 × B =	Included in Total Purchased Equipment Price	
Performance test =	0.01 × B =	Included in Total Purchased Equipment Price	
	Total Indirect Costs (IC) =	$0	
Continency Cost (C) =	CF(IC+DC)=	Included in Total Purchased Equipment Price	
Total Capital Investment =	**DC + IC +C =**	**$3,887,221**	**in 2024 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =	$11,882	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$3,873	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491	
	Supervisor = 15% of Operator	$2,924	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146	
	Materials = 100% of maintenance labor	$22,146	
Direct Annual Costs (DC) =		**$82,463**	**in 2024 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$40,024	
Administrative Charges	= 2% of TCI	$77,744	
Property Taxes	= 1% of TCI	$38,872	
Insurance	= 1% of TCI	$38,872	
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$388,585	
Indirect Annual Costs (IC) =		**$584,098**	**in 2024 dollars**
Total Annual Cost =	**DC + IC =**	**$666,561**	**in 2024 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of CO Pollutant Destroyed)

Total Annual Cost (TAC) =	$666,561	per year in 2024 dollars
TRS Destroyed =	1.76E-03	tons/year
Cost Effectiveness =	**$378,254,949**	**per ton of pollutants removed in 2024 dollars**

Table C-68

Detailed TRS Control Technology Economic Cost Assessment - Tall Oil Flash Tower Feed Tank to Tall Oil Reactor Scrubber for TRS Control

Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[d] (tpy)	Cost Effectiveness[d] ($/ton)
$50,000	0.08	$3,970	1.74E-03	$2,275,407

a. Estimated cost in 2024$.

b. Capital Recovery Factor is calculated using an estimated 50 year equipment life and an annual interest rate of 7.75%.

c. Anticipated sulfur compounds removed is based on the TRS PTE from the Flash Tower Feed Tank and a 98% control efficiency of the scrubber. This is extremely conservative as TRS compounds from the tank are expected to be dimethyl disuflide and methyl mercaptan. As described in Section 4.2.1.3 of the application, wet scrubbers using alkaline scrubbing solutions (like the Tall Oil Reator Scrubber) such as weak wash and caustic are effective at controlling at H2S but are significantly less efficient at controlling the remaining TRS compounds (i.e., methyl mercaptan, dimethyl sulfide, and dimethyl disulfide), if at all.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Removed)

Table C-69
Detailed SAM Control Technology Economic Cost Assessment - No. 8 Recovery Furnace to Wet ESP
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 428,823 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$30.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$60.51	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$25,947,239	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$22.50	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$45.38	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$19,460,429	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$2,593,809	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$22,054,238	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
SAM Removed	146.49	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$150,552**		Total Annual Cost/Annual Quantity of SAM Removed

Table C-70
Detailed SAM Control Technology Economic Cost Assessment - No. 7 Lime Kiln to Wet ESP
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 39,616 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$30.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$60.51	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$2,397,109	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$22.50	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Electrostatic Precipitators (average of range)
	$45.38	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$1,797,832	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$239,626	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$2,037,458	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
SAM Removed	5.20	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$391,560**		Total Annual Cost/Annual Quantity of SAM Removed

Table C-71
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Chip Bin to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$4,100,000	0.10	$409,855	5.62	$72,922

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated VOC removed is based on the VOC PTE from the No. 7 Mill Chip Bin and a 99% control efficiency of an existing combustion unit.

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Table C-72
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Chip Bin to Packed Bed Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,920 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$33.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$66.56	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$127,790	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$32.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$64.54	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$123,917	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$12,774	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$136,692	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	5.62	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$24,320**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-73
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$773,670	0.10	$77,340	1.16	$66,538

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated VOC removed is based on the VOC PTE from the No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC Destroyed)

Table C-74
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to Regenerative Catalytic Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$176,482	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$13.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$26.22	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$26,220	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$17,642	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$43,862	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	1.16	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$37,736**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-75
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner to Packed Bed Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$33.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$66.56	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$66,559	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$32.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$64.54	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$64,542	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$6,654	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$71,196	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	1.16	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$61,252**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-76

Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Primary Screens, Secondary Screen, Quaternary Screen, and Shive Cleaner Equipped with Carbon Adsorption

Capital Costs

Estimated capital costs for a Fixed-Bed Carbon Adsorber with Steam Regeneration with the following characteristics:

VOC Controlled/Recovered = Toluene
Adsorber Vessel Orientation = Horizontal
Operating Schedule = Continuous Operation

Total Capital Investment (TCI) (in 2023 dollars)

Parameter	Equation	Cost
Costs for Each Carbon Adsorber Vessel (C_v) =	271 x F_m x $S^{0.778}$ =	$258,620
Total Cost for All Carbon Adsorber Vessels and Carbon(EC_{Adsorb}) =	5.82 x $Q^{0.133}$ x [C_c + (N_A + N_D) x C_v] =	$1,775,537
Auxiliary Equipment (EC_{aux}) =	(Based on design costs or estimated using methods provided in Section 2)	$32,000
Total Purchased Equipment Costs for Carbon Adsorber (A) =	= EC_{Adsorb} + EC_{aux} =	$1,807,537
Instrumentation =	0.10 × A =	Included in A
Sales taxes =	0.03 × A =	$54,226
Freight =	0.05 × A =	$90,377
	Total Purchased Equipment Costs (B) =	$1,952,140

Direct Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Foundations and Supports =	0.08 × B =	$156,171
Handling and Erection =	0.14 × B =	$273,300
Electrical =	0.04 × B =	$78,086
Piping =	0.02 × B =	$39,043
Insulation =	0.01 × B =	$19,521
Painting =	0.01 × B =	$19,521
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Costs (DC) = B + (0.3 × B) + SP + Bldg =	$2,537,782

Total Indirect Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Engineering =	0.10 × B =	$195,214
Construction and field expenses =	0.05 × B =	$97,607
Contractor fees =	0.10 × B =	$195,214
Start-up =	0.02 × B =	$39,043
Performance test =	0.01 × B =	$19,521
	Total Indirect Costs (IC) =	$546,599
Contingency Cost (C) =	CF(IC+DC)=	$308,438

Total Capital Investment (TCI) =	**DC + IC + C = (1.28 × B) + SP + Bldg. + C =**	**$3,392,819**	**in 2023 dollars**

Annual Costs

Direct Annual Costs

Parameter	Equation	Cost
Annual Electricity Cost =	Q_{Elec} × P_{elec} =	$1,076
Annual Steam Cost (C_s) =	3.50 x m_{voc} x Θ_s x P_s =	$44
Annual Cooling Water Cost (C_{cs}) =	3.43 x C_s/P_s x P_{wc} =	$108
Operating Labor Costs:	Operator = 0.5 hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491
	Supervisor = 15% of Operator	$2,924
Maintenance Costs:	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146
	Materials = 100% of maintenance labor	$22,146
Carbon Replacement Costs:	Labor = CRF_{carbon} x (Labor Rate × M_c)/CRR =	$0
	Carbon = CRF_{carbon} x CC x M_c x 1.08 =	$18

Direct Annual Costs (DAC) =		**$67,955**	**in 2023 dollars**

Indirect Annual Costs

Parameter	Equation	Cost
Overhead	= 60% of sum of operator, supervisor, maintenance labor Plus maintenance materials	$40,024
Administrative Charges	= 2% of TCI	$67,856
Property Taxes	= 1% of TCI	$33,928
Insurance	= 1% of TCI	$33,928
Capital Recovery	= $CRF_{Adsorber}$ × (TCI - [(1.08 x CC x M_c) + (LR x M_c/CRR)] =	$390,343

Indirect Annual Costs (IAC) =		**$566,080**	**in 2023 dollars**

Recovered Solvent Credit/Disposal Costs

Disposal Cost

Parameter	Equation	Cost
VOC Disposal/Treatment Costs (*$Disposal_{cost}$*)	= m_{voc} x Θ_s x D_{voc} x E =	$0

VOC Recovery Credit

Parameter	Equation	Cost
Annual Recovery Credit for Condensate (RC)	= m_{voc} × Θ_s x P_{voc} x E =	$822

Total Annual Cost (TAC) =	**DAC + IAC + C + $Disposal_{Cost}$ - RC =**	**$633,213**	**in 2023 dollars**

Cost Effectiveness

Cost Effectiveness

Parameter	Equation	Cost	
Total Annual Cost =	TAC =	$633,213	per year in 2023 dollars
Annual Quantity of VOC Removed/Recovered =	W_{voc} = m_{voc} x Θ_s x E =	1.15	tons/year
Cost Effectiveness =	**Total Annual Cost (TAC) / Annual Quantity of VOC Removed/Recovered =**	**$550,338**	**per ton of pollutants removed/recovered in 2023 dollars**

Table C-77
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Bleach Plant Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2024 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer[b]	= ($1,690,000 * (53,621 acfm / 1,761 acfm) ^ 0.6) * 4 + $5,000,000	$57,491,868	in 2024 dollars
Instrumentation[c] =	0.10 × A =	Included in Equipment Cost	
Sales taxes =	0.03 × A =	Included in Equipment Cost	
Freight =	0.05 × A =	Included in Equipment Cost	
	Total Purchased equipment costs (B) =	$57,491,868	in 2024 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b - Cost based on a April 2024 quote for replacement of an RTO with an inlet flow of 1,761 acfm. The quote was adjusted based on flow for the No. 7 Bleach Plant, using the 0.6 power rule, Lang factor of 4 (to account for all direct and indirect equipment and installation costs), and the cost of the associated stack.
c - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =	Included in Total Purchased Equipment Price	
Handling and Erection =	0.14 × B =	Included in Total Purchased Equipment Price	
Electrical =	0.04 × B =	Included in Total Purchased Equipment Price	
Piping =	0.02 × B =	Included in Total Purchased Equipment Price	
Insulation for Ductwork =	0.01 × B =	Included in Total Purchased Equipment Price	
Painting =	0.01 × B =	Included in Total Purchased Equipment Price	
Site Preparation (SP) =		Included in Total Purchased Equipment Price	
Buildings (Bldg) =		Included in Total Purchased Equipment Price	
	Total Direct Installaton Costs =	$0	
Total Direct Costs (DC) =	B + C + SP + Bldg =	$57,491,868	in 2024 dollars
Total Indirect Installation Costs (in 2024 dollars)			
Engineering =	0.10 × B =	Included in Total Purchased Equipment Price	
Construction and field expenses =	0.05 × B =	Included in Total Purchased Equipment Price	
Contractor fees =	0.10 × B =	Included in Total Purchased Equipment Price	
Start-up =	0.02 × B =	Included in Total Purchased Equipment Price	
Performance test =	0.01 × B =	Included in Total Purchased Equipment Price	
	Total Indirect Costs (IC) =	$0	
Continency Cost (C) =	CF(IC+DC)=	Included in Total Purchased Equipment Price	
Total Capital Investment =	**DC + IC +C =**	**$57,491,868**	**in 2024 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =	$502,949	
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$163,932	
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491	
	Supervisor = 15% of Operator	$2,924	
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146	
	Materials = 100% of maintenance labor	$22,146	
Direct Annual Costs (DC) =		**$733,588**	**in 2024 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$40,024	
Administrative Charges	= 2% of TCI	$1,149,837	
Property Taxes	= 1% of TCI	$574,919	
Insurance	= 1% of TCI	$574,919	
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$5,747,159	
Indirect Annual Costs (IC) =		**$8,086,858**	**in 2024 dollars**
Total Annual Cost =	**DC + IC =**	**$8,820,446**	**in 2024 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of CO Pollutant Destroyed)

Total Annual Cost (TAC) =	$8,820,446	per year in 2024 dollars
CO Pollutant Destroyed =	66.8	tons/year
Cost Effectiveness =	**$131,954**	**per ton of pollutants removed in 2024 dollars**

Table C-78
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Pulp Dryer to Regenerative Thermal Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,299,692 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$229,372,148	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$7.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$14.12	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$18,349,772	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$22,929,125	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$41,278,897	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	47.25	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$873,556**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-79
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Pulp Dryer to Regenerative Catalytpic Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,299,692 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$229,372,148	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$13.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$26.22	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$34,078,148	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$22,929,125	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$57,007,273	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	47.25	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$1,206,405**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-80
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Precipitator Mix Tank to Mill Combustion Unit
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$750,000	0.10	$74,974	0.61	$122,770

a. Estimated capital cost in 2024$.

b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.

c. Anticipated VOC removed is based on the VOC PTE from the No. 7 Mill Precipitator Mix Tank and a 99% control efficiency of an existing combustion unit.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC Destroyed)

Table C-81
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Precipitator Mix Tank to Packed Bed Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$33.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$66.56	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$33,279	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$32.00	/scfm (2002$)	EPA-CICA Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (average of range)
	$64.54	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$32,271	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$3,327	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$35,598	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	0.61	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$58,292**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-82
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Precipitator Mix Tank Controlled by Carbon Adsorption

Capital Costs

Estimated capital costs for a Fixed-Bed Carbon Adsorber with Steam Regeneration with the following characteristics:

VOC Controlled/Recovered = Toluene
Adsorber Vessel Orientation = Horizontal
Operating Schedule = Continuous Operation

Total Capital Investment (TCI) (in 2023 dollars)

Parameter	Equation	Cost
Costs for Each Carbon Adsorber Vessel (C_v) =	271 x F_m x $S^{0.778}$ =	$156,841
Total Cost for All Carbon Adsorber Vessels and Carbon(EC_{Adsorb}) =	5.82 x $Q^{-0.133}$ x [C_c + (N_A + N_D) x C_v] =	$1,172,966
Auxiliary Equipment (EC_{aux}) =	(Based on design costs or estimated using methods provided in Section 2)	$32,000
Total Purchased Equipment Costs for Carbon Adsorber (A) =	= EC_{Adsorb} + EC_{aux} =	$1,204,966
Instrumentation =	0.10 × A =	Included in A
Sales taxes =	0.03 × A =	$36,149
Freight =	0.05 × A =	$60,248
	Total Purchased Equipment Costs (B) =	$1,301,363

Direct Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Foundations and Supports =	0.08 × B =	$104,109
Handling and Erection =	0.14 × B =	$182,191
Electrical =	0.04 × B =	$52,055
Piping =	0.02 × B =	$26,027
Insulation =	0.01 × B =	$13,014
Painting =	0.01 × B =	$13,014
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Costs (DC) = B + (0.3 × B) + SP + Bldg =	$1,691,772

Total Indirect Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Engineering =	0.10 × B =	$130,136
Construction and field expenses =	0.05 × B =	$65,068
Contractor fees =	0.10 × B =	$130,136
Start-up =	0.02 × B =	$26,027
Performance test =	0.01 × B =	$13,014
	Total Indirect Costs (IC) =	$364,382
Contingency Cost (C) =	CF(IC+DC)=	$205,615

Total Capital Investment (TCI) =	**DC + IC + C = (1.28 × B) + SP + Bldg. + C =**	**$2,261,769**	**in 2023 dollars**

Annual Costs

Direct Annual Costs

Parameter	Equation	Cost
Annual Electricity Cost =	Q_{Elec} × P_{elec} =	$808
Annual Steam Cost (C_s) =	3.50 x m_{voc} x Θ_s x P_s =	$46
Annual Cooling Water Cost (C_{cs}) =	3.43 x C_s/P_s x P_{wc} =	$112
Operating Labor Costs:	Operator = 0.5 hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491
	Supervisor = 15% of Operator	$2,924
Maintenance Costs:	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146
	Materials = 100% of maintenance labor	$22,146
Carbon Replacement Costs:	Labor = CRF_{carbon} x (Labor Rate × M_c)/CRR =	$0
	Carbon = CRF_{carbon} x CC x M_c x 1.08 =	$18

Direct Annual Costs (DAC) =		**$67,692**	**in 2023 dollars**

Indirect Annual Costs

Parameter	Equation	Cost
Overhead	= 60% of sum of operator, supervisor, maintenance labor Plus maintenance	$40,024
Administrative Charges	= 2% of TCI	$45,235
Property Taxes	= 1% of TCI	$22,618
Insurance	= 1% of TCI	$22,618
Capital Recovery	= $CRF_{Adsorber}$ × (TCI - [(1.08 x CC x M_c) + (LR x M_c/CRR)] =	$260,213

Indirect Annual Costs (IAC) =		**$390,708**	**in 2023 dollars**

Recovered Solvent Credit/Disposal Costs

Disposal Cost

Parameter	Equation	Cost
VOC Disposal/Treatment Costs (*Disposal $_{cost}$*)	= m_{voc} x Θ_s x D_{voc} x E =	$0

VOC Recovery Credit

Parameter	Equation	Cost
Annual Recovery Credit for Condensate (RC)	= m_{voc} × Θ_s x P_{voc} x E =	$850

Total Annual Cost (TAC) =	**DAC + IAC + C + $Disposal_{Cost}$ - RC =**	**$457,550**	**in 2023 dollars**

Cost Effectiveness

Cost Effectiveness

Parameter	Equation	Cost	
Total Annual Cost =	TAC =	$457,550	per year in 2023 dollars
Annual Quantity of VOC Removed/Recovered =	W_{voc} = m_{voc} x Θ_s x E =	1.21	tons/year
Cost Effectiveness =	**Total Annual Cost (TAC) / Annual Quantity of VOC Removed/Recovered =**	**$379,584**	**per ton of pollutants removed/recovered in 2023 dollars**

Table C-83
Detailed VOC Control Technology Economic Cost Assessment - No. 8 Mill Intermediate Black Liquor Storage Tank to Mill Combustion Unit or Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$528,360	0.10	$52,817	0.49	$107,793

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 8 Mill Intermediate Black Liquor Storage Tank and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC Destroyed)

Table C-84
Detailed VOC Control Technology Economic Cost Assessment - No. 8 Mill Intermediate Black Liquor Storage Tank to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 500 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$4,034	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$15,883	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$403	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$16,287	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	0.49	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$33,239**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-85
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Precipitator Mix Tank Controlled by Carbon Adsorption

Capital Costs

Estimated capital costs for a Fixed-Bed Carbon Adsorber with Steam Regeneration with the following characteristics:

VOC Controlled/Recovered = Toluene
Adsorber Vessel Orientation = Horizontal
Operating Schedule = Continuous Operation

Total Capital Investment (TCI) (in 2023 dollars)

Parameter	Equation	Cost
Costs for Each Carbon Adsorber Vessel (C_v) =	271 x F_m x $S^{0.778}$ =	$272,161
Total Cost for All Carbon Adsorber Vessels and Carbon(EC_{Adsorb}) =	5.82 x $Q^{-0.133}$ x [C_c + (N_A + N_D) x C_v] =	$1,852,172
Auxiliary Equipment (EC_{aux}) =	(Based on design costs or estimated using methods provided in Section 2)	$32,000
Total Purchased Equipment Costs for Carbon Adsorber (A) =	= EC_{Adsorb} + EC_{aux} =	$1,884,172
Instrumentation =	0.10 × A =	Included in A
Sales taxes =	0.03 × A =	$56,525
Freight =	0.05 × A =	$94,209
	Total Purchased Equipment Costs (B) =	$2,034,906

Direct Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Foundations and Supports =	0.08 × B =	$162,792
Handling and Erection =	0.14 × B =	$284,887
Electrical =	0.04 × B =	$81,396
Piping =	0.02 × B =	$40,698
Insulation =	0.01 × B =	$20,349
Painting =	0.01 × B =	$20,349
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Costs (DC) = B + (0.3 × B) + SP + Bldg =	$2,645,378

Total Indirect Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Engineering =	0.10 × B =	$203,491
Construction and field expenses =	0.05 × B =	$101,745
Contractor fees =	0.10 × B =	$203,491
Start-up =	0.02 × B =	$40,698
Performance test =	0.01 × B =	$20,349
	Total Indirect Costs (IC) =	$569,774
Contingency Cost (C) =	CF(IC+DC)=	$321,515

Total Capital Investment (TCI) =	**DC + IC + C = (1.28 × B) + SP + Bldg. + C =**	**$3,536,667**	**in 2023 dollars**

Annual Costs

Direct Annual Costs

Parameter	Equation	Cost
Annual Electricity Cost =	Q_{Elec} × P_{elec} =	$1,112
Annual Steam Cost (C_s) =	3.50 x m_{voc} x Θ_s x P_s =	$17
Annual Cooling Water Cost (C_{cs}) =	3.43 x C_s/P_s x P_{wc} =	$42
Operating Labor Costs:	Operator = 0.5 hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491
	Supervisor = 15% of Operator	$2,924
Maintenance Costs:	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146
	Materials = 100% of maintenance labor	$22,146
Carbon Replacement Costs:	Labor = CRF_{carbon} x (Labor Rate × M_c)/CRR =	$0
	Carbon = CRF_{carbon} x CC x M_c x 1.08 =	$7

Direct Annual Costs (DAC) =		**$67,886**	**in 2023 dollars**

Indirect Annual Costs

Parameter	Equation	Cost
Overhead	= 60% of sum of operator, supervisor, maintenance labor Plus maintenance	$40,024
Administrative Charges	= 2% of TCI	$70,733
Property Taxes	= 1% of TCI	$35,367
Insurance	= 1% of TCI	$35,367
Capital Recovery	= $CRF_{Adsorber}$ × (TCI - [(1.08 x CC x M_c) + (LR x M_c/CRR)] =	$406,898

Indirect Annual Costs (IAC) =		**$588,389**	**in 2023 dollars**

Recovered Solvent Credit/Disposal Costs

Disposal Cost

Parameter	Equation	Cost
VOC Disposal/Treatment Costs (*Disposal $_{cost}$*)	= m_{voc} x Θ_s x D_{voc} x E =	$0

VOC Recovery Credit

Parameter	Equation	Cost
Annual Recovery Credit for Condensate (RC)	= m_{voc} × Θ_s x P_{voc} x E =	$317

Total Annual Cost (TAC) =	**DAC + IAC + C + $Disposal_{Cost}$ - RC =**	**$655,958**	**in 2023 dollars**

Cost Effectiveness

Cost Effectiveness

Parameter	Equation	Cost	
Total Annual Cost =	TAC =	$655,958	per year in 2023 dollars
Annual Quantity of VOC Removed/Recovered =	W_{voc} = m_{voc} x Θ_s x E =	0.48	tons/year
Cost Effectiveness =	**Total Annual Cost (TAC) / Annual Quantity of VOC Removed/Recovered =**	**$1,366,010**	**per ton of pollutants removed/recovered in 2023 dollars**

Table C-86
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Mill Lime Kiln to Regenerative Thermal Oxidizer
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 39,616 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$87.50	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$176.48	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$6,991,567	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$13.00	/scfm (2002$)	EPA-CICA Fact Sheet for Regenerative Incinerators (average of range)
	$26.22	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$1,038,747	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$698,910	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$1,737,657	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	7.01	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$247,716**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-87
Detailed VOC Control Technology Economic Cost Assessment - No. 7 Lime Kiln to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

39,616 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$319,615	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$1,258,482	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$31,950	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$1,290,432	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	7.01	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$183,961**		Total Annual Cost/Annual Quantity of VOC Removed

Table C-88
Detailed VOC Control Technology Economic Cost Assessment - Tall Oil Flash Tower Feed Tank Equipped with an RTO

Direct Costs			
Total Purchased equipment costs (in 2024 dollars)			
Incinerator + auxiliary equipment[a] (A) =			
Equipment Costs (EC) for Regenerative Oxidizer[b]	=($1,690,000 * ((210 acfm/ 1,761 acfm) ^ 0.6) * 4 + $2,000,000		$3,887,221 in 2024 dollars
Instrumentation[c] =	0.10 × A =		Included in Equipment Cost
Sales taxes =	0.03 × A =		Included in Equipment Cost
Freight =	0.05 × A =		Included in Equipment Cost
		Total Purchased equipment costs (B) =	$3,887,221 in 2024 dollars

Footnotes

a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.

b - Cost based on a April 2024 quote for replacement of an RTO with an inlet flow of 1,761 acfm. The quote was adjusted based on flow for the Tall Oil Flash Tower Feed Tank, using the 0.6 power rule, Lang factor of 4 (to account for all direct and indirect equipment and installation costs), and the cost of the associated stack.

c - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2023 dollars)			
Foundations and Supports =	0.08 × B =		Included in Total Purchased Equipment Price
Handling and Erection =	0.14 × B =		Included in Total Purchased Equipment Price
Electrical =	0.04 × B =		Included in Total Purchased Equipment Price
Piping =	0.02 × B =		Included in Total Purchased Equipment Price
Insulation for Ductwork =	0.01 × B =		Included in Total Purchased Equipment Price
Painting =	0.01 × B =		Included in Total Purchased Equipment Price
Site Preparation (SP) =			Included in Total Purchased Equipment Price
Buildings (Bldg) =			Included in Total Purchased Equipment Price
		Total Direct Installaton Costs =	$0
Total Direct Costs (DC) =	B + C + SP + Bldg =		$3,887,221 in 2024 dollars
Total Indirect Installation Costs (in 2024 dollars)			
Engineering =	0.10 × B =		Included in Total Purchased Equipment Price
Construction and field expenses =	0.05 × B =		Included in Total Purchased Equipment Price
Contractor fees =	0.10 × B =		Included in Total Purchased Equipment Price
Start-up =	0.02 × B =		Included in Total Purchased Equipment Price
Performance test =	0.01 × B =		Included in Total Purchased Equipment Price
		Total Indirect Costs (IC) =	$0
Continency Cost (C) =	CF(IC+DC)=		Included in Total Purchased Equipment Price
Total Capital Investment =	**DC + IC +C =**		**$3,887,221 in 2024 dollars**
Direct Annual Costs			
Annual Electricity Cost	= Annual Electricity Usage × Operating Hours/year × Electricity Price =		$11,882
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year		$3,865
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)		$19,491
	Supervisor = 15% of Operator		$2,924
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)		$22,146
	Materials = 100% of maintenance labor		$22,146
Direct Annual Costs (DC) =			**$82,455 in 2024 dollars**
Indirect Annual Costs			
Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials		$40,024
Administrative Charges	= 2% of TCI		$77,744
Property Taxes	= 1% of TCI		$38,872
Insurance	= 1% of TCI		$38,872
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]		$388,585
Indirect Annual Costs (IC) =			**$584,098 in 2024 dollars**
Total Annual Cost =	**DC + IC =**		**$666,553 in 2024 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of CO Pollutant Destroyed)

Total Annual Cost (TAC) =	$666,553	per year in 2024 dollars
TRS Destroyed =	0.15	tons/year
Cost Effectiveness =	**$4,488,574**	**per ton of pollutants removed in 2024 dollars**

Table C-89

Detailed VOC Control Technology Economic Cost Assessment - Tall Oil Flash Tower Feed Tank to Tall Oil Reactor Scrubber for VOC Control

Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC[c] (tpy)	Cost Effectiveness[d] ($/ton)
$50,000	0.08	$3,970	0.12	$33,562

a. Estimated cost in 2024$.

b. Capital Recovery Factor is calculated using an estimated 50 year equipment life and an annual interest rate of 7.75%.

c. Anticipated VOC removed is based on the VOC PTE from the Flash Tower Feed Tank and a 80% control efficiency of the scrubber. As described in Section 4.2.1.6 of the application, wet scrubbers using alkaline scrubbing solutions (like the Tall Oil Reator Scrubber) are less efficient at removal of organics.

d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC Removed)

APPENDIX D

PERMIT APPLICATION FORMS

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION ADEM FORM 103

Do not Write in This Space

Facility Number | | | | - | | | | |

CONSTRUCTION/OPERATING PERMIT APPLICATION FACILITY IDENTIFICATION FORM

1. Name of Facility or Organization: Alabama River Cellulose LLC

Plant Name: Alabama River Cellulose Mill

Facility Physical Location Address

Street & Number: 2373 Lena Landegger Highway

City: Perdue Hill County: Monroe Zip: 36470

Facility Mailing Address (If different from above)

Mailing Contact: Dean Ahrens

Address or PO Box: P.O. Box 40

City: Perdue Hill State: Alabama Zip: 36470

Facility Billing Address

2. Billing Contact: Jeff Vermilyea

Street & Number: 2373 Lena Landegger Highway

City: Perdue Hill State: AL Zip: 36470

Telephone Number: (404) 652-5240 E-mail Address: Jeff.Vermilyea@gapac.com

Responsible Official's Business Mailing Address

3. Responsible Official: Jeff Vermilyea Title: VP/General Manager

Street & Number: 2373 Lena Landegger Highway

City: Perdue Hill State: AL Zip: 36470

Telephone Number: (404) 652-5240 E-mail Address: Jeff.Vermilyea@gapac.com

RO under delegated authority? ☐ Yes ☒ No (if "yes", provide appropriate documentation)

Plant Contact Information

4. Plant Contact: Dean Ahrens Title: Environmental Manager

Telephone Number: (850) 371-9635 E-mail Address: Jerry.Ahrens@gapac.com

5. Location Coordinates:				
UTM:	453,700 m	E-W	3,494,200 m	N-S
Latitude/Longitude:	31° 34′ 55″	LAT	-87° 29′ 17″	LONG

6. Permit application is being made to obtain the following type permit:

☐ Air permit

☒ Major source operating permit

☐ Synthetic minor source operating permit

7. Permit application is made for:

☐ Existing source (initial application)

☒ Modification

☒ New source (to be constructed)

☐ Change of ownership

☐ Other (specify) _____

Date construction/modification to begin: _____ to be completed: _____

8. Indicate the number of each of the following forms attached and made a part of this application (if a form does not apply to your operation, indicate "N/A" in the space provided). Multiple forms may be used as required.

2 ADEM 104 INDIRECT HEATING EQUIPMENT

15 ADEM 105 MANUFACTURING OR PROCESSING OPERATION

N/A ADEM 106 REFUSE HANDLING, DISPOSAL, AND INCINERATION

N/A ADEM 107 STATIONARY INTERNAL COMBUSTION ENGINES

N/A ADEM 108 LOADING, STORAGE & DISPENSING LIQUID & GASEOUS ORGANIC COMPOUNDS

N/A ADEM 109 VOLATILE ORGANIC COMPOUND SURFACE COATING EMISSION SOURCES

7 ADEM 110 AIR POLLUTION CONTROL DEVICE

N/A ADEM 112 SOLVENT METAL CLEANING

N/A ADEM 437 COMPLIANCE SCHEDULE

9 ADEM 438 CONTINUOUS EMISSION MONITORS

9. General nature of business: (describe and list appropriate standard industrial classification (SIC) and North American Industry Classification System (NAICS) (www.naics.com) code(s)):

SIC – 2611 – Production of Market Bleached Kraft Pulp

NAICS – 322110 – Production of Market Bleached Kraft Pulp

10. Summarize each pollutant emitted and the potential facility-wide annual emission rate for the pollutant. Indicate those pollutants for which the facility is major.

Regulated pollutant	Potential Emissions* (tons/year)	Major source? yes/no
PM	1,310.61	☒ Yes ☐ No
PM_{10}	1,277.52	☒ Yes ☐ No
$PM_{2.5}$	1,073.60	☒ Yes ☐ No
SO_2	4,455.36	☒ Yes ☐ No
NO_X	3,127.42	☒ Yes ☐ No
CO	11,601.95	☒ Yes ☐ No
VOC	2,853.39	☒ Yes ☐ No
Lead	0.11	☒ Yes ☐ No
TRS	312.48	☒ Yes ☐ No
H_2S	88.49	☒ Yes ☐ No
H_2SO_4	284.66	☒ Yes ☐ No
HAP	>25	☒ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No

*Potential emissions are either the maximum allowed by the regulations or by permit, or, if there is no regulatory limit, it is the emissions that occur from continuous operation at maximum capacity.

11. Provide a scaled map which contains clearly marked emission points, building locations, property boundaries, and directions (North, etc.). Labeling of emission points should be consistent across all forms.

Please refer to Appendix A

12. Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 7 Continuous Digester System (Z004)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
Z004	TRS	5 ppmv @ 10% O_2 or combustion as described in 40 CFR §60.283a(a)(1)(i) – (iii)	NSPS Subpart BBa[a]	Emissions routed to No. 7 Lime Kiln or Backup NCG Incinerator for destruction[b]	☒	☐
	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	NESHAP Subpart S[c]	Emissions routed to No. 7 Lime Kiln or Backup NCG Incinerator for destruction[bError! Bookmark not defined.]	☒	☐
		Kraft Pulping Condensate System	NESHAP Subpart S	Digester primary condenser condensates pumped to activated sludge treatment system	☒	☐
					☐	☐
					☐	☐
					☐	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

[a] The NSPS Subpart BBa TRS standard applies to the following equipment that are part of EU Z004: Continuous Digester (282), Flash Tank (283), and Blow Tank (286).

[b] The Chip Meter (207) and Blow Tank (286) will be routed to the No. 7 Recovery Furnace for destruction instead.

[c] The NESHAP Subpart S standard to reduce HAP emissions applies to the following equipment that are part of EU Z004: Continuous Digester (282), Flash Tank (283), Foul Condensate Tank, Digester Area Foul Condensate Tank (284), Digester Evaporator (285), Chip Meter (207), and Blow Tank (286).

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 7 Brown Stock Washing System (Z007)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
Z007	TRS	5 ppmv @ 10% O_2 or combustion as described in 40 CFR §60.283a(a)(1)(i) – (iii)	NSPS Subpart BBa[d]	Emissions routed to No. 7 Recovery Furnace	☒	☐
	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	NESHAP Subpart S[e]	Emissions routed to No. 7 Recovery Furnace	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

[d] The NSPS Subpart BBa TRS standard applies to the following equipment that are part of EU Z007: Primary (Pressure Knotter (104a), Secondary Knotter (Knotter Drainer, 104b), Knotter Accepts Tank (104c), Knot Conveyor (104d), Brownstock Washers (118a-118d), and Foam Tower (119).

[e] The NESHAP Subpart S standard to reduce HAP emissions applies to the following equipment that are part of EU Z007: Primary (Pressure Knotter (104a), Secondary Knotter (Knotter Drainer, 104b), Knotter Accepts Tank (104c), Knot Conveyor (104d), Brownstock Washers (118a-118d), and Foam Tower (119). Emissions from the knotter system are expected to be less than the 0.1 lb/ODT HAP threshold specified in 40 CFR §63.443(a)(1)(ii)(A); however, the ARC mill intends to collect for destruction. Oxygen delignification (122) has historically been permitted as part of EU Z007 and is also subject to NESHAP Subpart S standard, even though not part of the pulp washing system as defined in 40 CFR §63.441.

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 7 Bleach Plant (X020)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X020	Chlorine	10 ppmv total chlorinated HAP	NESHAP Subpart S[f]	NCASI Impinger Capture Technique (1 per 5 yrs) based on performance test	☒	☐
	Chlorine Dioxide	2.87 lb/hr	State Air Toxics Program[g]	NCASI Impinger Capture Technique (1 per 5 yrs) based on performance test	☒	☐
	Chloroform	Comply with Effluent Guidelines	NESHAP Subpart S	Elemental Chlorine-Free Bleaching System	☒	☐
	CO	462.37 tpy (at Scrubber); 11.09 tpy (E-Stage)	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 10 (1 per 5 yrs) based on performance test	☒	☐
	VOC	61.17 tpy (at Scrubber); 6.35 tpy (E-Stage)	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 25, 25A or 25B (1 per 5 yrs) based on performance test	☒	☐
	TRS	6.16 tpy	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 16A (1 per 5 yrs) based on performance test	☒	☐
	H_2S	3.28	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 16A (1 per 5 yrs) based on performance test	☒	☐

[1] PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2] Attach compliance plan

[3] Attach compliance schedule (ADEM Form-437)

[4] Fugitive emissions must be included as separate entries

[f] These requirements only apply to each bleaching stage where chlorinated compounds are introduced.

[g] Required by state law only, not federally enforceable.

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 7 Multiple-Effect Evaporator System (X006)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X006	TRS	5 ppmv @ 10% O_2 or combustion as described in 40 CFR §60.283(a)(1)(i) – (iii)	NSPS Subpart BB	Emissions routed to No. 7 Lime Kiln or Backup NCG Incinerator for destruction	☒	☐
	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	NESHAP Subpart S	Emissions routed to No. 7 Lime Kiln or Backup NCG Incinerator for destruction	☒	☐
		Kraft Pulping Condensate System	NESHAP Subpart S	Hotwell and 5th and 6th effect foul condensates pumped to activated sludge treatment system	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 7 Lime Kiln (X003)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X003	PM	0.01 gr/dscf @ 10% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 5 or 17 (1 per 5 years) based on performance test	☒	☐
		0.066 gr/dscf @ 10% O_2 (natural gas)	NSPS Subpart BB	40 CFR 60, Appendix A, Method 5 or 17 (1 per 5 years) based on performance test	☒	☐
	PM_{10}	0.030 gr/dscf @ 10% O_2	AAC 335-3-14-.04 (Proposed)	Performance Test (once every 5 years)	☒	☐
	$PM_{2.5}$	0.027 gr/dscf @ 10% O_2	AAC 335-3-14-.04 (Proposed)	Performance Test (once every 5 years)	☒	☐
	Metal HAPs	0.064 gr/dscf @ 10% O_2 (PM as surrogate)	NESHAP Subpart MM	Continuous Parameter Monitoring Systems	☒	☐
	TRS and H_2S	8 ppmvd @ 10% O_2	AAC 335-3-14-.04, NSPS Subpart BB (TRS)	Continuous Emissions Monitoring System on a 12-hour block average basis	☒	☐
	SO_2	50 ppmvd @ 10% O_2	AAC 335-3-14-.04	40 CFR 60, Appendix A, Method 6 or 6C (1 per 5 yrs) based on performance test	☒	☐
	NO_X	112 ppmvd @ 10% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 7 or 7E (1 per 5 yrs) based on performance test	☒	☐
	CO	50 ppmvd @ 10% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 10 (1 per 5 yrs) based on performance test	☒	☐
	VOC	25 ppmvd @ 10% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 25, 25A or 25B (1 per 5 yrs) based on performance test	☒	☐
	H_2SO_4	1.2 lb/hr	AAC 335-3-14-.04	Conditional Test Method 13B or 40 CFR 60, Appendix A, Method 8 (1 per 5 yrs) based on performance test	☒	☐
	GHG	65,073 tpy	AAC 335-3-14-.04 (Proposed)	Annual Natural Gas Firing Records and Records of NCG Firing	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No.8 Multiple-Effect Evaporator System (X016)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X016	TRS	5 ppmv @ 10% O_2 or combustion as described in 40 CFR §60.283(a)(1)(i) – (iii)	NSPS Subpart BBa	Emissions routed to No. 8 Lime Kiln or Backup NCG Incinerator for destruction	☒	☐
	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	NESHAP Subpart S	Emissions routed to No. 8 Lime Kiln or Backup NCG Incinerator for destruction	☒	☐
		Kraft Pulping Condensate System	NESHAP Subpart S	Hotwell foul condensates pumped to activated sludge treatment system	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 8 Recovery Furnace (X012)
(description)

Emission Point No.	Pollutant[4]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X012	PM	0.015 gr/dscf @ 8% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 5 or 17 (once per year) based on performance stack test	☒	☐
		0.044 gr/dscf @ 8% O_2	NSPS Subpart BBa	40 CFR 60, Appendix A, Method 5 or 17 (once per year) based on performance stack test	☒	☐
	PM_{10}	0.030 gr/dscf @ 8% O_2	AAC 335-3-14-.04 (Proposed)	Performance Test (once every 5 years)	☒	☐
	$PM_{2.5}$	0.027 gr/dscf @ 8% O_2	AAC 335-3-14-.04 (Proposed)	Performance Test (once every 5 years)	☒	☐
	Metal HAPs	0.044 gr/dscf @ 8% O_2 (PM as surrogate)	NESHAP Subpart MM	40 CFR 60, Appendix A, Method 5 or 17 (once per year) based on performance stack test	☒	☐
	TRS (as H_2S)	5 ppmvd @ 8% O_2	AAC 335-3-14-.04, NSPS Subpart BBa	Continuous Emissions Monitoring System on a 12-hour block average basis	☒	☐
	SO_2	100 ppmvd @ 8% O_2 and 357.3 lb/hr	AAC 335-3-14-.04	40 CFR 60, Appendix A, Method 6 or 6C (1 per 5 yrs) based on performance stack test	☒	☐
		0.3 lb/MMBtu fuel oil heat input and 357.3 lb/hr	AAC 335-3-14-.04		☒	☐
	NO_X	75 ppmvd @ 8% O_2	AAC 335-3-14-.04	40 CFR 60, Appendix A, Method 7 or 7E (1 per 5 yrs) based on performance stack test	☒	☐
		10% fossil fuel capacity factor	NSPS Subpart Db	Records of BLS and fossil fuel firing and 12-month rolling average fossil fuel capacity factor	☒	☐
	CO	200 ppmvd @ 8% O_2	AAC 335-3-14-.04	40 CFR 60, Appendix A, Method 10 (1 per 5 yrs) based on performance stack test	☒	☐
	VOC	20 ppmvd @ 8% O_2	AAC 335-3-14-.04 (Proposed)	40 CFR 60, Appendix A, Method 25, 25A or 25B (1 per 5 yrs) based on performance stack test	☒	☐
	H_2SO_4	5 ppmvd @ 8% O_2	AAC 335-3-14-.04	Conditional Test Method 13B, 12, 13A or 40 CFR 60, Appendix A, Method 8 (1 per 5 yrs) based on performance stack test	☒	☐
	GHG	830,307 tpy	AAC 335-3-14-.04	12-Month Rolling Fuel Firing Records and Records of NCG Firing	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: No. 8 Smelt Dissolving Tank (X015)
(description)

Emission Point No.	Pollutant[4,5]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X015, X012[h]	PM	0.2 lb/ton BLS (dry)	NSPS Subpart BBa	Emissions typically routed to the No. 8 Recovery Furnace[h]	☒	☐
	Metal HAPs	0.12 lb/ton BLS (dry) (PM as surrogate)	NESHAP Subpart MM	Emissions typically routed to the No. 8 Recovery Furnace[h]	☒	☐
	TRS	0.033 lb/ton BLS (dry)	NSPS Subpart BBa	Emissions typically routed to the No. 8 Recovery Furnace[h]	☒	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

[5]As part of the proposed project, the No. 8 Smelt Dissolving Tank will be routed to the No. 8 Recovery Furnace.

[h] In limited operating scenarios (e.g., when performing maintenance on the No. 8 Smelt Dissolving Tanks condenser or 'clean air' fan), the exhaust from the No. 8 Smelt Dissolving Tank will vent through the scrubber directly to atmosphere.

Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: *Modified or New* Crude Tall Oil Plant (X321)
(description)

Emission Point No.	Pollutant[4,5]	Standard	Program[1]	Method used to determine compliance	Compliance Status	
					IN[2]	OUT[3]
X321	VOC	3.50 tpy	AAC 335-3-14-.04 (Proposed)	Emissions routed to the HVLC system	☒	☐
	TRS	0.07 tpy	AAC 335-3-14-.04 (Proposed)	Emissions routed to the HVLC system	☒	☐
	H_2S	0.03 tpy	AAC 335-3-14-.04 (Proposed)	Emissions routed to the HVLC system	☒	☐
					☐	☐
					☐	☐

[1]PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)),SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

[2]Attach compliance plan

[3]Attach compliance schedule (ADEM Form-437)

[4]Fugitive emissions must be included as separate entries

6. For those applying for a major source operating permit, list all insignificant activities and the basis for listing them as such (i.e., less than the insignificant activity thresholds or on the list of insignificant activities). Attach any documentation needed, such as calculations. No unit subject to an NSPS, NESHAP or MACT standard can be listed as insignificant.

Insignificant Activity	Basis
See process flow diagrams in Appendix E.	

7. List and explain any facility-wide exemptions from applicable requirements the facility is claiming:

a. Not applicable

b.

c.

d.

e.

f.

g.

8. List below other attachments that are a part of this application (all supporting engineering calculations must be appended):

a. Appendix A contains an area map and plot plan;

b. Appendix B contains the detailed emissions calculations;

c. Appendix C contains the BACT reference materials;

d. Appendix D contains the ADEM permit applications forms;

e. Appendix E contains the process flow diagrams; and

f. Appendix F contains the CAM plan.

g.

h.

i.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Phone (251) 743-8185 Email: Nikki.Turner@gapac.com

Signature: N Turner Date: 7/25/25

I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND COMPLETE.

I ALSO CERTIFY THAT THE SOURCE WILL CONTINUE TO COMPLY WITH APPLICABLE REQUIREMENTS FOR WHICH IT IS IN COMPLIANCE, AND THAT THE SOURCE WILL, IN A TIMELY MANNER, MEET ALL APPLICABLE REQUIREMENTS THAT WILL BECOME EFFECTIVE DURING THE PERMIT TERM AND SUBMIT A DETAILED SCHEDULE, IF NEEDED FOR MEETING THE REQUIREMENTS.

	VP/General Manager	7/25/2025
SIGNATURE OF RESPONSIBLE OFFICIAL	TITLE	DATE

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

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1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Woodyard (WDYD)

Source Classification Code(s): 30700199

Equipment manufacturer's information

Make: TBD Model: TBD

Rated process capacity (manufacturer's or designer's guaranteed maximum): See Appendix B.

Manufactured date: N/A

Proposed installation date: N/A

Original installation date (if existing): No. 7 Line - 1978; No. 8 Line - 1991

Reconstruction/Modification date (if applicable): No. 7 Line - N/A; No. 8 Line - 2014

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any): N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
No. 7 Mill Processed Logs	359,848	397,727	1,576,136
No. 8 Mill Processed Logs	842,803	852,273	3,691,477
Purchased Bark	336,000	336,000	1,471,350
Purchased Chips	620,621	838,000	2,718,320

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
No. 7 Mill Processed Bark	189,136	tons
No. 7 Mill Processed Chips	1,387,000	tons
No. 8 Mill Processed Bark	442,977	tons
No. 8 Mill Processed Chips	3,248,500	tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
Fugitive	Fugitive	☐						N/A	N/A	N/A	N/A	N/A	N/A	N/A
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
Multiple – Debarking, Chipping, and Bark and Chip Processing	☒	PM	5.51	20.88			NCASI and AP-42 Emission Factors	
		PM_{10}	3.28	12.72			NCASI and AP-42 Emission Factors	
		$PM_{2.5}$	0.67	2.64			NCASI and AP-42 Emission Factors	
Multiple – Storage Piles	☒	PM	1.68	7.36			NCASI Emission Factors	
		PM_{10}	1.68	7.36			NCASI Emission Factors	
		$PM_{2.5}$	1.68	7.36			NCASI Emission Factors	
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13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☒ Yes ☐ No

List storage piles or other facility (if any): Mill Bark and Chip Piles

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)
Bark		~2.8 acres	>40% moisture
Chips		~10.4 acres	>40% moisture

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/19/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

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1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Continuous Digester System (Z004)

Source Classification Code(s): 30700101

Equipment manufacturer's information

Make: TBD Model: TBD

Rated process capacity (manufacturer's or designer's guaranteed maximum): 79.1 ADTUBP/hr

Manufactured date: TBD

Proposed installation date: TBD

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): N/A - New

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Softwood Chips	607,169	616,607	2,659,401

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Unbleached Pulp (ADUBP)	629,529	air-dried tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

Other than allowed venting under 40 CFR Part 63, Subpart S, gases from the digester system that are required to be controlled are routed to the No. 7 Lime Kiln, Backup NCG Incinerator, or No. 7 Recovery Furnace for destruction. There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point[a]	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X003[b]	Point	☐	453.490	3,494,070				350	68.9	4.2		93.7	77,861	577
X029[b]	Point	☐	453.494	3,494.230				64	68.9	5.5		11.1	16,097	1,232
X001[b]	Point	☒	453.595	3,494.290				250	68.9	14.0		80.5	743,227	352
206	Point	☐	TBD	TBD				TBD	TBD	TBD		TBD	TBD	TBD
		☐												
		☐												
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* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

[a] With exception to emissions from the Chip Bin (Equipment ID No. 206), all other emissions from EU Z004, except for allowed venting of the LVHC and HVLC gases, are captured and vented to No. 7 Lime Kiln (X003) or Backup NCG Incinerator (X029) for the LVHC system or No. 7 Recovery Furnace (X001) for HVLC system for destruction.

[b] Emission Points X003, X029, and X001 are the emission points for the control devices that provide control to the equipment that is part of EU Z004.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT[c]	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
206	☐	VOC	1.32	5.68			Proposed BACT Limit	5.68 tpy
		TRS	0.02	0.10			Proposed BACT Limit	0.10 tpy
		H_2S	<0.01	<0.01			Proposed BACT Limit	0.01 tpy
282-285[d]	☐	VOC	9.21	0.37			NCASI Emission Factor	
		TRS	29.61	1.18			NCASI Emission Factor	
		H_2S	4.72	0.19			NCASI Emission Factor	
286[d]	☐	VOC	21.47	3.42			NCASI Emission Factor	
		TRS	68.25	10.87			NCASI Emission Factor	
		H_2S	10.88	1.76			NCASI Emission Factor	
	☐							
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13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

[c] Equipment IDs are provided.
[d] Emission rates represent uncontrolled venting of the emission units.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?
☐ Yes ☐ No *N/A – Unit are not constructed or operational.*
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?
☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?
☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Brown Stock Washing (Z007)

Source Classification Code(s): 30700102

Equipment manufacturer's information

Make: Eimco (Washers) Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 79.1 ADTUBP/hr

Manufactured date: Prior to September 1976 (commenced construction)

Proposed installation date: N/A

Original installation date (if existing): 1976

Reconstruction/Modification date (if applicable): TBD

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Unbleached Pulp (ADTUBP)	143,728	158,101	629,529

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Unbleached Pulp (ADTUBP)	629,529	air-dried tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

Other than allowed venting under 40 CFR Part 63, Subpart S, gases from the No. 7 Mill Brown Stock Washing System that are required to be controlled are routed to the No. 7 Recovery Furnace for destruction. The Decker (105), Decker Filtrate Chest (106), MC Standpipe (214), and screening system (128, 133-133D, 120, 134, 121, 135, 136, 129, 130, and 131) vent to atmosphere directly. There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X001[a]	Point	☒	453.595	3,494.290				250	68.9	14.0		80.47	743,227	352
105, 106, 214	Point	☐												
120, 121, 128-131, 133a-133d, 134-136	Point	☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

[a] With exception to emissions from the Decker (105), Decker Filtrate Chest (106), MC Standpipe (214), and screening system (128, 133-133D, 120, 134, 121, 135, 136, 129, 130, and 131), all other emissions from EU Z007, except for allowed venting of the HVLC gases, are captured and vented to No. 7 Recovery Furnace (X001) for destruction.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT[b]	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
			lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative UOM
104a-104d, 207[c]	☐	VOC	0.38	0.06			NCASI Emission Factor	
		TRS	14.70	2.34			NCASI Emission Factor	
275[c]	☐	VOC	4.84	0.85			NCASI Emission Factor	
		TRS	0.53	0.09			NCASI Emission Factor	
		H_2S	0.01	<0.01			NCASI Emission Factor	
118a-118d[c]	☐	VOC	17.00	2.71			NCASI Emission Factor	
		TRS	4.34	0.69			NCASI Emission Factor	
		H_2S	0.20	0.03			NCASI Emission Factor	
119[c]	☐	VOC	4.27	0.68			NCASI Emission Factor	
		TRS	0.43	0.07			NCASI Emission Factor	
122[c]	☐	VOC	15.45	2.46			NCASI Emission Factor	
		TRS	8.22	1.31			NCASI Emission Factor	
122	☐	CO	3.59	0.57			NCASI Emission Factor	
		H_2S	0.22	0.03			NCASI Emission Factor	
105, 106, 214	☐	VOC	6.08	24.21			NCASI Emission Factor	
		TRS	3.07	12.21			NCASI Emission Factor	
		H_2S	1.58	6.30			NCASI Emission Factor	

[b] Equipment IDs are provided.
[c] Emission rates represent uncontrolled venting of the emission units.

EMISSION POINT[b]	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
			lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative UOM
120, 121, 128-131, 133a-133d, 134-136	☐	VOC	0.29	1.17			NCASI Emission Factor	
		TRS	0.03	0.13			NCASI Emission Factor	

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No *Response addresses existing units.*
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

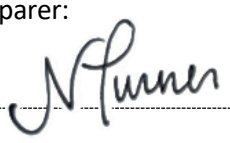
☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature:  Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Bleach Plant (X020)

Source Classification Code(s): 30700216

Equipment manufacturer's information

Make: Parsons and Whittemore Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 72.8 ADTBP/hr

Manufactured date: 1978

Proposed installation date: N/A

Original installation date (if existing): 1978

Reconstruction/Modification date (if applicable): 2005

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Unbleached Pulp (ADUBP)	143,728	158,101	629,529
Bleaching Chemicals and Oxygen	Varies	Varies	Varies

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Bleached Pulp (ADTBP)	604,409	air-dried tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X020	Point	☐	453.559	3,494.119				274	68.9	5.0		39.2	46,121	116
228	Point	☐											~7,500	
228a	Point	☐												
228b	Point	☐												
		☐												
		☐												
		☐												
		☐												
		☐												
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		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X020a-X020b, X020e-X020g, X020j-X020l	☐	VOC	14.73	61.17			NCASI Emission Factor	61.17 tpy
		CO	111.34	462.37			NCASI Emission Factor	462.37 tpy
		TRS	1.48	6.16			NCASI Emission Factor	6.16 tpy
		H_2S	0.79	3.28			NCASI Emission Factor	3.28 tpy
X020c-X020d, X020h-X020i	☐	VOC	1.53	6.35			NCASI Emission Factor	6.35 tpy
		CO	2.67	11.09			NCASI Emission Factor	11.09 tpy
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13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 7/25/2025

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

				-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Bleach Plant (X020)

Source Classification Code(s): 30700216

Equipment manufacturer's information

Make: Parsons and Whittemore Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 72.8 ADTBP/hr

Manufactured date: 1978

Proposed installation date: N/A

Original installation date (if existing): 1978

Reconstruction/Modification date (if applicable): 2005

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Unbleached Pulp (ADUBP)	143,728	158,101	629,529
Bleaching Chemicals and Oxygen	Varies	Varies	Varies

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Bleached Pulp (ADTBP)	604,409	air-dried tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X020	Point	☐	453.559	3,494.119				274	68.9	5.0		39.2	46,121	116
228	Point	☐											~7,500	
228a	Point	☐												
228b	Point	☐												
		☐												
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* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X020a-X020b, X020e-X020g, X020j-X020l	☐	VOC	14.73	61.17			NCASI Emission Factor	61.17 tpy
		CO	111.34	462.37			NCASI Emission Factor	462.37 tpy
		TRS	1.48	6.16			NCASI Emission Factor	6.16 tpy
		H_2S	0.79	3.28			NCASI Emission Factor	3.28 tpy
X020c-X020d, X020h-X020i	☐	VOC	1.53	6.35			NCASI Emission Factor	6.35 tpy
		CO	2.67	11.09			NCASI Emission Factor	11.09 tpy
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13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 7/25/2025

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

☐☐☐ - ☐☐☐☐ - ☐☐☐☐

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☐ Afterburner
- ☐ Cyclone
- ☐ Absorber
- ☐ Condenser
- ☐ Thermal Oxidizer
- ☐ Electrostatic precipitator
- ☐ Baghouse
- ☐ Multiclone
- ☐ Adsorber
- ☐ Wet Suppression

Wet scrubber (kind): Dual Laminate Packed Bed

Other (describe):

3. Control device manufacturer's information:

Name of manufacturer Caldwell-McKay Company Model No. Custom

4. Emission source(s) to which device is installed or is to be installed:

No. 7 Bleach Plant (X020)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Chlorine	Chlorine Dioxide	
Mass emission rate (#/hr)			
Uncontrolled	32.7	31.9	
Designed.....	2.6	2.87	
Manufacturer's guaranteed	N/A	N/A	
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	10 ppmv	2.87 lb/hr	
Manufacturer's guaranteed	N/A	N/A	
Removal efficiency (%)			
Designed.....	92+	91+	
Manufacturer's guaranteed	N/A	N/A	

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			46,121
Temperature (ºF)			116
Velocity (ft/sec)			39.15
Percent moisture			Saturated

Pressure drop across device: _____ (inches H_20)

7. Stack dimensions:

Stack No. & Description: No. 7 Bleach Plant Scrubber Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.559	(km)	Stack UTM Coordinate (N-S)	3,494.119	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	274	(ft)	Gas temperature at exit	116	(°F)
Inside diameter at exit (round)	5.0	(ft)	Gas Velocity	39.2	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	46,121	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height	274	(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

(1) Scrubber Effluent ORP
(2) Scrubber Liquid Influent Flow
(3) Scrubber fan is ON

12. By-pass (if any) is to be used and when:

N/A

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume			Varies	
Composition			Spent White Liquor/Scrubbant Mixture	
Is waste hazardous?			No	
Method of disposal			WWTP	
Final destination			Alabama River	

If collected air pollutants are recycled, describe:
N/A

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Pulp Dryer (X108)

Source Classification Code(s): 30700401

Equipment manufacturer's information

Make: TBD Model: TBD

Rated process capacity (manufacturer's or designer's guaranteed maximum): 80.2 ADTFP/hr

Manufactured date: TBD

Proposed installation date: TBD

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): N/A - New

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Finished Pulp (ADFP)	145,804	160,384	638,620

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Finished Pulp (ADFP)	668,620	air-dried tons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
7DRYR1	Point	☐	453.805	3,494.160				81.5	68.9	6.56		74.26	150,675	244
7DRYR2	Point	☐	453.819	3,494.160				81.5	68.9	6.56		74.26	150,675	244
7VAC	Point	☐	453.765	3,494.153				84.1	68.9	2.95		143.60	59,000	140
7WINDER	Point	☐	453.892	3,494.117				81.7	68.9	2.62		52.37	17,000	140
7REEL	Point	☐	453.875	3,494.117				81.7	68.9	2.62		64.69	21,000	140
7ROOF01	Point	☐	453.749	3,494.141				86.0	68.9	5.00		50.93	60,000	120
7ROOF02	Point	☐	453.760	3,494.141				86.0	68.9	5.00		44.56	52,500	120
7ROOF03	Point	☐	453.760	3,494.132				86.0	68.9	5.00		44.56	52,500	120
7ROOF04	Point	☐	453.778	3,494.132				86.0	68.9	5.00		44.56	52,500	120
7ROOF05	Point	☐	453.778	3,494.141				86.0	68.9	5.00		44.56	52,500	120
7ROOF06	Point	☐	453.789	3,494.132				86.0	68.9	5.00		44.56	52,500	120
7ROOF07	Point	☐	453.789	3,494.141				86.0	68.9	5.00		44.56	52,500	120
7ROOF08	Point	☐	453.840	3,494.147				86.0	68.9	5.00		50.93	60,000	120
7ROOF09	Point	☐	453.836	3,494.136				86.0	68.9	5.00		44.56	52,500	120
7ROOF10	Point	☐	453.840	3,494.130				86.0	68.9	5.00		50.93	60,000	120

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this ics a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
7ROOF11	Point	☐	453.783	3,494.141				86.0	68.9	5.00		44.56	52,500	120
7ROOF12	Point	☐	453.766	3,494.141				86.0	68.9	5.00		44.56	52,500	120
7WALL04	PointHor	☐	453.749	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WALL05	PointHor	☐	453.755	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WALL06	PointHor	☐	453.761	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WALL07	PointHor	☐	453.767	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WALL08	PointHor	☐	453.773	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WALL09	PointHor	☐	453.779	3,494.152				55.1	68.9	5.64		36.00	54,000	110
7WREHS01	PointCap	☐	453.868	3,494.192				34.4	68.9	4.59		33.53	33,333	100
7WREHS02	PointCap	☐	453.899	3,494.192				34.4	68.9	4.59		33.53	33,333	100
7WREHS03	PointCap		453.929	3,494.192				34.4	68.9	4.59		33.53	33,333	100

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
108	☐	PM	1.60	6.39			Proposed BACT Limit	6.39 tpy
		PM_{10}	2.41	9.58			Proposed BACT Limit	9.58 tpy
		$PM_{2.5}$	1.84	7.34			Proposed BACT Limit	7.34 tpy
		VOC	11.99	47.73			Proposed BACT Limit	47.73 tpy
	☐							
	☐							
	☐							
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13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☐ Yes ☐ No *N/A – Unit not constructed or operational.*
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Multiple-Effect Evaporator System (X006)

Source Classification Code(s): 30700103

Equipment manufacturer's information

Make: Goslin/Lundberg/HPD Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 114.6 TBLS/hr

Manufactured date: 1978

Proposed installation date: N/A

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): 2004-2005

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Weak Black Liquor			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Strong Black Liquor	1,005,941	tons BLS

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

Other than allowed venting under 40 CFR Part 63, Subpart S, gases from the multiple-effect evaporator system that are required to be controlled are routed to the No. 7 Lime Kiln or Backup NCG Incinerator for destruction. There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
X003[a]	Point		453.490	3,494,070				350	68.9	4.2		93.7	77,861	577
X029[a]	Point		453.494	3,494.230				64	68.9	5.5		11.1	16,097	1,232

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

[a] Emission Points X003 and X029 are the emission points for the control devices that provide control to the equipment that is part of EU X006.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X006[2]	☐	VOC	--	0.97			NCASI Emission Factor	
		TRS	--	0.07			NCASI Emission Factor	
		H_2S	--	0.07			NCASI Emission Factor	

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

[2] Emission rates represent uncontrolled venting of the emission units.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Mill Liquor Recovery Area Sources[a] (X032)

Source Classification Code(s): 30700124

Equipment manufacturer's information

Make: Varies Model: Varies

Rated process capacity (manufacturer's or designer's guaranteed maximum): 5.5 MMlb BLS/day (at the No. 7 RF)

Manufactured date: 1978[b]

Proposed installation date: N/A

Original installation date (if existing): 1978[c]

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) None

[a]Includes the following equipment associated with the No. 7 Mill Liquor Recovery Area: Precipitator Mix Tank (127), Salt Cake Mix Tank (111), weak black liquor tanks (110A-110C), Boilout Tank (242), Soap Skimmer Tank (123), Soap Storage Tank (124), Intermediate Black Liquor Tank (239), heavy black liquor tanks (240 and 241), and Black Liquor Dump Tank (281).

[b] Most or all equipment.

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Varies			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Green Liquor	~873,100,000	gallons

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
Multiple		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
110A – C, 242 (combined)	☐	VOC	2.14	9.37			NCASI Emission Factor	
		TRS	0.82	3.61			NCASI Emission Factor	
		H_2S	0.01	0.06			NCASI Emission Factor	
123 & 124 (combined)	☐	VOC	0.23	0.99			NCASI Emission Factor	
		TRS	0.15	0.65			NCASI Emission Factor	
		H_2S	0.10	0.43			NCASI Emission Factor	
239	☐	VOC	0.11	0.49			NCASI Emission Factor	
		TRS	0.07	0.33			NCASI Emission Factor	
		H_2S	0.05	0.21			NCASI Emission Factor	
240, 241, 281 (combined)	☐	VOC	0.34	1.48			NCASI Emission Factor	
		TRS	0.22	0.98			NCASI Emission Factor	
		H_2S	0.15	0.64			NCASI Emission Factor	
127 & 111 (combined)	☐	VOC			These tanks vent to the No. 7 Smelt Dissolving Tank scrubber.			

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Lime Kiln (X003)

Source Classification Code(s): 30700106

Equipment manufacturer's information

Make: Allis Chalmers Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 19.3 TCaO/hr

Manufactured date: 1978

Proposed installation date: N/A

Original installation date (if existing): 1978

Reconstruction/Modification date (if applicable): 2005[a]

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

[a]With the proposed project, physical changes are planned for the No. 7 Lime Kiln. However, the unit will not undergo a modification or reconstruction with respect to 40 CFR Part 60 or 63.

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Lime Mud			
LVHC Gases			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): 127 MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas	1,019[b]	Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Lime	153,300	Tons (as CaO)

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

[b]Monthly average between January 2014 and April 2024

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
X003	Point	☐	453.490	3,494.070	N/A	N/A	350	N/A	68.9	4.2	N/A	93.7	77,861	577
		☐												
		☐												
		☐												
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X003	☐	Filterable PM			2.96	12.98	Proposed BACT Limit	0.01 gr/dscf @10% O_2
		Total PM_{10}			8.89	38.95	Proposed BACT Limit	0.030 gr/dscf @10% O_2
		Total $PM_{2.5}$			8.00	35.06	Proposed BACT Limit for FPM and NCASI Emission Factors	0.027 gr/dscf @10% O_2
		SO_2	5.52	24.19			Existing BACT Limit	23.3/ 50 ppmvd @10% O_2
		NO_X	27.76	121.59			Proposed BACT Limit	112 ppmvd @ 10 % O_2
		CO	7.55	33.05			Proposed BACT Limit	50 ppmvd @ 10 % O_2
		VOC	1.62	7.09			Proposed BACT Limit	25 ppmvd @ 10 % O_2
		TRS	1.47	6.43			Proposed BACT Limit	8 ppmvd @ 10 % O_2
		H_2S	1.47	6.43			Proposed BACT Limit	8 ppmvd @ 10 % O_2
		SAM	1.2	5.26			Proposed BACT Limit	1.2 lb/hr
		Lead	<0.01	<0.01			NCASI Emission Factor	N/A
		GHG[c]	--	65,073 tpy for fuel combustion/ 4,965 tpy for control of NCGs			NCASI and 40 CFR Part 98 Emission Factors	65,073 tpy for fuel combustion/ 4,965 tpy for control of NCGs

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

[c]These emission rates and limits reflect GHG emissions due to natural gas combustion and control of NCGs. Consistent with the language in 40 CFR §98.273(c)(3), biogenic CO2 emissions from the conversion of $CaCO_3$ to CaO are included in the biogenic CO_2 estimates calculated for the No. 7 Recovery Furnace.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 7/25/2024

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☒ Electrostatic precipitator
- ☐ Afterburner
- ☐ Baghouse
- ☐ Cyclone
- ☐ Multiclone
- ☐ Absorber
- ☐ Adsorber
- ☐ Condenser
- ☐ Wet Suppression
- ☐ Thermal Oxidizer

Wet scrubber (kind): _____

Other (describe): _____

3. Control device manufacturer's information:

Name of manufacturer AirTek Model No. Custom

4. Emission source(s) to which device is installed or is to be installed:
No. 7 Lime Kiln (X003)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Filterable PM		
Mass emission rate (#/hr)			
Uncontrolled	7,902		
Designed.....	2.96		
Manufacturer's guaranteed	N/A		
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	TBD		
Manufacturer's guaranteed	0.01 gr/dscf @ 10% O_2		
Removal efficiency (%)			
Designed.....	99.96		
Manufacturer's guaranteed	N/A		

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			77,861
Temperature (°F)			577
Velocity (ft/sec)			93.7
Percent moisture			

Pressure drop across device: -8.64 (inches H_2O)

7. Stack dimensions:

Stack No. & Description: No. 7 Lime Kiln Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.490	(km)	Stack UTM Coordinate (N-S)	3,494.070	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	350	(ft)	Gas temperature at exit	577	(°F)
Inside diameter at exit (round)	4.2	(ft)	Gas Velocity	93.7	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	77,861	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

Please refer to Appendix E for the associated process flow diagram.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

Continuous Opacity Monitoring System (COMS)

12. By-pass (if any) is to be used and when:

Isolating chamber for inspection and/or maintenance

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume				
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

Kiln dust will be recovered back to the flash dryer.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☒ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Flow Rate
- ☐ VOCs
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: TBD

Model number: TBD

Serial number: TBD

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: TBD

Serial number: TBD

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 7 Lime Kiln ESP Exhaust (X003)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

TBD

7. Indicate CEM calibration/maintenance schedule:

TBD

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 100%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 1

11. Insitu/dilution extractive/extractive? (type): Insitu

12. If dilution extractive, give approximate dilution rate: N/A

13. Conditioning system? ☐ YES ☒ NO

If yes, what type?

14. Does Appendix F in 40 CFR Part 60 apply?

☒ YES ☐ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☒ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Flow Rate
- ☐ VOCs
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: Automated Control Systems, Inc.

Model number: 800

Serial number: 22166-LK7

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Teledyne API T100

Serial number: 6447

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 7 Lime Kiln ESP Exhaust (X003)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs at least daily by 8 AM. Approximately 10 minutes are lost during each daily calibration event.

7. Indicate CEM calibration/maintenance schedule:

- Daily automatic calibration (zero and upscale calibration drift determination)
- Initial performance specification testing (CD and RATA)
- Quarterly cylinder gas audits (CGAs)

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 25%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 3

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: 50:1

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Cooling/Dilution/Extractive

14. Does Appendix F in 40 CFR Part 60 apply?

☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☒ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Other (explain):
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs

3. CEMS Manufacturer's Information:

Name of manufacturer: Automated Control Systems, Inc.

Model number: 800

Serial number: 22166-LK7

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Teledyne API T100

Serial number: 6447

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 7 Lime Kiln ESP Exhaust (X003)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs twice daily by 8 AM. Approximately 20 minutes are lost during each daily calibration event.

7. Indicate CEM calibration/maintenance schedule:

- Twice daily calibration (zero and upscale drift determination)
- Initial performance specification testing (CD and RATA)
- Quarterly cylinder gas audits (CGAs)

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0 ppmv To: 30 ppmv

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 5

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: 50:1

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Cooling/Dilution/Extractive

14. Does Appendix F in 40 CFR Part 60 apply?

☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 7 Mill Recausticizing Area sources[a] (X030)

Source Classification Code(s): 30700122

Equipment manufacturer's information

Make: Varies Model: Varies

Rated process capacity (manufacturer's or designer's guaranteed maximum): 19.3 TCaO/hr (at the No. 7 Lime Kiln)

Manufactured date: 1978[b]

Proposed installation date: TBD

Original installation date (if existing): 1978[c]

Reconstruction/Modification date (if applicable): N/A[d]

[a] Includes the following equipment associated with the No. 7 Mill Recausticizing Area: Slaker (132), Nos. 1-5 Causticizers and Causticizer Sump Tank (248-252 and 261), Reburned Lime Silo/Bin (259), Purchased Lime Silo/Bin (260), Green and White Liquor Swing Tank (117a), Nos. 1 and 2 White Liquor Storage Tanks (253 and 117b), Green Liquor Blend Tank (278), and various causticizing equipment that are not sources of emissions.

[b] This application proposes construction of new emission units (e.g., No. 7 Mill Slaker) as well as physical changes to existing emission units.

[c] Most equipment.

[d] Physical changes are proposed for multiple emission units as part of EU X030. However, none of the changes constitute modification or reconstruction with respect to 40 CFR Part 60 or 63.

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) None

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Varies			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Lime	153,300	tons CaO

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
132	Point	☐	453.509	3,494.205			42.2		68.9	2.33		5.85	1,500	150
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
115a, 115b, 246, 247, 255a, 256, 257, 258, 287, 288	As described in NCASI Technical Bulletin No. 973, organic emissions are not expected from the causticizing area sources at mills that use 100% fresh water in the entire causticizing area (e.g., mud washing). This includes all unit operations from the smelt dissolving tank to the white liquor storage tank, including all processes associated with green and white liquor processing and mud washing. Based on NCASI guidance, emissions are not estimated for the listed emission units, since published data only includes organic emissions.							
117a	☐	TRS	<0.01	<0.01			NCASI Emission Factor	<0.01 tpy
		H_2S	0.01	0.04				0.04 tpy
117b	☐	TRS	<0.01	<0.01			NCASI Emission Factor	<0.01 tpy
		H_2S	0.01	0.04				0.04 tpy
132	☐	PM			0.56	2.22	NCASI Emission Factor	2.22 tpy
		PM_{10}			0.56	2.22		2.22 tpy
		$PM_{2.5}$			0.56	2.22		2.2.2 tpy
		TRS			2.03	8.08		8.08 tpy
248 – 252 and 261 (combined)	☐	TRS			1.07	4.25	NCASI Emission Factor	0.85 tpy for No. 5 Causticizer only
253	☐	TRS	<0.01	<0.01			NCASI Emission Factor	
		H_2S	0.01	0.04				
259 and 260 (combined)	☐	PM	0.06	0.14			AP-42 Emission Factor	
		PM_{10}	0.03	0.07				
		$PM_{2.5}$	<0.01	0.01				
278	☐	TRS	0.04	<0.01			NCASI Emission Factor	
		H_2S	0.01	0.04				

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 7/25/2025

PERMIT APPLICATION FOR INDIRECT HEATING EQUIPMENT
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Unit Description (i.e. No. 1 Power Boiler): No. 7 Power Boiler (Z008)

Source Classification Code(s): 30790003

Equipment manufacturer's information

Name of manufacturer: Combustion Engineering, Inc.

Model number: CEVU - 40

Rated capacity-input: 598.4[a] (MMBtu/hr.)

Boiler type: ☐ Fire Tube ☒ Water Tube ☐ Other (specify):

Manufactured date: Commenced Construction in 1975

Proposed installation date: N/A

Original installation date (if existing): 1976

Reconstruction/Modification date (if applicable): N/A

3. Type of fuel used:

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Wood	4,166[b]	Btu/lb				

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Natural Gas	1,019[c]	Btu/ft^3	N/A	N/A		
Fuel Oil	136.2[d]	Btu/kgal	0.25	N/A	No. 2 – No. 5	
Biodiesel	128	Btu/kgal	0.05	N/A		
Glycerin	138[e]	Btu/kgal	0.05	N/A		
Tall Oil	129.5	Btu/kgal	0.25	N/A		

[a]The maximum firing rate for the No. 7 Power Boiler is 598.4 MMBtu/hr. The boiler has the capacity to fire natural gas and fuel oil at a maximum firing rate of 500 MMBtu/hr and wood at 598.4 MMBtu/hr.
[b]Average of samples collected from January 2016 – April 2024.
[c]Average of samples collected from January 2014 – April 2024.
[d]Average samples collected over the last five years.
[e]Assumed to be similar to No. 2 Fuel Oil.

4. Purpose (if multipurpose, note percent in each use category):

☐	Space heat		%
☒	Power generation	50	%
☒	Process heat	50	%
☐	Other (specify)		%

5. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

6. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

7. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

8. Is there any emission control equipment on this emission source?

☒ Yes ☐ No(If "yes", ADEM Form 110 must be completed and attached)

9. Stack data (if a control device is installed, the information should be for the control device's stack exit; if multiple stacks associated, provide additional sheet):

Stack No. & Description: Combined No. 7 Energy Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.595	(km)	Stack UTM Coordinate (N-S)	3,494,290	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	250	(ft)	Gas temperature at exit	352	(ºF)
Inside diameter at exit (round)	14	(ft)	Gas Velocity	80.5	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	743,227	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☒ Yes ☐ No

If yes, provide units: The No. 7 Recovery Furnace and the No. 7 Power Boiler share a merged stack.

10. Is this item subject to the Transport Rule 335-3-8-.07 or NOX Budget Program under 335-3-8-.71?

☐ Yes ☒ No If "Yes", provide ORIS Plant and Unit ID:

11. Is this item in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No if "No", a compliance schedule, ADEM Form 437, must be attached.)

12. Fugitive Emissions: *Not Applicable*

POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
	lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative Unit of Measure
Filterable Particulate						
Total PM_{10}						
Total PM_{10}						
Sulfur dioxide						
Nitrogen oxides						
Carbon monoxide						
VOC's						

Attach calculation worksheets. Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

13. Point Emissions:

POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
	lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative Unit of Measure
Filterable Particulate			59.84	262.10	NSPS Subpart D Limit	0.10 lb/MMBTU
Total PM_{10}			65.23	285.69	NSPS Subpart D Limit and NCASI Emission Factor	
Total $PM_{2.5}$			65.23	285.69		
Sulfur dioxide	478.72	2,096.79			NSPS Subpart D Limit	0.8 lb/MMBTU and max 0.25% sulfur in fuel oil
Nitrogen oxides	179.52	786.30			NSPS Subpart D Limit	0.3 lb/MMBtu for wood and fossil fuel; 0.2 lb/MMBtu for natural gas
Carbon monoxide	1,581.94	6,928.91			NESHAP Subpart DDDDD Limit	3,500 ppmvd at 3% O2
VOC's	2.95	12.92			AP-42 Emission Factor	
SAM	2.19	9.58			EPA Emission Factor	
Lead	0.02	0.08			NCASI and AP-42 Emission Factors	

Attach calculation worksheets. Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☐ Afterburner
- ☐ Cyclone
- ☐ Absorber
- ☐ Condenser
- ☐ Thermal Oxidizer
- ☐ Electrostatic precipitator
- ☐ Baghouse
- ☐ Multiclone
- ☐ Adsorber
- ☐ Wet Suppression

Wet scrubber (kind): Multiple Venturi Scrubber (2 identical units)

Other (describe):

3. Control device manufacturer's information:

Name of manufacturer BACT Engineering Model No. ME165

4. Emission source(s) to which device is installed or is to be installed:

No. 7 Power Boiler (Z008)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Filterable PM		
Mass emission rate (#/hr)			
Uncontrolled	5,984 lb/hr		
Designed.....			
Manufacturer's guaranteed			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	0.1 lb/MMBTU		
Manufacturer's guaranteed			
Removal efficiency (%)			
Designed.....	99%		
Manufacturer's guaranteed	99%		

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			206,227
Temperature (ºF)			150
Velocity (ft/sec)			
Percent moisture			Saturated

Pressure drop across device: _____ (inches H_20)

7. Stack dimensions:

Stack No. & Description: Combined No. 7 Energy Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.595	(km)	Stack UTM Coordinate (N-S)	3,494. 290	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	250	(ft)	Gas temperature at exit	352	(ºF)
Inside diameter at exit (round)	14.0	(ft)	Gas Velocity	80.5	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	743,227	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☒ Yes ☐ No

If yes, provide units: The No. 7 Recovery Furnace and the No. 7 Power Boiler share a merged stack.

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

Please refer to Appendix E for the associated process flow diagram.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

(1) Scrubber Liquid Flow Rate
(2) Scrubber Differential Pressure

12. By-pass (if any) is to be used and when:

N/A

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume	None	None		None
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

N/A

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 8 Multiple-Effect Evaporator System (X016)

Source Classification Code(s): 30700103

Equipment manufacturer's information

Make: Goslin – Birmingham/Tampella Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 160.1 TBLS/hr

Manufactured date: 1991

Proposed installation date: N/A

Original installation date (if existing): 1991

Reconstruction/Modification date (if applicable): TBD[a]

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

[a] The No. 8 Multiple-Effect Evaporator System will undergo modification with respect to NSPS Subpart BBa as a result of the No. 7 Mill Transformation Project.

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Weak Black Liquor			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Strong Black Liquor	~1,402,331	tons BLS (dry)

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

Vent gases are collected and burned in the No. 8 Lime Kiln or Backup NCG Incinerator.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source? See the ADEM Form 110 for the Backup NCG Incinerator.

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X014[b]	Point		453.487	3,494,070			350		68.9	5.0		64.8	76,329	452
X029[b]	Point		453.494	3,494.230			64		68.9	5.5		11.1	16,097	1,232

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

[b] Emission Points X014 and X029 are the emission points for the control devices that provide control to the equipment that is part of EU X016.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X016[c]	☐	VOC	--	1.30			NCASI Emission Factor	
		TRS	--	0.09			NCASI Emission Factor	
		H_2S	--	0.09			NCASI Emission Factor	

13. On a separate sheet, provide a flow diagram to:
(1) Illustrate input of raw materials,
(2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
(3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

[c] Emission rates represent uncontrolled venting of the emission unit.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR INDIRECT HEATING EQUIPMENT
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Unit Description (i.e. No. 1 Power Boiler): No. 8 Recovery Furnace (X012)

Source Classification Code(s): 30700104

Equipment manufacturer's information

Name of manufacturer: Babcock and Wilcox

Model number: PR-216

Rated capacity-input: BLS – 156.3 TBLS/hr
Fuel Oil - 750 MMBtu/hr
Natural Gas – 525 MMBtu/hr (MMBtu/hr.)

Boiler type: ☐ Fire Tube ☒ Water Tube ☐ Other (specify):

Manufactured date:

Proposed installation date: N/A

Original installation date (if existing): March 1991

Reconstruction/Modification date (if applicable): TBD[a]

3. Type of fuel used:

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
BLS	12.2[b]	MMBtu/ton				

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Fuel Oil	136.2[b]	Btu/kgal	0.25	N/A	No. 2 – No. 5	
Natural Gas	1,019[c]	Btu/ft^3		N/A		
Biodiesel	128	Btu/kgal		N/A		
Glycerin	138[d]	Btu/kgal		N/A		
Tall Oil	129.5	Btu/kgal		N/A		

[a]The No. 8 Recovery Boiler will undergo modification with respect to NSPS Subparts Db and BBa as a result of the No. 7 Mill Transformation Project.

[b]Average of samples collected over the last five years.

[c]Average of samples collected between January 2014 and April 2024.

[d]Assumed to be similar to No. 2 Fuel Oil.

4. Purpose (if multipurpose, note percent in each use category):

☐	Space heat	%	
☐	Power generation	%	
☐	Process heat	%	
☒	Other (specify)	%	Chemical (pulping liquor) recovery and control of HVLC NCGs

5. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

6. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

The No. 8 Recovery Furnace is limited to a fossil fuel firing annual capacity factor of 10% or less (NSPS Db).

7. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

8. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (If "yes", ADEM Form 110 must be completed and attached)

9. Stack data (if a control device is installed, the information should be for the control device's stack exit; if multiple stacks associated, provide additional sheet):

Stack No. & Description: Combined No. 8 Energy Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.558	(km)	Stack UTM Coordinate (N-S)	3,490.350	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	375	(ft)	Gas temperature at exit	412	(ºF)
Inside diameter at exit (round)	14	(ft)	Gas Velocity	101.5	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	937,121	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☒ Yes ☐ No

If yes, provide units: The No. 8 Recovery Furnace, the proposed No. 8 Smelt Dissolving Tank, and new No. 8 Power Boiler will share a merged stack. The stack data provided above represents the contribution from all three units.

10. Is this item subject to the Transport Rule 335-3-8-.07 or NOX Budget Program under 335-3-8-.71?

☐ Yes ☒ No If "Yes", provide ORIS Plant and Unit ID:

11. Is this item in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No if "No", a compliance schedule, ADEM Form 437, must be attached.)

12. Fugitive Emissions: *Not applicable*

POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
	lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative Unit of Measure

Attach calculation worksheets. Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

13. Point Emissions:

POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT
	lb/hr	ton/yr	lb/hr	ton/yr		Provide in lb/hr or specify alternative Unit of Measure
Filterable Particulate			56.86	249.03	Proposed BACT Limit	0.015 gr/dscf at 8% O_2
Total PM_{10}			113.71	498.07	Proposed BACT Limit	0.030 gr/dscf at 8% O_2
Total $PM_{2.5}$			102.34	448.26	Proposed BACT Limit	0.027 gr/dscf at 8% O_2
Sulfur dioxide	225.00	592.36			Vendor Information	357.3 lb/hr, 100 ppmvd at 8% O_2 (BLS Firing), 0.3 lb/MMBtu (fuel Oil firing)
Nitrogen oxides	237.69	1,041.10			Existing BACT Limit	75 ppmvd at 8% O_2
Carbon monoxide	385.91	1,690.30			Proposed BACT Limit	200 ppmvd at 8% O_2
VOC's	16.55	72.48			Proposed BACT Limit	20 ppmvd at 8% O_2
TRS	11.74	51.42			Proposed BACT Limit	5 ppmvd at 8% O_2
H_2S	9.39	41.14			Proposed BACT Limit	41.14 tpy
SAM	33.78	14.80			Proposed BACT Limit	5 ppmvd at 8% O_2
Lead	0.01	0.02			NCASI and AP-42 Emission Factors	
GHG	--	1,830,307 for BLS and fuel combustion; 4,965 for control of NCGs			NCASI and 40 CFR Part 98 Emission Factors	1,830,307 for BLS and fuel combustion; 4,965 for control of NCGs

Attach calculation worksheets. Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 7/25/2025

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				
			-					-				

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☒ Electrostatic precipitator
- ☐ Afterburner
- ☐ Baghouse
- ☐ Cyclone
- ☐ Multiclone
- ☐ Absorber
- ☐ Adsorber
- ☐ Condenser
- ☐ Wet Suppression
- ☐ Thermal Oxidizer

Wet scrubber (kind): _____

Other (describe): _____

3. Control device manufacturer's information:

Name of manufacturer Environmental Elements Model No. Custom

4. Emission source(s) to which device is installed or is to be installed:

No. 8 Recovery Furnace (X012)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Filterable PM		
Mass emission rate (#/hr)			
Uncontrolled	39,800		
Designed.....	56.86		
Manufacturer's guaranteed			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	TBD		
Manufacturer's guaranteed	0.015		
Removal efficiency (%)			
Designed.....	99.86		
Manufacturer's guaranteed			

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet[a]
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			735,200
Temperature (ºF)			445
Velocity (ft/sec)			
Percent moisture			

Pressure drop across device: 12 (inches H_20)

7. Stack[b] dimensions:

Stack No. & Description: Combined No. 8 Energy Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.558	(km)	Stack UTM Coordinate (N-S)	3,494.350	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	375	(ft)	Gas temperature at exit	412	(ºF)
Inside diameter at exit (round)	14	(ft)	Gas Velocity	101.5	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	937,121	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☒ Yes ☐ No

If yes, provide units: The No. 8 Recovery Furnace, the proposed No. 8 Smelt Dissolving Tank, and new No. 8 Power Boiler will share a merged stack. The stack data provided above represents the contribution from all three units.

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

Continuous Opacity Monitoring System (COMS)

[a] Outlet characteristics are representative of the No. 8 Recovery Furnace only (prior to the merged stack)

[b] Release parameters represent common stack that serves the No. 8 Recovery Furnace (and No. 8 Smelt Dissolving Tank routed to it) and the future No. 8 Power Boiler (not yet constructed).

12. By-pass (if any) is to be used and when:

Isolating chamber for inspection and/or maintenance. Gases will be channeled through alternate chamber for emission control.

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume				
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

Precipitator salt cake (i.e., ash collected from the ESPs) is mixed with black liquor and reburned in the No. 8 Recovery Furnace.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☒ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: Ametek-Land

Model number: 4500 Mark III

Serial number: 205654

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Ametek-Land

Serial number: 4500 Mark III/207191

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Recovery Furnace Ductwork to Main Stack after ESP (X012)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs daily by 8 am. Approximately 10 minutes of monitoring time are lost during daily calibration.

7. Indicate CEM calibration/maintenance schedule:

Daily automatic calibration. Weekly, monthly, quarterly, semi-annual, and annual maintenance are conducted as required by manufacturer's O&M manual.

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☒	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 100%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 1

11. Insitu/dilution extractive/extractive? (type): Insitu

12. If dilution extractive, give approximate dilution rate: N/A

13. Conditioning system? ☐ YES ☒ NO

If yes, what type?

14. Does Appendix F in 40 CFR Part 60 apply? ☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☒ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: Automated Control Systems, Inc.

Model number: 800

Serial number: 22255-RB8

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Teledyne API T100

Serial number: 6590

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Recovery Furnace Ductwork to Stack after ESP (X012)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs daily by 8 am. Approximately 20 minutes of monitoring time are lost during daily calibration.

7. Indicate CEM calibration/maintenance schedule:

Daily automatic calibration. Weekly, monthly, quarterly, semi-annual, and annual maintenance are conducted as required by manufacturer's O&M manual.

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 25%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 3

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: 50:1

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Thermoelectric sample cooler

14. Does Appendix F in 40 CFR Part 60 apply? ☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☒ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: Automated Control Systems, Inc.

Model number: 800

Serial number: 22255-RB8

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Teledyne API T100

Serial number: 6590

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Recovery Furnace Ductwork to Stack after ESP (X012)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs at least daily by 8 am. Approximately 20 minutes of monitoring time are lost during daily calibration.

7. Indicate CEM calibration/maintenance schedule:

- Twice daily automatic calibration (zero and upscale calibration drift determination)
- Initial performance specification testing (CD and RATA)
- Quarterly cylinder gas audits (CGAs)

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0 ppm To: 30 ppm

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 5

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: 50:1

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Thermoelectric sample cooler

14. Does Appendix F in 40 CFR Part 60 apply? ☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 8 Smelt Dissolving Tank (X015)

Source Classification Code(s): 30700105

Equipment manufacturer's information

Make: TBD Model: TBD

Rated process capacity (manufacturer's or designer's guaranteed maximum): 156.3 TBLS/hr at the No. 8 Recovery Furnace

Manufactured date: TBD[a]

Proposed installation date: TBD

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

[a] The No. 8 Smelt Dissolving Tank is proposed for replacement as part of this application.

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Smelt			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Green Liquor		

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
X012[b]	Point	☐	453.558	3,494.350			375		68.9	14.0		101.5	937.121	412
X015	Point	☐	TBD	TBD			TBD		TBD	TBD		TBD	TBD	TBD
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

[b] During typical operation, the No. 8 Smelt Dissolving Tank will vent to the No. 8 Recovery Furnace. In limited circumstances, the No. 8 Smelt Dissolving Tank will be required to vent through its dedicated scrubber. Please refer to the application for additional detail.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X015[3]	☐	PM			22.81	0.55	NCASI Emission Factor	0.2 lb/ton BLS
		PM_{10}			24.69	0.59	NCASI Emission Factor	
		$PM_{2.5}$			24.69	0.59	NCASI Emission Factor	
		SO_2	0.94	0.02			NCASI Emission Factor	
		CO	1.28	0.03			NCASI Emission Factor	
		VOC	0.20	<0.01			NCASI Emission Factor	
		Lead	<0.01	<0.01			NCASI Emission Factor	
		TRS			2.92	0.07	NCASI Emission Factor	0.033 lb/BTLS
		H_2S			1.84	0.04	NCASI Emission Factor	

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

[3] The emission rates shown reflect the limited operating scenario in which the No. 8 Smelt Dissolving Tank vents through its dedicated stack.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☐ Electrostatic precipitator
- ☐ Afterburner
- ☐ Baghouse
- ☐ Cyclone
- ☐ Multiclone
- ☐ Absorber
- ☐ Adsorber
- ☐ Condenser
- ☐ Wet Suppression
- ☐ Thermal Oxidizer

Wet scrubber (kind): Venturi

Other (describe):

3. Control device manufacturer's information:

Name of manufacturer TBD Model No. TBD

4. Emission source(s) to which device is installed or is to be installed:

No. 8 Smelt Dissolving Tank (X015)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	PM	TRS/H2S	
Mass emission rate (#/hr)			
Uncontrolled			
Designed.....	22.81	2.92	
Manufacturer's guaranteed			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	0.2 lb/TBLS	0.033 lb/TBLS	
Manufacturer's guaranteed			
Removal efficiency (%)			
Designed.....			
Manufacturer's guaranteed			

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			
Temperature (ºF)			
Velocity (ft/sec)			
Percent moisture			

Pressure drop across device: _____ (inches H_20)

7. Stack dimensions:

Stack No. & Description: X015 – No. 8 Smelt Dissolving Tank Scrubber Outlet Stack Type: _____

Stack UTM Coordinate (E-W)	TBD	(km)	Stack UTM Coordinate (N-S)	TBD	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	TBD	(ft)	Gas temperature at exit	TBD	(ºF)
Inside diameter at exit (round)	TBD	(ft)	Gas Velocity	TBD	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	TBD	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

12. By-pass (if any) is to be used and when:

In limited operating scenarios (e.g., when performing maintenance on the No. 8 Smelt Dissolving Tank's condenser or 'clean air' fan), the exhaust from the No. 8 Smelt Dissolving Tank will vent through the scrubber directly to atmosphere. The ARC Mill requests that the flexibility to vent from the scrubber outlet for up to 24 hours in any semiannual period while the smelt dissolving tank is receiving smelt (e.g., within 30 minutes of establishing black liquor solids firing in the No. 8 Recovery Furnace).

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume				
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 8 Mill Liquor Recovery Area Sources[a] (X033)

Source Classification Code(s): 30700124

Equipment manufacturer's information

Make: Varies Model: Varies

Rated process capacity (manufacturer's or designer's guaranteed maximum): 156.3 TBLS/hr at the No. 8 RF

Manufactured date: N/A

Proposed installation date: N/A

Original installation date (if existing): 1991[b]

Reconstruction/Modification date (if applicable): TBD[c]

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) None

[a] Includes the following equipment associated with the No. 8 Mill Liquor Recovery Area: Soap Skimmer Tanks (424 and 425), Intermediate Black Liquor Tanks (426 and 430), Salt Cake Mix Tank (310), Weak Black Liquor Tank (309), Boilout Tank (432), Soap Storage Tank (429), Heave Black Liquor Storage Tank (431), Black Liquor Dump Tank (479), and Black Liquor Spill Tank.

[b] Most equipment.

[c] With the No. 7 Mill Transformation Project, a second Intermediate Black Liquor Tank will be added.

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Varies			

Notes:

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Green Liquor		

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions: None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												
		☐												

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
309 and 432 (combined)	☐	VOC	1.07	4.69			NCASI Emission Factor	
		TRS	0.41	1.80			NCASI Emission Factor	
		H_2S	0.01	0.03			NCASI Emission Factor	
310	☐	VOC	This tank vents to the No. 8 Recovery Furnace economizer or No. 7 Smelt Dissolving Tank scrubber.					
424 and 425 (combined)	☐	VOC	0.23	0.99			NCASI Emission Factor	
		TRS	0.15	0.65			NCASI Emission Factor	
		H_2S	0.10	0.43			NCASI Emission Factor	
426	☐	VOC	0.11	0.49			NCASI Emission Factor	
		TRS	0.07	0.33			NCASI Emission Factor	
		H_2S	0.05	0.21			NCASI Emission Factor	
429	☐	VOC	0.11	0.49			NCASI Emission Factor	
		TRS	0.07	0.33			NCASI Emission Factor	
		H_2S	0.05	0.21			NCASI Emission Factor	
430	☐	VOC	0.11	0.49			NCASI Emission Factor	
		TRS	0.07	0.33			NCASI Emission Factor	
		H_2S	0.05	0.21			NCASI Emission Factor	
431 and 479 (combined)	☐	VOC	0.23	0.99			NCASI Emission Factor	
		TRS	0.15	0.65			NCASI Emission Factor	
		H_2S	0.10	0.43			NCASI Emission Factor	

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/20/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-			

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Crude Tall Oil (CTO) Plant (X321)

Source Classification Code(s): 30700136

Equipment manufacturer's information

Make: TBD[a] Model: TBD[a]

Rated process capacity (manufacturer's or designer's guaranteed maximum): 7.6 TTO/hr (if replaced/modified)

Manufactured date: TBD[a]

Proposed installation date: TBD[a]

Original installation date (if existing): TBD

Reconstruction/Modification date (if applicable): TBD

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

[a] Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be modified or replaced as part of the project.

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Soap			
Sulfuric Acid			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Crude Tall Oil	60,352	TTO/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

There is no limitation on source operation that affects emissions or work practice standards.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
TBD		☐												
		☐												
		☐												
		☐												
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* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
319	☐	VOC	--	0.19			AP-42	
320 (new – if replaced/modified)	☐	VOC	21.98	87.51	21.98	3.50	NCASI Emission Factor	Routed to the HVLC System
		TRS	0.44	1.77	0.44	0.07		
		H_2S	0.21	0.85	0.21	0.03		
321/497 (existing – if affected only)	☐	VOC			19.33	84.68	NCASI Emission Factor	
		TRS			0.39	1.71		
		H_2S			0.19	0.83		
469, 470, 472, 477, 500, 501, 502 (combined)	☐	VOC	0.79	3.46			NCASI Emission Factor	
		TRS	0.52	2.28				
		H_2S	0.34	1.50				
475 (new) or 474 (existing)	☐	VOC	0.04	0.15			NCASI Emission Factor	0.15 tpy
		TRS	<0.01	<0.01				0.01 tpy
476a and 476b (combined)	☐	VOC	0.07	0.30			NCASI Emission Factor	
		TRS	<0.01	<0.01				
498	☐	VOC	<0.01	<0.01			NCASI Emission Factor	
	☐							
	☐							

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 6/4/2025

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☐ Electrostatic precipitator
- ☐ Afterburner
- ☐ Baghouse
- ☐ Cyclone
- ☐ Multiclone
- ☐ Absorber
- ☐ Adsorber
- ☐ Condenser
- ☐ Wet Suppression
- ☐ Thermal Oxidizer

Wet scrubber (kind): TBD[a]

Other (describe):

3. Control device manufacturer's information:

Name of manufacturer: TBD Model No. TBD

4. Emission source(s) to which device is installed or is to be installed:

Crude Tall Oil (CTO) Plant (X321)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	TRS	H_2S	
Mass emission rate (#/hr)			
Uncontrolled			
Designed.....	0.44[b]	0.21[b]	
Manufacturer's guaranteed			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....			
Manufacturer's guaranteed			
Removal efficiency (%)			
Designed.....			
Manufacturer's guaranteed			

[a] Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be modified or replaced.

[b] Emission rates shown are at outlet of scrubber. These rates represent emission at the outlet of the scrubber, prior to the HVLC system.

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			
Temperature (ºF)			
Velocity (ft/sec)			
Percent moisture			

Pressure drop across device: _____ (inches H_20)

7. Stack dimensions:

Stack No. & Description: TBD Stack Type: Point

Stack UTM Coordinate (E-W)	TBD	(km)	Stack UTM Coordinate (N-S)	TBD	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	TBD	(ft)	Gas temperature at exit	TBD	(ºF)
Inside diameter at exit (round)		(ft)	Gas Velocity	TBD	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	TBD	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

12. By-pass (if any) is to be used and when:

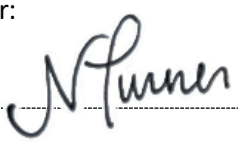
13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume				
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature:  Date: 6/4/2025

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Wastewater Treatment System (including Cooling Towers) (704)

Source Classification Code(s): 30700121

Equipment manufacturer's information

Make: Varies Model: Varies

Rated process capacity (manufacturer's or designer's guaranteed maximum):

Manufactured date: 1978

Proposed installation date: N/A

Original installation date (if existing): 1978

Reconstruction/Modification date (if applicable):

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
No. 7 Mill process effluent			
No. 8 Mill process effluent			
Sanitary sewer effluent			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft^3				
L. P. Gas		Btu/ft^3				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Treated wastewater	1,325,185	ADTFP/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached).

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (ºF)
			E-W (km)	N-S (km)	LAT	LONG								
Fugitive	Fugitive													

* Std temperature is 68ºF - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
704a	☒	PM	4.07	17.81			Mass Balance	
	☒	PM_{10}	1.92	8.42				
	☒	$PM_{2.5}$	0.01	0.04				
704b	☒	PM	3.15	13.78				
	☒	PM_{10}	1.74	7.63				
	☒	$PM_{2.5}$	0.01	0.03				
704c	☒	PM	5.43	23.80				
	☒	PM_{10}	2.43	10.64				
	☒	$PM_{2.5}$	0.01	0.05				
704 (fugitive)	☒	VOC	--	2,083			TRI calculations based on pollutant concentrations	
	☒	TRS	--	4.59				
	☒	H_2S	--	1.78				

13. On a separate sheet, provide a flow diagram to:
(1) Illustrate input of raw materials,
(2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
(3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 12/17/2024

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: N/A

Please refer to the application narrative.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): No. 8 Lime Kiln (X014)

Source Classification Code(s): 30700106

Equipment manufacturer's information

Make: Allis Chalmers Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 22.5 TCaO/hr

Manufactured date: 1990

Proposed installation date: N/A

Original installation date (if existing): 1991

Reconstruction/Modification date (if applicable): 2005

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any) N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Lime Mud			
LVHC Gases			

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM Form 104): 145 MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Fuel Oil	136.2[b]	Btu/gal	0.25	N/A	No. 2 – No. 5	
Natural Gas	1,019[b]	Btu/ft^3				

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Biodiesel	128	Btu/kgal				
Glycerin	138[c]	Btu/kgal				
Tall Oil	129.5	Btu/kgal				

7. Products of process or unit:

Products	Quantity/year	Units of production
Lime	197,100	Tons (as CaO)

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

None.

9. Are you requesting a limitation for permitting? ☐ Yes ☒ No if "yes", specify the limit and affected unit(s):

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached).

[b] Average of samples collected between January 2014 and April 2024.
[c] Assumed to be similar to No. 2 Fuel Oil.

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (Feet)	GEP Stack Height (Feet)	Base Elevation (Feet)	Inside Diameter for Round Opening (Feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/ Sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp. (°F)
			E-W (km)	N-S (km)	LAT	LONG								
X014	Point	☐	453.487	3,494.070	N/A	N/A	350	N/A	68.9	5	N/A	64.8	76,329	452
		☐												
		☐												
		☐												
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		☐												
		☐												

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if Fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
X014	☐	Filterable PM (Natural Gas Firing)			14.6	63.9	BACT Limit	0.035 gr/dscf @10% O_2
		Total PM_{10} (Natural Gas Firing)			16.6	72.5	BACT Limit and NCASI Emission Factor	N/A
		Total $PM_{2.5}$ (Natural Gas Firing)			16.6	72.5	BACT Limit and NCASI Emission Factor	N/A
		Filterable PM (Fuel Oil Firing)			27.8	121.9	NESHAP and BACT Limit	0.064 gr/dscf @10% O_2
		Total PM_{10} (Fuel Oil Firing)			29.8	130.4	NESHAP Limit and NCASI Emission Factor	N/A
		Total $PM_{2.5}$ (Fuel Oil Firing)			29.8	130.4	NESHAP Limit and NCASI Emission Factor	N/A
		SO_2	25.3	110.8			BACT Limit	25.3/ 50 ppmvd @10% O_2
		NO_X	36.3	159.0			BACT Limit	100 ppmvd @ 10 % O_2
		CO	11.5	50.4			BACT Limit	52 ppmvd @ 10 % O_2
		VOC	16.3	71.4			BACT Limit	78 ppmvd @ 10 % O_2
		TRS	2.2	9.4			BACT Limit	8 ppmvd @ 10 % O_2
		SAM	1.3	5.5			Proposed BACT Limit	1.3 lb/hr
		Lead	<0.01	<0.01			NCASI Emission Factor	N/A
		GHG	Refer to emission calculations in Appendix D				N/A	N/A

13. On a separate sheet, provide a flow diagram to:
    (1) Illustrate input of raw materials,
    (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
    (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Please refer to Appendix E for the associated process flow diagram.

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No
(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 6/4/2024

PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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			-					-				

Do not write in this space

1. Name of facility or organization Alabama River Cellulose LLC

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- ☐ Settling chamber
- ☒ Electrostatic precipitator
- ☐ Afterburner
- ☐ Baghouse
- ☐ Cyclone
- ☐ Multiclone
- ☐ Absorber
- ☐ Adsorber
- ☐ Condenser
- ☐ Wet Suppression
- ☐ Thermal Oxidizer

Wet scrubber (kind): _____

Other (describe): _____

3. Control device manufacturer's information:

Name of manufacturer Boliden Allis Model No. Custom

4. Emission source(s) to which device is installed or is to be installed:
No. 8 Lime Kiln (X014)

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Filterable PM – *Natural Gas*	Filterable PM – *Fuel Oil*	
Mass emission rate (#/hr)			
Uncontrolled	4,867[1]	4,638[1]	
Designed.....	14.6	27.8	
Manufacturer's guaranteed	N/A	N/A	
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	0.035 gr/dscf @ 10% O_2	0.064 gr/dscf @ 10% O_2	
Manufacturer's guaranteed	N/A	N/A	
Removal efficiency (%)			
Designed.....	99.7	99.4	
Manufacturer's guaranteed	99.7	99.4	

[1]Calculated based on controlled emission rate and design control efficiency.

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68ºf, 29.92" hg)			
(ACFM, existing conditions)			76,329
Temperature (°F)			452
Velocity (ft/sec)			64.8
Percent moisture			

Pressure drop across device: _____ (inches H_2O)

7. Stack dimensions:

Stack No. & Description: No. 8 Lime Kiln Stack Stack Type: Point

Stack UTM Coordinate (E-W)	453.487	(km)	Stack UTM Coordinate (N-S)	3,494.070	(km)
Latitude		(LAT)	Longitude		(LONG)
Height above grade	350	(ft)	Gas temperature at exit	452	(°F)
Inside diameter at exit (round)	5	(ft)	Gas Velocity	64.8	(ft/Sec)
Inside area at exit (not round)		(ft^2)	Volume of gas discharged	76,329	(ACFM)
Base Elevation	68.9	(ft)	GEP Stack Height		(ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

Please refer to Appendix E for the associated process flow diagram.

9. Enclosed are:

☐ Blueprints ☐ Particle size distribution report

☐ Manufacturer's literature ☐ Size efficiency- curves

☐ Emissions test of existing installation ☐ Fan curves

Other: _____

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

Continuous Opacity Monitoring System (COMS)

12. By-pass (if any) is to be used and when:

Isolating chamber for inspection and/or maintenance

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume				
Composition				
Is waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

n dust is recycled to the lime kiln for recovery of chemicals.

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 6/4/2025

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Other (explain):
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☒ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs

3. CEMS Manufacturer's Information:

Name of manufacturer: Ametek-Land

Model number: 4500 Mark III

Serial number: 205655

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Ametek-Land

Serial number: 205655

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Lime Kiln ESP Exhaust (X014)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs daily by 8 AM. Approximately 10 minutes are lost during daily calibration.

7. Indicate CEM calibration/maintenance schedule:

Daily automatic calibration. Weekly, monthly, quarterly, semi-annual, and annual maintenance are conducted as required by manufacturer's O&M manual.

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☒	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 100%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 1

11. Insitu/dilution extractive/extractive? (type): Insitu

12. If dilution extractive, give approximate dilution rate: N/A

13. Conditioning system? ☐ YES ☒ NO

If yes, what type?

14. Does Appendix F in 40 CFR Part 60 apply? ☒ YES ☐ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 6/4/2025

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☒ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Flow Rate
- ☐ VOCs
- ☐ Other (explain):

3. CEMS Manufacturer's Information:

Name of manufacturer: City Technology

Model number: 70X

Serial number: N/A

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Automated Control Systems, Inc./ CemMaster PC 2.0

Serial number: 08039C-DAS

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Lime Kiln ESP Exhaust (X014)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs at least daily by 8 AM. Approximately 10 minutes are lost during each daily calibration event.

7. Indicate CEM calibration/maintenance schedule:

- Daily automatic calibration (zero and upscale calibration drift determination)
- Initial performance specification testing (CD and RATA)
- Quarterly cylinder gas audits (CGAs)

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☒	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0% To: 25%

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 3

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: 50:1

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Vortex Cooling System - Dry

14. Does Appendix F in 40 CFR Part 60 apply?

☐ YES ☒ NO

Name of person preparing application: Nikki Turner

Company of preparer: Alabama River Cellulose LLC

Signature: N Turner Date: 6/4/2025

PERMIT APPLICATION FOR CONTINUOUS EMISSION MONITORING SYSTEMS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				

Do not write in this space

1. Name of facility or organization: Alabama River Cellulose LLC

2. List pollutant or parameter the continuous emission monitoring system is measuring:

- ☐ Sulfur dioxide
- ☐ Nitrogen oxides
- ☐ PM 10
- ☐ Oxygen
- ☐ Pressure
- ☐ Carbon dioxide
- ☒ Total reduced sulfides
- ☐ Hydrogen sulfide
- ☐ Other (explain):
- ☐ Carbon monoxide
- ☐ Particulates
- ☐ Exhaust temperature
- ☐ Hydrogen chloride
- ☐ Opacity
- ☐ Temperature
  - ☐ Exhaust gas
  - ☐ Primary Chamber
  - ☐ Secondary Chamber
- ☐ Flow Rate
- ☐ VOCs

3. CEMS Manufacturer's Information:

Name of manufacturer: Teledyne API

Model number: 100E

Serial number: 1859

4. Data acquisition system to be used (data logger, strip chart, software, etc):

Name of manufacturer/software: Automated Control Systems, Inc./600

Serial number: 08039C-LK2

5. Indicate emission source to be monitored and the location of the specific CEM:

No. 8 Lime Kiln ESP Exhaust (X014)

6. Briefly describe the calibration and operational procedures to be used in operating the CEM (indicate estimate of time lost in calibrating, maintaining, repairing, etc.):

Automatic on-stack zero and span calibration occurs twice daily by 8 AM. Approximately 20 minutes are lost during each daily calibration event.

7. Indicate CEM calibration/maintenance schedule:

- Twice daily calibration (zero and upscale drift determination)
- Initial performance specification testing (CD and RATA)
- Quarterly cylinder gas audits (CGAs)

8. Check which program(s) apply to the unit with the monitor:

☒	NSPS	☒	SIP	☒	PSD	☐	BIF
☐	NESHAPS	☐	Acid Rain	☐	RCRA	☐	Enhanced Monitoring

9. Monitor span: From: 0 ppmv To: 30 ppmv

10. Performance protocol (from Appendix B in 40 CFR Part 60): Performance Specification 5

11. Insitu/dilution extractive/extractive? (type): Dilution Extractive

12. If dilution extractive, give approximate dilution rate: **N/A**

13. Conditioning system? ☒ YES ☐ NO

If yes, what type? Vortex Cooling System - Dry

14. Does Appendix F in 40 CFR Part 60 apply?

☐ YES ☒ NO

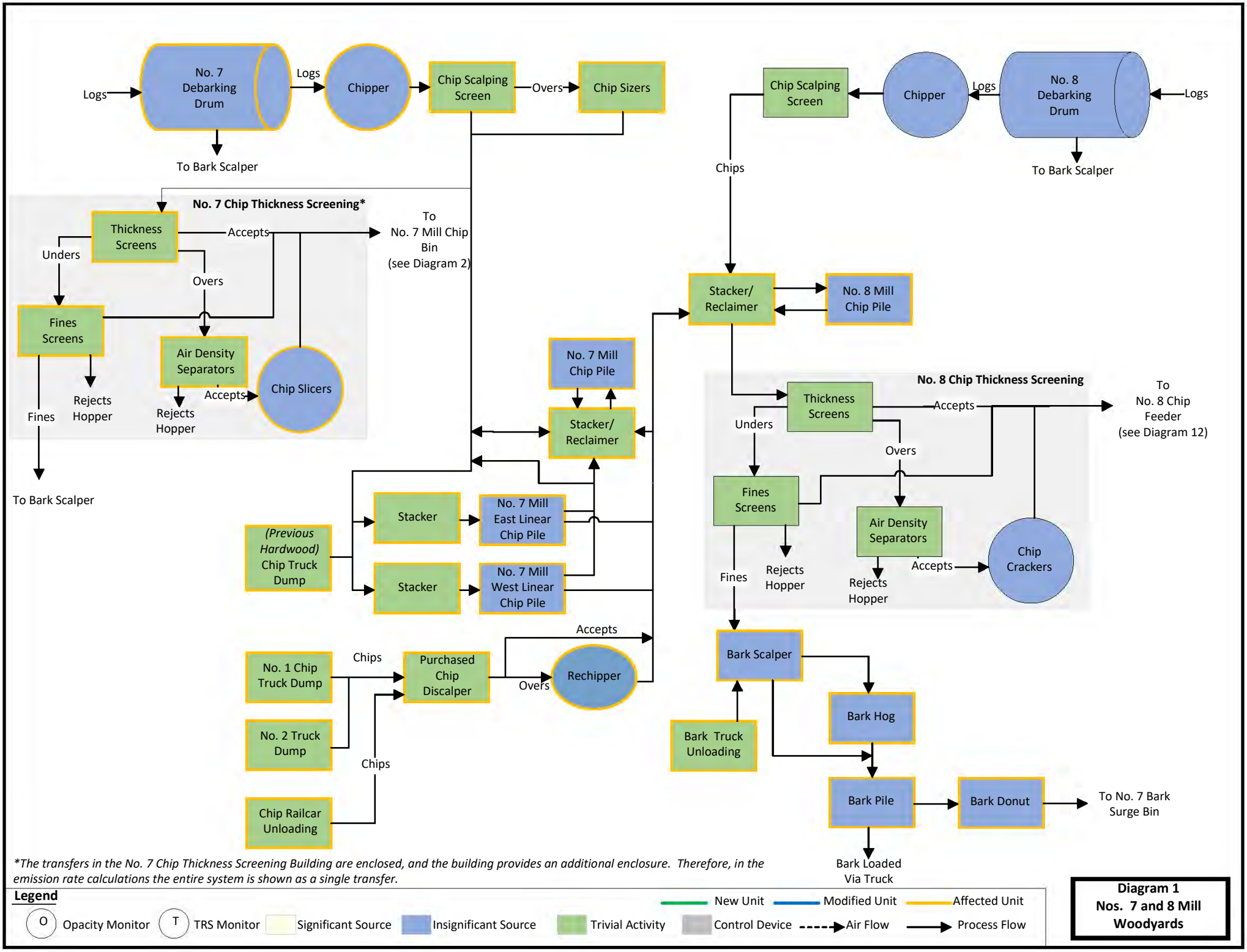
Name of person preparing application: Nikki Turner

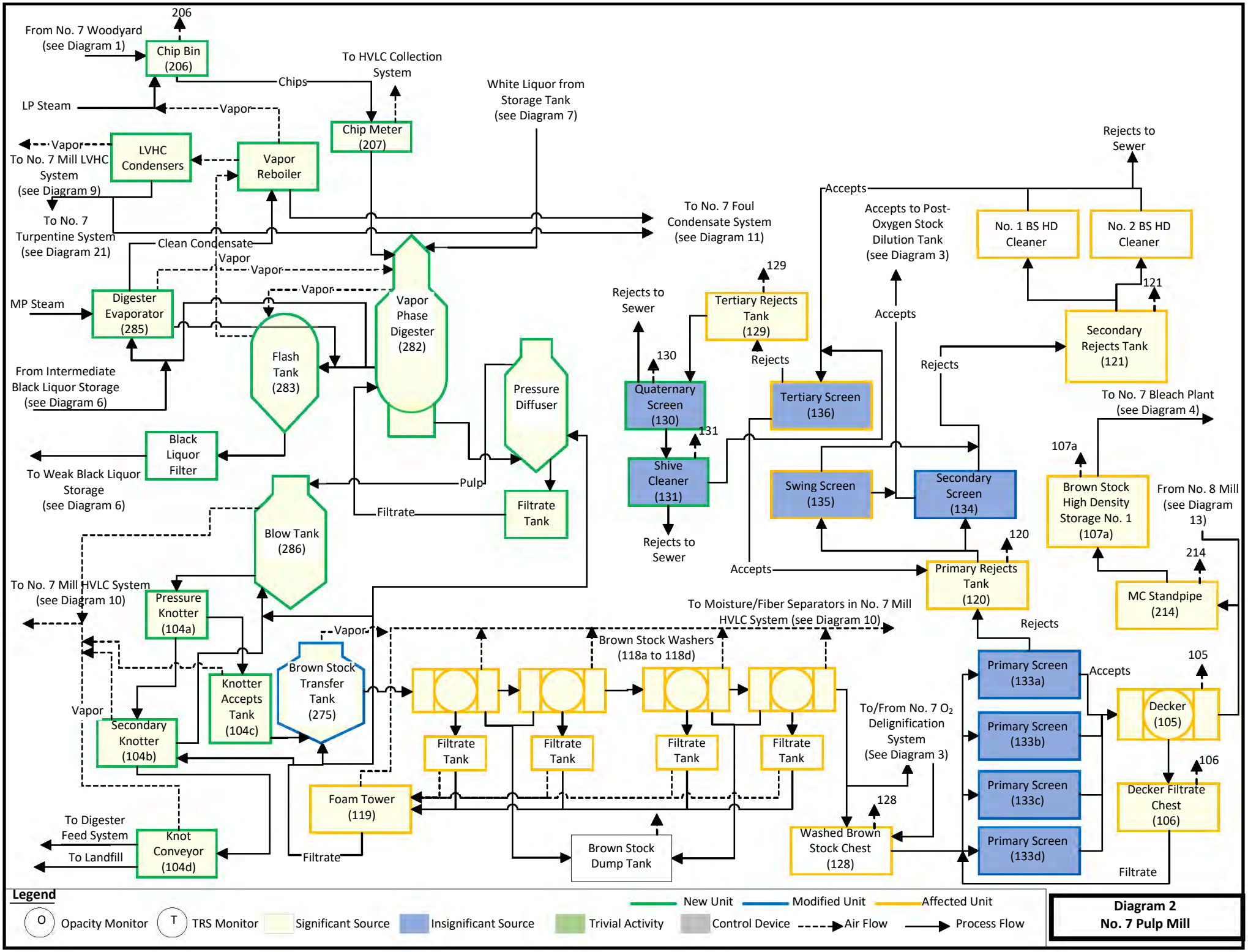
Company of preparer: Alabama River Cellulose LLC

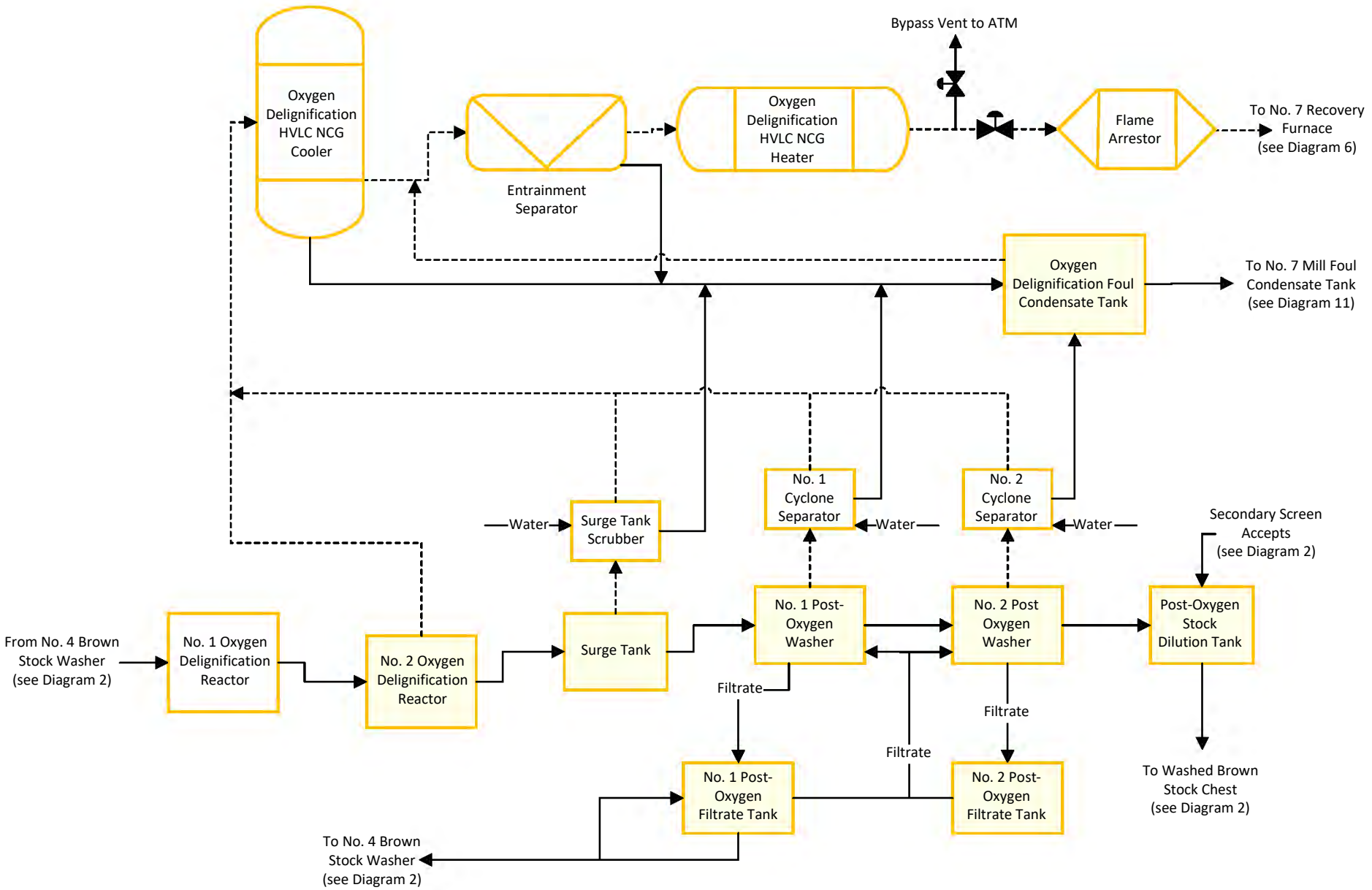
Signature: N Turner Date: 6/4/2025

APPENDIX E

PROCESS FLOW DIAGRAMS


Logs
No. 7 Debarking Drum
To Bark Scalper
Logs
Chipper
Chip Scalping Screen
Overs
Chip Sizers
No. 7 Chip Thickness Screening*
Thickness Screens
Accepts
To No. 7 Mill Chip Bin (see Diagram 2)
Unders
Overs
Fines Screens
Air Density Separators
Chip Slicers
Fines
Rejects Hopper
Rejects Hopper
Accepts
To Bark Scalper
Chip Scalping Screen
Chipper
Logs
No. 8 Debarking Drum
Logs
To Bark Scalper
Chips
Stacker/ Reclaimer
No. 8 Mill Chip Pile
No. 7 Mill Chip Pile
Stacker/ Reclaimer
No. 8 Chip Thickness Screening
Thickness Screens
Accepts
To No. 8 Chip Feeder (see Diagram 12)
Unders
Overs
Fines Screens
Air Density Separators
Chip Crackers
Fines
Rejects Hopper
Rejects Hopper
Accepts
Stacker
No. 7 Mill East Linear Chip Pile
(Previous Hardwood) Chip Truck Dump
Stacker
No. 7 Mill West Linear Chip Pile
Accepts
No. 1 Chip Truck Dump
Chips
Purchased Chip Discalper
Overs
Rechipper
No. 2 Truck Dump
Chips
Chip Railcar Unloading
Bark Scalper
Bark Hog
Bark Truck Unloading
Bark Pile
Bark Donut
To No. 7 Bark Surge Bin
Bark Loaded Via Truck
*The transfers in the No. 7 Chip Thickness Screening Building are enclosed, and the building provides an additional enclosure. Therefore, in the emission rate calculations the entire system is shown as a single transfer.
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 1
Nos. 7 and 8 Mill
Woodyards

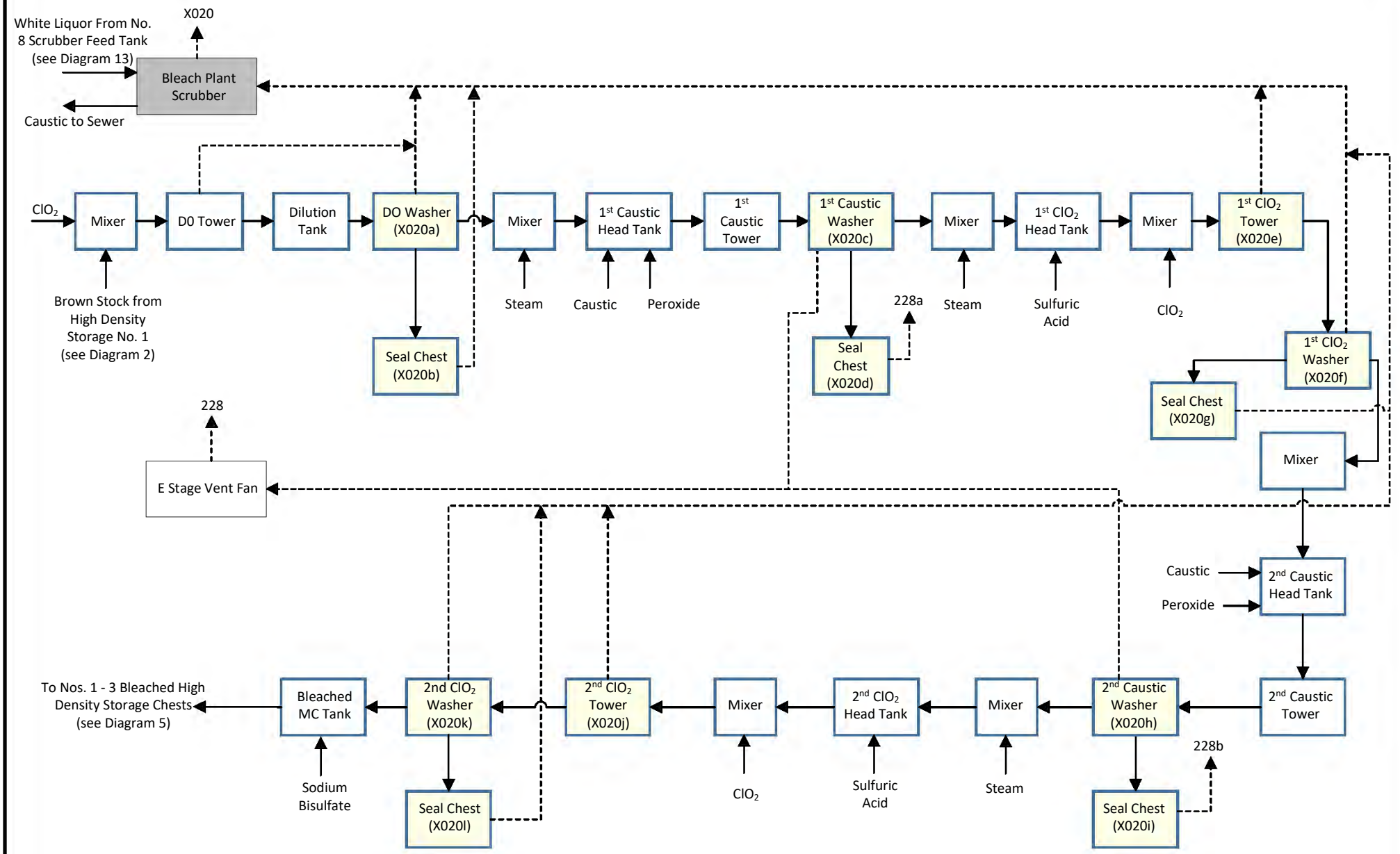

206
From No. 7 Woodyard (see Diagram 1)
Chip Bin (206)
Chips
To HVLC Collection System
LP Steam
Vapor
Chip Meter (207)
White Liquor from Storage Tank (see Diagram 7)
Vapor
To No. 7 Mill LVHC System (see Diagram 9)
LVHC Condensers
Vapor Reboiler
To No. 7 Turpentine System (see Diagram 21)
Clean Condensate
Vapor
To No. 7 Foul Condensate System (see Diagram 11)
Vapor
Vapor
MP Steam
Digester Evaporator (285)
Vapor Phase Digester (282)
Flash Tank (283)
From Intermediate Black Liquor Storage (see Diagram 6)
Pressure Diffuser
Black Liquor Filter
To Weak Black Liquor Storage (see Diagram 6)
Pulp
Filtrate
Filtrate Tank
Blow Tank (286)
To No. 7 Mill HVLC System (see Diagram 10)
Pressure Knotter (104a)
Vapor
Brown Stock Transfer Tank (275)
Knotter Accepts Tank (104c)
Vapor
Secondary Knotter (104b)
Foam Tower (119)
Filtrate
To Digester Feed System
To Landfill
Knot Conveyor (104d)
Brown Stock Washers (118a to 118d)
Filtrate Tank
Filtrate Tank
Filtrate Tank
Filtrate Tank
Brown Stock Dump Tank
To Moisture/Fiber Separators in No. 7 Mill HVLC System (see Diagram 10)
To/From No. 7 O_2 Delignification System (See Diagram 3)
128
Washed Brown Stock Chest (128)
Rejects to Sewer
129
Tertiary Rejects Tank (129)
Rejects
130
Quaternary Screen (130)
131
Shive Cleaner (131)
Rejects to Sewer
Tertiary Screen (136)
Swing Screen (135)
Secondary Screen (134)
Accepts
Accepts
Accepts to Post-Oxygen Stock Dilution Tank (see Diagram 3)
Rejects to Sewer
No. 1 BS HD Cleaner
No. 2 BS HD Cleaner
121
Secondary Rejects Tank (121)
Rejects
To No. 7 Bleach Plant (see Diagram 4)
107a
Brown Stock High Density Storage No. 1 (107a)
From No. 8 Mill (see Diagram 13)
214
MC Standpipe (214)
120
Primary Rejects Tank (120)
Accepts
Rejects
Primary Screen (133a)
Primary Screen (133b)
Primary Screen (133c)
Primary Screen (133d)
Accepts
105
Decker (105)
106
Decker Filtrate Chest (106)
Filtrate
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 2
No. 7 Pulp Mill



Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 3
No. 7 Mill Oxygen Delignification

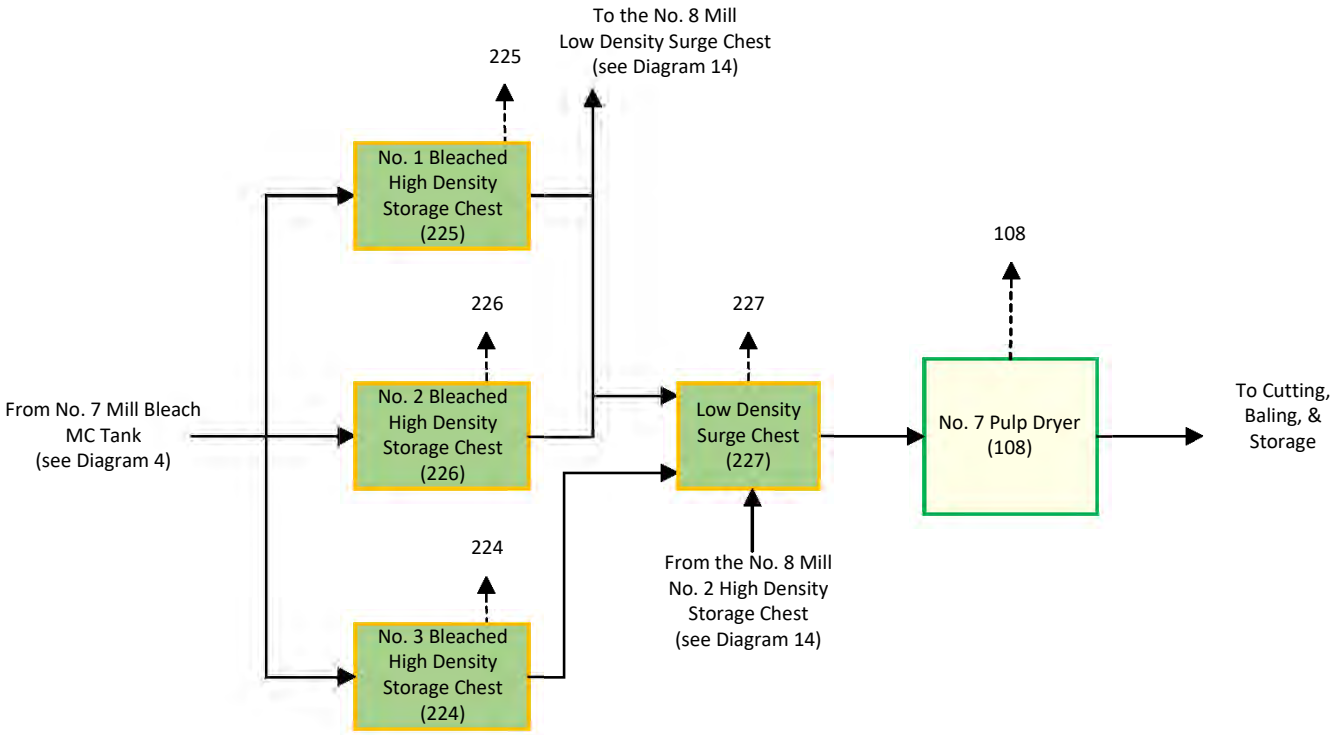


Not all components of the No. 7 Bleach Plant are expected have physical modifications as part of the project. However, since the collective emission unit will be modified, conservatively all individual components are shown as modified.

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 4
No. 7 Mill Bleach Plant

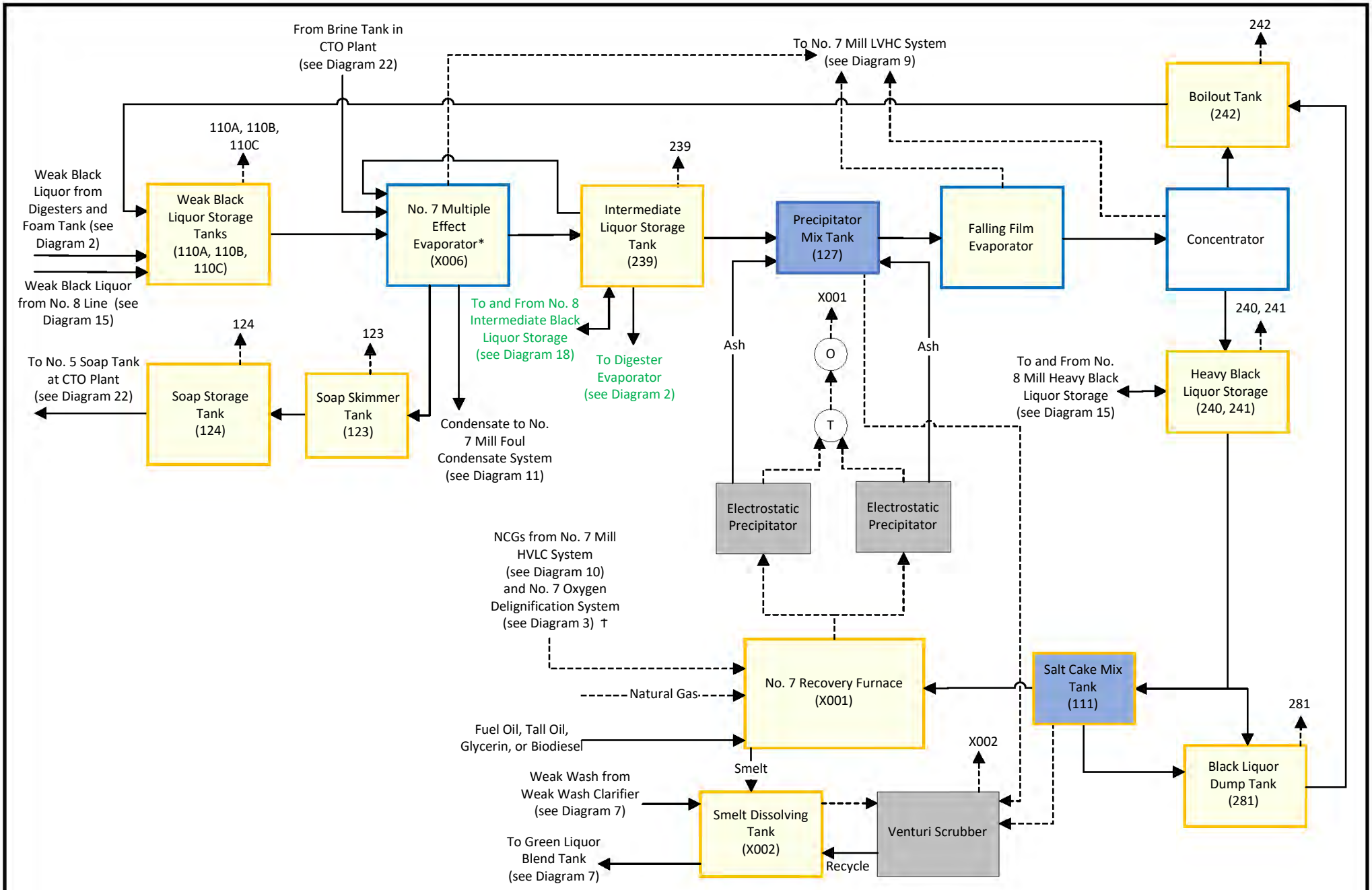


Note: The pulp dryer consists of various individual tanks and processes, the details of which have been omitted from the above diagram because the utilized emission factors include all the individual tanks and processes.

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 5
No. 7 Mill Pulp Dryer



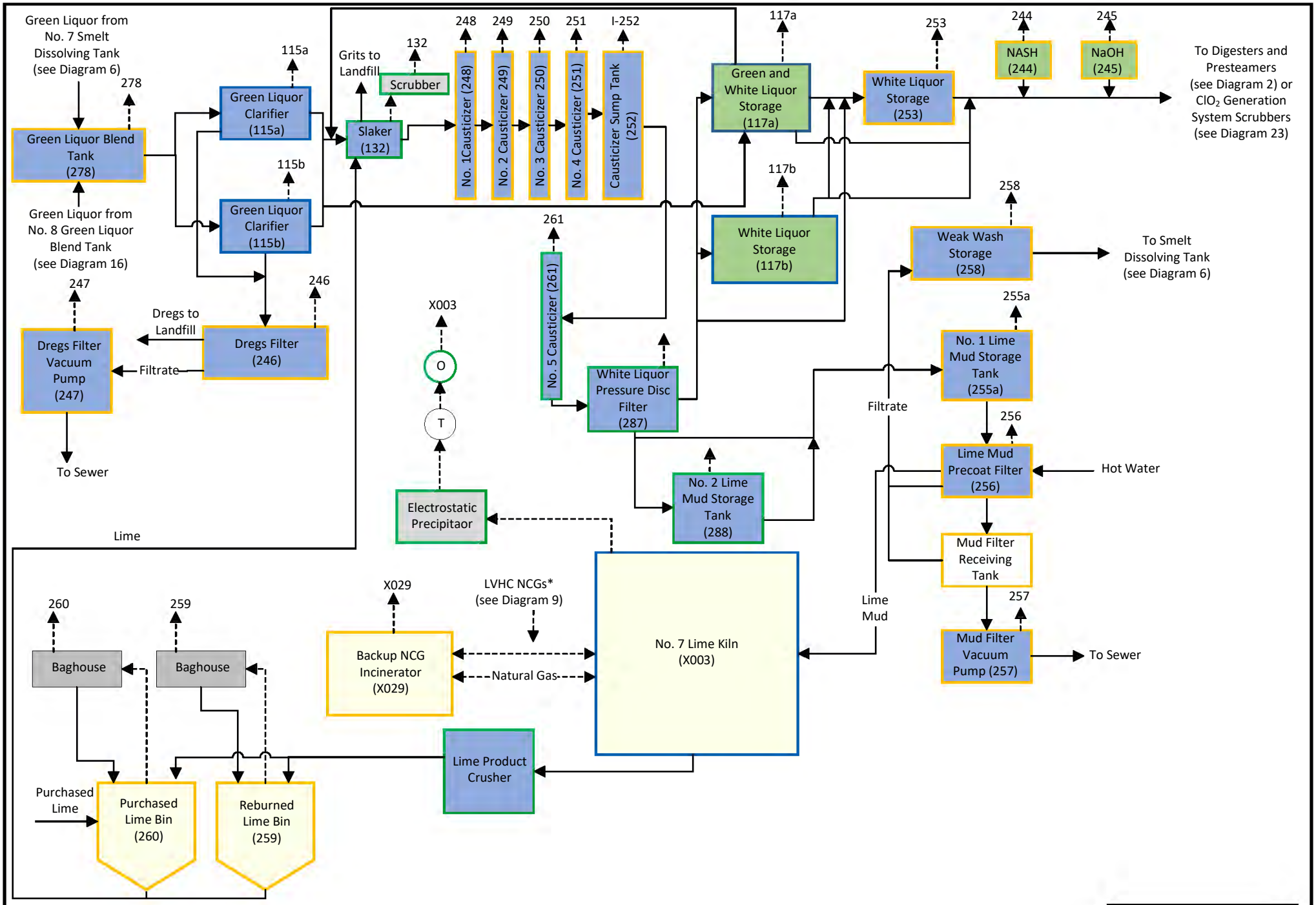
No physical changes are proposed for the No. 7 Multiple Effect Evaporator itself. However, changes are planned to the No. 7 evaporator system, which includes the falling film evaporator and concentrator.

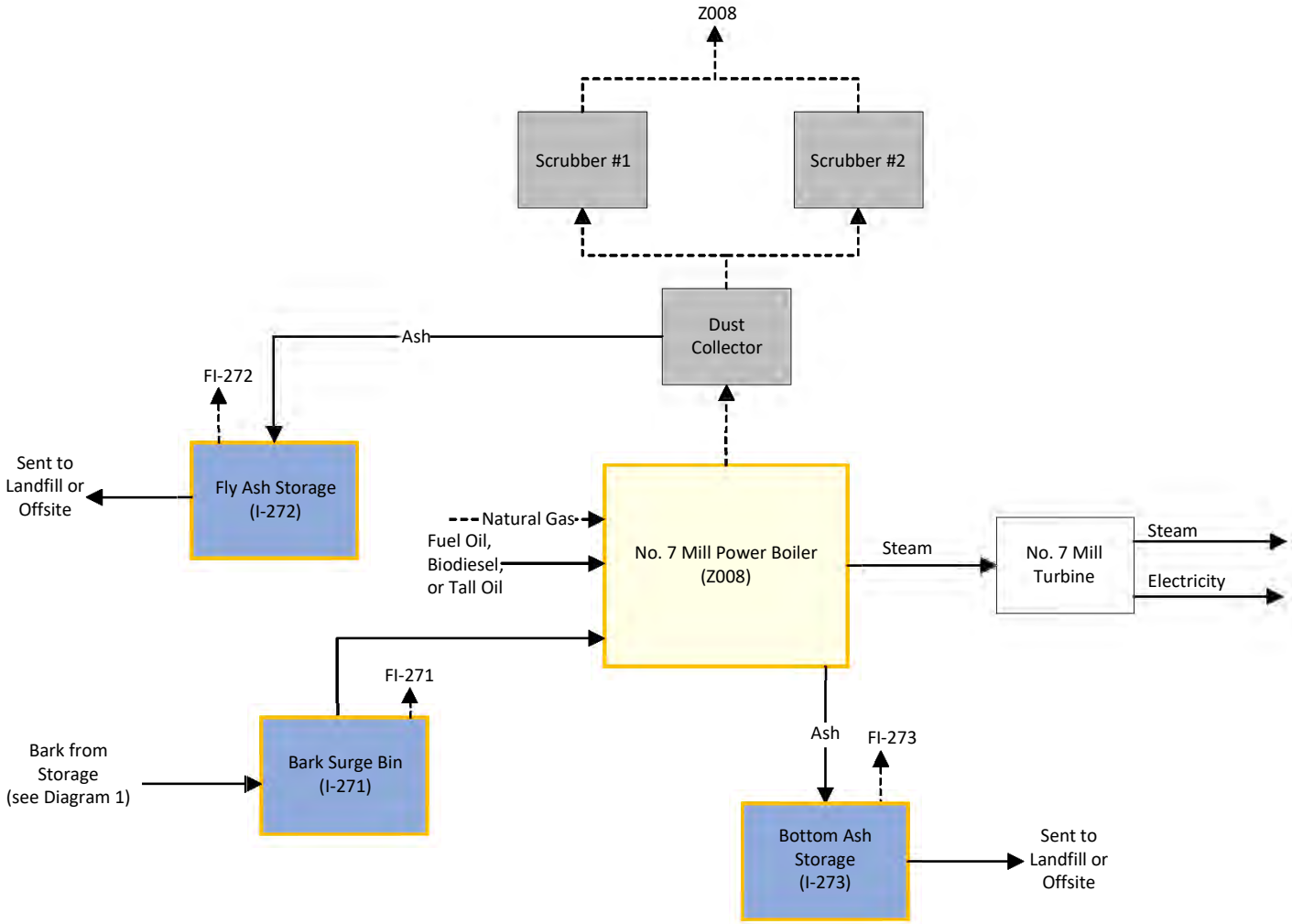
† As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases from the No. 7 Line will be sent to the No. 7 Recovery Furnace (in addition to the Nos. 7 and 8 Lime Kilns).

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 6
No. 7 Mill Liquor Recovery

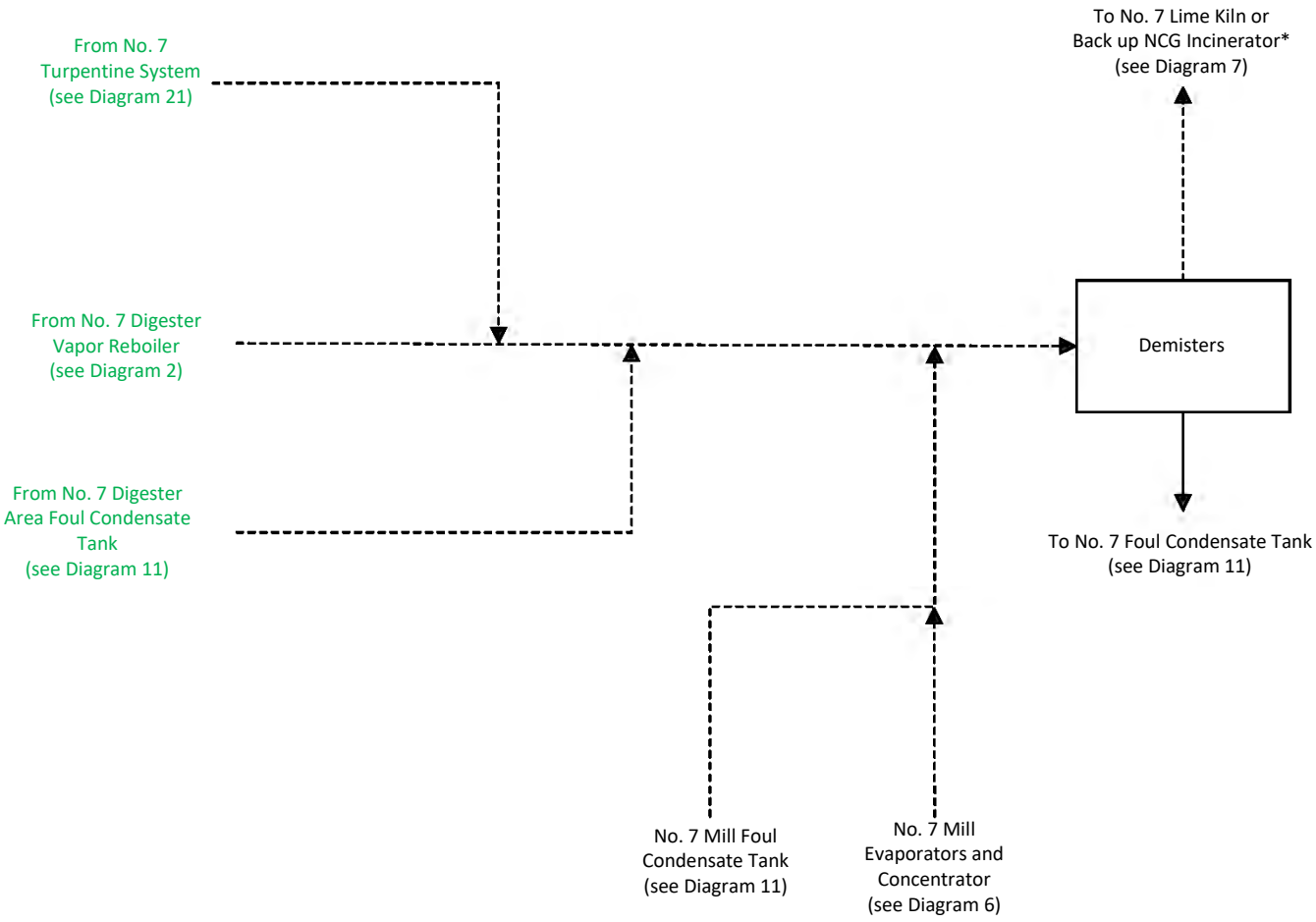

Green Liquor from No. 7 Smelt Dissolving Tank (see Diagram 6)
278
Green Liquor Blend Tank (278)
Green Liquor from No. 8 Green Liquor Blend Tank (see Diagram 16)
115a
Green Liquor Clarifier (115a)
115b
Green Liquor Clarifier (115b)
Grits to Landfill
132
Scrubber
Slaker (132)
248
249
250
251
I-252
No. 1Causticizer (248)
No. 2 Causticizer 249)
No. 3 Causticizer 250)
No. 4 Causticizer (251)
Causticizer Sump Tank (252)
117a
Green and White Liquor Storage (117a)
253
White Liquor Storage (253)
244
NASH (244)
245
NaOH (245)
To Digesters and Presteamers (see Diagram 2) or ClO2 Generation System Scrubbers (see Diagram 23)
117b
White Liquor Storage (117b)
258
Weak Wash Storage (258)
To Smelt Dissolving Tank (see Diagram 6)
261
No. 5 Causticizer (261)
247
Dregs Filter Vacuum Pump (247)
Dregs to Landfill
Filtrate
246
Dregs Filter (246)
To Sewer
X003
O
T
Electrostatic Precipitaor
White Liquor Pressure Disc Filter (287)
255a
No. 1 Lime Mud Storage Tank (255a)
Filtrate
256
Lime Mud Precoat Filter (256)
Hot Water
No. 2 Lime Mud Storage Tank (288)
Mud Filter Receiving Tank
257
Mud Filter Vacuum Pump (257)
To Sewer
Lime
X029
LVHC NCGs* (see Diagram 9)
Backup NCG Incinerator (X029)
Natural Gas
No. 7 Lime Kiln (X003)
Lime Mud
260
259
Baghouse
Baghouse
Lime Product Crusher
Purchased Lime
Purchased Lime Bin (260)
Reburned Lime Bin (259)
*As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases from the Nos. 7 and 8 Lines will be able to be sent to the No. 7 Lime Kiln.
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 7
No. 7 Recausticizing and Lime Kiln



Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 8
No. 7 Mill Power Boiler

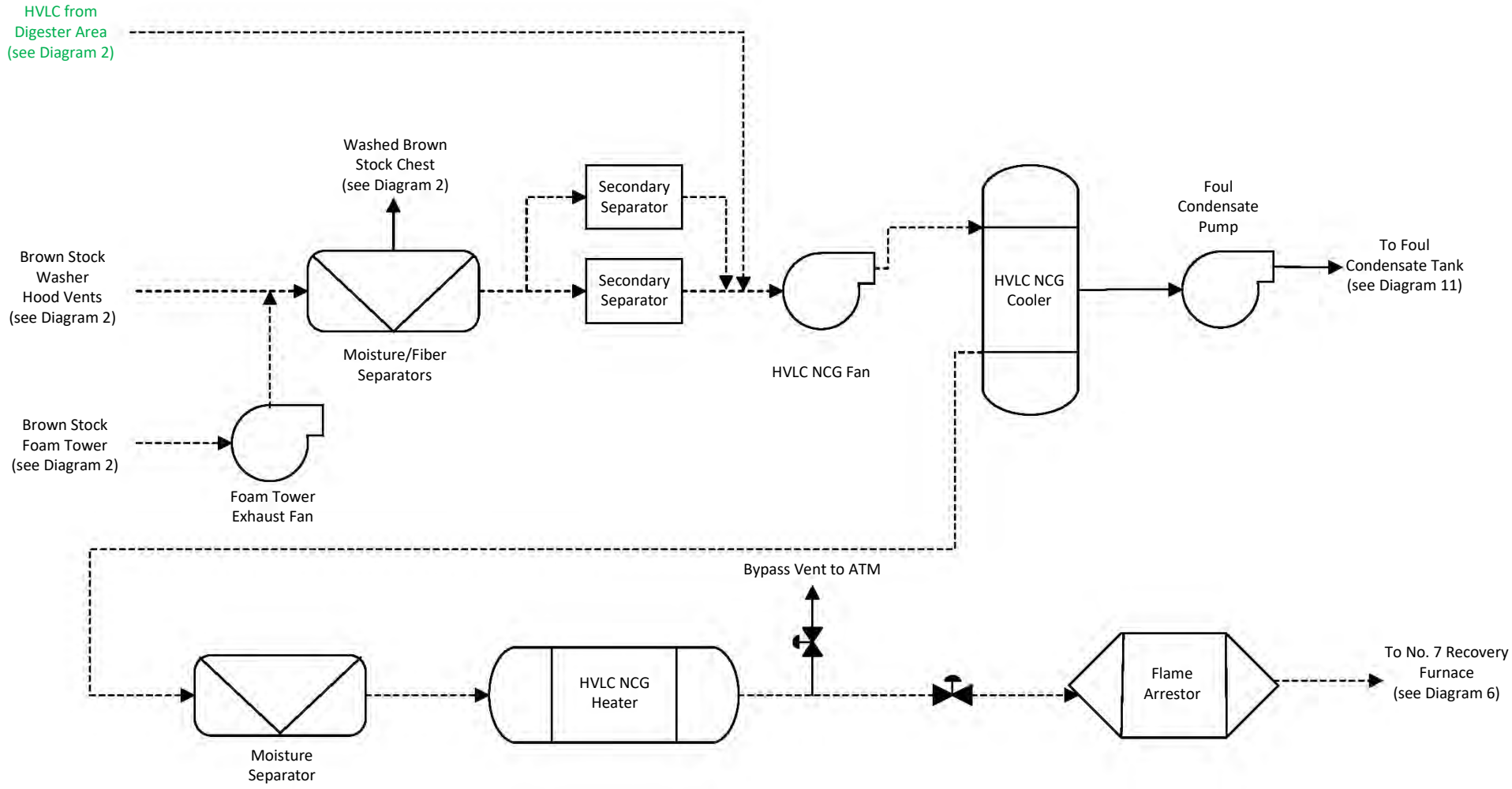


**As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases will be sent to the No. 7 Recovery Furnace (in addition to the Nos. 7 and 8 Lime Kilns).*

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

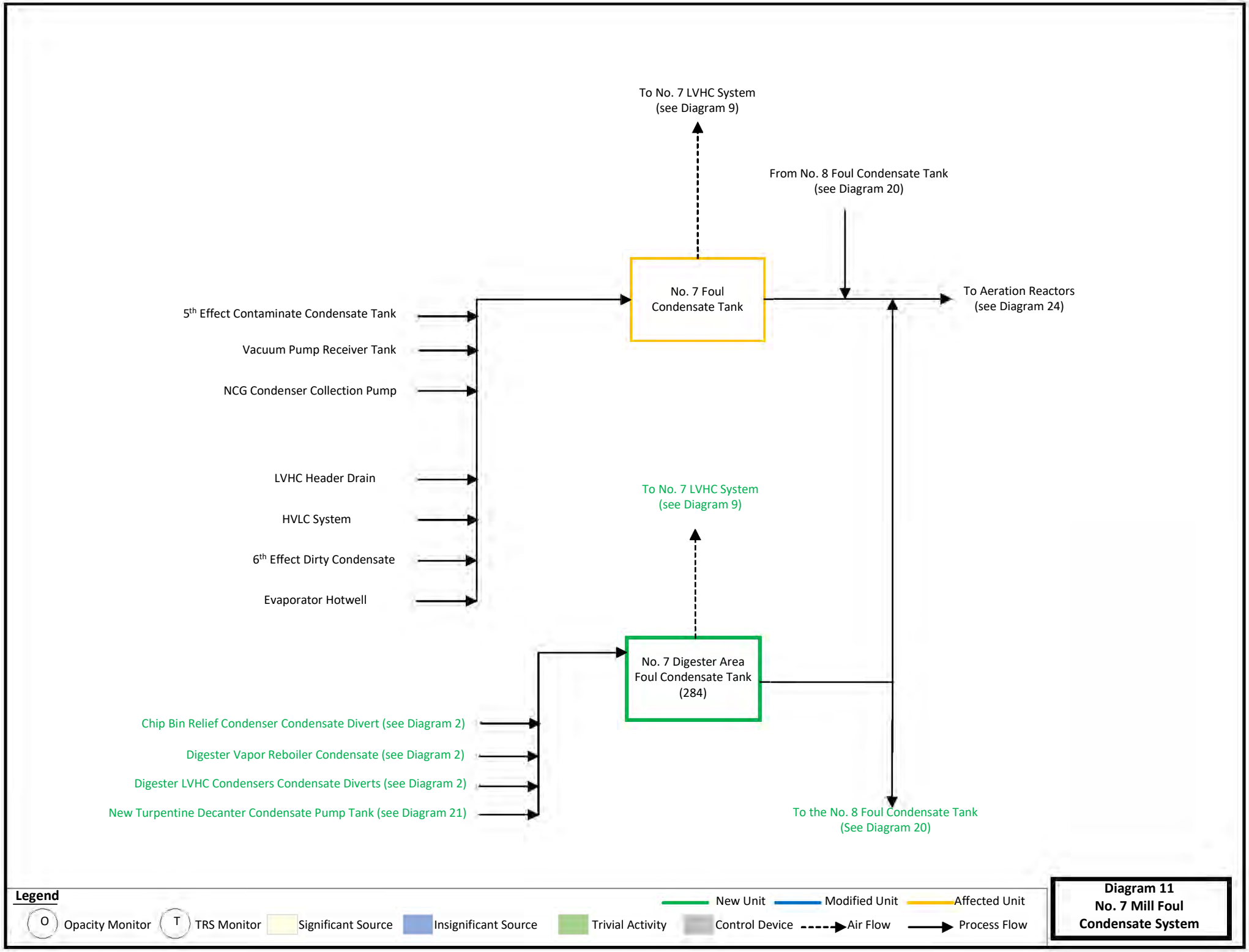
Diagram 9
No. 7 Mill LVHC System

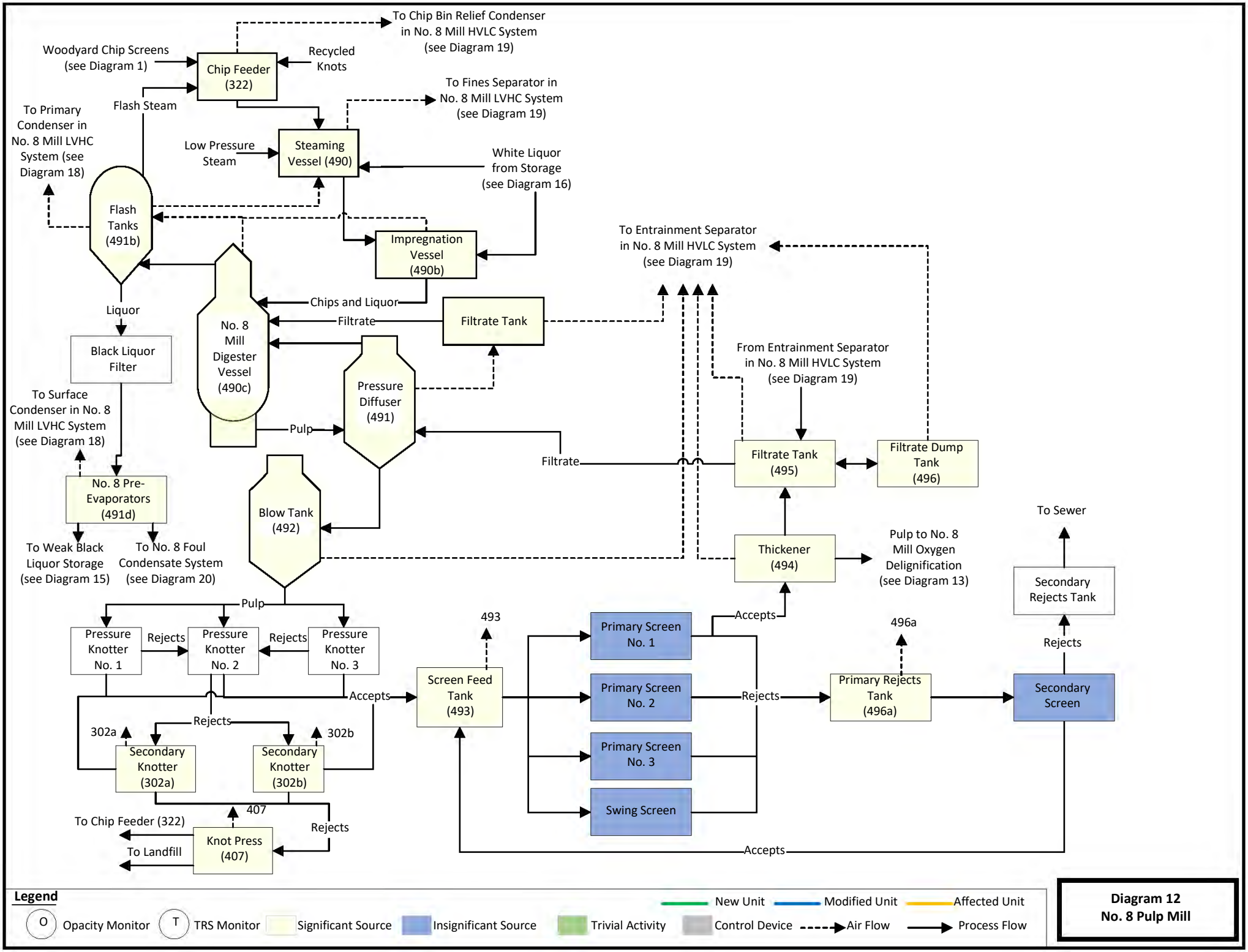


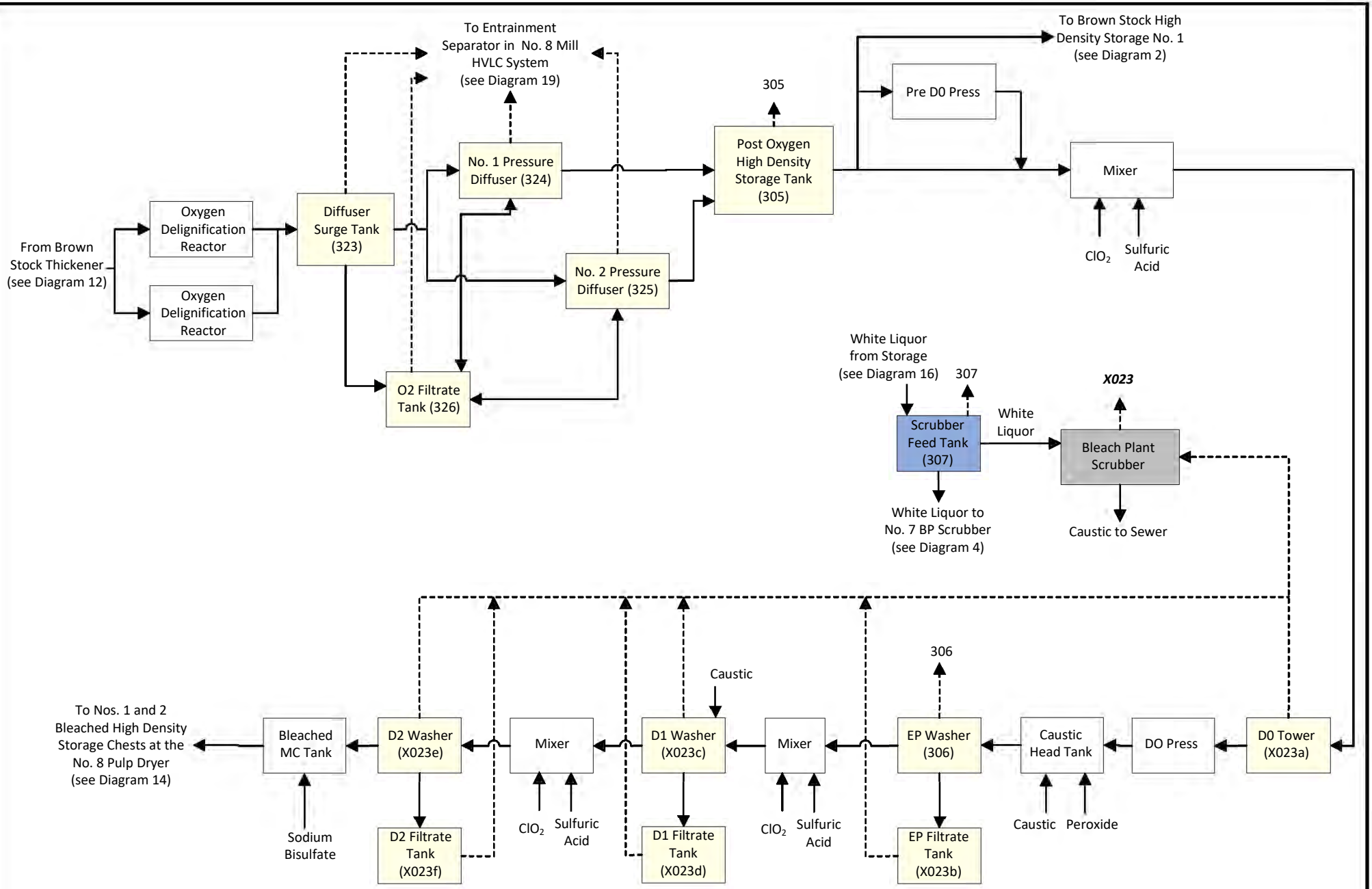
Legend

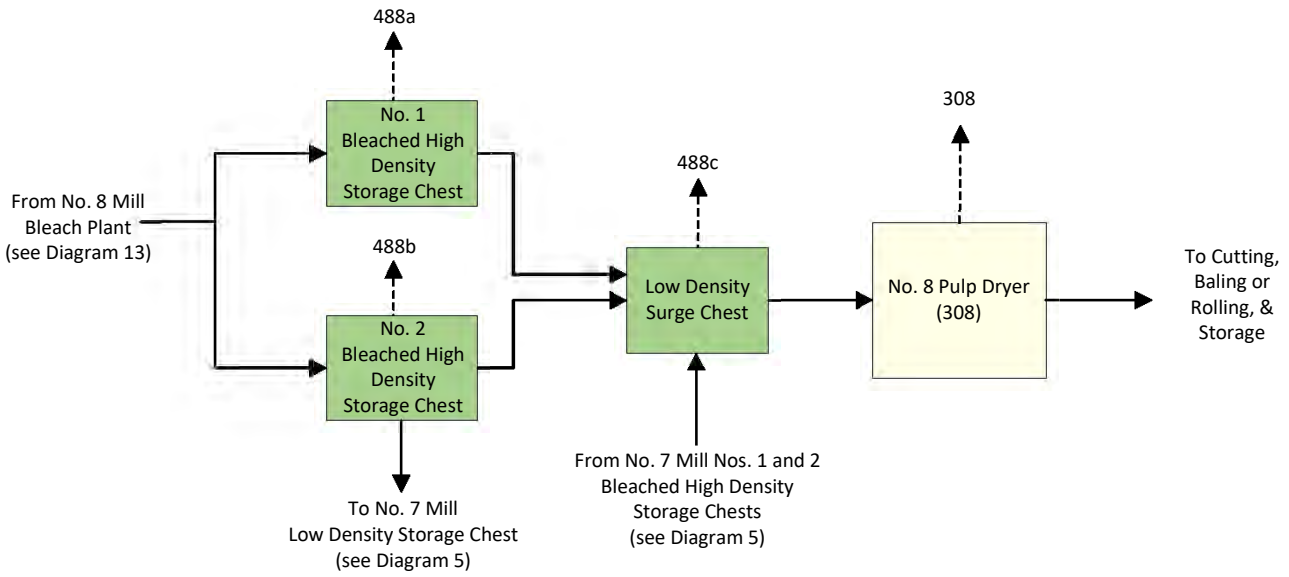
O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 10
No. 7 Mill HVLC System


To No. 7 LVHC System
(see Diagram 9)
From No. 8 Foul Condensate Tank
(see Diagram 20)
No. 7 Foul
Condensate Tank
To Aeration Reactors
(see Diagram 24)
5th Effect Contaminate Condensate Tank
Vacuum Pump Receiver Tank
NCG Condenser Collection Pump
LVHC Header Drain
HVLC System
6th Effect Dirty Condensate
Evaporator Hotwell
To No. 7 LVHC System
(see Diagram 9)
No. 7 Digester Area
Foul Condensate Tank
(284)
Chip Bin Relief Condenser Condensate Divert (see Diagram 2)
Digester Vapor Reboiler Condensate (see Diagram 2)
Digester LVHC Condensers Condensate Diverts (see Diagram 2)
New Turpentine Decanter Condensate Pump Tank (see Diagram 21)
To the No. 8 Foul Condensate Tank
(See Diagram 20)
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 11
No. 7 Mill Foul
Condensate System


To Chip Bin Relief Condenser in No. 8 Mill HVLC System (see Diagram 19)
Woodyard Chip Screens (see Diagram 1)
Chip Feeder (322)
Recycled Knots
To Fines Separator in No. 8 Mill LVHC System (see Diagram 19)
Flash Steam
To Primary Condenser in No. 8 Mill LVHC System (see Diagram 18)
Low Pressure Steam
Steaming Vessel (490)
White Liquor from Storage (see Diagram 16)
Flash Tanks (491b)
Impregnation Vessel (490b)
To Entrainment Separator in No. 8 Mill HVLC System (see Diagram 19)
Chips and Liquor
Liquor
Filtrate
Filtrate Tank
No. 8 Mill Digester Vessel (490c)
Black Liquor Filter
Pressure Diffuser (491)
From Entrainment Separator in No. 8 Mill HVLC System (see Diagram 19)
To Surface Condenser in No. 8 Mill LVHC System (see Diagram 18)
Pulp
Filtrate
Filtrate Tank (495)
Filtrate Dump Tank (496)
No. 8 Pre-Evaporators (491d)
Blow Tank (492)
To Sewer
Thickener (494)
Pulp to No. 8 Mill Oxygen Delignification (see Diagram 13)
To Weak Black Liquor Storage (see Diagram 15)
To No. 8 Foul Condensate System (see Diagram 20)
Secondary Rejects Tank
Pulp
493
Accepts
496a
Pressure Knotter No. 1
Rejects
Pressure Knotter No. 2
Rejects
Pressure Knotter No. 3
Primary Screen No. 1
Rejects
Accepts
Screen Feed Tank (493)
Primary Screen No. 2
Primary Rejects Tank (496a)
Secondary Screen
302a
302b
Secondary Knotter (302a)
Secondary Knotter (302b)
Primary Screen No. 3
Swing Screen
407
To Chip Feeder (322)
To Landfill
Knot Press (407)
Rejects
Accepts
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 12
No. 8 Pulp Mill


To Entrainment Separator in No. 8 Mill HVLC System (see Diagram 19)
To Brown Stock High Density Storage No. 1 (see Diagram 2)
305
Pre D0 Press
No. 1 Pressure Diffuser (324)
Post Oxygen High Density Storage Tank (305)
Mixer
From Brown Stock Thickener (see Diagram 12)
Oxygen Delignification Reactor
Oxygen Delignification Reactor
Diffuser Surge Tank (323)
No. 2 Pressure Diffuser (325)
ClO_2
Sulfuric Acid
O2 Filtrate Tank (326)
White Liquor from Storage (see Diagram 16)
307
X023
Scrubber Feed Tank (307)
White Liquor
Bleach Plant Scrubber
White Liquor to No. 7 BP Scrubber (see Diagram 4)
Caustic to Sewer
306
Caustic
To Nos. 1 and 2 Bleached High Density Storage Chests at the No. 8 Pulp Dryer (see Diagram 14)
Bleached MC Tank
D2 Washer (X023e)
Mixer
D1 Washer (X023c)
Mixer
EP Washer (306)
Caustic Head Tank
DO Press
D0 Tower (X023a)
Sodium Bisulfate
D2 Filtrate Tank (X023f)
ClO_2
Sulfuric Acid
D1 Filtrate Tank (X023d)
ClO_2
Sulfuric Acid
EP Filtrate Tank (X023b)
Caustic
Peroxide
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 13
No. 8 Mill Oxygen Delignificantion and Bleach Plant

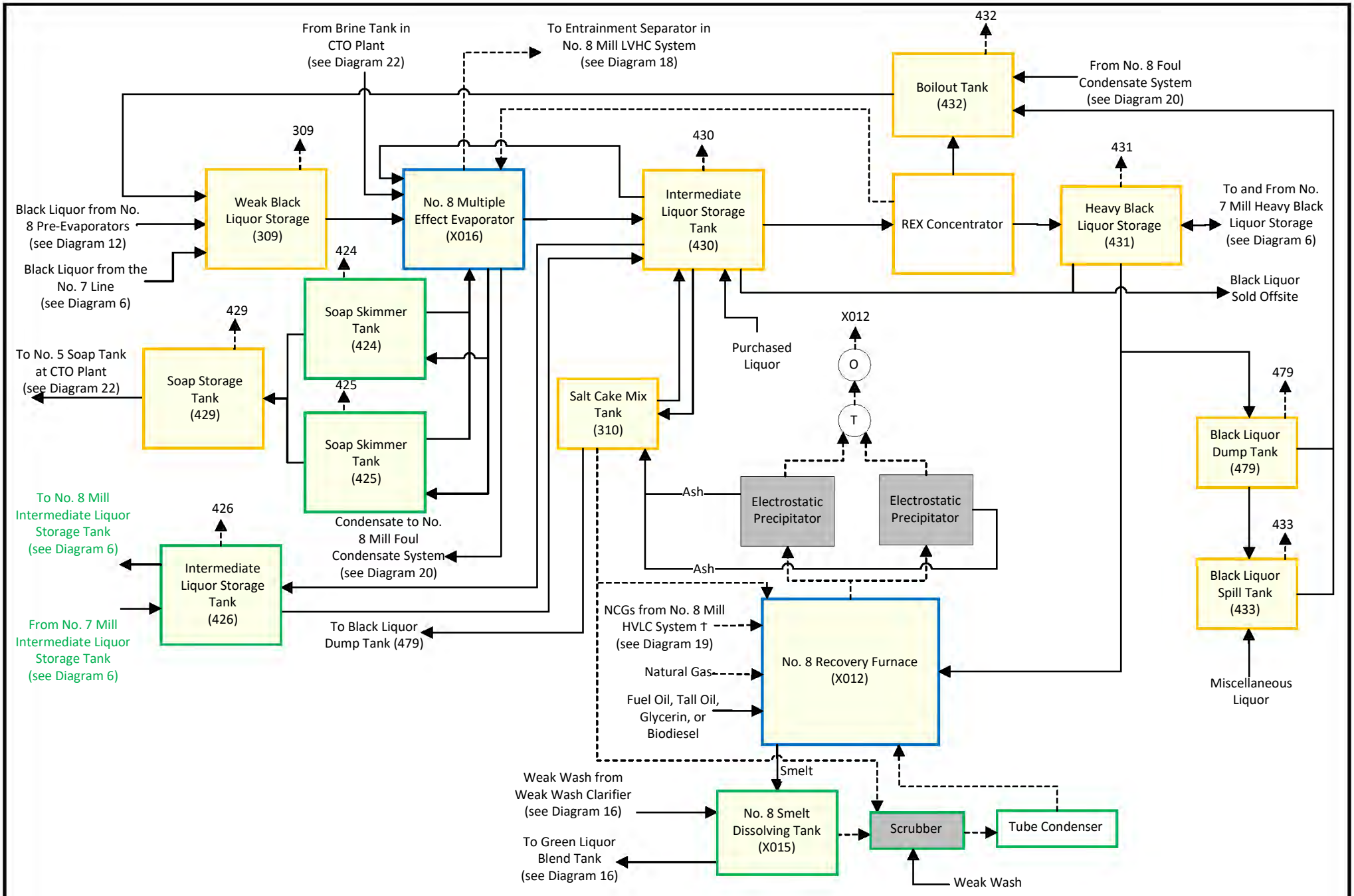


Note: The pulp dryer consists of various individual tanks and processes, the details of which have been omitted from the above diagram because the utilized emission factors include all the individual tanks and processes.

Legend

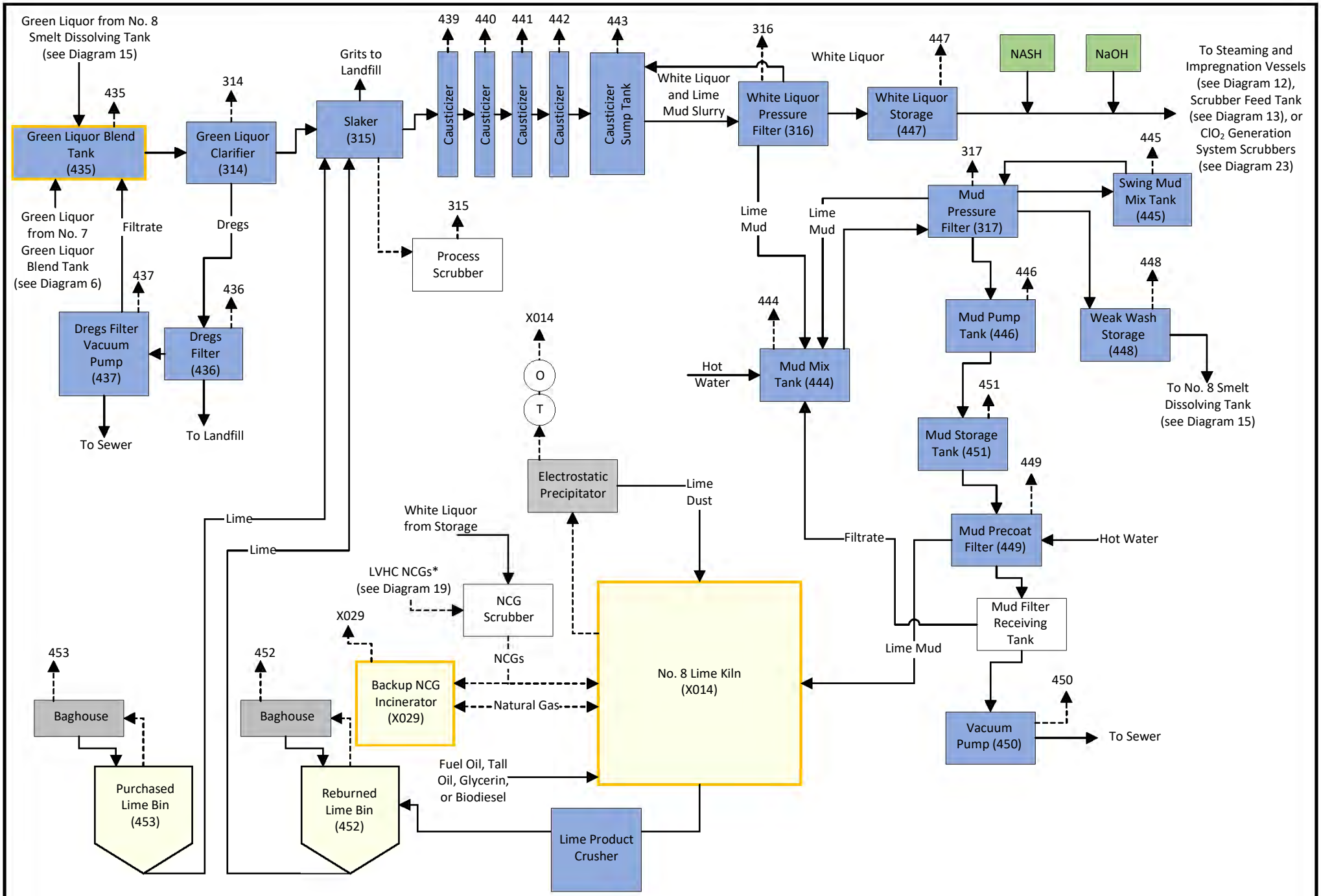
O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

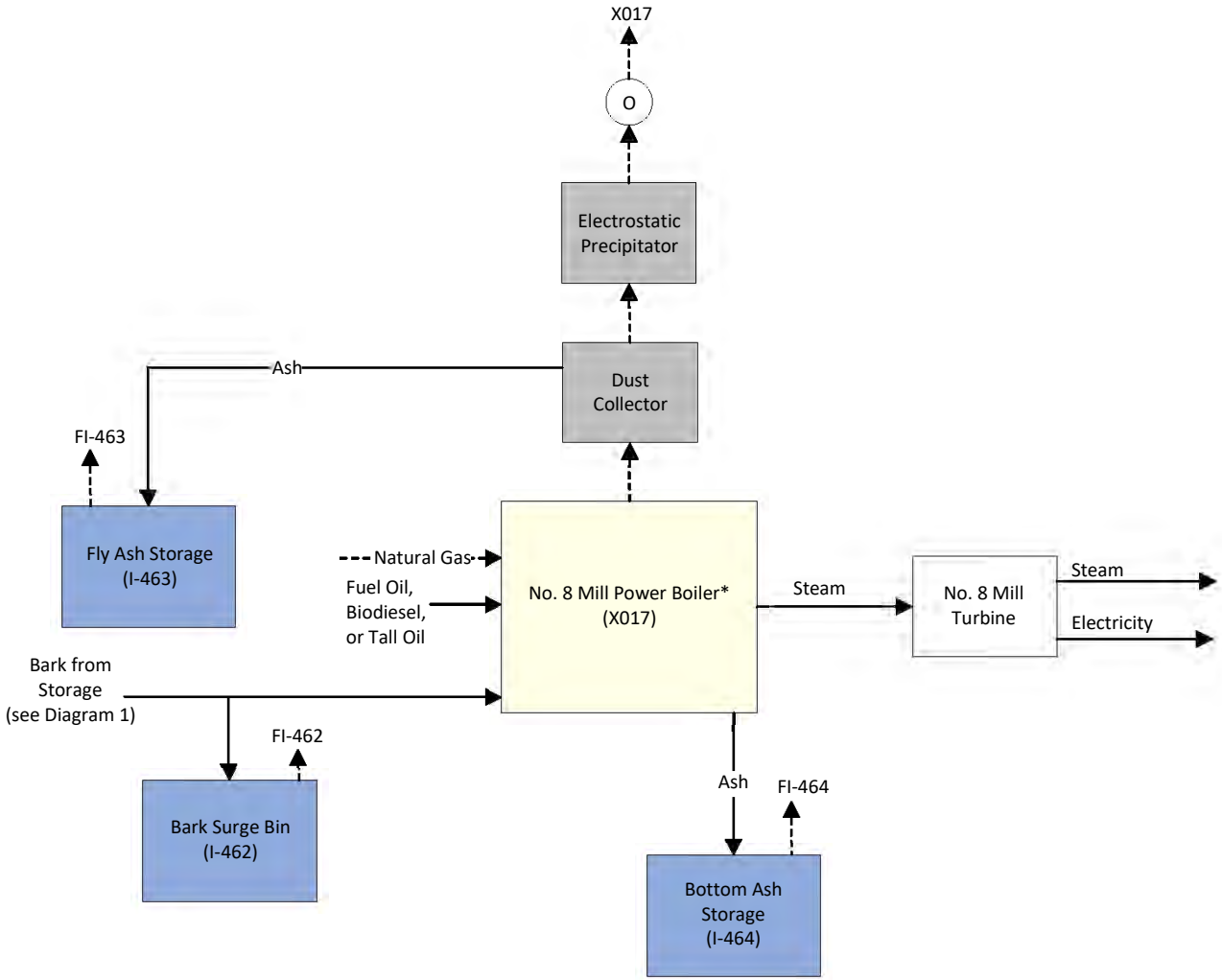
Diagram 14
No. 8 Mill Pulp Dryer



†As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases from the No. 7 Line will be sent to the No. 8 Recovery Furnace (in addition to the Nos. 7 and 8 Lime Kilns).

Diagram 15
No. 8 Mill Liquor Recovery


Green Liquor from No. 8 Smelt Dissolving Tank (see Diagram 15)
435
Green Liquor Blend Tank (435)
Green Liquor from No. 7 Green Liquor Blend Tank (see Diagram 6)
Filtrate
314
Green Liquor Clarifier (314)
Dregs
437
Dregs Filter Vacuum Pump (437)
To Sewer
436
Dregs Filter (436)
To Landfill
Grits to Landfill
Slaker (315)
315
Process Scrubber
439
440
441
442
443
Causticizer
Causticizer
Causticizer
Causticizer
Causticizer Sump Tank
White Liquor and Lime Mud Slurry
316
White Liquor Pressure Filter (316)
White Liquor
447
White Liquor Storage (447)
NASH
NaOH
To Steaming and Impregnation Vessels (see Diagram 12), Scrubber Feed Tank (see Diagram 13), or ClO2 Generation System Scrubbers (see Diagram 23)
Lime Mud
Lime Mud
317
Mud Pressure Filter (317)
445
Swing Mud Mix Tank (445)
446
Mud Pump Tank (446)
448
Weak Wash Storage (448)
To No. 8 Smelt Dissolving Tank (see Diagram 15)
444
Mud Mix Tank (444)
Hot Water
X014
O
T
Electrostatic Precipitator
Lime Dust
451
Mud Storage Tank (451)
449
Mud Precoat Filter (449)
Hot Water
Filtrate
Mud Filter Receiving Tank
Lime Mud
450
Vacuum Pump (450)
To Sewer
Lime
Lime
White Liquor from Storage
LVHC NCGs* (see Diagram 19)
NCG Scrubber
X029
NCGs
Backup NCG Incinerator (X029)
Natural Gas
No. 8 Lime Kiln (X014)
453
Baghouse
Purchased Lime Bin (453)
452
Baghouse
Reburned Lime Bin (452)
Fuel Oil, Tall Oil, Glycerin, or Biodiesel
Lime Product Crusher
*As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases from the Nos. 7 and 8 Lines will be able to be sent to the No. 8 Lime Kiln.
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
New Unit
Modified Unit
Affected Unit
Control Device
Air Flow
Process Flow
Diagram 16
No. 8 Recausticizing and Kiln

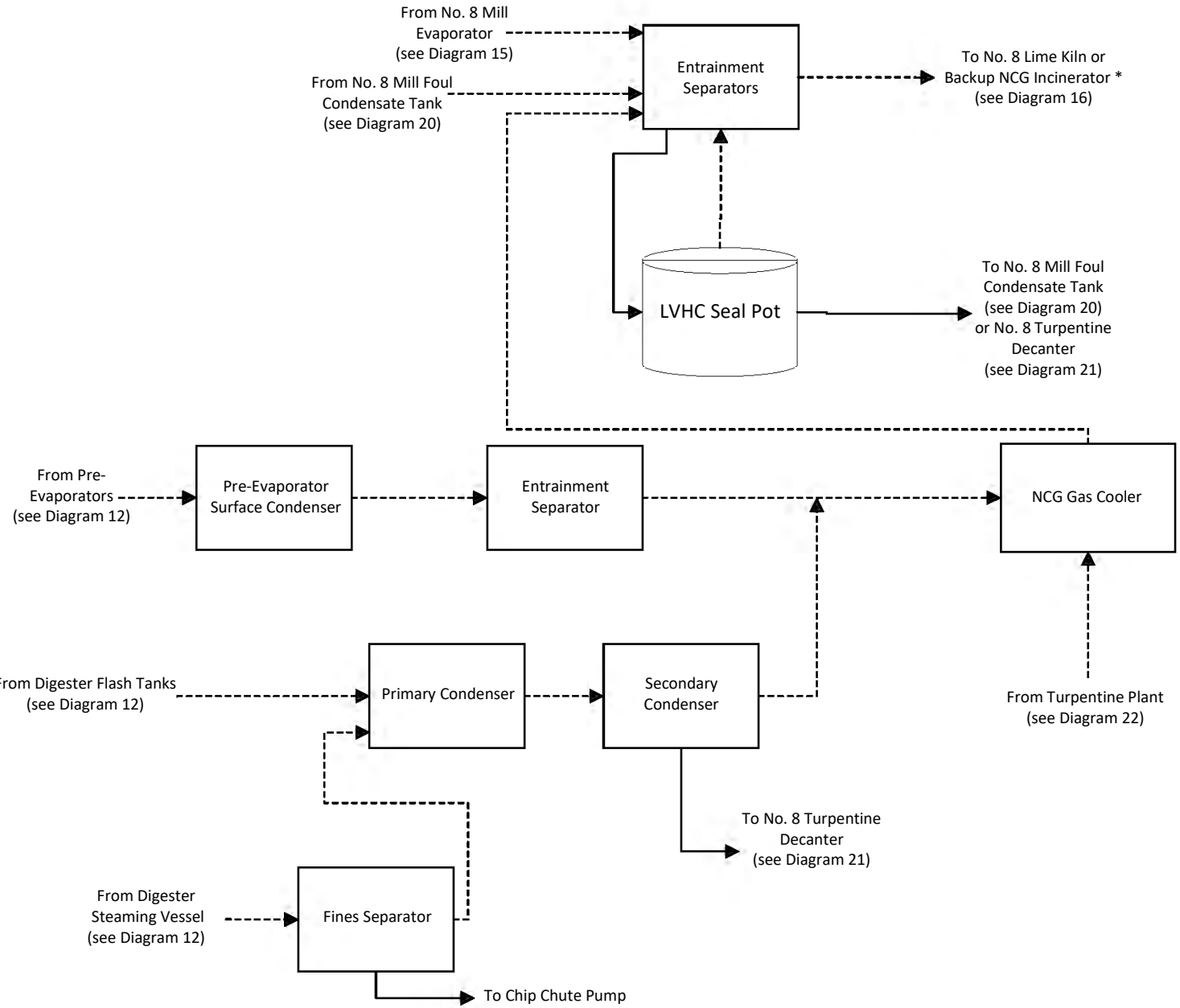


**As part of a separate project, the No. 8 Power Boiler is proposed to be replaced. Since the existing and replacement No. 8 Power Boilers are unaffected by this project, only the existing unit is shown.*

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 17
No. 8 Mill Power Boiler

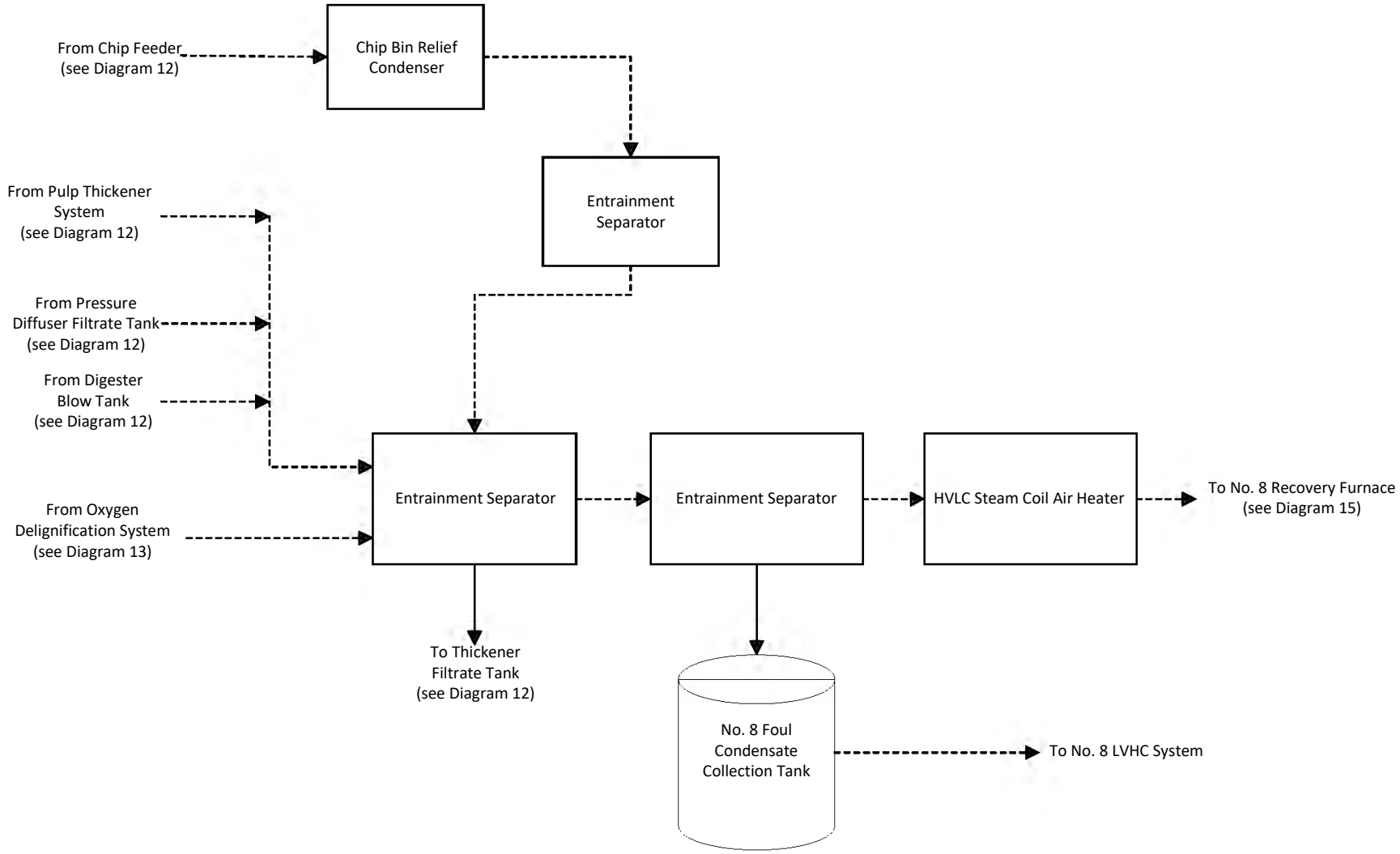


**As part of a separate project, the Backup NCG Incinerator is proposed to be removed and LVHC gases will be sent to the No. 8 Recovery Furnace (in addition to the Nos. 7 and 8 Lime Kilns).*

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

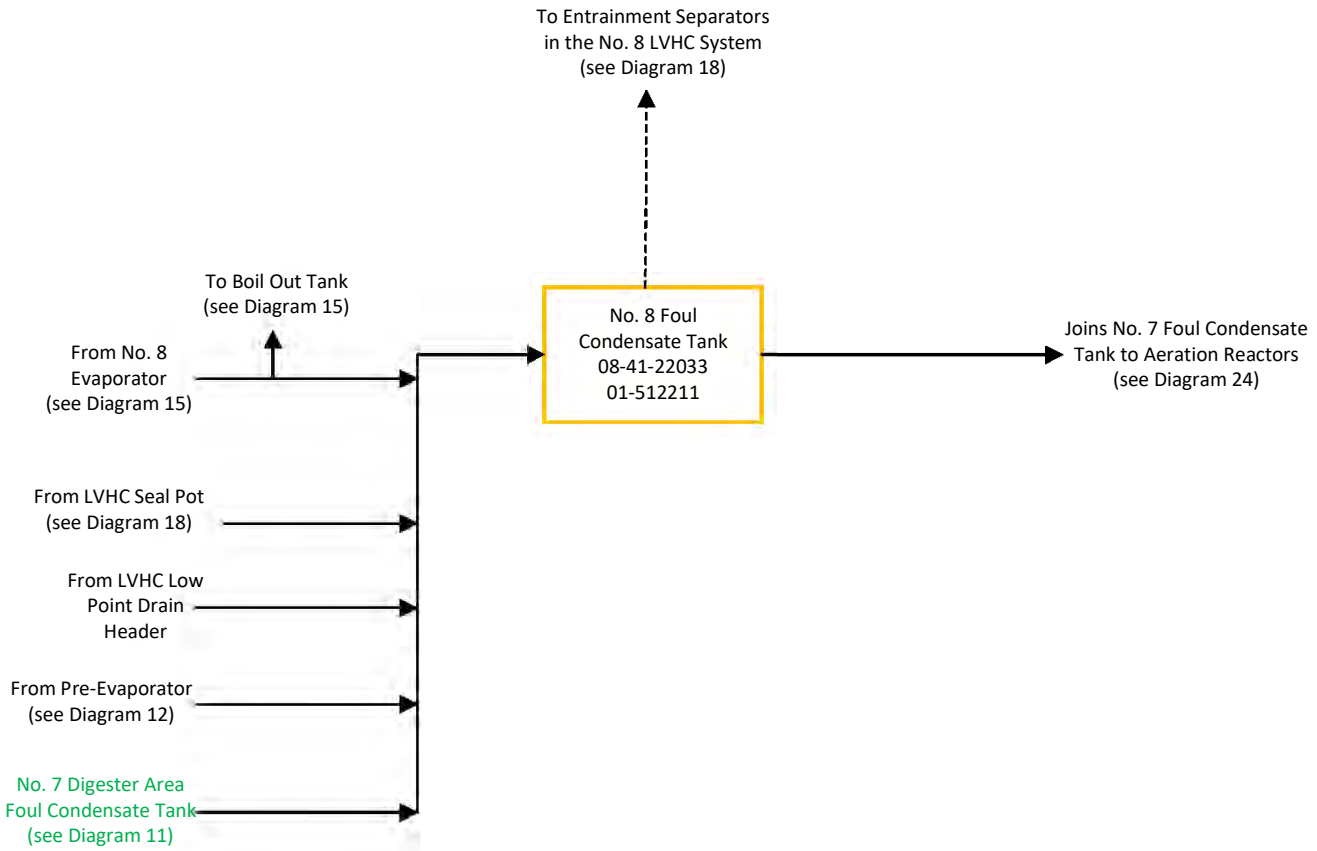
Diagram 18
No. 8 Mill LVHC System



Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

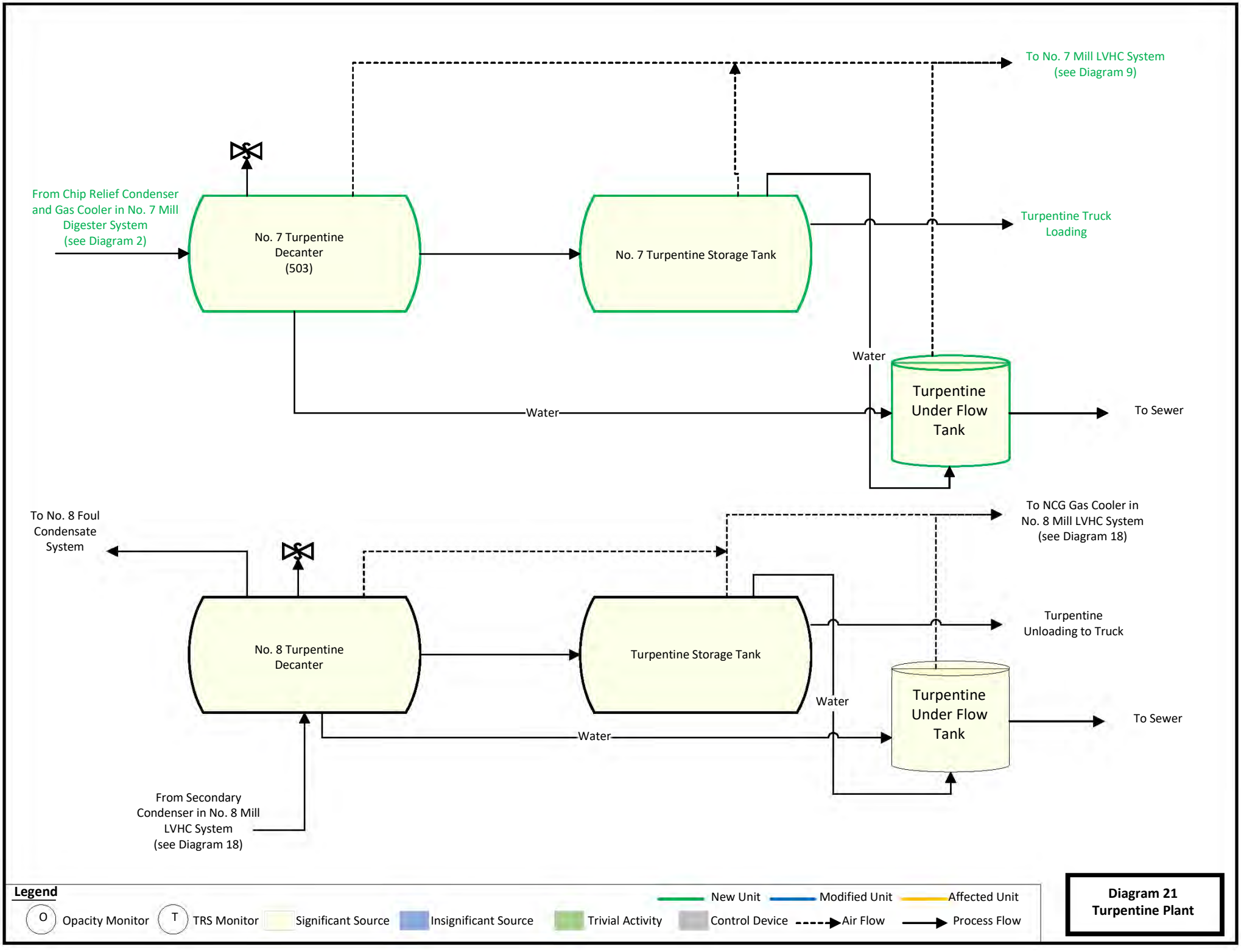
Diagram 19
No. 8 Mill HVLC System

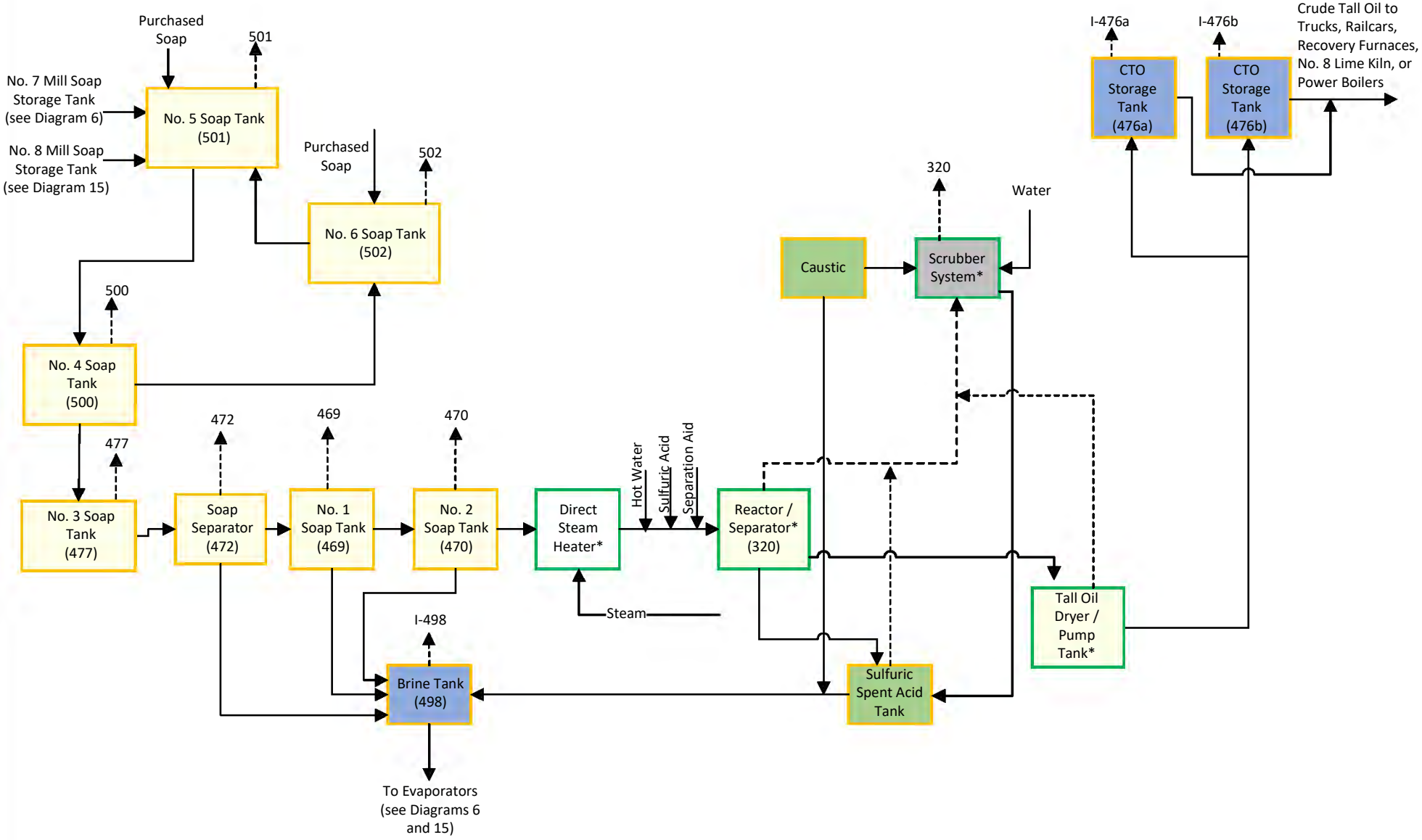


Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 20
No. 8 Mill Foul Condensate System


To No. 7 Mill LVHC System
(see Diagram 9)
From Chip Relief Condenser and Gas Cooler in No. 7 Mill Digester System
(see Diagram 2)
No. 7 Turpentine Decanter
(503)
No. 7 Turpentine Storage Tank
Turpentine Truck Loading
Water
Turpentine Under Flow Tank
Water
To Sewer
To No. 8 Foul Condensate System
To NCG Gas Cooler in No. 8 Mill LVHC System
(see Diagram 18)
No. 8 Turpentine Decanter
Turpentine Storage Tank
Turpentine Unloading to Truck
Water
Turpentine Under Flow Tank
Water
To Sewer
From Secondary Condenser in No. 8 Mill LVHC System
(see Diagram 18)
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 21
Turpentine Plant

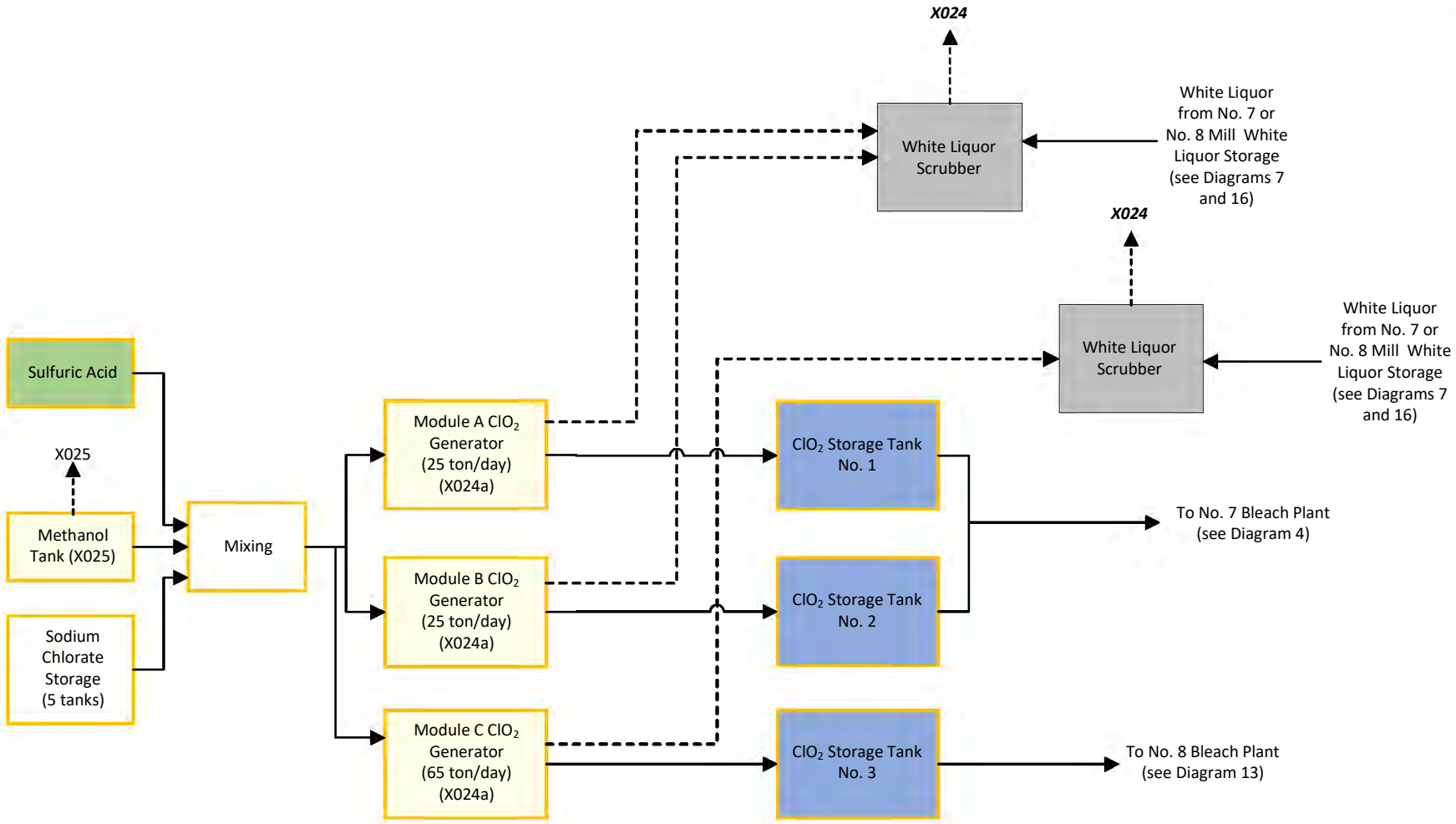


**Equipment in the Crude Tall Oil Plant, including the Tall Oil Reactor, may be affected, modified, or replaced as part of the No. 7 Mill Transformation Project. This PFD reflects replacement. If replaced or modified, the exhaust from the scrubber will be routed to the HVLC system (not shown).*

Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

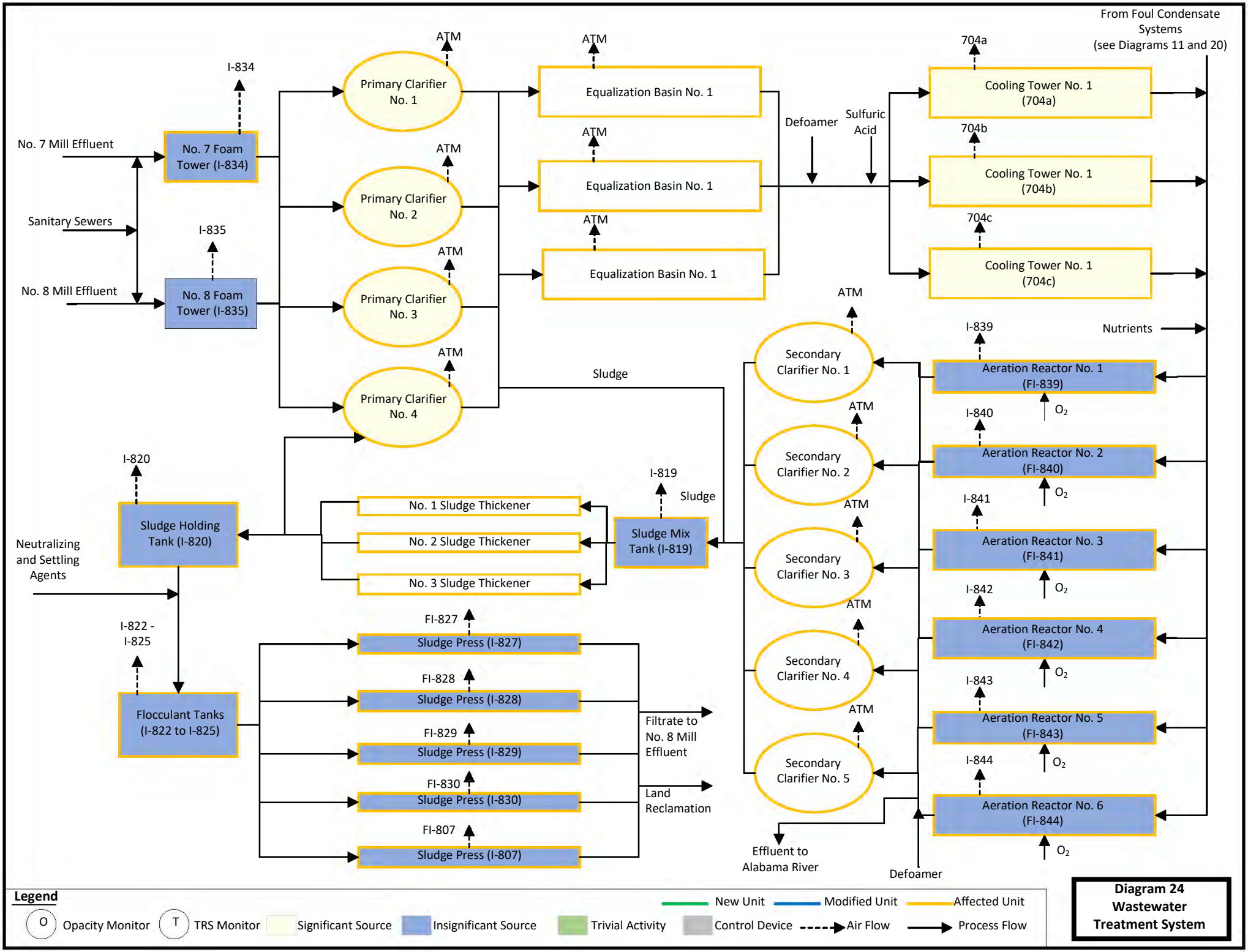
Diagram 22
CTO Plant



Legend

O Opacity Monitor | T TRS Monitor | Significant Source | Insignificant Source | Trivial Activity | Control Device | New Unit | Modified Unit | Affected Unit | Air Flow | Process Flow

Diagram 23
Chlorine Dioxide Generation System


From Foul Condensate Systems (see Diagrams 11 and 20)
No. 7 Mill Effluent
No. 8 Mill Effluent
Sanitary Sewers
I-834
No. 7 Foam Tower (I-834)
I-835
No. 8 Foam Tower (I-835)
ATM
Primary Clarifier No. 1
Primary Clarifier No. 2
Primary Clarifier No. 3
Primary Clarifier No. 4
Equalization Basin No. 1
Equalization Basin No. 1
Equalization Basin No. 1
Defoamer
Sulfuric Acid
704a
Cooling Tower No. 1 (704a)
704b
Cooling Tower No. 1 (704b)
704c
Cooling Tower No. 1 (704c)
Nutrients
I-839
Aeration Reactor No. 1 (FI-839)
I-840
Aeration Reactor No. 2 (FI-840)
I-841
Aeration Reactor No. 3 (FI-841)
I-842
Aeration Reactor No. 4 (FI-842)
I-843
Aeration Reactor No. 5 (FI-843)
I-844
Aeration Reactor No. 6 (FI-844)
O2
Secondary Clarifier No. 1
Secondary Clarifier No. 2
Secondary Clarifier No. 3
Secondary Clarifier No. 4
Secondary Clarifier No. 5
Sludge
I-819
Sludge Mix Tank (I-819)
No. 1 Sludge Thickener
No. 2 Sludge Thickener
No. 3 Sludge Thickener
I-820
Sludge Holding Tank (I-820)
Neutralizing and Settling Agents
I-822 - I-825
Flocculant Tanks (I-822 to I-825)
FI-827
Sludge Press (I-827)
FI-828
Sludge Press (I-828)
FI-829
Sludge Press (I-829)
FI-830
Sludge Press (I-830)
FI-807
Sludge Press (I-807)
Filtrate to No. 8 Mill Effluent
Land Reclamation
Effluent to Alabama River
Defoamer
Legend
O Opacity Monitor
T TRS Monitor
Significant Source
Insignificant Source
Trivial Activity
Control Device
New Unit
Modified Unit
Affected Unit
Air Flow
Process Flow
Diagram 24
Wastewater
Treatment System

APPENDIX F

CAM PLAN

APPENDIX F – CAM PLAN

Pursuant to the requirements of 40 CFR §64.5, the ARC Mill is providing this applicability determination for the Compliance Assurance Monitoring (CAM) rule. Specifically, this CAM applicability analysis and plan have been updated to address requirements for any new or modified emissions units for the No. 7 Mill Transformation Project.

F.1 REGULATORY APPLICABILITY

An essential component of the Title V permit is the combination of monitoring, recordkeeping, and reporting provisos that ensures compliance with applicable requirements. Federal Title V regulations at 40 CFR §60.70.6(a)(3) require that each permit shall contain monitoring included as part of applicable regulatory requirements or otherwise, "where the applicable requirement does not require periodic testing or instrumental or non-instrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit" is required. The ARC Mill's Title V permit contains extensive periodic monitoring requirements to meet this federal regulation.

40 CFR Part 64, the CAM regulations require that facilities prepare and submit monitoring plans for certain emission units with a significant permit modification application. Either CAM or general periodic monitoring requirements will apply to sources that are not subject to regulation-specific monitoring requirements. The CAM Plans are intended to provide an on-going and reasonable assurance of compliance with emission limits. Under the general applicability criteria, this regulation only applies to emission units that use a control device to achieve compliance with an emission limit and whose pre-controlled emission levels exceed the major source thresholds under the Title V operating program.

F.2 APPLICABILITY DETERMINATION

The ARC Mill reviewed the emissions limitations from applicable federal and state regulations to identify the emissions unit/pollutant combinations for which the CAM rule applies. In performing this applicability determination, the ARC Mill compiled a list of each regulated pollutant for each emissions unit and evaluated each pollutant based on the following CAM criteria in 40 CFR §64.2(a):

1. The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR §64.2(b)(1).
2. The unit uses a control device to achieve compliance with any such emission limitation or standard.

For an emissions unit to be subject to a CAM requirement for a given pollutant, both criteria above must be met. In addition to the evaluation criteria provided, the ARC Mill also considered the CAM Rule exemptions promulgated in 40 CFR §64.2(b)(1). Specifically, the ARC Mill identified two exemptions that apply to one or more emissions units operated by the mill:

- The requirements of Part 64 shall not apply to emissions limitations or standards proposed by U.S. EPA after November 15, 1990 pursuant to section 111 or 112 of the Clean Air Act (40 CFR §64.2(b)(1)(i)); and
- The requirements of Part 64 shall not apply to emissions limitations or standards for which a Part 70 or 71 permit specifies a continuous compliance determination method (40 CFR §64.2(b)(1)(vi)).

The first exemption applies to emissions limitations for air pollutants from NSPS or NESHAPs proposed after November 15, 1990. The ARC Mill operates several emissions units subject to 40 CFR Part 63 Subparts S, MM, and DDDDD and 40 CFR 60, Subpart BBa. As a result, these emissions units comply with the monitoring requirements prescribed in the applicable standard for certain pollutants rather than the requirements of 40 CFR Part 64.

The second exemption applies to emissions limitations for which the Alabama Department of Environmental Management (ADEM) has already prescribed continuous monitoring requirements in the mill's Title V Operating Permit. Per 40 CFR 64.1, the definition of a continuous compliance determination method is:

> *…a method, specified by the applicable standard or an applicable permit condition, which: (1) Is used to determine compliance with an emission limitation or standard on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance limit.*

40 CFR §64.3(b)(4)(ii) specifies that the "continuous basis" for monitoring frequency is dependent on the magnitude of emissions after the control device. For sources that emit greater than the major source threshold after control, monitoring must be conducted at least four times per hour. For sources that emit less than the major source threshold after control, "monitoring shall include some data collection at least once per 24-hour period." The ARC Mill already monitors several parameters as required by Permit No. 106-0010 and these are specifically addressed in the following sections.

In addition, 40 CFR §64.4(b)(4) specifies that "presumptively acceptable monitoring" includes monitoring for standards that are exempt from CAM pursuant to 40 CFR §64.2(b)(1)(i). Several units at the mill are subject to an emission limitation or standard proposed by the U.S. EPA after November 15, 1990 pursuant to Section 111 or 112 of the Federal Clean Air Act for pollutants that are also subject to CAM for another emission limitation that was proposed after November 15, 1990. Therefore, the ARC Mill asserts that presumptively acceptable monitoring exists, and a CAM plan is not required for these units.

Table G-1 summarizes the emissions units that employ control devices to achieve compliance with a specified emissions limit and therefore could be subject to CAM requirements. The ARC Mill determined through this analysis that CAM may apply to the following emissions unit at the ARC Mill that is proposed to be constructed or modified as part of the No. 7 Mill Transformation Project:

- No. 7 Mill Bleach Plant (X020) for H_2S, TRS, and VOC emissions controlled by the scrubber.

Limited data is available regarding the H_2S, TRS, and VOC control efficiencies of bleach plant scrubbers. GP reserves the right to refine this analysis if additional information becomes available.

Since the No. 8 Power Boiler (X017) has been permanently shutdown, the ARC Mill requests removal of all CAM requirements from the permit for this emission unit. The only other emission unit at the Mill subject to CAM requirements is the No. 7 Power Boiler (EU Z008) while firing natural gas only for NO_x emissions controlled by the atomized steam injection system, which is an affected source (i.e., not new or modified) as part of the project.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
No. 7 Pulp Mill								
No. 7 Continuous Digester System (Z004)	Chip Bin (206)	New	Condenser	VOC	Use of condenser technology	*Proposed BACT*	N/A	No, the condenser is inherent process equipment as defined in 40 CFR §64.1.
	Continuous Digester and Flash Tank (282, 283)	New	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	H_2S	Control to the LVHC System	*Proposed BACT*	18.79	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	5 ppmvd @ 10% O_2 or combusted as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					Control to the LVHC System	*Proposed BACT*	117.92	Yes, but presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa; therefore, a CAM Plan is not required.
				VOC	Control to the LVHC System	*Proposed BACT*	36.88	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Foul Condensate Tank (LVHC)	Affected	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Digester Area Foul Condensate Tank (284)	New	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	H_2S	Control to the LVHC System	*Proposed BACT*	18.79[1]	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the LVHC System	*Proposed BACT*	117.92[1]	Yes, but presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa for the Digester System; therefore, a CAM Plan is not required.

[1]Pre-control emission rate conservatively represents digester system emissions (excluding the blow tank).

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
				VOC	Control to the LVHC System	*Proposed BACT*	36.88[2]	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Digester Evaporator (285)	New	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	H_2S	Control to the LVHC System	*Proposed BACT*	18.79[2]	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the LVHC System	*Proposed BACT*	117.92[2]	Yes, but presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa for the Digester System; therefore, a CAM Plan is not required.
				VOC	Control to the LVHC System	*Proposed BACT*	36.88[2]	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Chip Meter (207)	New	HVLC System (No. 7 Recovery Furnace)	VOC	Control to the HVLC System	*Proposed BACT*	1.52[3]	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the HVLC System	*Proposed BACT*	58.55[3]	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Blow Tank (286)	New	HVLC System (No. 7 Recovery Furnace)	VOC	Control to the HVLC System	*Proposed BACT*	85.49	No, uncontrolled emissions are below CAM applicability thresholds

[2]Pre-control emission rate conservatively represents digester system emissions (excluding the blow tank).
[3]Pre-control emission rate represents entire knotter system emissions.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
				TRS	5 ppmvd @ 10% O_2 or combusted as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i)
					Control to the HVLC System	*Proposed BACT*	271.76	Yes, but presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa; therefore, a CAM Plan is not required.
				H_2S	Control to the HVLC System	*Proposed BACT*	43.31	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Brown Stock Washer System (Z007)	Primary (Pressure) Knotter (104a), Secondary Knotter (Knotter Drainer, 104b), Knotter Accepts Tank (104c), Knot Conveyor (104d),	New	HVLC System (No. 7 Recovery Furnace)	VOC	Control to the HVLC System	*Proposed BACT*	1.52	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	5 ppm @ 10% O_2 or combusted as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					Control to the HVLC System	*Proposed BACT*	58.55	No, uncontrolled emissions are below CAM applicability thresholds.
	Brown Stock Transfer Tank (275)	Modified	HVLC System (No. 7 Recovery Furnace)	VOC	Control to the HVLC System	*Proposed BACT*	21.20	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the HVLC System	*Proposed BACT*	2.33	No, uncontrolled emissions are below CAM applicability thresholds.
				H_2S	Control to the HVLC System	*Proposed BACT*	0.05	No, uncontrolled emissions are below CAM applicability thresholds.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)[4]	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Brownstock Washers (4 stages, 118a-118d)	Affected	HVLC System (No. 7 Recovery Furnace)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Foam Tower (119)	Affected	HVLC System (No. 7 Recovery Furnace)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Oxygen Delignification (122)	Affected	HVLC System (No. 7 Recovery Furnace)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 8 Pulp Mill								
No. 8 Continuous Digester System (X015)	Continuous Digester Chip Feeder (322)	Unaffected	HVLC System (No. 8 Recovery Furnace)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Recovery Furnace).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).

[4]Emissions from the knotter system are expected to be less than 0.1 lb/ODT HAP threshold specified in 40 CFR §63.443(a)(1)(ii)(A). If so, the new knotter system would not be part of the affected source and would not be subject to the emissions limit in 40 CFR 63, Subpart S.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
	Steaming Vessel and Digester Condenser (490, 490a)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Lime Kiln and temperature monitoring on the Backup NCG Incinerator).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Flash Tanks (491b)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Lime Kiln and temperature monitoring on the Backup NCG Incinerator).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Black Liquor Filter and Pre-Evaporators (491c, 491d)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Lime Kiln and temperature monitoring on the Backup NCG Incinerator).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Impregnation Vessel and Digester Vessel (490b, 490c)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Lime Kiln and temperature monitoring on the Backup NCG Incinerator).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
	Pressure Diffuser and Filtrate Tank (491, 491a)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Blow Tank (492)	Unaffected	HVLC System (No. 8 Recovery Furnace)	TRS	5 ppm @ 10% O2 or combusted as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	N/A	No, current Part 70 permit specifies continuous compliance determination method (TRS CEMS on the No. 8 Lime Kiln and temperature monitoring on the Backup NCG Incinerator).
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Foul Condensate Collection Tank (LVHC)	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	Foul Condensate Tank (LVHC)	Affected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Mill Bleach Plant								
No. 7 Bleaching System (X020)	No. 7 Mill Bleach Plant[5] (X020a-X020b, X020e-X020f, X020j-X020l)	Modified	Packed Bed Scrubber	VOC	61.17 tpy (12-month rolling average)	*Proposed BACT*	Potentially > 100	Yes
				TRS	6.16 tpy (12-month rolling average)	*Proposed BACT*	Potentially > 100 tpy	Yes
				Chlorinated HAP	10 ppmv (Chlorine as surrogate)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
				Chlorine Dioxide	2.87 lb/hr	Rule 335-3-14	N/A	No, chlorine dioxide does not satisfy Part 70 definition of 'regulated air pollutant'.
No. 8 Mill Bleach Plant								
	No. 8 Mill Bleach Plant[6]	Unaffected	Packed Bed Scrubber	Chlorinated HAP	10 ppmv (Chlorine as surrogate)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).

[5]Excludes extraction stage washers and associated seal chests, since these emission units are not controlled.
[6]Excludes extraction stage washer, since this emission unit is not controlled.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
No. 8 Bleaching System (X023)	(X023a-X023f)			Chlorine Dioxide	3.33 lb/hr	Rule 335-3-14	N/A	No, chlorine dioxide does not satisfy Part 70 definition of 'regulated air pollutant'.
No. 7 Mill Liquor Recovery								
No. 7 Multiple-Effect Evaporator System (X006)	No. 7 Multiple Effect Evaporator System (X006)	Modified	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	VOC	Control to the LVHC System	*Proposed BACT*	97.27	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	5 ppm @ 10% O_2 or combustion as described in 40 CFR §60.283(a)(1)(i) – (iii)	40 CFR 60, Subpart BB	6.65	No, uncontrolled emissions are below CAM applicability thresholds.
					Control to the LVHC System	*Proposed BACT*	6.65	No, uncontrolled emissions are below CAM applicability thresholds.
				H_2S	Control to the LVHC System	*Proposed BACT*	5.98	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Recovery Furnace (X001)	No. 7 Recovery Furnace (X001)	Affected	Two ESPs	PM	0.044 gr/dscf @ 8% O_2	40 CFR 60, Subpart BB	64,978	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
					0.025 gr/dscf @ 8% O_2; 74.0 lb/hr	Rule 335-3-14-.04(9)	64,978	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				HAP Metals	0.044 gr/dscf @ 8% O_2 (PM as surrogate)	40 CFR 63, Subpart MM	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Smelt Tank	No. 7 Smelt Dissolving Tank	Affected	Venturi Scrubber	PM	0.12 lb/ton BLS (dry weight)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
(X002)	(X002)				0.12 lb/ton of BLS and/or 13.0 lb/hr	Rule 335-3-14-.04(9)	1,898	Yes, but presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				SO_2	0.05 lb/ton of BLS; 5.4 lb/hr	Rule 335-3-14-.04(9)	66.15	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	0.033 lb/ton of BLS	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					0.033 lb/ton of BLS; 3.6 lb/hr	Rule 335-3-14-.04(9)	135.53	Yes, but presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa; therefore, a CAM Plan is not required.
				HAP Metals	0.2 lb/ton of BLS (PM as surrogate)	40 CFR 63, Subpart MM	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 8 Mill Liquor Recovery								
No. 8 Multiple Effect Evaporator System (X016)	No. 8 Multiple Effect Evaporator System (X016)	Modified	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	VOC	Control to the LVHC System	*Proposed BACT*	130.49	Yes, but presumptively acceptable monitoring is required for HAP under 40 CFR 63, Subpart S; therefore, a CAM Plan is not required.
				TRS	5 ppm @ 10% O_2 or combustion as described in 40 CFR §60.283a(a)(1)(i) – (iii)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					Control to the LVHC System	*Proposed BACT*	8.92	No, uncontrolled emissions are below CAM applicability thresholds.
				H_2S	Control to the LVHC System	*Proposed BACT*	9.20	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 8 Recovery	No. 8 Recovery Furnace	Modified	Two ESPs	PM	0.044 gr/dscf @ 8% O_2	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
Furnace (X012)	(X012)				0.015 gr/dscf @ 8% O_2	*Proposed BACT*	174,324	Yes, but presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				PM_{10}	0.030 gr/dscf @ 8% O_2	*Proposed BACT*	>100 tpy	Yes, but presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required
				$PM_{2.5}$	0.027 gr/dscf @ 8% O_2	*Proposed BACT*	>100 tpy	Yes, but presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required
				HAP Metals	0.044 gr/dscf @ 8% O_2 (PM as surrogate)	40 CFR 63, Subpart MM	67,317	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 8 Smelt Tank (X013)	No. 8 Smelt Dissolving Tank (X013)	New	No. 8 Recovery Furnace	VOC	Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	0.85	No, uncontrolled emissions are below CAM applicability thresholds.
			Scrubber, No. 8 Recovery Furnace, and Associated ESPs	PM	0.12 lb/ton BLS (dry weight)	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	N/A	Presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				PM_{10}	Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	N/A	Presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
				$PM_{2.5}$	Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	N/A	Presumptively acceptable monitoring is required for PM under 40 CFR 60, Subpart BBa and for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
			No. 8 Recovery Furnace	TRS	0.033 lb/ton of BLS	40 CFR 60, Subpart BBa	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
					Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	N/A	Presumptively acceptable monitoring is required for TRS under 40 CFR 60, Subpart BBa; therefore, a CAM Plan is not required.
				H_2S	Vent to the No. 8 Recovery Furnace during routine operation	*Proposed BACT*	N/A	Presumptively acceptable monitoring is required for TRS (of which, H_2S is a subset) under 40 CFR 60, Subpart BBa; therefore, a CAM Plan is not required.
			Scrubber, No. 8 Recovery Furnace, and Associated ESPs	HAP Metals	0.2 lb/ton of BLS (PM as surrogate)	40 CFR 63, Subpart MM	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Mill Recausticizing								
No. 7 Recausticizing Area (X030)	Slaker (132)	New	Scrubber	PM	2.22 tpy	*Proposed BACT*	22.23	No, uncontrolled emissions are below CAM applicability thresholds.
				PM_{10}	2.22 tpy	*Proposed BACT*	22.23	No, uncontrolled emissions are below CAM applicability thresholds.
				$PM_{2.5}$	2.22 tpy	*Proposed BACT*	22.23	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	8.08 tpy	*Proposed BACT*	< 100	No, uncontrolled emissions are below CAM applicability thresholds.
	Reburned Lime Silo/Bin (259)	Affected	Baghouse	PM	39.96 lb/hr	Rule 335-3-4-.04	7.16	No, uncontrolled emissions are below CAM applicability thresholds.
	Purchased Lime Silo/Bin (260)	Affected	Baghouse	PM	39.96 lb/hr	Rule 335-3-4-.04	7.16	No, uncontrolled emissions are below CAM applicability thresholds.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
No. 7 Lime Kiln (X003)	No. 7 Lime Kiln (X003)	Modified	ESP *(Proposed)*	PM	0.066 gr/dscf @ 10% O_2 (for gaseous fossil fuel)	40 CFR 60, Subpart BB	32,460	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
					0.01 gr/dscf at 10% O_2	*Proposed BACT*	32,460	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				PM_{10}	0.030 gr/dscf at 10% O_2	*Proposed BACT*	>100	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				$PM_{2.5}$	0.027 gr/dscf at 10% O_2	*Proposed BACT*	>100	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				HAP Metals	0.064 gr/dscf @ 10% O_2 (PM as surrogate)	40 CFR 63, Subpart MM	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 8 Mill Recausticizing								
No. 8 Recausticizing Area (X031)	Reburned Lime Silo/Bin (453)	Unaffected	Baghouse	PM	39.96 lb/hr	Rule 335-3-4-.04	47.75	No, uncontrolled emissions are below CAM applicability thresholds.
	Purchased Lime Silo/Bin (453)	Unaffected	Baghouse	PM	39.96 lb/hr	Rule 335-3-4-.04	47.75	No, uncontrolled emissions are below CAM applicability thresholds.
No. 8 Lime Kiln (X014)	No. 8 Lime Kiln (X014)	Affected	ESP	PM	0.066 gr/dscf @ 10% O_2 (for gaseous fossil fuel) and 0.13 gr/dscf at 10% O_2 (for liquid fossil fuel)	40 CFR 60, Subpart BB	20,314	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
					0.035 gr/dscf at 10% O2 and 14.6 lb/hr (for gaseous fossil fuel); 0.07 gr/dscf at 10% O2 and 29.2 lb/hr (for liquid fossil fuel)	Rule 335-3-14-.04(9)	20,314	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63, Subpart MM; therefore, a CAM Plan is not required.
				HAP Metals	0.064 gr/dscf @ 10% O_2 (PM as surrogate)	40 CFR 63, Subpart MM	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
No. 7 Mill Utilities								
No. 7 Power Boiler (Z008)	No. 7 Power Boiler (Z008)	Affected	Venturi Scrubbers[7]	PM	0.10 lb/MMBtu	40 CFR 60, Subpart D	26,210	Yes, but presumptively acceptable monitoring is required for PM as a surrogate for HAP metals under 40 CFR 63 Subpart DDDDD; therefore, a CAM Plan is not required.
			Atomized Steam Injection and Low NOx Burners – Natural Gas Firing Only	NO_x	0.30 lb/MMBtu when firing wood or wood/fossil fuel; 0.20 lb/MMBtu when firing natural gas alone	40 CFR 60, Subpart D	1,494	Yes, see CAM in section below.
			Venturi Scrubber[7]	HAP Metals	0.44 lb/MMBtu of heat input (PM as surrogate)	40 CFR 63, Subpart DDDDD	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
				HCl	0.022 lb/MMBtu of heat input	40 CFR 63, Subpart DDDDD	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
				Mercury	5.4E-06 lb/MMBtu of heat input	40 CFR 63, Subpart DDDDD	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
Crude Tall Oil Plant								
Crude Tall Oil Plant (X321)	Tall Oil Reactor and Associated Equipment (320 [new] or 321 [existing])	New or Modified	HVLC System[8] (if replaced or modified only)	VOC	Control to the HVLC System	*Proposed BACT*	87.51	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the HVLC System	*Proposed BACT*	52.18	No, uncontrolled emissions are below CAM applicability thresholds.

[7]The No. 7 Power Boiler also has a mechanical dust collector, which is considered inherent process equipment as defined in 40 CFR §64.1.
[8]The Tall Oil Reactor is also equipped with a scrubber for odor control and thus, is considered inherent process equipment as defined in 40 CFR §64.1.

Table F-1
CAM Applicability for Pollutant-Specific Emission Units

Emissions Unit	Equipment	Impact by Project	Control Device	Pollutant Controlled	Applicable Emissions Limit	Basis for Limit	Pre-Control Emissions (tpy)	Subject to CAM?
				H_2S	Control to the HVLC System	*Proposed BACT*	41.32 tpy	No, uncontrolled emissions are below CAM applicability thresholds.
Turpentine Plant								
Turpentine Plant (LVHC)	No. 7 Turpentine Decanter (503)	New	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	VOC	Control to the LVHC System	*Proposed BACT*	0.29	No, uncontrolled emissions are below CAM applicability thresholds.
				TRS	Control to the LVHC System	*Proposed BACT*	0.94	No, uncontrolled emissions are below CAM applicability thresholds.
				H_2S	Control to the LVHC System	*Proposed BACT*	0.08	No, uncontrolled emissions are below CAM applicability thresholds.
				HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	No. 7 Turpentine Storage Tank (504)	New	LVHC System (No. 7 Lime Kiln or Back-Up NCG Incinerator)	VOC	Control to the LVHC System	*Proposed BACT*	0.15	No, uncontrolled emissions are below CAM applicability thresholds.
	No. 8 Turpentine Decanter	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
	No. 8 Turpentine Storage Tank	Unaffected	LVHC System (No. 8 Lime Kiln or Back-Up NCG Incinerator)	HAPs	Reduce HAP emissions using one of the methods specified in 40 CFR §63.433(d)	40 CFR 63, Subpart S	N/A	No, exempt per 40 CFR §64.2(b)(1)(i).
115 Ton Per Day Chlorine Dioxide System (X024)	Chlorine Dioxide Generator (X024)	Affected	Wet Scrubber	Chlorine	2.4 lb/hr	Rule 335-3-14	526	Yes, but presumptively acceptable monitoring exists; therefore (daily liquor scrubber recirculation flow rate and pH), a CAM plan is not required.
				Chlorine Dioxide	0.55 lb/hr	Rule 335-3-14	N/A	No, chlorine dioxide does not satisfy Part 70 definition of 'regulated air pollutant'.

F.3 PLAN CONTENT

Pursuant to 40 CFR §64.3, U.S. EPA requires the following elements to be included in a facility's CAM Plan:

- Applicability determination for pollutant-specific emissions units;
- Monitoring plan, including basis for selection of monitoring parameters and establishment of parameter values and averaging periods, and performance criteria for monitoring systems; and
- CAM reporting and recordkeeping requirements.

Monitoring requirements for emissions units exempt from the CAM rule are located in the facility's existing Title V operating permit or in federal NSPS or NESHAP requirements proposed since November 15, 1990.

Per 40 CFR §64.5(a) and (b), CAM must be provided in applications for a significant permit revision but only for large pollutant-specific emission units for which the proposed revision is applicable, and CAM for other pollutant-specific emission units must be provided as part of the renewal of the site's Title V permit. A large pollutant-specific emission units is defined as emissions units with the potential to emit (taking into account control devices to the extent appropriate under the definition of this term in 40 CFR §64.1) the applicable regulated air pollutant in an amount equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. The No. 7 Mill Transformation Project does not propose to construct or modify any large pollutant-specific emission units. Therefore, no new CAM requirement are proposed as part of this application.

F.4 CAM PLAN

As described in Sections F.2 and F.3, no pollutant-specific emissions unit are required add a CAM Plan in this application. Therefore, the only CAM Plan included in this section is for the No. 7 Power Boiler while firing natural gas only for NO_X emissions controlled by atomized steam injection system. No changes to required monitoring are proposed to existing CAM for this unit.

CAM Plan
No. 7 Power Boiler (EU Z008)
Atomized Steam Injection

Source Information: The No. 7 Power Boiler is a stationary boiler manufactured by Combustion Engineering, Inc. and is rated at 598.4 million British thermal units per hour (MMBtu/hr). The No. 7 Power Boiler is currently permitted to burn wood, tall oil, glycerin, biodiesel, Nos. 2 through 5 fuel oil, and natural gas.

Control Device(s): Atomized steam injection for NO_x control –Natural gas only

Applicable Limits: 0.2 lb NOx/MMBTU heat input (when natural gas is fired)
A prorated limit is used when multiple fossil fuels are fired simultaneously (without wood) in accordance with 40 CFR §60.44(b).

Current Monitoring: Five-Year stack test for NO_X and boiler steaming rate

The proposed CAM Plan for the atomized steam injection for the No. 7 Power Boiler is provided in Table G-2.

Table F-2
Monitoring Plan for Atomized Steam Injection on the No. 7 Power Boiler

Criteria	Indicator No. 1
General Criteria Monitoring Approach	Atomized steam pressure
General Criteria Indicator Range	The atomized steam pressure is continuously measured and a three-hour block average pressure is calculated. A minimum three-hour block average atomized steam pressure has been set by the required periodic test that proved compliance. The minimum three-hour block average atomized steam pressure was set by taking 90% of the average atomized steam pressure recorded during each of the three one-hour test runs from the required periodic test that proved compliance. The facility can re-establish the minimum three-hour block average atomized steam pressure with subsequent test.
General Criteria Quality Improvement Plan Threshold	>5% excursions in a semi-annual period
Performance Criteria Data Representativeness, Rationale and Justification	During operation of the natural gas main burners, atomized steam is injected through the center of the fuel oil burners to reduce NO_X emissions resulting from the combustion of natural gas. Atomized steam injection reduces NO_X emissions by reducing the burner flame temperature, which in turn, reduces thermal NOx emissions. The atomized steam injection system is interlocked with the main natural gas burners to ensure that the natural gas burners will not be fired without the steam injection system operating.
Performance Criteria Verification Procedures	Install and operate atomized steam pressure monitoring device in accordance with the manufacturer's recommendations.
Performance Criteria Quality Assurance Practices and Criteria	At least annually, calibrate the meter in accordance with the manufacture's recommendation.
Performance Criteria Monitoring Frequency/Data Averaging Periods	The atomized steam pressure is recorded at a minimum of once every 15 minutes using the facility's Process Information (PI) system. The data averaging period is three-hour blocks.
Performance Criteria **Data Collection Procedures**	Monitor atomized steam pressure while firing the natural gas burners and calculate a three-hour block average. An excursion is defined as a continuous three-hour period during which the natural gas main burners are fired and the three-hour block average atomized steam pressure is less than 90 percent of the value recorded during a periodic test that demonstrated compliance.

APPENDIX G

BACT ANALYSIS FOR THE NO. 8 MILL SOAP SKIMMER TANKS

BACT ANALYSIS FOR THE NO. 8 MILL SOAP SKIMMER TANKS

The No. 8 Mill Soap Skimmer Tanks (Emissions Unit X033, Equipment ID Nos. 424 and 425) will be considered new sources with respect to the No. 7 Mill Transformation Project. The tanks are sources of TRS, H_2S, and VOC emissions. Since the project triggers PSD review for all 3 pollutants, BACT is required to be addressed for TRS, H_2S, and VOC emissions from the tanks. No changes are necessary to Step 1 of the BACT analysis (i.e., identification of available control technologies) presented previously in this application to consider the No. 8 Mill Soap Skimmer Tanks. Therefore, this analysis begins at Step 2.

Step 2. Eliminate Infeasible Control Technology

This section presents the BACT technical feasibility discussion for TRS, H_2S, and VOC. Table G-1 presents a summary of the technical feasibility of the control technologies available for reducing TRS/H_2S emissions from the No. 8 Mill Soap Skimmer Tanks. For each emissions unit and control technology listed:

- The letter "N" indicates that the available control technology has been determined to be technically infeasible;
- The letter "B" indicates that the top-ranked control technology for the emissions unit has been selected as BACT for the emissions unit; and
- The letter "Y" indicates that the available control technology has been determined to be technically feasible.

TABLE G-1. SUMMARY OF TRS/H_2S CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Wet Scrubber	Good Operating Practices
X033	No. 8 Mill - No. 1 Soap Skimmer Tank	Y	Y	Y
X033	No. 8 Mill - No. 2 Soap Skimmer Tank	Y	Y	Y

A review of the RBLC database was conducted for Process Codes 30.219 (Other Kraft Material Recovery Processes), 30.211 (Kraft Recovery Furnaces/Boilers), 30.249 (Other Kraft Paper Making Processes) and 30.290 (Other Kraft Processes), and no add-on control technology was identified for soap skimmer tanks or black liquor storage tanks. However, some facilities do collect and control emissions from weak black liquor tanks in the HVLC system (thermal oxidation). All control technologies listed are technically feasible for control of TRS/H_2S emissions.

Table G-2 presents a summary of the technical feasibility of the control technologies available for reducing VOC emissions from the No. 8 Mill Soap Skimmer Tanks. The "N", "B", and "Y" designations have the same meaning as described above for Table G-1.

TABLE G-2. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY

Emissions Unit	Source Name	Thermal Oxidation (Incineration)	Catalytic Oxidation	Packed Bed Scrubber	Condenser Technology	Carbon Adsorption	Biofiltration	Good Operating Practices
X033	No. 8 Mill - No. 1 Soap Skimmer Tank	Y	N	Y	N	Y	N	Y
X033	No. 8 Mill - No. 2 Soap Skimmer Tank	Y	N	Y	N	Y	N	Y

A review of the RBLC database was conducted for Process Codes 30.219 (Other Kraft Material Recovery Processes), 30.211 (Kraft Recovery Furnaces/Boilers), 30.249 (Other Kraft Paper Making Processes) and 30.290 (Other Kraft Processes), and no add-on control technology was identified for soap skimmer tanks or black liquor storage tanks. These tanks are not required to be controlled under 40 CFR Part 63, Subpart S or MM.

Thermal oxidation for the control of VOC from these tanks is technically feasible. Catalytic oxidation would encounter technical hurdles, such as catalyst deactivation through sulfur-containing exhaust gases, and has been deemed not a technically feasible control option. A packed-bed scrubber could be a technically feasible control technology for this type of tank. Condensing technology would not be a technically feasible control technology as the pollutant loading from these sources is outside the normal operating ranges (<5,000 ppm). Carbon adsorption might be feasible for controlling some of the individual VOC compounds that are emitted, but not for all VOC compounds. Activated carbon has a varying "adsorption ability" for different VOC compounds and this affects the overall VOC control efficiency for the exhaust stream to be controlled. To the best of our knowledge, biofiltration has never been demonstrated for use to control VOCs from soap skimming tanks. However, average temperatures of the exhaust leaving this tank would be approximately 160°F, well above the optimal temperature for the bacteria to survive. Diluting the exhaust gas with ambient air to reduce the temperature would reduce VOC concentrations to a level that would significantly reduce the effectiveness of the biofilter.

The Mill has concluded that the use of thermal oxidation, packed-bed scrubber, carbon adsorption, and good operating practices are technically feasible control technologies for VOC emissions from the No. 8 Mill Soap Skimmer Tanks.

Step 3. Rank Remaining Control Technologies by Control Effectiveness

TRS/H_2S

Following the feasibility review in Step 2, three feasible control technologies remain for control of TRS and H_2S emissions from the No. 8 Mill Soap Skimmer Tanks. The technologies have been ranked according to their control efficiency in Table G-3.

TABLE G-3. SUMMARY OF SULFUR COMPOUNDS CONTROL TECHNOLOGY FEASIBILITY

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Wet Scrubber	90-98%	2
Good Operating Practices	Varies by design	3

VOC
Following the feasibility review in Step 2, four feasible control technologies remain for control of VOC emissions from the No. 8 Soap Skimmer Tanks. The technologies have been ranked according to their control efficiency in Table G-4.

TABLE G-4. SUMMARY OF VOC CONTROL TECHNOLOGY FEASIBILITY

Control Technology	Control Efficiency	Rank
Thermal Oxidation (Incineration)	95-99%	1
Packed Bed Scrubber	70-99%	2
Carbon Adsorption	95-98%	3
Good Operating Practices	Varies by design	4

For all 3 pollutants, the top ranked control technology is selected as BACT by default unless the applicant can demonstrate that the economic, environmental, and energy impacts justify selecting a lower ranked control technology. The evaluation continues in Step 4.

Step 4. Evaluate Economic, Environmental, and Energy Impacts of Technically Feasible Control Technologies

TRS/H_2S
An economic analysis was performed to evaluate the feasibility of collecting and transporting sulfur compound emissions from the No. 8 Mill Soap Skimmer Tanks to an existing wet scrubber or combustion unit. Initial estimates for the capital cost of the collection system are approximately $717,060. Using a CRF of 0.1 results in an annual cost of $71,681. Combining the annualized cost with the anticipated tons of TRS removed (0.64 tpy) results in a total cost per ton of sulfur compounds removed of $111,392 in 2024 dollars. Additional cost detail is included at the end of this section. Based on this economic evaluation, collecting and transporting sulfur compound emissions from the No. 8 Mill Soap Skimmer Tanks to an existing control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Spray Chamber/Spray Tower Wet Scrubbers to evaluate the feasibility of controlling TRS emissions from the No. 8 Mill Soap Skimmer Tanks with a new wet scrubber. Assuming a fan is installed to pull a draft from both tanks to the wet scrubber at a rate of 1,000 scfm and a control efficiency of 98%, a wet scrubber is not cost effective as reflected in Table G-5. Additional cost detail is included at the end of this section.

TABLE G-5. SUMMARY OF TRS CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$8,068
Direct Annual Costs	$31,767
Indirect Annual Costs	$806
Total Annual Costs	$32,573
TRS Reduction (tpy)	0.64
Cost Effectiveness ($/ton removed)	**$51,135**

Based on this analysis, good operating practices is the only remaining feasible control alternative for minimization of TRS and H_2S emissions.

VOC

An economic analysis was performed to evaluate the feasibility of collecting and transporting VOC emissions the No. 8 Mill Soap Skimmer Tanks to an existing combustion unit. Initial estimates for the capital cost of the collection system are roughly $717,060. Using a capital recovery factor of 0.1 results in an annual cost of $52,817. Combining the annual cost with the anticipated tons of VOC removed (0.98 tpy) results in a total cost per ton of VOC removed of $73,136 in 2024 dollars. Additional cost detail is included at the end of this section. Based on this economic evaluation, collecting and transporting VOC emissions from the No. 8 Mill Soap Skimmer Tanks to an existing control device is not economically feasible.

An economic analysis was also performed using EPA's Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubbers to evaluate the feasibility of controlling VOC emissions from the No. 8 Mill Soap Skimmer Tanks with a new wet scrubber. Assuming a fan is installed to pull a draft from this tank to the wet scrubber at a rate of 1,000 scfm and a control efficiency of 99%, a wet scrubber is not cost effective as reflected in Table G-6. Additional cost detail is included at the end of this section.

TABLE G-6. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – PACKED BED WET SCRUBBER

Cost Type	Total Cost (2023$)
Total Capital Investment	$8,068
Direct Annual Costs	$31,767
Indirect Annual Costs	$806
Total Annual Costs	$32,573
VOC Reduction (tpy)	0.98
Cost Effectiveness ($/ton removed)	**$33,235**

An economic evaluation of an add-on carbon adsorption unit was conducted using the *Air Pollution Control Cost Estimation Spreadsheet for Carbon Adsorbers, U.S. EPA (November 2020)*. The economic impact for purchasing and operating a stand-alone carbon adsorber is summarized in Table G-7. Additional cost detail is included at the end of this section.

TABLE G-7. SUMMARY OF VOC CONTROL TECHNOLOGY ECONOMIC COST ASSESSMENT – CARBON ADSORPTION

Cost Type	Total Cost (2023$)
Total Capital Investment	$3,501,084
Direct Annual Costs	$67,945
Indirect Annual Costs	$582,869
Total Annual Costs	$650,173
VOC Reduction (tpy)	0.97
Cost Effectiveness ($/ton removed)	**$670,144**

Based on this economic evaluation, good operating practices is the only remaining feasible control alternative.

Step 5. Identify BACT

TRS/H_2S

Good operating practices are the only technically and economically feasible control technology for TRS/H_2S emissions from the No. 8 Mill Soap Skimmer Tanks. The Mill is proposing an annual emissions limit of 0.33 tpy of TRS and 0.21 tpy of H_2S for each tank. The annual emissions limits are based on emissions factors from the 2018 NCASI Air Toxics Pulp and Paper Database for heavy black liquor storage tanks.

The available data in the RBLC search results is not sufficient to show that the Mill's proposed TRS and H_2S emissions limits would be comparable to similar black liquor storage tanks. However, this data is the best available and is comparable to current industry representations for TRS emissions from soap skimmer tanks.

VOC

As discussed in above, capturing, collecting, and incinerating the VOC emissions from the No. 8 Mill Soap Skimmer Tanks is not economically feasible, and good operating practices are the sole remaining control technology. The Mill proposes an annual limit of 0.49 tpy for each tank based on emissions factors referenced from the NCASI TB No. 1020 for heavy black liquor storage tanks.

To confirm that the proposed emissions limits are comparable to other similar tank BACT determinations for VOC, a search of the RBLC database was conducted. The VOC BACT summary shows that the proposed BACT emissions limit of 0.11 lb/hr would be within the 0.01 to 0.57 lb/hr range of BACT emissions limits for weak and heavy black liquor storage tanks.

Control Technology Economic Cost Assessments

Table G-1. Detailed TRS Control Technology Economic Cost Assessment - No. 8 Mill Soap Skimmer Tanks to Mill Combustion Unit or Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated Sulfur Compounds Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$717,060	0.10	$71,681	0.64	$111,392

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 8 Mill Soap Skimmer Tanks and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of Sulfur Compounds Pollutants Destroyed)

Table G-2. Detailed TRS Control Technology Economic Cost Assessment - No. 8 Mill Soap Skimmer Tanks to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$8,068	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$31,767	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$806	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$32,573	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
TRS Removed*	0.64	tons/year	Assumes 98% control efficiency
Cost Effectiveness	**$51,135**	/ton	Total Annual Cost/Annual Quantity of TRS Removed

*Conservatively uses entire screening system emissions, not just the new and modified equipment.

Table G-3. Detailed VOC Control Technology Economic Cost Assessment - No. 8 Mill Soap Skimmer Tanks to Mill Combustion Unit or Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Capital Cost[a]	Capital Recovery Factor[b]	Annualized Direct Cost	Anticipated VOC Destroyed[c] (tpy)	Cost Effectiveness[d] ($/ton)
$717,060	0.10	$71,681	0.98	$73,136

a. Estimated capital cost in 2024$.
b. Capital Recovery Factor is calculated using an estimated 20 year equipment life and an annual interest rate of 7.75%.
c. Anticipated sulfur compounds removed is based on the TRS PTE from the No. 8 Mill Soap Skimmer Tanks and a 99% control efficiency of an existing combustion unit.
d. Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC Destroyed)

Table G-4. Detailed VOC Control Technology Economic Cost Assessment - No. 8 Mill Soap Skimmer Tanks to Wet Scrubber
Alabama River Cellulose LLC - Purdue Hill, AL

Estimated Exhaust Flow: 1,000 scfm

Parameter	Value	Units	Basis
Total Capital Investment (TCI)	$4.00	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$8.07	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$8,068	(2023$)	Normalized cost multiplied by estimated exhaust flow
Direct Annual Costs	$15.75	/scfm (2002$)	EPA-CICA Fact Sheet for Wet Scrubbers (average of range)
	$31.77	/scfm (2023$)	Adjusted based on Chemical Engineering Plant Cost Escalation/De-escalation Index
	$31,767	(2023$)	Normalized cost multiplied by estimated exhaust flow
Capital Recovery	$806	(2023$)	Capital Recovery Factor, CRF,calculated using an estimated 20-year equipment life and an annual interest rate of 7.75% applied to TCI.
Total Annual Cost	$32,573	(2023$)	Direct Annual Costs + Capital Recovery. Conservatively, this analysis does not account for other indirect annual costs such as property taxes and insurance.
VOC Removed	0.98	tons/year	Assumes 99% control efficiency
Cost Effectiveness	**$33,235**		Total Annual Cost/Annual Quantity of VOC Removed

Table G-5.
Detailed VOC Control Technology Economic Cost Assessment - No. 8 Mill Soap Skimmer Tanks Controlled by Carbon Adsorption

Capital Costs

Estimated capital costs for a Fixed-Bed Carbon Adsorber with Steam Regeneration with the following characteristics:

VOC Controlled/Recovered = Toluene
Adsorber Vessel Orientation = Horizontal
Operating Schedule = Continuous Operation

Total Capital Investment (TCI) (in 2023 dollars)

Parameter	Equation	Cost
Costs for Each Carbon Adsorber Vessel (C_v) =	$271 \times F_m \times S^{0.778}$ =	$268,794
Total Cost for All Carbon Adsorber Vessels and Carbon(EC_{Adsorb}) =	$5.82 \times Q^{0.133} \times [C_c + (N_A + N_D) \times C_v]$ =	$1,833,216
Auxiliary Equipment (EC_{aux}) =	(Based on design costs or estimated using methods provided in Section 2)	$32,000
Total Purchased Equipment Costs for Carbon Adsorber (A) =	$= EC_{Adsorb} + EC_{aux}$ =	$1,865,216
Instrumentation =	0.10 × A =	Included in A
Sales taxes =	0.03 × A =	$55,956
Freight =	0.05 × A =	$93,261
	Total Purchased Equipment Costs (B) =	$2,014,433

Direct Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Foundations and Supports =	0.08 × B =	$161,155
Handling and Erection =	0.14 × B =	$282,021
Electrical =	0.04 × B =	$80,577
Piping =	0.02 × B =	$40,289
Insulation =	0.01 × B =	$20,144
Painting =	0.01 × B =	$20,144
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Costs (DC) = B + (0.3 × B) + SP + Bldg =	$2,618,763

Total Indirect Installation Costs (in 2023 dollars)

Parameter	Equation	Cost
Engineering =	0.10 × B =	$201,443
Construction and field expenses =	0.05 × B =	$100,722
Contractor fees =	0.10 × B =	$201,443
Start-up =	0.02 × B =	$40,289
Performance test =	0.01 × B =	$20,144
	Total Indirect Costs (IC) =	$564,041
Contingency Cost (C) =	CF(IC+DC)=	$318,280

Total Capital Investment (TCI) =	**DC + IC + C = (1.28 × B) + SP + Bldg. + C =**	**$3,501,084**	**in 2023 dollars**

Annual Costs

Direct Annual Costs

Parameter	Equation	Cost
Annual Electricity Cost =	$Q_{Elec} \times P_{elec}$ =	$1,104
Annual Steam Cost (C_s) =	$3.50 \times m_{voc} \times \Theta_s \times P_s$ =	$35
Annual Cooling Water Cost (C_{cs}) =	$3.43 \times C_s/P_s \times P_{wc}$ =	$84
Operating Labor Costs:	Operator = 0.5 hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$19,491
	Supervisor = 15% of Operator	$2,924
Maintenance Costs:	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$22,146
	Materials = 100% of maintenance labor	$22,146
Carbon Replacement Costs:	Labor = $CRF_{carbon} \times$ (Labor Rate × M_c)/CRR =	$0
	Carbon = $CRF_{carbon} \times CC \times M_c \times 1.08$ =	$14

Direct Annual Costs (DAC) =		**$67,945**	**in 2023 dollars**

Indirect Annual Costs

Parameter	Equation	Cost
Overhead	= 60% of sum of operator, supervisor, maintenance labor Plus maintenance materials	$40,024
Administrative Charges	= 2% of TCI	$70,022
Property Taxes	= 1% of TCI	$35,011
Insurance	= 1% of TCI	$35,011
Capital Recovery	= $CRF_{Adsorber}$ × (TCI - [(1.08 x CC x M_c) + (LR x M_c/CRR)] =	$402,801

Indirect Annual Costs (IAC) =		**$582,869**	**in 2023 dollars**

Recovered Solvent Credit/Disposal Costs

Disposal Cost

Parameter	Equation	Cost
VOC Disposal/Treatment Costs (*Disposal $_{cost}$*)	$= m_{voc} \times \Theta_s \times D_{voc} \times E$ =	$0

VOC Recovery Credit

Parameter	Equation	Cost
Annual Recovery Credit for Condensate (RC)	$= m_{voc} \times \Theta_s \times P_{voc} \times E$ =	$640

Total Annual Cost (TAC) =	**DAC + IAC + C + $Disposal_{Cost}$ - RC =**	**$650,173**	**in 2023 dollars**

Cost Effectiveness

Cost Effectiveness

Parameter	Equation	Cost	
Total Annual Cost =	TAC =	$650,173	per year in 2023 dollars
Annual Quantity of VOC Removed/Recovered =	$W_{voc} = m_{voc} \times \Theta_s \times E$ =	0.97	tons/year
Cost Effectiveness =	**Total Annual Cost (TAC) / Annual Quantity of VOC Removed/Recovered =**	**$670,144**	**per ton of pollutants removed/recovered in 2023 dollars**

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) AIR QUALITY ANALYSES FINAL REPORT

ALABAMA RIVER CELLULOSE NO. 7 MILL TRANSFORMATION PROJECT

Alabama River Cellulose LLC
Facility/Permit No. 106-0010

2373 Lena Landegger Highway
Perdue Hill (Monroe County), Alabama 36470

Submitted to the
Alabama Department of Environmental Management (ADEM) Air Division

July 2025 (Updated)

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1. EXECUTIVE SUMMARY

Alabama River Cellulose LLC (ARC or the "mill"), a wholly owned subsidiary of Georgia-Pacific LLC (GP), operates a kraft pulp mill in Perdue Hill, Monroe County, Alabama. ARC is an existing major source of air pollutants and operates under Title V Operating Permit No. 106-0010 issued by the Alabama Department of Environmental Management (ADEM) Air Division effective November 9, 2022.

GP initially submitted a Prevention of Significant Deterioration (PSD) permit application on December 20, 2024, to request a construction permit authorizing a *project*[1] to modernize the mill's operations by replacing certain process equipment with new equipment and modify other process equipment to increase capacity and ensure existing equipment can reliably meet higher production targets. After initial review and subsequent discussion with ADEM, an updated application was submitted on June 4, 2025, and a final revision on July 7, 2025.

This PSD air quality analysis final report provides a summary description of the existing mill, proposed *project*, and PSD permitting applicability, consistent with applicable EPA and ADEM guidance. This report describes the analytical techniques and data resources GP used to demonstrate compliance with applicable air quality standards and meet regulatory requirements for PSD permitting. GP submitted an initial modeling protocol on November 24, 2024, received comments from ADEM on December 16, 2024, and further discussed questions, comments, and analytical techniques on December 18, 2024, February 5, 2025, and May 1, 2025. A revised modeling protocol was submitted on June 6, 2025, to address ADEM's comments and provide requested additional information, a copy of which is provided as Appendix A to this report. ADEM indicated approval of GP's PSD modeling protocol on June 11, 2025.[2] ADEM's initial comments on the modeling report were addressed through correspondence on July 1, 2025[3], and this updated modeling report is submitted concurrently with the final, revised PSD permit application, including updates to modeled emission rates for carbon monoxide, volatile organic compounds, particulate matter less than 10 microns, and particulate matter less than 2.5 microns from certain emission units reflected in an updated permit application submitted on July 25, 2025.

The remainder of this report describes applicable regulations, guidance, data resources, analytical techniques, and air quality analyses to demonstrate attainment of applicable standards. GP's PSD permit application provides more detailed information about the proposed *project*, emissions calculations, regulatory applicability, and best available control technology determinations. This final modeling report and electronic data files are transmitted electronically for ADEM review and a complete permitting record.

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[1] Throughout this report, italicized terms are used consistent with a specific regulatory definition. For example, a *project* is "a physical change in, or change in the method of operation of, an existing major stationary source" (ADEM Admin Code r. 335-3-5-.04(14)(1)(yy)).

[2] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP) dated June 11, 2025.

[3] Electronic communication from Mr. Ryan Gesser (GP) to Mr. Steven Bissey (ADEM) dated July 1, 2025.

1.1. MILL AND PROJECT DESCRIPTION

ARC owns and operates a bleached Kraft pulp mill classified under North American Industrial Classification System (NAICS) code 322110 and Standard Industrial Classification (SIC) code 2611. The ARC Mill is located at 2373 Lena Landegger Highway between U.S. Highway 84 and State Highway 41 in Perdue Hill (Monroe County), Alabama. Monroe County has been designated by the EPA as "attainment" or "unclassified" for all criteria pollutants.[4] The centroid of the main process area is approximately 453.7 km East, 3,494.2 km North (Universal Transverse Mercator [UTM] Zone 16, North American Datum [NAD] 1983). Figure 1-1 illustrates the location and layout of the facility and surrounding area.

The mill operates two existing pulping lines: the No. 7 Line and the No. 8 Line. The mill produces bleached softwood Kraft pulp for sale as market (baled) pulp and rolled (fluff) pulp. Although the two lines were originally constructed separately and each line could operate independently because each maintains a woodyard, power boiler to generate steam and electricity, pulping and bleaching lines, chemical recovery system (i.e., recovery furnace, lime kiln, and recausticizing), pulp dryer, and finishing system, both lines have the ability to utilize bark, chips, steam, black liquor, and pulp from the other line. Both lines feed a combined crude tall oil (CTO) and turpentine system to recover valuable byproducts, and both are served by the mill's effluent treatment system. The mill is an existing *major stationary source* of air pollutants and is subject to PSD review for *projects* that are a *major modification* because they cause a *significant emissions increase* and a *significant* ***net*** *emissions increase* of *regulated NSR pollutants*.

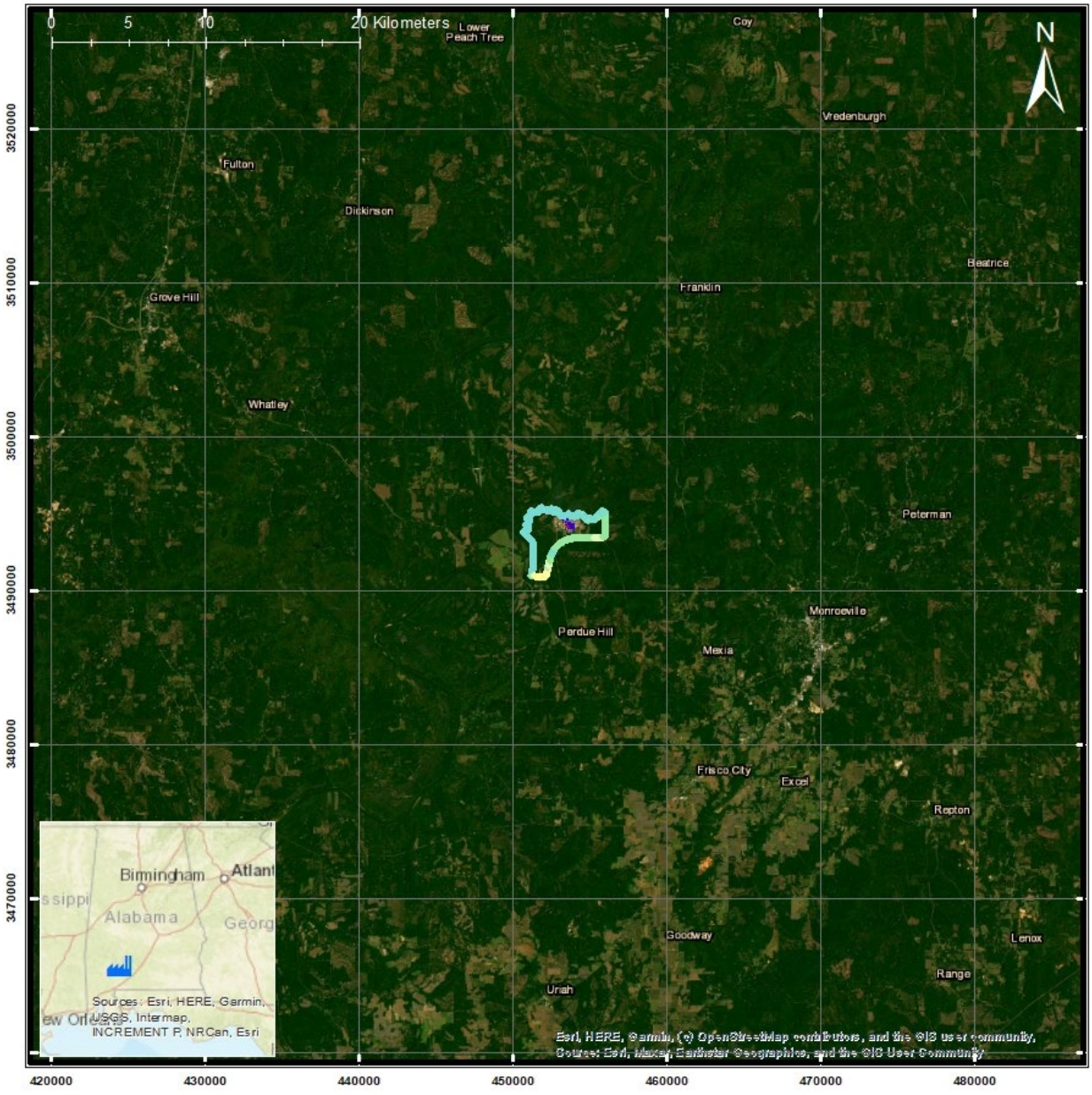
GP intends to conduct a *project* to modernize the mill's pulp manufacturing process by replacing certain existing process units with new equipment and modifying other existing equipment to ensure reliable operations at higher production capacity after the *project* is completed ("modernization project"). Other process units will not be physically modified but will nevertheless be affected in the sense that utilization, and therefore *actual emissions*, may increase to support modified existing and new equipment operating at higher production rates. GP's PSD permit application provided a complete description of the proposed project, process flow diagrams, emissions inventory, regulatory applicability analysis, and best available control technology (BACT) determination to meet requirements for PSD permitting.

As a distinct *project* that will be permitted separately from the modernization project, ARC intends to install a new power boiler to primarily generate steam for the No. 8 Line, which will replace the stationary existing No. 8 Power Boiler that has recently been shut down and obviate the need for multiple natural gas-fired package boilers that ARC has rented and operated since approximately November 2022. Although the No. 8 Power Boiler replacement is a separate *project* that is unlikely to trigger PSD review in and of itself, the replacement is expected to

[4] 40 CFR §81.301.

occur after the modernization project is permitted and commences construction, but before the mill resumes normal operations, such that the No. 8 Power Boiler replacement project is *contemporaneous* with the modernization project and the emissions changes were accounted as part of the Step 2 emissions netting analysis. The PSD permit application submitted on June 4, 2025, provides detailed information about the scope of the *project* and affected emissions units.

Figure 1-1. Alabama River Cellulose and surrounding area.
(Universal Transverse Mercator [NAD 1983] Zone 16 coordinates expressed in meters as described in Section 2.4 of this report.)



1.2. PSD PERMITTING APPLICABILITY

Prevention of Significant Deterioration (PSD) permitting requirements are established in ADEM's State Implementation Plan (SIP) approved regulations at ADEM Admin. Code r. 335-3-14-.04 "Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting (PSD)]." PSD permitting is required when a *project* at an existing *major stationary source* is a *major modification* because it causes a *significant emissions increase* and a *significant **net** emissions increase* of a *regulated NSR pollutant*. GP's PSD permit application provided detailed calculations to quantify the emissions changes resulting from the *project* ("Step 1 emissions changes") based on the "hybrid test for projects that involve multiple types of emissions units" by comparing *baseline actual emissions* to *projected actual emissions* for existing emission units and accounting *potential emissions* from new emission units.[5]

The proposed *project* will affect most of the mill's emission units through replacement of existing emissions units with new emissions units, *modification* of existing units, and increased utilization of existing emissions units that are not otherwise modified, for which GP submitted a detailed PSD permitting applicability analysis to quantify the Step 1 emissions increases associated with the *project* and the Step 2 *net emissions increases* including *projects* that are *contemporaneous* and otherwise *creditable*. Table 1-1 summarizes GP's analysis of net emissions changes resulting from the project for each *regulated NSR pollutant* relative to the PSD *significant emission rate* (SER) thresholds, above which the *project* triggers PSD permitting requirements. The PSD permit application submitted on June 4, 2025, provided detailed information about emissions calculations and PSD permitting applicability.

Table 1-1. Summary of *net emissions increases* associated with the proposed *major modification* relative to PSD *Significant Emission Rates* (SER).

Regulated NSR Pollutant	Emissions Changes (tpy)			SER	PSD Review?
	Project (Step 1)	Contemporaneous (Step 2)	Net		
Filterable PM	225.53	256.54	**482.07**	25	Yes
Total PM_{10}	495.51	112.42	**607.94**	15	Yes
Total $PM_{2.5}$	445.31	64.79	**510.10**	10	Yes
SO_2	39.79			40	No
NO_X	774.54	31.13	**805.67**	40	Yes
CO	1,990.82	1,556.98	**3,547.80**	100	Yes
VOC	270.31	574.18	**844.48**	40	Yes
SAM	130.49	114.20	**244.69**	7	Yes
Lead	0.00093			0.6	No
H_2S	42.42	4.96	**47.38**	10	Yes
TRS	40.50	76.28	**116.78**	10	Yes
Total GHG as CO_2e	584,287	338,774	**923,061**	75,000	Yes

[5] Unless otherwise specified, references to *potential emissions* generally refer to permitted emission limits in the mill's most recent construction and operating permits, and in prior permit application submittals upon which the current permits are based or anticipated (but subject to change) proposed permit limits for new or modified equipment. *Actual emissions – baseline*, *projected*, and *past* – are expressed consistent with regulatory definitions in the appropriate context as described in subsequent sections of this report.

Based on the analysis summarized in Table 1-1, the proposed ***net*** *emissions increases* will exceed the PSD SER and be a *major modification* for the following *regulated NSR pollutants*:

- Filterable Particulate matter (PM)
- Total particulate matter (including condensable PM) less than 10 microns in aerodynamic diameter (PM_{10})
- Total particulate matter (including condensable PM) less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Volatile organic compounds (VOC)
- Sulfuric acid mist (SAM)
- Hydrogen sulfide (H_2S)
- Total reduced sulfur compounds (TRS)
- Greenhouse gases (GHG)

Among the preceding *regulated NSR pollutants*, only certain ones are also *criteria air pollutants* for which EPA has established National Ambient Air Quality Standards (NAAQS) and PSD Increments that are evaluated in the PSD air quality analyses: PM_{10}, $PM_{2.5}$, CO, and NO_2. VOC emissions are addressed as a precursor to secondary ozone formation. Notably, GP does not anticipate a *significant* ***net*** *emissions increase* of sulfur dioxide (SO_2); therefore, no additional modeling analyses for this pollutant are required. However, SO_2 is evaluated as a precursor to secondary formation of $PM_{2.5}$ as prescribed by recent EPA guidance and described in subsequent sections of this report.

1.3. FEDERAL AND ALABAMA AIR QUALITY STANDARDS

The Clean Air Act of 1970 required the EPA to establish ambient concentration thresholds for certain compounds based upon the identifiable effects that the compounds may have on the public health and welfare. Subsequently, the EPA promulgated regulations that set NAAQS for six criteria pollutants: SO_2, CO, NO_2, particulate matter (PM, PM_{10} and $PM_{2.5}$), lead (Pb), and ozone. Two classes of ambient air quality standards have been established: (1) primary standards defining levels of air quality that the EPA has judged as necessary to protect public health; and, (2) secondary standards defining levels for protecting soils, vegetation, wildlife, and other aspects of public welfare.

ADEM has adopted the federal primary and secondary NAAQS for the State of Alabama in ADEM Admin. Code r. 335-3-1-.03 "Ambient Air Quality Standards." Table 1-2 summarizes the applicable ambient air quality standards indicating the averaging period, form, and concentration level of each. Attainment is typically determined in terms of a *design value* or *concentration* consistent with the form of each standard. When ambient monitoring data are

used to assess compliance, the *design value* represents a three-calendar year average. When dispersion models are used to assess compliance, the *modeled design concentration* is determined from five simulated meteorological data years.

Table 1-2. National and Alabama Ambient Air Quality Standards.

Pollutant	Averaging Period / Form	Concentration Level	
		Primary	Secondary
NO_2	1-hour / Average 98th percentile Daily Maximum	188.1 µg/m³	None
	Annual / Maximum	100 µg/m³	100 µg/m³
SO_2	1-hour / Average 99th percentile Daily Maximum	196.3 µg/m³	None
	3-hour / Highest 2nd-High (H2H)	None	1,300 µg/m³
PM_{10}	24-hour / Highest 6th-High of 5 Years	150 µg/m³	150 µg/m³
$PM_{2.5}$	24-hour / 98th percentile Daily Average	35 µg/m³	35 µg/m³
	Annual / 5-year Average	9.0 µg/m³	15.0 µg/m³
CO	1-hour / H2H	40,000 µg/m³	None
	8-hour / H2H	10,000 µg/m³	None
O_3	8-hour / 4th-high Daily Maximum	70 ppb	70 ppb
Pb	3-month / Maximum	0.15 µg/m³	0.15 µg/m³

Under the 1970 Clean Air Act, states were required to delineate air quality control regions (AQCRs) and to adopt SIPs to provide for attainment of the NAAQS as expeditiously as practical, within certain time limits. The 1977 Clean Air Act Amendments, in Section 107, required EPA and states to identify, by category, those AQCRs (or portions thereof) meeting and not meeting the NAAQS. Areas meeting the NAAQS are termed attainment areas, and areas not meeting the NAAQS are termed non-attainment areas. Areas that have insufficient data to determine attainment/non-attainment status are unclassified or are not designated but are treated as being attainment areas for permitting purposes. The designation of an area is made on a pollutant-by-pollutant basis.

ARC is located in Monroe County, which is part of the Alabama and Tombigbee Rivers Intrastate Air Quality Control Region. Per 40 CFR §81.301, the current attainment status for Monroe County for each of the criteria pollutants is provided below in Table 1-3. The attainment status of the county, in addition to the calculated net emissions changes, determines the regulatory review process for the *project*. As shown in Table 1-3, ARC is currently treated as an attainment area for permitting purposes for all pollutants and is therefore subject to PSD for NSR for a *major modification* at an *existing major stationary source*.

Table 1-3. Attainment Status of Monroe County, Alabama.
Status is reported relative to the most recent NAAQS revision for which designations have been made.

Pollutant	Attainment Status
Total Suspended Particulate	Better than national standards
PM_{10}	Unclassifiable/Attainment
$PM_{2.5}$	Unclassifiable/Attainment
SO_2	Attainment/Unclassifiable
CO	Unclassifiable/Attainment
O_3	Attainment/Unclassifiable
1-hour NO_2	Unclassifiable/Attainment
Annual NO_2	Cannot be classified or better than national standards
Pb	Unclassifiable/Attainment

1.4. SCOPE OF PSD AIR QUALITY ANALYSES

The PSD regulations require that an owner or operator undergoing a *major modification* perform the following air quality analyses for those pollutants subject to PSD review as enumerated in ADEM Admin Code r. 335-3-14-.04(10) through (15) to demonstrate that the project would not cause or contribute to air pollution in violation of applicable standards:

- **Analysis of existing air quality in the vicinity of the source**. This analysis is performed through review of ambient monitoring data in the vicinity, or otherwise representative of, the mill, as described in Section 3.2 of this report.
- **Analysis of air quality impacts resulting from pollutant emissions from the source relative to PSD Increments and NAAQS**. This analysis is performed through dispersion modeling of emissions changes expected to result from the proposed *major modification* to determine whether ambient concentration changes will be significant, and if so, to demonstrate representative emissions after the *major modification* will not cause or contribute to violations of applicable standards, as described in Sections 4 and 5 of this report.
- **Assessment of additional impacts resulting from plume visibility, effects on soils and vegetation in the source's impact areas, and growth associated with the project**. As described subsequently in Section 6 of this report, no adverse additional impacts on visibility, soils and vegetation, and growth are expected to result from this project because dispersion modeling analyses demonstrate attainment of secondary NAAQS that are established to protect welfare and ecological effects, and because the Mill will continue to comply with general requirements (e.g., fugitive emissions management) that minimize impacts on the surrounding environment.
- **PSD increment consumption, visibility, and air quality related values (AQRV) impact analyses at federal Class I areas within 300 km of the facility where the project occurs**. As described subsequently in Section 7 of this report, no adverse additional impacts on Class I AQRV or PSD Increments are expected to result from this *major modification* because the anticipated emissions increases are expected to cause *de minimis* impacts at distant (i.e., 215 km

and beyond) Class I areas, and regional-scale emissions reductions have improved air quality and expanded PSD Increment across the region including these areas.

The following sections describe the PSD air quality analyses that have been conducted to demonstrate attainment of applicable standards. This discussion is limited to CO, PM_{10}, $PM_{2.5}$, and NO_2, the only *regulated NSR pollutants* for which a *significant **net** emissions increase* is caused by the project and subject to PSD review for which ambient standards have been established. Ozone is also discussed because the project will cause a *significant **net** emissions increase* of precursor VOC.

1.4.1. Significant Impact Analyses

The initial step of the modeling analysis is to determine whether the *significant **net** emissions increases* caused by the *major modification* result in ambient concentrations that exceed significant impact levels (SILs) established for each pollutant and averaging period as summarized in Table 1-4, including the averaging period, form, and concentration level of each. SILs are established for Class II areas (i.e., outside of Class I areas including the vicinity of ARC) and separately for federally designated Class I areas that are afforded a higher level of air quality protection through lower, more stringent SILs and PSD Increments. As stated in ADEM Admin Code r. 335-3-14-.04(10)(b) where the SILs are established, the required demonstration that a proposed *modification* would not cause or contribute to a violation of a NAAQS or PSD Increment is "deemed to have been made if the emissions increase … from the modification alone … would cause air quality impacts less than the SILs in all areas." Ambient monitoring of air quality may be required if the project is expected to increase concentrations above significant monitoring concentrations (SMCs) summarized in Table 1-4 as established in ADEM Admin Code r. 335-3-14-.04(8)(h).

Table 1-4. SILs and SMCs for each *regulated NSR pollutant* subject to PSD analyses.

Pollutant	Averaging Period / Form	Concentration Level	
		SIL	SMC
CO	1-hour / 1st High Among 5 Years	2,000 µg/m³	None
	8-hour / 1st High Among 5 Years	500 µg/m³	575 µg/m³
NO_2	1-hour / 1st High Averaged over 5 Years	7.5 µg/m³	None
	Annual / 1st High Among 5 Years	1 µg/m³	14 µg/m³
PM_{10}	24-hour / 1st High Among 5 Years	5 µg/m³	10 µg/m³
	Annual / 1st High Among 5 Years	1 µg/m³	None
$PM_{2.5}$	24-hour / 1st High Averaged over 5 Years	1.2 µg/m³	None
	Annual / 1st High Averaged over 5 Years	0.13* µg/m³	None
O_3	8-hour / 4th-high Daily Maximum	1.0 ppb	None†

* GP notes that although the applicable annual average $PM_{2.5}$ SIL established in ADEM Admin Code r. 335-3-14-.04(8)(h) remains 0.3 µg/m³ as of the submittal date of this report, ADEM has revised its PSD modeling guidelines and communicated its intent to adopt the EPA-recommended value of 0.13 µg/m³ associated with the annual average $PM_{2.5}$ NAAQS revised effective May 6, 2024.

† Pre-construction ambient monitoring for ozone may be required for projects with a *significant **net** emissions increase* of 100 tpy or more VOC or NO_X.

Modeled concentrations are assessed relative to the SIL for each pollutant and averaging period. If the significant impact analysis determines that no ambient concentration exceeds the SIL due to emissions changes resulting from the *project*, then no further analysis is necessary for that pollutant because it is presumed the *project* will neither cause nor contribute to a violation of any applicable standards. If a modeled concentration above the SIL is computed, then subsequent cumulative analyses are required. The significant impact area (SIA) is determined as the longest distance from the source at which a significant impact is computed to occur and is used to define the geographic range of cumulative analyses – including nearby stationary sources that may affect the same area – to demonstrate compliance with NAAQS and PSD Increments.

As described in Section 3 of this report, GP's significant impact analyses indicate that significant impacts of 1-hour average (only) NO_2, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$ will result from the proposed *major modification*; therefore, cumulative NAAQS and PSD Increment analyses were performed for those pollutants and corresponding averaging periods. As described subsequently in Section 3.2 of this report, GP utilized existing ambient monitoring data collected by ADEM to characterize existing air quality in the vicinity of ARC, including ozone and $PM_{2.5}$ for which no SMC has been established. As discussed in Section 2.9.1 of this report, secondary formation of ozone due to *significant **net** emissions increases* of precursor NO_X and VOC are expected to exceed the SIL; however, this analysis also demonstrates that continued attainment with the 8-hour ozone NAAQS is expected.

1.4.2. NAAQS Compliance Demonstration

Compliance with applicable NAAQS is determined in a "cumulative analysis" by simulating representative emissions from all sources at ARC as described in Section 2.6, emissions represented as described in Section 2.8.2, nearby sources in the regional source inventory as described in Section 3.1, background concentrations as described in Section 3.2, and for $PM_{2.5}$ secondary formation as described in Section 2.9.3. The modeled design concentration for each pollutant and averaging period is computed consistent with the averaging period and form of each standard to demonstrate that the total cumulative impact is less than the level of the NAAQS. Table 1-5 summarizes NAAQS for pollutants evaluated in this permit application.

Table 1-5. Summary of NAAQS for pollutants evaluated in this permit application.

Pollutant	Averaging Period / Form	Concentration Level	
		Primary	Secondary
NO_2	1-hour / 8th High Averaged over 5 Years	188.1 µg/m^3	None
PM_{10}	24-hour / 6th High Among 5 Years	150 µg/m^3	150 µg/m^3
$PM_{2.5}$	24-hour / 8th High Averaged over 5 Years	35 µg/m^3	35 µg/m^3
	Annual / 1st High Averaged over 5 Years	9.0 µg/m^3	15.0 µg/m^3
O_3	8-hour / 4th-high Daily Maximum	70 ppb	70 ppb

As described in Section 4 of this report, analyses demonstrate attainment of each of the preceding NAAQS using the modeling techniques and data resources described in this report.

1.4.3. PSD Increments Compliance Demonstration

PSD Increments are formally established in applicable regulations (ADEM Admin Code r. 335-3-14-.04(3)) as the *increase* above the *baseline concentration*, which is itself defined as follows (ADEM Admin Code r. 335-3-14-.04(2)(m)):

> *(m)* **Baseline concentration** *shall mean that ambient concentration level which exists in the baseline area … at the time of the applicable minor source baseline date. A baseline concentration is determined for each pollutant for which a minor source baseline date is established and shall include:*
>
> 1. *The actual emissions, as defined in paragraph (2)(u) of this Rule, representative of sources in existence on the applicable minor source baseline date, except as provided in subparagraph (m) 3. of this paragraph;*
> 2. *The allowable emissions of major stationary sources that commenced construction before the major source baseline date, but were not in operation by the applicable minor source baseline date.*
> 3. *The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s):*
>
>   *(i) Actual emissions, as defined in paragraph (2)(u), from any major stationary source on which construction commenced after the major source baseline date; and*
>
>   *(ii) Actual emissions increases and decreases, as defined in paragraph (2)(u), at any stationary source occurring after the minor source baseline date.*

Based on the preceding definition in subsection (m), "PSD Increment-affecting emissions" are those changes in *actual emissions* at any stationary source after the minor source baseline date (mSBD) and *actual emissions* at a *major stationary source* commencing construction after the major source baseline date (MSBD). Table 1-6 summarizes the applicable PSD Increments and MSBD for each pollutant and averaging period in Class II areas.

Table 1-6. Summary of PSD Increments for pollutants evaluated in this permit application.

Pollutant	Averaging Period / Form	Increment ($\mu g/m^3$)	MSBD
NO_2	Annual / Maximum Among 5 Years	25 $\mu g/m^3$	February 8, 1988
PM_{10}	24-hour / 2nd High Among 5 Years	30 $\mu g/m^3$	January 6, 1975
	Annual / Maximum Among 5 Years	17 $\mu g/m^3$	
$PM_{2.5}$	24-hour / 2nd High Among 5 Years	9 $\mu g/m^3$	October 20, 2010
	Annual / Maximum Among 5 Years	4 $\mu g/m^3$	

The original construction of ARC commenced in 1977 after the MSBD for PM_{10}; therefore, all PM_{10} *actual emissions* consume PSD Increment. *Actual emissions* changes at ARC after 1988 affect NO_2 PSD Increment; however, because the significant impact analyses indicate no significant impacts of annual average NO_2 resulting from the planned *major modification*, annual average NO_2 PSD Increment was not evaluated in this analysis. There is no 1-hour average NO_2 PSD Increment to evaluate because EPA did not establish a 1-hour average PSD Increment when the 1-hour average NAAQS was established in 2010.

ARC originally commenced construction prior to the $PM_{2.5}$ MSBD on October 20, 2010. GP anticipates that this PSD permit application may establish the $PM_{2.5}$ mSBD for Monroe County because it appears to be the first PSD permit application affecting $PM_{2.5}$ submitted after the $PM_{2.5}$ trigger date of October 20, 2011. GP reviewed available air permit files for Monroe County via ADEM eFile (https://app.adem.alabama.gov/eFile/) and did not identify a more recent PSD permit application for $PM_{2.5}$ (or SO_2 and NO_X that are precursors to $PM_{2.5}$) at any other stationary source since the $PM_{2.5}$ mSBD. Specifically, permits issued to Harrigan Lumber (106-S005 -X018 through -X027) appear to be subject to PSD only for VOC (and that facility has received federally enforceable synthetic minor limits on emissions of PM_{10}, $PM_{2.5}$, NO_X, and SO_2 to avoid a *major modification* for those pollutants).

EPA observes in its guidance for $PM_{2.5}$ permit modeling that "a proposed new or modified source being evaluated for compliance with the $PM_{2.5}$ increments in a particular area may be the first source in the area with increment-consuming emissions … under this situation, a permitting authority may have a sufficient basis to conclude that the $PM_{2.5}$ impacts of the new or modified PSD source, although greater than the applicable $PM_{2.5}$ SILs, may be compared directly to the allowable $PM_{2.5}$ increments without the need for a cumulative analysis. This would be the case where it can be shown that any other increment-consuming sources in the same baseline area, if any, do not have much or any overlapping impact with the proposed new or modified source."[6] Accordingly, only $PM_{2.5}$ emissions changes resulting from ARC and those PSD Increment-affecting

[6] EPA, "Guidance for Ozone and Fine Particulate Matter Permit Modeling," July 29, 2022. https://www.epa.gov/system/files/documents/2022-07/Guidance_for_O3_PM25_Permit_Modeling.pdf.

sources identified by ADEM as part of the regional source modeling inventory described in Section 3.1 of this report to represent new *major stationary sources* that have been constructed and/or *major modifications* have taken place elsewhere in Monroe County, or in an adjacent intrastate airshed that would increase ambient concentrations in excess of the specified 1 μg/m^3 annual average concentration in a *baseline area* including ARC were modeled to assess $PM_{2.5}$ PSD Increment and demonstrate attainment.[7]

Section 2.8.6 of this report describes the determination of PSD Increment-affecting *actual emissions* changes of direct $PM_{2.5}$ simulated in this analysis and Section 2.9.4 demonstrates that *actual emissions* changes of precursor SO_2 and NO_X emissions that form secondary $PM_{2.5}$ may justifiably be neglected because emissions of these pollutants have significantly decreased since the baseline date, but are represented conservatively to ensure a complete analysis.

[7] One such source was identified in the regional source inventory provided by ADEM described in Section 3.1 of this report, the Scotch Plywood plant in Beatrice that may involve modification of the veneer dryers after the mSBD. GP notes that the definition of *baseline area* in ADEM Admin Code r. 335-3-14-.04(2)(o) does not include the clause "or equal or greater than 0.3 μg/m^3 (annual average) for $PM_{2.5}$" that appears in the analogous federal definition at 40 CFR §52.21(b)(15)(i).

2. CLASS II AIR QUALITY COMPLIANCE DEMONSTRATIONS

This section of the report describes the modeling techniques and data resources GP utilized to prepare compliance demonstrations for NAAQS and PSD Increments.

2.1. AIR DISPERSION MODELING ANALYSES

The air dispersion modeling analyses described in this report are formulated and were performed generally in accordance with the following federal (EPA) and state (ADEM) air quality modeling guidelines.

- EPA: 40 CFR Part 51, Appendix W, *Guideline on Air Quality Models* (Revised November 20, 2024) ("Appendix W" hereinafter)
- ADEM: *PSD Air Quality Analysis Modeling Guidelines*, revised July 2025 ("ADEM Guidelines" hereinafter)
- EPA: *AERMOD Implementation Guide*, revised July 2021
- EPA: *Guidance for Ozone and Fine Particulate Matter Permit Modeling*, July 29, 2022 ("Ozone/PM2.5 Permit Modeling Guidance" hereinafter)
- EPA: *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program*, April 30, 2019 ("MERPs Guidance" hereinafter), including clarification and addendum dated April 30, 2024
- EPA: *Guidance on Developing Background Concentrations for Use in Modeling Demonstrations*, November 20, 2024 ("Background Concentrations Guidance" hereinafter)
- Federal Land Managers' Air Quality Related Values Work Group (FLAG): *Phase I Report*, November 2010 ("FLAG 2010" hereinafter)

Air quality modeling was previously conducted for ARC as part of the mill's prior PSD permit issued in 2007. The analyses described in this report utilize the prior modeling analyses as a basis but are substantially updated to reflect the permitted operations, emission points and rates, structures causing downwash, proposed *major modification*, and current regulatory modeling techniques, data resources, requirements, and guidance.

2.2. MODEL SELECTION AND DEFAULT PROCESSING OPTIONS

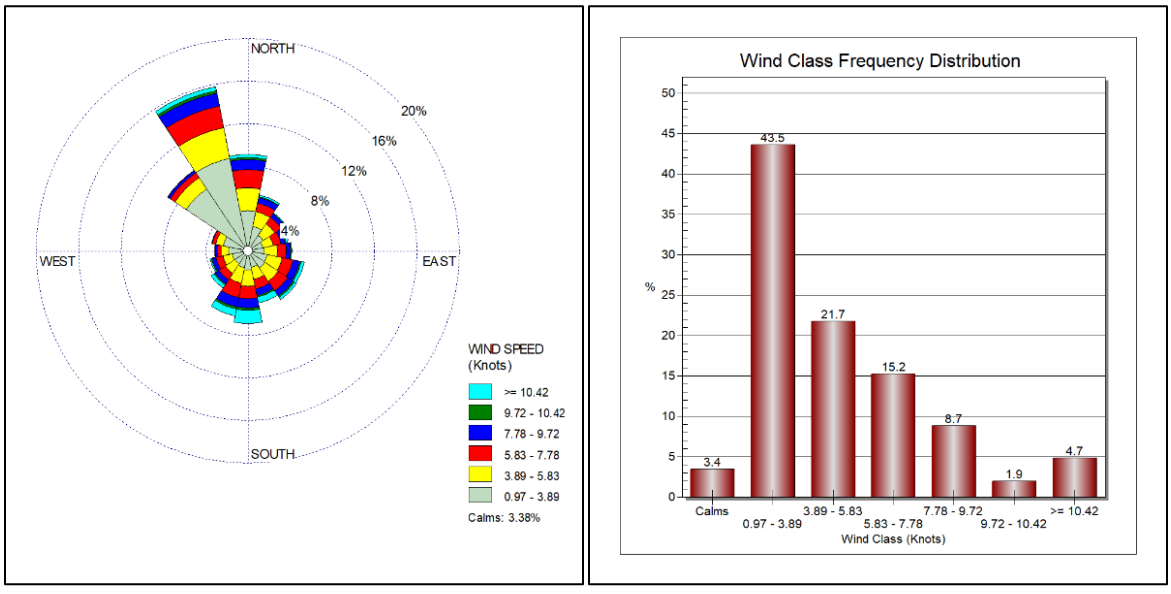
Dispersion models compute downwind pollutant concentrations by simulating the evolution of a plume over time and space given inputs including the quantity of emissions and the initial conditions (e.g., velocity and temperature) of the stack exhaust to the atmosphere. The modeling analyses described in this report were performed using EPA's preferred regulatory model system, AERMOD (Version 24142). The AERMOD modeling system comprises a meteorological preprocessor (AERMET) and receptor and terrain preprocessor (AERMAP) that generate data utilized by AERMOD's dispersion algorithms.

Regulatory default model processing options were enabled for these analyses and performed in a manner consistent with the current Appendix W and ADEM Guidelines. The dispersion environment was determined through inspection of aerial photographs (e.g., Figure 1-1) of the three-kilometer (3 km) area surrounding ARC, which clearly show that the area is predominantly forested and rural; therefore, the default dispersion option was used in the modeling analyses and the urban option was not utilized. Specifically for modeling the conversion of NO_X emissions to ambient concentrations of NO_2, GP used the regulatory default Ambient Ratio Method 2 (ARM2) option that does not require additional specification of in-stack ratios for NO_X emissions or hourly ozone concentrations.

2.3. METEOROLOGICAL DATA

The modeling analyses were conducted using five years of surface meteorological data from Evergreen, Alabama and upper air observations from Alabaster, Alabama, as specified by ADEM Guidelines for sources in Monroe County. Surface conditions from Evergreen are considered representative of conditions in the area surrounding ARC, approximately 45 km distant, and are the nearest, most representative available data of sufficient quality for regulatory modeling analyses. ADEM processed the meteorological data using the regulatory meteorological data processor AERMET and regulatory default processing options (including ADJ_U*) using AERSURFACE (Version 20060), to represent land use and cover in the area surrounding the surface observation site, and AERMINUTE (Version 15272), to calculate hourly average wind speed and direction from 1-minute and 5-minute observations. Modeling analyses described in this report were prepared using data from 2019-2023 processed by ADEM using AERMET Version 24142, for which Figure 2-1 depicts the windrose and frequency distribution for observations over the 5-year period.

Figure 2-1. Windrose and frequency distribution for hourly surface observations at Evergreen, Alabama, 2019-2023.



2.4. GEOGRAPHIC COORDINATE SYSTEM

In all modeling analysis data files, the location of emission sources, structures, and receptors are represented in the Universal Transverse Mercator (UTM) coordinate system. The UTM grid divides the world into coordinates that are measured in north meters (measured from the equator) and east meters (measured from the central meridian of a particular zone, which is set at 500 km). The central location of the ARC Mill is approximately 453.7 km East and 3,494.2 km North in Zone 16, referenced to North American Datum 1983 (NAD83). NAD83 was used consistently as the basis for reporting coordinates of all sources, structures, and receptors to be consistent with the reference datum for all National Elevation Data (NED) data used to represent terrain as described in the following Section 2.5 of this report. UTM coordinates are input to AERMOD in metric units of meters, rounded to the nearest integer, to avoid the inference that locations are simulated to a higher level of accuracy and precision.

2.5. RECEPTORS AND TERRAIN ELEVATIONS

Ground-level concentrations were calculated at receptors placed along the ARC Mill property boundary and within nested Cartesian discrete receptor grids surrounding ARC using the following scheme:

- Ambient air boundary receptors were placed along the mill property boundary at approximately 25-meter spacing (or less, following the contours of the property boundary formed by waterways).
- Fine Cartesian grid receptors extending approximately 5 km from the mill property boundary at 100-meter spacing.
- Medium Cartesian grid receptors extending between 5 km and 10 km from the facility centroid at 250-meter spacing.
- Coarse Cartesian grid receptors extending between 10 km and 20 km from the facility centroid at 500-meter spacing.
- Sparse Cartesian grid receptors extending between 20 km and 50 km from the facility centroid at 1,000-meter spacing.

Figure 2-2 depicts the location of receptors at the ambient air boundary. "Onsite" areas of ARC within the ambient air boundary are excluded from the analysis of ambient impacts because public access is restricted by effective physical barriers, hostile terrain and land cover, or other sufficient measures to preclude access. The ARC woodyard and process area occupies cleared land totaling approximately 400 acres within GP property. Undeveloped areas of the property are densely vegetated wetlands (Figure 2-3) in a Zone A Flood Plain (Figure 2-4) designated by the Federal Emergency Management Agency[8] that is a known habitat for aggressive wildlife (i.e., wild boars, snakes, and alligators).

[8] Alabama Department of Economic and Community Affairs: "Am I in a Floodplain?" https://adeca.alabama.gov/floods/am-i-in-a-floodplain/ and alabamaflood.com.

The segment of property that adjoins the public roadway to the south of the mill (Lena Landegger Highway) and is readily accessible is well-defined by signage indicating the designated entrances to GP's private property and is otherwise fenced to preclude access. "Private Property - No Trespassing" signs are posted around the perimeter where the ARC property line may not be easily discernable. Access along each segment (as denoted in Figure 2-2 proceeding clockwise from the southern boundary) is precluded as follows:

1. Segment 1 follows the southern property boundary following (to the north of) Lena Landegger Highway from which employees, inbound raw materials and outbound product shipments, and visitors may access the mill at designated entrance points only. Each access road has no outlet (i.e., there is no publicly accessible through connection) and terminates after a scalehouse/gate house where inbound and outbound trucks are weighed, and a security force authorizes facility access. As the primary routes to and from the mill that are utilized by employees, inbound delivery and outbound shipment trucks, and visitors, the presence of loiterers or trespassers along the access roads would be promptly detected and reported.
2. Segment 2 follows the contour of ARC property along Lena Landegger Highway to the southwest and west until ARC property terminates at the Alabama River. Onsite property along this segment is densely vegetated, posted for "Private Property - No Trespassing," and a dirt road access to the river is gated. In addition, a soil/borrow pit is located at the southern edge of the property line beyond a locked gate to prevent non-facility personnel from entering the area.
3. Segment 3 adjoins the Alabama River from the southwestern property corner to the westernmost property where Big Flat Creek enters the river. Onsite areas are densely vegetated wetlands with a steep gradient that is hazardous to enter the property by way of the river. GP personnel are restricted from traveling on foot in these areas due to the presence of aggressive wildlife (i.e., wild boars, snakes, and alligators).
4. Segment 4 adjoins privately owned property, follows the contours of ARC's property boundary along the southern edge of Big Flat Creek, approximately 30 to 50 ft wide. The properties are densely vegetated wetlands within and across the boundary. "Private Property - No Trespassing" is posted along this segment.
5. Segment 5 adjoins privately owned property and is densely vegetated within the boundary, which runs from the northeastern-most corner roughly due south to the southeastern corner at Lena Landegger Highway. "Private property/no trespassing" signage is placed at regularly spaced intervals. Rail access to ARC and unmaintained offroad access transits this eastern boundary and is excluded from ambient air because neither continues through the mill property, and is accessible only to business invitees with permission to enter the ARC Mill.

Figure 2-2. Ambient air boundary receptors.

Figure 2-3. Land use and cover within ARC property.

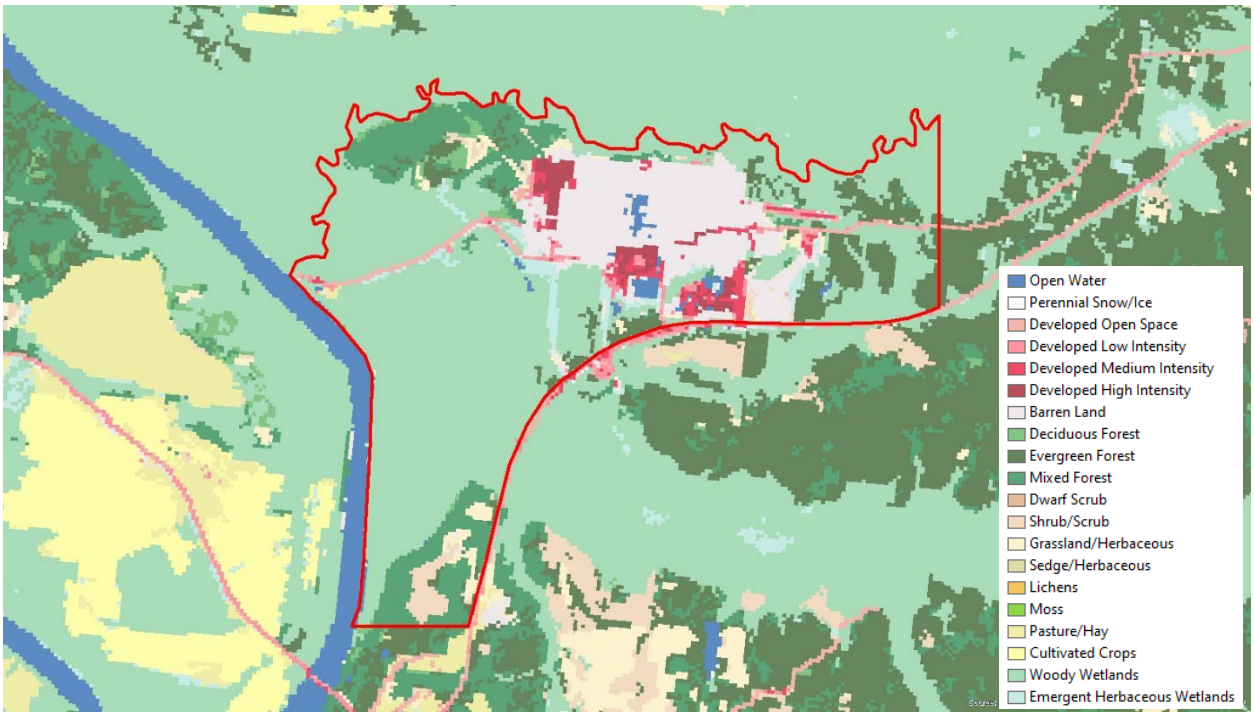
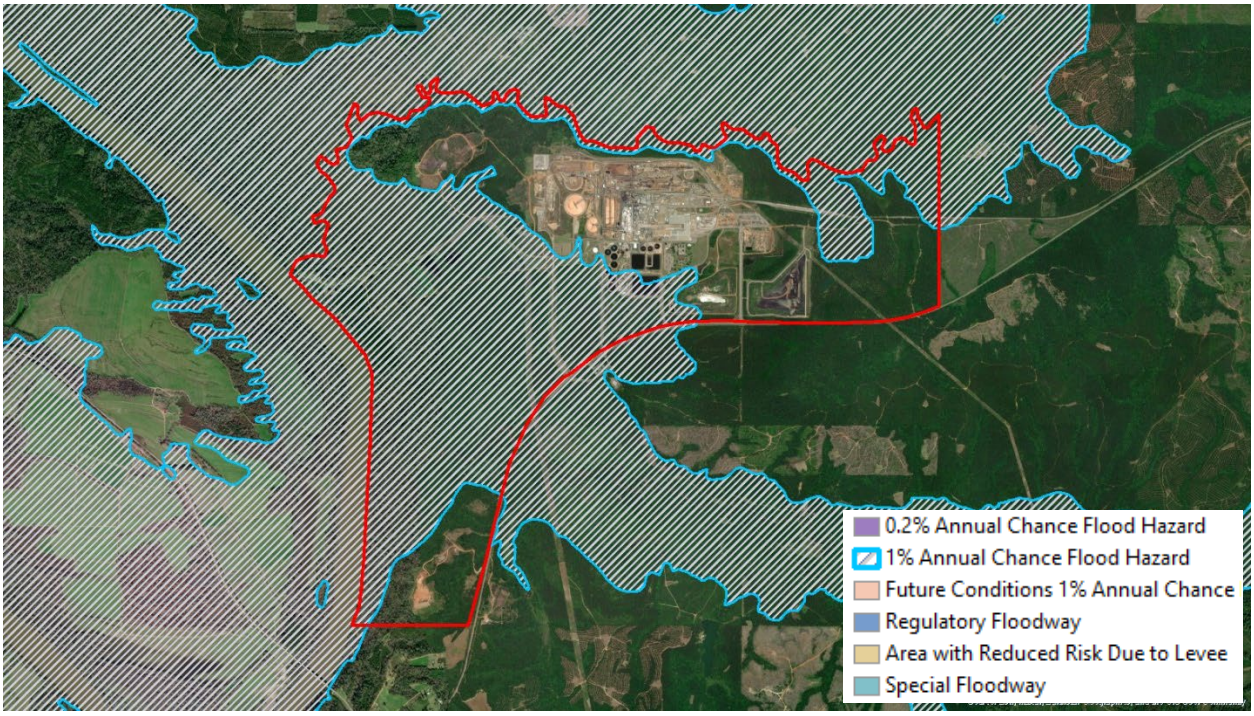


Figure 2-4. FEMA designated Zone A flood plain within ARC property.



Terrain elevations based on NED data were input to the AERMOD model for each receptor. The NED data consist of arrays of regularly spaced elevations at 1/3 arc-second (10-meter) intervals and are interpolated to determine elevations at the boundary and gridded receptors simulated in the modeling analysis. NED data (tiled data files) spanning from roughly 32° N, 89° W to 33° N, 87º W were selected to ensure coverage of a sufficiently large domain at least 50 km from the mill centroid. GP processed NED data by running the AERMAP terrain preprocessor (Version 24142) to assign elevation and hill height scale parameters for each receptor location based on NED data from the surrounding area. The location and elevation of receptors used in these analyses are plotted in Figures 2-5 and 2-6. The presence of elevated terrain is noted at and beyond approximately 10 km from the mill where ground level elevation increases with distance away from the Alabama River and tributaries (i.e., Big Flat Creek to the north and Limestone Creek to the south) that surround ARC.

In the cumulative NAAQS and PSD Increment analyses, the receptor grid for each pollutant and averaging period was truncated to the distance of the SIA because, by definition, the proposed *major modification* cannot cause or contribute to modeled violations at locations where the SIL is not exceeded. The truncated receptor grids reduced computational runtime and conform to the expectations in ADEM Guidelines that "NAAQS/Class II Increment compliance modeling must address all areas within the … SIA. All maximum predicted concentrations should be resolved to the nearest 100 meters." Additional receptors were placed as necessary for further evaluation on a pollutant-by-pollutant and averaging period-by-averaging period basis.

The primary operational area of the mill is generally flat with a base elevation of approximately 69 feet above mean sea level (MSL), validated by recent surveys of locations within the process area that demonstrate some, but little variability. AERMAP was not used to assign base elevations to emissions points and structures; instead, a constant base elevation of 69 feet (21 meters) was assigned to ensure consistency and avoid the inference that elevations are simulated to a higher level of accuracy and precision.

Figure 2-5. Far-field view of the cartesian grid receptors within 50 km of ARC.

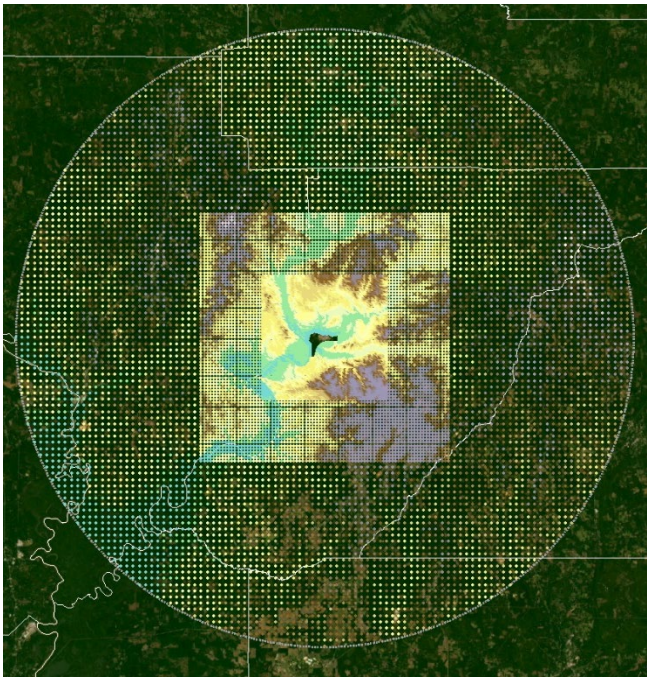
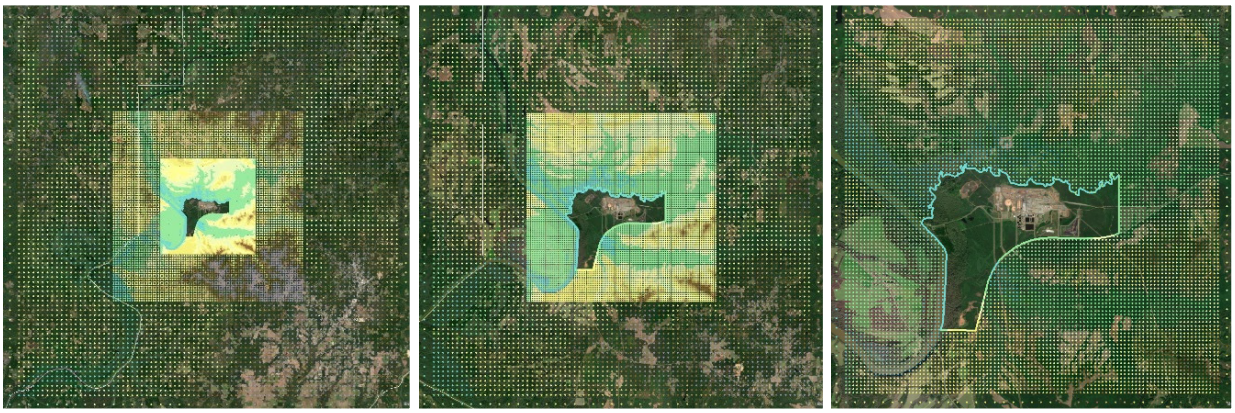


Figure 2-6. Near-field view of the Cartesian grid receptors.
Left panel depicts fine (100-m spacing), medium (250 m), and coarse (500 m) grids to 20 km. Center panel depicts fine (100-m spacing) and medium (250 m) grids to 10 km. Right panel depicts fine grid (100-m spacing) from boundary to 5 km.



2.6. SOURCE TYPES AND STACK PARAMETERS

The scope of the PSD modeling analyses includes all emissions points that are modified or affected by the proposed *project* and other *contemporaneous* changes in the significant impact analysis, all emissions points that will operate upon completion of the proposed *major modification* in the NAAQS analyses, and emissions points that affect PSD Increments because of changes since the applicable baseline dates.

ADEM does not generally require modeling of fugitive PM_{10} and $PM_{2.5}$ emissions from operations that are not well quantified, poorly characterized and simulated in dispersion modeling analyses, and are otherwise managed to minimize emissions and ambient impacts. ADEM Guidelines specify evaluation of fugitive emissions "limited to sources which are quantifiable and related to the project at hand." Other than lengthening one chip conveyor and its associated transfer to the chip bin feeder, no such sources are being substantially modified as part of the *project*; furthermore, ADEM has previously determined that substantial modifications to the ARC Mill's existing woodyard originally proposed in 2015 did not require permitting because "a review of the emissions from the proposed project has led to the determination that no state or federal standards are expected to be exceeded. The Department has determined that no new air permit, nor a change to your existing Title V permit will be required at this time."[9] The most recent major source operating permit renewal (November 9, 2022) implemented requirements for a mill-wide fugitive dust plan to assure compliance with ADEM Code r. 335-3-4-.02 "to prevent fugitive dust at the facility which travel beyond the facility property line and cause a nuisance," with which ARC complies using methods including (but not limited to) enclosures for woodyard operations and conveyors, roadway dust suppression through paving and/or water/chemical application. Accordingly, although GP estimated PM_{10} and $PM_{2.5}$ emissions as part of the PSD applicability analysis and continue to report estimated emissions in routine permitting and reporting, dispersion modeling analyses do not include fugitive emissions from roads, woodyard operations (e.g., debarking, sawing, chipping), material handling operations (e.g., fiber, wood residuals, and transfers, and lime storage bins and silos and transfers), and cooling towers.

The scope of the modeling analyses is such that all relevant sources of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions at ARC can be reasonably represented in AERMOD as conventional POINT sources that emit from well-defined stacks or vents that can be readily characterized by the location, release height (above ground level), stack or vent diameter, exhaust temperature, and exhaust velocity (measured or derived from a measured actual volumetric flow rate), and building downwash parameters which are input to AERMOD for each emission point. The scope of the proposed *project* involves the physical modification and replacement of certain existing emissions units, associated structures, and release points with new emissions units, associated structures, and release points. The extent of these changes is such that it is necessary to simulate both existing conditions before the *project* and conditions after the *project* in the

[9] Letter from Mr. Ronald W. Gore (ADEM) to Mr. Justin Bates (GP) dated January 19, 2016.

significant impact analyses and PSD Increment analyses that simulate the effect of changes on ambient pollutant concentrations. Specifically, each emission point is represented separately in existing conditions and future conditions for location and physical input parameters; existing conditions are simulated with a negative emission rate and designated with an "X" appended to the model ID for each emission point and future conditions are simulated with a positive emission rate. This approach ensures the modeling analyses are spatially and temporally consistent as prescribed by EPA guidance.[10] As subsequently discussed in greater detail, all existing emission points were evaluated for building downwash using existing structures and a separate building downwash analysis was performed for future conditions including removal of certain structures and construction of new structures.

Table 2-1 summarizes source input parameters used to represent POINT sources in the modeling analyses. GP notes the following about the determination of certain source parameters.

- Stack parameters represented in previous analyses and reports were reviewed for accuracy and updated as necessary. For example, the stack height of the No. 7 Smelt Dissolving Tank was corrected from a previously reported value of 250 ft to a measured as-built value of 209.5 ft (63.86 m).
- Exhaust temperature and velocity for existing units were determined as the average value of available, representative stack test data to simulate existing conditions.
- Stack location, height, diameter, exhaust temperature, and velocity (flowrate) for new emissions points were determined from engineering design and specifications. An evaluation of modeled concentrations for low operating loads is not necessary because operating experience indicates the emissions units associated with the primary process (i.e., chemical recovery system and pulp dryers) and energy generating units (i.e., power boilers) are typically operated at rates in excess of 75% capacity and low load operations are infrequent and transient.
- Merged stacks (e.g., No. 7 Power Boiler and No. 7 Recovery Furnace, No. 8 Power Boiler and No. 8 Recovery Furnace) were simulated by adding actual flowrates, calculating velocity based on stack diameter, and calculating exhaust temperature based on weighted average of individual exhaust flows.
- Each of the Nos. 7 and 8 Pulp Dryers – which were not included in prior modeling analyses – consist of in-line machinery within a building from which particulate is exhausted through powered roof and wall ventilation and conventional stacks that induce exhaust from sections of the process. Engineering judgment and design specifications were used to quantify an expected exhaust temperature (based on process conditions) and flowrate (based on fan motor ratings) for each of the emissions points. Total particulate mass emission rates for each machine (quantified as described in subsequent sections) were proportionally allocated among the emissions points for each machine based on flowrate of each exhaust.
- POINTHOR and POINTCAP source type designations were input to AERMOD as appropriate to simulate horizontal and obstructed discharges, respectively.

[10] See, for example, EPA memorandum "Calculation of Prevention of Significant Deterioration (PSD) Increment Consumption and Expansion, Paired in Time and Space," October 16, 2002. https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/R8PSD.pdf.

Table 2-1. Source Input Parameters.

Red text denotes model inputs for existing conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	Type/Orientation	UTM (Zone 17, NAD 1983) East (m)	UTM (Zone 17, NAD 1983) North (m)	Ground Elevation (m)	Height (ft)	Height (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Diameter (ft)	Diameter (m)	Flowrate (acfm)
No. 7 Lime Kiln (Existing)	7LKX	POINT	453490	3494070	21	350.0	106.68	147	337.22	39.99	12.19	4.20	1.28	33,242
No. 7 Lime Kiln (Modified)	7LK	POINT	453490	3494070	21	350.0	106.68	577	576.15	93.67	28.55	4.20	1.28	77,861
No. 7 Mill Lime Slaker	7SLAKERX	POINT	453509	3494205	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 7 Mill Lime Slaker	7SLAKER	POINT	453509	3494205	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	POINT	453601	3494252	21	209.3	63.80	179	355.00	26.34	8.03	5.38	1.64	35,928
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	POINT	453601	3494252	21	209.3	63.80	179	355.00	26.34	8.03	5.38	1.64	35,928
No. 7 Power Boiler (Existing)								150	338.80					206,227
No. 7 Power Boiler (Post-Project)								150	338.80					206,227
No. 7 Recovery Furnace (Existing)								436	497.47					679,517
No. 7 Recovery Furnace (Post-Project)								430	494.26					537,000
Combined No. 7 Energy Stack (Existing)	7RBPBX	POINT	453595	3494290	21	250.0	76.20	369	460.53	95.90	29.23	14.00	4.27	885,744
Combined No. 7 Energy Stack (Post-Project)	7RBPB	POINT	453595	3494290	21	250.0	76.20	352	451.12	80.47	24.53	14.00	4.27	743,227
No. 8 Lime Kiln (Existing)	8LKX	POINT	453487	3494070	21	350.0	106.68	452	506.30	64.79	19.75	5.00	1.52	76,329
No. 8 Lime Kiln (Post-Project)	8LK	POINT	453487	3494070	21	350.0	106.68	452	506.30	64.79	19.75	5.00	1.52	76,329
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	POINT	453466	3494227	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 8 Mill Lime Slaker	8SLAKER	POINT	453466	3494227	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	POINT	453609	3494318	21	290.0	88.39	154	340.74	22.63	6.90	7.50	2.29	59,980
No. 8 Power Boiler (Existing)								355	452.78					121,116
No. 8 Power Boiler (New)								348	448.71					141,941
No. 8 Recovery Furnace (Existing)								424	490.80					736,742
No. 8 Recovery Furnace (Post-Project)								445	502.59					735,200
Combined No. 8 Energy Stack (Existing)	RF8PB8X	POINT	453558	3494350	21	375.0	114.30	414	485.44	92.88	28.31	14.00	4.27	857,858
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	POINT	453558	3494350	21	375.0	114.30	412	484.07	101.46	30.93	14.00	4.27	937,121
Backup NCG Incinerator	INCINX	POINT	453494	3494230	21	64.0	19.50	1232	939.82	11.13	3.39	5.54	1.69	16,097
Backup NCG Incinerator	INCIN	POINT	453494	3494230	21	64.0	19.50	1232	939.82	11.13	3.39	5.54	1.69	16,097
Bleach Plant Scrubber	BLEACHX	POINT	453559	3494119	21	274.0	83.50	116	319.82	39.15	11.93	5.00	1.52	46,121
Bleach Plant Scrubber	BLEACH	POINT	453559	3494119	21	274.0	83.50	116	319.82	39.15	11.93	5.00	1.52	46,121
No. 7 Mill Pulp Dryer														
Dryer Exhaust 1 (Relocated)	7DRYR1X	POINT	453807	3494158	21	65.0	19.81	244	390.93	127.90	38.98	5.00	1.52	150,675
Dryer Exhaust 2 (Relocated)	7DRYR2X	POINT	453810	3494158	21	65.0	19.81	244	390.93	127.90	38.98	5.00	1.52	150,675
Center Aisle Exhaust	7AISLEX	POINT	453815	3494158	21	65.0	19.81	120	322.04	76.39	23.29	5.00	1.52	90,000
Vacuum Exhaust	7VACX	POINT	453765	3494153	21	84.1	25.63	140	333.15	143.60	43.77	2.95	0.90	59,000
Winder Pulper	7WINDERX	POINT	453892	3494117	21	81.7	24.90	140	333.15	52.37	15.96	2.62	0.80	17,000
Reel Pulper	7REELX	POINT	453875	3494117	21	81.7	24.90	140	333.15	64.69	19.72	2.62	0.80	21,000
Wet End Roof Exhaust (RE) 1	7ROOF01X	POINT	453749	3494141	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X	POINT	453760	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X	POINT	453760	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X	POINT	453778	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X	POINT	453778	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X	POINT	453789	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X	POINT	453789	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 8	7ROOF08X	POINT	453840	3494147	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X	POINT	453836	3494136	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 10	7ROOF10X	POINT	453840	3494130	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Machine East Wall Exhaust 1	7WALL01X	POINTHOR	453925	3494123	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
Machine East Wall Exhaust 2	7WALL02X	POINTHOR	453925	3494133	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
Machine East Wall Exhaust 3	7WALL03X	POINTHOR	453925	3494143	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
No. 7 Mill Pulp Dryer														
Dryer Exhaust 1 (Relocated)	7DRYR1	POINT	453805	3494160	21	89.5	27.28	244	390.93	74.26	22.64	6.56	2.00	150,675
Dryer Exhaust 2 (Relocated)	7DRYR2	POINT	453819	3494160	21	89.5	27.28	244	390.93	74.26	22.64	6.56	2.00	150,675
Vacuum Exhaust	7VAC	POINT	453765	3494153	21	84.1	25.63	140	333.15	143.60	43.77	2.95	0.90	59,000
Winder Pulper	7WINDER	POINT	453892	3494117	21	81.7	24.90	140	333.15	52.37	15.96	2.62	0.80	17,000
Reel Pulper	7REEL	POINT	453875	3494117	21	81.7	24.90	140	333.15	64.69	19.72	2.62	0.80	21,000
Wet End Roof Exhaust (RE) 1	7ROOF01	POINT	453749	3494141	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	POINT	453760	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	POINT	453760	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	POINT	453778	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	POINT	453778	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	POINT	453789	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	POINT	453789	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 8	7ROOF08	POINT	453840	3494147	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	POINT	453836	3494136	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 10	7ROOF10	POINT	453840	3494130	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling 1 (New)	7ROOF11	POINT	453783	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling 2 (New)	7ROOF12	POINT	453766	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wall Exhaust 4 (New)	7WALL04	POINTHOR	453749	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 5 (New)	7WALL05	POINTHOR	453755	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 6 (New)	7WALL06	POINTHOR	453761	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 7 (New)	7WALL07	POINTHOR	453767	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 8 (New)	7WALL08	POINTHOR	453773	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 9 (New)	7WALL09	POINTHOR	453779	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Warehouse Exhaust 1 (New)	7WREHS01	POINTCAP	453868	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
Warehouse Exhaust 2 (New)	7WREHS02	POINTCAP	453899	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
Warehouse Exhaust 3 (New)	7WREHS03	POINTCAP	453929	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
No. 8 Mill Pulp Dryer	308													
Pulp Dryer Combined Exhaust Stack	8DRYR1X	POINT	453802	3494063	21	88.6	27.00	225	380.37	61.12	18.63	7.55	2.30	164,000
42" Vacuum Stack	8VAC	POINT	453786	3494053	21	65.6	20.00	140	333.15	98.58	30.05	3.28	1.00	50,000
Dryer Exhaust Stack	8DRYEX	POINT	453757	3494099	21	91.9	28.00	140	333.15	251.38	76.62	1.64	0.50	31,877
Dryer Pulper	8PULPER	POINT	453841	3494062	21	88.6	27.00	140	333.15	14.91	4.54	7.55	2.30	40,000
Reel Pulper	8REEL	POINT	453849	3494099	21	65.6	20.00	140	333.15	51.26	15.62	3.28	1.00	26,000
Winder Pulper	8WINDER	POINT	453882	3494099	21	65.6	20.00	140	333.15	50.83	15.49	2.62	0.80	16,500
Wet End Roof Exhaust (RE) 1	8ROOF01	POINT	453746	3494089	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 2	8ROOF02	POINT	453746	3494082	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 3	8ROOF03	POINT	453746	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	POINT	453754	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	POINT	453754	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	POINT	453761	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	POINT	453761	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	POINT	453766	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	POINT	453766	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	POINT	453772	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	POINT	453772	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	POINT	453779	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	POINT	453779	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 1	8ROOF14	POINT	453802	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 2	8ROOF15	POINT	453815	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Roll Handling Wall Exhaust 1	8WALL01	POINTHOR	453853	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 2	8WALL02	POINTHOR	453863	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 3	8WALL03	POINTHOR	453874	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 4	8WALL04	POINTHOR	453889	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
No. 8 Mill Pulp Dryer	308													
Pulp Dryer Combined Exhaust Stack	8DRYR1	POINT	453802	3494063	21	88.6	27.00	225	380.37	61.12	18.63	7.55	2.30	164,000
42" Vacuum Stack	8VAC	POINT	453786	3494053	21	65.6	20.00	140	333.15	98.58	30.05	3.28	1.00	50,000
Dryer Exhaust Stack	8DRYREX	POINT	453757	3494099	21	91.9	28.00	140	333.15	251.38	76.62	1.64	0.50	31,877
Dryer Pulper	8PULPER	POINT	453841	3494062	21	88.6	27.00	140	333.15	14.91	4.54	7.55	2.30	40,000
Reel Pulper	8REEL	POINT	453849	3494099	21	65.6	20.00	140	333.15	51.26	15.62	3.28	1.00	26,000
Winder Pulper	8WINDER	POINT	453882	3494099	21	65.6	20.00	140	333.15	50.83	15.49	2.62	0.80	16,500
Wet End Roof Exhaust (RE) 1	8ROOF01	POINT	453746	3494089	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 2	8ROOF02	POINT	453746	3494082	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 3	8ROOF03	POINT	453746	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	POINT	453754	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	POINT	453754	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	POINT	453761	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	POINT	453761	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	POINT	453766	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	POINT	453766	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	POINT	453772	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	POINT	453772	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	POINT	453779	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	POINT	453779	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 1	8ROOF14	POINT	453802	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 2	8ROOF15	POINT	453815	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Roll Handling Wall Exhaust 1	8WALL01	POINTHOR	453853	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 2	8WALL02	POINTHOR	453863	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 3	8WALL03	POINTHOR	453874	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 4	8WALL04	POINTHOR	453889	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000

2.7. BUILDING DOWNWASH AND GEP STACK HEIGHT ANALYSIS

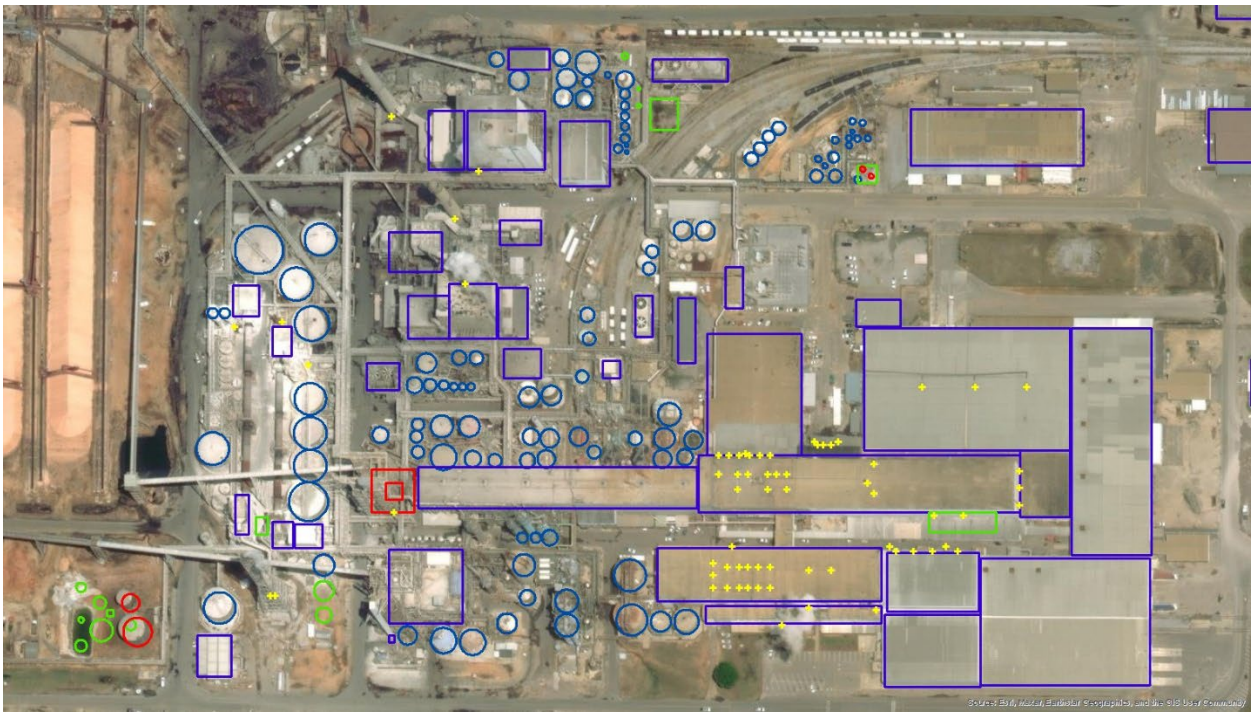
Building structures that obstruct wind flow near emission points may cause stack discharges to become caught in the turbulent wakes of these structures leading to downwash of the plumes. Wind blowing around a building creates zones of turbulence that are greater than if the building were absent. These effects generally cause higher ground level pollutant concentrations near the source because building downwash inhibits downwind dispersion from elevated stack discharges.

The direction-specific building dimensions used as input to the AERMOD model were calculated using the EPA's Building Profile Input Program (BPIP), which has been adapted to incorporate the PRIME downwash algorithms and released as "BPIPPRM" (version 04274). BPIPPRM is designed to incorporate the concepts and procedures described in the EPA's *Guideline for Determination of Good Engineering Practice Stack Height* while incorporating the PRIME enhancements to improve prediction of ambient impacts in building cavities and wake regions.

By regulation (40 CFR §51.100(ii)), the default Good Engineering Practice (GEP) stack height is 65 meters and stack heights in excess of GEP are not creditable for modeling purposes unless a larger GEP height is demonstrated due to the dimensions of nearby structures. Certain stacks at ARC exceed the regulatory 65-meter (213.3-ft) GEP stack height but were demonstrated through the GEP analysis conducted by BPIP that the nearby structures are sufficiently tall to justify the simulation of actual stack heights in the modeling analyses.

Many of the emission units affected by the proposed *project* emit only *regulated NSR pollutants* that are not also criteria air pollutants (e.g., hydrogen sulfide). Emissions from such units are not explicitly simulated in the PSD air quality modeling analyses. Such units are identified and included in the analyses only to the extent their physical structure is evaluated in the building downwash analyses. As described previously for emission points, the BPIP analyses were performed twice: once to simulate existing configurations of emissions points and structures and separately to simulate configurations after the *project* is completed. This approach is necessary to avoid BPIP assigning downwash parameters from a structure being removed to an emission point in the future conditions, and vice versa. Figure 2-7 illustrates the location of buildings considered in the BPIP and GEP analyses, showing the distinction between existing and future conditions for emissions points and buildings. Stack and structure locations and dimensions are provided as part of the BPIP and AERMOD input and output files transmitted electronically with this report.

Figure 2-7. Location of buildings evaluated for downwash relative to POINT sources.
Blue denotes existing structures that will not be modified as part of the project.
Red denotes existing structures that will be removed.
Green denotes new structures to be constructed.



2.8. EMISSION RATES FOR AIR QUALITY ANALYSES

This section of the report describes the emissions simulated in each modeling analysis and to distinguish *actual emissions* from *potential* or *allowable emissions*, each of which is used in different analyses, and the different averaging periods evaluated relative to different standards.

2.8.1. Actual, Potential, and Allowable Emissions

GP evaluated PSD applicability using the "hybrid test for projects that involve multiple types of emissions units" by comparing *baseline actual emissions* to *projected actual emissions* – each in tons per year – for existing emission units and accounting for *potential emissions* from new emission units. Once it is determined that PSD applies for one or more *regulated NSR pollutants* because a *significant **net** emissions increase* will result, *baseline actual* and *projected actual emissions* are no longer used for modeling because the PSD regulations distinguish *actual emissions* as defined in 40 CFR §52.21(b)(1) and ADEM Admin. Code r. 335-3-14-.04(2) as:

> *(u)* **Actual emissions** *means the actual rate of emissions of a regulated NSR pollutant from an emissions unit, as determined in accordance with paragraphs (u)1. through (u)3. below, except that this definition shall not apply for establishing a [Plantwide Applicability Limit] under paragraph (23) of this rule. Instead, subparagraphs (2)(nn) and (2)(uu) of this Rule shall apply for this purpose.*

> *1. In general,* **actual emissions** *as of any given date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive twenty-four (24)-month period which precedes the given date and which is representative of normal source operation. The Department shall allow the use of a different time period upon a determination that it is more representative of normal source operation.* **Actual emissions** *shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.*
>
> *(c) The Director may presume that source-specific* **allowable emissions** *for the unit are equivalent to the* **actual emissions** *of the unit.*
>
> *(d) For any emissions unit that has not begun normal operations on the given date as determined in subparagraph (u)1.,* **actual emissions** *shall equal the* **potential to emit** *of the unit on that date.*

In practice, *actual emissions* may be much lower than *potential* or *allowable emissions* because of lower utilization than maximum capacity and because the emission factor – as measured by an EPA reference method stack test or otherwise estimated – is lower than the factor or design specification used to establish the emission limit that defines *potential* or *allowable emissions*.

Actual emissions are distinguished from *potential emissions* and *allowable emissions*, by definition:

> *(d)* **Potential to emit** *shall mean the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions ... do not count in determining the potential to emit of a stationary source.*
>
> *(p)* **Allowable emissions** *shall mean the emissions rate of a stationary source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:*
>
> > *1. The applicable standards as set forth in 40 CFR Parts 60, 61, and 63;*
> > *2. The applicable State Implementation Plan emissions limitation, including those with a future compliance date; or*
> > *3. The emissions rate specified as a federally enforceable permit condition, including those with a future compliance date.*

For most emission units in practice, the *potential* emission rate is the highest emission rate that could be achieved because not all sources are subject to standard in 40 CFR Parts 60 (i.e., New Source Performance Standards or "NSPS"), 61, and 63 or a SIP limit. Specifically at ARC, all significant emission units have been previously subject to NSPS and/or PSD review including BACT that established *allowable* emissions equivalent to *potential* emissions in federally enforceable permit conditions. For this reason, GP generally considers *potential* and *allowable* emissions to be equivalent and interchangeable to determine the maximum emission rate simulated in certain air quality modeling analyses. Few exceptions apply, in which cases the *potential emission* rate is utilized based on permitted capacity and fuel characteristics (e.g., sulfur content).

As described in relevant subsequent sections of this report, *actual emissions* were quantified using the best available data for representative emissions factors – with preference for site- and unit-specific stack test data – and actual operating levels demonstrated through monitoring and recordkeeping over multiple relevant averaging periods.

2.8.2. Averaging Periods for Emission Rates

The PSD applicability test comparing *baseline actual emissions* to *projected actual emissions* or *potential emissions* assesses the difference in annual emissions on a tons per year basis, regardless of changes (if any) in the hourly (or daily) maximum emission rate. This calculus quantifies increased production capacity and emissions from new units, increased production capacity and emissions from existing units that are physically modified, and increased emissions from higher utilization of existing units, even if such units are not physically modified and their maximum production capacity does not increase.

Because air quality modeling analyses are conducted for pollutants with a wide range of short-term and long-term standards – specifically in this analysis including 1-hour and annual average NO_2, 1-hour and 8-hour average CO, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$ – it is essential to distinguish and characterize changes in emissions for each relevant averaging period. Certain existing emission units at ARC will not be physically modified as part of the proposed *project* but will increase utilization due to the production capacity created by the new equipment. For these emission units, neither the annual nor hourly maximum capacity is changed; therefore, neither the annual nor hourly *potential emission rate* is increased. Since individual emission units already operate near or at maximum capacity, there may be little or no change in the hourly actual emission rate even though the annual actual emission rate increases by a higher proportion because the unit will operate more hours per year. For the preceding reasons, emission rates for some emissions units input to the model as an instantaneous rate (i.e., pounds per hour or grams per second) are different for short-term (1-hour or 24-hour) averaging periods than long-term (annual) averaging periods.

2.8.3. Particulate Matter Emission Rates

PM emissions are variously represented as "particulate matter" (PM) or "total suspended particulate" (TSP), PM less than 10 microns (PM_{10}), and PM less than 2.5 microns ($PM_{2.5}$). PM generally means any finely divided solid and liquid material. PM emissions may be both filterable (i.e., particles captured in the "front-half" of an EPA Reference Method 5 or 17 sampling train) and condensable (i.e., particles that are emitted in vapor phase at stack conditions but that condense into liquid phase at ambient conditions and are captured using EPA Reference Method 202). Conventionally, "PM" or "TSP" refers only to filterable PM as would be measured using Method 5 and is implemented as the form of the emission standard – often also using opacity as an indicator – for certain emissions standards (i.e., NSPS Db and Boiler MACT). Under EPA guidance, condensable PM emissions were only incorporated after deficiencies were addressed in the availability and reliability of emission factors and stack test measurements using currently available test methods.

In this report and the PSD permit application submitted for the *major modification*, GP quantifies condensable PM emissions and distinguishes filterable $PM_{2.5}$ from PM_{10} and PM (TSP) using the best available emission factors. For some emission sources, a simplifying assumption was made that filterable PM, PM_{10}, and $PM_{2.5}$ emissions are equivalent. For certain other sources for which distinct emission factors are available, GP made the best estimate of different PM, PM_{10}, and $PM_{2.5}$ emissions. In these cases, PM_{10} and $PM_{2.5}$ emissions may be reported to be greater than PM emissions, which is counterintuitive, but reflects that by definition PM_{10} and $PM_{2.5}$ emissions include condensable PM, but PM (TSP) does not. GP reserves the right to revise emission factors in the future based on improved data after promulgation and implementation of improved test methods for condensable PM, $PM_{10,}$ and $PM_{2.5}$.

2.8.4. Significant Impact Analyses

The initial modeling analyses determine whether the *significant **net** emissions increases* resulting from the *major modification* including the *project* and *contemporaneous* emissions changes cause significant increases in ambient concentrations by comparing *actual emissions* before the *major modification* to *potential emissions* after the *major modification*. This significant impact analysis is performed for each *regulated NSR pollutant* in excess of the SER and for each averaging period consistent with the form of the applicable standards.

Emissions rates simulated in the significant impact analysis are critically different in two ways from the PSD applicability analysis that relies on a comparison of *baseline actual emissions* and *projected actual emissions* (equal to *potential emissions* for new units) for emissions units affected by the *project* and *baseline actual emissions* to *potential emissions* for emissions units affected by *contemporaneous* projects. EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance summarizes these two key differences (footnotes omitted):

It is important to note that in many cases, the emissions rate(s) used for the source impact analysis should not be the same as the rate calculated for applicability purposes converted into equivalent short-term model input rates. First, as part of the 2002 NSR Reform Rule, the EPA made clear that "baseline actual emissions" and the "actual-to-projected-actual applicability test" should not be used for PSD air quality analyses. Instead, for major modifications, the definition of "actual emissions" at [ADEM Rule 335-3-14-.02(u)] *continues to apply and post-project emissions should be based on potential to emit or allowable emissions. Second, the "allowable emission increases" that must be evaluated pursuant to 40 CFR 52.21(k) should correspond with the averaging time of the applicable standard. For major modifications, this may also depend on the type of emissions unit (new or existing) and the effect the project has on the emissions unit (e.g., increase in short-term potential to emit vs. increase in annual utilization).*

GP applied the following methodology to determine emission rates simulated in the significant impact analyses for this application.

- GP initially determined the scope of emission units involved in the calculations of the ***net*** *emissions increase* to assess PSD applicability for each *regulated NSR pollutant*. For those pollutants for which that increase is *significant* and PSD air quality analyses are required, GP then determined:
    - For the *project*, the scope includes new units (which generally replace existing units), existing units that ARC plans to physically modify, and affected units that will not be physically modified but may increase actual utilization and emissions.
    - For *contemporaneous* changes, the scope includes units that were new, modified, or affected by other *projects* within the *contemporaneous period*. Although the inventory of *contemporaneous* changes primarily includes projects that have been initiated (if not completed) in the five years prior to the anticipated start of construction on the proposed *project*, by definition the *contemporaneous period* also includes projects that are initiated after the application is submitted but before the mill resumes normal operations when construction of the project is completed. GP anticipates one such project that is critical to the PSD modeling analyses: the replacement of the combination fuel No. 8 Power Boiler (that has actually already shutdown in 2024) with a new, natural gas-fired power boiler. This replacement is conceived of distinctly and will be evaluated for permitting separately from the subject *project* of this application. However, because the replacement is *contemporaneous* and is part of the Step 2 emissions netting analysis for PSD applicability, it is included in this significant impact analysis by representing the existing No. 8 Power Boiler as part of the existing condition with past *actual emissions* and the planned replacement No. 8 Power Boiler as part of the future conditions with *potential emissions*. Accordingly, temporary rental boilers in use at ARC are not included in these analyses.

In practice, this analysis encompasses all of the emissions units associated with the primary manufacturing process; therefore, all emissions units are evaluated in the significant impact analysis.

- GP determined the *actual emissions* rate from each unit, for each modeled pollutant and averaging period.
    - GP selected a representative *actual emissions* factor for each pollutant based on best available data with preference for site- and unit-specific stack test data expressed in terms of the relevant fuel combustion (e.g., lb/MMBtu) or process production parameters (e.g., lb/tons black liquor solids fired). Otherwise, a representative emission factor was selected from published resources.
    - GP reviewed recordkeeping for fuel and production over the prior 24-month period consistent with the definition of *actual emissions* – not (necessarily) the baseline period used to calculate *baseline actual emissions* for PSD applicability analyses – to determine the operating level for each relevant averaging period. In practice, this period spanned from May 2022 through April 2024, the most recent 24-month period for which complete, quality assured records are available.

      The operating level for each unit was selected commensurate with the averaging period for each modeled pollutant. Annual operating levels (for annual average NO_2, PM_{10}, and $PM_{2.5}$ analyses) were determined as the average fuel combustion or production rate over the 24-month period based on monthly records. 24-hour operating levels (for 24-hour average PM_{10} and $PM_{2.5}$ analyses) were determined as the maximum recorded 24-hour fuel combustion or production rate over the 24-month period for units with daily operating records. 1-hour operating levels (for 1-hour average NO_2 and 1-hour and 8-hour CO analyses) were determined as the maximum recorded 1-hour fuel combustion or production rate over the 24-month period for units with hourly operating records.

      For units for which short-term operating records are not available, the relevant operating level was estimated conservatively. Specifically, daily average operating levels conservatively represent the maximum 1-hour operating level, and the annual or monthly operating levels conservatively represent the maximum 24-hour operating level. No operating level in excess of a stated unit capacity was utilized, if reflected in short-term operating records.

  The *actual emission* rate for each unit and pollutant was then calculated on a lb/hr basis as the representative emission factor multiplied by the operating level for each averaging period. The *actual emission* rate for each unit is converted to AERMOD input units of grams per second (g/s) and entered as a negative quantity for each emission point, which as previously described was simulated using the existing location, best estimate of actual exhaust conditions, and relative to the location and dimensions of existing structures.

- To simulate conditions after the project, GP determined the *potential emission* rate for each unit, pollutant, and averaging period consistent with the previously discussed regulatory definitions reflecting current or anticipated permitted emissions limitations based on applicable regulatory requirements (i.e., NSPS, MACT, or SIP requirements) or BACT determinations (whichever is lower), maximum operating capacity, and maximum operating factor (including 8,760 hours per year, unless production is limited by an enforceable permit condition). The maximum *potential emission* rate for each unit is converted to AERMOD input units of grams per second (g/s) and entered as a positive quantity for each emission point, which as previously described is simulated using the future location, design or specification for exhaust conditions, and relative to the location and dimensions of structures after the project is completed.

Table 2-3 summarizes the determination of emission rates for the annual average and short-term significant impact analyses, respectively.

Table 2-3. Summary of modeled emission rates for significant impact analyses.

Red text denotes model inputs for existing conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	Project Status	NO_X SIL 1-hr (g/s)	NO_X SIL Annual (g/s)	CO SIL (g/s)	PM10 24-hour SIL (g/s)	PM10 Annual SIL (g/s)	PM2.5 24-hour SIL (g/s)	PM2.5 Annual SIL (g/s)
No. 7 Lime Kiln (Existing)	7LKX	Modified	-1.8571	-1.2428	-1.1549	-1.1347	-0.8202	-1.1347	-0.8202
No. 7 Lime Kiln (Modified)	7LK	Modified	3.4977	3.4977	0.9507	1.1206	1.1206	1.0085	1.0085
No. 7 Mill Lime Slaker	7SLAKERX	Replaced				-0.0513	-0.0429	-0.0513	-0.0429
No. 7 Mill Lime Slaker	7SLAKER	New				0.0704	0.0640	0.0704	0.0640
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	Affected			-0.1149	-0.6930	-0.5380	-0.6930	-0.5380
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	Affected			0.1187	1.8116	1.8021	1.8116	1.8021
No. 7 Power Boiler (Existing)		Affected	-17.4038	-8.4480	-16.3957	-3.4273	-2.1505	-3.4273	-2.1505
No. 7 Power Boiler (Post-Project)		Affected	22.6196	22.6196	199.3249	8.2186	8.2186	8.2186	8.2186
No. 7 Recovery Furnace (Existing)		Affected	-27.9382	-20.9033	-8.0820	-3.1747	-2.5898	-2.5497	-2.0534
No. 7 Recovery Furnace (Post-Project)		Affected	28.1319	28.1319	57.0927	6.5822	5.9244	5.1148	4.4571
Combined No. 7 Energy Stack (Existing)	7RBPBX	Affected	-45.3420	-29.3513	-24.4777	-6.6020	-4.7403	-5.9770	-4.2039
Combined No. 7 Energy Stack (Post-Project)	7RBPB	Affected	50.7515	50.7515	256.4176	14.8008	14.1430	13.3334	12.6757
No. 8 Lime Kiln (Existing)	8LKX	Affected	-4.1516	-1.9135	-0.0478	-0.4577	-0.2063	-0.3895	-0.1780
No. 8 Lime Kiln (Post-Project)	8LK	Affected	4.5807	4.5807	1.4503	1.3573	1.3573	0.6034	0.6034
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	Affected				-0.0687	-0.0569	-0.0687	-0.0569
No. 8 Mill Lime Slaker	8SLAKER	Affected				0.0823	0.0823	0.0823	0.0823
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	Modified			-0.1079	-1.2294	-1.0121	-1.2294	-1.0121
No. 8 Power Boiler (Existing)		Removed	-4.7413	-1.0162	-7.5647	-1.5237	-0.3266	-1.5237	-0.3266
No. 8 Power Boiler (New)		New	1.6253	1.6253	1.6704	0.3364	0.3364	0.3364	0.3364
No. 8 Recovery Furnace (Existing)		Modified	-19.9697	-14.8833	-35.9216	-3.9223	-3.1513	-3.1152	-2.4979
No. 8 Recovery Furnace (Post-Project)		Modified	29.9494	29.9494	48.6251	14.3280	14.3280	12.8952	12.8952
Combined No. 8 Energy Stack (Existing)	8RBPBX	Modified	-24.7110	-15.8995	-43.4863	-5.4460	-3.4779	-4.6389	-2.8245
Combined No. 8 Energy Stack (Post-Project)	8RBPB	Modified	31.5747	31.5747	50.2955	14.6644	14.6644	13.2316	13.2316
Backup NCG Incinerator	INCINX	Affected	-0.0347	-0.0347	-0.0092	-0.0292	-0.0292	-0.0292	-0.0292
Backup NCG Incinerator	INCIN	Affected	0.0913	0.0913	0.0242	0.7301	0.0747	0.7301	0.0747
Bleach Plant Scrubber	BLEACHX	Modified			-4.3821				
Bleach Plant Scrubber	BLEACH	Modified			14.0293				
No. 7 Mill Pulp Dryer		Removed							
Dryer Exhaust 1 (Relocated)	7DRYR1X					-0.0202	-0.0202	-0.0155	-0.0155
Dryer Exhaust 2 (Relocated)	7DRYR2X					-0.0202	-0.0202	-0.0155	-0.0155
Center Aisle Exhaust	7AISLEX					-0.0121	-0.0121	-0.0093	-0.0093
Vacuum Exhaust	7VACX					-0.0080	-0.0080	-0.0061	-0.0061
Winder Pulper	7WINDERX					-0.0023	-0.0023	-0.0018	-0.0018
Reel Pulper	7REELX					-0.0029	-0.0029	-0.0022	-0.0022
Wet End Roof Exhaust (RE) 1	7ROOF01X					-0.0081	-0.0081	-0.0062	-0.0062
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X					-0.0071	-0.0071	-0.0054	-0.0054
Dry End Roof Exhaust (RE) 8	7ROOF08X					-0.0081	-0.0081	-0.0062	-0.0062
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X					-0.0071	-0.0071	-0.0054	-0.0054
Dry End Roof Exhaust (RE) 10	7ROOF10X					-0.0081	-0.0081	-0.0062	-0.0062
Machine East Wall Exhaust 1	7WALL01X					-0.0054	-0.0054	-0.0042	-0.0042
Machine East Wall Exhaust 2	7WALL02X					-0.0054	-0.0054	-0.0042	-0.0042
Machine East Wall Exhaust 3	7WALL03X					-0.0054	-0.0054	-0.0042	-0.0042
No. 7 Mill Pulp Dryer		New							
Dryer Exhaust 1 (Relocated)	7DRYR1					0.0310	0.0282	0.0238	0.0216
Dryer Exhaust 2 (Relocated)	7DRYR2					0.0310	0.0282	0.0238	0.0216
Vacuum Exhaust	7VAC					0.0122	0.0111	0.0093	0.0085
Winder Pulper	7WINDER					0.0035	0.0032	0.0027	0.0025
Reel Pulper	7REEL					0.0044	0.0040	0.0034	0.0031
Wet End Roof Exhaust (RE) 1	7ROOF01					0.0124	0.0113	0.0095	0.0086
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07					0.0108	0.0099	0.0083	0.0076
Dry End Roof Exhaust (RE) 8	7ROOF08					0.0124	0.0113	0.0095	0.0086
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09					0.0108	0.0099	0.0083	0.0076
Dry End Roof Exhaust (RE) 10	7ROOF10					0.0124	0.0113	0.0095	0.0086
Wet End False Ceiling 1 (New)	7ROOF11					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling 2 (New)	7ROOF12					0.0108	0.0099	0.0083	0.0076
Wall Exhaust 4 (New)	7WALL04					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 5 (New)	7WALL05					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 6 (New)	7WALL06					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 7 (New)	7WALL07					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 8 (New)	7WALL08					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 9 (New)	7WALL09					0.0111	0.0101	0.0086	0.0078
Warehouse Exhaust 1 (New)	7WREHS01					0.0069	0.0063	0.0053	0.0048
Warehouse Exhaust 2 (New)	7WREHS02					0.0069	0.0063	0.0053	0.0048
Warehouse Exhaust 3 (New)	7WREHS03					0.0069	0.0063	0.0053	0.0048
No. 8 Mill Pulp Dryer	308	Contemporaneous							
Pulp Dryer Combined Exhaust Stack	8DRYR1X					-0.0250	-0.0250	-0.0192	-0.0192
42" Vacuum Stack	8VACX					-0.0076	-0.0076	-0.0059	-0.0059
Dryer Exhaust Stack	8DRYREXX					-0.0049	-0.0049	-0.0038	-0.0038
Dryer Pulper	8PULPERX					-0.0061	-0.0061	-0.0047	-0.0047
Reel Pulper	8REELX					-0.0040	-0.0040	-0.0031	-0.0031
Winder Pulper	8WINDERX					-0.0026	-0.0026	-0.0020	-0.0020
Wet End Roof Exhaust (RE) 1	8ROOF01X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End Roof Exhaust (RE) 2	8ROOF02X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End Roof Exhaust (RE) 3	8ROOF03X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13X					-0.0076	-0.0076	-0.0059	-0.0059
Dry End Roof Exhaust (RE) 1	8ROOF14X					-0.0076	-0.0076	-0.0059	-0.0059
Dry End Roof Exhaust (RE) 2	8ROOF15X					-0.0076	-0.0076	-0.0059	-0.0059
Roll Handling Wall Exhaust 1	8WALL01X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 2	8WALL02X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 3	8WALL03X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 4	8WALL04X					-0.0083	-0.0083	-0.0063	-0.0063
No. 8 Mill Pulp Dryer	308	Contemporaneous					[illegible]		[illegible]
Pulp Dryer Combined Exhaust Stack	8DRYR1					0.0376	0.0376	0.0288	0.0288
42" Vacuum Stack	8VAC					0.0115	0.0115	0.0088	0.0088
Dryer Exhaust Stack	8DRYREX					0.0073	0.0073	0.0056	0.0056
Dryer Pulper	8PULPER					0.0092	0.0092	0.0071	0.0071
Reel Pulper	8REEL					0.0060	0.0060	0.0046	0.0046
Winder Pulper	8WINDER					0.0038	0.0038	0.0029	0.0029
Wet End Roof Exhaust (RE) 1	8ROOF01					0.0115	0.0115	0.0088	0.0088
Wet End Roof Exhaust (RE) 2	8ROOF02					0.0115	0.0115	0.0088	0.0088
Wet End Roof Exhaust (RE) 3	8ROOF03					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13					0.0115	0.0115	0.0088	0.0088
Dry End Roof Exhaust (RE) 1	8ROOF14					0.0115	0.0115	0.0088	0.0088
Dry End Roof Exhaust (RE) 2	8ROOF15					0.0115	0.0115	0.0088	0.0088
Roll Handling Wall Exhaust 1	8WALL01					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 2	8WALL02					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 3	8WALL03					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 4	8WALL04					0.0124	0.0124	0.0095	0.0095

2.8.5. NAAQS Analyses

EPA's Appendix W, Table 8-2 "Point Source Model Inputs for NAAQS Compliance in PSD Demonstrations" specifies the determination of modeled emission rates. Table 8-2 critically distinguishes between annual and short-term averaging periods and between a "new or modified source" and "nearby sources." The proposed *project* at ARC involves both annual and short-term averaging periods and includes new units, existing units that will be physically modified, and existing units that will not be physically modified as part of the *project* but are affected to the extent they may increase utilization and *actual emissions*.

The maximum *potential emission* rate was conservatively modeled for all averaging periods for new or modified emissions units at ARC. Emissions units at ARC that are "nearby sources" as described in Appendix W, Table 8-2, Footnote 4 "includes existing facility to which modification is proposed if the emissions from the existing facility will not be affected by the modification" were modeled with annual average $PM_{2.5}$ emissions simulating the "temporally representative" actual operating level and operating factor as prescribed in Table 8-2:

Table 8-2. - Point Source Model Emission Inputs for NAAQS Compliance in PSD Demonstrations

Averaging time	Emissions limit (lb/MMBtu)[1]	X	Operating level (MMBtu/hr)[2]	X	Operating factor (*e.g.*, hr/yr, hr/day)
Nearby Source(s) [4,5]					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.[5]		Annual level when actually operating, averaged over the most recent 2 years.[6]		Actual operating factor averaged over the most recent 2 years.[6,8]

Although the prescription in Table 8-2 is expressed in terms of fuel heat input (MMBtu), it can also be expressed in terms of production rates relevant to each emissions unit, which for the annual averaging period, the actual annual production rate represents the annual operating level multiplied by the actual operating factor. For the following units that will not be newly installed or modified as part of the project, and are therefore simulated as "nearby sources," Table 2-4 summarizes the representative annual average $PM_{2.5}$ emissions rates simulated in the NAAQS analysis, using Calendar Years 2022 and 2023 to determine the average annual operations multiplied by the applicable emission limit (or maximum potential emission factor) for each unit. This time period is representative of the most recent 24-month period and annual production rates can be easily validated from annual emissions reports. **GP notes that the simulation of actual operation level and factor in terms of the actual annual production rate as prescribed in Table 8-2 is not intended as an enforceable limitation on future operations**.

Table 2-4. Derivation of modeled emission rates for annual average $PM_{2.5}$ from emission units represented by actual annual operating level and factor.

Emission Unit	$PM_{2.5}$ Emission Limit [1]	Annual Operations					PM2.5 Emission Rate	
		Capacity	2022	2023	Average	UOM [2]	"Actual" [3] (tpy)	Modeled (g/s)
No. 7 Power Boiler	0.11 lb/MMBtu	4,415,040	4,145,369	4,390,087	4,267,728	MMBtu/yr	233.2	6.7086
No. 7 Recovery Furnace	0.35 lb/ton BLS	1,003,750	899,018	716,258	807,638	tons BLS/yr	143.1	4.1155
No. 7 Smelt Dissolving Tank	0.13 lb/ton BLS	1,003,750	899,018	716,258	807,638	tons BLS/yr	50.7	1.4577
No. 8 Lime Kiln	0.10 lb/ton CaO	197,100	140,327	136,089	138,208	tons CaO/yr	7.1	0.2036
No. 8 Pulp Dryer	0.023 lb/ADTFP	686,565	497,955	492,362	495,159	ADTFP/yr	5.7	0.1639

1. The "$PM_{2.5}$ Emission Limit" represents the permitted mass emission rate (lb/hr) for total $PM_{2.5}$ divided by the maximum hourly fuel consumption or production capacity expressed in relevant units. For these emissions units, applicable emissions standards (NSPS, MACT, and/or BACT) are expressed in terms of filterable PM and are adjusted for size (if necessary) and added to a representative condensable PM emission factor as described in Section 2.8.3 of this report.
2. Units of measure (UOM) are expressed as the primary fuel consumption or process measurement for each emissions unit, consistent with emission limit basis. MMBtu = million British thermal units per hour heat input. BLS = black liquor solids. CaO = calcium oxide (lime). ADTFP = air dried tons finished pulp.
3. The "actual" annual emission rate denotes the quantity calculated from the $PM_{2.5}$ emission limit and average annual operations listed in the table. In every instance, this "actual" rate exceeds the actual emissions reported in 2022 and 2023 annual emission reports because the emission limit exceeds the actual emission factor demonstrated through stack testing. For example, $PM_{2.5}$ actual emissions from the No. 7 Power Boiler are calculated based on an average measured filterable PM emission factor of 0.04 lb/MMBtu relative to an applicable emission standard of 0.1 lb/MMBtu that is used in this analysis.

Table 2-5 summarizes modeled emission rates for the NAAQS analyses.

Table 2-5. Summary of modeled emission rates for NAAQS analyses.

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	NOx (1-hour Maximum)		PM10 (24-hour Average)		PM10 (Annual Average)		PM2.5 (24-hour Average)		PM2.5 (Annual Average)	
		(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(tpy)	(g/s)	(lb/hr)	(g/s)	(tpy)
No. 7 Lime Kiln (Modified)	7LK	3.4977	27.76	1.1206	8.89	1.1206	38.95	1.0085	8.00	1.0085	35.06
No. 7 Mill Lime Slaker	7SLAKER			0.0704	0.56	0.0640	2.22	0.0704	0.56	0.0640	2.22
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT			1.8116	14.38	1.8021	62.64	1.8116	14.38	1.4577	50.67
No. 7 Power Boiler (Post-Project)		22.6196	179.52	8.2186	65.23	8.2186	285.69	8.2186	65.23	6.7086	233.20
No. 7 Recovery Furnace (Post-Project)		28.1319	223.27	6.5822	52.24	5.9244	205.94	5.1148	40.59	4.1155	143.06
Combined No. 7 Energy Stack (Post-Project)	7RBPB	50.7515	402.79	14.8008	117.47	14.1430	491.64	13.3334	105.82	10.8241	376.26
No. 8 Lime Kiln (Post-Project)	8LK	4.5807	36.35	1.3573	10.77	1.3573	47.18	0.6034	4.79	0.8266	28.73
No. 8 Mill Lime Slaker	8SLAKER			0.0823	0.65	0.0823	2.86	0.0823	0.65	0.0823	2.86
No. 8 Power Boiler (New)		1.6253	12.90	0.3364	2.67	0.3364	11.69	0.3364	2.67	0.3364	11.69
No. 8 Recovery Furnace (Post-Project)		29.9494	237.69	14.3280	113.71	14.3280	498.07	12.8952	102.34	12.8952	448.26
Combined No. 8 Energy Stack (Post-Project)	8RBPB	31.5747	250.59	14.6644	116.38	14.6644	509.76	13.2316	105.01	13.2316	459.95
Backup NCG Incinerator	INCIN	0.9549	7.58	0.7301	5.79	0.0747	2.60	0.7301	5.79	0.0747	2.60
Bleach Plant Scrubber	BLEACH										
No. 7 Mill Pulp Dryer					2.41		9.58		1.84		7.34
Dryer Exhaust 1 (Relocated)	7DRYR1			0.0310	0.25	0.0282	0.98	0.0238	0.19	0.0216	0.75
Dryer Exhaust 2 (Relocated)	7DRYR2			0.0310	0.25	0.0282	0.98	0.0238	0.19	0.0216	0.75
Vacuum Exhaust	7VAC			0.0122	0.096	0.0111	0.38	0.0093	0.074	0.0085	0.29
Winder Pulper	7WINDER			0.0035	0.028	0.0032	0.11	0.0027	0.021	0.0025	0.085
Reel Pulper	7REEL			0.0044	0.034	0.0040	0.14	0.0034	0.026	0.0031	0.10
Wet End Roof Exhaust (RE) 1	7ROOF01			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Dry End Roof Exhaust (RE) 8	7ROOF08			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Dry End Roof Exhaust (RE) 10	7ROOF10			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Wet End False Ceiling 1 (New)	7ROOF11			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling 2 (New)	7ROOF12			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wall Exhaust 4 (New)	7WALL04			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 5 (New)	7WALL05			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 6 (New)	7WALL06			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 7 (New)	7WALL07			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 8 (New)	7WALL08			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 9 (New)	7WALL09			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Warehouse Exhaust 1 (New)	7WREHS01			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
Warehouse Exhaust 2 (New)	7WREHS02			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
Warehouse Exhaust 3 (New)	7WREHS03			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
No. 8 Mill Pulp Dryer	308				2.35		10.30		1.80		5.69
Pulp Dryer Combined Exhaust Stack	8DRYR1			0.0376	0.30	0.0376	1.30	0.0288	0.23	0.0208	0.72
42" Vacuum Stack	8VAC			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dryer Exhaust Stack	8DRYREX			0.0073	0.058	0.0073	0.25	0.0056	0.044	0.0041	0.14
Dryer Pulper	8PULPER			0.0092	0.073	0.0092	0.32	0.0071	0.056	0.0051	0.18
Reel Pulper	8REEL			0.0060	0.047	0.0060	0.21	0.0046	0.036	0.0033	0.11
Winder Pulper	8WINDER			0.0038	0.030	0.0038	0.13	0.0029	0.023	0.0021	0.07
Wet End Roof Exhaust (RE) 1	8ROOF01			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End Roof Exhaust (RE) 2	8ROOF02			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End Roof Exhaust (RE) 3	8ROOF03			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dry End Roof Exhaust (RE) 1	8ROOF14			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dry End Roof Exhaust (RE) 2	8ROOF15			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Roll Handling Wall Exhaust 1	8WALL01			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 2	8WALL02			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 3	8WALL03			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 4	8WALL04			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24

2.8.6. PSD Increment Analyses

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance provides a concise, current description of acceptable procedures to analyze PSD Increment generally for any pollutant and specifically for $PM_{2.5}$. By definition, PSD Increment consumption results from changes in *actual emissions* at *major stationary sources* after the MSBD and from all sources after the mSBD. A cumulative assessment of PSD Increment includes the following:

1. Direct and precursor *allowable emissions* that the proposed new or modifying source would emit in significant amounts;
2. Direct and precursor *actual emissions* changes that have occurred at existing sources (including the existing source at which a *major modification* is being proposed, where applicable) since the minor source baseline date for the proposed source's baseline area;
3. Direct and precursor *actual emissions* from any *major stationary source* on which construction commenced after the MSBD; and,
4. Direct and precursor *allowable emissions* of permitted sources that are not yet fully operational.

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance explains (Section V.1.2, page 64, footnote 35) that emissions changes that consume or expand PSD Increment result from *construction*, which includes a *modification*, that is, "any physical change or change in the method of operation of a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted." This means that in practice, the PSD Increment analyses differ from the NAAQS analyses because "only sources that have … emissions … that affect the amount of increment consumed in the area of concern should be included in the modeling inventory for the increment analysis. Moreover, from such sources, only those specific emissions changes that affect increment should be included in the actual modeling analysis." Although the *baseline concentration* is established on the mSBD, EPA guidance confirms the exception codified at ADEM Admin Code r. 335-3-14-.04(2)(m) that PSD Increment-affecting emissions include "actual emissions, as defined in paragraph (2)(u) of this Rule, from any major stationary source on which construction commenced after the major source baseline date," which includes "projects at major stationary sources on which construction commences after the major source baseline date, the project emissions affect increment, even if the new or modified source actually begins operation before the minor source baseline date."

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance further distinguishes the emissions rates modeled in the PSD Increment analyses in contrast to NAAQS analyses (emphasis added): "the cumulative impact analysis for … increments is also different and based on the **actual emission changes** occurring at existing sources in the baseline area after the pertinent baseline dates (i.e., major and minor source baseline dates), whereas NAAQS analyses are generally based on the cumulative impact associated with the **maximum**

allowable emissions from the new or modifying source and other nearby sources (with specific provisions for operating levels of nearby sources)." In practice, emission units being newly installed or modified as part of the *project* under review are modeled by simulating the proposed *potential* or *allowable emission* rates since *actual emissions* after resumption of normal operations are not yet known. Emission units that affect PSD Increment because of prior *modifications* after the baseline dates – but not part of the proposed *project* – are modeled by simulating *actual emissions* (in the sense of ADEM Admin Code r. 335-3-14-.04(2)(u)). Alternatively, the PSD Increment analysis can conservatively simulate the maximum *potential* or *allowable emission* rate from all emissions units. Consistent with ADEM recommendations, GP simulated the *potential emission* rate from all PSD Increment affecting units; however, GP may seek to refine inputs to simulate *actual emissions* in future analyses consistent with the regulatory definition.

Because the proposed *major modification* is expected to cause no significant impacts for annual average NO_2, and because EPA did not establish a 1-hour average NO_2 PSD Increment corresponding to the 1-hour average NO_2 NAAQS, no cumulative analyses are required for NO_2 PSD Increment.

All emission units at ARC affect PSD Increment for PM_{10} because the mill was initially constructed after the MSBD of January 6, 1975. For cumulative PSD Increment analyses of PM_{10}, GP simulated maximum *potential emission* rates for 24-hour and annual average analyses for all emission units being newly installed or *modified* as part of the proposed *major modification*. The remaining emission units could be simulated with *actual emissions* based on the prior 24 months of operation, as positive quantities numerically equivalent to the emission rates modeled as negative quantities to simulate *actual emissions* in the significant impact analysis. However, as recommended by ADEM, *potential emissions* were input to the model to conservatively simulate these units. Table 2-6 summarizes the modeled emission rates (both annual average and 24-hour average) for PM_{10}.

Table 2-6. Summary of modeled emission rates for PM_{10} PSD Increment analyses.

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	PM10 24-hour		PM10 Annual	
		(lb/hr)	(g/s)	(tpy)	(g/s)
No. 7 Lime Kiln (Modified)	7LK	8.89	1.1206	38.95	1.1206
No. 7 Mill Lime Slaker	7SLAKER	0.56	0.0704	2.22	0.0640
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	14.38	1.8116	62.64	1.8021
No. 7 Power Boiler (Post-Project)		65.23	8.2186	285.69	8.2186
No. 7 Recovery Furnace (Post-Project)		52.24	6.5822	205.94	5.9244
Combined No. 7 Energy Stack (Post-Project)	7RBPB	117.47	14.8008	491.64	14.1430
No. 8 Lime Kiln (Post-Project)	8LK	10.77	1.3573	47.18	1.3573
No. 8 Mill Lime Slaker	8SLAKER	0.65	0.0823	2.86	0.0823
No. 8 Power Boiler (New)		2.67	0.3364	11.69	0.3364
No. 8 Recovery Furnace (Post-Project)		113.71	14.3280	498.07	14.3280
Combined No. 8 Energy Stack (Post-Project)	8RBPB	116.38	14.6644	509.76	14.6644
Backup NCG Incinerator	INCIN	5.79	0.7301	2.60	0.0747
Bleach Plant Scrubber	BLEACH				
No. 7 Mill Pulp Dryer		2.41		9.58	
Dryer Exhaust 1 (Relocated)	7DRYR1	0.25	0.0310	0.98	0.0282
Dryer Exhaust 2 (Relocated)	7DRYR2	0.25	0.0310	0.98	0.0282
Vacuum Exhaust	7VAC	0.096	0.0122	0.38	0.0111
Winder Pulper	7WINDER	0.028	0.0035	0.11	0.0032
Reel Pulper	7REEL	0.034	0.0044	0.14	0.0040
Wet End Roof Exhaust (RE) 1	7ROOF01	0.098	0.0124	0.39	0.0113
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	0.086	0.0108	0.34	0.0099
Dry End Roof Exhaust (RE) 8	7ROOF08	0.098	0.0124	0.39	0.0113
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	0.086	0.0108	0.34	0.0099
Dry End Roof Exhaust (RE) 10	7ROOF10	0.098	0.0124	0.39	0.0113
Wet End False Ceiling 1 (New)	7ROOF11	0.086	0.0108	0.34	0.0099
Wet End False Ceiling 2 (New)	7ROOF12	0.086	0.0108	0.34	0.0099
Wall Exhaust 4 (New)	7WALL04	0.088	0.0111	0.35	0.0101
Wall Exhaust 5 (New)	7WALL05	0.088	0.0111	0.35	0.0101
Wall Exhaust 6 (New)	7WALL06	0.088	0.0111	0.35	0.0101
Wall Exhaust 7 (New)	7WALL07	0.088	0.0111	0.35	0.0101
Wall Exhaust 8 (New)	7WALL08	0.088	0.0111	0.35	0.0101
Wall Exhaust 9 (New)	7WALL09	0.088	0.0111	0.35	0.0101
Warehouse Exhaust 1 (New)	7WREHS01	0.054	0.0069	0.22	0.0063
Warehouse Exhaust 2 (New)	7WREHS02	0.054	0.0069	0.22	0.0063
Warehouse Exhaust 3 (New)	7WREHS03	0.054	0.0069	0.22	0.0063
No. 8 Mill Pulp Dryer	308	2.35		10.30	
Pulp Dryer Combined Exhaust Stack	8DRYR1	0.30	0.0376	1.30	0.0376
42" Vacuum Stack	8VAC	0.091	0.0115	0.40	0.0115
Dryer Exhaust Stack	8DRYREX	0.058	0.0073	0.25	0.0073
Dryer Pulper	8PULPER	0.073	0.0092	0.32	0.0092
Reel Pulper	8REEL	0.047	0.0060	0.21	0.0060
Winder Pulper	8WINDER	0.030	0.0038	0.13	0.0038
Wet End Roof Exhaust (RE) 1	8ROOF01	0.091	0.0115	0.40	0.0115
Wet End Roof Exhaust (RE) 2	8ROOF02	0.091	0.0115	0.40	0.0115
Wet End Roof Exhaust (RE) 3	8ROOF03	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	0.091	0.0115	0.40	0.0115
Dry End Roof Exhaust (RE) 1	8ROOF14	0.091	0.0115	0.40	0.0115
Dry End Roof Exhaust (RE) 2	8ROOF15	0.091	0.0115	0.40	0.0115
Roll Handling Wall Exhaust 1	8WALL01	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 2	8WALL02	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 3	8WALL03	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 4	8WALL04	0.098	0.0124	0.43	0.0124

As previously described for $PM_{2.5}$ PSD Increments in Section 1.4.4, ARC commenced construction prior to the $PM_{2.5}$ MSBD on October 20, 2010. GP anticipates that this PSD permit application will establish the $PM_{2.5}$ mSBD for Monroe County because it is the first PSD permit application submitted for $PM_{2.5}$ after the trigger date October 20, 2011. EPA observes in its Ozone/$PM_{2.5}$ Permit Modeling Guidance that "a proposed new or modified source being evaluated for compliance with the $PM_{2.5}$ increments in a particular area may be the first source in the area with increment-consuming emissions … under this situation, a permitting authority may have a sufficient basis to conclude that the $PM_{2.5}$ impacts of the new or modified PSD source, although greater than the applicable $PM_{2.5}$ SILs, may be compared directly to the allowable $PM_{2.5}$ increments without the need for a cumulative analysis." $PM_{2.5}$ emissions changes at ARC resulting from this project were modeled to assess $PM_{2.5}$ PSD Increment; ADEM's regional source inventory indicates emissions reductions at other *major stationary sources* occurring since the MSBD that would affect the same *baseline area* and were modeled using negative emission rates because they expand PSD Increment.

Having reviewed *projects* occurring at ARC since the $PM_{2.5}$ MSBD (October 20, 2010), GP determined that all emissions units included in the scope of these PSD analyses have been physically *modified* since that time, or will be as part of the proposed *major modification*, with the exception of the No. 7 Power Boiler and Backup NCG Incinerator. Therefore, these emission units are excluded from the $PM_{2.5}$ PSD Increment analysis and GP quantified the emissions changes from remaining units that affect PSD Increment as follows:

- For all emissions units (except the No. 7 Power Boiler and Backup NCG Incinerator), GP examined annual emissions reports from Calendar Years 2008 and 2009 to determine the representative 2-year average $PM_{2.5}$ actual emission rate as of the MSBD (October 20, 2010). This emission rate is determined in tons per year and is converted to grams per second for input to the dispersion model as a negative quantity representing existing conditions for source parameters and downwash. This approach directly represents the annual average emissions and is a conservative representation of the 24-hour average emission rate because higher (negative) emission rates may have been achieved on a daily basis than represented by the 2-year annual average. Because emissions factors for $PM_{2.5}$ were generally less reliable at the time those emission reports were prepared, GP calculated the $PM_{2.5}$ emission rate simulated in this analysis using currently available emissions factors – preferentially utilizing stack test results over the last 10 years – multiplied by the reported annual production parameters for each unit, for each Calendar Year.[11] Table 2-7 summarizes the determination of baseline $PM_{2.5}$ emissions. Stack parameters, locations, and building downwash represent conditions before the proposed *major modification*.

[11] $PM_{2.5}$ precursor emissions of NO_X and SO_2 from emissions units that affect $PM_{2.5}$ Increment were used as reported without revision to calculate the secondary $PM_{2.5}$ component as described subsequently in Section 2.9 of this report.

- For all emissions units being newly installed and physically modified as part of the proposed *major modification*, maximum *potential emission* rates are modeled with stack parameters, locations, and building downwash representative of future operations.
- The remaining emission units that have been modified since the MSBD – but are not being modified as part of this *project* – were simulated with *potential emissions* (consistent with ADEM recommendations) as positive quantities with stack parameters, locations, and building downwash representative of future operations. GP may seek to refine inputs for such sources using *actual emissions* based on the prior 24 months of operation in future analyses consistent with the regulatory definition.

Table 2-7. Determination of modeled baseline emission rates for $PM_{2.5}$ PSD Increment analyses.

	Production Rate				Filterable PM2.5		Condensable PM		Total PM2.5	
Unit	2008	2009	Average	UOM	(lb/UOM)	(tpy)	(lb/UOM)	(tpy)	(tpy)	(g/s)
No. 7 Recovery Furnace	771,717	835,338	803,527	tons BLS	0.095	37.97	0.083	33.39	71.36	-2.0527
No. 7 Smelt Dissolving Tank	771,717	835,338	803,527	tons BLS	0.054	21.69	0.0025	1.02	22.71	-0.6532
No. 7 Lime Kiln	85,283	92,239	88,761	tons CaO	0.33	14.73	0.054	2.40	17.12	-0.4925
No. 7 Mill Lime Slaker	85,283	92,239	88,761	tons CaO	0.029	1.29			1.29	-0.0370
No. 7 Mill Pulp Dryer	450,605	451,616	451,111	ADTFP	0.0050	1.13	0.018	4.06	5.19	-0.1492
No. 8 Power Boiler	101,200	1,543,674	822,437	MMBtu	0.012	4.87	0.0059	2.41	7.28	-0.2095
No. 8 Recovery Furnace	1,087,318	1,023,322	1,055,320	tons BLS	0.085	44.86	0.083	43.85	88.71	-2.5517
No. 8 Smelt Dissolving Tank	1,087,318	1,023,322	1,055,320	tons BLS	0.094	49.39	0.012	6.34	55.74	-1.6034
No. 8 Lime Kiln	143,461	142,717	143,089	tons CaO	0.0057	0.41	0.087	6.20	6.61	-0.1901
No. 8 Mill Lime Slaker	143,461	142,717	143,089	tons CaO	0.029	2.07			2.07	-0.0596
No. 8 Mill Pulp Dryer	509,204	561,727	535,466	ADTFP	0.0050	1.34	0.018	4.82	6.16	-0.1771
Total Emissions									**282.95**	

Table 2-8 summarizes the modeled emission rates (both annual average and 24-hour average) from new and modified units to demonstrate compliance for $PM_{2.5}$ PSD Increments.

Table 2-8. Summary of modeled emission rates for $PM_{2.5}$ PSD Increment analyses.

Red text denotes model inputs for baseline conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

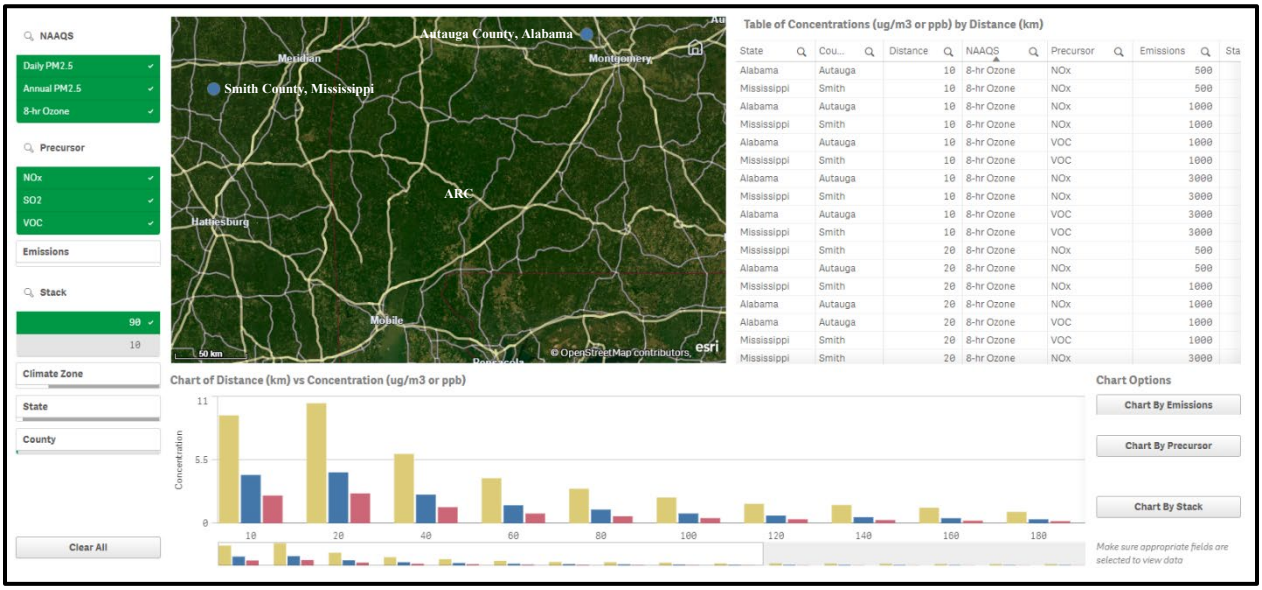
Emission Unit/Point	Model ID	PM2.5 24-hour		PM2.5 Annual	
		(lb/hr)	(g/s)	(tpy)	(g/s)
No. 7 Lime Kiln (Existing)	7LKX	3.91	-0.4925	17.12	-0.4925
No. 7 Lime Kiln (Modified)	7LK	8.00	1.0085	35.06	1.0085
No. 7 Mill Lime Slaker	7SLAKERX	0.29	-0.0370	1.29	-0.0370
No. 7 Mill Lime Slaker	7SLAKER	0.56	0.0704	2.22	0.0640
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	5.18	-0.6532	22.71	-0.6532
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	14.38	1.8116	62.64	1.8021
No. 7 Power Boiler (Existing)					
No. 7 Power Boiler (Post-Project)					
No. 7 Recovery Furnace (Existing)		16.29	-2.0527	71.36	-2.0527
No. 7 Recovery Furnace (Post-Project)		40.59	5.1148	154.93	4.4571
Combined No. 7 Energy Stack (Existing)	7RBPBX	16.29	-2.0527	71.36	-2.0527
Combined No. 7 Energy Stack (Post-Project)	7RBPB	105.82	5.1148	376.26	4.4571
No. 8 Lime Kiln (Existing)	8LKX	1.51	-0.1901	6.61	-0.1901
No. 8 Lime Kiln (Post-Project)	8LK	4.79	0.6034	20.97	0.6034
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	0.47	-0.0596	2.07	-0.0596
No. 8 Mill Lime Slaker	8SLAKER	0.65	0.0823	2.86	0.0823
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	12.73	-1.6034	55.74	-1.6034
No. 8 Power Boiler (Existing)		1.66	-0.2095	7.28	-0.2095
No. 8 Power Boiler (New)		2.67	0.3364	11.69	0.3364
No. 8 Recovery Furnace (Existing)		20.25	-2.5517	88.71	-2.5517
No. 8 Recovery Furnace (Post-Project)		102.34	12.8952	448.26	12.8952
Combined No. 8 Energy Stack (Existing)	8RBPBX	21.91	-2.7612	95.99	-2.7612
Combined No. 8 Energy Stack (Post-Project)	8RBPB	105.01	13.2316	459.95	13.2316
Backup NCG Incinerator	INCINX				
Backup NCG Incinerator	INCIN	5.79	0.7301	2.60	0.0747
Bleach Plant Scrubber	BLEACHX				
Bleach Plant Scrubber	BLEACH				
No. 7 Mill Pulp Dryer		1.18	-0.1492	5.19	-0.1492
Dryer Exhaust 1 (Relocated)	7DRYR1X	0.15	-0.0194	0.68	-0.0194
Dryer Exhaust 2 (Relocated)	7DRYR2X	0.15	-0.0194	0.68	-0.0194
Center Aisle Exhaust	7AISLEX	0.092	-0.0116	0.40	-0.0116
Vacuum Exhaust	7VACX	0.060	-0.0076	0.26	-0.0076
Winder Pulper	7WINDERX	0.017	-0.0021	0.076	-0.0021
Reel Pulper	7REELX	0.022	-0.0027	0.094	-0.0027
Wet End Roof Exhaust (RE) 1	7ROOF01X	0.061	-0.0077	0.27	-0.0077
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X	0.054	-0.0067	0.24	-0.0067
Dry End Roof Exhaust (RE) 8	7ROOF08X	0.061	-0.0077	0.27	-0.0077
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X	0.054	-0.0067	0.24	-0.0067
Dry End Roof Exhaust (RE) 10	7ROOF10X	0.061	-0.0077	0.27	-0.0077
Machine East Wall Exhaust 1	7WALL01X	0.041	-0.0051	0.18	-0.0051
Machine East Wall Exhaust 2	7WALL02X	0.041	-0.0051	0.18	-0.0051
Machine East Wall Exhaust 3	7WALL03X	0.041	-0.0051	0.18	-0.0051
No. 7 Mill Pulp Dryer		1.84	0.2320	7.34	0.0925
Dryer Exhaust 1 (Relocated)	7DRYR1	0.19	0.0238	0.75	0.0216
Dryer Exhaust 2 (Relocated)	7DRYR2	0.19	0.0238	0.75	0.0216
Vacuum Exhaust	7VAC	0.074	0.0093	0.29	0.0085
Winder Pulper	7WINDER	0.021	0.0027	0.08	0.0025
Reel Pulper	7REEL	0.026	0.0034	0.10	0.0031
Wet End Roof Exhaust (RE) 1	7ROOF01	0.075	0.0095	0.30	0.0086
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	0.066	0.0083	0.26	0.0076
Dry End Roof Exhaust (RE) 8	7ROOF08	0.075	0.0095	0.30	0.0086
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	0.066	0.0083	0.26	0.0076
Dry End Roof Exhaust (RE) 10	7ROOF10	0.075	0.0095	0.30	0.0086
Wet End False Ceiling 1 (New)	7ROOF11	0.066	0.0083	0.26	0.0076
Wet End False Ceiling 2 (New)	7ROOF12	0.066	0.0083	0.26	0.0076
Wall Exhaust 4 (New)	7WALL04	0.068	0.0086	0.27	0.0078
Wall Exhaust 5 (New)	7WALL05	0.068	0.0086	0.27	0.0078
Wall Exhaust 6 (New)	7WALL06	0.068	0.0086	0.27	0.0078
Wall Exhaust 7 (New)	7WALL07	0.068	0.0086	0.27	0.0078
Wall Exhaust 8 (New)	7WALL08	0.068	0.0086	0.27	0.0078
Wall Exhaust 9 (New)	7WALL09	0.068	0.0086	0.27	0.0078
Warehouse Exhaust 1 (New)	7WREHS01	0.042	0.0053	0.17	0.0048
Warehouse Exhaust 2 (New)	7WREHS02	0.042	0.0053	0.17	0.0048
Warehouse Exhaust 3 (New)	7WREHS03	0.042	0.0053	0.17	0.0048
No. 8 Mill Pulp Dryer	308	1.43	-0.1731	6.16	-0.1731
Pulp Dryer Combined Exhaust Stack	8DRYR1X	0.18	-0.0224	0.78	-0.0224
42" Vacuum Stack	8VACX	0.054	-0.0068	0.24	-0.0068
Dryer Exhaust Stack	8DRYREXX	0.035	-0.0043	0.15	-0.0043
Dryer Pulper	8PULPERX	0.043	-0.0054	0.19	-0.0054
Reel Pulper	8REELX	0.028	-0.0035	0.12	-0.0035
Winder Pulper	8WINDERX	0.018	-0.0022	0.078	-0.0022
Wet End Roof Exhaust (RE) 1	8ROOF01X	0.054	-0.0068	0.24	-0.0068
Wet End Roof Exhaust (RE) 2	8ROOF02X	0.054	-0.0068	0.24	-0.0068
Wet End Roof Exhaust (RE) 3	8ROOF03X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13X	0.054	-0.0068	0.24	-0.0068
Dry End Roof Exhaust (RE) 1	8ROOF14X	0.054	-0.0068	0.24	-0.0068
Dry End Roof Exhaust (RE) 2	8ROOF15X	0.054	-0.0068	0.24	-0.0068
Roll Handling Wall Exhaust 1	8WALL01X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 2	8WALL02X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 3	8WALL03X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 4	8WALL04X	0.059	-0.0073	0.26	-0.0073
No. 8 Mill Pulp Dryer	308	1.80	0.2268	7.90	0.2268
Pulp Dryer Combined Exhaust Stack	8DRYR1	0.23	0.0288	1.00	0.0288
42" Vacuum Stack	8VAC	0.070	0.0088	0.30	0.0088
Dryer Exhaust Stack	8DRYREX	0.044	0.0056	0.19	0.0056
Dryer Pulper	8PULPER	0.056	0.0071	0.24	0.0071
Reel Pulper	8REEL	0.036	0.0046	0.16	0.0046
Winder Pulper	8WINDER	0.023	0.0029	0.10	0.0029
Wet End Roof Exhaust (RE) 1	8ROOF01	0.070	0.0088	0.30	0.0088
Wet End Roof Exhaust (RE) 2	8ROOF02	0.070	0.0088	0.30	0.0088
Wet End Roof Exhaust (RE) 3	8ROOF03	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	0.070	0.0088	0.30	0.0088
Dry End Roof Exhaust (RE) 1	8ROOF14	0.070	0.0088	0.30	0.0088
Dry End Roof Exhaust (RE) 2	8ROOF15	0.070	0.0088	0.30	0.0088
Roll Handling Wall Exhaust 1	8WALL01	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 2	8WALL02	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 3	8WALL03	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 4	8WALL04	0.075	0.0095	0.33	0.0095

2.9. SECONDARY FORMATION OF OZONE AND $PM_{2.5}$

Because the proposed *major modification* causes *significant net emissions increases* of NO_X and VOC, secondary formation of ozone (for which NO_X and VOC emissions are precursors) and $PM_{2.5}$ (for which NO_X and SO_2 emissions are precursors) must be evaluated. GP utilized the screening methods described in EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance to conform to the Appendix W requirement to characterize secondary formation. This approach utilizes EPA's MERPs Guidance as a Tier I screening technique to quantify secondary ozone and $PM_{2.5}$ concentrations for relevant analyses.

GP reviewed availability of photochemical grid modeling prepared and compiled by EPA to characterize ozone and $PM_{2.5}$ air quality resulting from hypothetical sources of precursor emissions in the vicinity of ARC. As shown in Figure 2-8, EPA simulated emissions from two hypothetical sources roughly equidistant from ARC: one in Autauga County, Alabama and one in Smith County, Mississippi. Neither hypothetical source perfectly represents the conditions in Monroe County in the vicinity of ARC. For the reasons summarized as follows, GP selected the Smith County, Mississippi hypothetical source as representative to estimate secondary formation of ozone and $PM_{2.5}$ in this analysis.

Figure 2-8. EPA's "MERPs View Qlik" database compilation of estimated maximum secondary ozone and $PM_{2.5}$ concentrations for sources of precursor emissions in rural western Alabama.



- Smith County (22.3 people/square mile) is more representative of the rural characteristics of Monroe County (19.1 people/square mile) and the area surrounding ARC than Autauga County (97.3 people/square mile) in terms of population density. As noted in Appendix A of the MERPs Guidance, the Autauga County hypothetical source is nearer an urban area (up to 25% urban land cover within the Montgomery Metropolitan Statistical Area) compared to 2.3% urban land cover near the Smith County hypothetical source.

- GP observes that for many hypothetical sources simulated by EPA, maximum estimated secondary formation is within the first 10 to 20 km downwind of the source as shown in Figure 2-8, indicating the importance of the source itself and any other nearby sources that may affect the same area. ARC is located remotely, and the nearest point sources are at least 15 to 20 km away; no large emissions sources of ozone or $PM_{2.5}$ precursors are located within approximately 40 km. The Smith County hypothetical source is similarly situated with few small sources and no large sources of precursor emissions nearer than 50 km. The Autauga County hypothetical source is located approximately 15 km northwest of a large industrial point source and is therefore not representative of ARC and the surrounding area. Because SO_2 emissions are the most consequential to this analysis as a precursor to secondary $PM_{2.5}$, the similarity between Smith County (155 tpy) and Monroe County (126 tpy) as reported for point and nonpoint sources in the most recent (2020) National Emissions Inventory is a compelling factor compared to Autauga County (808 tpy).
- Neither terrain nor climate is a determinative factor to select between the two hypothetical sources.
    - The average (52 m) and maximum (171 m) terrain within 50 km of ARC is comparable to the terrain near the Smith County (121 m average and 142 m maximum) and Autauga County (96 m average and 179 m maximum) hypothetical sources.
    - Although EPA's MERPs Guidance assigns Alabama to the Southeast Climate Zone and Mississippi to the South Climate Zone, the climate is similar across the region including the area where ARC is located. Both the Smith County and Autauga County hypothetical sources were modeled within the same "12EUS2" photochemical modeling domain.
- GP notes that among all 68 hypothetical sources simulated by EPA across the entire U.S., Autauga County is an outlier that results in the highest estimate of secondary $PM_{2.5}$ formation, roughly 4 times the average of all hypothetical sources and 2.7 times the average of all hypothetical sources in the South and Southeast Climate Zones.

For each hypothetical source, EPA's database viewer compiles the estimated maximum 8-hour average ozone and 24-hour/annual average $PM_{2.5}$ concentration as a function of the downwind distance, emissions of each precursor, and source height. GP selected the 90-meter stack height for NO_X and SO_2 emissions since ARC emits these pollutants from tall stacks (90 m or taller) that exhaust from the largest sources (i.e., power boilers, chemical recovery units, and lime kilns). GP selected the 10-meter stack height for VOC since ARC emits this pollutant from a wide variety of emission units that are closer to ground level than tall stacks.

2.9.1. Estimates of Ozone Formation from Precursor NO_X and VOC Emissions

GP estimated increases in ambient ozone concentration resulting from the proposed *major modification* by comparing mill-wide *potential emissions* of NO_X (3,146 tpy) and VOC (2,854 tpy) to *actual emissions* of NO_X (1,862 tpy) and VOC (318 tpy) reported in Calendar Years 2022 and 2023 to determine the maximum increase in each precursor: 1,284 tpy NO_X and 2,536 tpy VOC. GP then evaluated downwind ozone concentrations for the Smith County hypothetical source emitting 1,000 tpy NO_X from a 90-meter stack and 1,000 tpy VOC from a 10-meter stack. (Hypothetical source VOC emissions of 3,000 tons per year were simulated only

for a 90-meter release.) GP analyzed the results of the hypothetical source simulation for each downwind distance ranging from 10 meters to 300 meters to calculate the concentration response to the modeled emission rate for each precursor (MERP), as summarized in the following example calculation for 20 km downwind.

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration (ppb)}}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase (ppb)}$$

$$1{,}284 \text{ tpy } NO_X \times \frac{4.427 \text{ ppb}}{1{,}000 \text{ tpy } NO_X} = 5.684 \text{ ppb}$$

$$2{,}536 \text{ tpy VOC} \times \frac{0.0995 \text{ ppb}}{1{,}000 \text{ tpy VOC}} = 0.252 \text{ ppb}$$

$$\mathbf{5.684\ ppb + 0.252\ ppb = 5.94\ ppb}$$

As discussed subsequently in Sections 3 and 4 of this report, the result indicates that the proposed modification would cause a significant impact of ozone in excess of the 1.0 ppb SIL; however, when added to the representative background concentration, the result is less than the NAAQS and therefore would not cause or contribute to nonattainment of the standard.

2.9.2. Estimates of Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Significant Impact Analyses

GP used a similar approach to quantify secondary $PM_{2.5}$ using EPA's MERPs but performed distinct evaluations for the significant impact analysis, NAAQS analyses, and PSD Increment analysis because the relevant quantity of precursor emissions differs for each analysis.

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance acknowledges that emissions rates simulated in modeling analyses should not represent the emissions increases calculated for PSD applicability determinations that rely on *projected actual emissions* and *baseline actual emissions*. However, the guidance does not prescribe how to quantify the precursor emissions increases should be simulated in a situation such as this proposed *major modification* at an existing *major stationary source* that involves new units, modified units, and units that are "affected" in the sense that *actual emissions* may increase only because of increased utilization. ADEM advised GP[12] to consider the emissions increases in terms of maximum *potential* or *allowable emissions* minus *actual emissions* from only those emissions units that are newly installed or modified as part of the *project*, plus units that are affected and increase utilization if those units have not previously been subject to BACT determination. The resulting determination of emissions increases is summarized in Table 2-9.

[12] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), September 26, 2024.

Table 2-9. Emissions increases of NO_X and SO_2 precursors simulated to cause secondary $PM_{2.5}$ in the significant impact analysis.

Highlighted rows indicate emissions units included in the analysis because they are newly installed or physically modified as part of the project, or will increase utilization and have not previously been subject to BACT (red font).

			Prior BACT?		2022		2023		2-year "Past Actual"		PTE		PTE-Past Actual (SIL)	
Unit	PSD Status*	Substatus	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2
No. 7 Power Boiler	Affected	†Utilization	No	No	270	0.3	279	0.4	274	0.3	786	2,097	512	2,096
No. 7 Recovery Furnace	Affected	†Utilization	Yes	Yes	897	3.5	832	4.6	864	4.1	978	1,513	114	1,509
No. 7 Smelt Dissolving Tank	Affected	†Utilization	NA	Yes		0.0		0.0		0.0		22		22
No. 7 Lime Kiln	Modified	Modified	Yes	Yes	37	2.6	35	2.4	36	2.5	122	24	86	22
No. 8 Power Boiler	Modified	Replaced	Yes	Yes	29	0.1	28	0.1	28	0.1	56	0.9	28	0.9
No. 8 Recovery Furnace	Modified	Physical Change	Yes	Yes	628	1.8	591	1.7	610	1.8	1,041	592	431	591
No. 8 Smelt Dissolving Tank	Modified	Removed	NA	Yes		1.7		1.7		1.7				-1.7
No. 8 Lime Kiln	Affected	†Utilization	Yes	Yes	47	0.4	48	0.4	47	0.4	159	111	112	111
Incinerator	Affected	†Utilization	No	No	3.2	43.0	1.4	18.9	2.3	30.9	3.2	95.1	0.9	64.2
Modified/Affected Units					**967**	**49**	**934**	**25**	**951**	**37**	**2,009**	**2,809**	**1,058**	**2,772**

*"Affected" indicates emission unit is not being physically modified as part of the current or contemporaneous project, but may experience an actual emissions increase because of increased utilization.

**For affected emission units that are not being physically modified as part of the current project, potential emissions are simulated using the emissions limit and temporally representative operating level (TROL).

The proposed *project* does not cause a *significant emissions increase* of SO_2 because *projected actual emissions* are less than the *significant emission rate* (40 tpy), consistent with reported actual emissions in the past several years. *Potential emissions* of SO_2 are considerably higher than *actual emissions* because of permitted use of alternative fuels with higher sulfur content that are rarely combusted, and because stack tests demonstrate considerably lower emission factors than applicable emissions standards, prior BACT determinations, or published emissions factors used to establish emissions limitations. GP is not requesting any enforceable emissions limitations on precursor emissions as part of this significant impact analysis.

The resulting emissions increases (1,058 tpy NO_X and 2,772 tpy SO_2) were evaluated using EPA's MERPs for the Smith County, Mississippi source emitting 1,000 tpy NO_X and 3,000 SO_2 from a 90-meter stack to determine the secondary $PM_{2.5}$ concentrations.

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$1{,}058 \text{ tpy } NO_X \times \frac{0.108 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.119 \ \mu g/m^3$$

$$2{,}772 \text{ tpy } SO_2 \times \frac{1.864 \ \mu g/m^3}{3{,}000 \text{ tpy } SO_2} = 1.723 \ \mu g/m^3$$

$$\mathbf{0.119 \ \mu g/m^3 + 1.723 \ \mu g/m^3 = 1.841 \ \mu g/m^3 \ 24\text{-hour average } PM_{2.5}}$$

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$1{,}058 \text{ tpy } NO_X \times \frac{0.0049 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.0051 \ \mu g/m^3$$

$$2{,}772 \text{ tpy } SO_2 \times \frac{0.106 \ \mu g/m^3}{3{,}000 \text{ tpy } SO_2} = 0.098 \ \mu g/m^3$$

$$\mathbf{0.0051 \ \mu g/m^3 + 0.098 \ \mu g/m^3 = 0.103 \ \mu g/m^3 \ annual \ average \ PM_{2.5}}$$

The proposed project is characterized as "Case 2" under EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance because *significant* ***net*** *emissions increases* of direct $PM_{2.5}$ and at least one precursor (NO_X) result. Therefore, the preceding secondary concentrations of

$PM_{2.5}$ are added to the results of the AERMOD analysis of direct *significant **net** emissions increases* to calculate total concentrations of $PM_{2.5}$. This analysis is conservative because the screening concentration of secondary $PM_{2.5}$ is unlikely to occur at the same location (i.e., a boundary or proximate receptor) and particular 24-hour averaging period associated with the AERMOD result for direct $PM_{2.5}$. Nevertheless, cumulative NAAQS analyses described in Section 4 demonstrate attainment with this conservative assumption. GP notes that the distance-dependent secondary $PM_{2.5}$ formation peaks within 50 km of the source and decreases with further downwind distance. Annual average secondary $PM_{2.5}$ attributed to ARC emission increases peaks at 20 km downwind, is less than 40% of the peak nearer the fenceline, and the concentration is approximately 50% of the peak at 50 km downwind. 24-hour average secondary $PM_{2.5}$ attributed to ARC emission increases peaks at 20 km downwind. GP may seek to utilize distance-dependent concentrations in future analyses.

2.9.3. Estimates of Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Cumulative NAAQS Analyses

Cumulative analyses were necessary to demonstrate compliance with the $PM_{2.5}$ NAAQS, for which the secondary formation associated with the total precursor emissions of NO_X and SO_2 from all emissions units is accounted, including those excluded from the estimates for the significant impact analysis. Another distinction from the significant impact analysis (and PSD Increment analysis) is that the estimate of secondary $PM_{2.5}$ formation is added to the modeled design concentration for primary $PM_{2.5}$ calculated by AERMOD for direct $PM_{2.5}$ emissions and a representative background concentration, the latter of which is determined from the *design value* (DV) of a representative ambient monitor. As further described in Section 3.2, the DV is a 3-year average, specifically for this analysis from Calendar Years 2021 through 2023. ADEM also recommends adding secondary $PM_{2.5}$ attributable to nearby sources that may affect the cumulative analysis modeling domain. Based on ADEM's review of precursor SO_2 and NO_X emissions from ARC and nearby sources within the modeling domain, ADEM specified the following additional secondary $PM_{2.5}$ concentrations[13]:

24-hour average secondary $PM_{2.5}$:	0.296 μg/m³
Annual average secondary $PM_{2.5}$:	0.012 μg/m³

The preceding values were added to the modeled design concentration computed by AERMOD for each averaging period, including the monitored ambient background design values specified in Section 3.2 of this report, and the secondary $PM_{2.5}$ concentrations attributed to the *major modification* described in the preceding Section 2.9.2.

[13] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), March 3, 2025.

2.9.4. Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Cumulative PSD Increment Analyses

Secondary $PM_{2.5}$ formation attributable to PSD Increment-affecting emissions changes are calculated in an analogous manner, yet with a different analysis of emissions changes of precursor NO_X and SO_2 since the MSBD (October 11, 2010) following the approach described in Section 2.8.6 for PSD Increment-affecting emissions of direct $PM_{2.5}$.[14] Section V.3.2.2 "Assessing Secondary $PM_{2.5}$ Impacts" [for $PM_{2.5}$ Increments Cumulative Analyses] of EPA's Ozone/PM2.5 Permit Modeling Guidance acknowledges the following (footnotes omitted, emphasis added):

> *In recent years, several rules promulgated by the EPA have resulted in control requirements that have significantly reduced NO_X and SO_2 precursor emissions affecting ambient $PM_{2.5}$ concentrations in many areas. This is particularly true in the eastern U.S. As a result, in some cases, the secondary $PM_{2.5}$ impacts may be addressed by a demonstration that provides ambient monitoring data that generally confirms a downward trend in precursor emissions occurring after the applicable $PM_{2.5}$ minor source baseline date (or the major source baseline date).* ***If it can be confirmed that such emissions reductions have occurred in a particular baseline area, it may be possible to complete the $PM_{2.5}$ increments modeling analysis simply by focusing on potential increment consumption associated with* direct $PM_{2.5}$ emissions**.

To assess emissions reductions of precursor SO_2 and NO_X emissions since the $PM_{2.5}$ MSBD in the vicinity of ARC, GP examined EPA's triennial National Emissions Inventory from 2008 (just before the MSBD in 2010), 2011, 2014, 2017, and 2020 (most recent available) for counties within 100 km of ARC – and including the existing operations at ARC – as depicted in Figure 2-9 for the following stationary source categories. Table 2-10 and Figure 2-10 confirm the expected significantly decreasing trend in both precursor SO_2 and NO_X emissions since the $PM_{2.5}$ MSBD in this airshed.

Fuel Comb - Comm/Institutional - Coal
Fuel Comb - Comm/Institutional - Natural Gas
Fuel Comb - Comm/Institutional - Oil
Fuel Comb - Comm/Institutional - Other
Fuel Comb - Industrial Boilers, ICEs - Biomass
Fuel Comb - Industrial Boilers, ICEs - Coal
Fuel Comb - Industrial Boilers, ICEs - Natural Gas
Fuel Comb - Industrial Boilers, ICEs - Oil
Fuel Comb - Industrial Boilers, ICEs - Other
Industrial Processes - Ferrous Metals
Industrial Processes - NEC
Industrial Processes - Pulp & Paper
Miscellaneous Non-Industrial NEC

[14] As discussed in Section 2.8.6, the No. 7 Power Boiler and the Backup NCG Incinerator have not been physically modified since the $PM_{2.5}$ MSBD; therefore, these units are not PSD Increment-affecting for $PM_{2.5}$ and are not accounted for either direct or precursor emissions.

Figure 2-9. Counties within 100 km (green ring) of ARC evaluated for emissions changes in precursor SO_2 and NO_X emissions since the $PM_{2.5}$ major source baseline date.
Markers denote relative location and size of stationary sources

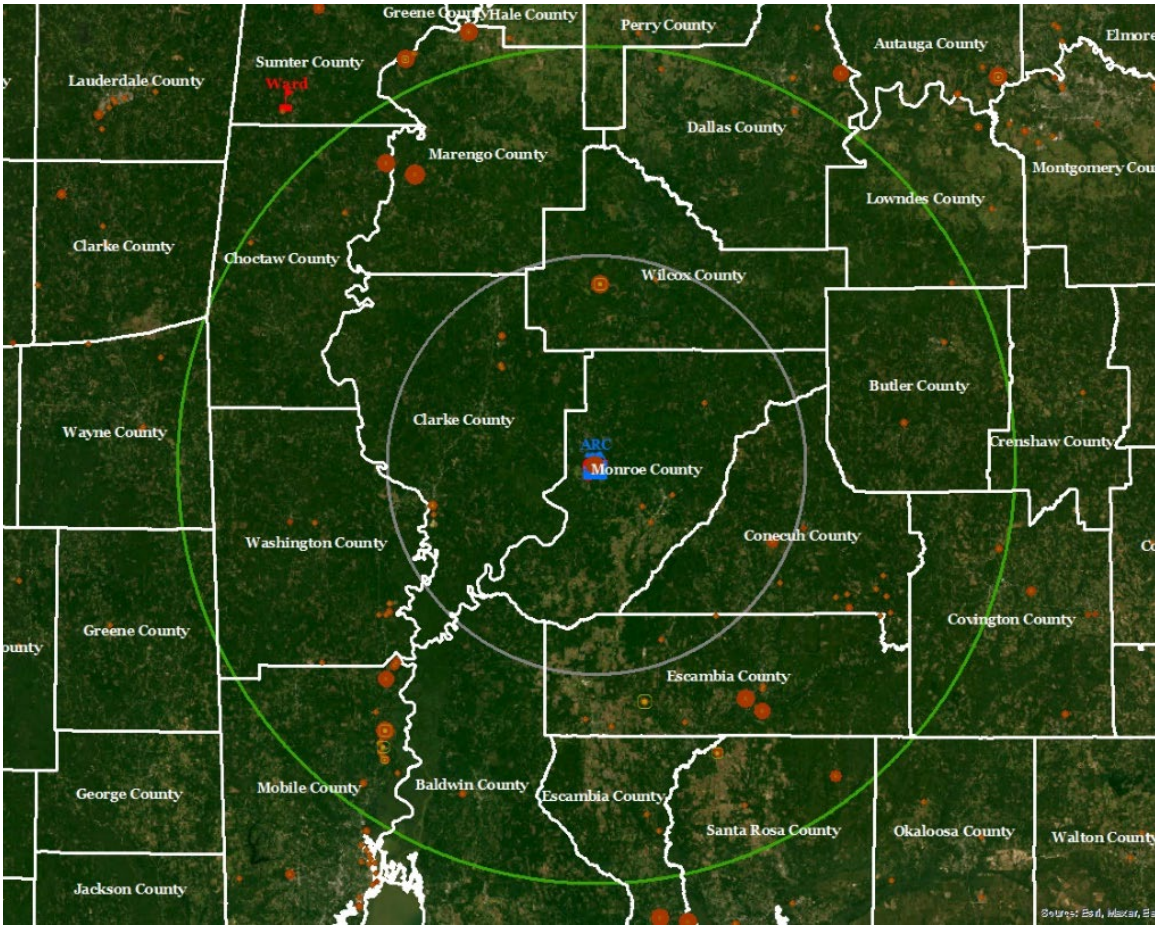
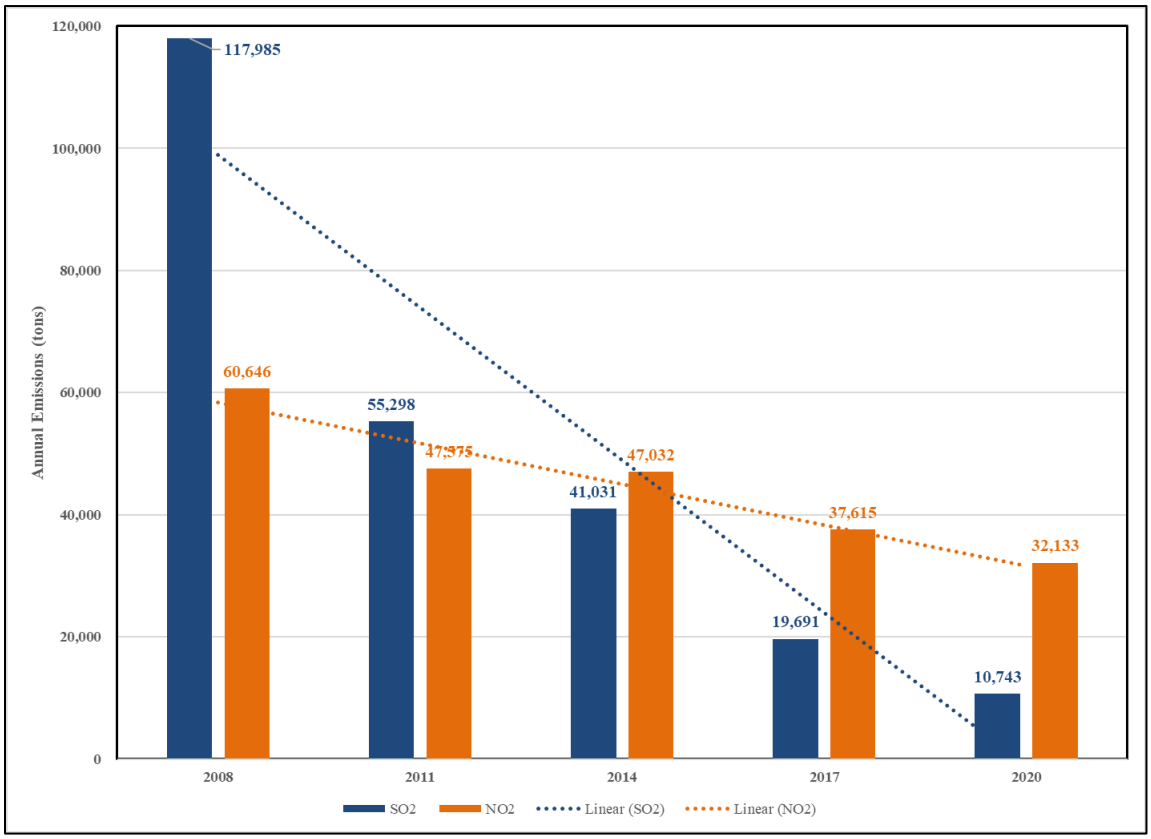


Table 2-10. Emissions changes in precursor SO_2 and NO_X emissions from stationary sources (within 100 km of and including ARC) since the $PM_{2.5}$ major source baseline date reported to EPA's Triennial National Emissions Inventory (NEI).

NEI Year	ARC		Counties within 100 km	
	SO_2	NO_2	SO_2	NO_2
2008	1,071	1,846	117,985	60,646
2011	1,019	1,721	55,298	47,575
2014	116	1,955	41,031	47,032
2017	56	1,879	19,691	37,615
2020	4	2,061	10,743	32,133

Figure 2-10. Emissions changes in precursor SO_2 and NO_X emissions from stationary sources (within 100 km of and including ARC) since the $PM_{2.5}$ major source baseline date reported to EPA's Triennial National Emissions Inventory (NEI).



Because precursor SO_2 and NO_X emissions in the vicinity of ARC, **including the ARC Mill itself**, have been reduced substantially since the $PM_{2.5}$ MSBD, secondary $PM_{2.5}$ need not be simulated as part of the PSD Increment analysis according to EPA's Ozone/PM2.5 Permit Modeling Guidance. However, consistent with ADEM recommendations, GP conservatively included secondary $PM_{2.5}$ from ARC estimated using MERPs by comparing emissions at the $PM_{2.5}$ MSBD represented by the average of Calendar Year 2008 and 2009 actual emissions and currently permitted *potential emissions* as summarized in Table 2-11.

Table 2-11. Emissions changes in precursor SO_2 and NO_X emissions from ARC prior to the $PM_{2.5}$ major source baseline date relative to currently permitted *potential emissions*.

	Production Rate				SO2					NO2				
Unit	2008	2009	Average	UOM	2008	2009	Average	PTE	Increase	2008	2009	Average	PTE	Increase
No. 7 Recovery Furnace	771,717	835,338	803,527	tons BLS	936.25	969.86	953.05	1,513.13	560.08	647.76	676.12	661.94	977.92	315.98
No. 7 Smelt Dissolving Tank	771,717	835,338	803,527	tons BLS	0.40	0.42	0.41	22.36	21.95	12.73	13.78	13.26		-13.26
No. 7 Lime Kiln	85,283	92,239	88,761	tons CaO	26.17	27.05	26.61	24.19	-2.42	168.34	173.99	171.16	121.59	-49.58
No. 7 Mill Lime Slaker	85,283	92,239	88,761	tons CaO										
No. 7 Mill Pulp Dryer	450,605	451,616	451,111	ADTFP										
No. 8 Power Boiler	101,200	1,543,674	822,437	MMBtu	22.00	24.33	23.16	0.92	-22.24	5.06	176.76	90.91	56.50	-34.42
No. 8 Recovery Furnace	1,087,318	1,023,322	1,055,320	tons BLS	13.00	20.02	16.51	592.36	575.85	514.74	555.62	535.18	1,041.10	505.92
No. 8 Smelt Dissolving Tank	1,087,318	1,023,322	1,055,320	tons BLS	1.60	1.69	1.65	0.00	-1.65	17.94	16.88	17.41		-17.41
No. 8 Lime Kiln	143,461	142,717	143,089	tons CaO	9.34	9.67	9.51	110.87	101.37	32.71	33.84	33.27	159.23	125.96
No. 8 Mill Lime Slaker	143,461	142,717	143,089	tons CaO										
No. 8 Mill Pulp Dryer	509,204	561,727	535,466	ADTFP										
Total Emissions					1,057	1,115	1,086	2,285	**1,200**	1,399	1,647	1,523	2,359	**836**

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$836 \text{ tpy } NO_X \times \frac{0.112 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.094 \ \mu g/m^3$$

$$1{,}200 \text{ tpy } SO_2 \times \frac{0.436 \ \mu g/m^3}{1{,}000 \text{ tpy } SO_2} = 0.523 \ \mu g/m^3$$

$$\mathbf{0.094\ \mu g/m^3 + 0.523\ \mu g/m^3 = 0.617\ \mu g/m^3}\ \textbf{24-hour average } \mathbf{PM_{2.5}}$$

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$836 \text{ tpy } NO_X \times \frac{0.0049 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.0041 \ \mu g/m^3$$

$$1{,}200 \text{ tpy } SO_2 \times \frac{0.198 \ \mu g/m^3}{1{,}000 \text{ tpy } SO_2} = 0.0238 \ \mu g/m^3$$

$$\mathbf{0.0041\ \mu g/m^3 + 0.0238\ \mu g/m^3 = 0.0278\ \mu g/m^3}\ \textbf{annual average } \mathbf{PM_{2.5}}$$

GP modeled direct $PM_{2.5}$ emissions changes from ARC as described in Section 2.8.6 and nearby sources specified by ADEM as described in Section 3.1 of this report, the modeling results from which were added to the secondary $PM_{2.5}$ quantified above as described in Section 5 to demonstrate attainment of $PM_{2.5}$ PSD Increments.

3. SIGNIFICANT IMPACT ANALYSES

The results of the significant impact analyses are summarized in Tables 3-1 (CO), 3-2 (NO_2), 3-3 (PM_{10}) and 3-4 ($PM_{2.5}$) demonstrate that significant impacts will result from the proposed *major modification* for certain pollutants and averaging periods; therefore, cumulative analyses to demonstrate compliance with applicable NAAQS and PSD Increments were required. The following tables also summarize the applicable significant monitoring concentration (SMC) above which ambient monitoring may be required to measure actual changes in air quality, as well as the estimated significant impact area (SIA) that represents the most distant receptor from ARC (within the 50 km initial grids) at which a significant concentration was predicted.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, for which the screening estimates of 24-hour and annual average secondary $PM_{2.5}$ were described in Section 2.9.2.

Table 3-1. Summary of Significant Impact Analysis for CO.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
1-hour	264.22668		264.23		2,000	No	None
8-hour	142.02457		142.02	575	500	No	None

Table 3-2. Summary of Significant Impact Analysis for NO_2.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
1-hour	25.75084		25.75		7.53	Yes	5.7
Annual	0.67416		0.67	14	1	No	None

Table 3-3. Summary of Significant Impact Analysis for PM_{10}.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
24-hour	6.77762		6.78	10	5	Yes	1.7
Annual	1.16949		1.17		1	Yes	1.2

Table 3-4. Summary of Significant Impact Analysis for $PM_{2.5}$.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
24-hour	4.97709	1.841	6.82	0*	1.2	Yes	50
Annual	0.86850	0.103	0.97	0*	0.13	Yes	50

† As described in 40 CFR §52.21(i)(5)(*c*), in accordance with Sierra Club v. EPA, 706 F.3d 428 (DC Cir. 2013), no SMC is established to provide an exemption with regard to $PM_{2.5}$.

As summarized in the preceding tables, the proposed *major modification* is expected to cause significant impacts of 1-hour average NO_2, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$, for which cumulative analyses were prepared to demonstrate compliance with applicable NAAQS and PSD Increments. Significant impacts of NO_2 are only expected for the 1-hour averaging period, for which a cumulative NAAQS analysis was prepared to demonstrate compliance with the NAAQS established in 2010. There is no 1-hour PSD Increment for NO_2, and because no significant annual average impacts of NO_2 are expected, no cumulative NAAQS or PSD Increment analyses were required.

Figures 3-1 (1-hour NO_2) and 3-2 (PM_{10}) depicts the extent of the SIA computed in the analysis for each pollutant and averaging period having a significant ambient impact. Note that no figures are provided for CO because no significant impacts are computed. No figures are provided for $PM_{2.5}$ because the SIA is estimated to be the maximum 50 km since secondary $PM_{2.5}$ concentrations from precursor NO_X and SO_2 emissions alone (as described in Section 2.9.1) are estimated to exceed the applicable 24-hour average $PM_{2.5}$ SIL. The extent of the SIA for each pollutant and averaging period is the basis for the regional source modeling inventory described in following Section 3.1 and utilized in the cumulative NAAQS and PSD Increment analyses.

The modeling results indicate that impacts from the proposed project would exceed the SMC for $PM_{2.5}$, which is effectively zero. As described in following Section 3.2, GP proposes to utilize existing ambient monitors already operated by ADEM to characterize air quality for these pollutants (as well as ozone for which the *significant **net** emission increase* exceeds 100 tpy VOC) and select background concentrations to include in the cumulative NAAQS analyses. GP requests that ADEM confirm that additional pre-construction ambient monitoring is not required for the proposed *major modification* because ADEM's existing ambient monitoring network is sufficient to characterize air quality throughout the state including the area surrounding ARC. GP requested – and ADEM subsequently provided – an ambient monitor design value report included as Appendix B to this report.[15]

[15] Electronic communication between Mr. Ryan Gesser (GP) and Ms. Gina Curvin (ADEM), February 17-18, 2025.

Figure 3-1. Modeled SIA for 1-hour average NO_2.
Receptors with modeled concentrations above SIL shown in red, receptors with modeled concentrations below SIL shown in green. Inset map depicts entire 50 km grid.

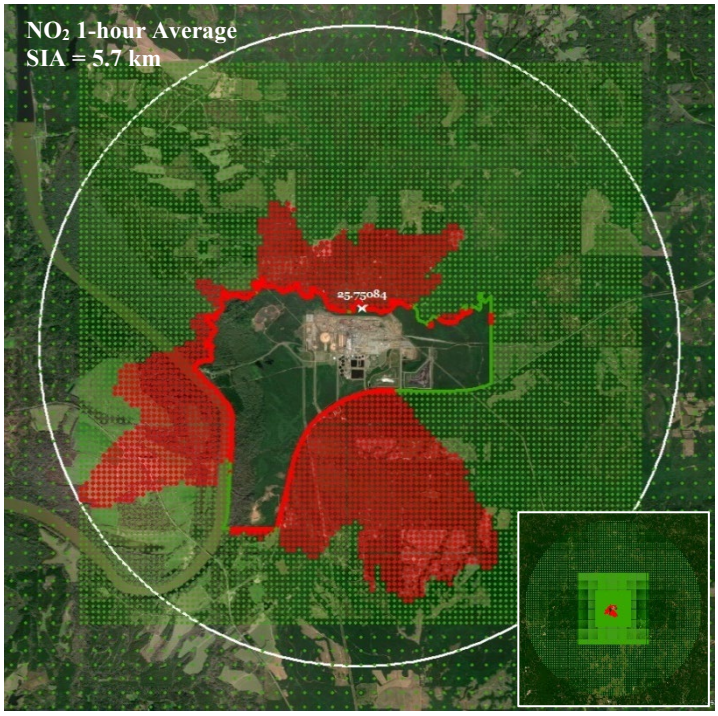


Figure 3-2. Modeled SIA for 24-hour (left) and annual (right) average PM_{10}.
Receptors with modeled concentrations above SIL shown in red, receptors with modeled concentrations below SIL shown in green.

3.1. REGIONAL SOURCE INVENTORY

The NAAQS and PSD increment analyses include the new and existing sources at ARC, along with stationary sources in the surrounding area that also potentially affect the SIA for each pollutant and averaging period. Major sources located within each SIA, as well as other sources which could significantly impact the SIA, are generally modeled as part of the air quality impact analysis. The regional source inventory provided by ADEM represents "nearby sources" in the sense of Appendix W, Table 8-2.

Consistent with ADEM Guidelines, GP requested that ADEM develop and provide the regional source inventories based on the SIA for each pollutant and averaging period for which significant impacts were computed.[16] Table 3-5 summarizes the sources and total emission rates for each provided by ADEM.[17] ADEM provided the inventory including emission points, emission rates, and source parameters which GP adapted into AERMOD-input format for the cumulative NAAQS and PSD Increment analyses described in Sections 4 and 5 of this report. Figures 3-3 (NO_X NAAQS), 3-4 ($PM_{2.5}$ NAAQS), and 3-5 ($PM_{2.5}$ Increment[18]) depicts the location and relative size of facilities in each inventory.

Table 3-5. Summary of Regional Sources and total emissions rates (lb/hr) specified by ADEM for cumulative NAAQS and PSD Increment analyses.
For $PM_{2.5}$ PSD Increment, positive quantities represent PSD Increment consuming emissions and negative quantities denote PSD Increment expanding emissions.

ADEM Facility No.	Facility	NAAQS		PSD Increment
		NO_X	$PM_{2.5}$	$PM_{2.5}$
102-0001	Boise White Paper, LLC	497.14	192.72	20.20
102-0014	Louisiana-Pacific Corporation		57.94	16.40
102-S003	Scotch Gulf Lumber LLC - Fulton Facilty			-34.29
102-S004	Scotch Gulf Lumber - Jackson Facility			-15.28
102-S006	Scotch Plywood Co Inc - Fulton Plywood Facility		13.34	
102-S012	Browder and Sons Veneer Co Inc - Thomasville Sawmill		3.97	3.97
106-0004	Georgia-Pacific Panel Products LLC			-91.37
106-S001	Standard Furniture Manufacturing Co Inc			-6.44
106-S005	Harrigan Lumber Co			-57.92
106-S009	Scotch Plywood Co		44.27	22.03
108-0001	PowerSouth Energy Cooperative Inc - Lowman	254.25	57.91	-157.55
109-0001	International Paper - Pine Hill Mill		294.09	
502-S008	Huxford Pole & Timber Co., Inc - Huxford Facility		8.60	

[16] Electronic communication from Mr. Ryan Gesser (GP) to Mr. Steven Bissey (ADEM), October 3, 2024.

[17] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), November 6, 2024. Notwithstanding GP's initial request including PM_{10} with a SIA of 5 km, ADEM indicated "a PM_{10} inventory was also requested for this project, but a review of the PM_{10} SIA and surrounding sources indicated that a nearby source inventory for PM_{10} was not needed." Subsequent communication on November 14, 2024, confirmed the exclusion of certain other sources by ADEM based on screening techniques. ADEM provided updated parameters for certain sources on March 17, 2025.

[18] EPA's Ozone/$PM_{2.5}$ Permitting Guidance observes (Section V.1.3, "PSD Increment Expansion") "In the case of true "increment expansion," emissions in the area are allowed to increase by the amount allowed by the original increment plus the amount of actual air quality improvement (relative to the baseline concentration) achieved by the reduction of emissions because of its relationship to the established baseline dates for the area. In such cases, it is appropriate to model the actual emissions decrease as a negative amount to effectively lower the baseline concentration to simulate the expansion of the increment."

GP notes that EPA recently finalized the Background Concentrations Guidance that focuses on the selection of nearby sources for cumulative NAAQS and PSD Increment analyses. Among other recommendations and observations, EPA notes that "nearby sources under consideration will typically be within the first 10 to 20 km from the project source and the area where the project source's impacts equal or exceed the SIL" (Section 4.4, "Determination of Nearby Sources to Explicitly Model," page 30). GP believes ARC is well-suited to apply the guidance to minimize the number of explicitly modeled regional sources – at least for the cumulative PM_{10} and NO_2 NAAQS analyses – because ARC is remotely located and there are only three stationary sources within 20 km, the nearest being roughly 15 km to the southeast. ADEM's regional source inventory generally conforms to this guidance by minimizing the inventory to include only the largest sources of emissions that may affect the computed SIAs.

Figure 3-3. Location of nearby sources of NO_X relative to ARC simulated in the cumulative NAAQS analysis.
Proportional size markers depict the relative amount of emissions based on ADEM inventory.

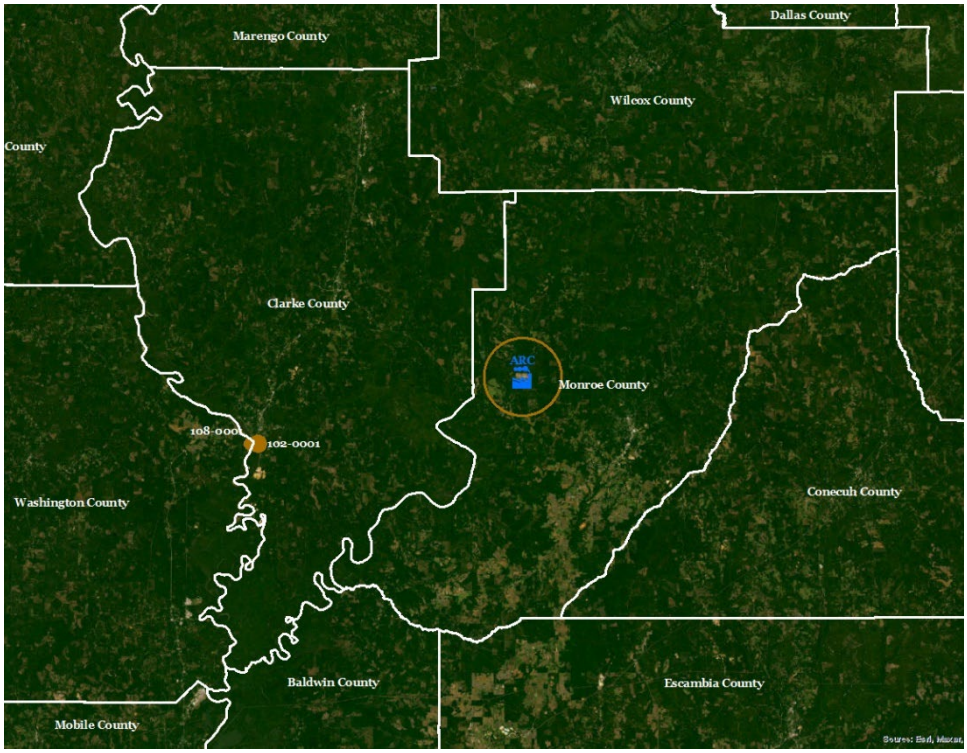


Figure 3-4. Location of nearby sources of $PM_{2.5}$ relative to ARC simulated in the cumulative NAAQS analysis.
Proportional size markers depict the relative amount of emissions based on ADEM Inventory.

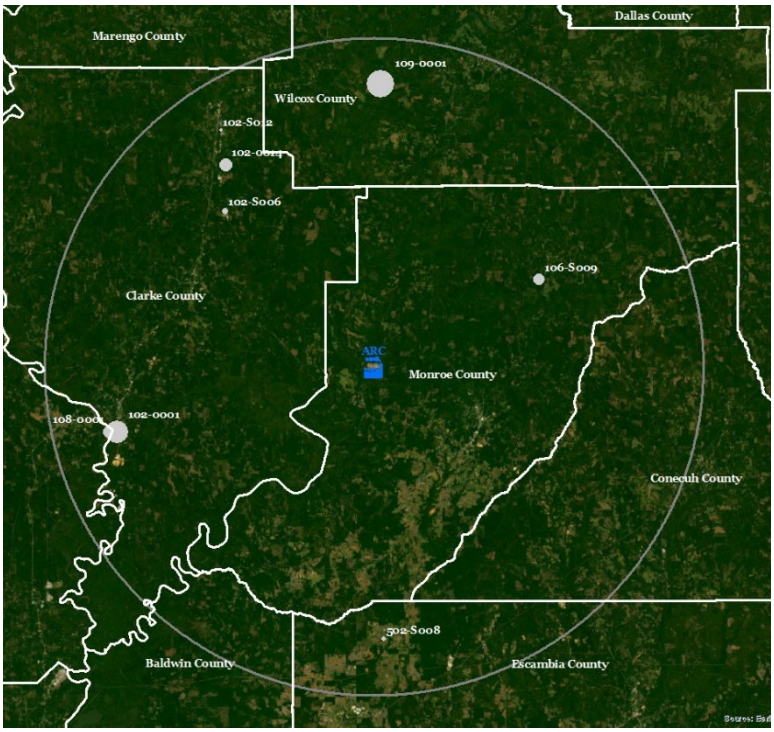
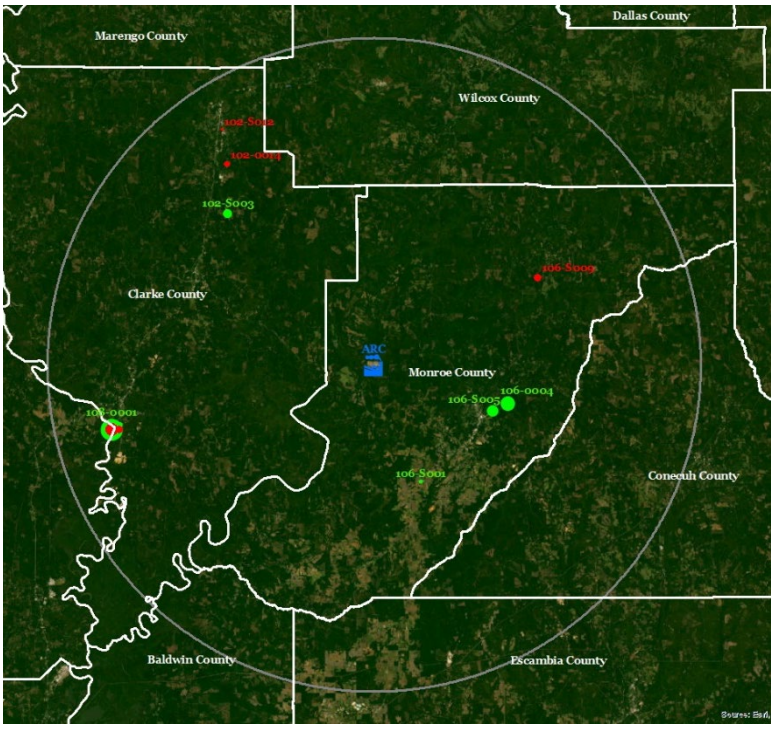


Figure 3-5. Location of nearby sources of $PM_{2.5}$ relative to ARC simulated in the cumulative PSD Increment analysis.
Proportional size markers depict the relative amount of emissions based on ADEM Inventory.
Green markers denotes source that expand PSD Increment; red markers denote sources that consume PSD Increment.



3.2. BACKGROUND CONCENTRATIONS

Because the modeled ambient air concentrations only reflect the impacts from sources explicitly modeled in the analysis, background concentrations are added to the modeled concentrations prior to assessing compliance with the NAAQS to represent contributions from other industrial sources as well as mobile and organic sources. Background concentrations are specified by ADEM Guidelines[19] as summarized in Table 3-4.

Table 3-4. Background concentrations for cumulative NAAQS analysis.

Pollutant	Averaging Period	Concentration (µg/m^3)	Monitor
NO_2	1-hour	31	Yorkville, Georgia
PM_{10}	24-hour	24	Montgomery, Alabama
$PM_{2.5}$	24-hour	16	Ward, Alabama
$PM_{2.5}$	Annual	6.2	Ward, Alabama
Ozone	8-hour	55 ppb	Ward, Alabama

GP notes that although ADEM considers background concentrations observed at the Ward (Sumter County) ambient monitor to be representative of statewide conditions across all of Alabama, this monitor would be selected as the most representative monitor specifically for ARC among all available monitors. As described in ADEM's *Ambient Air Monitoring 2024 Network Plan (May 2024)*[20], the Ward monitor represents rural, background ozone and $PM_{2.5}$ values for the state and is designated for "General/Background" monitoring objective and "Regional" spatial scale. EPA's regulations for ambient air surveillance define "regional scale" as "usually a rural area of reasonably homogeneous geography without large sources and extends from tens to hundreds of kilometers" which aptly characterizes the area of inland, rural southwestern Alabama in which ARC, the Ward monitor, and the modeling domain for this analysis. As shown in Figure 3-5, the Ward monitor is located approximately 115 km northwest of ARC and the "regional scale" (approximated as 200 km to represent "hundreds of kilometers") encompasses the entirety of the modeling domain and nearby sources included in the cumulative NAAQS analysis.

Therefore, the Ward monitor is specifically representative of ARC such that actual emissions from the mill and other nearby sources can be considered part of the monitored design value used to simulate the background concentration (e.g., 6.2 µg/m^3 for annual average $PM_{2.5}$ and 55 ppb for ozone) for the representative time period (Calendar Years 2021, 2022, and 2023).[21] This representativeness supports the assessment of ozone and secondary $PM_{2.5}$ formation described in Sections 2.9.2 for the NAAQS analysis, as well as obviating the need to include precursor

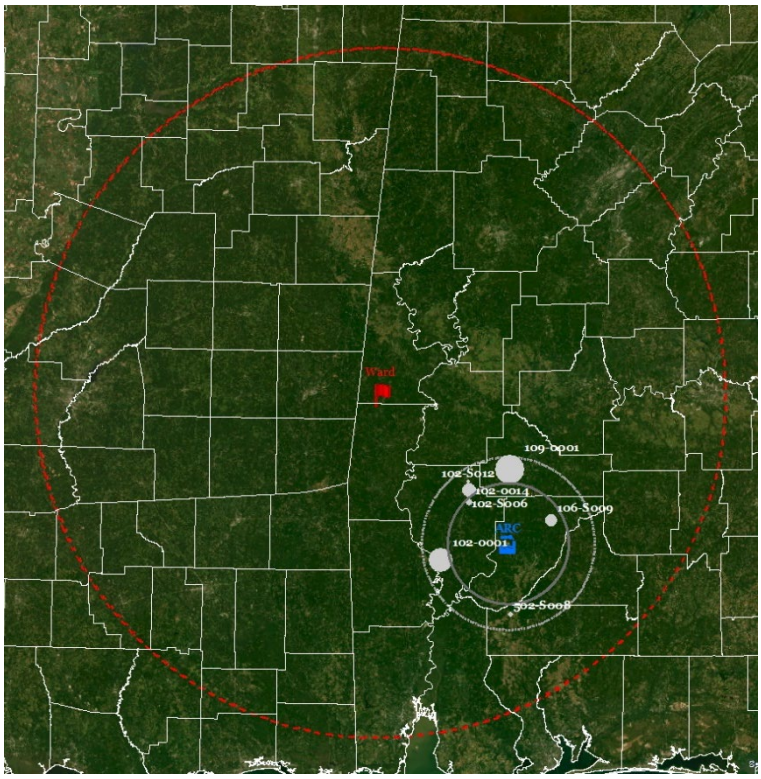
[19] Electronic communication from Mr. Michael Leach (ADEM) to Mr. Ryan Gesser (GP), June 27, 2024, confirming values listed in the ADEM Guidelines and specifying site-specific background concentrations.

[20] ADEM, https://adem.alabama.gov/newsEvents/notices/may24/pdfs/2024AmbAirPlan.pdf.

[21] GP notes that just prior to the preparation of this report, EPA released DV for the 3-year period 2022 through 2024, which indicates a certified annual average $PM_{2.5}$ DV of 6.0 µg/m^3 and 8-hour average ozone DV of 54 ppb for the Ward Monitor. The originally specified values (6.2 µg/m^3 and 55 ppb) are used in this analysis because they are conservative and previously agreed upon; however, GP will seek to use the most recent representative DV in future analyses.

emissions and secondary formation from any nearby sources because those sources are also represented by the measured background. This situation meets EPA's expectations described in EPA's Background Concentrations Guidance and Ozone/$PM_{2.5}$ Permit Modeling Guidance: "Impacts on $PM_{2.5}$ from precursors (NO_X and SO_2) [emitted by nearby sources] are typically accounted for through representative monitored background." "The monitor should be representative, in that it accounts for secondary $PM_{2.5}$ formation associated with existing sources both within and outside of the modeling domain, in addition to the background levels of primary $PM_{2.5}$ associated with nearby and background sources that are not included in the modeled inventory."

Figure 3-5. Ward (Sumter County) ambient monitor location (red flag) and 200 km regional scale (red ring) relative to ARC, the maximum modeling domain, and regional sources in the surrounding area.
Proportional size markers depict the relative amount of direct $PM_{2.5}$ emissions from point sources based on the ADEM inventory.



Nevertheless, ADEM also recommended adding secondary $PM_{2.5}$ attributable to nearby sources that may affect the cumulative analysis modeling domain. Based on ADEM's review of precursor SO_2 and NO_X emissions from ARC and nearby sources within the modeling domain, ADEM specified the following additional secondary $PM_{2.5}$ concentrations[22]:

24-hour average secondary $PM_{2.5}$:	0.296 µg/m³
Annual average secondary $PM_{2.5}$:	0.012 µg/m³

[22] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), March 3, 2025.

Therefore, the total secondary $PM_{2.5}$ added to the computed AERMOD modeled design concentration is the sum of the preceding values and those attributed to the proposed *major modification* as quantified in Section 2.9.2:

$$\mathbf{1.841\ \mu g/m^3 + 0.296\ \mu g/m^3 = 2.137\ \mu g/m^3\ 24\text{-hour average } PM_{2.5}}$$
$$\mathbf{0.103\ \mu g/m^3 + 0.012\ \mu g/m^3 = 0.115\ \mu g/m^3\ annual\ average\ PM_{2.5}}$$

Background $PM_{2.5}$ concentrations are input directly to AERMOD to calculate the MDC for each averaging period using the `SO BACKGRND` pathway. The annual average $PM_{2.5}$ background concentration of 6.2 µg/m^3 was selected simply as the most recent 3-year average (2021-2023) design value for the Ward monitor as specified by ADEM. The 24-hour average $PM_{2.5}$ background concentration was input using the `SO BACKGRND MONTH` option, initially using an analysis of daily monitoring values[23] for each calendar quarter (e.g., Q1 = January, February, March) following the approach described in EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance (Appendix D: Example of the background monitoring data calculations for a Second Level 24-hour modeling analysis). This analysis evaluates the 24-hour average $PM_{2.5}$ concentration measured at Ward to determine the maximum value for each quarter that contributes to the annual 98th percentile design concentration, averaged over three years (2021-2023) of measurements. Table 3-5 summarizes the resulting background concentrations.

Table 3-5. 24-hour Average $PM_{2.5}$ Background Concentrations (Ward Monitor).
Specified values represent the seasonal maximum 24-hour average concentration less than or equal to the 98th percentile annual design value.

Year	2021	2022	2023	2021-2023
Overall	15.1	14.2	17.2	**16**
Q1	14.2	13.7	16.6	**14.83**
Q2	12.3	14.2	16.8	**14.43**
Q3	15.1	14.1	17.2	**15.47**
Q4	10.0	13.9	11.0	**11.63**

Furthermore, GP requests that ADEM confirm no additional pre-construction or post-construction ambient monitoring is required because the maximum concentration associated with the proposed *major modification* quantified in the significant impact analysis described in Section 3 exceeds the $PM_{2.5}$ SMC of 0 µg/m^3. As documented in ADEM's monitoring network plan and cited in this report, the existing monitor at Ward (Sumter County) represents conditions across inland, rural southwestern Alabama, if not the entire state, specifically including ARC and the surrounding airshed. GP requested – and ADEM subsequently provided – an ambient monitor design value report included as Appendix A to this report.[24]

[23] EPA, https://www.epa.gov/outdoor-air-quality-data/download-daily-data.

[24] Electronic communication between Mr. Ryan Gesser (GP) and Ms. Gina Curvin (ADEM), February 17-18, 2025.

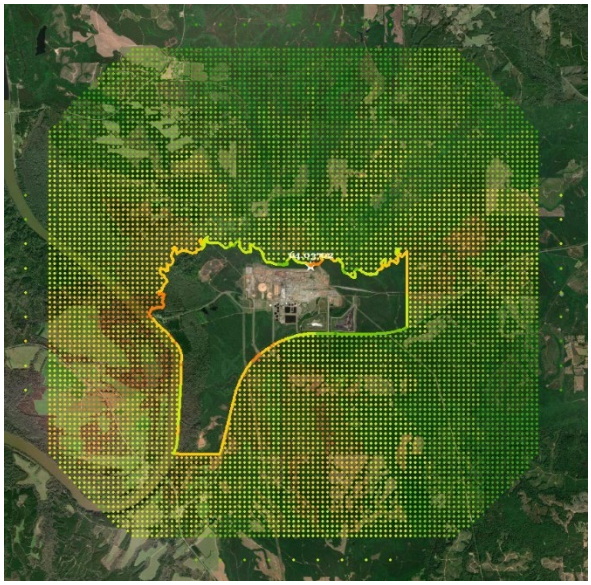
4. CUMULATIVE NAAQS ANALYSES

The results of the cumulative NAAQS analyses are summarized in Tables/Figures 4-1 (NO_2), 4-2 (PM_{10}), and 4-3 ($PM_{2.5}$) demonstrating attainment of each standard using the dispersion modeling techniques and data resources described throughout this report.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period for the NAAQS. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, for which the screening estimates of 24-hour and annual average secondary $PM_{2.5}$ for NAAQS analyses were described in Section 2.9.2. Background concentrations are indicated in each table for the value simulated in the analysis as described in Section 3.2. The appropriate background concentrations were simulated within AERMOD for each pollutant and averaging period; the "AERMOD" result denoted in each of the following tables represents the concentration calculated by AERMOD attributable to the modeled sources to which the indicated background concentration (and secondary concentration for $PM_{2.5}$) is added to determine the MDC.

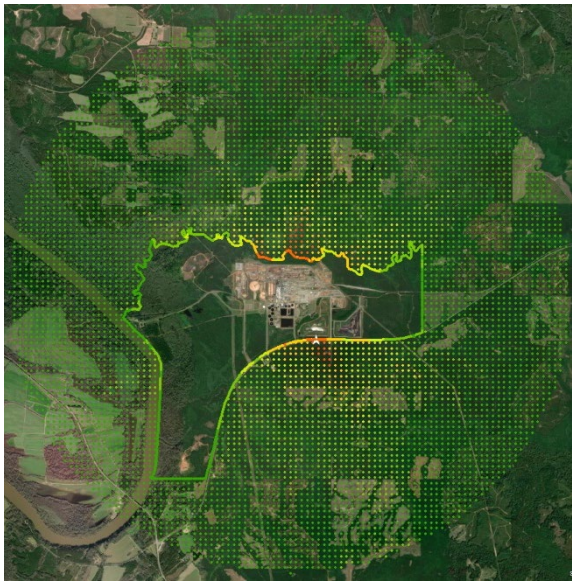
Table/Figure 4-1. Cumulative NAAQS analysis for 1-hour average NO_2.

Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	NAAQS
1-hour	33.03702		31	64.04	188.1



Table/Figure 4-2. Cumulative NAAQS analysis for PM_{10}.

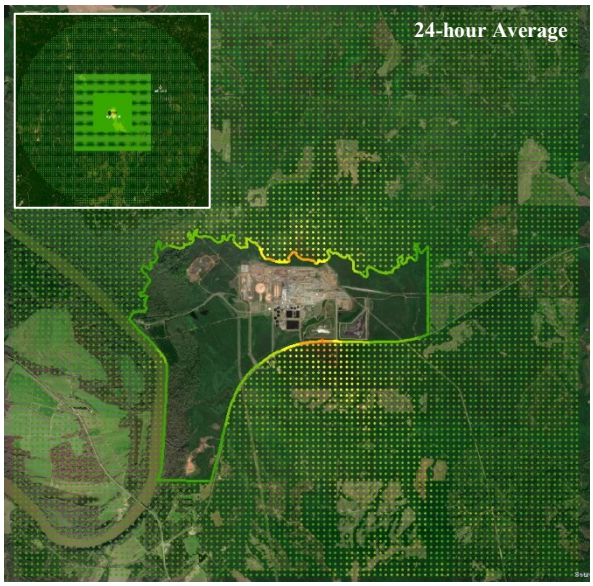
Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	NAAQS
24-hour	16.17225		24	40.17	150



Table/Figure 4-3. Cumulative NAAQS analysis for $PM_{2.5}$ in the vicinity of ARC.

Secondary $PM_{2.5}$ concentrations associated with the [1] proposed major modification and [2] nearby sources as described in Section 2.9.3. Left panels depict 24-hour average and right panels depict annual average analyses on 5 km (100-meter spacing) grid from ARC ambient boundary. GP notes that attainment of the 24-hour NAAQS would be demonstrated even if the Tier 1 DV (16 $\mu g/m^3$) were used to simulate the background concentration.

Averaging Period	Concentration ($\mu g/m^3$)					
	AERMOD	Secondary [1]	Secondary [2]	Background	MDC	NAAQS
24-hour	9.26277	1.841	0.296	15.2	26.61	35
Annual	2.27263	0.103	0.012	6.2	8.59	9.0



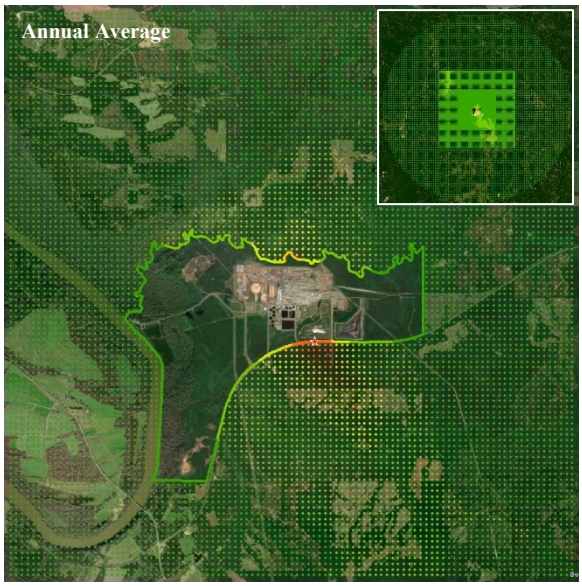
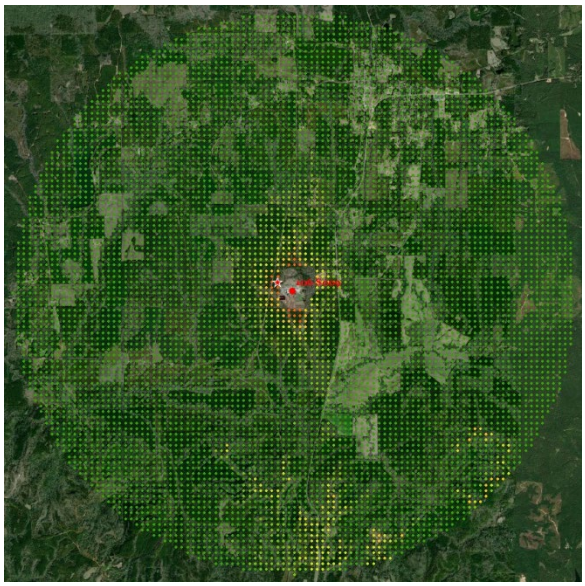


Figure 4-3 depicts the MDC less than the applicable NAAQS at or near the ARC ambient air boundary within the fine and medium receptor grids where emissions from the mill – including both direct $PM_{2.5}$ emissions resulting in primary $PM_{2.5}$ concentrations calculated by AERMOD and precursor SO_2 and NO_X emissions resulting in secondary $PM_{2.5}$ concentrations estimated by MERPs – are simulated to have the highest impact. GP examined results in the vicinity of nearby sources within the 50 km grids and identified the 24-hour average $PM_{2.5}$ MDC located in the vicinity of a nearby source (ID 106-S009) to the northeast of ARC. A localized 100-meter receptor grid was utilized in this area to quantify the MDC (26.86 $\mu g/m^3$) and demonstrate attainment of the NAAQS as shown in Figure 4-4.

Figure 4-4. Cumulative NAAQS analysis for 24-hour average $PM_{2.5}$ on localized 100-m grid in the vicinity of nearby source 106-S009.



Ozone is not simulated using AERMOD but is calculated based on the sum of ozone formed from precursor emissions (NO_X and VOC) increases plus the representative background concentration. The result summarized in Table 4-4 demonstrates attainment of the NAAQS.

Table 4-4. Cumulative NAAQS analysis for ozone.

	Concentration (ppb)				
Averaging Period	**AERMOD**	**Secondary**	**Background**	**MDC**	**NAAQS**
8-hour		5.94	55.00	60.94	70

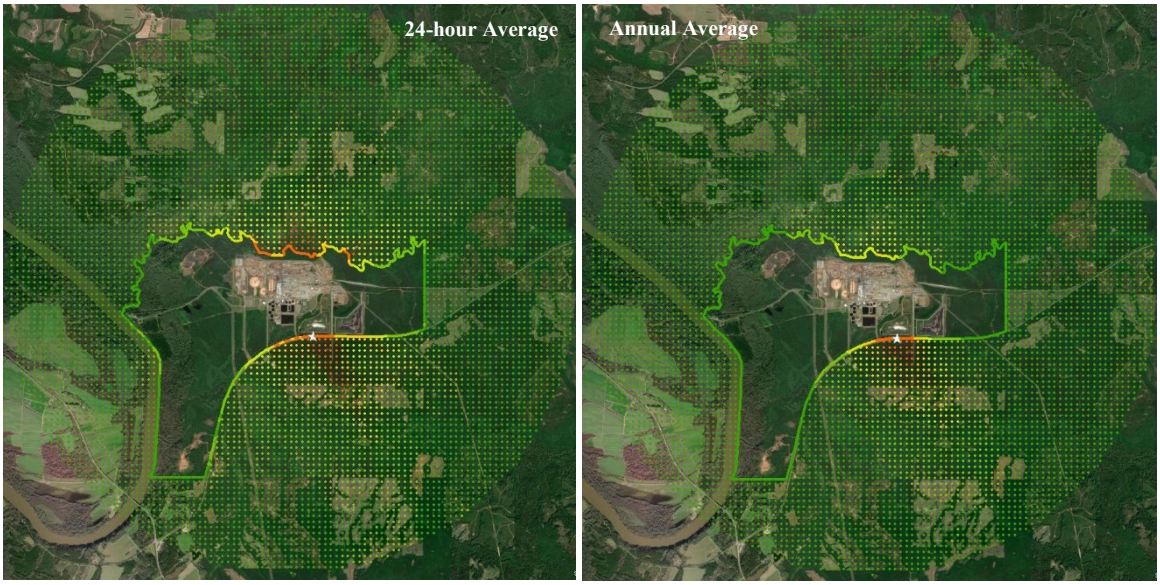
5. PSD INCREMENT ANALYSES

The results of the cumulative PSD Increment analyses are summarized in Tables/Figures 5-1 (PM_{10}) and 5-2 ($PM_{2.5}$) demonstrating attainment of each standard using the dispersion modeling techniques and data resources described throughout this modeling report.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period for the PSD Increment. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, based on the determinations of precursor SO_2 and NO_X emissions trends and comparison of ARC potential precursor emissions from PSD Increment-affecting sources as described in Section 2.9.3. Background concentrations are not simulated for PSD Increment. NO_2 was not evaluated for PSD Increment because significant impacts were predicted only for the 1-hour averaging period for which no PSD Increment has been established; no significant impacts of annual average NO_2 were predicted and the proposed major modification is presumed not to cause or contribute to any violation of that standard.

Table/Figure 5-1. Cumulative PSD Increment analyses for PM_{10}.
Left panel depicts 24-hour average, right panel depicts annual average.

	Concentration (µg/m³)				
Averaging Period	**AERMOD**	**Secondary**	**Background**	**MDC**	**Increment**
24-hour	12.66497			12.66	30
Annual	2.86711			2.87	17



Table/Figure 5-2. Cumulative PSD Increment analyses for $PM_{2.5}$.
Left panel depicts 24-hour average, right panel depicts annual average. Inset maps depict 50-km grid.

Averaging Period	Concentration (µg/m³)				
	AERMOD	Secondary	Background	MDC	Increment
24-hour	5.38791	0.617		6.00	9
Annual	0.55142	0.0278		0.58	4

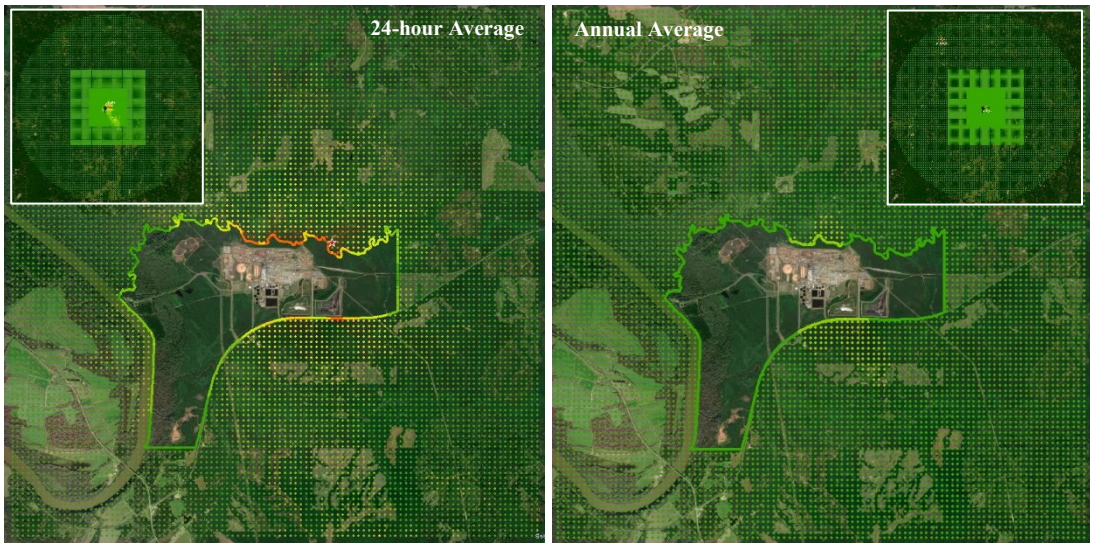
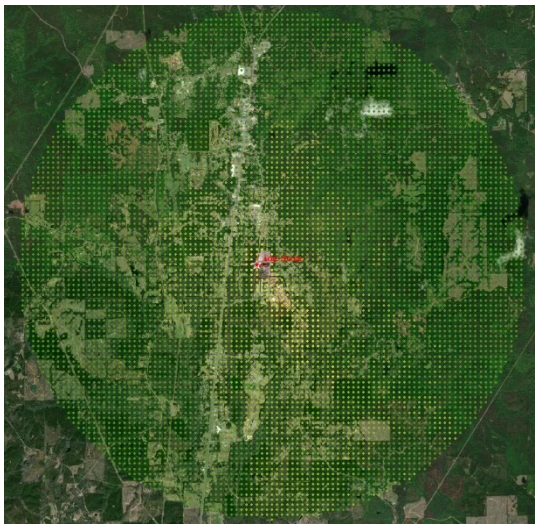


Figure 5-2 depicts the MDC less than the applicable PSD Increments at or near the ARC ambient air boundary within the fine and medium receptor grids where emissions from the mill are simulated to have the highest impact. GP examined results in the vicinity of nearby sources within the 50 km grids and identified the annual average $PM_{2.5}$ MDC located in the vicinity of a nearby source (ID 102-S012) to the northwest of ARC. A localized 100-meter receptor grid was utilized in this area to quantify the MDC (2.25 µg/m³) and demonstrate attainment of the PSD Increment as shown in Figure 5-3.

Figure 5-3. Cumulative PSD Increment analysis for annual average $PM_{2.5}$ on localized 100-m grid in the vicinity of nearby source 102-S012.



6. ADDITIONAL IMPACTS ANALYSES

ADEM Admin Code r. 335-3-14-.04(14) adopts the federal PSD requirements for an additional impacts analysis for air quality:

(a) The owner or operator shall provide an analysis of the impact on visibility, soils, and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification. The owner or operator need not provide an analysis of the impact on vegetation having no significant commercial or recreational value.

(b) The owner or operator shall provide an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the source or modification.

By definition of the NAAQS in 40 CFR §50.2(b) (emphasis added), "National primary ambient air quality standards define levels of air quality which the Administrator judges are necessary, with an adequate margin of safety, to protect the public health. **National secondary ambient air quality standards define levels of air quality which the Administrator judges necessary to protect the public welfare** from any known or anticipated adverse effects of a pollutant." Section 302(h) ("Definitions") of the Clean Air Act (42 U.S.C. 7602) states that language "referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants." As summarized in Table 1-2 of this report, for every pollutant, the secondary NAAQS established by EPA and adopted by ADEM is equivalent to, or less stringent than, the primary NAAQS with which the proposed *major modification* described in this report demonstrates attainment through explicit air quality modeling (NO_2, PM_{10}, $PM_{2.5}$, and ozone), the presumption that ARC would not cause or contribute to an violation of any standard because no significant impacts would result (CO), or the proposed *major modification* would not cause a *significant **net** emissions increase* triggering PSD review (SO_2 and lead).

Beyond the secondary NAAQS, adverse impacts on visibility are not expected because visible emissions from the existing operations at ARC are and will continue to be limited directly in terms of plume opacity, potential emissions of visibility-affecting pollutants (e.g., PM, NO_X, and SO_2) minimized through application of BACT, and through implementation of a fugitive dust management plan. GP anticipates that increased production resulting from the proposed *project* will be primarily managed by existing employees. Construction workforce is expected to be drawn from existing human resources in the surrounding region. Construction activities are expected to be limited in duration for the installation of the new equipment within the mill's existing footprint. No expansion of onsite or nearby infrastructure (e.g., public utility connections for electricity or natural gas, public roads, or railroads) are necessary or planned to

accommodate the project. Therefore, impacts on growth will be minimal and no adverse impacts are expected to occur.

ADEM Guidelines do not require modeling of non-criteria (i.e., toxic) air pollutants. GP notes that essentially the entire mill is, and will continue to be, regulated under 40 CFR Part 63 National Emissions Standards for Hazardous Air Pollutants (NESHAP) that implement maximum achievable control technology (MACT) emissions standards for existing and new sources in the following source categories to minimize emissions of hazardous air pollutants:

- Pulping, Bleaching, and Process Condensates (Subpart S)
- Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills (Subpart MM)
- Stationary Reciprocating Internal Combustion Engines (Subpart ZZZZ)
- Industrial-Commercial-Institutional Boilers and Process Heaters (Subpart DDDDD)

7. CLASS I AIR QUALITY IMPACTS

Federally designated Class I areas are afforded a higher level of air quality protection though more stringent PSD Increments and air quality related values (visibility and acidic deposition). Two Class I areas are located within 300 km of ARC:

1. Breton Wilderness Area is located approximately 215 km southwest.
2. Sipsey Wilderness Area is located approximately 300 km north.

ADEM Guidelines require air quality analyses only for Class I areas within 100 km.

FLAG 2010 establishes an emissions screening test to determine whether detailed modeling analyses are necessary to assess impacts on AQRV at distant (i.e., greater than 50 km) Class I areas. The "*Q*/*D*" test quantifies total AQRV-affecting emissions *Q* divided by the distance *D* (km) to each Class I area. FLAG 2010 establishes that *Q*/*D* less than 10 is a screening threshold indicating no adverse impacts may be presumed and no additional analyses are required. FLAG 2010 (Section 3.2, "Initial Screening Criteria (New)") specifies that *Q* is determined from "total SO_2, NO_X, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D)." In the accompanying response to comments, FLAG 2010 affirmed "for modified sources, applicants should only include the emission increases associated with the modification, not the total from the facility."[25] Notwithstanding this clarification, the screening estimate is challenging to construct for the proposed *project* that involves numerous emissions units – including all of the mill's significant emissions units that emit AQRV-affecting pollutants – some of which will be newly installed, others modified, yet others not physically modified as part of the *project* but affected in the sense of increased utilization and/or modified in a separate *project* that is *contemporaneous* and therefore part of the *major modification*. Accordingly, GP analyzed the screening *Q* parameter by comparing the maximum allowable hourly emission rates – as a representation of the "24-hour maximum allowable emissions" – before and after the *project* for all AQRV-affecting pollutants emitted from the mill from significant units. Table 7-1 summarizes this analysis.

[25] https://npshistory.com/publications/air-quality/flag-responses-2010.pdf.

Table 7-1. Maximum allowable emissions for AQRV-affecting pollutants before and after the proposed *major modification*.

		PM_{10} [1] (lb/hr)		NO_X (lb/hr)		SO_2 (lb/hr)		H_2SO_4 (lb/hr)	
Emission Unit	**Project Status**	**Before [2]**	**After [3]**	**Before [2]**	**After [3]**	**Before [2]**	**After [3]**	**Before [2]**	**After [3]**
No. 7 Power Boiler	Unmodified/Affected	56.04	65.23	151.20	179.52	403.20	478.72	2.22	2.19
No. 7 Recovery Furnace	Unmodified/Affected	52.67	52.24	223.00	223.27	345.00	345.46	26.48	26.44
No. 7 Smelt Dissolving Tank	Unmodified/Affected	14.38	14.38			5.40	5.40		
No. 7 Lime Kiln	Modified	27.43	8.89	58.90	27.76	23.30	5.52	1.20	1.20
No. 7 Lime Slaker	Replaced/New	0.51	0.56						
No. 7 Pulp Dryer	Replaced/New	4.49	2.41						
No. 8 Power Boiler	Contemporaneous/New	28.77	1.79	66.50	12.90	79.80	0.21	4.00	
No. 8 Recovery Furnace	Modified	57.67	113.71	192.70	237.69	357.30	225.00	27.40	33.78
No. 8 Smelt Dissolving Tank	Removed [4]	17.68				6.67			
No. 8 Lime Kiln	Unmodified/Affected	29.78	10.77	36.30	36.35	25.30	25.31	1.30	1.30
No. 8 Lime Slaker	Contemporaneous	0.65	0.65						
No. 8 Pulp Dryer	Contemporaneous	5.49	5.49						
NCG Incinerator	Unmodified/Affected	5.44	5.79	7.11	7.58	230.99	230.99	0.74	0.79
Total Hourly Maximum Emissions		**301 lb/hr**	**282 lb/hr**	**736 lb/hr**	**725 lb/hr**	**1,477 lb/hr**	**1,317 lb/hr**	**63 lb/hr**	**66 lb/hr**
Annualized Emissions		**1,318 tpy**	**1,235 tpy**	**3,222 tpy**	**3,176 tpy**	**6,469 tpy**	**5,767 tpy**	**277 tpy**	**288 tpy**
Difference	**-822 tpy**	**-84 tpy**		**-47 tpy**		**-702 tpy**		**10 tpy**	

1. PM_{10} emissions include filterable PM_{10} and condensable PM consistent with the methodology described in Section 2.8.3 of this report.
2. Maximum allowable emissions "before" the proposed *major modification* represent current permit limits or calculated potential emissions rates for units that are not specifically regulated or listed in the mill's major source operating permit.
3. Maximum allowable emissions "after" the proposed *major modification* represented anticipated permit limits or potential emissions rates calculated from expected BACT determinations and/or applicable regulatory standards.
4. The No. 8 Smelt Dissolving Tank is being modified and removed as an emission point because emissions from the unit will be routed to the No. 8 Recovery Furnace as part of the proposed *project*.

This analysis indicates a reduction in maximum allowable 24-hour average emissions of AQRV-affecting pollutants, due primarily to *modification* of the existing No. 7 Lime Kiln to fire lower-sulfur fuels and using a more efficient particulate control technology, *modification* of the existing No. 8 Recovery Furnace resulting in lower BACT emissions limits, and contemporaneous replacement of the combination fuel-fired No. 8 Power Boiler with a new, natural gas-fired boiler.

Alternatively, GP calculates the following using the PSD applicability calculation of the emissions increases resulting from the proposed *major modification*, which indicates PSD review is triggered for PM_{10}, NO_X, and H_2SO_4 (but not SO_2) because of increased capacity and annual utilization, even though hourly (24-hour) allowable emissions would not increase.

$$\frac{Q}{D} = \frac{607.94 \text{ tpy } PM_{10} + 805.67 \text{ tpy } NO_x + 39.79 \text{ tpy } SO_2 + 244.69 \text{ tpy } H_2SO_4}{215 \text{ km}} = 7.90 < 10$$

Because the emissions increases resulting from the proposed *major modification* are less than the screening threshold (using either screening approach), no adverse impacts on AQRV are expected and no further analyses are required. GP previously notified Federal Land Managers of the proposed project and summary determination using the recommended "Request for Applicability of Class I Area Modeling Analysis" form.[26] Related correspondence is provided in Appendix C.

[26] Electronic communication from Ms. Gisele Majidi-Weese, PE (U.S. Department of Agriculture) dated April 1, 2025, and from Mr. Tim Allen (U.S. Fish & Wildlife Service) dated June 11, 2025.

APPENDIX A

PSD Modeling Protocol

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) MODELING PROTOCOL (REVISED)

ALABAMA RIVER CELLULOSE NO. 7 MILL TRANSFORMATION PROJECT

Alabama River Cellulose LLC
Facility/Permit No. 106-0010

2373 Lena Landegger Highway
Perdue Hill (Monroe County), Alabama 36470

Submitted to the
Alabama Department of Environmental Management (ADEM) Air Division

June 2025

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1. EXECUTIVE SUMMARY

Alabama River Cellulose LLC (ARC or the "mill"), a wholly owned subsidiary of Georgia-Pacific LLC (GP), operates a kraft pulp mill in Perdue Hill, Monroe County, Alabama. ARC is an existing major source of air pollutants and operates under Title V Operating Permit No. 106-0010 issued by the Alabama Department of Environmental Management (ADEM) Air Division effective November 9, 2022.

GP initially submitted a Prevention of Significant Deterioration (PSD) permit application on December 20, 2024, to request a construction permit authorizing a *project*[1] to modernize the mill's operations by replacing certain process equipment with new equipment and modify other process equipment to increase capacity and ensure existing equipment can reliably meet higher production targets. After initial review and subsequent discussion with ADEM, an updated application was submitted on June 4, 2025.

This air quality modeling protocol provides a summary description of the existing mill, proposed *project*, and PSD permitting applicability, consistent with applicable EPA and ADEM guidance. GP is providing this protocol based on the best available current information about the *project* to promote mutual understanding of the expected analytical techniques and data resources GP intends to use to demonstrate compliance with applicable air quality standards and meet regulatory requirements for PSD permitting. GP submitted an initial modeling protocol on November 24, 2024, received comments from ADEM on December 16, 2024, and further discussed questions, comments, and analytical techniques on December 18, 2024, February 5, 2025, and May 1, 2025. This revised modeling protocol addresses ADEM's comments and provides additional information to support the proposed PSD air quality analyses.

The remainder of this modeling protocol describes applicable regulations, guidance, data resources, analytical techniques, and preliminary results to demonstrate that successful PSD air quality analyses will demonstrate attainment of applicable standards. Information about the scope of the *project* including emissions changes and initial modeling results should be considered preliminary, non-binding, and subject to change based on revisions to the project scope, comments from ADEM upon review of the modeling protocol, and any updates to EPA's regulatory modeling system (i.e., AERMOD), changes to prescribed EPA modeling guidelines and techniques (i.e., 40 CFR Part 51 Appendix W), data resources (i.e., updated meteorological data) after submittal of this modeling protocol. Substantial changes will be communicated in writing as part of the permitting record. GP's PSD permit application provides more detailed information about the proposed *project*, emissions calculations, regulatory applicability, and best available control technology determinations. Upon approval of this modeling protocol, GP will prepare and submit the final modeling report and electronic data files for review.

[1] Throughout this modeling protocol, italicized terms are used consistent with a specific regulatory definition. For example, a *project* is "a physical change in, or change in the method of operation of, an existing major stationary source" (ADEM Admin Code r. 335-3-5-.04(14)(1)(yy)).

1.1. MILL AND PROJECT DESCRIPTION

ARC owns and operates a bleached Kraft pulp mill classified under North American Industrial Classification System (NAICS) code 322110 and Standard Industrial Classification (SIC) code 2611. The ARC Mill is located at 2373 Lena Landegger Highway between U.S. Highway 84 and State Highway 41 in Perdue Hill (Monroe County), Alabama. Monroe County has been designated by the EPA as "attainment" or "unclassified" for all criteria pollutants.[2] The centroid of the main process area is approximately 453.7 km East, 3,494.2 km North (Universal Transverse Mercator [UTM] Zone 16, North American Datum [NAD] 1983). Figure 1-1 illustrates the location and layout of the facility and surrounding area.

The mill operates two existing pulping lines: the No. 7 Line and the No. 8 Line. The mill produces bleached softwood Kraft pulp for sale as market (baled) pulp and rolled (fluff) pulp. Although the two lines were originally constructed separately and each line could operate independently because each maintains a woodyard, power boiler to generate steam and electricity, pulping and bleaching lines, chemical recovery system (i.e., recovery furnace, lime kiln, and recausticizing), pulp dryer, and finishing system, both lines have the ability to utilize bark, chips, steam, black liquor, and pulp from the other line. Both lines feed a combined crude tall oil (CTO) and turpentine system to recover valuable byproducts, and both are served by the mill's effluent treatment system. The mill is an existing *major stationary source* of air pollutants and is subject to PSD review for *projects* that are a *major modification* because they cause a *significant emissions increase* and a *significant* ***net*** *emissions increase* of *regulated NSR pollutants*.

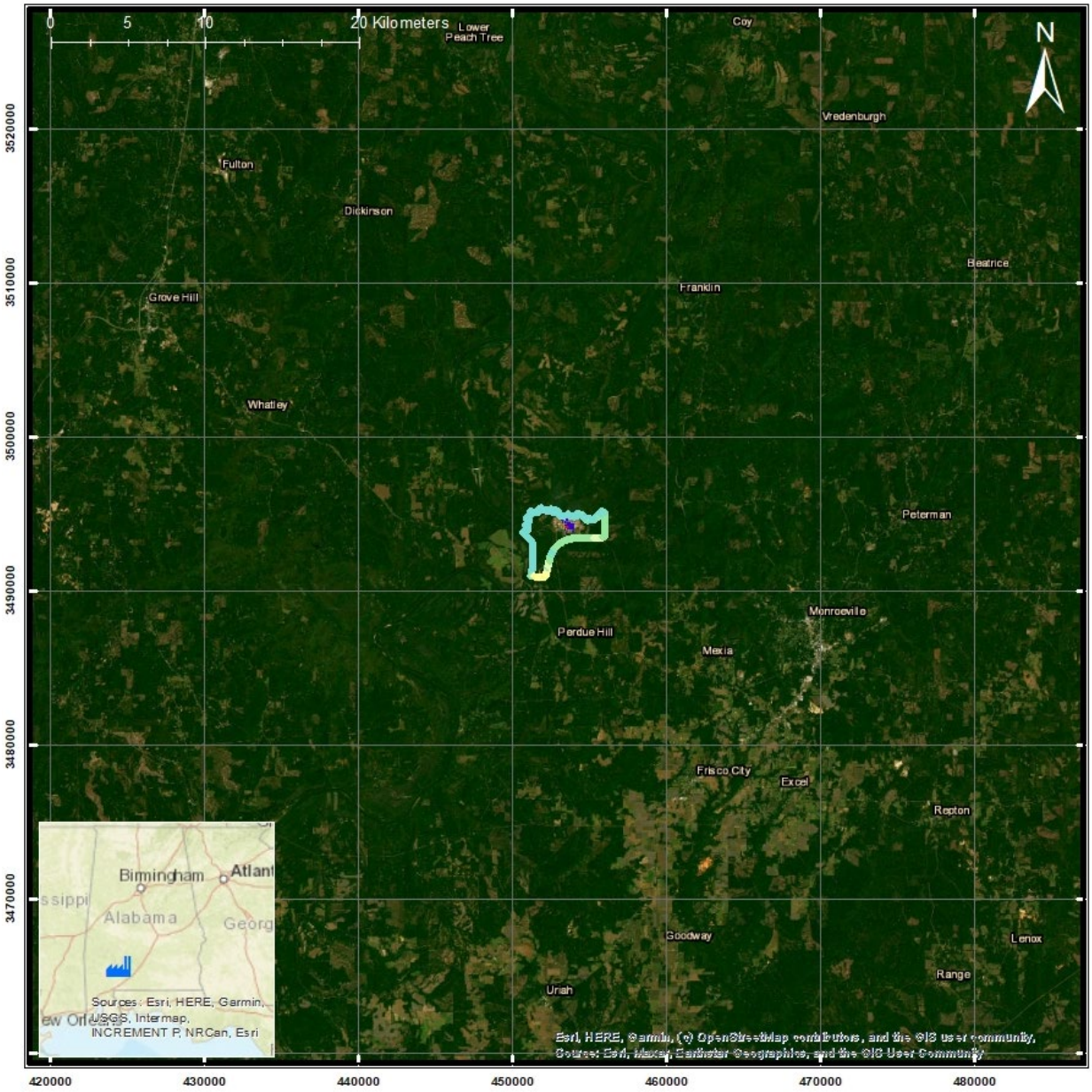
GP intends to conduct a *project* to modernize the mill's pulp manufacturing process by replacing certain existing process units with new equipment and modifying other existing equipment to ensure reliable operations at higher production capacity after the *project* is completed ("modernization project"). Other process units will not be physically modified but will nevertheless be affected in the sense that utilization, and therefore *actual emissions*, may increase to support modified existing and new equipment operating at higher production rates. GP's PSD permit application provided a complete description of the proposed project, process flow diagrams, emissions inventory, regulatory applicability analysis, and best available control technology (BACT) determination to meet requirements for PSD permitting.

As a distinct *project* that will be permitted separately from the modernization project, ARC intends to install a new power boiler to primarily generate steam for the No. 8 Line, which will replace the stationary existing No. 8 Power Boiler that has recently been shut down and obviate the need for multiple natural gas-fired package boilers that ARC has rented and operated since approximately November 2022. Although the No. 8 Power Boiler replacement is a separate *project* that is unlikely to trigger PSD review in and of itself, the replacement is expected to occur after the modernization project is permitted and commences construction, but before the

[2] 40 CFR §81.301.

mill resumes normal operations, such that the No. 8 Power Boiler replacement project is *contemporaneous* with the modernization project and the emissions changes will be accounted as part of the Step 2 emissions netting analysis. The PSD permit application submitted on December 20, 2024, provides detailed information about the scope of the *project* and affected emissions units.

Figure 1-1. Alabama River Cellulose and surrounding area.
(Universal Transverse Mercator [NAD 1983] Zone 16 coordinates expressed in meters as described in Section 2.4 of this modeling protocol.)



1.2. PSD PERMITTING APPLICABILITY

Prevention of Significant Deterioration (PSD) permitting requirements are established in ADEM's State Implementation Plan (SIP) approved regulations at ADEM Admin. Code r. 335-3-14-.04 "Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting (PSD)]." PSD permitting is required when a *project* at an existing *major stationary source* is a *major modification* because it causes a *significant emissions increase* and a *significant* ***net*** *emissions increase* of a *regulated NSR pollutant*. GP's PSD permit application will provide detailed calculations to quantify the emissions changes resulting from the *project* ("Step 1 emissions changes") based on the "hybrid test for projects that involve multiple types of emissions units" by comparing *baseline actual emissions* to *projected actual emissions* for existing emission units and accounting *potential emissions* from new emission units.[3]

The proposed *project* will affect most of the mill's emission units through replacement of existing emissions units with new emissions units, *modification* of existing units, and increased utilization of existing emissions units that are not otherwise modified, for which GP will submit a detailed PSD permitting applicability analysis to quantify the Step 1 emissions increases associated with the *project* and the Step 2 *net emissions increases* including *projects* that are *contemporaneous* and otherwise *creditable*. Table 1-1 summarizes GP's analysis of net emissions changes resulting from the project for each *regulated NSR pollutant* relative to the PSD *significant emission rate* (SER) thresholds, above which the *project* triggers PSD permitting requirements. The PSD permit application submitted on December 20, 2024, provided detailed information about emissions calculations and PSD permitting applicability.

Table 1-1. Summary of *net emissions increases* associated with the proposed *major modification* relative to PSD *Significant Emission Rates* (SER).

Regulated NSR Pollutant	Emissions Changes (tpy)			SER	PSD Review?
	Project (Step 1)	Contemporaneous (Step 2)	Net		
Filterable PM	225.53	256.54	**482.07**	25	Yes
Total PM_{10}	146.96	120.54	**267.51**	15	Yes
Total $PM_{2.5}$	108.57	72.91	**181.49**	10	Yes
SO_2	39.79			40	No
NO_X	774.54	31.13	**805.67**	40	Yes
CO	1,828.97	1,545.28	**3,374.25**	100	Yes
VOC	259.14	571.15	**830.29**	40	Yes
SAM	130.49	114.20	**244.69**	7	Yes
Lead	0.00093			0.6	No
H_2S	9.88	5.32	**15.21**	10	Yes
TRS	38.38	76.08	**114.46**	10	Yes
Total GHG as $CO2_e$	584,287	338,774	**923,061**	75,000	Yes

[3] Unless otherwise specified, references to *potential emissions* generally refer to permitted emission limits in the mill's most recent construction and operating permits, and in prior permit application submittals upon which the current permits are based or anticipated (but subject to change) proposed permit limits for new or modified equipment. *Actual emissions – baseline*, *projected*, and *past* – are expressed consistent with regulatory definitions in the appropriate context as described in subsequent sections of this modeling protocol.

Based on the analysis summarized in Table 1-1, the proposed ***net*** *emissions increases* will exceed the PSD SER and be a *major modification* for the following *regulated NSR pollutants*:

- Filterable Particulate matter (PM)
- Total particulate matter (including condensable PM) less than 10 microns in aerodynamic diameter (PM_{10})
- Total particulate matter (including condensable PM) less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Volatile organic compounds (VOC)
- Sulfuric acid mist (SAM)
- Hydrogen sulfide (H_2S)
- Total reduced sulfur compounds (TRS)
- Greenhouse gases (GHG)

Among the preceding *regulated NSR pollutants*, only certain ones are also *criteria air pollutants* for which EPA has established National Ambient Air Quality Standards (NAAQS) and PSD Increments that are evaluated in the PSD air quality analyses: PM_{10}, $PM_{2.5}$, CO, and NO_2. VOC emissions are addressed as a precursor to secondary ozone formation. Notably, GP does not anticipate a *significant* ***net*** *emissions increase* of sulfur dioxide (SO_2); therefore, no additional modeling analyses for this pollutant are required. However, SO_2 is evaluated as a precursor to secondary formation of $PM_{2.5}$ as prescribed by recent EPA guidance and described in subsequent sections of this modeling protocol.

1.3. FEDERAL AND ALABAMA AIR QUALITY STANDARDS

The Clean Air Act of 1970 required the EPA to establish ambient concentration thresholds for certain compounds based upon the identifiable effects that the compounds may have on the public health and welfare. Subsequently, the EPA promulgated regulations that set NAAQS for six criteria pollutants: SO_2, CO, NO_2, particulate matter (PM, PM_{10} and $PM_{2.5}$), lead (Pb), and ozone. Two classes of ambient air quality standards have been established: (1) primary standards defining levels of air quality that the EPA has judged as necessary to protect public health; and, (2) secondary standards defining levels for protecting soils, vegetation, wildlife, and other aspects of public welfare.

ADEM has adopted the federal primary and secondary NAAQS for the State of Alabama in ADEM Admin. Code r. 335-3-1-.03 "Ambient Air Quality Standards." Table 1-2 summarizes the applicable ambient air quality standards indicating the averaging period, form, and concentration level of each. Attainment is typically determined in terms of a *design value* or *concentration* consistent with the form of each standard. When ambient monitoring data are

used to assess compliance, the *design value* represents a three-calendar year average. When dispersion models are used to assess compliance, the *modeled design concentration* is determined from five simulated meteorological data years.

Table 1-2. National and Alabama Ambient Air Quality Standards.

Pollutant	Averaging Period / Form	Concentration Level	
		Primary	Secondary
NO_2	1-hour / Average 98th percentile Daily Maximum	188.1 µg/m³	None
	Annual / Maximum	100 µg/m³	100 µg/m³
SO_2	1-hour / Average 99th percentile Daily Maximum	196.3 µg/m³	None
	3-hour / Highest 2nd-High (H2H)	None	1,300 µg/m³
PM_{10}	24-hour / Highest 6th-High of 5 Years	150 µg/m³	150 µg/m³
$PM_{2.5}$	24-hour / 98th percentile Daily Average	35 µg/m³	35 µg/m³
	Annual / 5-year Average	9.0 µg/m³	15.0 µg/m³
CO	1-hour / H2H	40,000 µg/m³	None
	8-hour / H2H	10,000 µg/m³	None
O_3	8-hour / 4th-high Daily Maximum	70 ppb	70 ppb
Pb	3-month / Maximum	0.15 µg/m³	0.15 µg/m³

Under the 1970 Clean Air Act, states were required to delineate air quality control regions (AQCRs) and to adopt SIPs to provide for attainment of the NAAQS as expeditiously as practical, within certain time limits. The 1977 Clean Air Act Amendments, in Section 107, required EPA and states to identify, by category, those AQCRs (or portions thereof) meeting and not meeting the NAAQS. Areas meeting the NAAQS are termed attainment areas, and areas not meeting the NAAQS are termed non-attainment areas. Areas that have insufficient data to determine attainment/non-attainment status are unclassified or are not designated but are treated as being attainment areas for permitting purposes. The designation of an area is made on a pollutant-by-pollutant basis.

ARC is located in Monroe County, which is part of the Alabama and Tombigbee Rivers Intrastate Air Quality Control Region. Per 40 CFR §81.301, the current attainment status for Monroe County for each of the criteria pollutants is provided below in Table 1-3. The attainment status of the county, in addition to the calculated net emissions changes, determines the regulatory review process for the *project*. As shown in Table 1-3, ARC is currently treated as an attainment area for permitting purposes for all pollutants and is therefore subject to PSD for NSR for a *major modification* at an *existing major stationary source*.

Table 1-3. Attainment Status of Monroe County, Alabama.
Status is reported relative to the most recent NAAQS revision for which designations have been made.

Pollutant	Attainment Status
Total Suspended Particulate	Better than national standards
PM_{10}	Unclassifiable/Attainment
$PM_{2.5}$	Unclassifiable/Attainment
SO_2	Attainment/Unclassifiable
CO	Unclassifiable/Attainment
O_3	Attainment/Unclassifiable
1-hour NO_2	Unclassifiable/Attainment
Annual NO_2	Cannot be classified or better than national standards
Pb	Unclassifiable/Attainment

1.4. SCOPE OF PSD MODELING ANALYSES

The PSD regulations require that an owner or operator undergoing a *major modification* perform the following air quality analyses for those pollutants subject to PSD review as enumerated in ADEM Admin Code r. 335-3-14-.04(10) through (15) to demonstrate that the project would not cause or contribute to air pollution in violation of applicable standards:

- **Analysis of existing air quality in the vicinity of the source**. This analysis performed through review of ambient monitoring data in the vicinity, or otherwise representative of, the mill.
- **Analysis of air quality impacts resulting from pollutant emissions from the source relative to PSD Increments and NAAQS**. This analysis is performed through dispersion modeling of emissions changes expected to result from the proposed *major modification* to determine whether ambient concentration changes will be significant, and if so, to demonstrate representative emissions after the *major modification* will not cause or contribute to violations of applicable standards.
- **Assessment of additional impacts resulting from plume visibility, effects on soils and vegetation in the source's impact areas, and growth associated with the project**. As described subsequently in Section 6 of this modeling protocol, no adverse additional impacts on visibility, soils and vegetation, and growth are expected to result from this project because dispersion modeling analyses demonstrate attainment of secondary NAAQS that are established to protect welfare and ecological effects, and because the Mill will continue to comply with general requirements (e.g., fugitive emissions management) that minimize impacts on the surrounding environment.
- **PSD increment consumption, visibility, and air quality related values (AQRV) impact analyses at federal Class I areas within 300 km of the facility where the project occurs**. As described subsequently in Section 7 of this modeling protocol, no adverse additional impacts on Class I AQRV or PSD Increments are expected to result from this *major modification* because the anticipated emissions increases are expected to cause *de minimis* impacts at distant (i.e., 215 km

and beyond) Class I areas, and regional-scale emissions reductions have improved air quality and expanded PSD Increment across the region including these areas.

The following sections describe the analyses that will be conducted. This discussion is limited to CO, PM_{10}, $PM_{2.5}$, and NO_2, the only *regulated NSR pollutants* for which a *significant **net** emissions increase* is expected to be caused by the project and subject to PSD review for which ambient standards have been established. Ozone is also discussed because the project will cause a *significant **net** emissions increase* of precursor VOC.

1.4.1. Significant Impact Analyses

The initial step of the modeling analysis is to determine whether the *significant **net** emissions increases* caused by the *major modification* result in ambient concentrations that exceed significant impact levels (SILs) established for each pollutant and averaging period as summarized in Table 1-4, including the averaging period, form, and concentration level of each. SILs are established for Class II areas (i.e., outside of Class I areas including the vicinity of ARC) and separately for federally designated Class I areas that are afforded a higher level of air quality protection through lower, more stringent SILs and PSD Increments. As stated in ADEM Admin Code r. 335-3-14-.04(10)(b) where the SILs are established, the required demonstration that a proposed *modification* would not cause or contribute to a violation of a NAAQS or PSD Increment is "deemed to have been made if the emissions increase … from the modification alone … would cause air quality impacts less than the SILs in all areas." Ambient monitoring of air quality may be required if the project is expected to increase concentrations above significant monitoring concentrations (SMCs) summarized in Table 1-4 as established in ADEM Admin Code r. 335-3-14-.04(8)(h).

Table 1-4. SILs and SMCs for each *regulated NSR pollutant* subject to PSD analyses.

Pollutant	Averaging Period / Form	Concentration Level	
		SIL	SMC
CO	1-hour / 1st High Among 5 Years	2,000 µg/m³	None
	8-hour / 1st High Among 5 Years	500 µg/m³	575 µg/m³
NO_2	1-hour / 1st High Averaged over 5 Years	7.5 µg/m³	None
	Annual / 1st High Among 5 Years	1 µg/m³	14 µg/m³
PM_{10}	24-hour / 1st High Among 5 Years	5 µg/m³	10 µg/m³
	Annual / 1st High Among 5 Years	1 µg/m³	None
$PM_{2.5}$	24-hour / 1st High Averaged over 5 Years	1.2 µg/m³	None
	Annual / 1st High Averaged over 5 Years	0.13* µg/m³	None
O_3	8-hour / 4th-high Daily Maximum	1.0 ppb	None†

* GP notes that although the applicable annual average $PM_{2.5}$ SIL established in ADEM Admin Code r. 335-3-14-.04(8)(h) remains 0.3 µg/m³ as of the submittal date of this modeling protocol, ADEM has revised its PSD modeling guidelines and communicated its intent to adopt the EPA-recommended value of 0.13 µg/m³ associated with the annual average $PM_{2.5}$ NAAQS revised effective May 6, 2024.

† Pre-construction ambient monitoring for ozone may be required for projects with a *significant **net** emissions increase* of 100 tpy or more VOC or NO_X.

Modeled concentrations are assessed relative to the SIL for each pollutant and averaging period. If the significant impact analysis determines that no ambient concentration exceeds the SIL due to emissions changes resulting from the *project*, then no further analysis is necessary for that pollutant because it is presumed the *project* will neither cause nor contribute to a violation of any applicable standards. If a modeled concentration above the SIL is computed, then subsequent cumulative analyses are required. The significant impact area (SIA) is determined as the longest distance from the source at which a significant impact is computed to occur and is used to define the geographic range of cumulative analyses – including nearby stationary sources that may affect the same area – to demonstrate compliance with NAAQS and PSD Increments.

As described in Section 3 of this modeling protocol, GP's preliminary significant impact analyses indicate that significant impacts of 1-hour average (only) NO_2, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$ will result from the proposed *major modification*; therefore, cumulative NAAQS and PSD Increment analyses will be performed for those pollutants and corresponding averaging periods. As described subsequently in Section 3.2 of this modeling protocol, GP anticipates utilizing existing ambient monitoring data collected by ADEM to characterize existing air quality in the vicinity of ARC, including ozone and $PM_{2.5}$ for which no SMC has been established. As discussed in Section 2.9.1 of this modeling protocol, secondary formation of ozone due to *significant **net** emissions increases* of precursor NO_X and VOC are expected to exceed the SIL; however, this analysis also demonstrates that continued attainment with the 8-hour ozone NAAQS is expected.

1.4.2. NAAQS Compliance Demonstration

Compliance with applicable NAAQS is determined in a "cumulative analysis" by simulating representative emissions from all sources at ARC as described in Section 2.6, emissions represented as described in Section 2.8.2, nearby sources in the regional source inventory as described in Section 3.1, background concentrations as described in Section 3.2, and for $PM_{2.5}$ secondary formation as described in Section 2.9.3. The modeled design concentration for each pollutant and averaging period is computed consistent with the averaging period and form of each standard to demonstrate that the total cumulative impact is less than the level of the NAAQS. Table 1-5 summarizes NAAQS for pollutants evaluated in this permit application.

Table 1-5. Summary of NAAQS for pollutants evaluated in this permit application.

Pollutant	Averaging Period / Form	Concentration Level	
		Primary	Secondary
NO_2	1-hour / 8th High Averaged over 5 Years	188.1 µg/m^3	None
PM_{10}	24-hour / 6th High Among 5 Years	150 µg/m^3	150 µg/m^3
$PM_{2.5}$	24-hour / 8th High Averaged over 5 Years	35 µg/m^3	35 µg/m^3
	Annual / 1st High Averaged over 5 Years	9.0 µg/m^3	15.0 µg/m^3
O_3	8-hour / 4th-high Daily Maximum	70 ppb	70 ppb

As described in Section 4 of this modeling protocol, preliminary analyses demonstrate attainment of each of the preceding NAAQS using the modeling techniques and data resources described in this modeling protocol.

1.4.3. PSD Increments Compliance Demonstration

PSD Increments are formally established in applicable regulations (ADEM Admin Code r. 335-3-14-.04(3)) as the *increase* above the *baseline concentration*, which is itself defined as follows (ADEM Admin Code r. 335-3-14-.04(2)(m)):

> *(m)* **Baseline concentration** *shall mean that ambient concentration level which exists in the baseline area … at the time of the applicable minor source baseline date. A baseline concentration is determined for each pollutant for which a minor source baseline date is established and shall include:*
>
> 1. *The actual emissions, as defined in paragraph (2)(u) of this Rule, representative of sources in existence on the applicable minor source baseline date, except as provided in subparagraph (m) 3. of this paragraph;*
> 2. *The allowable emissions of major stationary sources that commenced construction before the major source baseline date, but were not in operation by the applicable minor source baseline date.*
> 3. *The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s):*
>
>   *(i) Actual emissions, as defined in paragraph (2)(u), from any major stationary source on which construction commenced after the major source baseline date; and*
>
>   *(ii) Actual emissions increases and decreases, as defined in paragraph (2)(u), at any stationary source occurring after the minor source baseline date.*

Based on the preceding definition in subsection (m), "PSD Increment-affecting emissions" are those changes in *actual emissions* at any stationary source after the minor source baseline date (mSBD) and *actual emissions* at a *major stationary source* commencing construction after the major source baseline date (MSBD). Table 1-6 summarizes the applicable PSD Increments and MSBD for each pollutant and averaging period in Class II areas.

Table 1-6. Summary of PSD Increments for pollutants evaluated in this permit application.

Pollutant	Averaging Period / Form	Increment ($\mu g/m^3$)	MSBD
NO_2	Annual / Maximum Among 5 Years	25 $\mu g/m^3$	February 8, 1988
PM_{10}	24-hour / 2nd High Among 5 Years	30 $\mu g/m^3$	January 6, 1975
	Annual / Maximum Among 5 Years	17 $\mu g/m^3$	
$PM_{2.5}$	24-hour / 2nd High Among 5 Years	9 $\mu g/m^3$	October 20, 2010
	Annual / Maximum Among 5 Years	4 $\mu g/m^3$	

The original construction of ARC commenced in 1977 after the MSBD for PM_{10}; therefore, all PM_{10} *actual emissions* consume PSD Increment. *Actual emissions* changes at ARC after 1988 affect NO_2 PSD Increment; however, because the preliminary significant impact analyses indicate no significant impacts of annual average NO_2 resulting from the planned *major modification*, annual average NO_2 PSD Increment is not evaluated in this analysis. There is no 1-hour average NO_2 PSD Increment to evaluate because EPA did not establish a 1-hour PSD Increment when the 1-hour NAAQS was established in 2010.

ARC originally commenced construction prior to the $PM_{2.5}$ MSBD on October 20, 2010. GP anticipates that this PSD permit application may establish the $PM_{2.5}$ mSBD for Monroe County because it appears to be the first PSD permit application affecting $PM_{2.5}$ submitted after the $PM_{2.5}$ trigger date of October 20, 2011. GP reviewed available air permit files for Monroe County via ADEM eFile (https://app.adem.alabama.gov/eFile/) and did not identify a more recent PSD permit application for $PM_{2.5}$ (or SO_2 and NO_X that are precursors to $PM_{2.5}$) at any other stationary source since the $PM_{2.5}$ mSBD. Specifically, permits issued to Harrigan Lumber (106-S005 -X018 through -X027) appear to be subject to PSD only for VOC (and that facility has received federally enforceable synthetic minor limits on emissions of PM_{10}, $PM_{2.5}$, NO_X, and SO_2 to avoid a *major modification* for those pollutants).

EPA observes in its guidance for $PM_{2.5}$ permit modeling that "a proposed new or modified source being evaluated for compliance with the $PM_{2.5}$ increments in a particular area may be the first source in the area with increment-consuming emissions … under this situation, a permitting authority may have a sufficient basis to conclude that the $PM_{2.5}$ impacts of the new or modified PSD source, although greater than the applicable $PM_{2.5}$ SILs, may be compared directly to the allowable $PM_{2.5}$ increments without the need for a cumulative analysis. This would be the case where it can be shown that any other increment-consuming sources in the same baseline area, if any, do not have much or any overlapping impact with the proposed new or modified source."[4] Accordingly, only $PM_{2.5}$ emissions changes resulting from ARC and those ADEM identified PSD

[4] EPA, "Guidance for Ozone and Fine Particulate Matter Permit Modeling," July 29, 2022. https://www.epa.gov/system/files/documents/2022-07/Guidance_for_O3_PM25_Permit_Modeling.pdf.

Increment-affecting sources as part of the regional source modeling inventory described in Section 3.1 of this modeling protocol to represent new *major stationary sources* that have been constructed and/or *major modifications* have taken place elsewhere in Monroe County, or in an adjacent intrastate airshed that would increase ambient concentrations in excess of the specified 1 $\mu g/m^3$ annual average concentration in a *baseline area* including ARC will be modeled to assess $PM_{2.5}$ PSD Increment and demonstrate attainment.[5]

Section 2.8.6 of this modeling protocol describes the determination of PSD Increment-affecting *actual emissions* changes of direct $PM_{2.5}$ simulated in this analysis and Section 2.9.4 demonstrates that *actual emissions* changes of precursor SO_2 and NO_X emissions that form secondary $PM_{2.5}$ may justifiably be neglected because emissions of these pollutants have significantly decreased since the baseline date, but are represented conservatively to ensure a complete analysis.

[5] One such source was identified in the regional source inventory provided by ADEM described in Section 3.1 of this protocol, the Scotch Plywood plant in Beatrice that may involve modification of the veneer dryers after the mSBD. GP notes that the definition of *baseline area* in ADEM Admin Code r. 335-3-14-.04(2)(o) does not include the clause "or equal or greater than 0.3 $\mu g/m^3$ (annual average) for $PM_{2.5}$" that appears in the analogous federal definition at 40 CFR §52.21(b)(15)(i).

2. CLASS II AIR QUALITY COMPLIANCE DEMONSTRATIONS

This section of the modeling protocol describes the modeling techniques and data resources GP intends to utilize to prepare compliance demonstrations for NAAQS and PSD Increments.

2.1. AIR DISPERSION MODELING ANALYSES

The air dispersion modeling analyses described in this modeling protocol are formulated and will be performed generally in accordance with the following federal (EPA) and state (ADEM) air quality modeling guidelines.

- EPA: 40 CFR Part 51, Appendix W, *Guideline on Air Quality Models* (Revised November 20, 2024) ("Appendix W" hereinafter)[6]
- ADEM: *PSD Air Quality Analysis Modeling Guidelines*, revised May 2024 ("ADEM Guidelines" hereinafter)
- EPA: *AERMOD Implementation Guide*, revised July 2021
- EPA: *Guidance for Ozone and Fine Particulate Matter Permit Modeling*, July 29, 2022 ("Ozone/PM2.5 Permit Modeling Guidance" hereinafter)
- EPA: *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program*, April 30, 2019 ("MERPs Guidance" hereinafter), including clarification and addendum dated April 30, 2024
- EPA: *Guidance on Developing Background Concentrations for Use in Modeling Demonstrations*, November 20, 2024 ("Background Concentrations Guidance" hereinafter)
- Federal Land Managers' Air Quality Related Values Work Group (FLAG): *Phase I Report*, November 2010 ("FLAG 2010" hereinafter)

Air quality modeling was previously conducted for ARC as part of the facility's prior PSD permit issued in 2007. The analyses described in this modeling protocol utilize the prior modeling analyses as a basis but are substantially updated to reflect the permitted operations, emission points and rates, structures causing downwash, proposed *major modification*, and current regulatory modeling techniques, data resources, requirements, and guidance.

2.2. MODEL SELECTION AND DEFAULT PROCESSING OPTIONS

Dispersion models compute downwind pollutant concentrations by simulating the evolution of a plume over time and space given inputs including the quantity of emissions and the initial conditions (e.g., velocity and temperature) of the stack exhaust to the atmosphere. The modeling analyses described in this modeling protocol will be performed using EPA's preferred regulatory model system, AERMOD (Version 24142). The AERMOD modeling system comprises a

[6] EPA published a notice in the ***Federal Register*** (Vol. 90 / No. 17) on January 28, 2025, to delay the effective date of the most recent revisions to Appendix W from January 28, 2025, to March 21, 2025. In the absence of alternative guidance, in anticipation the effective date will pass during ADEM's review of ARC's PSD permit application, and because the modeling techniques proposed in this protocol are not substantially affected by the most recent revisions, GP expects this guidance will prevail for these analyses.

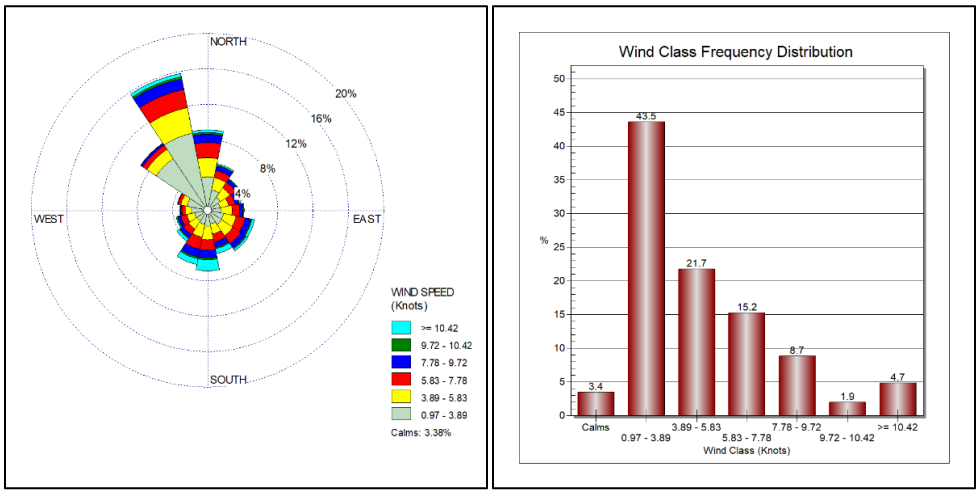
meteorological preprocessor (AERMET) and receptor and terrain preprocessor (AERMAP) that generate data utilized by AERMOD's dispersion algorithms.

Regulatory default model processing options will be enabled for this analysis and performed in a manner consistent with the current Appendix W and ADEM Guidelines. The dispersion environment was determined through inspection of aerial photographs (e.g., Figure 1-1) of the three-kilometer (3 km) area surrounding ARC, which clearly show that the area is predominantly forested and rural; therefore, the default dispersion option will be used in the modeling analyses and the urban option will not be utilized. Specifically for modeling the conversion of NO_X emissions to ambient concentrations of NO_2, GP anticipates using the regulatory default Ambient Ratio Method 2 (ARM2) option that does not require additional specification of in-stack ratios for NO_X emissions or hourly ozone concentrations.

2.3. METEOROLOGICAL DATA

The modeling analyses will be conducted using five years of surface meteorological data from Evergreen, Alabama and upper air observations from Alabaster, Alabama, as specified by ADEM Guidelines for sources in Monroe County. Surface conditions from Evergreen are considered representative of conditions in the area surrounding ARC, approximately 45 km distant, and are the nearest, most representative available data of sufficient quality for regulatory modeling analyses. ADEM processed the meteorological data using the regulatory meteorological data processor AERMET and regulatory default processing options (including ADJ_U*) using AERSURFACE (Version 20060), to represent land use and cover in the area surrounding the surface observation site, and AERMINUTE (Version 15272), to calculate hourly average wind speed and direction from 1-minute and 5-minute observations. Preliminary analyses presented in this modeling protocol were prepared using data from 2019-2023 processed by ADEM using AERMET Version 24142, for which Figure 2-1 depicts the windrose for observations over the 5-year period.

Figure 2-1. Windrose and frequency distribution for hourly surface observations at Evergreen, Alabama, 2019-2023.



2.4. GEOGRAPHIC COORDINATE SYSTEM

In all modeling analysis data files, the location of emission sources, structures, and receptors are represented in the Universal Transverse Mercator (UTM) coordinate system. The UTM grid divides the world into coordinates that are measured in north meters (measured from the equator) and east meters (measured from the central meridian of a particular zone, which is set at 500 km). The central location of the ARC Mill is approximately 453.7 km East and 3,494.2 km North in Zone 16, referenced to North American Datum 1983 (NAD83). NAD83 was used consistently as the basis for reporting coordinates of all sources, structures, and receptors to be consistent with the reference datum for all National Elevation Data (NED) data used to represent terrain as described in the following Section 2.5 of this protocol. UTM coordinates are input to AERMOD in metric units of meters, rounded to the nearest integer, to avoid the inference that locations are simulated to a higher level or accuracy and precision.

2.5. RECEPTORS AND TERRAIN ELEVATIONS

Ground-level concentrations were initially calculated at receptors placed along the ARC Mill property boundary and within nested Cartesian discrete receptor grids surrounding ARC using the following scheme:

- Ambient air boundary receptors were placed along the mill property boundary at approximately 25-meter spacing (or less, following the contours of the property boundary formed by waterways).
- Fine Cartesian grid receptors extending approximately 5 km from the mill property boundary at 100-meter spacing.
- Medium Cartesian grid receptors extending between 5 km and 10 km from the facility centroid at 250-meter spacing.
- Coarse Cartesian grid receptors extending between 10 km and 20 km from the facility centroid at 500-meter spacing.
- Sparse Cartesian grid receptors extending between 20 km and 50 km from the facility centroid at 1,000-meter spacing.

Figure 2-2 depicts the location of receptors at the ambient air boundary. "Onsite" areas of ARC within the ambient air boundary are excluded from the analysis of ambient impacts because public access is restricted by effective physical barriers, hostile terrain and land cover, or other sufficient measures to preclude access. The ARC woodyard and process area occupies cleared land totaling approximately 400 acres within GP property. Undeveloped areas of the property are densely vegetated wetlands (Figure 2-3) in a Zone A Flood Plain (Figure 2-4) designated by the Federal Emergency Management Agency[7] that is a known habitat for aggressive wildlife (i.e., wild boars, snakes, and alligators).

[7] Alabama Department of Economic and Community Affairs: "Am I in a Floodplain?" https://adeca.alabama.gov/floods/am-i-in-a-floodplain/ and alabamaflood.com.

The segment of property that adjoins the public roadway to the south of the mill (Lena Landegger Highway) and is readily accessible is well-defined by signage indicating the designated entrances to GP's private property and is otherwise fenced to preclude access. "Private Property - No Trespassing" signs are posted around the perimeter where the ARC property line may not be easily discernable. Access along each segment (as denoted in Figure 2-2 proceeding clockwise from the southern boundary) is precluded as follows:

1. Segment 1 follows the southern property boundary following (to the north of) Lena Landegger Highway from which employees, inbound raw materials and outbound product shipments, and visitors may access the mill at designated entrance points only. Each access road has no outlet (i.e., there is no publicly accessible through connection) and terminates after a scalehouse/gate house where inbound and outbound trucks are weighed, and a security force authorizes facility access. As the primary routes to and from the mill that are utilized by employees, inbound delivery and outbound shipment trucks, and visitors, the presence of loiterers or trespassers along the access roads would be promptly detected and reported.
2. Segment 2 follows the contour of ARC property along Lena Landegger Highway to the southwest and west until ARC property terminates at the Alabama River. Onsite property along this segment is densely vegetated, posted for "Private Property - No Trespassing," and a dirt road access to the river is gated. In addition, a soil/borrow pit is located at the southern edge of the property line that is located beyond a locked gate to prevent non-facility personnel from entering the area.
3. Segment 3 adjoins the Alabama River from the southwestern property corner to the westernmost property where Big Flat Creek enters the river. Onsite areas are densely vegetated wetlands with a steep gradient that is hazardous to enter the property by way of the river. GP personnel are restricted from traveling on foot in these areas due to the presence of aggressive wildlife (i.e., wild boars, snakes, and alligators).
4. Segment 4 adjoins privately owned property, follows the contours of ARC's property boundary along the southern edge of Big Flat Creek, approximately 30 to 50 ft wide. The properties are densely vegetated wetlands within and across the boundary. "Private Property - No Trespassing" is posted along this segment.
5. Segment 5 adjoins privately owned property and is densely vegetated within the boundary, which runs from the northeastern-most corner roughly due south to the southeastern corner at Lena Landegger Highway. "Private property/no trespassing" signage is placed at regularly spaced intervals. Rail access to ARC and unmaintained offroad access transits this eastern boundary and is excluded from ambient air because neither continues through the mill property, and is accessible only to business invitees with permission to enter the ARC Mill.

Figure 2-2. Ambient air boundary receptors.

Figure 2-3. Land use and cover within ARC property.

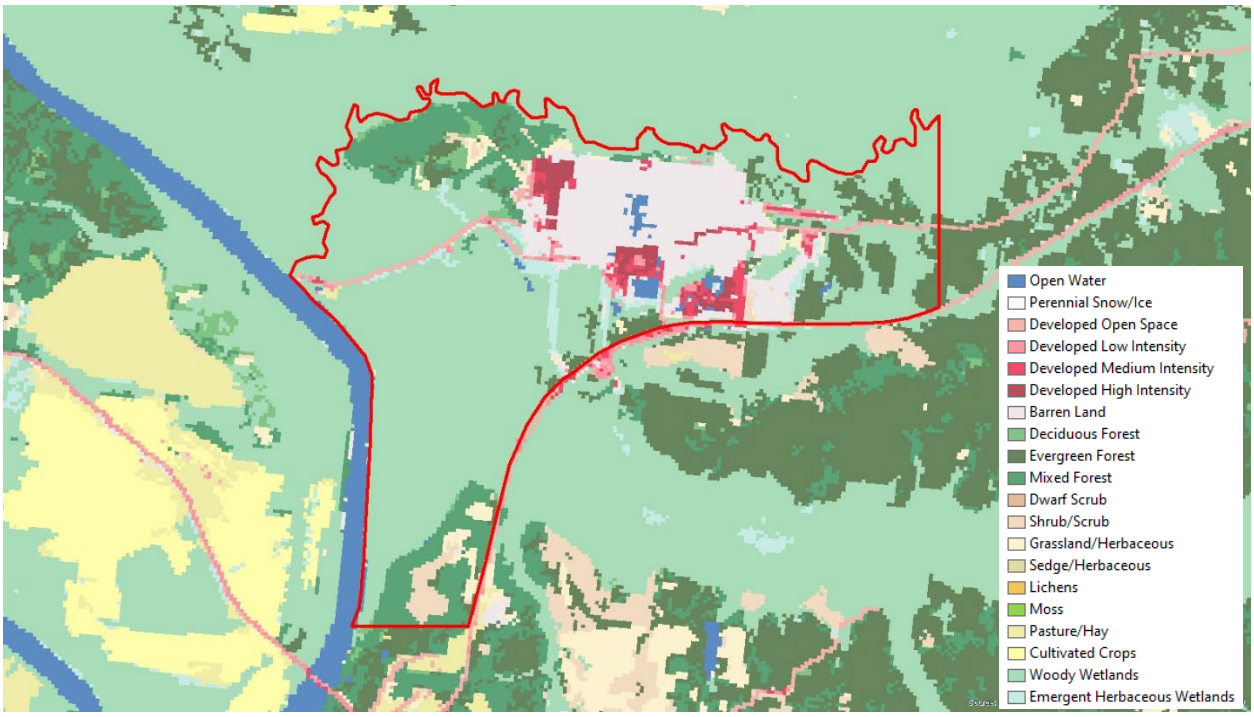
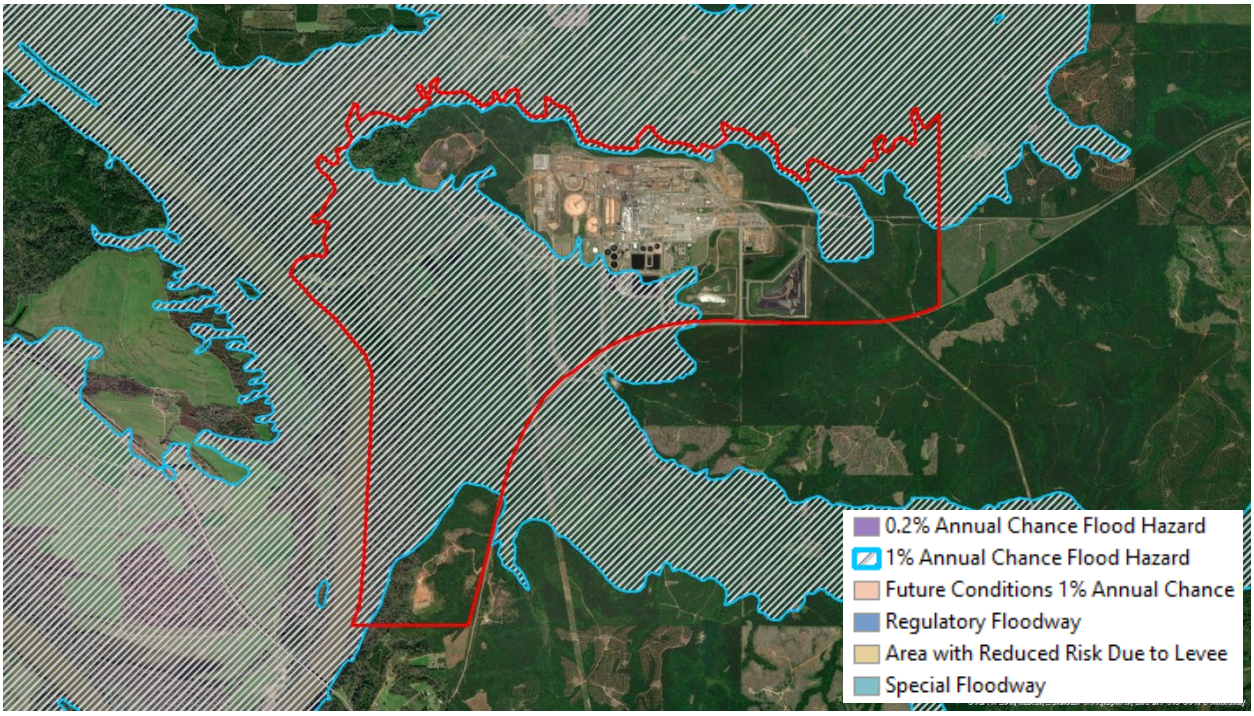


Figure 2-4. FEMA designated Zone A flood plain within ARC property.



Terrain elevations based on NED data were input to the AERMOD model for each receptor. The NED data consist of arrays of regularly spaced elevations at 1/3 arc-second (10-meter) intervals and are interpolated to determine elevations at the boundary and gridded receptors simulated in the modeling analysis. NED data (tiled data files) spanning from roughly 32° N, 89° W to 33° N, 87º W were selected to ensure coverage of a sufficiently large domain at least 50 km from the mill centroid. GP processed NED data by running the AERMAP terrain preprocessor (Version 18081) to assign elevation and hill height scale parameters for each receptor location based on NED data from the surrounding area. The location and elevation of receptors used in this analysis are plotted in Figures 2-5 and 2-6. The presence of elevated terrain is noted at and beyond approximately 10 km from the mill where ground level elevation increases with distance away from the Alabama River and tributaries (i.e., Big Flat Creek to the north and Limestone Creek to the south) that surround ARC.

In the cumulative NAAQS and PSD Increment analyses, the receptor grid for each pollutant and averaging period will be truncated to the distance of the SIA because, by definition, the proposed *major modification* cannot cause or contribute to modeled violations at locations where the SIL is not exceeded. The truncated receptor grid will reduce computational runtime and conform to the expectations in ADEM Guidelines that "NAAQS/Class II Increment compliance modeling must address all areas within the … SIA. All maximum predicted concentrations should be resolved to the nearest 100 meters." Additional receptors will be placed as necessary if modeled violations are located beyond the initial fine grid for further evaluation on a pollutant-by-pollutant, averaging period-by-averaging period, and receptor-by-receptor basis.

The primary operational area of the mill is generally flat with a base elevation of approximately 69 feet above mean sea level (MSL), validated by recent surveys of locations within the process area that demonstrate some, but little variability. AERMAP was not used to assign base elevations to emissions points and structures; instead, a constant base elevation of 69 feet (21 meters) was assigned to ensure consistency and avoid the inference that elevations are simulated to a higher level of accuracy and precision.

Figure 2-5. Far-field view of the cartesian grid receptors.

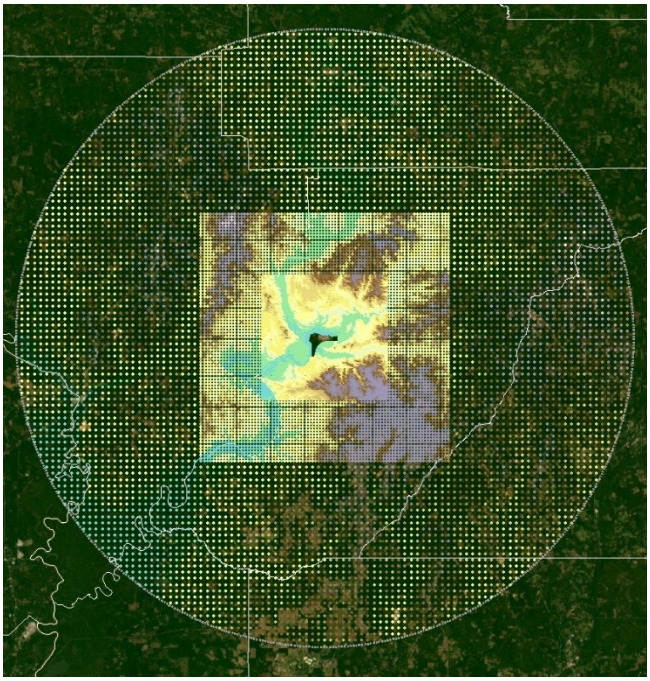
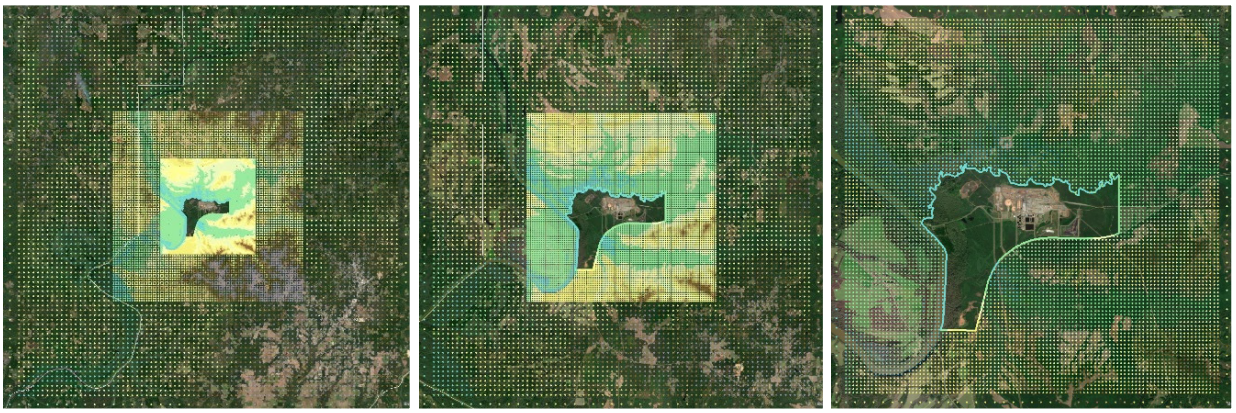


Figure 2-6. Near-field view of the Cartesian grid receptors.
Left panel depicts, medium (250 m), and coarse (500 m) grids to 20 km. Center panel depicts fine (100-m spacing) and medium (250 m) grids to 10 km. Right panel depicts fine grid (100-m spacing) from boundary to 5 km.



2.6. SOURCE TYPES AND STACK PARAMETERS

The scope of the PSD modeling analyses includes all emissions points that are modified or affected by the proposed *project* and other *contemporaneous* changes in the significant impact analysis, all emissions points that will operate upon completion of the proposed *major modification* in the NAAQS analyses, and emissions points that affect PSD Increments because of changes since the applicable baseline dates.

ADEM does not generally require modeling of fugitive PM_{10} and $PM_{2.5}$ emissions from operations that are not well quantified, poorly characterized and simulated in dispersion modeling analyses, and are otherwise managed to minimize emissions and ambient impacts. ADEM Guidelines specify evaluation of fugitive emissions "limited to sources which are quantifiable and related to the project at hand." Other than lengthening one chip conveyor and its associated transfer to the chip bin feeder, no such sources are being substantially modified as part of the *project*; furthermore, ADEM has previously determined that substantial modifications to the ARC Mill's existing woodyard originally proposed in 2015 did not require permitting because "a review of the emissions from the proposed project has led to the determination that no state or federal standards are expected to be exceeded. The Department has determined that no new air permit, nor a change to your existing Title V permit will be required at this time."[8] The most recent major source operating permit renewal (November 9, 2022) implemented requirements for a mill-wide fugitive dust plan to assure compliance with ADEM Code r. 335-3-4-.02 "to prevent fugitive dust at the facility which travel beyond the facility property line and cause a nuisance," with which ARC complies using methods including (but not limited to) enclosures for woodyard operations and conveyors, roadway dust suppression through paving and/or water/chemical application. Accordingly, although GP will estimate PM_{10} and $PM_{2.5}$ emissions as part of the PSD applicability analysis and continue to report estimated emissions in routine permitting and reporting, dispersion modeling analyses will not include fugitive emissions from roads, woodyard operations (e.g., debarking, sawing, chipping), material handling operations (e.g., fiber, wood residuals, and transfers, and lime storage bins and silos and transfers), and cooling towers.

The scope of the modeling analyses is such that all relevant sources of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions at ARC can be reasonably represented in AERMOD as conventional POINT sources that emit from well-defined stacks or vents that can be readily characterized by the location, release height (above ground level), stack or vent diameter, exhaust temperature, and exhaust velocity (measured or derived from a measured actual volumetric flow rate), and building downwash parameters which are input to AERMOD for each emission point. The scope of the proposed *project* involves the physical modification and replacement of certain existing emissions units, associated structures, and release points with new emissions units, associated structures, and release points. The extent of these changes is such that it is necessary to simulate both existing conditions before the *project* and conditions after the *project* in the

[8] Letter from Mr. Ronald W. Gore (ADEM) to Mr. Justin Bates (GP) dated January 19, 2016.

significant impact analyses and PSD Increment analyses that simulate the effect of changes on ambient pollutant concentrations. Specifically, each emission point is represented separately in existing conditions and future conditions for location and physical input parameters; existing conditions are simulated with a negative emission rate and designated with an "X" appended to the model ID for each emission point and future conditions are simulated with a positive emission rate. This approach ensures the modeling analyses are spatially and temporally consistent as prescribed by EPA guidance.[9] As subsequently discussed in greater detail, all existing emission points are evaluated for building downwash using existing structures and a separate building downwash analysis was performed for future conditions including removal of certain structures and construction of new structures.

Table 2-1 summarizes source input parameters used to represent POINT sources in the modeling analyses. GP notes the following about the determination of certain source parameters.

- Stack parameters represented in previous analyses and reports were reviewed for accuracy and updated as necessary. For example, the stack height of the No. 7 Smelt Dissolving Tank was corrected from a previously reported value of 250 ft to a measured as-built value of 209.5 ft (63.86 m).
- Exhaust temperature and velocity for existing units were determined as the average value of available, representative stack test data to simulate existing conditions.
- Stack location, height, diameter, exhaust temperature, and velocity (flowrate) for new emissions points were determined from engineering design and specifications. An evaluation of modeled concentrations for low operating loads is not necessary because operating experience indicates the emissions units associated with the primary process (i.e., chemical recovery system and pulp dryers) and energy generating units (i.e., power boilers) are typically operated at rates in excess of 75% capacity and low load operations are infrequent and transient.
- Merged stacks (e.g., No. 7 Power Boiler and No. 7 Recovery Furnace, No. 8 Power Boiler and No. 8 Recovery Furnace) were simulated by adding actual flowrates, calculating velocity based on stack diameter, and calculating exhaust temperature based on weighted average of individual exhaust flows.
- Each of the Nos. 7 and 8 Pulp Dryers – which were not included in prior modeling analyses – consist of in-line machinery within a building from which particulate is exhausted through powered roof and wall ventilation and conventional stacks that induce exhaust from sections of the process. Engineering judgment and design specifications were used to quantify an expected exhaust temperature (based on process conditions) and flowrate (based on fan motor ratings) for each of the emissions points. Total particulate mass emission rates for each machine (quantified as described in subsequent sections) were allocated among the emissions points for each machine proportionally based on flowrate of each exhaust.
- POINTHOR and POINTCAP source type designations were input to AERMOD as appropriate to simulate horizontal and obstructed discharges, respectively.

[9] See, for example, EPA memorandum "Calculation of Prevention of Significant Deterioration (PSD) Increment Consumption and Expansion, Paired in Time and Space," October 16, 2002. https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/R8PSD.pdf.

Table 2-1. Source Input Parameters.

Red text denotes model inputs for existing conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	Type/Orientation	UTM (Zone 17, NAD 1983) East (m)	UTM (Zone 17, NAD 1983) North (m)	Ground Elevation (m)	Height (ft)	Height (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Diameter (ft)	Diameter (m)	Flowrate (acfm)
No. 7 Lime Kiln (Existing)	7LKX	POINT	453490	3494070	21	350.0	106.68	147	337.22	39.99	12.19	4.20	1.28	33,242
No. 7 Lime Kiln (Modified)	7LK	POINT	453490	3494070	21	350.0	106.68	577	576.15	93.67	28.55	4.20	1.28	77,861
No. 7 Mill Lime Slaker	7SLAKERX	POINT	453509	3494205	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 7 Mill Lime Slaker	7SLAKER	POINT	453509	3494205	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	POINT	453601	3494252	21	209.3	63.80	179	355.00	26.34	8.03	5.38	1.64	35,928
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	POINT	453601	3494252	21	209.3	63.80	179	355.00	26.34	8.03	5.38	1.64	35,928
No. 7 Power Boiler (Existing)								150	338.80					206,227
No. 7 Power Boiler (Post-Project)								150	338.80					206,227
No. 7 Recovery Furnace (Existing)								436	497.47					679,517
No. 7 Recovery Furnace (Post-Project)								430	494.26					537,000
Combined No. 7 Energy Stack (Existing)	7RBPBX	POINT	453595	3494290	21	250.0	76.20	369	460.53	95.90	29.23	14.00	4.27	885,744
Combined No. 7 Energy Stack (Post-Project)	7RBPB	POINT	453595	3494290	21	250.0	76.20	352	451.12	80.47	24.53	14.00	4.27	743,227
No. 8 Lime Kiln (Existing)	8LKX	POINT	453487	3494070	21	350.0	106.68	452	506.30	64.79	19.75	5.00	1.52	76,329
No. 8 Lime Kiln (Post-Project)	8LK	POINT	453487	3494070	21	350.0	106.68	452	506.30	64.79	19.75	5.00	1.52	76,329
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	POINT	453466	3494227	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 8 Mill Lime Slaker	8SLAKER	POINT	453466	3494227	21	42.2	12.85	150	338.71	5.85	1.78	2.33	0.71	1,500
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	POINT	453609	3494318	21	290.0	88.39	154	340.74	22.63	6.90	7.50	2.29	59,980
No. 8 Power Boiler (Existing)								355	452.78					121,116
No. 8 Power Boiler (New)								348	448.71					141,941
No. 8 Recovery Furnace (Existing)								424	490.80					736,742
No. 8 Recovery Furnace (Post-Project)								445	502.59					735,200
Combined No. 8 Energy Stack (Existing)	RF8PB8X	POINT	453558	3494350	21	375.0	114.30	414	485.44	92.88	28.31	14.00	4.27	857,858
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	POINT	453558	3494350	21	375.0	114.30	412	484.07	101.46	30.93	14.00	4.27	937,121
Backup NCG Incinerator	INCINX	POINT	453494	3494230	21	64.0	19.50	1232	939.82	11.13	3.39	5.54	1.69	16,097
Backup NCG Incinerator	INCIN	POINT	453494	3494230	21	64.0	19.50	1232	939.82	11.13	3.39	5.54	1.69	16,097
Bleach Plant Scrubber	BLEACHX	POINT	453559	3494119	21	274.0	83.50	116	319.82	39.15	11.93	5.00	1.52	46,121
Bleach Plant Scrubber	BLEACH	POINT	453559	3494119	21	274.0	83.50	116	319.82	39.15	11.93	5.00	1.52	46,121
No. 7 Mill Pulp Dryer														
Dryer Exhaust 1 (Relocated)	7DRYR1X	POINT	453807	3494158	21	65.0	19.81	244	390.93	127.90	38.98	5.00	1.52	150,675
Dryer Exhaust 2 (Relocated)	7DRYR2X	POINT	453810	3494158	21	65.0	19.81	244	390.93	127.90	38.98	5.00	1.52	150,675
Center Aisle Exhaust	7AISLEX	POINT	453815	3494158	21	65.0	19.81	120	322.04	76.39	23.29	5.00	1.52	90,000
Vacuum Exhaust	7VACX	POINT	453765	3494153	21	84.1	25.63	140	333.15	143.60	43.77	2.95	0.90	59,000
Winder Pulper	7WINDERX	POINT	453892	3494117	21	81.7	24.90	140	333.15	52.37	15.96	2.62	0.80	17,000
Reel Pulper	7REELX	POINT	453875	3494117	21	81.7	24.90	140	333.15	64.69	19.72	2.62	0.80	21,000
Wet End Roof Exhaust (RE) 1	7ROOF01X	POINT	453749	3494141	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X	POINT	453760	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X	POINT	453760	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X	POINT	453778	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X	POINT	453778	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X	POINT	453789	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X	POINT	453789	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 8	7ROOF08X	POINT	453840	3494147	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X	POINT	453836	3494136	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 10	7ROOF10X	POINT	453840	3494130	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Machine East Wall Exhaust 1	7WALL01X	POINTHOR	453925	3494123	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
Machine East Wall Exhaust 2	7WALL02X	POINTHOR	453925	3494133	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
Machine East Wall Exhaust 3	7WALL03X	POINTHOR	453925	3494143	21	60.7	18.50	110	316.48	26.67	8.13	5.64	1.72	40,000
No. 7 Mill Pulp Dryer														
Dryer Exhaust 1 (Relocated)	7DRYR1	POINT	453805	3494160	21	89.5	27.28	244	390.93	74.26	22.64	6.56	2.00	150,675
Dryer Exhaust 2 (Relocated)	7DRYR2	POINT	453819	3494160	21	89.5	27.28	244	390.93	74.26	22.64	6.56	2.00	150,675
Vacuum Exhaust	7VAC	POINT	453765	3494153	21	84.1	25.63	140	333.15	143.60	43.77	2.95	0.90	59,000
Winder Pulper	7WINDER	POINT	453892	3494117	21	81.7	24.90	140	333.15	52.37	15.96	2.62	0.80	17,000
Reel Pulper	7REEL	POINT	453875	3494117	21	81.7	24.90	140	333.15	64.69	19.72	2.62	0.80	21,000
Wet End Roof Exhaust (RE) 1	7ROOF01	POINT	453749	3494141	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	POINT	453760	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	POINT	453760	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	POINT	453778	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	POINT	453778	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	POINT	453789	3494132	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	POINT	453789	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 8	7ROOF08	POINT	453840	3494147	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	POINT	453836	3494136	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Dry End Roof Exhaust (RE) 10	7ROOF10	POINT	453840	3494130	21	86.0	26.20	120	322.04	50.93	15.52	5.00	1.52	60,000
Wet End False Ceiling 1 (New)	7ROOF11	POINT	453783	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wet End False Ceiling 2 (New)	7ROOF12	POINT	453766	3494141	21	86.0	26.20	120	322.04	44.56	13.58	5.00	1.52	52,500
Wall Exhaust 4 (New)	7WALL04	POINTHOR	453749	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 5 (New)	7WALL05	POINTHOR	453755	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 6 (New)	7WALL06	POINTHOR	453761	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 7 (New)	7WALL07	POINTHOR	453767	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 8 (New)	7WALL08	POINTHOR	453773	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Wall Exhaust 9 (New)	7WALL09	POINTHOR	453779	3494152	21	55.1	16.79	110	316.48	36.00	10.97	5.64	1.72	54,000
Warehouse Exhaust 1 (New)	7WREHS01	POINTCAP	453868	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
Warehouse Exhaust 2 (New)	7WREHS02	POINTCAP	453899	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
Warehouse Exhaust 3 (New)	7WREHS03	POINTCAP	453929	3494192	21	34.4	10.50	100	310.93	33.53	10.22	4.59	1.40	33,333
No. 8 Mill Pulp Dryer	308													
Pulp Dryer Combined Exhaust Stack	8DRYR1X	POINT	453802	3494063	21	88.6	27.00	225	380.37	61.12	18.63	7.55	2.30	164,000
42" Vacuum Stack	8VAC	POINT	453786	3494053	21	65.6	20.00	140	333.15	98.58	30.05	3.28	1.00	50,000
Dryer Exhaust Stack	8DRYEX	POINT	453757	3494099	21	91.9	28.00	140	333.15	251.38	76.62	1.64	0.50	31,877
Dryer Pulper	8PULPER	POINT	453841	3494062	21	88.6	27.00	140	333.15	14.91	4.54	7.55	2.30	40,000
Reel Pulper	8REEL	POINT	453849	3494099	21	65.6	20.00	140	333.15	51.26	15.62	3.28	1.00	26,000
Winder Pulper	8WINDER	POINT	453882	3494099	21	65.6	20.00	140	333.15	50.83	15.49	2.62	0.80	16,500
Wet End Roof Exhaust (RE) 1	8ROOF01	POINT	453746	3494089	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 2	8ROOF02	POINT	453746	3494082	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 3	8ROOF03	POINT	453746	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	POINT	453754	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	POINT	453754	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	POINT	453761	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	POINT	453761	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	POINT	453766	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	POINT	453766	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	POINT	453772	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	POINT	453772	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	POINT	453779	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	POINT	453779	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 1	8ROOF14	POINT	453802	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 2	8ROOF15	POINT	453815	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Roll Handling Wall Exhaust 1	8WALL01	POINTHOR	453853	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 2	8WALL02	POINTHOR	453863	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 3	8WALL03	POINTHOR	453874	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 4	8WALL04	POINTHOR	453889	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
No. 8 Mill Pulp Dryer	308													
Pulp Dryer Combined Exhaust Stack	8DRYR1	POINT	453802	3494063	21	88.6	27.00	225	380.37	61.12	18.63	7.55	2.30	164,000
42" Vacuum Stack	8VAC	POINT	453786	3494053	21	65.6	20.00	140	333.15	98.58	30.05	3.28	1.00	50,000
Dryer Exhaust Stack	8DRYREX	POINT	453757	3494099	21	91.9	28.00	140	333.15	251.38	76.62	1.64	0.50	31,877
Dryer Pulper	8PULPER	POINT	453841	3494062	21	88.6	27.00	140	333.15	14.91	4.54	7.55	2.30	40,000
Reel Pulper	8REEL	POINT	453849	3494099	21	65.6	20.00	140	333.15	51.26	15.62	3.28	1.00	26,000
Winder Pulper	8WINDER	POINT	453882	3494099	21	65.6	20.00	140	333.15	50.83	15.49	2.62	0.80	16,500
Wet End Roof Exhaust (RE) 1	8ROOF01	POINT	453746	3494089	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 2	8ROOF02	POINT	453746	3494082	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End Roof Exhaust (RE) 3	8ROOF03	POINT	453746	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	POINT	453754	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	POINT	453754	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	POINT	453761	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	POINT	453761	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	POINT	453766	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	POINT	453766	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	POINT	453772	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	POINT	453772	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	POINT	453779	3494087	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	POINT	453779	3494075	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 1	8ROOF14	POINT	453802	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Dry End Roof Exhaust (RE) 2	8ROOF15	POINT	453815	3494085	21	91.9	28.00	120	322.04	42.44	12.94	5.00	1.52	50,000
Roll Handling Wall Exhaust 1	8WALL01	POINTHOR	453853	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 2	8WALL02	POINTHOR	453863	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 3	8WALL03	POINTHOR	453874	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000
Roll Handling Wall Exhaust 4	8WALL04	POINTHOR	453889	3494096	21	52.5	16.00	110	316.48	36.00	10.97	5.64	1.72	54,000

2.7. BUILDING DOWNWASH AND GEP STACK HEIGHT ANALYSIS

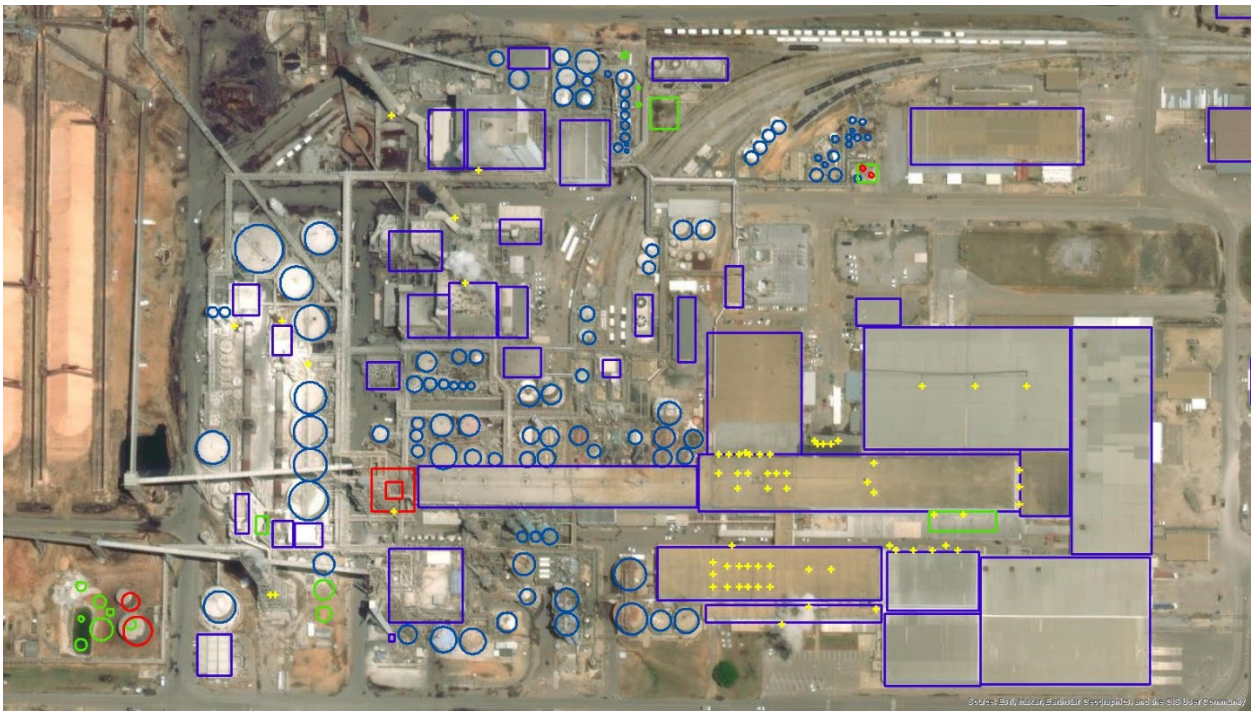
Building structures that obstruct wind flow near emission points may cause stack discharges to become caught in the turbulent wakes of these structures leading to downwash of the plumes. Wind blowing around a building creates zones of turbulence that are greater than if the building were absent. These effects generally cause higher ground level pollutant concentrations near the source because building downwash inhibits downwind dispersion from elevated stack discharges.

The direction-specific building dimensions used as input to the AERMOD model were calculated using the EPA's Building Profile Input Program (BPIP), which has been adapted to incorporate the PRIME downwash algorithms and released as "BPIPPRM" (version 04274). BPIPPRM is designed to incorporate the concepts and procedures described in the EPA's *Guideline for Determination of Good Engineering Practice Stack Height* while incorporating the PRIME enhancements to improve prediction of ambient impacts in building cavities and wake regions.

By regulation (40 CFR §51.100(ii)), the default Good Engineering Practice (GEP) stack height is 65 meters and stack heights in excess of GEP are not creditable for modeling purposes unless a larger GEP height is demonstrated due to the dimensions of nearby structures. Certain stacks at ARC exceed the regulatory 65-meter (213.3-ft) GEP stack height but were demonstrated through the GEP analysis conducted by BPIP that the nearby structures are sufficiently tall to justify the simulation of actual stack heights in the modeling analyses.

Many of the emission units affected by the proposed *project* emit only *regulated NSR pollutants* that are not also criteria air pollutants (e.g., hydrogen sulfide). Emissions from such units are not explicitly simulated in the PSD air quality modeling analyses. Such units are identified and included in the analyses only to the extent their physical structure is evaluated in the building downwash analyses. As described previously for emission points, the BPIP analyses were performed twice: once to simulate existing configurations of emissions points and structures and separately to simulate configurations after the *project* is completed. This approach is necessary to avoid BPIP assigning downwash parameters from a structure being removed to an emission point in the future conditions, and vice versa. Figure 2-7 illustrates the location of buildings considered in the BPIP and GEP analyses, showing the distinction between existing and future conditions for emissions points and buildings. Stack and structure locations and dimensions will be provided electronically as part of the BPIP and AERMOD input and output files.

Figure 2-7. Location of buildings evaluated for downwash relative to POINT sources.
Blue denotes existing structures that will not be modified as part of the project. Red denotes existing structures that will be removed. Green denotes new structures to be constructed.



2.8. EMISSION RATES FOR AIR QUALITY ANALYSES

This section of the modeling protocol describes the emissions simulated in each modeling analysis and to distinguish *actual emissions* from *potential* or *allowable emissions*, each of which is used in different analyses, and the different averaging periods evaluated relative to different standards.

2.8.1. Actual, Potential, and Allowable Emissions

GP evaluated PSD applicability using the "hybrid test for projects that involve multiple types of emissions units" by comparing *baseline actual emissions* to *projected actual emissions* – each in tons per year – for existing emission units and accounting for *potential emissions* from new emission units. Once it is determined that PSD applies for one or more *regulated NSR pollutants* because a *significant* ***net*** *emissions increase* will result, *baseline actual* and *projected actual emissions* are no longer used for modeling because the PSD regulations distinguish *actual emissions* as defined in 40 CFR §52.21(b)(1) and ADEM Admin. Code r. 335-3-14-.04(2) as:

> *(u)* **Actual emissions** *means the actual rate of emissions of a regulated NSR pollutant from an emissions unit, as determined in accordance with paragraphs (u)1. through (u)3. below, except that this definition shall not apply for establishing a [Plantwide Applicability Limit] under paragraph (23) of this rule. Instead, subparagraphs (2)(nn) and (2)(uu) of this Rule shall apply for this purpose.*

> *1. In general,* **actual emissions** *as of any given date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive twenty-four (24)-month period which precedes the given date and which is representative of normal source operation. The Department shall allow the use of a different time period upon a determination that it is more representative of normal source operation.* **Actual emissions** *shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.*
>
> *(c) The Director may presume that source-specific* **allowable emissions** *for the unit are equivalent to the* **actual emissions** *of the unit.*
>
> *(d) For any emissions unit that has not begun normal operations on the given date as determined in subparagraph (u)1.,* **actual emissions** *shall equal the* **potential to emit** *of the unit on that date.*

In practice, *actual emissions* may be much lower than *potential* or *allowable emissions* because of lower utilization than maximum capacity and because the emission factor – as measured by an EPA reference method stack test or otherwise estimated – is lower than the factor or design specification used to establish the emission limit that defines *potential* or *allowable emissions*.

Actual emissions are distinguished from *potential emissions* and *allowable emissions*, by definition:

> *(d)* **Potential to emit** *shall mean the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions … do not count in determining the potential to emit of a stationary source.*
>
> *(p)* **Allowable emissions** *shall mean the emissions rate of a stationary source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:*
>
> > *1. The applicable standards as set forth in 40 CFR Parts 60, 61, and 63;*
> > *2. The applicable State Implementation Plan emissions limitation, including those with a future compliance date; or*
> > *3. The emissions rate specified as a federally enforceable permit condition, including those with a future compliance date.*

For most emission units in practice, the *potential* emission rate is the highest emission rate that could be achieved because not all sources are subject to standard in 40 CFR Parts 60 (i.e., New Source Performance Standards or "NSPS"), 61, and 63 or a SIP limit. Specifically at ARC, all significant emission units have been previously subject to NSPS and/or PSD review including BACT that established *allowable* emissions equivalent to *potential* emissions in federally enforceable permit conditions. For this reason, GP generally considers *potential* and *allowable* emissions to be equivalent and interchangeable to determine the maximum emission rate simulated in certain air quality modeling analyses. Few exceptions apply, in which cases the *potential emission* rate is utilized based on permitted capacity and fuel characteristics (e.g., sulfur content).

As described in relevant subsequent sections of this modeling protocol, *actual emissions* were quantified using the best available data for representative emissions factors – with preference for site- and unit-specific stack test data – and actual operating levels demonstrated through monitoring and recordkeeping over multiple relevant averaging periods.

2.8.2. Averaging Periods for Emission Rates

The PSD applicability test comparing *baseline actual emissions* to *projected actual emissions* or *potential emissions* assesses the difference in annual emissions on a tons per year basis, regardless of changes (if any) in the hourly (or daily) maximum emission rate. This calculus quantifies increased production capacity and emissions from new units, increased production capacity and emissions from existing units that are physically modified, and increased emissions from higher utilization of existing units, even if such units are not physically modified and their maximum production capacity does not increase.

Because air quality modeling analyses are conducted for pollutants with a wide range of short-term and long-term standards – specifically in this analysis including 1-hour and annual average NO_2, 1-hour and 8-hour average CO, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$ – it is essential to distinguish and characterize changes in emissions for each relevant averaging period. Certain existing emission units at ARC will not be physically modified as part of the proposed *project* but will increase utilization due to the production capacity created by the new equipment. For these emission units, neither the annual nor hourly maximum capacity is changed; therefore, neither the annual nor hourly *potential emission rate* is increased. Since individual emission units already operate near or at maximum capacity, there may be little or no change in the hourly actual emission rate even though the annual actual emission rate increases by a higher proportion because the unit will operate more hours per year. For the preceding reasons, emission rates input to the model as an instantaneous rate (i.e., pounds per hour or grams per second) will be different for short-term (1-hour or 24-hour) averaging periods than long-term (annual) averaging periods.

2.8.3. Particulate Matter Emission Rates

PM emissions are variously represented as "particulate matter" (PM) or "total suspended particulate" (TSP), PM less than 10 microns (PM_{10}), and PM less than 2.5 microns ($PM_{2.5}$). PM generally means any finely divided solid and liquid material. PM emissions may be both filterable (i.e., particles captured in the "front-half" of a EPA Reference Method 5 or 17 sampling train) and condensable (i.e., particles that are emitted in vapor phase at stack conditions but that condense into liquid phase at ambient conditions and are captured using EPA Reference Method 202). Conventionally, "PM" or "TSP" refers only to filterable PM as would be measured using Method 5 and is implemented as the form of the emission standard – often also using opacity as an indicator – for certain emissions standards (i.e., NSPS Db and Boiler MACT). Under EPA guidance, condensable PM emissions were only incorporated after deficiencies were addressed in the availability and reliability of emission factors and stack test measurements using currently available test methods.

In this modeling protocol and the PSD permit application submitted for the *major modification*, GP quantifies condensable PM emissions and distinguishes filterable $PM_{2.5}$ from PM_{10} and PM (TSP) using the best available emission factors. For some emission sources, a simplifying assumption was made that filterable PM, PM_{10}, and $PM_{2.5}$ emissions are equivalent. For certain other sources for which distinct emission factors are available, GP made the best estimate of different PM, PM_{10}, and $PM_{2.5}$ emissions. In these cases, PM_{10} and $PM_{2.5}$ emissions may be reported to be greater than PM emissions, which is counterintuitive, but reflects that by definition PM_{10} and $PM_{2.5}$ emissions include condensable PM, but PM (TSP) does not. GP reserves the right to revise emission factors in the future based on improved data after promulgation and implementation of improved test methods for condensable PM, $PM_{10,}$ and $PM_{2.5}$.

2.8.4. Significant Impact Analyses

The initial modeling analyses determine whether the *significant **net** emissions increases* resulting from the *major modification* including the *project* and *contemporaneous* emissions changes cause significant increases in ambient concentrations by comparing *actual emissions* before the *major modification* to *potential emissions* after the *major modification*. This significant impact analysis is performed for each *regulated NSR pollutant* in excess of the SER and for each averaging period consistent with the form of the applicable standards.

Emissions rates simulated in the significant impact analysis are critically different in two ways from the PSD applicability analysis that relies on a comparison of *baseline actual emissions* and *projected actual emissions* (equal to *potential emissions* for new units) for emissions units affected by the *project* and *baseline actual emissions* to *potential emissions* for emissions units affected by *contemporaneous* projects. EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance summarizes these two key differences (footnotes omitted):

It is important to note that in many cases, the emissions rate(s) used for the source impact analysis should not be the same as the rate calculated for applicability purposes converted into equivalent short-term model input rates. First, as part of the 2002 NSR Reform Rule, the EPA made clear that "baseline actual emissions" and the "actual-to-projected-actual applicability test" should not be used for PSD air quality analyses. Instead, for major modifications, the definition of "actual emissions" at [ADEM Rule 335-3-14-.02(u)] *continues to apply and post-project emissions should be based on potential to emit or allowable emissions. Second, the "allowable emission increases" that must be evaluated pursuant to 40 CFR 52.21(k) should correspond with the averaging time of the applicable standard. For major modifications, this may also depend on the type of emissions unit (new or existing) and the effect the project has on the emissions unit (e.g., increase in short-term potential to emit vs. increase in annual utilization).*

GP applied the following methodology to determine emission rates simulated in the significant impact analyses for this application.

- GP initially determined the scope of emission units involved in the calculations of the ***net*** *emissions increase* to assess PSD applicability for each *regulated NSR pollutant*. For those pollutants for which that increase is *significant* and PSD air quality analyses are required, GP then determined:
    - For the *project*, the scope includes new units (which generally replace existing units), existing units that ARC plans to physically modify, and affected units that will not be physically modified but may increase actual utilization and emissions.
    - For *contemporaneous* changes, the scope includes units that were new, modified, or affected by other *projects* within the *contemporaneous period*. Although the inventory of *contemporaneous* changes primarily includes projects that have been initiated (if not completed) in the five years prior to the anticipated start of construction on the proposed *project*, by definition the *contemporaneous period* also includes projects that are initiated after the application is submitted but before the mill resumes normal operations when construction of the project is completed. GP anticipates one such project that is critical to the PSD modeling analyses: the replacement of the combination fuel No. 8 Power Boiler (that has actually already shutdown in 2024) with a new, natural gas-fired power boiler. This replacement is conceived of distinctly and will be evaluated for permitting separately from the subject *project* of this application. However, because the replacement is *contemporaneous* and is part of the Step 2 emissions netting analysis for PSD applicability, it is included in this significant impact analysis by representing the existing No. 8 Power Boiler as part of the existing condition with past *actual emissions* and the planned replacement No. 8 Power Boiler as part of the future conditions with *potential emissions*. Accordingly, temporary rental boilers in use at ARC are not included in these analyses.

In practice, this analysis encompasses all of the emissions units associated with the primary manufacturing process; therefore, all emissions units are evaluated in the significant impact analysis.

- GP determined the *actual emissions* rate from each unit, for each modeled pollutant and averaging period.
    - GP selected a representative *actual emissions* factor for each pollutant based on best available data with preference for site- and unit-specific stack test data expressed in terms of the relevant fuel combustion (e.g., lb/MMBtu) or process production parameters (e.g., lb/tons black liquor solids fired). Otherwise, a representative emission factor was selected from published resources.
    - GP reviewed recordkeeping for fuel and production over the prior 24-month period consistent with the definition of *actual emissions* – not (necessarily) the baseline period used to calculate *baseline actual emissions* for PSD applicability analyses – to determine the operating level for each relevant averaging period. In practice, this period spanned from May 2022 through April 2024, the most recent 24-month period for which complete, quality assured records are available.

      The operating level for each unit was selected commensurate with the averaging period for each modeled pollutant. Annual operating levels (for annual average NO_2, PM_{10}, and $PM_{2.5}$ analyses) were determined as the average fuel combustion or production rate over the 24-month period based on monthly records. 24-hour operating levels (for 24-hour average PM_{10} and $PM_{2.5}$ analyses) were determined as the maximum recorded 24-hour fuel combustion or production rate over the 24-month period for units with daily operating records. 1-hour operating levels (for 1-hour average NO_2 and 1-hour and 8-hour CO analyses) were determined as the maximum recorded 1-hour fuel combustion or production rate over the 24-month period for units with hourly operating records.

      For units for which short-term operating records are not available, the relevant operating level was estimated conservatively. Specifically, daily average operating levels conservatively represent the maximum 1-hour operating level, and the monthly operating levels conservatively represent the maximum 24-hour operating level. No operating level in excess of a stated unit capacity was utilized, if reflected in short-term operating records.

  The *actual emission* rate for each unit and pollutant was then calculated on a lb/hr basis as the representative emission factor multiplied by the operating level for each averaging period. The *actual emission* rate for each unit is converted to AERMOD input units of grams per second (g/s) and entered as a negative quantity for each emission point, which as previously described is simulated using the existing location, best estimate of actual exhaust conditions, and relative to the location and dimensions of existing structures.

- To simulate conditions after the project, GP determined the *potential emission* rate for each unit, pollutant, and averaging period consistent with the previously discussed regulatory definitions reflecting current or anticipated permitted emissions limitations based on applicable regulatory requirements (i.e., NSPS, MACT, or SIP requirements) or BACT determinations (whichever is lower), maximum operating capacity, and maximum operating factor (including 8,760 hours per year, unless production is limited by an enforceable permit condition). The maximum *potential emission* rate for each unit is converted to AERMOD input units of grams per second (g/s) and entered as a positive quantity for each emission point, which as previously described is simulated using the future location, design or specification for exhaust conditions, and relative to the location and dimensions of structures after the project is completed.

Table 2-3 summarizes the determination of emission rates for the annual average and short-term significant impact analyses, respectively.

Table 2-3. Summary of modeled emission rates for significant impact analyses.

Red text denotes model inputs for existing conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	Project Status	NO_X SIL 1-hr (g/s)	NO_X SIL Annual (g/s)	CO SIL (g/s)	PM10 24-hour SIL (g/s)	PM10 Annual SIL (g/s)	PM2.5 24-hour SIL (g/s)	PM2.5 Annual SIL (g/s)
No. 7 Lime Kiln (Existing)	7LKX	Modified	-1.8571	-1.2428	-1.1549	-1.1347	-0.8202	-1.1347	-0.8202
No. 7 Lime Kiln (Modified)	7LK	Modified	3.4977	3.4977	0.9507	0.3287	0.3096	0.2484	0.2293
No. 7 Mill Lime Slaker	7SLAKERX	Replaced				-0.0513	-0.0429	-0.0513	-0.0429
No. 7 Mill Lime Slaker	7SLAKER	New				0.0704	0.0640	0.0704	0.0640
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	Affected			-0.1149	-0.6930	-0.5380	-0.6930	-0.5380
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	Affected			0.1187	1.8116	1.8021	1.8116	1.8021
No. 7 Power Boiler (Existing)		Affected	-17.4038	-8.4480	-16.3957	-3.4273	-2.1505	-3.4273	-2.1505
No. 7 Power Boiler (Post-Project)		Affected	22.6196	22.6196	199.3249	8.2186	8.2186	8.2186	8.2186
No. 7 Recovery Furnace (Existing)		Affected	-27.9382	-20.9033	-8.0820	-3.1747	-2.5898	-2.5497	-2.0534
No. 7 Recovery Furnace (Post-Project)		Affected	28.1319	28.1319	57.0927	6.5822	5.9244	5.1148	4.4571
Combined No. 7 Energy Stack (Existing)	7RBPBX	Affected	-45.3420	-29.3513	-24.4777	-6.6020	-4.7403	-5.9770	-4.2039
Combined No. 7 Energy Stack (Post-Project)	7RBPB	Affected	50.7515	50.7515	256.4176	14.8008	14.1430	13.3334	12.6757
No. 8 Lime Kiln (Existing)	8LKX	Affected	-4.1516	-1.9135	-0.0478	-0.4577	-0.2063	-0.3895	-0.1780
No. 8 Lime Kiln (Post-Project)	8LK	Affected	4.5807	4.5807	1.4503	1.3573	1.3573	0.6034	0.6034
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	Affected				-0.0687	-0.0569	-0.0687	-0.0569
No. 8 Mill Lime Slaker	8SLAKER	Affected				0.0823	0.0823	0.0823	0.0823
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	Modified			-0.1079	-1.2294	-1.0121	-1.2294	-1.0121
No. 8 Power Boiler (Existing)		Removed	-4.7413	-1.0162	-7.5647	-1.5237	-0.3266	-1.5237	-0.3266
No. 8 Power Boiler (New)		New	1.6253	1.6253	1.6704	0.3364	0.3364	0.3364	0.3364
No. 8 Recovery Furnace (Existing)		Modified	-19.9697	-14.8833	-35.9216	-3.9223	-3.1513	-3.1152	-2.4979
No. 8 Recovery Furnace (Post-Project)		Modified	29.9494	29.9494	48.6250	6.1273	5.3512	5.0025	4.2264
Combined No. 8 Energy Stack (Existing)	RF8PB8X	Modified	-24.7110	-15.8995	-43.4863	-5.4460	-3.4779	-4.6389	-2.8245
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	Modified	31.5747	31.5747	50.2954	6.4637	5.6876	5.3389	4.5628
Backup NCG Incinerator	INCINX	Affected	-0.0347	-0.0347	-0.0092	-0.0292	-0.0292	-0.0292	-0.0292
Backup NCG Incinerator	INCIN	Affected	0.0913	0.0913	0.0242	0.7301	0.0747	0.7301	0.0747
Bleach Plant Scrubber	BLEACHX	Modified			-4.3821				
Bleach Plant Scrubber	BLEACH	Modified			8.7634				
No. 7 Mill Pulp Dryer		Removed							
Dryer Exhaust 1 (Relocated)	7DRYR1X					-0.0202	-0.0202	-0.0155	-0.0155
Dryer Exhaust 2 (Relocated)	7DRYR2X					-0.0202	-0.0202	-0.0155	-0.0155
Center Aisle Exhaust	7AISLEX					-0.0121	-0.0121	-0.0093	-0.0093
Vacuum Exhaust	7VACX					-0.0080	-0.0080	-0.0061	-0.0061
Winder Pulper	7WINDERX					-0.0023	-0.0023	-0.0018	-0.0018
Reel Pulper	7REELX					-0.0029	-0.0029	-0.0022	-0.0022
Wet End Roof Exhaust (RE) 1	7ROOF01X					-0.0081	-0.0081	-0.0062	-0.0062
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X					-0.0071	-0.0071	-0.0054	-0.0054
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X					-0.0071	-0.0071	-0.0054	-0.0054
Dry End Roof Exhaust (RE) 8	7ROOF08X					-0.0081	-0.0081	-0.0062	-0.0062
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X					-0.0071	-0.0071	-0.0054	-0.0054
Dry End Roof Exhaust (RE) 10	7ROOF10X					-0.0081	-0.0081	-0.0062	-0.0062
Machine East Wall Exhaust 1	7WALL01X					-0.0054	-0.0054	-0.0042	-0.0042
Machine East Wall Exhaust 2	7WALL02X					-0.0054	-0.0054	-0.0042	-0.0042
Machine East Wall Exhaust 3	7WALL03X					-0.0054	-0.0054	-0.0042	-0.0042
No. 7 Mill Pulp Dryer		New							
Dryer Exhaust 1 (Relocated)	7DRYR1					0.0310	0.0282	0.0238	0.0216
Dryer Exhaust 2 (Relocated)	7DRYR2					0.0310	0.0282	0.0238	0.0216
Vacuum Exhaust	7VAC					0.0122	0.0111	0.0093	0.0085
Winder Pulper	7WINDER					0.0035	0.0032	0.0027	0.0025
Reel Pulper	7REEL					0.0044	0.0040	0.0034	0.0031
Wet End Roof Exhaust (RE) 1	7ROOF01					0.0124	0.0113	0.0095	0.0086
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07					0.0108	0.0099	0.0083	0.0076
Dry End Roof Exhaust (RE) 8	7ROOF08					0.0124	0.0113	0.0095	0.0086
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09					0.0108	0.0099	0.0083	0.0076
Dry End Roof Exhaust (RE) 10	7ROOF10					0.0124	0.0113	0.0095	0.0086
Wet End False Ceiling 1 (New)	7ROOF11					0.0108	0.0099	0.0083	0.0076
Wet End False Ceiling 2 (New)	7ROOF12					0.0108	0.0099	0.0083	0.0076
Wall Exhaust 4 (New)	7WALL04					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 5 (New)	7WALL05					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 6 (New)	7WALL06					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 7 (New)	7WALL07					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 8 (New)	7WALL08					0.0111	0.0101	0.0086	0.0078
Wall Exhaust 9 (New)	7WALL09					0.0111	0.0101	0.0086	0.0078
Warehouse Exhaust 1 (New)	7WREHS01					0.0069	0.0063	0.0053	0.0048
Warehouse Exhaust 2 (New)	7WREHS02					0.0069	0.0063	0.0053	0.0048
Warehouse Exhaust 3 (New)	7WREHS03					0.0069	0.0063	0.0053	0.0048
No. 8 Mill Pulp Dryer	308	Contemporaneous							
Pulp Dryer Combined Exhaust Stack	8DRYR1X					-0.0250	-0.0250	-0.0192	-0.0192
42" Vacuum Stack	8VACX					-0.0076	-0.0076	-0.0059	-0.0059
Dryer Exhaust Stack	8DRYREXX					-0.0049	-0.0049	-0.0038	-0.0038
Dryer Pulper	8PULPERX					-0.0061	-0.0061	-0.0047	-0.0047
Reel Pulper	8REELX					-0.0040	-0.0040	-0.0031	-0.0031
Winder Pulper	8WINDERX					-0.0026	-0.0026	-0.0020	-0.0020
Wet End Roof Exhaust (RE) 1	8ROOF01X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End Roof Exhaust (RE) 2	8ROOF02X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End Roof Exhaust (RE) 3	8ROOF03X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12X					-0.0076	-0.0076	-0.0059	-0.0059
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13X					-0.0076	-0.0076	-0.0059	-0.0059
Dry End Roof Exhaust (RE) 1	8ROOF14X					-0.0076	-0.0076	-0.0059	-0.0059
Dry End Roof Exhaust (RE) 2	8ROOF15X					-0.0076	-0.0076	-0.0059	-0.0059
Roll Handling Wall Exhaust 1	8WALL01X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 2	8WALL02X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 3	8WALL03X					-0.0083	-0.0083	-0.0063	-0.0063
Roll Handling Wall Exhaust 4	8WALL04X					-0.0083	-0.0083	-0.0063	-0.0063
No. 8 Mill Pulp Dryer	308	Contemporaneous					[illegible]		[illegible]
Pulp Dryer Combined Exhaust Stack	8DRYR1					0.0376	0.0376	0.0288	0.0288
42" Vacuum Stack	8VAC					0.0115	0.0115	0.0088	0.0088
Dryer Exhaust Stack	8DRYREX					0.0073	0.0073	0.0056	0.0056
Dryer Pulper	8PULPER					0.0092	0.0092	0.0071	0.0071
Reel Pulper	8REEL					0.0060	0.0060	0.0046	0.0046
Winder Pulper	8WINDER					0.0038	0.0038	0.0029	0.0029
Wet End Roof Exhaust (RE) 1	8ROOF01					0.0115	0.0115	0.0088	0.0088
Wet End Roof Exhaust (RE) 2	8ROOF02					0.0115	0.0115	0.0088	0.0088
Wet End Roof Exhaust (RE) 3	8ROOF03					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12					0.0115	0.0115	0.0088	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13					0.0115	0.0115	0.0088	0.0088
Dry End Roof Exhaust (RE) 1	8ROOF14					0.0115	0.0115	0.0088	0.0088
Dry End Roof Exhaust (RE) 2	8ROOF15					0.0115	0.0115	0.0088	0.0088
Roll Handling Wall Exhaust 1	8WALL01					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 2	8WALL02					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 3	8WALL03					0.0124	0.0124	0.0095	0.0095
Roll Handling Wall Exhaust 4	8WALL04					0.0124	0.0124	0.0095	0.0095

2.8.5. NAAQS Analyses

EPA's Appendix W, Table 8-2 "Point Source Model Inputs for NAAQS Compliance in PSD Demonstrations" specifies the determination of modeled emission rates. Table 8-2 critically distinguishes between annual and short-term averaging periods and between a "new or modified source" and "nearby sources." The proposed *project* at ARC involves both annual and short-term averaging periods and includes new units, existing units that will be physically modified, and existing units that will not be physically modified as part of the *project* but are affected to the extent they may increase utilization and *actual emissions*.

The maximum *potential emission* rate[10] was conservatively modeled for all averaging periods for new or modified emissions units at ARC. Emissions units at ARC that are "nearby sources" as described in Appendix W, Table 8-2, Footnote 4 "includes existing facility to which modification is proposed if the emissions from the existing facility will not be affected by the modification" were modeled with annual average $PM_{2.5}$ emissions simulating the actual operating level and operating factor as prescribed in Table 8-2:

Table 8-2. - Point Source Model Emission Inputs for NAAQS Compliance in PSD Demonstrations

Averaging time	Emissions limit (lb/MMBtu)[1]	X	Operating level (MMBtu/hr)[2]	X	Operating factor (*e.g.*, hr/yr, hr/day)
		Nearby Source(s) [4,5]			
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.[5]		Annual level when actually operating, averaged over the most recent 2 years.[6]		Actual operating factor averaged over the most recent 2 years.[6,8]

Although the prescription in Table 8-2 is expressed in terms of fuel heat input (MMBtu), it can also be expressed in terms of production rates relevant to each emissions unit, which for the annual averaging period, the actual annual production rate represents the annual operating level multiplied by the actual operating factor. For the following units that will not be newly installed or modified as part of the project, and are therefore simulated as "nearby sources," Table 2-4 summarizes the representative annual average $PM_{2.5}$ emissions rates simulated in the NAAQS analysis, using Calendar Years 2022 and 2023 to determine the average annual operations multiplied by the applicable emission limit (or maximum potential emission factor) for each unit. This time period is representative of the most recent 24-month period and annual production rates can be easily validated from annual emissions reports. **GP notes that the simulation of actual operation level and factor in terms of the actual annual production rate as**

[10] The maximum *potential* or *allowable emission* rate for new and modified units will be quantified in the final PSD permit application based on the determination of applicable regulatory standards (i.e., NSPS, MACT, and SIP) and BACT for each pollutant and averaging period. Because stack testing of several units has demonstrated *actual emissions* are substantially lower than potential emissions, GP may propose lower *potential emissions* if necessary to demonstrate compliance with applicable air quality standards in this or future analyses.

prescribed in Table 8-2 is not intended as an enforceable limitation on future operations.

Table 2-4. Derivation of modeled emission rates for annual average $PM_{2.5}$ from emission units represented by actual annual operating level and factor.

Emission Unit	$PM_{2.5}$ Emission Limit [1]	Annual Operations					PM2.5 Emission Rate	
		Capacity	2022	2023	Average	UOM [2]	"Actual" [3] (tpy)	Modeled (g/s)
No. 7 Power Boiler	0.11 lb/MMBtu	4,415,040	4,145,369	4,390,087	4,267,728	MMBtu/yr	233.2	6.7086
No. 7 Recovery Furnace	0.35 lb/ton BLS	1,003,750	899,018	716,258	807,638	tons BLS/yr	143.1	4.1155
No. 7 Smelt Dissolving Tank	0.13 lb/ton BLS	1,003,750	899,018	716,258	807,638	tons BLS/yr	50.7	1.4577
No. 8 Lime Kiln	0.10 lb/ton CaO	197,100	140,327	136,089	138,208	tons CaO/yr	7.1	0.2036
No. 8 Pulp Dryer	0.023 lb/ADTFP	686,565	497,955	492,362	495,159	ADTFP/yr	5.7	0.1639

1. The "$PM_{2.5}$ Emission Limit" represents the permitted mass emission rate (lb/hr) for total $PM_{2.5}$ divided by the maximum hourly fuel consumption or production capacity expressed in relevant units. For these emissions units, applicable emissions standards (NSPS, MACT, and/or BACT) are expressed in terms of filterable PM and are adjusted for size (if necessary) and added to a representative condensable PM emission factor as described in Section 2.8.3 of this modeling protocol.
2. Units of measure (UOM) are expressed as the primary fuel consumption or process measurement for each emissions unit, consistent with emission limit basis. MMBtu = million British thermal units per hour heat input. BLS = black liquor solids. CaO = calcium oxide (lime). ADTFP = air dried tons finished pulp.
3. The "actual" annual emission rate denotes the quantity calculated from the $PM_{2.5}$ emission limit and average annual operations listed in the table. In every instance, this "actual" rate exceeds the actual emissions reported in 2022 and 2023 annual emission reports because the emission limit exceeds the actual emission factor demonstrated through stack testing. For example, $PM_{2.5}$ actual emissions from the No. 7 Power Boiler are calculated based on an average measured filterable PM emission factor of 0.04 lb/MMBtu relative to an applicable emission standard of 0.1 lb/MMBtu that is used in this analysis.

As described in additional detail in Section 3.1 of this modeling protocol, GP will represent emissions from facilities in the surrounding area based on a regional source inventory provided by ADEM. As "nearby sources" in the sense of Appendix W Table 8-2, GP may seek to refine emissions in consultation with ADEM using a similar approach should any such sources in the regional inventory cause or contribute to a modeled violation in the cumulative NAAQS analyses.

Table 2-5 summarizes modeled emission rates for the NAAQS analyses.

Table 2-5. Summary of modeled emission rates for NAAQS analyses.

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	NOx (1-hour Maximum)		PM10 (24-hour Average)		PM10 (Annual Average)		PM2.5 (24-hour Average)		PM2.5 (Annual Average)	
		(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(tpy)	(g/s)	(lb/hr)	(g/s)	(tpy)
No. 7 Lime Kiln (Modified)	7LK	3.4977	27.76	0.3287	2.61	0.3096	10.76	0.2484	1.97	0.2293	7.97
No. 7 Mill Lime Slaker	7SLAKER			0.0704	0.56	0.0640	2.22	0.0704	0.56	0.0640	2.22
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT			1.8116	14.38	1.8021	62.64	1.8116	14.38	1.4577	50.67
No. 7 Power Boiler (Post-Project)		22.6196	179.52	8.2186	65.23	8.2186	285.69	8.2186	65.23	6.7086	233.20
No. 7 Recovery Furnace (Post-Project)		28.1319	223.27	6.5822	52.24	5.9244	205.94	5.1148	40.59	4.1155	143.06
Combined No. 7 Energy Stack (Post-Project)	7RBPB	50.7515	402.79	14.8008	117.47	14.1430	491.64	13.3334	105.82	10.8241	376.26
No. 8 Lime Kiln (Post-Project)	8LK	4.5807	36.35	1.3573	10.77	1.3573	47.18	0.6034	4.79	0.2036	7.08
No. 8 Mill Lime Slaker	8SLAKER			0.0823	0.65	0.0823	2.86	0.0823	0.65	0.0823	2.86
No. 8 Power Boiler (New)		1.6253	12.90	0.3364	2.67	0.3364	11.69	0.3364	2.67	0.3364	11.69
No. 8 Recovery Furnace (Post-Project)		29.9494	237.69	6.1273	48.63	5.3512	186.02	5.0025	39.70	4.2264	146.92
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	31.5747	250.59	6.4637	51.30	5.6876	197.71	5.3389	42.37	4.5628	158.61
Backup NCG Incinerator	INCIN	0.9549	7.58	0.7301	5.79	0.0747	2.60	0.7301	5.79	0.0747	2.60
No. 7 Mill Pulp Dryer					2.41		9.58		1.84		7.34
Dryer Exhaust 1 (Relocated)	7DRYR1			0.0310	0.25	0.0282	0.98	0.0238	0.19	0.0216	0.75
Dryer Exhaust 2 (Relocated)	7DRYR2			0.0310	0.25	0.0282	0.98	0.0238	0.19	0.0216	0.75
Vacuum Exhaust	7VAC			0.0122	0.096	0.0111	0.38	0.0093	0.074	0.0085	0.29
Winder Pulper	7WINDER			0.0035	0.028	0.0032	0.11	0.0027	0.021	0.0025	0.085
Reel Pulper	7REEL			0.0044	0.034	0.0040	0.14	0.0034	0.026	0.0031	0.10
Wet End Roof Exhaust (RE) 1	7ROOF01			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Dry End Roof Exhaust (RE) 8	7ROOF08			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Dry End Roof Exhaust (RE) 10	7ROOF10			0.0124	0.098	0.0113	0.39	0.0095	0.075	0.0086	0.30
Wet End False Ceiling 1 (New)	7ROOF11			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wet End False Ceiling 2 (New)	7ROOF12			0.0108	0.086	0.0099	0.34	0.0083	0.066	0.0076	0.26
Wall Exhaust 4 (New)	7WALL04			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 5 (New)	7WALL05			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 6 (New)	7WALL06			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 7 (New)	7WALL07			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 8 (New)	7WALL08			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Wall Exhaust 9 (New)	7WALL09			0.0111	0.088	0.0101	0.35	0.0086	0.068	0.0078	0.27
Warehouse Exhaust 1 (New)	7WREHS01			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
Warehouse Exhaust 2 (New)	7WREHS02			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
Warehouse Exhaust 3 (New)	7WREHS03			0.0069	0.054	0.0063	0.22	0.0053	0.042	0.0048	0.17
No. 8 Mill Pulp Dryer	308				2.35		10.30		1.80		5.69
Pulp Dryer Combined Exhaust Stack	8DRYR1			0.0376	0.30	0.0376	1.30	0.0288	0.23	0.0208	0.72
42" Vacuum Stack	8VAC			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dryer Exhaust Stack	8DRYREX			0.0073	0.058	0.0073	0.25	0.0056	0.044	0.0041	0.14
Dryer Pulper	8PULPER			0.0092	0.073	0.0092	0.32	0.0071	0.056	0.0051	0.18
Reel Pulper	8REEL			0.0060	0.047	0.0060	0.21	0.0046	0.036	0.0033	0.11
Winder Pulper	8WINDER			0.0038	0.030	0.0038	0.13	0.0029	0.023	0.0021	0.07
Wet End Roof Exhaust (RE) 1	8ROOF01			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End Roof Exhaust (RE) 2	8ROOF02			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End Roof Exhaust (RE) 3	8ROOF03			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dry End Roof Exhaust (RE) 1	8ROOF14			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Dry End Roof Exhaust (RE) 2	8ROOF15			0.0115	0.091	0.0115	0.40	0.0088	0.070	0.0064	0.22
Roll Handling Wall Exhaust 1	8WALL01			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 2	8WALL02			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 3	8WALL03			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24
Roll Handling Wall Exhaust 4	8WALL04			0.0124	0.098	0.0124	0.43	0.0095	0.075	0.0069	0.24

2.8.6. PSD Increment Analyses

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance provides a concise, current description of acceptable procedures to analyze PSD Increment generally for any pollutant and specifically for $PM_{2.5}$. By definition, PSD Increment consumption results from changes in *actual emissions* at *major stationary sources* after the MSBD and from all sources after the mSBD. A cumulative assessment of PSD Increment includes the following:

1. Direct and precursor *allowable emissions* that the proposed new or modifying source would emit in significant amounts;
2. Direct and precursor *actual emissions* changes that have occurred at existing sources (including the existing source at which a *major modification* is being proposed, where applicable) since the minor source baseline date for the proposed source's baseline area;
3. Direct and precursor *actual emissions* from any *major stationary source* on which construction commenced after the MSBD; and,
4. Direct and precursor *allowable emissions* of permitted sources that are not yet fully operational.

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance explains (Section V.1.2, page 64, footnote 35) that emissions changes that consume or expand PSD Increment result from *construction*, which includes a *modification*, that is, "any physical change or change in the method of operation of a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted." This means that in practice, the PSD Increment analyses differ from the NAAQS analyses because "only sources that have … emissions … that affect the amount of increment consumed in the area of concern should be included in the modeling inventory for the increment analysis. Moreover, from such sources, only those specific emissions changes that affect increment should be included in the actual modeling analysis." Although the *baseline concentration* is established on the mSBD, EPA guidance confirms the exception codified at ADEM Admin Code r. 335-3-14-.04(2)(m) that PSD Increment-affecting emissions include "actual emissions, as defined in paragraph (2)(u) of this Rule, from any major stationary source on which construction commenced after the major source baseline date," which includes "projects at major stationary sources on which construction commences after the major source baseline date, the project emissions affect increment, even if the new or modified source actually begins operation before the minor source baseline date."

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance further distinguishes the emissions rates modeled in the PSD Increment analyses in contrast to NAAQS analyses (emphasis added): "the cumulative impact analysis for … increments is also different and based on the **actual emission changes** occurring at existing sources in the baseline area after the pertinent baseline dates (i.e., major and minor source baseline dates), whereas NAAQS analyses are generally based on the cumulative impact associated with the **maximum**

allowable emissions from the new or modifying source and other nearby sources (with specific provisions for operating levels of nearby sources)." In practice, emission units being newly installed or modified as part of the *project* under review are modeled by simulating the proposed *potential* or *allowable emission* rates since *actual emissions* after resumption of normal operations are not yet known. Emission units that affect PSD Increment because of prior *modifications* after the baseline dates – but not part of the proposed *project* – are modeled by simulating *actual emissions* (in the sense of ADEM Admin Code r. 335-3-14-.04(2)(u)). Alternatively, the PSD Increment analysis can conservatively simulate the maximum *potential* or *allowable emission* rate from all emissions units. Consistent with ADEM recommendations, GP will initially simulate the *potential emission* rate from all PSD Increment affecting units; however, GP may seek to refine inputs to simulate *actual emissions* in future analyses consistent with the regulatory definition.

Because the proposed *major modification* is expected to cause no significant impacts for annual average NO_2, and because EPA did not establish a 1-hour NO_2 PSD Increment corresponding to the 1-hour NO_2 NAAQS, no cumulative analyses are required for NO_2 PSD Increment.

All emission units at ARC affect PSD Increment for PM_{10} because the mill was initially constructed after the MSBD of January 6, 1975. For cumulative PSD Increment analyses of PM_{10}, GP simulates maximum *potential emission* rates for 24-hour and annual average analyses for all emission units being newly installed or *modified* as part of the proposed *major modification*. The remaining emission units could be simulated with *actual emissions* based on the prior 24 months of operation, as positive quantities numerically equivalent to the emission rates modeled as negative quantities to simulate *actual emissions* in the significant impact analysis. However, as recommended by ADEM, *potential emissions* will be input to the model to simulate these units. Table 2-6 summarizes the modeled emission rates (both annual average and 24-hour average) for PM_{10}.

Table 2-6. Summary of modeled emission rates for PM_{10} PSD Increment analyses.

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

Emission Unit/Point	Model ID	PM10 24-hour		PM10 Annual	
		(lb/hr)	(g/s)	(tpy)	(g/s)
No. 7 Lime Kiln (Modified)	7LK	2.61	0.3287	10.76	0.3096
No. 7 Mill Lime Slaker	7SLAKER	0.56	0.0704	2.22	0.0640
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	14.38	1.8116	62.64	1.8021
No. 7 Power Boiler (Post-Project)		65.23	8.2186	285.69	8.2186
No. 7 Recovery Furnace (Post-Project)		52.24	6.5822	205.94	5.9244
Combined No. 7 Energy Stack (Post-Project)	7RBPB	117.47	14.8008	491.64	14.1430
No. 8 Lime Kiln (Post-Project)	8LK	10.77	1.3573	47.18	1.3573
No. 8 Mill Lime Slaker	8SLAKER	0.65	0.0823	2.86	0.0823
No. 8 Power Boiler (New)		2.67	0.3364	11.69	0.3364
No. 8 Recovery Furnace (Post-Project)		48.63	6.1273	186.02	5.3512
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	51.30	6.4637	197.71	5.6876
Backup NCG Incinerator	INCIN	5.79	0.7301	2.60	0.0747
No. 7 Mill Pulp Dryer		2.41		9.58	
Dryer Exhaust 1 (Relocated)	7DRYR1	0.25	0.0310	0.98	0.0282
Dryer Exhaust 2 (Relocated)	7DRYR2	0.25	0.0310	0.98	0.0282
Vacuum Exhaust	7VAC	0.096	0.0122	0.38	0.0111
Winder Pulper	7WINDER	0.028	0.0035	0.11	0.0032
Reel Pulper	7REEL	0.034	0.0044	0.14	0.0040
Wet End Roof Exhaust (RE) 1	7ROOF01	0.098	0.0124	0.39	0.0113
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	0.086	0.0108	0.34	0.0099
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	0.086	0.0108	0.34	0.0099
Dry End Roof Exhaust (RE) 8	7ROOF08	0.098	0.0124	0.39	0.0113
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	0.086	0.0108	0.34	0.0099
Dry End Roof Exhaust (RE) 10	7ROOF10	0.098	0.0124	0.39	0.0113
Wet End False Ceiling 1 (New)	7ROOF11	0.086	0.0108	0.34	0.0099
Wet End False Ceiling 2 (New)	7ROOF12	0.086	0.0108	0.34	0.0099
Wall Exhaust 4 (New)	7WALL04	0.088	0.0111	0.35	0.0101
Wall Exhaust 5 (New)	7WALL05	0.088	0.0111	0.35	0.0101
Wall Exhaust 6 (New)	7WALL06	0.088	0.0111	0.35	0.0101
Wall Exhaust 7 (New)	7WALL07	0.088	0.0111	0.35	0.0101
Wall Exhaust 8 (New)	7WALL08	0.088	0.0111	0.35	0.0101
Wall Exhaust 9 (New)	7WALL09	0.088	0.0111	0.35	0.0101
Warehouse Exhaust 1 (New)	7WREHS01	0.054	0.0069	0.22	0.0063
Warehouse Exhaust 2 (New)	7WREHS02	0.054	0.0069	0.22	0.0063
Warehouse Exhaust 3 (New)	7WREHS03	0.054	0.0069	0.22	0.0063
No. 8 Mill Pulp Dryer	308	2.35		10.30	
Pulp Dryer Combined Exhaust Stack	8DRYR1	0.30	0.0376	1.30	0.0376
42" Vacuum Stack	8VAC	0.091	0.0115	0.40	0.0115
Dryer Exhaust Stack	8DRYREX	0.058	0.0073	0.25	0.0073
Dryer Pulper	8PULPER	0.073	0.0092	0.32	0.0092
Reel Pulper	8REEL	0.047	0.0060	0.21	0.0060
Winder Pulper	8WINDER	0.030	0.0038	0.13	0.0038
Wet End Roof Exhaust (RE) 1	8ROOF01	0.091	0.0115	0.40	0.0115
Wet End Roof Exhaust (RE) 2	8ROOF02	0.091	0.0115	0.40	0.0115
Wet End Roof Exhaust (RE) 3	8ROOF03	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	0.091	0.0115	0.40	0.0115
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	0.091	0.0115	0.40	0.0115
Dry End Roof Exhaust (RE) 1	8ROOF14	0.091	0.0115	0.40	0.0115
Dry End Roof Exhaust (RE) 2	8ROOF15	0.091	0.0115	0.40	0.0115
Roll Handling Wall Exhaust 1	8WALL01	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 2	8WALL02	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 3	8WALL03	0.098	0.0124	0.43	0.0124
Roll Handling Wall Exhaust 4	8WALL04	0.098	0.0124	0.43	0.0124

As previously described for $PM_{2.5}$ PSD Increments in section 1.4.4, ARC commenced construction prior to the $PM_{2.5}$ MSBD on October 20, 2010. GP anticipates that this PSD permit application will establish the $PM_{2.5}$ mSBD for Monroe County because it is the first PSD permit application submitted for $PM_{2.5}$ after the trigger date October 20, 2011. EPA observes in its Ozone/$PM_{2.5}$ Permit Modeling Guidance that "a proposed new or modified source being evaluated for compliance with the $PM_{2.5}$ increments in a particular area may be the first source in the area with increment-consuming emissions … under this situation, a permitting authority may have a sufficient basis to conclude that the $PM_{2.5}$ impacts of the new or modified PSD source, although greater than the applicable $PM_{2.5}$ SILs, may be compared directly to the allowable $PM_{2.5}$ increments without the need for a cumulative analysis." $PM_{2.5}$ emissions changes at ARC resulting from this project will be modeled to assess $PM_{2.5}$ PSD Increment; ADEM's regional source inventory indicates emissions reductions at other *major stationary sources* occurring since the MSBD that would affect the same *baseline area* and will be modeled using negative emission rates because they expand PSD Increment.

Having reviewed *projects* occurring at ARC since the $PM_{2.5}$ MSBD (October 20, 2010), GP determined that all emissions units included in the scope of these PSD analyses have been physically *modified* since that time, or will be as part of the proposed *major modification*, with the exception of the No. 7 Power Boiler and Backup NCG Incinerator. Therefore, these emission units are excluded from the $PM_{2.5}$ PSD Increment analysis and GP quantified the emissions changes from remaining units that affect PSD Increment as follows:

- For all emissions units (except the No. 7 Power Boiler and Incinerator), GP examined annual emissions reports from Calendar Years 2008 and 2009 to determine the representative 2-year average $PM_{2.5}$ actual emission rate as of the MSBD (October 20, 2010). This emission rate is determined in tons per year and is converted to grams per second for input to the dispersion model as a negative quantity representing existing conditions for source parameters and downwash. This approach directly represents the annual average emissions and is a conservative representation of the 24-hour average emission rate because higher (negative) emission rates may have been achieved on a daily basis than represented by the 2-year annual average. Because emissions factors for $PM_{2.5}$ were generally less reliable at the time those emission reports were prepared, GP calculated the $PM_{2.5}$ emission rate simulated in this analysis using currently available emissions factors – preferentially utilizing stack test results over the last 10 years – multiplied by the reported annual production parameters for each unit, for each Calendar Year.[11] Table 2-7 summarizes the determination of baseline $PM_{2.5}$ emissions. Stack parameters, locations, and building downwash represent conditions before the proposed *major modification*.

[11] $PM_{2.5}$ precursor emissions of NO_X and SO_2 from emissions units that affect $PM_{2.5}$ Increment were used as reported without revision to calculate the secondary $PM_{2.5}$ component as described subsequently in Section 2.9 of this modeling protocol.

- For all emissions units being newly installed and physically modified as part of the proposed *major modification*, maximum *potential emission* rates are modeled with stack parameters, locations, and building downwash representative of future operations.
- The remaining emission units that have been modified since the MSBD – but are not being modified as part of this *project* – will be simulated with *potential emissions* (consistent with ADEM recommendations) as positive quantities with stack parameters, locations, and building downwash representative of future operations. GP may seek to refine inputs for such sources using *actual emissions* based on the prior 24 months of operation in future analyses consistent with the regulatory definition.

Table 2-7. Determination of modeled baseline emission rates for $PM_{2.5}$ PSD Increment analyses.

	Production Rate				Filterable PM2.5		Condensable PM		Total PM2.5	
Unit	2008	2009	Average	UOM	(lb/UOM)	(tpy)	(lb/UOM)	(tpy)	(tpy)	(g/s)
No. 7 Recovery Furnace	771,717	835,338	803,527	tons BLS	0.095	37.97	0.083	33.39	71.36	-2.0527
No. 7 Smelt Dissolving Tank	771,717	835,338	803,527	tons BLS	0.054	21.69	0.0025	1.02	22.71	-0.6532
No. 7 Lime Kiln	85,283	92,239	88,761	tons CaO	0.33	14.73	0.054	2.40	17.12	-0.4925
No. 7 Mill Lime Slaker	85,283	92,239	88,761	tons CaO	0.029	1.29			1.29	-0.0370
No. 7 Mill Pulp Dryer	450,605	451,616	451,111	ADTFP	0.0050	1.13	0.018	4.06	5.19	-0.1492
No. 8 Power Boiler	101,200	1,543,674	822,437	MMBtu	0.012	4.87	0.0059	2.41	7.28	-0.2095
No. 8 Recovery Furnace	1,087,318	1,023,322	1,055,320	tons BLS	0.085	44.86	0.083	43.85	88.71	-2.5517
No. 8 Smelt Dissolving Tank	1,087,318	1,023,322	1,055,320	tons BLS	0.094	49.39	0.012	6.34	55.74	-1.6034
No. 8 Lime Kiln	143,461	142,717	143,089	tons CaO	0.0057	0.41	0.087	6.20	6.61	-0.1901
No. 8 Mill Lime Slaker	143,461	142,717	143,089	tons CaO	0.029	2.07			2.07	-0.0596
No. 8 Mill Pulp Dryer	509,204	561,727	535,466	ADTFP	0.0050	1.34	0.018	4.82	6.16	-0.1771
Total Emissions									**282.95**	

Table 2-8 summarizes the modeled emission rates (both annual average and 24-hour average) from new and modified units to demonstrate compliance for $PM_{2.5}$ PSD Increments.

Table 2-8. Summary of modeled emission rates for $PM_{2.5}$ PSD Increment analyses.

Red text denotes model inputs for baseline conditions with model ID appended with an "X."

Green text denotes model inputs for conditions after completion of the proposed *major modification*.

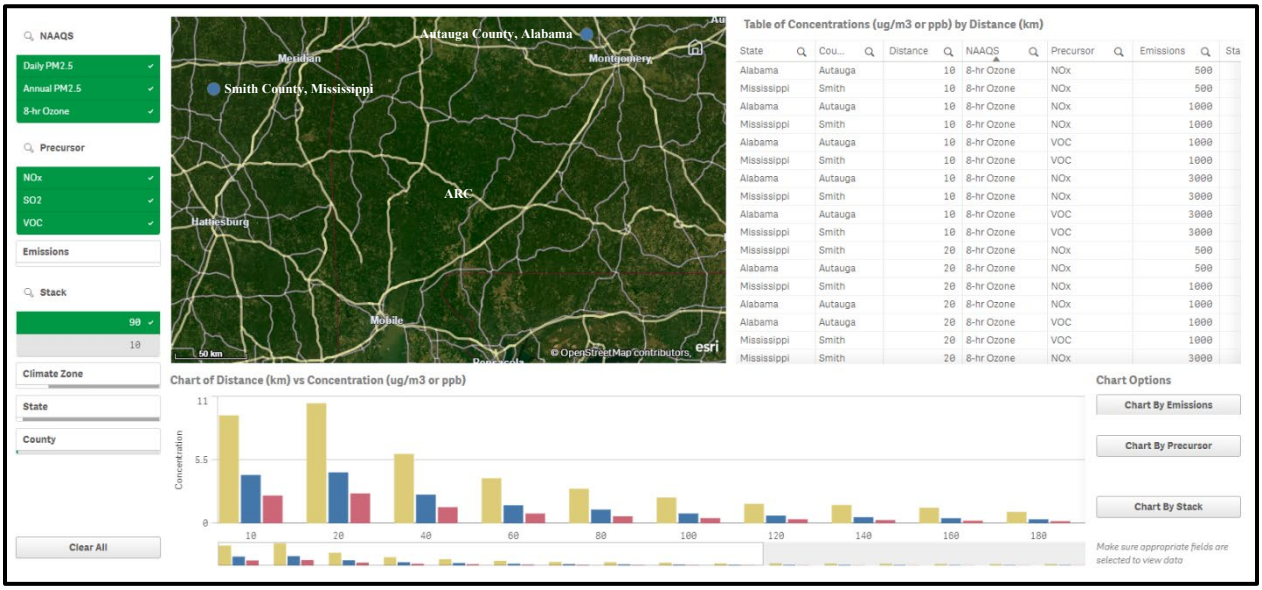
Emission Unit/Point	Model ID	PM2.5 24-hour		PM2.5 Annual	
		(lb/hr)	(g/s)	(tpy)	(g/s)
No. 7 Lime Kiln (Existing)	7LKX	3.91	-0.4925	17.12	-0.4925
No. 7 Lime Kiln (Modified)	7LK	1.97	0.2484	7.97	0.2293
No. 7 Mill Lime Slaker	7SLAKERX	0.29	-0.0370	1.29	-0.0370
No. 7 Mill Lime Slaker	7SLAKER	0.56	0.0704	2.22	0.0640
No. 7 Smelt Dissolving Tank (Existing)	7SDTX	5.18	-0.6532	22.71	-0.6532
No. 7 Smelt Dissolving Tank (Post-Project)	7SDT	14.38	1.8116	62.64	1.8021
No. 7 Power Boiler (Existing)					
No. 7 Power Boiler (Post-Project)					
No. 7 Recovery Furnace (Existing)		16.29	-2.0527	71.36	-2.0527
No. 7 Recovery Furnace (Post-Project)		40.59	5.1148	154.93	4.4571
Combined No. 7 Energy Stack (Existing)	7RBPBX	16.29	-2.0527	71.36	-2.0527
Combined No. 7 Energy Stack (Post-Project)	7RBPB	105.82	5.1148	376.26	4.4571
No. 8 Lime Kiln (Existing)	8LKX	1.51	-0.1901	6.61	-0.1901
No. 8 Lime Kiln (Post-Project)	8LK	4.79	0.6034	20.97	0.6034
No. 8 Mill Lime Slaker (Existing)	8SLAKERX	0.47	-0.0596	2.07	-0.0596
No. 8 Mill Lime Slaker	8SLAKER	0.65	0.0823	2.86	0.0823
No. 8 Smelt Dissolving Tank (Existing)	8SDTX	12.73	-1.6034	55.74	-1.6034
No. 8 Power Boiler (Existing)		1.66	-0.2095	7.28	-0.2095
No. 8 Power Boiler (New)		2.67	0.3364	11.69	0.3364
No. 8 Recovery Furnace (Existing)		20.25	-2.5517	88.71	-2.5517
No. 8 Recovery Furnace (Post-Project)		39.70	5.0025	146.92	4.2264
Combined No. 8 Energy Stack (Existing)	RF8PB8X	21.91	-2.7612	95.99	-2.7612
Combined No. 8 Energy Stack (Post-Project)	RF8PB8	42.37	5.3389	158.61	4.5628
Backup NCG Incinerator	INCINX				
Backup NCG Incinerator	INCIN	5.79	0.7301	2.60	0.0747
Bleach Plant Scrubber	BLEACHX				
Bleach Plant Scrubber	BLEACH				
No. 7 Mill Pulp Dryer		1.18	-0.1492	5.19	-0.1492
Dryer Exhaust 1 (Relocated)	7DRYR1X	0.15	-0.0194	0.68	-0.0194
Dryer Exhaust 2 (Relocated)	7DRYR2X	0.15	-0.0194	0.68	-0.0194
Center Aisle Exhaust	7AISLEX	0.092	-0.0116	0.40	-0.0116
Vacuum Exhaust	7VACX	0.060	-0.0076	0.26	-0.0076
Winder Pulper	7WINDERX	0.017	-0.0021	0.076	-0.0021
Reel Pulper	7REELX	0.022	-0.0027	0.094	-0.0027
Wet End Roof Exhaust (RE) 1	7ROOF01X	0.061	-0.0077	0.27	-0.0077
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06X	0.054	-0.0067	0.24	-0.0067
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07X	0.054	-0.0067	0.24	-0.0067
Dry End Roof Exhaust (RE) 8	7ROOF08X	0.061	-0.0077	0.27	-0.0077
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09X	0.054	-0.0067	0.24	-0.0067
Dry End Roof Exhaust (RE) 10	7ROOF10X	0.061	-0.0077	0.27	-0.0077
Machine East Wall Exhaust 1	7WALL01X	0.041	-0.0051	0.18	-0.0051
Machine East Wall Exhaust 2	7WALL02X	0.041	-0.0051	0.18	-0.0051
Machine East Wall Exhaust 3	7WALL03X	0.041	-0.0051	0.18	-0.0051
No. 7 Mill Pulp Dryer		1.84	-0.2317	7.34	-0.2317
Dryer Exhaust 1 (Relocated)	7DRYR1	0.19	0.0238	0.75	0.0216
Dryer Exhaust 2 (Relocated)	7DRYR2	0.19	0.0238	0.75	0.0216
Vacuum Exhaust	7VAC	0.074	0.0093	0.29	0.0085
Winder Pulper	7WINDER	0.021	0.0027	0.08	0.0025
Reel Pulper	7REEL	0.026	0.0034	0.10	0.0031
Wet End Roof Exhaust (RE) 1	7ROOF01	0.075	0.0095	0.30	0.0086
Wet End False Ceiling Roof Exhaust (FCE) 2	7ROOF02	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 3	7ROOF03	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 4	7ROOF04	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 5	7ROOF05	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 6	7ROOF06	0.066	0.0083	0.26	0.0076
Wet End False Ceiling Roof Exhaust (FCE) 7	7ROOF07	0.066	0.0083	0.26	0.0076
Dry End Roof Exhaust (RE) 8	7ROOF08	0.075	0.0095	0.30	0.0086
Dry End False Ceiling Exhaust (FCE) 9	7ROOF09	0.066	0.0083	0.26	0.0076
Dry End Roof Exhaust (RE) 10	7ROOF10	0.075	0.0095	0.30	0.0086
Wet End False Ceiling 1 (New)	7ROOF11	0.066	0.0083	0.26	0.0076
Wet End False Ceiling 2 (New)	7ROOF12	0.066	0.0083	0.26	0.0076
Wall Exhaust 4 (New)	7WALL04	0.068	0.0086	0.27	0.0078
Wall Exhaust 5 (New)	7WALL05	0.068	0.0086	0.27	0.0078
Wall Exhaust 6 (New)	7WALL06	0.068	0.0086	0.27	0.0078
Wall Exhaust 7 (New)	7WALL07	0.068	0.0086	0.27	0.0078
Wall Exhaust 8 (New)	7WALL08	0.068	0.0086	0.27	0.0078
Wall Exhaust 9 (New)	7WALL09	0.068	0.0086	0.27	0.0078
Warehouse Exhaust 1 (New)	7WREHS01	0.042	0.0053	0.17	0.0048
Warehouse Exhaust 2 (New)	7WREHS02	0.042	0.0053	0.17	0.0048
Warehouse Exhaust 3 (New)	7WREHS03	0.042	0.0053	0.17	0.0048
No. 8 Mill Pulp Dryer	308	1.34	-0.1721	5.16	-0.1721
Pulp Dryer Combined Exhaust Stack	8DRYR1X	0.18	-0.0224	0.78	-0.0224
42" Vacuum Stack	8VACX	0.054	-0.0068	0.24	-0.0068
Dryer Exhaust Stack	8DRYREXX	0.035	-0.0043	0.15	-0.0043
Dryer Pulper	8PULPERX	0.043	-0.0054	0.19	-0.0054
Reel Pulper	8REELX	0.028	-0.0035	0.12	-0.0035
Winder Pulper	8WINDERX	0.018	-0.0022	0.078	-0.0022
Wet End Roof Exhaust (RE) 1	8ROOF01X	0.054	-0.0068	0.24	-0.0068
Wet End Roof Exhaust (RE) 2	8ROOF02X	0.054	-0.0068	0.24	-0.0068
Wet End Roof Exhaust (RE) 3	8ROOF03X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12X	0.054	-0.0068	0.24	-0.0068
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13X	0.054	-0.0068	0.24	-0.0068
Dry End Roof Exhaust (RE) 1	8ROOF14X	0.054	-0.0068	0.24	-0.0068
Dry End Roof Exhaust (RE) 2	8ROOF15X	0.054	-0.0068	0.24	-0.0068
Roll Handling Wall Exhaust 1	8WALL01X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 2	8WALL02X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 3	8WALL03X	0.059	-0.0073	0.26	-0.0073
Roll Handling Wall Exhaust 4	8WALL04X	0.059	-0.0073	0.26	-0.0073
No. 8 Mill Pulp Dryer	308	1.80	-0.2305	7.90	-0.2305
Pulp Dryer Combined Exhaust Stack	8DRYR1	0.23	0.0288	1.00	0.0288
42" Vacuum Stack	8VAC	0.070	0.0088	0.30	0.0088
Dryer Exhaust Stack	8DRYREX	0.044	0.0056	0.19	0.0056
Dryer Pulper	8PULPER	0.056	0.0071	0.24	0.0071
Reel Pulper	8REEL	0.036	0.0046	0.16	0.0046
Winder Pulper	8WINDER	0.023	0.0029	0.10	0.0029
Wet End Roof Exhaust (RE) 1	8ROOF01	0.070	0.0088	0.30	0.0088
Wet End Roof Exhaust (RE) 2	8ROOF02	0.070	0.0088	0.30	0.0088
Wet End Roof Exhaust (RE) 3	8ROOF03	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 1	8ROOF04	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 2	8ROOF05	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 3	8ROOF06	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 4	8ROOF07	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 5	8ROOF08	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 6	8ROOF09	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 7	8ROOF10	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 8	8ROOF11	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 9	8ROOF12	0.070	0.0088	0.30	0.0088
Wet End False Ceiling Roof Exhaust (FCE) 10	8ROOF13	0.070	0.0088	0.30	0.0088
Dry End Roof Exhaust (RE) 1	8ROOF14	0.070	0.0088	0.30	0.0088
Dry End Roof Exhaust (RE) 2	8ROOF15	0.070	0.0088	0.30	0.0088
Roll Handling Wall Exhaust 1	8WALL01	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 2	8WALL02	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 3	8WALL03	0.075	0.0095	0.33	0.0095
Roll Handling Wall Exhaust 4	8WALL04	0.075	0.0095	0.33	0.0095

2.9. SECONDARY FORMATION OF OZONE AND $PM_{2.5}$

Because the proposed *major modification* causes *significant net emissions increases* of NO_X and VOC, secondary formation of ozone (for which NO_X and VOC emissions are precursors) and $PM_{2.5}$ (for which NO_X and SO_2 emissions are precursors) must be evaluated. GP utilized the screening methods described in EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance to conform to the Appendix W requirement to characterize secondary formation. This approach utilizes EPA's MERPs Guidance as a Tier I screening technique to quantify secondary ozone and $PM_{2.5}$ concentrations for relevant analyses.

GP reviewed availability of photochemical grid modeling prepared and compiled by EPA to characterize ozone and $PM_{2.5}$ air quality resulting from hypothetical sources of precursor emissions in the area of ARC. As shown in Figure 2-8, EPA simulated emissions from two hypothetical sources roughly equidistant from ARC: one in Autauga County, Alabama and one in Smith County, Mississippi. Neither hypothetical source perfectly represents the conditions in Monroe County in the vicinity of ARC. For the reasons summarized as follows, GP selected the Smith County, Mississippi hypothetical source as representative to estimate secondary formation of ozone and $PM_{2.5}$ in this analysis.

Figure 2-8. EPA's "MERPs View Qlik" database compilation of estimated maximum secondary ozone and $PM_{2.5}$ concentrations for sources of precursor emissions in rural western Alabama.



- Smith County (22.3 people/square mile) is more representative of the rural characteristics of Monroe County (19.1 people/square mile) and the area surrounding ARC than Autauga County (97.3 people/square mile) in terms of population density. As noted in Appendix A of the MERPs Guidance, the Autauga County hypothetical source is nearer an urban area (up to 25% urban land cover within the Montgomery Metropolitan Statistical Area) compared to 2.3% urban land cover near the Smith County hypothetical source.

- GP observes that for many hypothetical sources simulated by EPA, maximum estimated secondary formation is within the first 10 to 20 km downwind of the source as shown in Figure 2-8, indicating the importance of the source itself and any other nearby sources that may affect the same area. ARC is located remotely, and the nearest point sources are at least 15 to 20 km away; no large emissions sources of ozone or $PM_{2.5}$ precursors are located within approximately 40 km. The Smith County hypothetical source is similarly situated with few small sources and no large sources of precursor emissions nearer than 50 km. The Autauga County hypothetical source is located approximately 15 km northwest of a large industrial point source and is therefore not representative of ARC and the surrounding area. Because SO_2 emissions are the most consequential to this analysis as a precursor to secondary $PM_{2.5}$, the similarity between Smith County (155 tpy) and Monroe County (126 tpy) as reported for point and nonpoint sources in the most recent (2020) National Emissions Inventory is a compelling factor compared to Autauga County (808 tpy).
- Neither terrain nor climate is a determinative factor to select between the two hypothetical sources.
    - The average (52 m) and maximum (171 m) terrain within 50 km of ARC is comparable to the terrain near the Smith County (121 m average and 142 m maximum) and Autauga County (96 m average and 179 m maximum) hypothetical sources.
    - Although EPA's MERPs Guidance assigns Alabama to the Southeast Climate Zone and Mississippi to the South Climate Zone, the climate is similar across the region including the area where ARC is located. Both the Smith County and Autauga County hypothetical sources were modeled within the same "12EUS2" photochemical modeling domain.
- GP notes that among all 68 hypothetical sources simulated by EPA across the entire U.S., Autauga County is an outlier that results in the highest estimate of secondary $PM_{2.5}$ formation, roughly 4 times the average of all hypothetical sources and 2.7 times the average of all hypothetical sources in the South and Southeast Climate Zones.

For each hypothetical source, EPA's database viewer compiles the estimated maximum 8-hour average ozone and 24-hour/annual average $PM_{2.5}$ concentration as a function of the downwind distance, emissions of each precursor, and source height. GP selected the 90-meter stack height for NO_X and SO_2 emissions since ARC emits these pollutants from tall stacks (90 m or taller) that exhaust from the largest sources (i.e., power boilers, chemical recovery units, and lime kilns). GP selected the 10-meter stack height for VOC since ARC emits this pollutant from a wide variety of emission units that are closer to ground level than tall stacks.

2.9.1. Estimates of Ozone Formation from Precursor NO_X and VOC Emissions

GP estimated increases in ambient ozone concentration resulting from the proposed *major modification* by comparing mill-wide *potential emissions* of NO_X (3,146 tpy) and VOC (2,808 tpy) to *actual emissions* of NO_X (1,862 tpy) and VOC (318 tpy) reported in Calendar Years 2022 and 2023 to determine the maximum increase in each precursor: 1,284 tpy NO_X and 2,490 tpy VOC. GP then evaluated downwind ozone concentrations for the Smith County hypothetical source emitting 1,000 tpy NO_X from a 90-meter stack and 1,000 tpy VOC from a 10-meter stack. (Hypothetical source VOC emissions of 3,000 tons per year were simulated only

for a 90-meter release.) GP analyzed the results of the hypothetical source simulation for each downwind distance ranging from 10 meters to 300 meters to calculate the concentration response to the modeled emission rate for each precursor (MERP), as summarized in the following example concentration for 20 km downwind.

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration (ppb)}}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase (ppb)}$$

$$1{,}284 \text{ tpy } NO_X \times \frac{4.427 \text{ ppb}}{1{,}000 \text{ tpy } NO_X} = 5.68 \text{ ppb}$$

$$2{,}490 \text{ tpy VOC} \times \frac{0.0995 \text{ ppb}}{1{,}000 \text{ tpy VOC}} = 0.25 \text{ ppb}$$

$$\mathbf{5.68 \text{ ppb} + 0.25 \text{ ppb} = 5.93 \text{ ppb}}$$

As discussed subsequently in Sections 3 and 4 of this modeling protocol, the result indicates that the proposed modification would case a significant impact of ozone in excess of the 1.0 ppb SIL; however, when added to the representative background concentration, the result is less than the NAAQS and therefore would not cause or contribute to nonattainment of the standard.

2.9.2. Estimates of Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Significant Impact Analyses

GP used a similar approach to quantify secondary $PM_{2.5}$ using EPA's MERPs but performed distinct evaluations for the significant impact analysis, NAAQS analyses, and PSD Increment analysis because the relevant quantity of precursor emissions differs for each analysis.

EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance acknowledges that emissions rates simulated in modeling analyses should not represent the emissions increases calculated for PSD applicability determinations that rely on *projected actual emissions* and *baseline actual emissions*. However, the guidance does not prescribe how to quantify the precursor emissions increases should be simulated in a situation such as this proposed *major modification* at an existing *major stationary source* that involves new units, modified units, and units that are "affected" in the sense that *actual emissions* may increase only because of increased utilization. ADEM advised GP[12] to consider the emissions increases in terms of maximum *potential* or *allowable emissions* minus *actual emissions* from only those emissions units that are newly installed or modified as part of the *project*, plus units that are affected and increase utilization if those units have not previously been subject to BACT determination. The resulting determination of emissions increases is summarized in Table 2-9.

[12] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), September 26, 2024.

Table 2-9. Emissions increases of NO_X and SO_2 precursors simulated to cause secondary $PM_{2.5}$ in the significant impact analysis.

Highlighted rows indicate emissions units included in the analysis because they are newly installed or physically modified as part of the project, or will increase utilization and have not previously been subject to BACT (red font).

			Prior BACT?		2022		2023		2-year "Past Actual"		PTE		PTE-Past Actual (SIL)	
Unit	PSD Status*	Substatus	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2	NOX	SO2
No. 7 Power Boiler	Affected	†Utilization	No	No	270	0.3	279	0.4	274	0.3	786	2,097	512	2,096
No. 7 Recovery Furnace	Affected	†Utilization	Yes	Yes	897	3.5	832	4.6	864	4.1	978	1,513	114	1,509
No. 7 Smelt Dissolving Tank	Affected	†Utilization	NA	Yes		0.0		0.0		0.0		22		22
No. 7 Lime Kiln	Modified	Modified	Yes	Yes	37	2.6	35	2.4	36	2.5	122	24	86	22
No. 8 Power Boiler	Modified	Replaced	Yes	Yes	29	0.1	28	0.1	28	0.1	56	0.9	28	0.9
No. 8 Recovery Furnace	Modified	Physical Change	Yes	Yes	628	1.8	591	1.7	610	1.8	1,041	592	431	591
No. 8 Smelt Dissolving Tank	Modified	Removed	NA	Yes		1.7		1.7		1.7				-1.7
No. 8 Lime Kiln	Affected	†Utilization	Yes	Yes	47	0.4	48	0.4	47	0.4	159	111	112	111
Incinerator	Affected	†Utilization	No	No	3.2	43.0	1.4	18.9	2.3	30.9	3.2	95.1	0.9	64.2
Modified/Affected Units					**967**	**49**	**934**	**25**	**951**	**37**	**2,009**	**2,809**	**1,058**	**2,772**

**"Affected" indicates emission unit is not being physically modified as part of the current or contemporaneous project, but may experience an actual emissions increase because of increased utilization.

**For affected emission units that are not being physically modified as part of the current project, potential emissions are simulated using the emissions limit and temporally representative operating level (TROL).

The proposed *project* does not cause a *significant emissions increase* of SO_2 because *projected actual emissions* are less than the *significant emission rate* (40 tpy), consistent with reported actual emissions in the past several years. *Potential emissions* of SO_2 are considerably higher than *actual emissions* because of permitted use of alternative fuels with higher sulfur content than rarely combusted, and because stack tests demonstrate considerably lower emission factors than applicable emissions standards, prior BACT determinations, or published emissions factors used to establish emissions limitations. GP is not requesting that any enforceable emissions limitations on precursor emissions as part of this significant impact analysis but may do so if necessary to reduce estimated concentrations of secondary $PM_{2.5}$ that affect a modeled violation of the NAAQS.

The resulting emissions increases (1,058 tpy NO_X and 2,772 tpy SO_2) were evaluated using EPA's MERPs for the Smith County, Mississippi source emitting 1,000 tpy NO_X and 3,000 SO_2 from a 90-meter stack to determine the secondary $PM_{2.5}$ concentrations.

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$1{,}058 \text{ tpy } NO_X \times \frac{0.108 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.119 \ \mu g/m^3$$

$$2{,}772 \text{ tpy } SO_2 \times \frac{1.864 \ \mu g/m^3}{3{,}000 \text{ tpy } SO_2} = 1.723 \ \mu g/m^3$$

$$\mathbf{0.119 \ \mu g/m^3 + 1.723 \ \mu g/m^3 = 1.841 \ \mu g/m^3 \text{ 24-hour average } PM_{2.5}}$$

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$1{,}058 \text{ tpy } NO_X \times \frac{0.0049 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.0051 \ \mu g/m^3$$

$$2{,}772 \text{ tpy } SO_2 \times \frac{0.106 \ \mu g/m^3}{3{,}000 \text{ tpy } SO_2} = 0.098 \ \mu g/m^3$$

$$\mathbf{0.0051 \ \mu g/m^3 + 0.098 \ \mu g/m^3 = 0.103 \ \mu g/m^3 \text{ annual average } PM_{2.5}}$$

The proposed project is characterized as "Case 2" under EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance because *significant **net** emissions increases* of direct $PM_{2.5}$ and at least one precursor NO_X or SO_2 result. Therefore, the preceding secondary concentrations of $PM_{2.5}$ will be added to the results of the AERMOD analysis of direct *significant **net** emissions increases* to calculate total concentrations of $PM_{2.5}$. This analysis is conservative because the screening concentration of secondary $PM_{2.5}$ is unlikely to occur at the same location (i.e., a boundary or proximate receptor) and particular 24-hour averaging period associated with the AERMOD result for direct $PM_{2.5}$. Nevertheless, GP expects that a successful compliance demonstration can be prepared with this conservative assumption. GP notes that the distance-dependent secondary $PM_{2.5}$ formation peaks within 50 km of the source and decreases with further downwind distance. Annual average secondary $PM_{2.5}$ attributed to ARC emission increases peaks at 20 km downwind, is less than 40% of the peak nearer the fenceline, and the concentration is approximately 50% of the peak at 50 km downwind. 24-hour average secondary $PM_{2.5}$ attributed to ARC emission increases peaks at 20 km downwind

2.9.3. Estimates of Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Cumulative NAAQS Analyses

GP anticipates that a cumulative analysis will be necessary to demonstrate compliance with the $PM_{2.5}$ NAAQS, for which the secondary formation associated with the total precursor emissions of NO_X and SO_2 from all emissions units is accounted, including those excluded from the estimates for the significant impact analysis. Another distinction from the significant impact analysis (and PSD Increment analysis) is that the estimate of secondary $PM_{2.5}$ formation is added to the modeled design concentration for primary $PM_{2.5}$ calculated by AERMOD for direct $PM_{2.5}$ emissions and a representative background concentration, the latter of which is determined from the design value (DV) of a representative ambient monitor. As further described in Section 3.2, the DV is a 3-year average, specifically for this analysis from Calendar Years 2021 through 2023. ADEM also recommends adding secondary $PM_{2.5}$ attributable to nearby sources that may affect the cumulative analysis modeling domain. Based on ADEM's review of precursor SO_2 and NO_X emissions from ARC and nearby sources within the modeling domain, ADEM specified the following additional secondary $PM_{2.5}$ concentrations[13]:

24-hour average secondary $PM_{2.5}$:	0.296 $\mu g/m^3$
Annual average secondary $PM_{2.5}$:	0.012 $\mu g/m^3$

The preceding values will be added to the modeled design concentration computed by AERMOD for each averaging period, including the monitored ambient background design values specified in Section 3.2 of this protocol, and the secondary $PM_{2.5}$ concentrations attributed to the project described in the preceding Section 2.9.2.

[13] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), March 3, 2025.

2.9.4. Secondary $PM_{2.5}$ Formation from Precursor NO_X and SO_2 Emissions in the Cumulative PSD Increment Analyses

Secondary $PM_{2.5}$ formation attributable to PSD Increment-affecting emissions changes are calculated in an analogous manner, yet with a different analysis of emissions changes of precursor NO_X and SO_2 since the MSBD (October 11, 2010) following the approach described in Section 2.8.6 for PSD Increment-affecting emissions of direct $PM_{2.5}$.[14] Section V.3.2.2 "Assessing Secondary $PM_{2.5}$ Impacts" [for $PM_{2.5}$ Increments Cumulative Analyses] of EPA's Ozone/PM2.5 Permit Modeling Guidance acknowledges the following (footnotes omitted, emphasis added):

> *In recent years, several rules promulgated by the EPA have resulted in control requirements that have significantly reduced NO_X and SO_2 precursor emissions affecting ambient $PM_{2.5}$ concentrations in many areas. This is particularly true in the eastern U.S. As a result, in some cases, the secondary $PM_{2.5}$ impacts may be addressed by a demonstration that provides ambient monitoring data that generally confirms a downward trend in precursor emissions occurring after the applicable $PM_{2.5}$ minor source baseline date (or the major source baseline date).* ***If it can be confirmed that such emissions reductions have occurred in a particular baseline area, it may be possible to complete the $PM_{2.5}$ increments modeling analysis simply by focusing on potential increment consumption associated with* direct $PM_{2.5}$ emissions**.

To assess emissions reductions of precursor SO_2 and NO_X emissions since the $PM_{2.5}$ MSBD in the vicinity of ARC, GP examined EPA's triennial National Emissions Inventory from 2008 (just before the MSBD in 2010), 2011, 2014, 2017, and 2020 (most recent available) for counties within 100 km of ARC – and including the existing operations at ARC – as depicted in Figure 2-9 for the following stationary source categories. Table 2-10 and Figure 2-10 confirm the expected significantly decreasing trend in both precursor SO_2 and NO_X emissions since the $PM_{2.5}$ MSBD.

Fuel Comb - Comm/Institutional - Coal
Fuel Comb - Comm/Institutional - Natural Gas
Fuel Comb - Comm/Institutional - Oil
Fuel Comb - Comm/Institutional - Other
Fuel Comb - Industrial Boilers, ICEs - Biomass
Fuel Comb - Industrial Boilers, ICEs - Coal
Fuel Comb - Industrial Boilers, ICEs - Natural Gas
Fuel Comb - Industrial Boilers, ICEs - Oil
Fuel Comb - Industrial Boilers, ICEs - Other
Industrial Processes - Ferrous Metals
Industrial Processes - NEC
Industrial Processes - Pulp & Paper
Miscellaneous Non-Industrial NEC

[14] As discussed in Section 2.8.6, the No. 7 Power Boiler and the Backup NCG Incinerator have not been physically modified since the PM2.5 MSBD; therefore, these units are not PSD Increment-affecting for PM2.5 and are not accounted for either direct or precursor emissions.

Figure 2-9. Counties within 100 km (green ring) of ARC evaluated for emissions changes in precursor SO_2 and NO_X emissions since the $PM_{2.5}$ major source baseline date.
Markers denote relative location and size of stationary sources

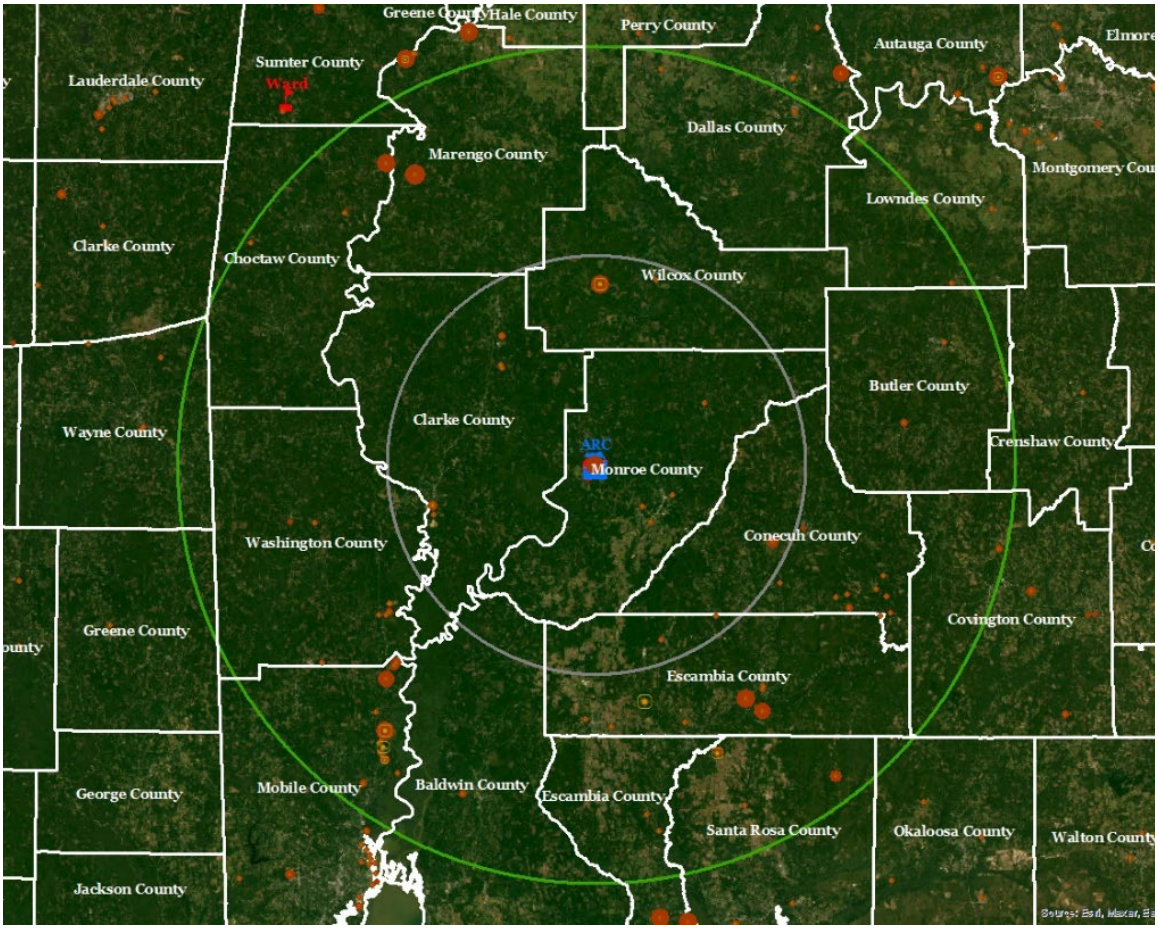
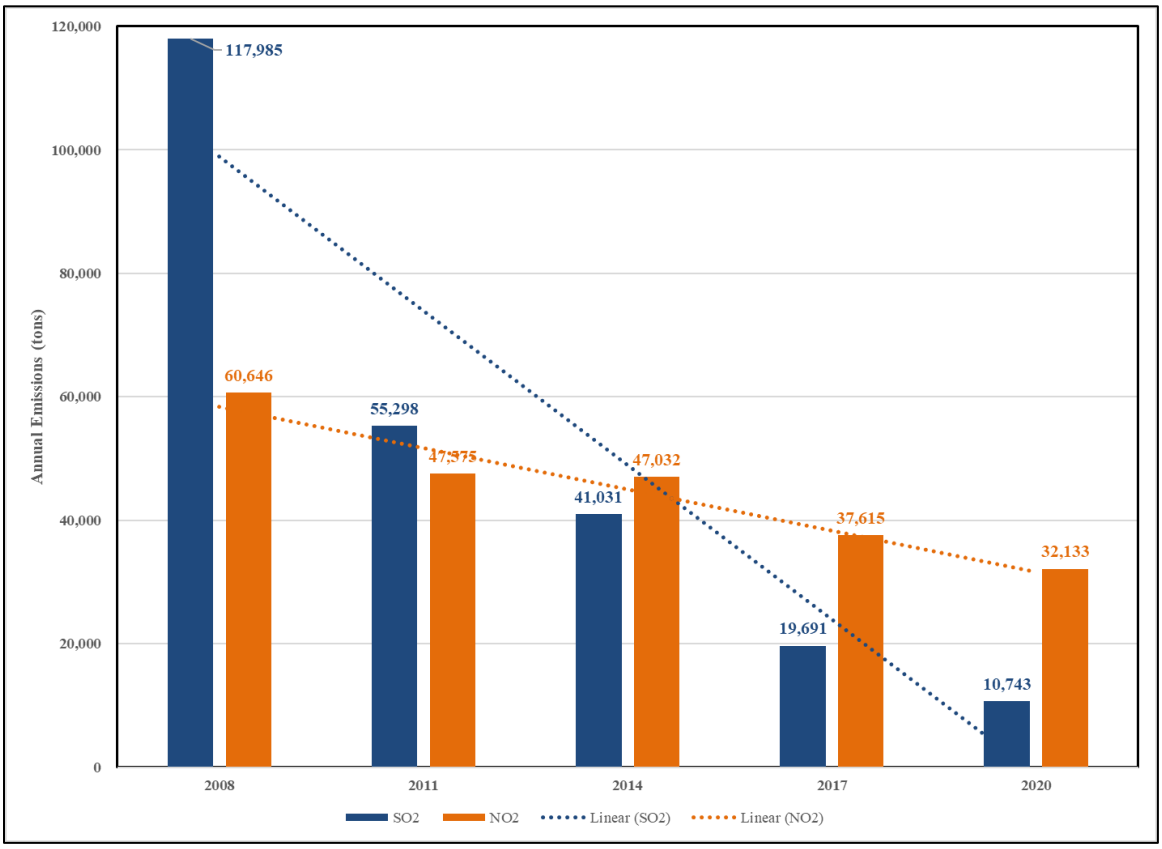


Table 2-10. Emissions changes in precursor SO_2 and NO_X emissions from stationary sources (including ARC) since the $PM_{2.5}$ major source baseline date reported to EPA's Triennial National Emissions Inventory (NEI).

	ARC		Counties within 100 km	
NEI Year	SO_2	NO_2	SO_2	NO_2
2008	1,071	1,846	117,985	60,646
2011	1,019	1,721	55,298	47,575
2014	116	1,955	41,031	47,032
2017	56	1,879	19,691	37,615
2020	4	2,061	10,743	32,133

Figure 2-10. Emissions changes in precursor SO_2 and NO_X emissions from stationary sources since the $PM_{2.5}$ major source baseline date reported to EPA's National Emissions Inventory (NEI).



Because precursor SO_2 and NO_X emissions in the vicinity of ARC, **including the ARC Mill itself**, have been reduced substantially since the $PM_{2.5}$ MSBD, secondary $PM_{2.5}$ need not be simulated as part of the PSD Increment analysis according to EPA's Ozone/PM2.5 Permit Modeling Guidance. However, consistent with ADEM recommendations, GP will conservatively include secondary $PM_{2.5}$ from ARC estimated using MERPs by comparing emissions at the $PM_{2.5}$ MSBD represented by the average of Calendar Year 2008 and 2009 actual emissions and currently permitted *potential emissions* as summarized in Table 2-11.

Table 2-11. Emissions changes in precursor SO_2 and NO_X emissions from ARC since the $PM_{2.5}$ major source baseline date relative to currently permitted *potential emissions*.

	Production Rate				SO2					NO2				
Unit	**2008**	**2009**	**Average**	**UOM**	**2008**	**2009**	**Average**	**PTE**	**Increase**	**2008**	**2009**	**Average**	**PTE**	**Increase**
No. 7 Recovery Furnace	771,717	835,338	803,527	tons BLS	936.25	969.86	953.05	1,513.13	560.08	647.76	676.12	661.94	977.92	315.98
No. 7 Smelt Dissolving Tank	771,717	835,338	803,527	tons BLS	0.40	0.42	0.41	22.36	21.95	12.73	13.78	13.26		-13.26
No. 7 Lime Kiln	85,283	92,239	88,761	tons CaO	26.17	27.05	26.61	24.19	-2.42	168.34	173.99	171.16	121.59	-49.58
No. 7 Mill Lime Slaker	85,283	92,239	88,761	tons CaO										
No. 7 Mill Pulp Dryer	450,605	451,616	451,111	ADTFP										
No. 8 Power Boiler	101,200	1,543,674	822,437	MMBtu	22.00	24.33	23.16	0.92	-22.24	5.06	176.76	90.91	56.50	-34.42
No. 8 Recovery Furnace	1,087,318	1,023,322	1,055,320	tons BLS	13.00	20.02	16.51	592.36	575.85	514.74	555.62	535.18	1,041.10	505.92
No. 8 Smelt Dissolving Tank	1,087,318	1,023,322	1,055,320	tons BLS	1.60	1.69	1.65	0.00	-1.65	17.94	16.88	17.41		-17.41
No. 8 Lime Kiln	143,461	142,717	143,089	tons CaO	9.34	9.67	9.51	110.87	101.37	32.71	33.84	33.27	159.23	125.96
No. 8 Mill Lime Slaker	143,461	142,717	143,089	tons CaO										
No. 8 Mill Pulp Dryer	509,204	561,727	535,466	ADTFP										
Total Emissions					1,057	1,115	1,086	2,285	**1,200**	1,399	1,647	1,523	2,359	**836**

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$836 \text{ tpy } NO_X \times \frac{0.112 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.094 \ \mu g/m^3$$

$$1{,}200 \text{ tpy } SO_2 \times \frac{0.436 \ \mu g/m^3}{1{,}000 \text{ tpy } SO_2} = 0.523 \ \mu g/m^3$$

$$\mathbf{0.094 \ \mu g/m^3 + 0.523 \ \mu g/m^3 = 0.617 \ \mu g/m^3} \textbf{ 24-hour average } \mathbf{PM_{2.5}}$$

$$\text{Emissions Increase (tpy)} \times \frac{\text{Modeled concentration } (\mu g/m^3)}{\text{Modeled emissions (tpy)}} = \text{Estimated Concentration Increase } (\mu g/m^3)$$

$$836 \text{ tpy } NO_X \times \frac{0.0049 \ \mu g/m^3}{1{,}000 \text{ tpy } NO_X} = 0.0041 \ \mu g/m^3$$

$$1{,}200 \text{ tpy } SO_2 \times \frac{0.198 \ \mu g/m^3}{1{,}000 \text{ tpy } SO_2} = 0.0238 \ \mu g/m^3$$

$$\mathbf{0.0041 \ \mu g/m^3 + 0.0238 \ \mu g/m^3 = 0.0278 \ \mu g/m^3} \textbf{ annual average } \mathbf{PM_{2.5}}$$

GP intends to model direct $PM_{2.5}$ emissions changes from ARC as described in Section 2.8.6 and nearby sources specified by ADEM as described in Section 3.1 of this protocol, the modeling results from which will be added to the secondary $PM_{2.5}$ quantified above.

3. PRELIMINARY SIGNIFICANT IMPACT ANALYSES

The results of preliminary significant impact analyses are summarized in Tables 3-1 (CO), 3-2 (NO_2), 3-3 (PM_{10}) and 3-4 ($PM_{2.5}$) demonstrating that GP anticipates significant impacts will result from the proposed *major modification* for certain pollutants and averaging periods; therefore, cumulative analyses to demonstrate compliance with applicable NAAQS and PSD Increments will be required. The following tables also summarize the applicable significant monitoring concentration (SMC) above which ambient monitoring may be required to measure actual changes in air quality, as well as the estimated significant impact area (SIA) that represents the most distant receptor from ARC (within the 50 km initial grids) at which a significant concentration is predicted. The following modeling results should be considered preliminary and subject to change based on the final project scope and comments from ADEM on this modeling protocol.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, for which the screening estimates of 24-hour and annual average secondary $PM_{2.5}$ were described in Section 2.9.2.

Table 3-1. Summary of Significant Impact Analysis for CO.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
1-hour	254.63522		254.64		2,000	No	None
8-hour	136.20328		136.20	575	500	No	None

Table 3-2. Summary of Significant Impact Analysis for NO_2.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
1-hour	25.75084		25.75		7.53	Yes	5.7
Annual	0.67416		0.67	14	1	No	None

Table 3-3. Summary of Significant Impact Analysis for PM_{10}.

	Concentration (µg/m³)						
Averaging Period	AERMOD	Secondary	MDC	SMC	SIL	Significant?	SIA (km)
24-hour	6.61214		6.61	10	5	Yes	1.7
Annual	1.08364		1.08		1	Yes	1.0

Table 3-4. Summary of Significant Impact Analysis for $PM_{2.5}$.

Averaging Period	Concentration ($\mu g/m^3$)					Significant?	SIA (km)
	AERMOD	Secondary	MDC	SMC	SIL		
24-hour	4.71566	1.85	6.56	0*	1.2	Yes	50
Annual	0.85027	0.10	0.95	0*	0.13	Yes	50

† As described in 40 CFR §52.21(i)(5)(*c*), in accordance with Sierra Club v. EPA, 706 F.3d 428 (DC Cir. 2013), no SMC is established to provide an exemption with regard to $PM_{2.5}$.

As summarized in the preceding tables, the proposed project is expected to cause significant impacts of 1-hour NO_2, 24-hour and annual average PM_{10}, and 24-hour and annual average $PM_{2.5}$, for which cumulative analyses will be prepared to demonstrate compliance with applicable NAAQS and PSD Increments. Significant impacts of NO_2 are only expected for the 1-hour averaging period, for which a cumulative NAAQS analysis will be prepared to demonstrate compliance with the standard established in 2010. There is no 1-hour PSD Increment for NO_2, and because no significant annual average impacts of NO_2 are expected, no cumulative NAAQS or PSD Increment analyses are required.

Figures 3-1 (1-hour NO_2) and 3-2 (PM_{10}) depicts the extent of the SIA computed in the preliminary analysis for each pollutant and averaging period having a significant ambient impact. Note that no figures are provided for CO because no significant impacts are computed. No figures are provided for $PM_{2.5}$ because the SIA is estimated to be the maximum 50 km since secondary $PM_{2.5}$ concentrations from precursor NO_X and SO_2 emissions alone (as described in Section 2.9.1) are estimated to exceed the applicable 24-hour average $PM_{2.5}$ SIL. The extent of the SIA for each pollutant and averaging period is the basis for the regional source modeling inventory described in following Section 3.1 and utilized in the cumulative NAAQS and PSD Increment analyses.

The preliminary modeling results indicate that impacts from the proposed project would exceed the SMC for $PM_{2.5}$, which is effectively zero. As described in following Section 3.2, GP proposes to utilize existing ambient monitors already operated by ADEM to characterize air quality for these pollutants (as well as ozone for which the *significant **net** emission increase* exceeds 100 tpy VOC) and select background concentrations to include in the cumulative NAAQS analyses. GP requests that ADEM confirm that additional pre-construction ambient monitoring is not required for the proposed *major modification* because ADEM's existing ambient monitoring network is sufficient to characterize air quality throughout the state including the area surrounding ARC. GP requested – and ADEM subsequently provided – an ambient monitor design value report included as Appendix A to this modeling protocol.[15]

[15] Electronic communication between Mr. Ryan Gesser (GP) and Ms. Gina Curvin (ADEM), February 17-18, 2025.

Figure 3-1. Preliminary estimated SIA for 1-hour average NO_2.
(Receptors with modeled concentrations above respective SIL shown in red, receptors with modeled concentrations below respective SIL shown in green).

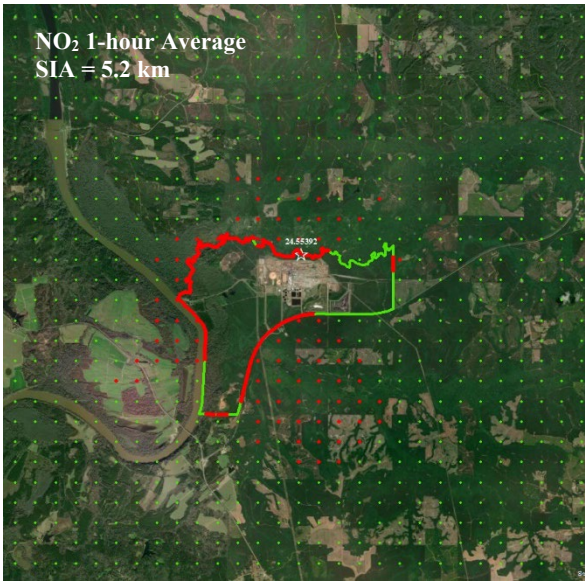


Figure 3-2. Preliminary estimated SIA for 24-hour (left) and annual (right) average PM_{10}.
(Receptors with modeled concentrations above respective SIL shown in red, receptors with modeled concentrations below respective SIL shown in green).

3.1. REGIONAL SOURCE INVENTORY

The NAAQS and PSD increment analyses include the new and existing sources at ARC, along with stationary sources in the surrounding area that also potentially affect the SIA for each pollutant and averaging period. Major sources located within each SIA, as well as other sources which could significantly impact the SIA, are generally modeled as part of the air quality impact analysis. The regional source inventory provided by ADEM represents "nearby sources" in the sense of Appendix W, Table 8-2.

Consistent with ADEM Guidelines, GP requested that ADEM develop and provide the regional source inventories based on the estimated SIA for each pollutant and averaging period for which significant impacts are expected.[16] Table 3-5 summarizes the sources and total emission rates for each provided by ADEM.[17] ADEM provided the inventory including emission points, emission rates, and source parameters which GP adapted into AERMOD-input format for the preliminary cumulative NAAQS and PSD Increment analyses described in Sections 4 and 5 of this modeling protocol. Figures 3-3 (NO_X NAAQS), 3-4 ($PM_{2.5}$ NAAQS), and 3-5 ($PM_{2.5}$ Increment[18]) depicts the location and relative size of facilities in each inventory.

Table 3-5. Summary of Regional Sources and total emissions rates (lb/hr) specified by ADEM for cumulative NAAQS and PSD Increment analyses.
For $PM_{2.5}$ PSD Increment, positive quantities represent PSD Increment consuming emissions and negative quantities denote PSD Increment expanding emissions.

ADEM Facility No.	Facility	NAAQS		PSD Increment
		NO_X	$PM_{2.5}$	$PM_{2.5}$
102-0001	Boise White Paper, LLC	497.14	192.72	20.20
102-0014	Louisiana-Pacific Corporation		57.94	16.40
102-S003	Scotch Gulf Lumber LLC - Fulton Facilty			-34.29
102-S004	Scotch Gulf Lumber - Jackson Facility			-15.28
102-S006	Scotch Plywood Co Inc - Fulton Plywood Facility		13.34	
102-S012	Browder and Sons Veneer Co Inc - Thomasville Sawmill		3.97	3.97
106-0004	Georgia-Pacific Panel Products LLC			-91.37
106-S001	Standard Furniture Manufacturing Co Inc			-6.44
106-S005	Harrigan Lumber Co			-57.92
106-S009	Scotch Plywood Co		44.27	22.03
108-0001	PowerSouth Energy Cooperative Inc - Lowman	254.25	57.91	-157.55
109-0001	International Paper - Pine Hill Mill		294.09	
502-S008	Huxford Pole & Timber Co., Inc - Huxford Facility		8.60	

[16] Electronic communication from Mr. Ryan Gesser (GP) to Mr. Steven Bissey (ADEM), October 3, 2024.

[17] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), November 6, 2024. Notwithstanding GP's initial request including PM_{10} with a SIA of 5 km, ADEM indicated "a PM_{10} inventory was also requested for this project, but a review of the PM_{10} SIA and surrounding sources indicated that a nearby source inventory for PM_{10} was not needed." Subsequent communication on November 14, 2024, confirmed the exclusion of certain other sources by ADEM based on screening techniques. ADEM provided updated parameters for certain sources on March 17, 2025.

[18] EPA's Ozone/$PM_{2.5}$ Permitting Guidance observes (Section V.1.3, "PSD Increment Expansion") "In the case of true "increment expansion," emissions in the area are allowed to increase by the amount allowed by the original increment plus the amount of actual air quality improvement (relative to the baseline concentration) achieved by the reduction of emissions because of its relationship to the established baseline dates for the area. In such cases, it is appropriate to model the actual emissions decrease as a negative amount to effectively lower the baseline concentration to simulate the expansion of the increment."

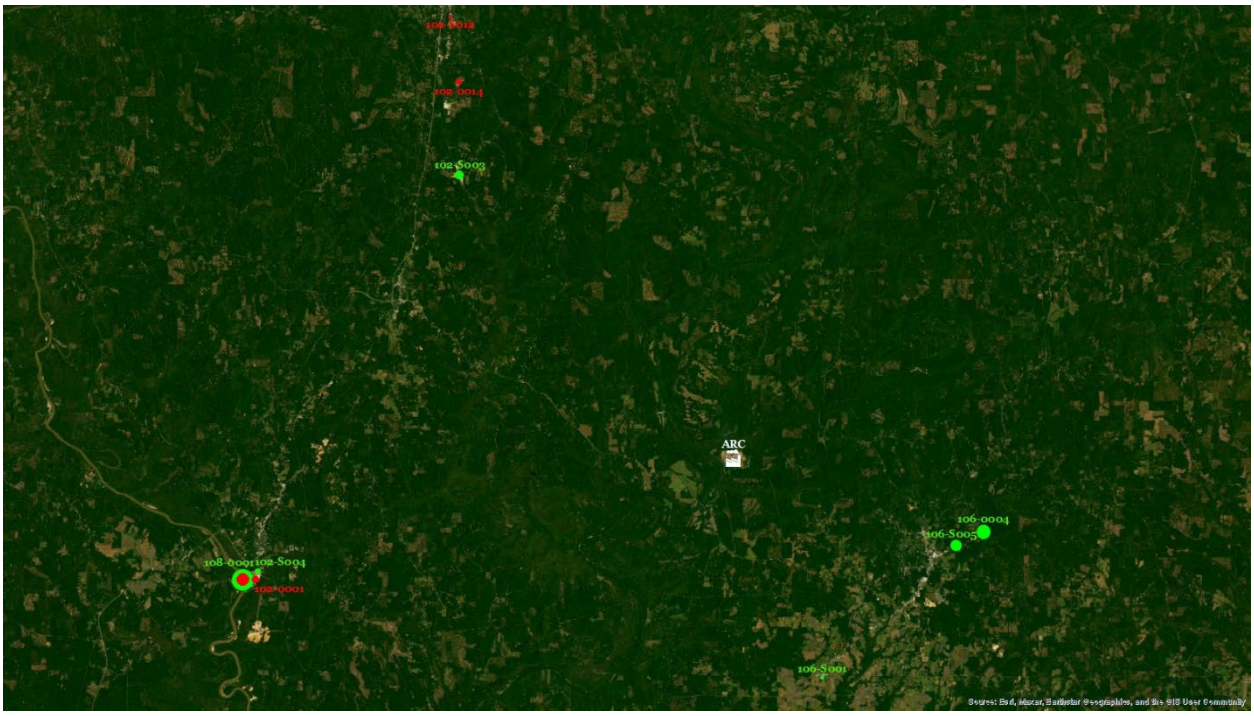
GP notes that EPA has recently finalized *Guidance on Developing Background Concentrations for Use in Modeling Demonstrations*[19] that focuses on the selection of nearby sources for cumulative NAAQS and PSD Increment analyses. Among other recommendations and observations, EPA notes that "nearby sources under consideration will typically be within the first 10 to 20 km from the project source and the area where the project source's impacts equal or exceed the SIL" (Section 4.4, "Determination of Nearby Sources to Explicitly Model," page 30). Although ADEM may not follow this guidance when developing the regional source inventories for this proposed *major modification*, GP believes ARC is well-suited to apply the guidance to minimize the number of explicitly modeled regional sources – at least for the cumulative NO_2 NAAQS analysis – because it is remotely located and there are only three stationary sources within 20 km, the nearest being roughly 15 km to the southeast. ADEM's regional source inventory generally conforms to this guidance by minimizing the inventory to include only the largest source of emissions that may affect the initially estimated SIAs.

Figure 3-3. Location of nearby sources of NO_X relative to ARC simulated in the cumulative NAAQS analysis.
Proportional size markers depict the relative amount of emissions based on ADEM inventory.

[19] https://www.epa.gov/system/files/documents/2024-11/guidance-on-developing-background-concentrations-for-use-in-modeling-demonstrations.pdf.

Figure 3-4. Location of nearby sources of $PM_{2.5}$ relative to ARC simulated in the cumulative NAAQS analysis.
Proportional size markers depict the relative amount of emissions based on ADEM Inventory.

Figure 3-5. Location of nearby sources of $PM_{2.5}$ relative to ARC simulated in the cumulative PSD Increment analysis.
Proportional size markers depict the relative amount of emissions based on ADEM Inventory. Green markers denotes source that expand PSD Increment; red markers denote sources that consume PSD Increment.



3.2. BACKGROUND CONCENTRATIONS

Because the modeled ambient air concentrations only reflect the impacts from sources explicitly modeled in the analysis, background concentrations are added to the modeled concentrations prior to assessing compliance with the NAAQS to represent contributions from other industrial sources as well as mobile and organic sources. Background concentrations are specified by ADEM Guidelines[20] as summarized in Table 3-4.

Table 3-4. Background concentrations for cumulative NAAQS analysis.

Pollutant	Averaging Period	Concentration (µg/m^3)	Monitor
NO_2	1-hour	31	Yorkville, Georgia
PM_{10}	24-hour	24	Montgomery, Alabama
$PM_{2.5}$	24-hour	16	Ward, Alabama
$PM_{2.5}$	Annual	6.2	Ward, Alabama
Ozone	8-hour	55 ppb	Ward, Alabama

GP notes that although ADEM considers background concentrations observed at the Ward (Sumter County) ambient monitor to be representative of statewide conditions across all of Alabama, this monitor would be selected as the most representative monitor specifically for ARC among all available monitors. As described in ADEM's *Ambient Air Monitoring 2024 Network Plan (May 2024)*[21], the Ward monitor represents rural, background ozone and $PM_{2.5}$ values for the state and is designated for "General/Background" monitoring objective and "Regional" spatial scale. EPA's regulations for ambient air surveillance define "regional scale" as "usually a rural area of reasonably homogeneous geography without large sources and extends from tens to hundreds of kilometers" which aptly characterizes the area of inland, rural southwestern Alabama in which ARC, the Ward monitor, and the modeling domain for this analysis. As shown in Figure 3-5, the Ward monitor is located approximately 115 km northwest of ARC and the "regional scale" (approximated as 200 km to represent "hundreds of kilometers") encompasses the entirety of the modeling domain and nearby sources included in the cumulative NAAQS analysis.

Therefore, the Ward monitor is specifically representative of ARC such that actual emissions from the mill and other nearby sources can be considered part of the monitored design value used to simulate the background concentration (e.g., 6.2 µg/m^3 for annual average $PM_{2.5}$) for the representative time period (Calendar Years 2021, 2022, and 2023). This representativeness supports the assessment of ozone and secondary $PM_{2.5}$ formation described in Sections 2.9.2 for the NAAQS analysis, as well as obviating the need to include precursor emissions and secondary formation from any nearby sources because those sources are also represented by the measured background. This situation meets EPA's expectations described in EPA's Background Concentrations Guidance and Ozone/$PM_{2.5}$ Permit Modeling Guidance: "Impacts on $PM_{2.5}$ from precursors (NO_X and SO_2) [emitted by nearby sources] are typically accounted for through

[20] Electronic communication from Mr. Michael Leach (ADEM) to Mr. Ryan Gesser (GP), June 27, 2024, confirming values listed in the ADEM Guidelines and specifying site-specific background concentrations.

[21] ADEM, https://adem.alabama.gov/newsEvents/notices/may24/pdfs/2024AmbAirPlan.pdf.

representative monitored background." "The monitor should be representative, in that it accounts for secondary $PM_{2.5}$ formation associated with existing sources both within and outside of the modeling domain, in addition to the background levels of primary $PM_{2.5}$ associated with nearby and background sources that are not included in the modeled inventory." Nevertheless, ADEM also recommends adding secondary $PM_{2.5}$ attributable to nearby sources that may affect the cumulative analysis modeling domain. Based on ADEM's review of precursor SO_2 and NO_X emissions from ARC and nearby sources within the modeling domain, ADEM specified the following additional secondary $PM_{2.5}$ concentrations[22]:

24-hour average secondary $PM_{2.5}$:	0.296 μg/m³
Annual average secondary $PM_{2.5}$:	0.012 μg/m³

Therefore, the total secondary $PM_{2.5}$ added to the computed AERMOD MDC is the sum of the preceding values and those attributed to the proposed *major modification* as quantified in Section 2.9.2:

$$\mathbf{1.841\ \mu g/m^3 + 0.296\ \mu g/m^3 = 2.137\ \mu g/m^3\ 24\text{-hour average } PM_{2.5}}$$

$$\mathbf{0.103\ \mu g/m^3 + 0.012\ \mu g/m^3 = 0.115\ \mu g/m^3\ annual\ average\ PM_{2.5}}$$

Background $PM_{2.5}$ concentrations are input directly to AERMOD to calculate the modeled design concentration for each averaging period using the `SO BACKGRND` pathway. The annual average $PM_{2.5}$ background concentration of 6.2 μg/m³ was selected simply as the most recent 3-year average (2021-2023) design value for the Ward monitor as specified by ADEM. The 24-hour average $PM_{2.5}$ background concentration was input using the `SO BACKGRND MONTH` option, initially using the 3-year average (2021-2023) design value (16 μg/m³) for the Ward monitor as specified by ADEM. For analyses of modeled violations of the 24-hour average NAAQS, if any, GP would represent the background concentration based on an analysis of daily monitoring values[23] for each calendar quarter (e.g., Q1 = January, February, March) following the approach described in EPA's Ozone/$PM_{2.5}$ Permit Modeling Guidance (Appendix D: Example of the background monitoring data calculations for a Second Level 24-hour modeling analysis). This analysis evaluates the daily $PM_{2.5}$ concentration measured at Ward to determine the maximum value for each quarter that contributes to the annual 98th percentile design concentration, averaged over three years (2021-2023) of measurements. Table 3-5 summarizes the resulting background concentrations.

[22] Electronic communication from Mr. Steven Bissey (ADEM) to Mr. Ryan Gesser (GP), March 3, 2025.

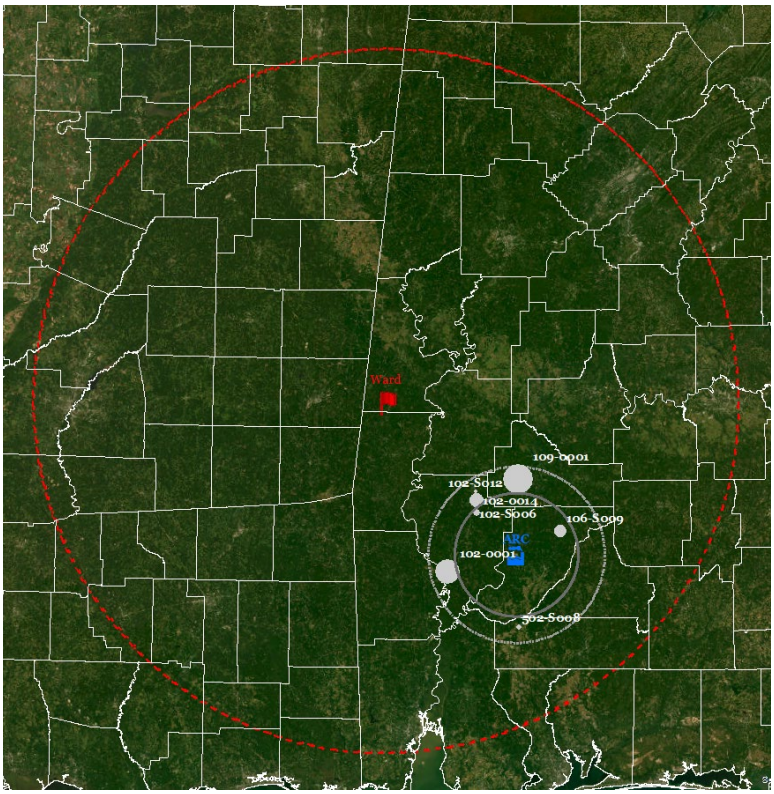
[23] EPA, https://www.epa.gov/outdoor-air-quality-data/download-daily-data.

Table 3-5. 24-hour Average $PM_{2.5}$ Background Concentrations (Ward Monitor).
Specified values represent the seasonal maximum 24-hour average concentration less than or equal to the 98th percentile annual design value.

Year	2021	2022	2023	2021-2023
Overall	15.1	14.2	17.2	**16**
Q1	14.2	13.7	16.6	**14.83**
Q2	12.3	14.2	16.8	**14.43**
Q3	15.1	14.1	17.2	**15.47**
Q4	10.0	13.9	11.0	**11.63**

Furthermore, GP requests that ADEM confirm no additional pre-construction or post-construction ambient monitoring is required because the maximum concentration associated with the proposed *major modification* quantified in the preliminary significant impact analysis described in Section 3 exceeds the $PM_{2.5}$ SMC of 0 $\mu g/m^3$. As documented in ADEM's monitoring network plan and cited in this modeling protocol, the existing monitor at Ward (Sumter County) represents conditions across inland, rural southwestern Alabama, if not the entire state, specifically including ARC and the surrounding airshed. GP requested – and ADEM subsequently provided – an ambient monitor design value report included as Appendix A to this modeling protocol.[24]

Figure 3-5. Ward (Sumter County) ambient monitor location (red flag) and 200 km regional scale (red circle) relative to ARC, the expected maximum modeling domain, and regional sources in the surrounding area.
Proportional size markers depict the relative amount of direct $PM_{2.5}$ emissions from point sources based on the ADEM inventory.



[24] Electronic communication between Mr. Ryan Gesser (GP) and Ms. Gina Curvin (ADEM), February 17-18, 2025.

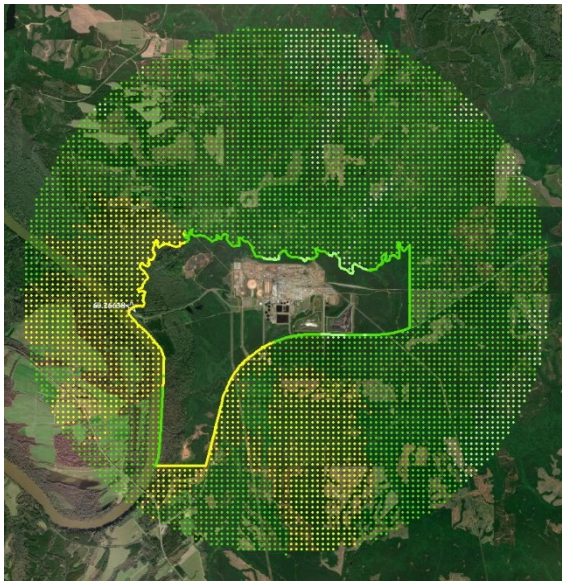
4. PRELIMINARY NAAQS ANALYSES

The results of preliminary cumulative NAAQS analyses are summarized in Tables/Figures 4-1 (NO_2), 4-2 (PM_{10}), and 4-3 ($PM_{2.5}$) demonstrating attainment of each standard using the dispersion modeling techniques and data resources described throughout this modeling protocol. The following modeling results are provided only to demonstrate that a successful analysis can be made and should be considered preliminary and subject to change based on comments from ADEM on this modeling protocol.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period for the NAAQS. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, for which the screening estimates of 24-hour and annual average secondary $PM_{2.5}$ for NAAQS analyses were described in Section 2.9.2. Background concentrations are indicated in each table for the value simulated in the analysis as described in Section 3.2. The appropriate background concentrations were simulated within AERMOD for each pollutant and averaging period; the "AERMOD" result denoted in each of the following tables represents the concentration calculated by AERMOD attributable to the modeled sources to which the indicated background concentration (and secondary concentration for $PM_{2.5}$) is added to determine the MDC.

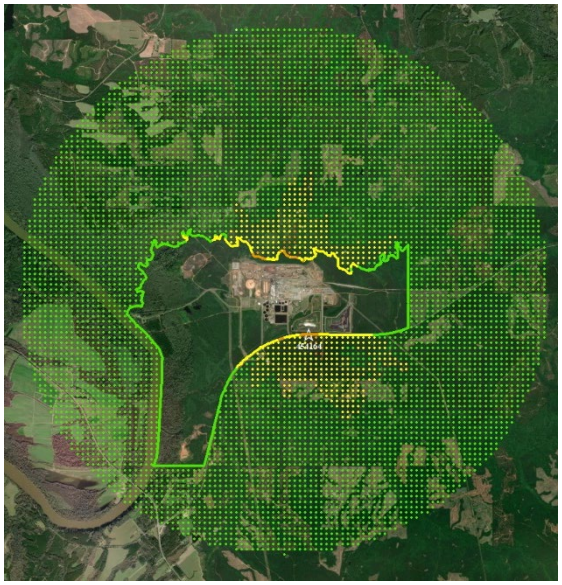
Table/Figure 4-1. Preliminary cumulative NAAQS analysis for NO_2.

Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	NAAQS
1-hour	28.80107		31	59.80	188.1



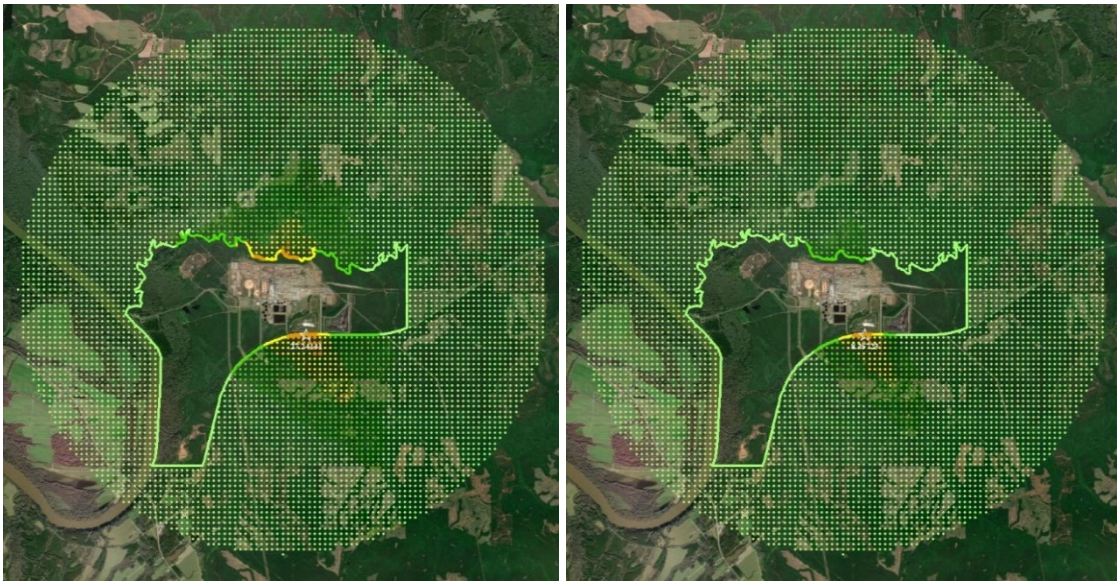
Table/Figure 4-2. Preliminary cumulative NAAQS analysis for PM_{10}.

Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	NAAQS
24-hour	15.74812		24	39.75	150



Table/Figure 4-3. Preliminary cumulative NAAQS analysis for $PM_{2.5}$ in the vicinity of ARC.
Left panels depict 24-hour average and right panels depict annual average analyses on 5 km (100-meter spacing) grid from ARC ambient boundary.

Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	NAAQS
24-hour	9.00472	2.137	16	27.14	35
Annual	2.23910	0.115	6.2	8.55	9.0



The results listed in Table 4-3 represent the MDC less than the applicable NAAQS at or near the ARC ambient air boundary within the fine and medium receptor grids where emissions from the mill – including both direct $PM_{2.5}$ emissions resulting in primary $PM_{2.5}$ concentrations calculated by AERMOD and precursor SO_2 and NO_X emissions resulting in secondary $PM_{2.5}$ concentrations estimated by MERPs – are simulated to have the highest impact. GP examined preliminary results in the vicinity of nearby sources within the 50 km grids and identified no anticipated hotspots that require additional evaluation. Localized 100-meter receptor grids would be utilized, if necessary, to identify maximum modeled concentrations in these areas.

Ozone is not simulated using AERMOD but is estimated based on the sum of ozone formed from precursor emissions (NO_X and VOC) increases plus the representative background concentration. The result summarized in Table 4-4 demonstrates attainment of the NAAQS.

Table 4-4. Preliminary cumulative NAAQS analysis for ozone.

	Concentration (ppb)				
Averaging Period	**AERMOD**	**Secondary**	**Background**	**MDC**	**NAAQS**
8-hour		5.93	55.00	60.93	70

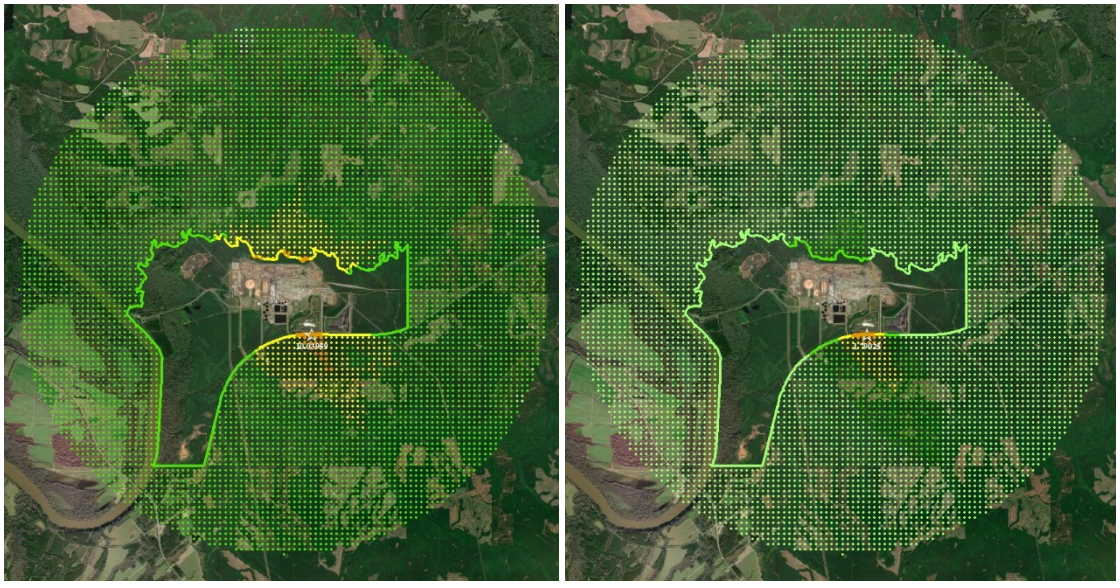
5. PRELIMINARY PSD INCREMENT ANALYSES

The results of preliminary cumulative PSD Increment analyses are summarized in Tables/Figures 5-1 (PM_{10}) and 5-2 ($PM_{2.5}$) demonstrating attainment of each standard using the dispersion modeling techniques and data resources described throughout this modeling protocol. The following modeling results are provided only to demonstrate that a successful analysis can be made and should be considered preliminary and subject to change based on the final project scope and comments from ADEM on this modeling protocol.

In each of the following tables, "MDC" represents the modeled design concentration calculated consistent with the form of each standard and averaging period for the PSD Increment. The primary MDC calculated from direct emissions of each pollutant is reported to five decimal places consistent with AERMOD model output. Secondary concentrations resulting from precursor emissions are accounted only for $PM_{2.5}$, based on the determinations of precursor SO_2 and NO_X emissions trends and comparison of ARC potential precursor emissions from PSD Increment-affecting sources as described in Section 2.9.3. Background concentrations are not simulated for PSD Increment. NO_2 was not evaluated for PSD Increment because significant impacts were predicted only for the 1-hour averaging period for which no PSD Increment has been established; no significant impacts of annual average NO_2 were predicted and the proposed major modification is presumed not to cause or contribute to any violation of that standard.

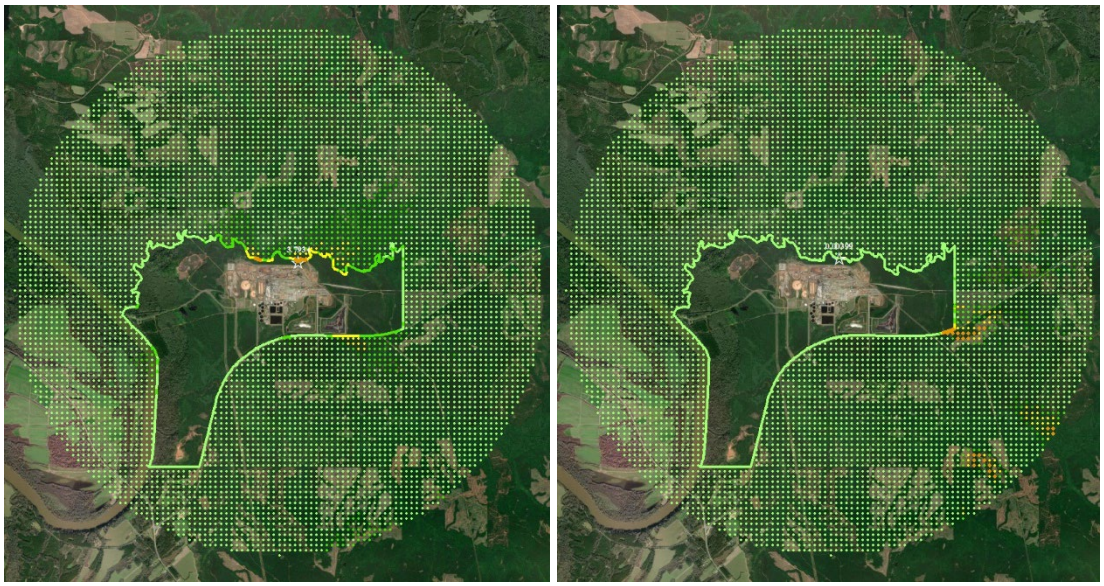
Table/Figure 5-1. Preliminary cumulative PSD Increment analysis for PM_{10}.

Averaging Period	Concentration (µg/m³)				
	AERMOD	Secondary	Background	MDC	Increment
24-hour	12.44199			12.44	30
Annual	2.76307			2.76	17



Table/Figure 5-2. Preliminary cumulative PSD Increment analysis for $PM_{2.5}$.

Averaging Period	Concentration ($\mu g/m^3$)				
	AERMOD	Secondary	Background	MDC	Increment
24-hour	5.22287	0.617		5.84	9
Annual	0.54079	0.0278		0.57	4



The results listed in Table 5-2 represent the MDC less than the applicable PSD Increments at or near the ARC ambient air boundary within the fine and medium receptor grids where emissions from the mill are simulated to have the highest impact. GP examined preliminary results in the vicinity of nearby sources within the 50 km grids and identified no anticipated hotspots that require additional evaluation. Localized 100-meter receptor grids would be utilized, if necessary, to identify maximum modeled concentrations in these areas.

6. ADDITIONAL IMPACTS ANALYSIS

ADEM Admin Code r. 335-3-14-.04(14) adopts the federal PSD requirements for an additional impacts analysis for air quality:

(a) The owner or operator shall provide an analysis of the impact on visibility, soils, and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification. The owner or operator need not provide an analysis of the impact on vegetation having no significant commercial or recreational value.

(b) The owner or operator shall provide an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the source or modification.

By definition of the NAAQS in 40 CFR §50.2(b) (emphasis added), "National primary ambient air quality standards define levels of air quality which the Administrator judges are necessary, with an adequate margin of safety, to protect the public health. **National secondary ambient air quality standards define levels of air quality which the Administrator judges necessary to protect the public <u>welfare</u>** from any known or anticipated adverse effects of a pollutant." Section 302(h) ("Definitions") of the Clean Air Act (42 U.S.C. 7602) states that language "referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants." As summarized in Table 1-2 of this modeling protocol, for every pollutant, the secondary NAAQS established by EPA and adopted by ADEM is equivalent to, or less stringent than, the primary NAAQS with which the proposed *major modification* described in this modeling protocol demonstrates attainment through explicit air quality modeling (NO_2, PM_{10}, $PM_{2.5}$, and ozone), the presumption that ARC would not cause or contribute to an violation of any standard because no significant impacts would result (CO), or the proposed *major modification* would not cause a *significant **<u>net</u** emissions increase* triggering PSD review (SO_2 and lead).

Beyond the secondary NAAQS, adverse impacts on visibility are not expected because visible emissions from the existing operations at ARC are and will continue to be limited directly in terms of plume opacity, potential emissions of visibility-affecting pollutants (e.g., PM, NO_X, and SO_2) minimized through application of BACT, and through implementation of a fugitive dust management plan. GP anticipates that increased production resulting from the proposed *project* will be primarily managed by existing employees. Construction workforce is expected to be drawn from existing human resources in the surrounding region. Construction activities are expected to be limited in duration for the installation of the new equipment within the mill's existing footprint. No expansion of onsite or nearby infrastructure (e.g., public utility connections for electricity or natural gas, public roads, or railroads) are necessary or planned to

accommodate the project. Therefore, impacts on growth will be minimal and no adverse impacts are expected to occur.

ADEM Guidelines do not require modeling of non-criteria (i.e., toxic) air pollutants. GP notes that essentially the entire mill is, and will continue to be, regulated under 40 CFR Part 63 National Emissions Standards for Hazardous Air Pollutants (NESHAP) that implement maximum achievable control technology (MACT) emissions standards for existing and new sources in the following source categories to minimize emissions of hazardous air pollutants:

- Pulping, Bleaching, and Process Condensates (Subpart S)
- Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills (Subpart MM)
- Stationary Reciprocating Internal Combustion Engines (Subpart ZZZZ)
- Industrial-Commercial-Institutional Boilers and Process Heaters (Subpart DDDDD)

7. CLASS I AIR QUALITY COMPLIANCE DEMONSTRATIONS

Federally designated Class I areas are afforded a higher level of air quality protection though more stringent PSD Increments and air quality related values (visibility and acidic deposition). Two Class I areas are located within 300 km of ARC:

1. Breton Wilderness Area is located approximately 215 km southwest.
2. Sipsey Wilderness Area is located approximately 300 km north.

ADEM Guidelines require air quality analyses only for Class I areas within 100 km.

FLAG 2010 establishes an emissions screening test to determine whether detailed modeling analyses are necessary to assess impacts on AQRV at distant (i.e., greater than 50 km) Class I areas. The "*Q*/*D*" test quantifies total AQRV-affecting emissions *Q* divided by the distance *D* (km) to each Class I area. FLAG 2010 establishes that *Q*/*D* less than 10 is a screening threshold indicating no adverse impacts may be presumed and no additional analyses are required. FLAG 2010 (Section 3.2, "Initial Screening Criteria (New)") specifies that *Q* is determined from "total SO_2, NO_X, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D)." In the accompanying response to comments, FLAG 2010 affirmed "for modified sources, applicants should only include the emission increases associated with the modification, not the total from the facility."[25] Notwithstanding this clarification, the screening estimate is challenging to construct for the proposed *project* that involves numerous emissions units – including all of the mill's significant emissions units that emit AQRV-affecting pollutants – some of which will be newly installed, others modified, yet others not physically modified as part of the *project* but affected in the sense of increased utilization and/or modified in a separate *project* that is *contemporaneous* and therefore part of the *major modification*. Accordingly, GP analyzed the screening *Q* parameter by comparing the maximum allowable hourly emission rates – as a representation of the "24-hour maximum allowable emissions" – before and after the *project* for all AQRV-affecting pollutants emitted from the mill from significant units. Table 7-1 summarizes this analysis.

[25] https://npshistory.com/publications/air-quality/flag-responses-2010.pdf.

Table 7-1. Maximum allowable emissions for AQRV-affecting pollutants before and after the proposed *major modification*.

Emission Unit	Project Status	PM_{10} [1] (lb/hr)		NO_X (lb/hr)		SO_2 (lb/hr)		H_2SO_4 (lb/hr)	
		Before [2]	After [3]	Before [2]	After [3]	Before [2]	After [3]	Before [2]	After [3]
No. 7 Power Boiler	Unmodified/Affected	56.04	65.23	151.20	179.52	403.20	478.72	2.22	2.19
No. 7 Recovery Furnace	Unmodified/Affected	52.67	52.24	223.00	223.27	345.00	345.46	26.48	26.44
No. 7 Smelt Dissolving Tank	Unmodified/Affected	14.38	14.38			5.40	5.40		
No. 7 Lime Kiln	Modified	27.43	2.61	58.90	27.76	23.30	5.52	1.20	1.20
No. 7 Lime Slaker	Replaced/New	0.51	0.56						
No. 7 Pulp Dryer	Replaced/New	4.49	2.41						
No. 8 Power Boiler	Contemporaneous/New	28.77	1.79	66.50	12.90	79.80	0.21	4.00	
No. 8 Recovery Furnace	Modified	57.67	48.63	192.70	237.69	357.30	225.00	27.40	33.78
No. 8 Smelt Dissolving Tank	Removed [4]	17.68				6.67			
No. 8 Lime Kiln	Unmodified/Affected	29.78	10.77	36.30	36.35	25.30	25.31	1.30	1.30
No. 8 Lime Slaker	Contemporaneous	0.65	0.65						
No. 8 Pulp Dryer	Contemporaneous	5.49	5.49						
NCG Incinerator	Unmodified/Affected	5.44	5.79	7.11	7.58	230.99	230.99	0.74	0.79
Total Hourly Maximum Emissions		**301 lb/hr**	**211 lb/hr**	**736 lb/hr**	**725 lb/hr**	**1,477 lb/hr**	**1,317 lb/hr**	**63 lb/hr**	**66 lb/hr**
Annualized Emissions		**1,318 tpy**	**922 tpy**	**3,222 tpy**	**3,176 tpy**	**6,469 tpy**	**5,767 tpy**	**277 tpy**	**288 tpy**
Difference	**-1,135 tpy**	**-396 tpy**		**-47 tpy**		**-702 tpy**		**10 tpy**	

1. PM_{10} emissions include filterable PM_{10} and condensable PM consistent with the methodology described in Section 2.8.3 of this modeling protocol.
2. Maximum allowable emissions "before" the proposed *major modification* represent current permit limits or calculated potential emissions rates for units that are not specifically regulated or listed in the mill's major source operating permit.
3. Maximum allowable emissions "after" the proposed *major modification* represented anticipated permit limits or potential emissions rates calculated from expected BACT determinations and/or applicable regulatory standards.
4. The No. 8 Smelt Dissolving Tank is being modified and removed as an emission point because emissions from the unit will be routed to the No. 8 Recovery Furnace as part of the proposed *project*.

This analysis indicates a reduction in maximum allowable 24-hour average emissions of AQRV-affecting pollutants, due primarily to *modification* of the existing No. 7 Lime Kiln to fire lower-sulfur fuels and using a more efficient particulate control technology, *modification* of the existing No. 8 Recovery Furnace resulting in lower BACT emissions limits, and contemporaneous replacement of the combination fuel-fired No. 8 Power Boiler with a new, natural gas-fired boiler.

Alternatively, GP calculates the following using the PSD applicability calculation of the emissions increases resulting from the proposed *major modification*, which indicates PSD review is triggered for PM_{10}, NO_X, and H_2SO_4 (but not SO_2) because of increased capacity and annual utilization, even though hourly (24-hour) allowable emissions would not increase.

$$\frac{Q}{D} = \frac{267.51 \text{ tpy } PM_{10} + 805.67 \text{ tpy } NO_x + 39.79 \text{ tpy } SO_2 + 244.69 \text{ tpy } H_2SO_4}{215 \text{ km}} = 6.31 < 10$$

Because the emissions increases resulting from the proposed *major modification* are less than the screening threshold (using either screening approach), no adverse impacts on AQRV are expected and no further analyses are required. GP previously notified Federal Land Managers of the proposed project, availability of this modeling protocol, and summary determination using the recommended "Request for Applicability of Class I Area Modeling Analysis" form.[26]

[26] Electronic communication from Ms. Gisele Majidi-Weese, PE (United States Department of Agriculture [USDA]) dated April 1, 2025, indicated the USDA "anticipates that modeling would not show any significant additional impacts to Air Quality Related Values (AQRV) at the Class I area administered by the USDA Forest Service. Therefore, we are not requesting that a Class I AQRV analysis be included in the PSD permit application." As this initial assessment represents the distant (299 km) Sipsey Wilderness, GP will seek a similar determination from the FWS representative for the Breton Wildlife Refuge (215 km distant).

APPENDIX B

Representative Ambient Monitor (Sumter, Ward County) Design Value Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: GCURVIN

RAW DATA REPORT

Report Request ID: 2263441 Report Code: AMP350 Feb. 18, 2025

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	01	119	0003	88101							

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Al Dept Of Env Mgt

SELECTED OPTIONS

Option Type	Option Value
INCLUDE NULLS	YES
DAILY STATISTICS	MAXIMUM
UNITS	STANDARD
RAW DATA EVENTS	INCLUDE EVENTS
MERGE PDF FILES	YES
AGENCY ROLE	PQAO

SORT ORDER

Order	Column
1	STATE_CODE
2	COUNTY_CODE
3	SITE_ID
4	PARAMETER_CODE
5	POC

DATE CRITERIA

Start Date	End Date
2021 01 01	2023 12 31

APPLICABLE STANDARDS

Standard Description
CO 1-hour 1971
Lead 3-Month 2009
Lead 3-Month PM10 Surrogate 2009
NO2 Annual 1971
Ozone 1-hour 1979
PM10 24-hour 2006
PM25 Annual 2024
SO2 1-hour 2010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Feb. 18, 2025

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JANUARY 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	1.0	1.1	9.5	-1.4	3.6	2.6	-.5	4.4	3.2	8.3	6.0	6.3	2.7	2.2	5.5	-1.3	4.8	-.4	-1.3	4.8	1.8	4.2	.6	4.1	24	9.5
2	5.2	6.6	1.7	6.0	2.5	6.3	2.7	2.8	2.7	2.4	2.7	2.3	2.8	7.5	.2	2.3	2.6	5.3	-.1	4.9	5.9	1.6	6.4	4.1	24	7.5
3	3.7	6.4	-.3	3.3	3.0	3.9	3.9	2.6	-2.4	6.6	3.9	6.2	3.9	.9	1.6	.1	.0	4.5	-3.5	-.2	3.1	3.2	2.0	2.2	24	6.6
4	1.8	2.2	-.8	-1.5	3.2	5.0	-.9	.1	.7	6.3	5.6	11.0	5.3	7.1	-.1	7.2	6.2	2.9	.0	.0	6.5	2.3	4.9	6.4	24	11.0
5	1.6	5.5	9.8	7.7	9.2	6.2	6.1	7.1	-.3	8.9	6.4	8.4	5.5	4.5	-.5	-1.9	5.0	.7	1.1	3.3	2.9	3.6	2.7	8.3	24	9.8
6	6.2	3.6	8.7	4.5	3.0	4.0	3.1	5.7	5.0	8.6	9.3	1.5	5.0	-.4	3.7	1.4	5.0	-.1	1.7	-.5	6.5	6.4	2.0	3.2	24	9.3
7	3.8	2.8	3.8	3.3	5.5	5.5	9.1	8.4	5.7	9.7	6.7	7.8	BA	BA	4.2	2.2	-2.0	.8	-.1	.1	.2	1.1	2.6	4.5	22	9.7
8	2.8	2.3	1.1	1.8	2.7	.0	1.5	3.0	2.1	.2	6.4	4.3	8.9	6.0	8.2	6.9	8.5	4.3	5.2	5.5	6.6	6.1	4.7	5.3	24	8.9
9	6.6	7.1	6.7	6.3	6.8	5.2	6.9	4.9	4.6	7.3	6.4	6.8	10.0	7.9	5.3	5.9	9.6	6.6	6.9	7.7	6.3	5.5	8.5	7.1	24	10.0
10	3.8	4.7	7.4	6.2	8.2	8.6	5.6	6.8	3.4	5.5	3.5	7.5	7.4	4.5	5.4	5.6	8.5	9.0	10.3	8.1	9.3	6.8	9.2	9.7	24	10.3
11	6.7	6.5	14.0	6.5	5.5	8.2	9.3	7.8	10.7	7.3	7.1	8.7	7.3	7.8	9.1	6.9	8.4	7.3	10.0	8.6	7.8	7.8	11.3	10.4	24	14.0
12	11.0	7.8	7.7	7.7	10.8	9.1	7.9	3.6	4.8	12.2	7.8	6.8	6.4	7.1	7.1	5.4	8.3	8.7	4.4	4.4	6.0	3.6	2.3	8.3	24	12.2
13	1.5	3.0	3.6	2.9	3.7	8.5	7.0	3.5	4.8	7.5	14.5	5.6	8.1	4.1	5.8	4.0	2.9	5.7	-.5	-.2	3.2	2.4	3.2	5.3	24	14.5
14	4.5	5.1	2.7	3.5	4.2	2.9	4.0	6.6	-.1	7.4	15.6	13.8	12.8	4.3	6.7	4.3	4.5	2.7	.6	1.6	2.2	4.5	4.4	5.6	24	15.6
15	7.1	9.1	6.8	2.9	.6	3.2	6.6	1.4	-.4	5.8	9.6	6.9	1.0	1.1	2.2	-2.7	1.1	1.6	-.9	1.3	1.2	-.1	5.8	4.0	24	9.6
16	1.9	.3	2.9	1.2	4.4	5.3	3.5	1.0	2.5	6.5	5.3	2.7	-.3	-3.5	4.0	.7	.9	1.5	-.8	-.8	3.5	1.1	2.1	1.7	24	6.5
17	4.2	3.9	7.2	3.0	3.7	2.5	3.9	4.4	2.6	5.8	10.0	8.1	7.5	1.4	3.5	5.2	5.8	5.6	2.2	1.9	1.2	1.7	.6	3.0	24	10.0
18	3.7	5.9	2.6	3.6	4.6	3.8	3.6	4.1	1.6	4.4	10.1	9.8	5.0	2.3	1.5	-1.7	-1.5	.3	-2.5	-2.1	-.3	2.7	4.9	1.9	24	10.1
19	4.7	-1.9	2.3	3.7	1.1	4.5	2.7	4.3	4.9	1.4	5.3	14.5	7.8	5.6	8.6	8.7	7.2	6.1	5.0	6.1	6.3	6.3	3.8	7.9	24	14.5
20	9.4	10.6	7.1	12.1	5.8	7.9	6.7	7.5	4.9	3.5	7.3	5.7	6.8	2.3	8.5	4.1	.8	1.9	2.5	2.0	2.8	4.5	5.2	5.3	24	12.1
21	6.1	3.9	7.6	4.2	10.9	12.6	12.0	10.1	8.5	8.1	5.8	7.1	2.6	2.6	AX	AX	11.5	2.7	-.6	3.2	2.8	5.7	3.6	4.9	22	12.6
22	3.2	-1.0	2.0	3.9	4.2	3.6	4.4	-1.4	3.4	AV	-.8	3.7	-2.9	4.9	.3	1.7	3.4	4.3	1.8	-1.3	3.0	4.8	3.6	4.2	23	4.9
23	7.8	6.8	5.4	5.2	7.5	6.9	8.7	7.2	6.1	4.3	7.4	5.2	5.3	9.4	3.8	6.4	3.7	3.1	3.6	6.8	4.9	5.9	3.9	2.1	24	9.4
24	5.5	1.6	6.2	6.0	3.7	5.1	2.9	2.7	5.5	3.4	8.9	7.3	8.3	3.0	6.4	-.1	5.2	3.7	1.6	4.7	4.9	6.4	8.2	6.5	24	8.9
25	9.3	7.6	5.6	7.3	8.0	9.3	7.7	1.8	7.7	.7	3.2	5.2	3.4	1.1	3.4	7.3	3.9	10.5	9.3	11.5	8.4	13.0	8.4	10.0	24	13.0
26	8.6	13.1	11.4	-1.0	.9	3.4	2.2	3.9	-2.8	9.6	2.7	5.5	2.1	4.8	-2.8	-1.2	4.7	3.8	4.5	2.7	2.9	2.6	1.4	7.7	24	13.1
27	.2	-1.8	1.3	1.0	3.2	1.8	3.1	1.1	-1.1	3.6	6.8	1.9	1.7	4.7	1.8	2.9	8.2	.1	3.8	5.1	4.6	2.1	4.9	3.5	24	8.2
28	4.3	3.7	8.2	3.4	7.1	4.1	4.9	5.6	4.1	-2.5	4.9	7.9	5.5	4.4	3.8	1.3	3.5	5.4	-.9	5.7	6.2	6.4	6.4	6.7	24	8.2
29	6.9	6.4	7.8	4.1	4.7	4.6	3.9	3.6	1.7	4.1	4.7	1.9	4.5	3.8	.4	4.1	5.0	2.9	-2.2	-.2	1.7	1.8	7.1	5.4	24	7.8
30	5.5	1.7	7.0	5.2	5.0	3.7	4.8	5.9	3.8	6.4	12.9	9.1	9.1	1.5	5.5	7.8	5.4	2.0	3.6	5.3	6.0	6.4	5.9	.7	24	12.9
31	6.3	3.1	2.7	5.0	4.3	2.5	1.2	2.7	2.7	5.9	9.7	12.3	20.1	21.0	17.5	13.8	9.6	1.9	1.5	4.1	6.5	6.7	4.9	5.4	24	21.0
NO.:	31	31	31	31	31	31	31	31	31	30	31	31	30	30	30	30	31	31	31	31	31	31	31	31		
MAX:	11.0	13.1	14.0	12.1	10.9	12.6	12.0	10.1	10.7	12.2	15.6	14.5	20.1	21.0	17.5	13.8	11.5	10.5	10.3	11.5	9.3	13.0	11.3	10.4		
AVG:	5.00	4.44	5.47	4.12	4.89	5.19	4.79	4.30	3.25	5.64	6.96	6.83	5.79	4.46	4.35	3.58	4.86	3.72	2.14	3.36	4.35	4.42	4.69	5.34		

MONTHLY OBSERVATIONS: 739 MONTHLY MEAN: 4.66 MONTHLY MAX: 21.0

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: FEBRUARY 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.8	2.0	4.6	7.0	6.8	5.6	5.6	9.4	6.8	3.1	7.8	1.0	3.0	3.8	2.9	2.5	2.6	5.8	4.0	4.3	5.0	3.5	3.7	3.8	24	9.4
2	5.2	5.0	5.2	3.1	1.8	5.5	2.8	3.7	-.3	5.2	10.5	5.4	7.1	3.2	4.9	2.8	-.7	4.9	-2.0	-.1	3.2	3.3	2.8	2.5	24	10.5
3	3.1	2.7	5.4	10.7	7.3	10.4	8.6	8.9	1.0	3.9	9.4	5.3	8.7	7.2	BA	BA	6.9	2.4	.5	1.8	1.5	2.7	3.8	.6	22	10.7
4	4.0	4.2	3.6	.4	4.0	7.5	1.1	4.7	8.9	14.0	10.8	7.3	8.6	6.5	4.5	8.4	17.4	7.4	4.0	19.1	25.8	12.0	10.2	9.3	24	25.8
5	11.9	-.1	4.1	3.8	2.2	3.1	2.5	1.8	.3	2.3	.8	5.7	-.4	2.1	2.0	2.6	1.5	1.9	1.1	2.2	-1.0	2.4	3.7	8.1	24	11.9
6	5.7	1.1	3.3	.8	3.9	.8	4.7	2.8	4.9	5.0	9.1	21.9	3.4	6.7	7.6	5.8	5.9	-3.0	2.8	-.9	-2.6	1.7	1.9	4.2	24	21.9
7	4.9	3.3	.5	1.5	4.2	4.3	-2.0	3.8	1.0	1.0	1.7	-.9	1.5	4.0	-.6	.5	1.0	5.3	.2	1.6	3.2	4.4	6.2	.7	24	6.2
8	2.7	4.9	1.4	1.4	.1	.5	.4	.7	1.6	8.1	6.4	9.1	7.8	3.4	4.4	-2.3	5.1	-.9	1.8	5.1	2.1	1.1	3.0	8.3	24	9.1
9	9.5	7.9	9.4	8.6	8.0	11.4	7.9	11.1	4.7	8.0	4.8	5.7	5.4	-.9	7.6	3.1	9.1	7.5	7.9	2.3	3.1	4.9	2.5	5.0	24	11.4
10	2.4	5.5	5.8	7.0	4.5	3.1	8.2	8.5	6.1	9.6	13.8	13.8	5.9	4.9	5.1	5.6	6.4	5.1	3.6	9.2	5.8	5.9	2.6	4.5	24	13.8
11	3.3	6.5	10.0	8.3	7.2	5.1	2.6	2.7	3.6	3.9	5.2	-.5	4.3	4.3	-3.2	-.1	1.3	-.8	-.3	.2	.6	.1	.1	-.1	24	10.0
12	3.9	1.6	3.9	2.1	5.3	5.6	3.1	3.5	7.7	10.3	11.1	8.8	4.9	5.5	3.9	1.1	6.7	9.1	10.9	9.7	8.3	8.5	14.0	13.6	24	14.0
13	12.4	18.0	12.4	5.3	6.4	3.9	6.8	8.6	6.5	8.8	9.9	9.1	9.9	13.7	13.1	7.8	15.6	13.4	15.6	16.6	19.2	18.4	18.4	19.1	24	19.2
14	19.4	20.9	24.1	17.8	18.0	19.3	21.8	16.9	18.7	19.0	19.2	17.5	17.4	20.0	19.1	15.6	13.6	12.8	14.4	15.9	14.8	16.1	11.6	9.8	24	24.1
15	6.2	8.7	7.4	6.2	2.9	1.7	4.3	3.8	3.9	3.8	7.9	2.2	1.5	-.1	3.9	1.8	4.6	6.7	3.6	8.7	4.4	5.3	4.6	6.2	24	8.7
16	5.5	7.9	6.9	8.6	5.4	6.7	7.1	7.0	5.6	6.9	6.9	4.9	5.2	5.5	10.2	11.1	9.1	4.7	3.4	6.7	10.0	4.5	3.9	5.8	24	11.1
17	6.5	5.6	4.2	6.9	4.9	3.7	6.8	3.1	7.9	8.1	9.7	9.2	13.1	12.7	13.4	5.4	6.4	13.8	4.6	10.0	7.0	6.4	AV	AV	22	13.8
18	8.0	5.6	.0	-1.5	4.2	2.4	8.8	9.7	8.6	7.9	8.4	7.8	9.3	8.0	11.0	10.5	8.0	8.2	9.3	12.5	8.8	12.8	14.1	12.7	24	14.1
19	11.6	17.1	13.6	15.9	14.8	12.4	12.2	13.8	11.4	9.6	9.7	11.5	10.5	10.5	7.0	8.2	7.1	6.5	7.7	5.3	5.9	8.6	5.7	4.6	24	17.1
20	7.5	6.9	8.2	6.7	7.1	9.1	10.1	7.1	7.5	10.3	10.7	8.4	10.1	5.4	2.7	4.2	1.3	1.5	2.7	1.6	4.0	7.1	3.5	5.3	24	10.7
21	2.9 6	1.5 6	3.8 6	1.0 6	5.7 6	4.4 6	2.5 6	1.3 6	2.0 6	9.5 6	15.5 6	4.3 6	3.5 6	.9 6	.8 6	1.9 6	3.7 6	7.5 6	2.5 6	4.6 6	4.9 6	6.6 6	6.2 6	7.7 6	24	15.5
22	8.2 6	9.2 6	5.9 6	4.8 6	6.9 6	4.7 6	7.2 6	4.3 6	4.7 6	8.8 6	2.0 6	4.6 6	3.3 6	3.0 6	5.7 6	1.3 6	.1 6	AX	BA	.4	2.1	1.2	4.2	2.0	22	9.2
23	5.8	2.8	1.0	3.7	4.2	5.1	3.5	5.6	.4	-1.2	8.5	4.7	4.7	3.6	2.3	3.0	5.9	1.3	2.5	2.3	6.3	6.1	7.1	8.8	24	8.8
24	6.3	9.4	7.0	10.5	6.8	11.6	14.6	11.9	10.1	13.7	11.4	12.5	4.8	8.9	3.8	9.4	3.0	6.5	9.8	6.5	4.2	11.2	8.8	7.3	24	14.6
25	10.4	4.5	6.1	9.8	5.8	6.6	8.9	10.0	8.2	17.5	20.1	14.1	10.2	8.1	14.0	12.8	14.8	18.0	AV	18.8	23.4	27.7	27.0	31.5	23	31.5
26	27.6	29.9	27.8	34.2	26.4	29.2	25.2	21.8	20.8	18.1	11.3	8.2	5.5	6.4	4.7	3.7	6.4	AV	-7.7	5.7	1.5	4.8	3.7	4.0	23	34.2
27	2.2	3.5	1.7	4.6	7.3	8.7	5.8	9.0	9.3	10.6	7.0	2.9	6.3	6.9	3.9	5.7	9.6	3.2	4.2	7.0	7.4	6.9	4.1	7.5	24	10.6
28	7.8	8.0	9.1	2.4	6.0	5.9	7.1	6.7	8.2	7.0	8.5	9.2	8.2	5.5	6.2	11.2	5.0	6.8	9.5	7.8	8.1	6.7	10.8	8.7	24	11.2
29																									0	
30																									0	
31																									0	
NO.:	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	26	26	28	28	28	27	27		
MAX:	27.6	29.9	27.8	34.2	26.4	29.2	25.2	21.8	20.8	19.0	20.1	21.9	17.4	20.0	19.1	15.6	17.4	18.0	15.6	19.1	25.8	27.7	27.0	31.5		
AVG:	7.45	7.29	7.01	6.84	6.72	7.08	7.08	7.22	6.43	8.31	9.22	7.63	6.56	6.06	5.96	5.32	6.34	5.98	4.48	6.60	6.68	7.18	6.97	7.46		

MONTHLY OBSERVATIONS: 664 MONTHLY MEAN: 6.84 MONTHLY MAX: 34.2

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MARCH 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	7.7	4.6	10.5	8.1	10.7	13.0	-1.0	5.0	-1.2	.0	-1.4	.0	.0	4.4	4.6	4.1	2.7	1.7	4.4	4.9	3.0	4.0	-.1	3.1	24	13.0
2	4.0	4.4	2.6	.9	-.9	7.6	2.2	5.7	4.5	2.2	1.9	2.4	2.3	3.0	.2	4.8	3.7	1.1	3.6	4.5	-2.8	3.2	1.9	4.5	24	7.6
3	6.2	3.9	3.1	5.5	9.5	5.0	4.5	5.1	4.5	6.6	11.2	3.2	5.3	4.0	1.4	5.9	4.2	4.3	1.4	-4.2	-1.0	1.1	2.4	.2	24	11.2
4	10.5	5.8	5.7	5.8	4.0	4.2	7.9	3.1	4.3	7.9	12.1	6.2	3.1	3.9	3.2	4.8	6.2	5.9	5.8	1.4	4.0	6.9	4.4	4.4	24	12.1
5	5.0	6.5	3.5	5.2	6.2	5.1	9.4	6.7	8.3	7.1	10.3	4.5	4.6	3.5	5.2	.6	.7	5.2	9.8	11.7	7.6	8.8	11.7	13.8	24	13.8
6	8.4	9.0	5.5	5.0	5.1	3.0	4.7	5.0	5.1	.2	8.8	5.4	3.7	19.3	14.9	12.3	10.6	13.4	7.0	7.0	7.4	5.7	11.8	25.3	24	25.3
7	24.3	22.7	23.7	20.7	18.1	16.4	14.2	10.0	2.1	7.0	10.6	5.7	4.0	4.5	2.2	7.0	AV	10.1	6.6	1.8	4.6	6.8	8.9	9.9	23	24.3
8	8.8	7.6	11.8	9.6	7.6	9.2	8.7	10.1	6.3	14.7	17.8	16.4	7.9	3.6	28.1	15.5	9.4	8.9	8.4	1.7	6.7	3.9	8.1	10.3	24	28.1
9	6.4	9.1	8.0	5.6	11.2	10.1	10.7	11.4	13.0	22.3	25.2	20.9	15.1	16.9	12.7	AX	9.5	10.4	10.1	8.5	14.0	13.1	12.4	21.6	23	25.2
10	18.4	17.3	21.1	17.3	13.2	15.2	20.3	13.9	12.9	11.5	8.2	5.1	6.2	4.8	7.7	5.7	3.4	6.8	9.3	6.9	4.8	7.3	7.3	5.8	24	21.1
11	1.7	3.5	.3	8.0	12.5	10.9	10.9	12.7	11.7	4.2	10.6	7.1	5.4	6.0	10.8	5.3	6.4	7.5	3.5	5.9	4.0	8.1	10.2	7.2	24	12.7
12	13.4	9.5	9.4	7.9	7.5	7.2	3.9	6.3	4.5	4.4	9.0	7.9	7.0	5.4	5.3	4.6	7.5	9.9	4.6	7.8	6.7	6.8	6.6	4.7	24	13.4
13	5.4	8.1	11.2	9.0	10.7	8.2	10.0	9.4	13.6	11.5	14.4	6.2	12.8	4.9	5.9	7.0	15.2	11.5	23.8	24.9	22.8	23.8	24.6	21.6	24	24.9
14	24.6	22.4	21.5	21.7	16.9	18.8	17.2	18.1	22.4	15.6	8.3	9.5	2.5	4.6	7.2	6.0	4.6	6.0	7.3	8.7	6.3	14.8	11.9	14.7	24	24.6
15	9.8	6.2	9.3	8.9	10.1	10.2	4.4	6.3	6.1	9.0	7.6	5.3	8.7	6.6	3.5	3.8	8.0	6.1	7.0	4.3	4.5	7.4	14.0	6.5	24	14.0
16	8.5	11.5	.7	7.7	3.2	.2	3.2	5.3	-.4	2.8	5.4	-.6	4.3	3.8	.7	4.4	5.1	3.4	7.9	3.8	6.1	2.6	7.9	2.3	24	11.5
17	3.6	7.9	7.0	6.8	10.1	7.5	5.4	6.9	8.4	5.6	6.4	13.0	8.1	10.2	4.9	4.5	7.3	1.8	1.3	10.7	2.6	6.2	.8	5.0	24	13.0
18	3.4	4.6	4.9	5.5	9.0	9.3	8.8	9.4	4.5	3.4	-1.3	.8	AV	-6.5	.4	2.9	2.3	-3.3	-.8	-.3	2.8	-.5	4.1	2.3	23	9.4
19	.6	1.1	1.6	2.5	3.2	1.6	-.5	2.2	.8	2.0	1.1	.8	-1.4	.2	-.7	3.3	.8	5.8	.5	2.9	1.5	1.5	-.3	6.0	24	6.0
20	3.1	5.1	3.9	5.4	8.8	6.0	7.3	4.8	3.1	4.7	3.8	3.6	1.1	3.7	-.8	1.1	6.4	3.3	7.1	2.5	6.3	3.3	5.0	4.6	24	8.8
21	3.2	-1.4	4.3	5.2	4.5	4.5	5.5	4.3	8.4	14.1	10.7	12.4	7.9	7.1	5.4	6.0	2.2	2.3	4.1	5.0	6.5	2.2	6.9	3.6	24	14.1
22	4.4	5.1	5.2	9.1	3.9	1.4	4.7	4.3	8.5	11.9	9.7	6.2	.8	5.3	3.4	6.5	.0	3.0	3.2	5.6	4.0	5.2	6.2	5.7	24	11.9
23	4.6	8.0	11.4	10.4	11.3	14.9	14.2	11.0	8.6	8.9	7.1	7.2	6.8	6.0	2.9	3.7	AV	-9.3	5.9	-.8	-.8	4.1	4.2	3.2	23	14.9
24	3.0	4.2	2.2	3.7	4.0	3.8	4.8	2.4	2.4	7.3	10.8	13.0	5.8	8.5	6.6	9.9	5.4	5.6	1.8	9.4	3.0	7.7	10.8	4.7	24	13.0
25	2.7	5.5	3.8	4.0	9.4	7.3	9.1	10.2	7.7	3.6	10.8	8.0	9.2	6.8	8.9	12.2	7.4	9.5	AV	AV	1.6	3.4	2.3	4.7	22	12.2
26	9.6	4.2	8.4	6.7	8.4	7.2	7.4	4.7	8.4	6.1	5.3	8.9	7.1	4.9	7.7	5.6	11.7	8.6	8.5	7.6	7.5	6.2	8.3	6.8	24	11.7
27	5.3	8.6	7.4	8.6	4.0	7.8	3.7	6.9	7.2	5.2	7.8	3.7	5.3	6.9	9.1	8.7	-1.3	11.2	9.7	7.1	9.4	11.2	10.3	7.5	24	11.2
28	8.6	7.8	9.3	5.5	10.1	9.0	10.9	10.6	-1.0	3.9	3.2	6.1	5.2	5.0	3.3	5.4	6.3	4.5	4.6	6.1	2.7	2.1	2.8	2.3	24	10.9
29	1.6	.9	4.2	2.3	5.6	5.1	7.3	3.9	4.7	6.1	5.1	3.5	6.9	5.0	2.1	2.2	6.0	5.5	3.8	4.4	-.3	6.4	8.1	6.5	24	8.1
30	6.7	6.5	4.3	7.5	5.3	4.8	4.5	4.2	8.5	12.9	8.3	8.9	5.0	6.6	-.4	8.9	19.3	6.2	7.1	1.5	9.3	7.2	4.6	6.5	24	19.3
31	9.8	7.5	6.4	5.4	11.6	9.6	7.1	9.1	7.7	5.9	5.6	16.1	-.6	.8	.1	AV	5.8	4.8	.4	3.2	4.5	3.4	4.0	3.2	23	16.1
NO.:	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	29	29	31	30	30	31	31	31	31		
MAX:	24.6	22.7	23.7	21.7	18.1	18.8	20.3	18.1	22.4	22.3	25.2	20.9	15.1	19.3	28.1	15.5	19.3	13.4	23.8	24.9	22.8	23.8	24.6	25.3		
AVG:	7.53	7.35	7.49	7.60	8.22	7.87	7.46	7.39	6.63	7.37	8.21	7.01	5.34	5.47	5.37	5.96	6.10	5.54	5.92	5.48	5.14	6.25	7.16	7.37		

MONTHLY OBSERVATIONS: 737 MONTHLY MEAN: 6.73 MONTHLY MAX: 28.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: APRIL 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.8	5.1	4.2	2.5	5.5	9.0	3.1	6.3	3.0	7.8	5.6	2.3	2.5	-.2	3.0	3.2	5.5	2.4	5.1	4.5	1.3	6.1	2.0	4.7	24	9.0
2	4.4	5.4	5.1	5.7	6.2	5.6	2.5	5.4	5.5	8.5	5.0	5.3	1.6	3.4	3.2	.9	3.4	3.2	1.9	5.2	1.0	1.2	3.4	3.4	24	8.5
3	7.5	2.8	2.4	3.5	4.7	3.9	4.4	3.3	4.3	6.1	9.7	6.8	6.0	6.5	2.7	7.1	6.1	6.5	1.4	8.2	6.3	8.1	4.1	9.4	24	9.7
4	8.1	7.2	9.1	12.1	10.2	10.2	4.7	7.0	8.5	12.0	14.9	6.2	8.3	4.0	5.7	7.3	7.3	7.4	10.2	9.5	6.1	8.0	8.3	11.8	24	14.9
5	8.6	10.9	11.6	6.5	7.9	11.1	9.3	6.2	8.1	17.3	13.8	6.0	7.0	8.0	9.3	8.8	6.9	7.5	10.8	10.9	9.0	8.7	9.4	6.1	24	17.3
6	12.5	12.8	13.1	11.1	10.2	12.6	8.0	12.7	7.6	3.7	8.1	7.5	1.9	3.1	5.0	3.0	8.0	10.9	5.3	3.2	8.2	10.7	12.5	8.6	24	13.1
7	7.5	3.5	6.5	7.7	5.1	8.7	4.4	12.8	9.9	7.8	8.1	4.5	-1.4	4.6	6.3	6.2	13.5	6.0	5.7	5.7	5.7	5.3	8.8	7.0	24	13.5
8	7.1	6.6	9.7	4.7	.4	5.9	4.7	5.4	3.8	7.3	BL	AX	3.2	6.7	4.5	3.6	2.2	3.2	8.5	4.9	4.3	4.1	4.1	5.5	22	9.7
9	4.7	7.7	6.9	4.7	6.0	13.7	7.7	11.9	7.5	10.3	11.8	6.4	12.3	13.5	4.4	11.4	7.6	8.0	4.8	5.7	7.2	6.9	6.2	7.3	24	13.7
10	8.1	AV	AV	4.2	3.2	2.4	3.1	-.6	3.0	1.0	2.7	4.4	5.2	2.5	4.4	6.0	3.7	7.9	6.4	4.7	6.7	6.3	4.7	3.7	22	8.1
11	2.4	12.5	9.2	10.0	8.2	8.8	7.7	3.1	-.5	4.7	4.8	5.3	6.6	6.3	5.1	8.1	6.9	2.4	6.1	5.1	6.1	7.6	7.5	3.5	24	12.5
12	6.9	5.7	3.9	5.6	5.4	4.4	4.2	4.2	3.6	8.7	10.8	2.8	5.4	6.0	2.4	2.2	6.1	3.5	4.4	8.1	3.4	5.7	1.3	6.7	24	10.8
13	5.4	7.6	10.0	6.8	6.9	6.2	11.5	6.5	10.0	17.0	5.6	11.8	8.2	4.7	7.1	6.9	5.1	6.3	11.7	5.7	3.8	5.9	7.6	8.7	24	17.0
14	6.9	6.0	4.5	10.2	10.6	8.4	9.9	9.2	13.6	12.8	12.0	11.2	10.5	8.1	10.0	1.8	AV	5.9	2.2	2.4	3.2	6.7	5.4	5.1	23	13.6
15	2.6	3.7	2.0	3.3	7.2	6.7	9.1	8.4	7.2	11.3	10.5	7.5	9.4	3.9	4.6	2.9	6.1	.1	5.3	4.8	8.2	8.2	7.0	6.8	24	11.3
16	7.3	7.5	7.1	10.5	9.4	7.9	1.8	2.5	5.7	5.4	.4	5.1	2.3	4.5	-.4	4.9	.6	8.9	5.8	6.9	4.9	4.4	1.2	4.7	24	10.5
17	5.3	6.9	4.8	7.6	4.4	6.3	6.4	7.2	5.3	3.9	9.6	13.3	1.2	1.1	7.8	5.1	5.9	5.3	8.6	5.7	11.2	6.4	7.4	7.9	24	13.3
18	4.4	6.4	5.7	8.1	6.7	13.2	9.7	9.1	6.3	14.5	11.4	7.2	4.5	.0	5.8	4.9	4.3	4.2	4.7	4.5	3.6	4.7	4.2	3.3	24	14.5
19	5.3	4.2	7.0	7.6	4.6	5.9	6.6	5.5	1.5	8.4	4.0	2.1	2.0	3.9	1.2	3.6	3.6	3.2	5.3	2.4	4.7	-.2	5.4	4.7	24	8.4
20	3.2	4.7	6.8	3.3	4.6	6.7	3.7	3.4	1.3	11.3	5.2	2.8	4.7	4.8	6.2	17.4	15.0	10.2	12.7	15.0	12.3	15.8	18.9	18.3	24	18.9
21	18.5	15.5	13.8	11.8	7.3	5.1	3.2	.6	1.0	6.7	AV	AV	3.7	2.3	3.6	1.9	3.5	2.9	3.0	1.5	1.0	3.7	5.9	4.8	22	18.5
22	7.3	3.6	4.3	3.7	6.1	5.7	1.7	7.6	8.1	13.3	6.4	5.1	5.5	4.7	6.1	4.3	3.1	3.3	1.7	3.1	4.0	5.9	5.6	6.6	24	13.3
23	4.5	3.0	7.2	6.5	6.6	4.4	7.0	6.6	9.8	12.7	12.6	9.7	8.0	16.6	15.5	17.1	15.0	19.4	12.0	9.5	13.9	13.1	28.5	30.4	24	30.4
24	34.4	36.2	20.4	8.0	4.3	1.6	1.9	3.4	1.6	-4.2	4.2	5.1	7.2	8.7	10.1	10.8	8.1	7.7	4.3	AV	.6	3.7	-1.9	-.6	23	36.2
25	-1.4	3.3	4.8	4.6	6.0	5.6	9.2	6.4	5.6	11.5	8.4	11.4	8.6	6.4	1.6	7.2	5.5	5.7	6.6	5.8	4.4	8.0	5.5	7.8	24	11.5
26	4.9	7.9	4.1	6.6	6.3	4.9	4.6	4.7	8.7	14.1	10.0	12.2	5.2	9.1	6.0	5.9	6.5	4.9	10.1	6.3	6.7	3.6	5.6	8.3	24	14.1
27	7.6	8.8	5.4	7.6	6.2	10.3	8.7	8.9	AV	-1.9	4.1	7.0	2.7	3.8	5.2	16.2	6.4	1.5	8.5	12.4	7.5	6.4	7.5	8.9	23	16.2
28	9.5	5.7	6.4	6.4	6.3	6.1	5.7	5.6	10.5	7.3	7.0	6.4	12.6	10.8	7.9	7.4	10.9	6.9	11.0	11.1	11.6	6.8	10.3	8.4	24	12.6
29	6.3	7.2	7.9	10.0	5.4	7.3	5.0	4.9	9.0	4.0	3.6	4.8	6.3	BA	6.7	13.1	6.3	5.3	16.0	11.2	5.7	6.3	4.9	6.3	23	16.0
30	11.7	9.7	9.7	10.4	9.7	12.4	11.3	8.9	4.3	7.0	4.4	6.7	2.3	2.3	3.7	7.2	7.2	2.3	8.6	7.9	3.5	7.2	5.8	7.2	24	12.4
31																									0	
NO.:	30	29	29	30	30	30	30	30	29	30	28	28	30	29	30	30	29	30	30	29	30	30	30	30		
MAX:	34.4	36.2	20.4	12.1	10.6	13.7	11.5	12.8	13.6	17.3	14.9	13.3	12.6	16.6	15.5	17.4	15.0	19.4	16.0	15.0	13.9	15.8	28.5	30.4		
AVG:	7.51	7.87	7.37	7.04	6.39	7.37	6.03	6.24	5.99	8.34	7.67	6.68	5.45	5.52	5.49	6.88	6.56	5.76	6.96	6.62	5.87	6.51	6.90	7.51		

MONTHLY OBSERVATIONS: 710 MONTHLY MEAN: 6.69 MONTHLY MAX: 36.2

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MAY 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	7.5	4.3	6.0	5.8	7.1	5.5	8.8	6.0	4.3	7.8	6.8	3.9	3.0	3.4	5.2	4.1	1.4	7.4	10.0	2.8	.7	6.2	5.7	4.9	24	10.0
2	2.3	3.6	8.9	4.0	1.4	4.8	6.3	7.7	3.6	9.2	9.1	10.5	10.9	7.5	15.0	11.8	5.7	6.1	9.1	6.8	5.1	5.9	4.8	3.7	24	15.0
3	1.9	2.4	2.0	2.0	5.2	2.1	3.7	2.9	1.9	4.2	7.1	5.8	8.0	10.2	11.6	12.9	11.4	13.3	11.6	11.5	14.4	11.2	9.6	9.9	24	14.4
4	10.8	11.1	9.6	8.2	10.1	4.9	8.6	9.3	4.6	10.5	12.2	12.0	AX	15.6	20.4	15.7	AV	AV	AV	-.8	7.1	3.1	7.2	5.9	20	20.4
5	7.9	8.4	7.1	6.2	6.4	9.0	6.1	4.6	10.4	4.8	3.5	7.4	7.5	4.9	1.7	8.8	7.6	4.2	2.5	.2	6.7	.9	1.1	3.7	24	10.4
6	1.6	.8	7.7	5.6	6.0	6.2	8.6	8.7	2.6	7.5	2.3	5.3	3.4	2.9	1.5	2.2	4.2	3.5	6.1	11.5	6.6	6.0	8.8	6.8	24	11.5
7	6.0	7.0	7.4	7.0	5.5	5.4	AV	AV	AV	11.3	4.0	7.6	5.8	2.8	4.0	3.3	4.4	5.2	8.8	7.5	7.9	2.8	6.3	4.2	21	11.3
8	8.5	3.4	4.8	7.0	3.4	.4	5.6	5.0	-1.7	7.4	4.5	5.0	4.3	4.6	3.1	7.4	9.3	9.4	15.5	14.8	10.5	7.6	11.8	6.8	24	15.5
9	12.6	7.1	5.6	3.5	5.6	8.3	5.7	6.8	.3	8.2	5.3	8.6	6.3	6.4	6.7	7.1	9.6	9.2	12.0	8.6	5.9	7.4	9.1	8.5	24	12.6
10	9.4	4.6	1.8	5.4	-.2	.9	6.0	5.2	2.8	3.4	-2.4	8.3	4.9	3.8	3.5	4.9	5.1	2.2	8.3	13.2	6.7	10.4	9.4	12.0	24	13.2
11	8.6	10.9	7.7	8.1	11.2	11.5	9.4	9.7	6.3	10.6	7.5	15.3	17.8	6.5	5.8	5.3	5.5	5.4	4.8	10.3	9.0	10.8	9.3	11.2	24	17.8
12	11.8	6.0	1.6	-.6	1.4	3.3	4.1	3.8	4.9	3.8	4.7	8.3	1.4	10.1	3.5	9.1	6.9	4.9	7.6	6.6	6.4	5.4	6.5	7.3	24	11.8
13	7.8	9.4	7.8	8.5	4.9	4.1	5.1	2.8	3.4	1.2	.4	3.3	2.0	5.7	6.7	5.2	4.5	2.4	4.6	5.5	4.6	4.1	6.0	6.1	24	9.4
14	5.6	5.0	2.8	5.7	5.3	3.0	2.6	8.8	3.6	5.4	6.3	3.0	6.7	-.2	2.6	1.3	3.6	7.2	3.7	10.0	6.5	5.0	5.1	5.6	24	10.0
15	7.0	7.3	5.6	4.4	5.5	7.4	.5	9.3	6.5	10.2	6.9	6.1	2.7	4.8	5.0	6.3	4.2	12.1	11.6	20.9	16.9	14.4	14.7	11.3	24	20.9
16	14.2	11.9	11.9	11.5	14.3	12.5	10.3	10.0	4.9	11.4	9.7	7.7	5.2	6.9	8.6	3.5	7.3	11.6	5.4	12.1	11.6	12.8	8.1	10.8	24	14.3
17	7.4	7.6	8.9	8.1	9.1	5.5	6.1	3.0	4.0	7.7	6.8	4.2	5.0	8.3	6.8	8.5	6.6	7.9	21.9	1.5	7.7	7.2	3.5	10.1	24	21.9
18	3.6	5.7	4.9	3.3	6.6	5.6	4.3	6.8	9.9	7.1	10.3	2.5	6.1	8.1	17.3	5.3	4.9	4.4	8.4	6.8	8.6	8.5	9.2	6.0	24	17.3
19	8.3	5.3	8.9	6.7	6.5	6.0	5.2	1.4	4.5	3.2	4.2	1.2	6.0	4.0	3.8	4.3	5.2	4.3	6.0	6.6	3.2	5.8	9.8	8.8	24	9.8
20	8.5	10.6	9.7	8.6	9.0	6.1	2.0	3.9	1.7	10.1	.9	5.8	5.5	6.1	7.4	2.8	AV	-2.1	2.2	7.3	5.3	6.6	10.1	5.0	23	10.6
21	7.0	5.4	6.3	9.0	7.7	7.4	5.3	7.2	1.9	5.9	3.5	4.1	12.1	11.2	13.0	12.2	6.4	7.3	8.9	6.4	9.7	9.0	8.8	8.1	24	13.0
22	4.6	7.7	8.5	7.8	8.6	7.9	5.3	7.1	11.5	14.1	9.4	8.8	7.3	5.0	6.1	6.1	8.1	4.5	6.6	7.0	4.4	5.5	3.8	4.8	24	14.1
23	4.2	6.4	3.8	1.7	4.2	6.7	2.7	4.8	-3.1	8.6	9.2	4.9	9.4	7.3	6.3	5.3	5.2	11.1	7.9	12.0	12.9	9.2	10.6	6.9	24	12.9
24	8.4	8.3	7.7	4.2	7.3	6.8	5.4	6.3	1.6	8.0	8.5	9.3	8.2	10.7	13.1	10.9	13.4	10.9	9.3	13.9	13.3	7.6	10.2	6.0	24	13.9
25	12.2	12.9	11.5	9.0	8.9	6.2	8.5	5.4	4.9	9.8	7.0	5.5	9.0	9.1	7.1	11.7	8.5	8.6	11.4	22.1	12.8	13.8	11.7	14.4	24	22.1
26	12.1	11.1	12.3	7.4	10.8	11.8	10.7	9.9	7.2	7.6	7.1	7.4	8.2	5.3	8.6	4.7	7.8	8.7	14.3	10.6	10.2	5.2	2.1	6.2	24	14.3
27	7.1	5.0	1.5	5.5	3.9	2.8	4.3	8.2	4.5	5.4	11.5	6.4	6.3	5.1	4.8	1.8	2.8	7.3	9.3	14.6	9.5	8.0	8.7	11.1	24	14.6
28	10.8	12.6	9.7	9.8	9.3	10.4	5.8	6.8	2.5	10.6	9.1	8.0	5.4	10.2	8.8	14.3	-.2	1.6	3.8	1.7	2.9	4.3	5.1	4.3	24	14.3
29	6.1	5.8	1.8	6.8	7.6	6.4	4.9	8.0	-.3	5.3	4.7	7.2	1.5	3.3	.4	9.2	6.0	2.0	7.1	7.1	2.7	3.0	5.7	3.5	24	9.2
30	5.4	6.7	5.2	-1.8	.9	4.7	2.8	5.1	.9	5.5	1.8	3.9	5.2	.9	-.5	2.5	.4	4.3	6.4	AV	-3.5	4.5	6.0	3.9	23	6.7
31	4.6	3.7	-1.3	3.3	1.2	2.7	.8	5.9	-4.1	6.7	.6	5.0	1.9	2.7	2.7	-3.1	6.0	1.7	6.7	5.8	4.3	2.1	3.2	9.1	24	9.1
NO.:	31	31	31	31	31	31	30	30	30	31	31	31	30	31	31	31	29	30	30	30	31	31	31	31		
MAX:	14.2	12.9	12.3	11.5	14.3	12.5	10.7	10.0	11.5	14.1	12.2	15.3	17.8	15.6	20.4	15.7	13.4	13.3	21.9	22.1	16.9	14.4	14.7	14.4		
AVG:	7.54	7.03	6.38	5.86	6.28	6.01	5.52	6.35	3.53	7.50	5.89	6.53	6.23	6.23	6.79	6.63	5.92	6.22	8.39	8.83	7.44	6.91	7.48	7.32		

MONTHLY OBSERVATIONS: 735 MONTHLY MEAN: 6.62 MONTHLY MAX: 22.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Feb. 18, 2025

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JUNE 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	1.0	6.4	5.2	1.7	3.9	4.0	1.7	5.5	.5	13.1	8.9	4.8	5.2	4.5	5.0	4.9	5.5	7.1	7.7	18.5	9.2	9.9	13.4	11.7	24	18.5
2	8.0	14.2	9.0	15.1	10.1	8.0	4.3	5.0	6.4	6.1	.9	5.4	AX	7.1	12.4	3.2	12.3	6.5	5.3	3.7	5.8	4.9	6.7	8.6	23	15.1
3	6.4	6.4	7.1	6.2	7.8	6.4	4.8	-1.5	1.9	3.2	8.5	7.4	6.7	21.3	-3.6	9.0	12.7	9.4	13.4	10.2	14.3	3.1	3.2	5.8	24	21.3
4	4.5	4.3	3.0	5.3	3.1	.4	5.3	3.0	5.9	8.1	4.3	8.9	8.7	7.8	15.5	12.9	10.8	7.9	5.2	7.1	6.2	5.6	5.3	7.7	24	15.5
5	2.9	5.0	8.9	6.7	7.2	6.3	6.0	7.4	2.4	10.0	1.9	4.9	4.8	9.2	2.3	8.1	7.0	7.1	4.7	3.9	5.4	3.4	2.2	5.4	24	10.0
6	3.9	10.3	2.0	8.3	5.8	7.3	8.0	3.8	1.3	-.1	4.9	AV	AV	-5.6	-2.3	-1.2	2.0	.7	3.1	3.2	.3	2.8	2.7	AV	21	10.3
7	AV	2.5	2.5	1.1	-1.0	5.3	-.9	-.5	-.6	7.2	.2	3.1	4.3	1.6	8.3	4.8	18.0	2.3	6.0	4.1	1.6	2.8	5.1	5.8	23	18.0
8	3.7	3.6	5.7	8.7	3.5	8.3	8.1	5.7	10.9	4.1	9.2	4.9	4.1	4.7	8.3	.9	2.3	1.8	4.4	2.8	2.3	2.8	1.4	6.2	24	10.9
9	5.0	4.2	8.4	6.9	5.5	4.2	6.5	4.6	5.8	4.9	6.6	10.1	10.3	3.7	14.4	.1	4.7	6.9	5.7	1.0	1.8	1.7	1.1	1.1	24	14.4
10	1.0	3.7	6.1	1.0	3.7	3.7	4.4	3.2	3.3	5.1	8.6	9.0	9.3	10.0	7.9	8.4	11.5	10.1	11.4	8.8	6.9	6.9	8.2	10.7	24	11.5
11	7.8	4.7	7.5	8.5	6.6	9.3	8.2	11.5	5.8	2.2	5.0	6.1	5.1	2.3	7.2	9.2	7.8	7.9	7.1	8.9	6.9	5.1	7.4	3.7	24	11.5
12	5.7	4.2	3.3	5.7	6.6	3.4	8.5	7.6	5.5	10.2	8.0	10.5	12.7	9.3	6.5	12.3	14.4	14.0	12.3	AV	AV	1.4	3.4	11.9	22	14.4
13	4.7	6.3	5.4	8.3	7.9	4.6	2.5	AV	AV	11.5	10.2	13.4	12.4	11.3	18.5	10.9	9.8	1.6	3.9	4.3	4.9	4.4	3.4	2.7	22	18.5
14	4.5	6.0	10.3	8.5	10.0	9.2	5.3	9.3	2.8	6.3	7.7	7.1	7.7	8.6	13.7	18.0	12.1	AV	AV	-2.3	5.2	2.2	6.7	5.0	22	18.0
15	4.4	10.5	6.5	9.2	10.3	10.5	12.0	13.3	1.1	9.6	13.3	13.9	10.2	8.3	10.1	9.9	8.2	11.6	7.9	11.0	10.4	13.8	12.4	9.0	24	13.9
16	12.1	10.0	7.4	10.5	8.5	12.3	8.6	7.2	2.9	7.7	7.6	6.6	4.8	2.9	5.5	7.7	4.9	5.3	5.6	9.8	9.9	8.5	10.0	9.0	24	12.3
17	6.1	9.7	10.5	10.0	10.4	10.2	7.3	11.3	2.5	9.3	10.9	8.8	5.2	6.7	6.4	8.2	7.8	10.1	7.5	12.4	13.9	13.8	12.2	13.5	24	13.9
18	13.7	12.7	10.3	10.6	10.9	10.1	9.4	9.2	12.0	13.8	14.4	5.2	12.2	10.9	12.1	8.1	13.6	17.5	16.8	17.9	14.3	12.0	13.5	15.3	24	17.9
19	15.1	14.8	18.2	9.8	11.4	12.3	10.3	7.7	9.0	13.6	9.7	1.5	-.2	.5	1.3	4.1	2.4	6.3	.2	2.3	2.8	.9	3.7	AV	23	18.2
20	-9.2	2.4	4.0	5.5	2.0	1.0	4.6	2.4	-2.9	.8	23.1	5.6	5.6	2.5	5.9	7.0	5.0	5.1	13.0	10.0	9.8	5.4	5.9	4.5	24	23.1
21	5.0	5.5	4.7	8.4	2.9	7.8	4.5	5.6	5.0	5.5	7.4	8.0	4.5	5.1	4.2	4.7	5.9	12.6	-1.2	3.4	1.9	6.0	-.7	.0	24	12.6
22	3.3	-.3	3.0	2.6	3.8	3.6	2.2	6.1	7.8	7.8	10.4	3.4	8.0	5.7	3.8	6.5	8.5	7.8	7.3	9.2	4.8	8.7	7.1	6.0	24	10.4
23	6.0	7.8	7.8	6.9	5.5	6.3	6.0	8.6	6.8	6.2	4.8	5.9	9.7	6.4	5.8	3.0	10.3	4.1	10.8	9.0	10.2	10.8	12.5	10.0	24	12.5
24	9.6	9.0	9.4	11.2	6.2	5.3	6.2	9.7	4.7	5.9	6.5	10.1	10.4	11.9	5.9	4.9	11.6	14.2	9.4	9.9	8.7	10.2	8.3	11.5	24	14.2
25	8.1	9.8	8.0	5.5	8.2	6.0	2.8	4.1	3.4	4.1	7.4	2.4	3.9	1.0	6.0	6.0	3.7	3.6	6.3	9.9	7.1	7.7	7.5	5.5	24	9.9
26	3.9	6.2	6.1	6.9	4.2	4.0	2.6	10.2	.9	5.2	4.6	5.8	1.7	5.0	3.3	4.2	6.2	3.8	10.1	3.3	7.8	7.1	4.9	5.9	24	10.2
27	6.5	6.6	1.5	5.6	3.8	1.9	3.9	5.0	-1.5	5.1	7.1	6.4	7.9	6.8	5.5	3.7	1.7	4.1	5.6	3.2	3.7	5.2	4.7	5.6	24	7.9
28	3.3	4.9	5.2	4.3	3.2	5.4	1.1	3.4	-.9	2.2	3.8	6.9	1.8	6.7	3.4	2.6	4.0	7.2	4.9	4.6	4.4	3.5	3.4	2.2	24	7.2
29	5.5	5.5	4.9	1.8	3.3	1.5	2.2	4.2	-2.2	10.5	5.9	7.2	10.8	BA	11.1	-.1	4.1	6.3	9.7	7.4	6.2	5.8	5.2	7.0	23	11.1
30	5.3	4.1	3.9	3.9	5.3	5.0	3.4	5.8	-.3	5.9	8.4	4.1	4.3	2.2	-1.1	3.5	3.0	6.0	9.6	5.3	5.9	5.1	4.1	5.0	24	9.6
31																									0	
NO.:	29	30	30	30	30	30	30	29	29	30	30	29	28	29	30	30	30	29	29	29	29	30	30	28		
MAX:	15.1	14.8	18.2	15.1	11.4	12.3	12.0	13.3	12.0	13.8	23.1	13.9	12.7	21.3	18.5	18.0	18.0	17.5	16.8	18.5	14.3	13.8	13.5	15.3		
AVG:	5.44	6.70	6.53	6.82	6.02	6.12	5.33	6.15	3.46	6.84	7.67	6.81	6.86	6.15	6.78	6.18	7.73	7.20	7.37	6.99	6.64	6.05	6.16	7.01		

MONTHLY OBSERVATIONS: 707 MONTHLY MEAN: 6.46 MONTHLY MAX: 23.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JULY 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	4.0	3.0	.1	-.2	4.7	5.7	3.3	1.6	3.9	2.8	-.1	AX	BA	-8.2	5.0	3.3	1.2	6.0	1.3	8.3	2.8	3.0	4.7	6.0	22	8.3
2	2.6	4.3	3.2	6.1	6.2	6.6	.2	3.0	4.1	5.1	6.9	17.6	1.2	6.1	11.7	6.5	3.4	6.9	3.7	10.4	7.7	5.8	3.5	6.5	24	17.6
3	5.9	3.4	4.9	6.1	8.5	8.7	7.8	12.0	9.5	10.1	14.0	7.0	10.7	6.3	7.5	7.8	8.5	10.3	11.8	12.1	13.9	12.4	11.1	11.1	24	14.0
4	12.6	7.3	8.1	9.3	7.9	10.3	8.2	5.0	4.6	9.4	10.3	8.0	7.6	7.1	12.6	7.7	6.4	10.9	8.2	7.6	9.3	11.4	9.4	8.9	24	12.6
5	7.7	6.8	9.5	5.9	2.6	7.4	6.0	8.4	5.8	12.2	12.8	13.4	9.8	8.9	11.0	6.5	18.1	11.3	8.1	16.6	7.4	10.2	7.7	8.9	24	18.1
6	5.9	6.0	3.8	4.9	6.7	3.7	6.8	6.7	5.6	10.1	4.4	2.5	19.0	-.5	13.8	4.4	9.4	7.2	5.4	8.4	5.7	5.2	5.2	2.3	24	19.0
7	11.2	3.4	8.2	5.5	8.4	6.4	5.1	2.8	5.4	4.6	3.1	1.9	7.6	8.1	10.7	4.0	-2.1	8.6	.8	3.2	1.9	3.3	2.3	4.8	24	11.2
8	7.8	1.7	2.8	2.8	1.9	2.2	4.1	5.1	4.9	4.3	7.6	8.7	BA	-6.2	4.4	3.6	6.7	5.0	6.5	AV	-6.1	5.7	6.0	11.1	22	11.1
9	2.7	3.5	1.9	4.8	1.9	6.3	6.1	2.5	6.4	9.7	7.4	5.1	3.4	3.7	6.4	6.3	6.1	-2.3	1.5	1.5	5.5	2.7	2.3	6.8	24	9.7
10	5.5	3.4	1.8	1.9	2.6	4.2	3.1	2.5	-.4	10.3	9.3	8.4	4.6	2.1	2.4	1.6	5.2	7.8	-.2	3.4	4.1	2.6	3.9	2.4	24	10.3
11	5.9	8.0	3.7	7.5	6.2	7.1	7.0	8.2	9.6	13.2	12.5	6.3	11.3	10.8	13.1	6.9	6.5	.9	1.7	2.5	4.5	3.6	2.7	4.2	24	13.2
12	5.7	4.6	5.0	.4	4.3	2.2	10.1	2.1	5.8	7.4	9.4	12.5	20.4	6.0	1.7	4.9	6.9	5.9	5.4	4.3	7.6	8.4	9.6	10.9	24	20.4
13	8.8	8.3	7.4	10.4	5.4	9.9	4.9	5.7	6.1	3.9	5.4	5.5	11.9	10.0	12.8	14.0	16.0	6.2	7.3	10.5	6.7	2.6	4.0	5.0	24	16.0
14	4.0	7.3	4.5	2.3	2.9	4.8	1.9	-.6	-1.2	5.2	5.1	3.1	3.8	13.6	9.6	8.2	16.7	1.3	6.8	5.1	2.7	2.4	1.4	-.3	24	16.7
15	3.9	2.9	3.5	5.2	5.1	2.9	2.9	3.8	4.9	11.7	8.6	8.3	8.8	6.7	5.5	7.1	10.9	9.6	8.6	9.5	9.6	7.9	11.1	1.5	24	11.7
16	9.4	1.8	-1.2	.8	3.2	4.8	1.4	2.2	5.2	9.2	6.9	12.2	9.6	8.5	11.2	17.6	-3.2	4.8	2.1	2.7	6.5	.4	6.5	4.0	24	17.6
17	1.8	6.5	3.5	3.3	3.1	.6	2.2	5.6	.7	-2.3	1.1	7.2	-4.2	AV	AV	AV	-3.7	-1.8	2.4	.6	1.8	3.8	1.7	4.9	21	7.2
18	.0	-.8	3.2	3.5	.9	1.3	2.9	2.2	.4	5.5	1.2	6.2	14.3	-1.7	-5.0	-.2	1.9	2.4	1.0	5.7	5.6	5.8	-.9	2.1	24	14.3
19	4.1	2.2	3.0	-.8	4.0	4.8	2.5	AV	AV	.5	4.1	-.5	3.2	1.4	3.8	7.5	3.3	7.3	9.4	8.4	16.1	5.0	4.5	6.6	22	16.1
20	7.7	8.6	7.7	5.4	4.8	5.2	3.2	6.3	6.7	6.7	6.9	4.5	3.4	-3.8	-.6	2.1	3.4	8.5	7.3	-.4	3.3	1.3	2.2	2.2	24	8.6
21	1.7	1.3	2.3	2.1	4.2	6.6	.4	3.9	2.0	.2	1.3	2.8	2.7	5.0	10.7	1.2	-4.8	8.2	.7	8.5	3.3	6.7	-.5	3.5	24	10.7
22	3.1	6.0	2.6	2.1	2.1	4.2	2.7	5.9	2.8	9.0	9.2	8.6	11.5	11.6	10.1	9.1	8.5	14.1	1.6	7.4	5.4	5.0	3.3	3.4	24	14.1
23	6.3	3.1	3.8	4.5	5.3	4.3	3.4	7.5	7.2	8.6	14.2	9.4	11.9	12.4	10.4	15.3	5.2	7.8	10.0	11.5	6.0	8.8	9.9	5.8	24	15.3
24	6.9	4.7	8.1	3.7	7.3	5.9	5.5	9.4	4.2	5.7	9.0	15.0	14.4	14.3	11.7	13.3	20.0	16.2	15.3	18.1	15.1	14.1	13.5	14.3	24	20.0
25	12.2	10.9	9.9	9.4	11.6	10.5	9.4	7.9	8.3	10.5	10.9	14.1	14.2	10.4	12.9	15.4	16.5	12.3	12.1	9.6	10.9	7.3	8.7	9.4	24	16.5
26	9.1	10.4	9.1	7.1	11.9	5.2	8.4	11.7	8.4	10.4	11.2	14.2	9.8	13.4	14.7	20.7	4.6	6.2	10.4	12.7	7.1	9.5	10.6	9.2	24	20.7
27	11.6	11.5	14.8	10.3	12.8	11.7	10.8	11.3	7.6	11.6	10.8	BA	1.9	13.3	14.6	12.5	12.0	10.4	16.7	19.2	11.0	2.2	1.5	1.7	23	19.2
28	-.1	1.4	1.4	4.9	4.3	1.8	2.8	7.5	1.8	8.5	9.0	8.5	11.0	9.0	10.5	AV	3.5	7.4	6.1	11.9	11.0	9.6	6.0	10.9	23	11.9
29	9.7	6.5	6.7	7.0	9.9	8.5	4.3	11.9	9.7	15.4	12.2	14.5	16.5	12.5	12.1	13.1	14.5	11.5	17.3	16.1	17.5	13.7	11.3	10.2	24	17.5
30	12.8	15.2	10.4	8.8	10.7	8.8	10.0	11.2	13.3	14.2	19.2	19.8	14.9	15.3	17.2	12.2	17.9	17.8	19.5	24.6	21.5	19.5	14.2	14.9	24	24.6
31	13.4	14.1	15.2	12.3	11.7	16.0	14.0	16.2	14.3	16.5	16.8	21.3	17.5	16.1	18.5	17.0	18.2	16.7	21.5	22.5	20.0	19.4	15.6	15.1	24	22.5
NO.:	31	31	31	31	31	31	31	30	30	31	31	29	29	30	30	29	31	31	31	30	31	31	31	31		
MAX:	13.4	15.2	15.2	12.3	12.8	16.0	14.0	16.2	14.3	16.5	19.2	21.3	20.4	16.1	18.5	20.7	20.0	17.8	21.5	24.6	21.5	19.5	15.6	15.1		
AVG:	6.58	5.72	5.45	5.07	5.91	6.08	5.21	6.32	5.59	8.07	8.41	9.18	9.40	7.07	9.37	8.61	7.67	7.92	7.43	9.42	7.92	7.07	6.23	6.72		

MONTHLY OBSERVATIONS: 733 MONTHLY MEAN: 7.17 MONTHLY MAX: 24.6

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

Feb. 18, 2025

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: AUGUST 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	14.2 6	16.0 6	17.2 6	17.0 6	12.9 6	14.4 6	15.2 6	14.0 6	AV	10.7 6	15.9 6	18.6 6	19.7 6	25.0 6	18.7 6	22.2 6	25.9 6	25.7 6	24.2 6	23.1 6	29.8 6	7.7 6	7.9 6	6.1 6	23	29.8
2	7.4 6	7.3 6	6.9 6	6.5 6	8.3 6	8.5 6	6.3 6	4.3 6	10.9 6	12.0 6	AV	-6.6 6	.6 6	3.9 6	-.4 6	.5 6	2.2 6	2.6 6	7.6 6	9.6 6	5.2 6	4.9 6	8.5 6	11.6 6	23	12.0
3	11.1 6	13.6 6	11.0 6	14.5 6	10.4 6	10.9 6	13.0 6	11.5 6	13.7 6	16.3 6	20.5 6	AX	BA	25.7	25.0	22.7	23.4	24.5	26.6	25.6	24.2	26.0	21.3	24.6	22	26.6
4	23.2	25.4	21.6	22.2	20.1	18.2	20.0	17.0	11.4	18.0	17.7	18.8	18.2	13.2	16.4	12.8	17.1	14.0	14.5	21.7	16.3	17.8	17.0	13.7	24	25.4
5	17.6	13.8	15.7	16.5	16.1	17.0	18.4	13.7	15.2	13.7	19.6	13.3	11.0	14.1	13.3	9.8	7.9	9.9	13.2	14.1	13.2	10.6	9.0	11.5	24	19.6
6	9.2	11.6	10.8	12.0	10.8	13.0	14.3	13.1	7.6	6.4	7.9	12.1	6.9	13.1	6.7	10.0	11.2	12.3	20.1	17.8	16.2	15.9	13.8	13.7	24	20.1
7	11.2	11.3	10.6	9.8	9.8	11.2	10.6	9.7	12.3	13.3	19.3	18.1	18.4	19.6	21.1	16.5	17.1	20.3	19.8	21.8	17.8	17.0	16.4	17.2	24	21.8
8	13.8	14.0	14.1	14.7	13.3	14.1	16.1	13.7	16.2	15.5	17.6	22.5	18.6	19.6	16.5	24.1	23.4	30.1	31.1	29.8	27.7	27.0	23.3	23.6	24	31.1
9	20.9	22.0	19.1	18.8	15.0	16.5	15.1	15.4	9.5	12.9	12.1	14.1	10.9	8.0	10.7	16.6	12.5	7.6	10.9	12.5	10.5	8.0	11.9	6.3	24	22.0
10	8.5	4.7	6.7	6.1	7.3	4.9	5.4	2.8	3.5	8.2	4.6	8.4	11.3	9.9	7.8	5.7	10.6	6.4	10.7	13.8	11.8	8.9	7.9	4.6	24	13.8
11	5.0	8.6	3.1	6.6	9.4	5.5	3.2	11.6	4.7	10.4	6.3	7.2	10.7	12.9	15.0	AV	4.2	.2	7.7	10.0	6.1	7.0	2.0	8.3	23	15.0
12	5.5	7.6	6.1	3.9	5.7	1.8	5.2	6.2	-.7	8.1	6.1	6.0	-3.0	9.1	7.9	3.3	8.6	.4	2.4	9.2	5.0	1.8	5.2	4.0	24	9.2
13	1.8	1.8	3.6	1.4	3.3	-5.3	1.9	2.4	2.6	2.6	2.1	3.1	1.2	1.6	1.9	2.6	2.2	4.0	5.5	9.8	7.1	8.7	6.5	3.4	24	9.8
14	4.2	5.7	2.8	3.7	5.0	3.9	-.4	7.4	3.6	4.7	4.7	8.1	6.3	4.0	7.1	6.2	7.5	8.3	15.1	8.7	5.0	12.5	10.9	3.1	24	15.1
15	.9	-.1	5.7	2.0	6.5	4.1	1.8	5.2	4.9	3.6	9.2	4.6	11.5	7.2	11.1	16.8	3.6	5.7	7.6	3.4	6.7	2.8	7.8	8.8	24	16.8
16	7.9	6.4	9.5	6.5	7.4	5.4	2.6	4.0	3.9	2.7	9.0	4.7	11.8	8.7	5.4	4.9	6.5	6.9	7.6	9.2	5.5	7.9	8.1	5.7	24	11.8
17	2.5	6.0	2.5	3.8	7.0	4.0	6.3	4.2	-.4	3.8	8.6	BA	-3.7	7.0	7.1	5.5	1.8	5.8	7.6	12.2	2.6	5.1	5.1	3.1	23	12.2
18	4.7	1.1	1.6	7.9	7.2	4.7	1.9	4.1	-.2	11.4	6.7	7.0	9.8	2.1	4.2	7.3	4.8	5.4	6.9	11.5	7.6	6.8	7.7	7.0	24	11.5
19	6.0	5.3	4.6	4.7	4.0	9.3	4.3	2.7	.7	4.9	5.1	7.7	3.5	6.5	2.7	9.9	5.2	-1.2	1.6	-2.2	1.6	3.1	-.1	.7	24	9.9
20	.6	2.6	6.1	4.3	5.2	1.9	3.9	-.5	3.6	-1.8	1.5	4.8	4.4	5.1	9.0	14.0	1.2	-2.9	3.8	5.1	.3	3.5	1.4	-.2	24	14.0
21	1.2	1.7	4.7	-.7	.6	2.1	2.6	3.2	3.1	6.8	9.0	11.4	21.6	10.5	15.6	12.1	19.6	17.3	10.4	10.0	14.0	9.2	6.7	7.1	24	21.6
22	6.8	8.1	11.1	7.0	5.2	8.1	5.0	9.2	10.8	5.0	13.3	15.1	14.1	13.8	21.4	11.6	11.9	7.7	9.3	5.6	9.4	8.2	6.9	8.4	24	21.4
23	8.7	9.9	7.8	3.8	10.5	7.5	9.2	7.5	4.4	6.9	8.4	8.2	11.2	9.3	8.8	12.2	10.1	9.6	9.5	11.0	10.2	9.7	9.1	6.0	24	12.2
24	11.4	8.6	8.4	8.9	8.8	7.2	5.8	11.1	6.2	9.5	8.9	12.1	9.7	5.5	5.9	9.5	10.5	8.8	10.0	15.0	11.2	9.0	8.8	9.4	24	15.0
25	8.9	9.9	11.3	10.7	11.9	8.5	7.8	7.2	5.2	10.8	11.7	7.6	6.7	9.5	15.4	8.2	16.5	-.5	12.0	13.3	7.4	10.4	10.5	6.6	24	16.5
26	6.2	7.3	3.6	5.2	4.8	3.4	6.4	7.1	3.7	2.4	8.8	8.2	5.6	7.7	14.1	8.8	16.8	14.9	13.3	9.2	14.1	8.8	11.3	9.3	24	16.8
27	7.5	7.2	7.2	8.0	8.3	6.5	8.3	7.3	8.9	13.8	11.1	8.6	10.7	13.9	2.4	10.5	6.1	9.4	8.0	8.1	4.2	7.2	2.2	1.6	24	13.9
28	6.0	6.3	4.6	3.5	3.9	3.5	5.7	4.9	-2.0	4.9	3.9	3.9	6.4	BA	-5.9	.6	5.1	6.7	5.5	7.9	5.9	5.5	6.1	3.4	23	7.9
29	6.6	.1	3.8	3.1	3.1	3.6	5.3	-.5	4.2	7.8	3.1	3.3	3.3	9.9	2.6	2.5	5.4	2.8	2.9	2.2	2.5	2.5	3.1	5.8	24	9.9
30	3.8	.7	.7	7.9	8.3	1.9	3.0	2.7	AV	AV	3.1	3.0	4.9	-.2	.5	4.5	-2.3	.1	1.9	5.2	-2.5	-1.3	AV	AV	20	8.3
31	-1.7	6.5	.6	-1.7	AV	AV	AV	AV	AV	AV	-3.5	4.1	7.6	5.2	7.0	5.6	3.4	8.0	5.9	6.0	4.2	5.6	5.4	6.0	18	8.0
NO.:	31	31	31	31	30	30	30	30	28	29	30	29	30	30	31	30	31	31	31	31	31	31	30	30		
MAX:	23.2	25.4	21.6	22.2	20.1	18.2	20.0	17.0	16.2	18.0	20.5	22.5	21.6	25.7	25.0	24.1	25.9	30.1	31.1	29.8	29.8	27.0	23.3	24.6		
AVG:	7.79	8.10	7.84	7.70	8.34	7.21	7.47	7.41	5.98	8.46	9.08	8.90	9.00	10.05	9.52	9.92	9.68	8.74	10.75	11.62	9.70	8.96	8.72	8.01		

MONTHLY OBSERVATIONS: 727 MONTHLY MEAN: 8.72 MONTHLY MAX: 31.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: SEPTEMBER 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.5	5.9	3.3	2.1	2.2	2.6	4.1	3.4	1.3	5.3	9.4	9.4	7.7	5.8	7.4	12.4	4.5	15.9	-.7	3.5	6.2	4.0	2.0	4.4	24	15.9
2	1.7	2.8	8.1	2.5	7.9	10.9	8.5	8.0	9.1	4.7	1.6	2.7	5.3	7.6	8.7	10.3	5.3	2.8	9.1	11.6	11.1	8.0	7.9	AV	23	11.6
3	AV	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
4	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
5	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
6	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
7	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
8	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AX	BA	-2.6	12.4	15.7	13.5	15.3	13.2	10.3	12.3	12.3	11.4	4.0	10.8	12	15.7
9	8.9	9.0	14.3	9.4	12.1	8.1	9.1	8.9	5.7	5.4	7.0	5.1	4.1	4.5	6.3	5.3	5.8	4.7	11.4	7.5	5.5	7.1	2.9	5.1	24	14.3
10	4.0	1.4	4.9	7.1	1.7	4.5	3.2	6.8	5.3	1.8	2.4	6.2	4.8	3.1	4.2	4.9	8.1	5.4	6.8	8.6	3.1	4.5	3.8	1.9	24	8.6
11	4.8	-.5	6.5	3.4	3.2	6.5	8.2	6.1	7.4	9.9	9.2	8.1	6.3	8.6	6.2	6.2	5.3	10.7	10.6	11.0	8.5	7.7	6.0	10.0	24	11.0
12	2.8	8.7	4.2	2.2	9.6	2.8	7.1	10.0	8.6	7.3	14.7	8.8	12.4	4.8	7.1	5.0	5.5	6.9	11.0	4.4	6.9	5.6	2.2	4.9	24	14.7
13	1.6	3.7	3.9	1.4	5.1	3.6	3.5	4.0	6.6	4.6	4.0	6.2	6.2	8.0	8.6	9.0	1.1	4.3	10.4	6.3	3.5	5.0	5.2	6.8	24	10.4
14	9.1	3.7	7.1	5.0	2.8	3.2	3.7	2.1	7.4	4.8	8.1	5.0	13.0	8.6	13.9	8.6	11.6	6.1	6.5	9.3	9.1	7.7	7.8	7.5	24	13.9
15	10.9	12.4	12.2	13.5	14.0	12.5	14.2	10.1	9.5	6.8	10.5	6.2	9.0	7.8	5.6	8.2	14.5	12.4	12.5	3.5	5.4	9.9	1.6	5.2	24	14.5
16	5.4	2.7	.8	.1	.4	2.1	2.7	1.2	2.6	-2.4	BA	BA	BA	-3.5	8.7	-1.9	8.7	-3.6	.1	-.5	-1.2	5.0	2.4	6.0	21	8.7
17	2.9	.6	4.5	3.5	3.8	3.9	6.3	2.9	7.9	-2.6	-.4	3.1	4.8	-1.3	8.7	-5.4	4.6	1.9	3.0	1.7	11.6	6.4	.9	3.5	24	11.6
18	2.1	6.5	4.8	5.1	.3	-.6	.4	4.2	4.0	2.7	-1.4	4.9	5.9	4.6	.8	-2.3	AV	AV	-2.7	.2	1.8	1.1	.1	1.7	22	6.5
19	5.2	1.3	-1.1	2.6	4.5	5.3	2.2	2.3	4.5	3.6	1.4	3.7	2.2	4.0	1.9	5.5	-.1	4.6	6.5	3.0	4.1	6.4	4.3	5.6	24	6.5
20	6.7	2.6	4.8	3.7	6.3	3.5	2.5	6.7	2.9	1.5	3.6	2.3	3.9	3.9	6.1	4.7	4.6	4.7	5.5	2.4	3.4	5.3	2.5	4.1	24	6.7
21	5.7	4.2	4.0	7.7	5.0	3.9	4.5	4.3	1.8	.6	9.0	9.0	8.5	19.7	-6.8	17.7	-1.0	4.4	7.1	10.0	8.2	4.5	6.1	2.9	24	19.7
22	8.4	4.3	4.4	6.0	3.4	6.7	6.6	1.0	2.1	-2.1	5.5	-4.2	3.8	3.7	4.8	8.2	5.4	4.9	5.3	4.3	3.8	6.6	3.6	5.0	24	8.4
23	6.4	2.0	1.2	1.4	3.2	6.6	3.5	.6	2.8	-.4	4.1	.5	2.1	.7	3.3	2.6	2.5	5.9	8.0	4.3	7.2	3.7	3.6	4.6	24	8.0
24	3.7	1.6	3.2	3.4	-.3	2.7	7.8	2.8	3.8	-.6	2.4	2.4	-1.5	4.0	4.0	4.2	1.3	1.6	7.9	4.8	4.2	6.0	6.4	4.9	24	7.9
25	1.4	4.4	2.5	4.1	3.3	7.6	2.7	4.7	5.1	.9	5.4	2.2	7.1	2.8	1.4	6.0	3.9	7.3	12.4	7.0	8.8	5.3	6.8	6.1	24	12.4
26	6.2	1.7	3.7	8.9	5.6	5.0	-.7	6.6	6.4	-1.2	8.7	7.8	9.0	8.5	7.4	8.3	8.7	8.9	14.5	5.9	8.3	6.2	8.1	8.6	24	14.5
27	8.0	8.3	7.1	7.8	6.9	6.5	8.4	5.6	13.7	11.9	6.3	8.5	8.3	5.8	6.8	11.5	7.5	10.5	13.5	13.9	10.8	5.7	7.7	6.5	24	13.9
28	5.6	7.3	6.8	7.7	4.7	7.7	6.1	4.9	13.5	14.7	6.5	4.3	6.9	5.1	7.7	4.7	8.7	1.2	1.3	3.1	1.9	2.1	3.7	-1.6	24	14.7
29	6.1	3.7	2.7	2.2	3.3	4.4	6.1	5.2	8.7	-.1	3.5	6.6	-.5	6.9	2.8	8.5	10.0	.4	2.1	2.3	3.9	-3.2	3.6	2.6	24	10.0
30	-2.0	.2	2.2	3.8	2.8	3.5	2.9	.9	4.0	6.6	10.6	2.3	-2.4	-2.3	2.3	2.9	3.1	5.9	7.2	6.5	5.3	1.7	.9	1.2	24	10.6
31																									0	
NO.:	24	24	24	24	24	24	24	24	24	24	23	23	24	25	25	25	24	24	25	25	25	25	25	24		
MAX:	10.9	12.4	14.3	13.5	14.0	12.5	14.2	10.1	13.7	14.7	14.7	9.4	13.0	19.7	15.7	17.7	15.3	15.9	14.5	13.9	12.3	11.4	8.1	10.8		
AVG:	4.96	4.10	4.84	4.78	4.66	5.15	5.15	4.72	6.03	3.49	5.74	4.83	5.18	5.35	5.74	6.34	6.04	5.88	7.18	5.88	6.15	5.35	4.16	4.93		

MONTHLY OBSERVATIONS: 582 MONTHLY MEAN: 5.28 MONTHLY MAX: 19.7

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: OCTOBER 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.3	2.5	5.9	4.6	3.3	5.6	3.2	1.4	5.9	1.6	AX	BA	10.3	13.1	12.6	9.4	12.8	15.1	11.8	13.9	11.9	9.9	10.4	9.7	22	15.1
2	11.4	9.6	12.5	9.5	11.4	7.7	11.1	11.2	14.6	13.1	11.3	15.9	11.1	7.9	7.0	8.7	9.7	8.4	3.4	3.1	1.5	1.4	1.9	1.9	24	15.9
3	2.6	4.5	6.6	4.6	4.4	4.5	4.2	3.7	6.0	4.7	6.2	6.8	3.1	9.7	8.6	-1.9	1.6	4.1	2.2	2.7	.5	.8	4.0	3.1	24	9.7
4	3.1	4.9	9.3	2.7	5.7	7.4	3.1	1.8	6.7	-.8	6.6	5.0	7.6	8.1	4.1	7.0	4.7	5.4	6.1	4.0	5.6	4.5	5.3	2.4	24	9.3
5	3.2	2.4	3.4	3.4	3.2	3.4	.2	.1	6.2	.3	-3.8	.4	AV	-.2	4.9	4.7	.3	1.7	3.7	3.9	2.5	.5	4.3	-.8	23	6.2
6	2.1	3.7	2.1	6.4	3.2	3.1	4.2	1.1	-.4	7.2	6.6	5.1	5.7	3.2	4.8	4.5	2.8	7.5	5.2	4.1	6.0	7.9	2.6	2.9	24	7.9
7	5.1	5.3	2.3	6.2	6.6	4.5	5.7	1.8	6.5	1.0	2.7	2.4	11.0	5.5	6.4	5.9	12.1	13.8	12.4	9.6	7.6	6.8	6.5	6.2	24	13.8
8	5.4	8.0	5.6	8.7	6.9	7.3	7.4	5.5	6.1	.8	5.2	5.9	2.6	7.0	2.1	8.1	7.3	9.2	15.3	7.7	6.6	8.3	5.5	6.8	24	15.3
9	11.0	6.5	6.8	8.3	6.9	4.8	5.5	4.3	10.3	3.5	10.0	7.5	11.5	11.0	10.8	9.3	11.5	14.8	12.5	12.2	10.2	11.6	7.8	10.3	24	14.8
10	7.1	8.4	12.0	11.9	11.2	12.3	6.2	7.0	7.8	3.7	6.8	12.2	6.9	4.8	7.8	12.1	11.5	10.9	11.8	10.1	10.1	8.3	11.9	9.0	24	12.3
11	12.2	9.7	8.2	7.9	9.0	7.5	9.7	7.6	7.9	7.6	8.9	4.9	4.5	7.0	4.4	4.3	4.1	5.8	10.5	7.6	3.1	4.9	4.9	4.7	24	12.2
12	4.3	5.4	4.1	7.1	2.6	4.6	6.4	3.6	7.0	-2.8	7.0	3.6	6.8	6.4	5.5	4.1	2.6	3.8	8.8	7.9	7.8	7.8	7.4	6.9	24	8.8
13	6.4	8.7	8.7	5.6	5.9	4.5	5.6	4.0	7.1	1.6	AX	AX	AX	6.0	3.8	4.0	3.9	10.9	10.7	3.6	-1.1	7.2	9.0	6.7	21	10.9
14	3.4	6.2	4.1	7.1	2.1	8.3	4.5	2.7	6.6	9.1	AV	7.4	7.8	7.3	5.6	10.1	10.7	3.5	8.5	7.3	7.6	5.0	4.4	7.7	23	10.7
15	2.3	7.1	6.3	5.3	5.3	5.2	6.7	4.8	9.0	11.0	5.3	6.3	2.8	3.5	3.6	2.4	-1.3	7.7	8.8	6.5	3.4	4.7	6.0	3.9	24	11.0
16	6.3	6.4	.7	-.5	2.1	-2.5	2.4	3.3	.1	-1.8	3.2	2.3	2.1	1.9	3.1	3.4	2.1	3.3	1.0	4.2	4.6	2.5	3.6	.2	24	6.4
17	2.7	1.8	2.5	4.1	.3	3.7	4.9	.3	.5	-2.4	4.0	1.3	1.9	1.2	3.2	2.2	1.5	2.6	2.6	7.5	5.6	.8	.3	2.0	24	7.5
18	3.0	4.1	2.2	1.9	5.0	6.6	3.6	2.3	10.1	-1.2	6.0	6.1	5.7	1.7	2.6	5.3	3.3	2.5	3.7	3.9	2.6	1.6	1.6	1.1	24	10.1
19	-.8	-.6	2.7	-.6	1.4	3.4	3.6	-.8	3.6	5.1	7.5	10.4	6.8	5.4	4.7	5.3	5.9	12.3	9.7	7.3	4.6	8.6	9.6	9.1	24	12.3
20	9.6	8.2	4.5	3.0	2.1	3.5	5.3	5.0	6.4	-.5	8.6	4.4	9.5	11.4	3.0	6.4	7.3	5.4	4.7	7.1	10.1	1.2	5.7	2.9	24	11.4
21	5.7	7.6	10.3	5.4	5.8	5.8	7.5	3.0	6.3	6.3	4.2	3.2	7.1	6.2	5.8	7.8	8.9	10.2	7.6	3.5	8.3	5.2	7.2	3.7	24	10.3
22	7.2	3.2	6.1	3.5	2.4	6.8	2.6	5.8	7.8	2.3	4.2	11.4	8.8	5.7	3.3	7.6	8.2	14.8	6.3	5.8	5.5	6.4	5.2	AV	23	14.8
23	AV	6.6	3.7	3.0	6.5	.6	3.4	2.1	5.0	1.5	9.2	5.4	5.6	3.3	7.6	2.9	4.3	7.4	7.6	5.3	5.3	2.5	4.7	4.1	23	9.2
24	4.0	8.9	6.9	8.3	7.1	4.6	5.2	4.0	6.8	7.5	6.9	9.5	5.4	2.1	9.6	8.2	9.0	7.6	6.3	5.2	2.3	6.4	10.1	3.4	24	10.1
25	3.0	4.3	5.7	9.0	5.3	6.2	7.7	5.7	3.7	4.0	3.9	1.9	8.9	-3.3	5.1	2.9	4.8	4.9	7.4	3.6	5.1	5.7	1.8	4.8	24	9.0
26	5.1	2.2	1.9	3.0	3.2	3.3	1.9	.0	2.0	-4.0	6.2	5.4	4.9	-.6	-.1	3.8	6.6	3.9	1.8	4.7	5.6	.6	2.2	3.2	24	6.6
27	3.5	2.8	5.6	7.6	6.6	5.5	3.4	5.9	4.2	3.6	AV	AV	8.8	4.4	4.1	5.1	3.7	4.7	-.9	7.9	4.0	7.2	6.0	6.2	22	8.8
28	5.6	5.0	3.7	3.7	-.3	3.1	2.7	1.7	7.0	-1.1	2.0	10.6	1.3	3.6	5.5	.7	8.2	.6	-1.3	3.3	-.4	-.7	5.0	1.4	24	10.6
29	1.4	5.1	4.9	.1	.0	1.4	-1.3	2.7	1.1	-.9	1.1	.7	-1.6	-.6	.3	2.0	-.2	-.2	.2	2.1	3.0	.7	.2	2.7	24	5.1
30	-.8	-1.2	3.7	3.7	1.8	-3.1	-2.6	2.5	-.9	1.5	.7	-1.9	-5.6	2.6	.3	-.2	1.5	1.8	1.0	2.2	5.2	2.5	2.4	2.6	24	5.2
31	2.1	3.7	3.4	2.8	.8	2.1	.3	.2	1.0	-.9	4.6	2.9	2.4	.9	1.7	2.5	2.2	6.4	1.9	3.7	1.0	1.0	1.7	.1	24	6.4
NO.:	30	31	31	31	31	31	31	31	31	31	27	28	29	31	31	31	31	31	31	31	31	31	31	30		
MAX:	12.2	9.7	12.5	11.9	11.4	12.3	11.1	11.2	14.6	13.1	11.3	15.9	11.5	13.1	12.6	12.1	12.8	15.1	15.3	13.9	11.9	11.6	11.9	10.3		
AVG:	4.68	5.19	5.37	5.07	4.45	4.57	4.33	3.36	5.55	2.60	5.37	5.61	5.64	4.72	4.90	5.12	5.54	6.80	6.17	5.85	5.02	4.57	5.14	4.30		

MONTHLY OBSERVATIONS: 733 MONTHLY MEAN: 4.99 MONTHLY MAX: 15.9

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: NOVEMBER 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	-.2	2.4	1.3	3.2	4.0	4.7	.2	2.5	1.3	.3	7.4	6.2	4.9	7.0	4.0	6.2	3.8	6.7	6.2	1.9	-1.0	2.4	-.5	4.6	24	7.4
2	4.5	6.6	6.0	6.6	7.8	5.9	8.2	4.5	8.6	4.5	5.5	11.8	4.8	2.0	.7	2.4	4.0	5.4	1.9	5.6	8.7	.6	5.9	3.1	24	11.8
3	7.6	4.3	3.8	3.2	-1.0	3.8	3.7	2.6	4.1	7.0	.2	AX	BA	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	11	7.6
4	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	0	
5	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	0	
6	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AX	AX	7.2	5.1	2.6	3.2	4.3	7.3	2.6	6.4	9.1	5.3	5.8	5.6	12	9.1
7	4.9	2.3	3.5	3.6	7.4	5.6	6.7	5.8	11.5	5.8	5.7	6.5	.3	5.6	4.4	1.0	3.9	7.6	6.3	6.5	.8	5.8	4.8	9.7	24	11.5
8	2.3	6.4	2.6	6.1	5.8	9.1	6.7	4.5	6.6	5.2	8.2	5.5	7.1	5.8	2.9	3.8	3.8	14.3	9.4	5.4	4.7	3.8	3.9	4.2	24	14.3
9	6.7	1.2	2.4	4.0	4.1	3.6	2.4	-.3	6.1	9.8	11.8	10.8	5.4	4.4	8.3	10.2	10.6	10.9	9.2	7.8	4.9	11.5	7.2	13.7	24	13.7
10	10.2	6.0	7.1	6.5	8.0	6.9	6.2	3.5	9.0	10.9	11.5	5.9	7.6	5.9	7.7	7.0	8.6	7.2	5.6	6.4	5.5	4.7	6.5	6.5	24	11.5
11	3.4	5.1	7.5	.5	8.6	4.1	7.4	7.8	8.0	5.9	3.8	8.0	6.7	-.6	1.8	3.3	1.4	2.8	4.4	.8	3.8	2.0	3.8	1.5	24	8.6
12	2.6	2.4	4.6	1.6	3.2	2.9	1.1	6.0	4.1	4.4	3.2	3.1	3.8	1.4	4.4	3.3	6.7	4.9	4.5	6.0	-.6	8.4	7.7	9.8	24	9.8
13	5.9	6.8	4.9	2.7	4.8	2.1	1.5	-1.3	4.6	5.2	1.4	2.0	-.7	5.1	2.4	4.0	5.3	-1.9	2.5	2.1	4.1	7.2	6.8	4.6	24	7.2
14	9.7	7.9	1.9	3.7	.4	.1	6.2	1.1	2.3	3.4	2.5	6.0	6.0	1.8	3.0	1.2	7.0	5.4	.5	3.1	3.0	1.7	3.5	.1	24	9.7
15	2.6	4.0	5.6	4.3	4.7	4.4	3.4	4.9	3.9	7.0	7.4	4.4	5.2	5.1	4.8	6.0	6.1	3.6	3.1	5.0	2.7	3.3	1.6	3.3	24	7.4
16	2.5	9.8	8.4	8.8	10.3	10.9	9.8	9.5	14.7	8.4	14.3	BA	-.7	7.2	6.8	14.2	9.3	10.9	13.7	11.3	12.0	12.5	12.7	13.9	23	14.7
17	13.1	13.0	11.6	13.6	11.9	8.2	12.0	10.3	8.7	9.1	7.8	2.5	3.8	4.5	1.7	5.7	9.0	8.1	7.4	4.3	6.3	7.1	9.4	6.7	24	13.6
18	7.8	8.0	5.6	7.7	4.9	10.2	6.4	8.7	4.8	.7	5.7	2.5	2.8	2.6	4.0	.1	1.8	5.4	2.5	5.7	5.9	4.4	4.2	4.6	24	10.2
19	8.8	7.7	6.1	6.0	4.3	4.1	1.5	-.1	6.6	1.7	BL	-2.1	4.1	5.2	1.9	7.5	6.0	8.8	5.5	8.6	7.2	3.3	4.9	6.5	23	8.8
20	5.6	3.6	3.5	5.8	2.8	5.4	4.5	2.9	11.1	10.7	9.0	6.2	12.0	13.1	15.4	3.9	9.3	4.2	3.7	4.4	6.5	5.3	9.6	10.2	24	15.4
21	7.5	11.9	9.7	10.2	11.9	12.2	11.5	10.4	8.0	12.6	7.2	16.4	9.2	7.5	2.3	6.4	10.8	6.2	2.9	5.9	4.7	3.5	15.9	1.4	24	16.4
22	1.4	9.0	4.6	5.5	4.8	6.5	5.7	12.0	8.6	9.2	10.2	7.8	2.8	7.6	4.1	6.3	4.5	5.5	3.9	5.5	3.5	2.3	4.5	5.9	24	12.0
23	5.3	8.5	7.5	6.2	4.9	5.3	7.3	.1	2.3	4.8	5.7	.5	.4	5.7	7.0	-.8	4.0	.0	.8	2.1	2.7	1.9	.3	5.1	24	8.5
24	1.4	5.8	5.8	2.1	4.1	4.2	-.8	.6	6.7	10.0	8.4	5.7	4.0	7.4	10.2	8.3	6.9	5.2	.3	2.1	5.2	4.4	4.3	3.4	24	10.2
25	5.9	3.2	6.8	9.4	7.1	6.8	6.7	10.0	7.1	10.7	4.0	13.1	10.1	4.5	2.9	8.6	2.5	2.1	5.4	9.3	8.0	6.3	-.7	-.7	24	13.1
26	-.6	5.4	6.9	12.4	8.6	12.1	12.3	13.0	7.8	10.6	7.8	5.6	6.0	.1	4.0	6.6	6.0	2.2	4.9	7.3	5.5	7.2	5.6	6.4	24	13.0
27	2.5	2.6	4.3	6.8	7.8	6.0	3.3	2.7	6.5	12.6	3.6	8.3	5.9	3.8	1.7	2.6	3.6	6.0	3.6	3.8	6.2	5.3	5.9	4.4	24	12.6
28	6.6	5.6	6.2	3.8	6.1	5.4	8.0	6.3	8.9	6.7	5.5	6.9	8.1	5.2	10.5	7.6	9.5	6.0	6.5	8.6	5.2	6.9	10.0	7.8	24	10.5
29	6.6	10.6	1.9	8.3	10.4	7.3	9.1	.6	8.2	8.0	6.6	2.7	1.5	1.5	3.4	3.2	1.2	9.6	5.3	-.1	3.1	4.5	3.2	1.5	24	10.6
30	6.0	.5	5.0	3.1	3.3	5.7	3.8	6.6	-3.1	-.2	12.4	4.9	10.0	4.7	7.0	6.1	5.5	10.6	6.4	1.8	4.5	6.1	5.0	3.1	24	12.4
31																									0	
NO.:	27	27	27	27	27	27	27	27	27	27	26	25	27	27	27	27	27	27	27	27	27	27	27	27		
MAX:	13.1	13.0	11.6	13.6	11.9	12.2	12.3	13.0	14.7	12.6	14.3	16.4	12.0	13.1	15.4	14.2	10.8	14.3	13.7	11.3	12.0	12.5	15.9	13.9		
AVG:	5.21	5.95	5.37	5.77	5.96	6.06	5.73	5.01	6.56	6.85	6.80	6.05	5.12	4.79	4.81	5.11	5.76	6.11	4.78	5.10	4.90	5.10	5.62	5.44		

MONTHLY OBSERVATIONS: 645 MONTHLY MEAN: 5.58 MONTHLY MAX: 16.4

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: DECEMBER 2021

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	4.3	3.6	7.8	8.6	4.5	3.6	7.9	4.2	5.5	3.6	13.5	AX	BA	BC	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	11	13.5
2	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
3	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
4	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
5	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
6	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	-3.7	2.4	4.1	2.1	5.1	2.0	8.0	9.5	8	9.5
7	2.5	1.9	6.9	4.4	2.7	6.7	4.2	5.2	5.8	1.8	7.3	4.0	4.6	11.5	.4	7.3	8.3	3.1	6.3	9.0	6.0	6.3	1.4	4.1	24	11.5
8	4.9	3.4	5.4	4.4	3.3	6.6	3.9	5.4	5.2	5.5	4.4	7.5	2.3	2.0	8.6	3.0	6.2	8.1	7.3	4.7	5.6	5.0	5.7	3.1	24	8.6
9	7.5	5.8	4.4	4.2	5.7	4.1	5.4	7.6	4.5	3.0	5.3	10.1	5.2	14.4	7.2	11.1	8.6	6.5	6.4	8.7	7.2	9.6	10.2	6.6	24	14.4
10	3.8	5.2	4.9	2.7	1.8	3.0	1.9	6.3	7.2	10.3	4.8	4.4	6.5	9.1	5.6	7.2	1.7	5.3	3.8	5.8	6.9	8.3	3.9	7.8	24	10.3
11	4.9	7.9	8.5	2.2	7.7	6.2	6.0	5.7	10.5	7.8	8.6	4.4	11.0	6.1	9.9	.7	5.0	6.6	7.5	7.4	.4	7.5	2.0	4.5	24	11.0
12	2.3	3.1	5.9	2.2	3.4	3.9	2.5	5.6	4.0	2.8	2.5	-.9	7.8	5.9	3.7	4.5	9.5	6.2	6.3	2.9	3.1	2.7	1.4	3.3	24	9.5
13	4.2	-2.4	5.9	2.5	3.8	3.1	3.6	.6	-.2	6.0	7.6	5.6	8.8	9.3	5.8	5.7	3.7	8.3	8.0	6.1	8.0	2.1	4.5	5.2	24	9.3
14	3.2	2.3	.5	4.9	5.4	6.6	3.8	1.7	2.7	8.9	8.3	4.4	6.1	4.7	10.1	8.7	8.6	10.0	9.2	7.0	9.8	9.0	4.4	4.6	24	10.1
15	9.1	5.0	6.8	8.3	5.2	7.9	5.5	1.8	4.6	13.4	8.0	14.7	9.4	5.5	7.1	6.6	6.5	7.0	7.0	1.0	3.1	5.5	5.6	1.4	24	14.7
16	11.8	22.2	16.2	12.0	8.0	14.4	12.2	8.7	6.6	8.3	9.4	9.3	5.5	13.7	9.1	7.7	2.5	5.8	7.2	5.1	3.7	5.8	5.5	5.7	24	22.2
17	7.1	8.8	10.2	7.5	3.4	1.5	5.6	5.5	4.3	4.1	-.6	7.9	8.2	6.4	1.7	6.5	1.4	6.2	3.9	9.3	2.4	5.2	1.9	6.5	24	10.2
18	2.8	3.4	5.0	2.2	3.5	-1.0	1.3	.9	1.7	6.6	10.0	5.7	3.6	3.8	-4.0	12.2	-4.4	4.1	1.7	1.6	3.0	3.6	-.1	.6	24	12.2
19	1.2	-.8	2.9	4.2	.5	1.2	4.9	5.5	.9	8.8	4.8	5.2	11.5	8.8	6.2	5.1	6.3	7.1	3.5	3.0	4.6	9.3	1.7	4.8	24	11.5
20	6.7	5.7	5.1	2.3	5.2	4.7	3.0	6.7	3.1	2.1	9.3	5.0	9.9	8.1	8.0	8.7	6.0	5.2	5.1	6.0	11.9	8.0	5.1	5.3	24	11.9
21	4.9	3.0	7.2	4.5	3.6	6.8	7.2	7.8	8.2	4.8	5.9	5.2	4.8	2.9	4.3	4.3	1.5	3.7	2.4	2.4	-1.1	7.5	3.2	1.3	24	8.2
22	7.2	5.9	5.3	2.8	2.5	4.8	6.0	4.0	1.7	8.3	6.2	4.0	7.1	4.9	1.0	3.6	6.6	5.0	6.1	2.4	6.8	4.9	1.1	7.1	24	8.3
23	4.8	1.4	3.2	4.7	.6	3.7	3.6	2.9	1.5	4.4	6.6	.4	4.4	6.9	7.4	2.5	5.6	7.1	2.4	-.5	4.1	5.2	5.3	4.3	24	7.4
24	7.8	3.2	6.9	2.0	3.6	.8	7.3	5.4	7.6	8.0	4.0	6.4	.8	7.4	3.1	3.7	2.7	1.8	1.8	3.6	3.2	.1	1.4	3.5	24	8.0
25	3.1	5.1	2.5	4.2	1.6	5.8	-1.1	2.9	1.5	4.2	2.1	1.9	3.7	4.2	2.6	-3.4	5.6	6.0	7.2	3.0	3.1	1.4	2.2	3.5	24	7.2
26	.9	2.5	3.3	.6	3.9	4.0	3.6	-2.9	4.8	7.3	4.7	4.6	6.1	4.8	8.0	7.2	4.3	6.4	6.9	2.7	5.0	3.1	5.9	3.4	24	8.0
27	2.5	2.3	1.8	8.7	2.6	7.2	6.6	4.9	9.0	2.8	4.5	3.3	4.7	1.6	5.8	6.6	3.4	4.5	2.4	-.4	6.0	7.4	5.2	4.9	24	9.0
28	3.0	5.1	5.2	1.8	4.4	4.8	5.8	6.8	4.8	.6	5.9	6.1	2.4	.6	3.7	-2.0	2.1	4.5	4.2	7.5	6.4	6.8	5.6	5.1	24	7.5
29	4.4	.7	8.5	5.7	3.4	2.6	3.3	5.3	3.5	4.0	9.4	4.6	3.7	1.8	7.7	7.5	8.3	7.1	8.0	9.4	7.3	5.5	8.4	6.4	24	9.4
30	7.9	9.8	8.0	9.2	4.6	7.4	14.5	8.6	13.2	6.5	8.2	9.6	-2.8	-4.2	1.6	7.4	11.2	11.5	5.0	7.3	3.3	5.1	3.5	7.9	24	14.5
31	6.0	7.2	7.0	5.7	5.5	12.9	11.9	5.9	8.0	9.5	3.3	8.0	4.5	6.3	8.7	5.5	7.0	6.9	4.9	4.1	4.9	4.0	4.9	10.5	24	12.9
NO.:	26	26	26	26	26	26	26	26	26	26	26	25	25	25	25	25	26	26	26	26	26	26	26	26		
MAX:	11.8	22.2	16.2	12.0	8.0	14.4	14.5	8.7	13.2	13.4	13.5	14.7	11.5	14.4	10.1	12.2	11.2	11.5	9.2	9.4	11.9	9.6	10.2	10.5		
AVG:	4.95	4.67	5.97	4.71	3.86	5.13	5.40	4.73	5.01	5.90	6.31	5.66	5.59	5.86	5.33	5.52	4.79	6.02	5.33	4.66	4.99	5.42	4.15	5.03		

MONTHLY OBSERVATIONS: 619 MONTHLY MEAN: 5.20 MONTHLY MAX: 22.2

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JANUARY 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	2.6 6	3.7 6	1.4 6	6.3 6	3.9 6	7.6 6	2.9 6	1.4 6	1.5 6	6.3 6	6.8 6	3.8 6	1.2 6	4.0 6	7.3 6	8.5 6	3.8 6	5.7 6	4.3 6	8.7 6	6.7 6	7.4 6	7.7 6	6.7 6	24	8.7
2	9.0 6	.6 6	8.3 6	2.0 6	6.0 6	6.1 6	7.4 6	5.4 6	2.7 6	5.2 6	-.8 6	4.7 6	3.8 6	-2.4 6	-1.0 6	-.1 6	6.2 6	1.4 6	1.9 6	5.3 6	-.3 6	1.2 6	-1.5 6	4.3 6	24	9.0
3	1.9 6	3.3 6	7.5 6	4.7 6	9.1 6	5.4 6	8.0 6	5.9 6	1.4 6	.9 6	5.0 6	3.4 6	6.5 6	7.3 6	6.4 6	11.1 6	9.2 6	9.7 6	6.9 6	7.1 6	4.7 6	5.3 6	9.5 6	6.9 6	24	11.1
4	3.4 6	5.9 6	4.0 6	5.4 6	3.9 6	9.0 6	7.3 6	2.3 6	2.4 6	.7 6	7.7 6	1.6 6	4.1 6	4.4 6	5.8 6	3.7 6	6.5 6	7.6 6	7.5 6	5.0 6	4.4 6	5.3 6	7.5 6	4.7 6	24	9.0
5	5.1 6	5.8 6	4.6 6	4.0 6	7.9 6	7.4 6	3.6 6	6.4 6	4.2 6	8.2 6	6.0 6	.8 6	-.6 6	1.1 6	3.7 6	6.8 6	4.7 6	7.3 6	4.1 6	-.5 6	5.8 6	5.9 6	2.5 6	5.4 6	24	8.2
6	2.8 6	2.2 6	4.9 6	2.9 6	.1 6	1.7 6	2.6 6	1.5 6	.4 6	6.4 6	7.0 6	4.9 6	AX	BA	6.4	2.6	-.5	-.2	3.6	-.1	.9	1.6	2.8	.6	22	7.0
7	3.1	5.6	7.5	8.2	3.5	7.0	3.3	4.4	5.9	-.3	.8	1.3	4.1	.0	2.7	6.0	3.4	4.4	4.9	5.7	2.8	7.0	6.1	4.0	24	8.2
8	7.4	5.6	3.6	8.4	3.3	2.4	3.0	4.0	3.7	6.6	5.1	6.3	5.9	7.7	4.7	6.8	6.7	8.2	5.7	6.7	11.0	11.7	10.8	12.7	24	12.7
9	12.6	9.8	7.5	9.2	10.3	9.7	11.4	10.7	8.6	6.7	6.2	7.3	9.0	13.5	-2.5	2.8	3.8	2.4	.7	.4	4.3	-2.2	-1.1	1.1	24	13.5
10	-.9	-1.8	-.2	3.7	3.9	5.8	4.0	7.2	5.8	1.5	.1	-2.1	3.5	2.4	AV	AV	AV	5.3	-1.0	2.2	1.6	7.6	1.8	.7	21	7.6
11	.0	-1.7	.1	5.1	6.1	3.5	3.1	1.5	2.6	3.8	1.6	3.1	2.6	-.1	2.9	5.0	3.0	2.4	2.3	2.7	1.2	3.7	2.8	4.3	24	6.1
12	1.3	3.8	3.9	3.3	3.2	3.0	8.4	1.5	1.5	7.8	10.4	6.3	7.7	1.7	3.6	4.7	4.5	3.3	4.7	.5	4.6	1.3	4.4	5.1	24	10.4
13	3.5	4.0	3.1	-1.0	3.4	2.0	2.5	4.3	1.3	7.1	12.8	8.3	6.1	4.4	2.1	2.4	3.9	2.1	7.1	3.6	4.7	4.2	9.2	9.3	24	12.8
14	6.4	6.0	6.3	3.0	10.9	5.8	6.2	6.5	.9	5.7	9.5	1.6	4.7	3.8	4.3	1.7	2.3	-1.5	1.1	3.5	-.4	1.2	4.2	3.0	24	10.9
15	6.6	2.9	4.1	3.8	3.0	1.0	4.2	2.1	.4	1.8	3.6	7.1	12.3	6.0	12.5	6.8	4.8	7.6	10.2	11.9	3.3	3.2	1.1	-.5	24	12.5
16	-1.4	-.7	-.8	.5	.4	.8	2.2	4.2	3.4	.5	.6	1.6	-.1	.9	1.4	3.2	3.0	6.0	5.9	8.1	8.7	7.0	6.9	2.9	24	8.7
17	5.0	9.1	4.7	6.6	8.1	6.8	2.9	7.0	4.9	7.1	5.7	.6	4.6	5.1	6.4	2.9	3.2	2.3	1.3	3.8	.1	.5	6.9	.4	24	9.1
18	4.2	3.3	8.2	2.3	4.1	6.0	2.5	1.7	1.8	3.3	8.2	6.1	6.5	2.5	5.7	1.3	3.6	6.0	3.4	1.1	-.6	-.3	15.1	5.9	24	15.1
19	7.5	9.0	5.6	5.6	3.6	6.0	7.1	8.6	5.1	4.2	6.0	2.5	6.0	3.8	4.6	3.2	-.2	6.8	2.5	4.8	3.3	2.8	4.1	.9	24	9.0
20	-1.7	.3	-1.7	3.5	3.8	-1.8	.6	.2	.6	.2	.3	4.1	6.8	3.5	3.0	3.2	6.1	9.7	6.4	5.8	4.8	4.7	8.4	6.0	24	9.7
21	5.2	5.7	8.8	5.7	9.6	9.4	5.2	7.7	7.9	7.9	4.3	7.7	8.7	4.7	8.6	8.8	.7	8.5	4.7	6.0	5.4	7.2	6.5	1.8	24	9.6
22	3.8	3.1	6.2	3.7	3.3	6.1	6.8	3.3	9.4	-.5	8.7	6.7	1.7	2.4	.8	2.3	6.7	-.5	2.9	1.5	1.3	-1.1	3.7	4.7	24	9.4
23	4.1	4.1	-1.3	5.8	4.9	4.7	3.5	3.0	3.6	10.7	6.3	11.4	7.2	8.0	4.5	2.7	6.0	3.9	6.6	1.7	3.8	9.6	5.7	7.2	24	11.4
24	5.2	4.3	5.9	3.8	7.1	6.5	4.5	5.2	5.1	5.6	7.9	9.9	6.0	3.5	4.7	5.0	2.3	2.2	3.9	6.3	9.0	8.4	7.3	9.7	24	9.9
25	13.1	14.6	11.9	12.3	15.7	11.6	10.1	12.0	13.7	12.5	9.4	9.5	9.3	5.6	11.0	7.5	7.8	8.5	5.6	7.9	7.2	8.3	8.4	5.8	24	15.7
26	6.1	7.4	7.1	4.0	6.1	4.0	6.5	3.6	4.0	7.1	5.0	7.2	6.7	3.5	2.9	1.9	3.2	3.7	.9	3.1	2.3	1.6	2.7	1.2	24	7.4
27	3.9	7.3	5.0	3.6	3.8	10.5	12.7	7.2	5.3	8.6	12.4	11.7	16.2	9.6	11.9	6.8	11.1	3.3	7.9	5.6	8.2	9.9	12.0	8.4	24	16.2
28	10.1	10.4	9.3	6.9	7.8	3.7	5.8	9.7	9.3	6.8	8.1	9.4	6.7	5.7	4.1	-1.0	4.7	3.6	-.4	2.3	-.9	-.8	4.4	3.0	24	10.4
29	2.5	.3	-.6	2.6	3.8	.0	.6	-.5	1.2	.4	1.3	1.8	.8	-.1	2.3	-.9	-.3	1.1	1.5	-1.8	-.1	-1.9	-.3	1.6	24	3.8
30	2.5	3.6	-.6	.6	1.6	5.8	2.7	6.0	15.3	6.3	8.4	7.5	3.8	2.2	8.5	2.5	4.1	4.4	3.6	2.7	-2.5	1.0	5.9	5.2	24	15.3
31	6.0	5.8	4.4	5.5	5.0	4.5	4.4	4.7	4.1	3.9	15.2	12.8	6.9	9.8	9.0	11.2	12.4	6.4	8.8	6.5	6.7	7.3	8.4	11.4	24	15.2
NO.:	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	31	31	31	31	31	31	31		
MAX:	13.1	14.6	11.9	12.3	15.7	11.6	12.7	12.0	15.3	12.5	15.2	12.8	16.2	13.5	12.5	11.2	12.4	9.7	10.2	11.9	11.0	11.7	15.1	12.7		
AVG:	4.55	4.62	4.47	4.58	5.39	5.23	5.03	4.80	4.45	4.94	6.12	5.45	5.62	4.15	4.94	4.31	4.56	4.57	4.18	4.13	3.61	4.15	5.61	4.66		

MONTHLY OBSERVATIONS: 739 MONTHLY MEAN: 4.76 MONTHLY MAX: 16.2

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: FEBRUARY 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	16.3	AN	AN	AN	AN	AN	AN	AN	AN	AN	AX	AX	BA	BA	9.6	-3.6	5.4	12.1	21.4	14.7	15.5	13.6	11.9	11.9	11	21.4
2	20.2	13.7	16.1	8.1	20.5	13.6	15.4	11.6	10.0	7.6	7.9	9.0	4.3	9.7	8.3	8.0	3.6	6.0	5.7	8.6	4.9	.3	2.1	4.5	24	20.5
3	3.6	2.9	4.0	1.4	2.8	3.9	2.0	2.3	.6	2.3	3.7	7.3	4.9	7.9	-2.4	2.8	.2	-.4	.9	1.4	-3.9	-1.3	-.2	-.7	24	7.9
4	2.8	1.1	-.4	1.3	.5	3.8	2.4	5.2	7.7	2.2	7.4	4.8	5.4	6.3	2.8	1.5	3.1	4.4	4.7	4.9	3.6	5.8	7.8	5.4	24	7.8
5	7.1	7.6	6.7	2.3	8.0	3.1	4.1	3.8	8.1	1.0	6.2	2.8	3.5	7.5	2.2	.4	2.8	5.2	2.7	3.9	5.7	4.0	5.5	2.3	24	8.1
6	3.9	6.3	3.6	2.4	5.7	4.8	7.6	4.7	-1.3	3.1	10.5	10.9	10.8	5.9	5.2	4.8	3.9	3.7	5.4	-3.5	4.6	5.0	8.5	5.7	24	10.9
7	6.9	5.8	7.2	6.2	10.4	4.0	9.5	9.5	6.9	8.6	.6	10.6	9.4	7.1	3.9	5.1	6.8	2.9	1.1	3.5	4.8	10.6	3.8	5.4	24	10.6
8	4.0	6.5	3.5	7.0	7.6	3.5	7.4	5.0	2.2	5.9	7.8	6.0	BA	3.8	3.4	4.2	2.8	1.0	2.6	1.1	-3.3	1.2	3.2	3.6	23	7.8
9	7.3	.6	.5	1.0	3.3	-.2	2.3	2.8	.4	.1	13.9	7.3	5.5	.4	5.2	8.1	7.2	4.4	5.2	4.6	6.7	3.6	5.4	7.8	24	13.9
10	6.3	5.9	5.5	9.6	2.4	4.3	8.9	8.8	3.4	7.4	21.5	20.5	8.8	3.9	5.7	2.5	.5	8.5	10.1	1.8	6.7	9.1	12.0	12.9	24	21.5
11	14.0	15.8	16.6	16.5	17.2	13.9	13.6	14.8	13.5	9.8	18.2	9.4	11.2	10.8	10.5	9.6	8.5	7.5	13.7	5.9	8.4	4.7	15.2	12.5	24	18.2
12	11.8	4.5	11.4	10.8	8.2	12.3	12.4	8.2	7.0	11.3	18.4	21.1	19.9	17.9	13.2	10.9	4.7	7.5	6.3	5.7	.9	4.5	5.7	10.0	24	21.1
13	5.6	4.4	7.1	7.3	6.7	3.9	7.9	3.9	2.4	-3.6	1.2	4.6	5.9	.3	.9	2.8	2.9	1.1	1.3	-3.6	-1.6	-2.1	2.2	-2.1	24	7.9
14	4.8	-1.5	1.7	1.7	5.2	1.2	-1.0	.6	1.9	.3	13.7	8.5	6.6	6.4	1.3	1.5	7.4	4.1	7.1	1.6	3.6	4.7	5.7	3.5	24	13.7
15	7.2	5.9	-1.6	4.6	4.5	1.4	7.6	5.6	1.8	6.6	19.3	19.0	7.3	8.7	7.9	7.4	6.4	8.1	8.0	8.0	6.3	9.5	27.8	24.4	24	27.8
16	17.8	18.8	18.1	18.1	17.2	14.4	19.9	15.3	14.1	17.7	19.0	18.0	8.8	7.1	3.6	7.2	7.2	9.5	8.1	5.4	4.8	6.4	2.2	4.5	24	19.9
17	6.9	7.7	5.0	6.1	3.7	6.5	4.3	6.6	4.9	6.6	7.3	BA	BA	-3.0	5.4	4.7	10.4	4.6	6.5	-3.8	4.4	5.0	10.2	-.7	22	10.4
18	1.7	2.1	1.1	1.6	2.7	4.1	2.3	1.4	-.4	1.9	7.2	8.5	4.5	10.0	6.0	4.5	4.6	5.3	6.3	6.6	6.3	.7	5.2	4.6	24	10.0
19	4.7	5.8	7.1	5.9	7.4	4.0	3.3	5.7	-1.3	2.7	.5	6.8	3.2	5.6	-.1	.3	4.8	1.1	1.8	-1.6	3.7	3.6	2.8	2.6	24	7.4
20	6.4	7.9	4.4	5.2	4.5	.1	4.9	2.5	-.3	8.7	11.9	15.0	7.8	2.2	3.4	6.7	6.6	8.3	4.4	4.2	3.9	1.3	8.0	6.9	24	15.0
21	4.6	7.9	12.2	7.2	12.7	7.8	11.5	10.9	15.0	7.7	10.2	8.5	8.6	5.2	8.7	10.9	4.8	8.0	8.3	9.5	12.3	12.6	13.0	10.1	24	15.0
22	11.0	10.0	8.8	10.7	8.9	5.6	8.4	7.4	2.8	5.6	12.5	8.1	6.8	6.4	6.7	8.4	6.4	8.0	8.4	8.1	6.9	6.9	8.9	11.0	24	12.5
23	11.7	14.2	7.7	4.9	7.2	9.6	10.1	6.0	-.5	-3.6	-4.8	5.1	-1.7	5.6	.8	8.5	3.6	6.6	5.3	4.4	4.9	10.4	6.2	8.7	24	14.2
24	7.7	10.1	7.2	4.5	3.0	5.7	4.9	8.2	2.9	6.2	6.5	12.2	4.1	7.2	7.0	5.5	5.2	4.3	7.9	10.1	7.6	4.6	7.9	8.6	24	12.2
25	2.7	7.9	4.5	-1.7	-.4	-5.3	2.2	.3	-1.9	-2.4	1.4	.4	-2.8	2.0	4.7	2.7	4.7	4.4	6.4	4.1	1.9	4.1	1.2	9.1	24	9.1
26	2.3	4.4	7.6	8.2	4.3	7.4	3.4	8.8	7.4	3.9	9.7	10.8	7.2	7.9	3.1	3.2	7.9	8.6	3.4	2.2	3.4	6.7	5.5	8.0	24	10.8
27	3.6	4.7	9.7	7.2	6.6	3.1	.2	AV	1.0	5.6	3.5	.6	-2.1	-2.4	2.3	5.0	.4	.2	2.0	2.6	2.6	5.8	4.0	4.6	23	9.7
28	8.3	4.4	4.4	6.9	8.2	9.3	6.8	8.2	9.5	7.7	10.9	8.5	3.3	2.5	3.3	2.6	7.3	5.5	3.3	-.6	2.3	3.9	3.8	5.3	24	10.9
29																									0	
30																									0	
31																									0	
NO.:	28	27	27	27	27	27	27	26	27	27	27	26	25	27	28	28	28	28	28	28	28	28	28	28		
MAX:	20.2	18.8	18.1	18.1	20.5	14.4	19.9	15.3	15.0	17.7	21.5	21.1	19.9	17.9	13.2	10.9	10.4	12.1	21.4	14.7	15.5	13.6	27.8	24.4		
AVG:	7.54	6.87	6.66	6.11	7.00	5.40	6.75	6.47	4.36	4.85	9.11	9.40	6.05	5.66	4.74	4.86	5.00	5.38	6.01	3.92	4.57	5.19	6.98	6.80		

MONTHLY OBSERVATIONS: 655 MONTHLY MEAN: 6.06 MONTHLY MAX: 27.8

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MARCH 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	2.8	5.8	8.0	1.6	2.0	6.2	4.1	6.2	1.5	6.1	7.2	2.7	2.1	4.4	2.7	3.6	-1.0	3.7	32.3	.2	4.9	-1.1	3.0	4.0	24	32.3
2	3.9	5.3	7.2	5.5	1.9	8.4	2.5	4.0	4.6	2.8	12.6	10.5	1.3	6.0	5.7	5.0	2.9	3.1	10.3	.3	3.4	5.1	7.0	7.7	24	12.6
3	11.4	7.2	11.7	13.5	15.9	13.7	11.5	13.8	11.1	16.7	19.8	7.9	AX	BA	8.9	9.0	7.8	4.9	12.8	10.4	10.2	10.0	10.4	8.9	22	19.8
4	12.6	11.9	9.2	9.8	12.2	10.0	11.4	7.6	10.3	11.5	13.8	13.3	10.6	12.9	12.7	15.2	20.8	18.8	17.0	13.6	16.5	17.4	18.4	22.0	24	22.0
5	19.1	18.7	19.0	18.1	22.2	23.4	17.8	23.9	21.0	13.4	13.5	8.2	11.9	8.7	6.4	11.3	5.2	12.1	15.9	5.9	6.8	7.9	12.1	7.8	24	23.9
6	8.1	7.0	4.5	9.0	9.9	9.5	2.8	9.1	14.3	17.6	8.6	10.8	4.9	9.0	5.8	6.8	8.6	7.0	6.0	3.6	8.2	3.7	8.8	4.1	24	17.6
7	8.3	8.2	9.2	9.5	7.5	9.9	10.0	7.2	8.1	5.0	8.3	7.0	3.6	-3.1	3.6	3.7	-.2	3.2	-.3	1.2	1.4	4.2	-.9	4.5	24	10.0
8	5.1	2.7	5.9	4.8	4.2	2.3	2.6	4.2	4.3	7.8	5.8	4.5	5.9	3.5	7.9	11.6	7.1	.2	6.6	7.5	6.3	1.3	2.4	3.8	24	11.6
9	-2.9	.2	-3.1	4.1	-.4	.7	3.2	2.3	1.4	-1.0	-1.9	-1.5	1.0	-1.1	7.2	2.0	3.3	1.1	6.0	.3	-1.9	5.8	2.8	4.3	24	7.2
10	1.8	6.0	5.7	2.1	.7	5.1	2.1	.3	5.0	3.2	3.4	6.1	4.6	-.9	4.4	2.8	.3	2.1	5.5	1.6	3.5	2.5	1.0	3.4	24	6.1
11	6.1	3.9	4.1	2.0	2.8	8.1	.1	3.5	2.3	8.5	12.1	5.9	5.6	4.9	4.2	6.7	7.9	4.8	7.9	13.7	9.9	16.0	10.8	9.7	24	16.0
12	5.0	4.0	-2.2	-1.7	.6	4.0	3.8	3.4	.3	.6	-1.4	3.7	1.1	-1.3	1.8	-.6	-3.7	1.5	2.4	-2.4	.5	.3	1.6	-.7	24	5.0
13	4.3	.2	4.0	-1.7	-2.0	-2.6	2.0	.2	-4.8	-.6	5.9	6.0	5.8	3.6	7.0	-.9	.8	1.2	4.4	-2.3	-.4	-1.9	1.1	2.0	24	7.0
14	4.4	-1.3	2.0	.4	3.0	8.3	3.8	6.1	5.0	7.3	11.7	9.3	6.7	2.8	6.4	8.0	8.7	6.0	4.0	3.1	7.2	6.1	7.3	5.3	24	11.7
15	14.0	8.7	7.5	11.5	16.9	12.7	15.3	15.6	19.4	13.6	9.9	14.7	4.6	7.5	7.2	1.9	4.6	9.8	4.6	8.1	3.4	3.7	5.6	1.7	24	19.4
16	3.5	1.5	3.2	1.0	2.6	1.3	1.6	.7	4.1	-2.2	5.8	5.2	-.9	3.3	7.6	7.0	-.5	.9	5.4	.0	4.7	4.0	2.8	2.2	24	7.6
17	3.0	1.4	3.4	6.3	1.1	2.5	2.5	4.2	4.0	6.6	8.6	7.7	6.7	3.3	1.5	1.2	2.9	2.0	4.6	8.7	4.3	1.8	3.9	11.2	24	11.2
18	27.0	25.0	5.9	7.7	6.4	8.5	4.8	.3	3.2	4.2	1.8	5.4	3.8	9.7	3.6	5.1	9.7	10.7	6.1	9.9	9.6	11.0	6.1	6.8	24	27.0
19	2.1	1.6	3.1	-.6	2.8	4.2	1.1	2.5	2.6	.3	3.7	4.7	.2	3.5	-.4	3.9	1.4	3.2	6.2	8.0	1.6	6.6	6.8	5.3	24	8.0
20	8.8	8.9	8.6	5.4	6.1	3.3	2.2	3.2	-.5	-2.2	13.8	4.9	.3	6.0	3.8	2.2	.5	4.4	8.5	7.8	7.2	.6	2.4	3.1	24	13.8
21	5.7	9.0	6.7	7.2	7.5	11.5	9.3	4.0	8.9	5.1	12.8	5.6	2.8	6.4	22.7	19.1	7.7	8.5	21.9	30.4	24.5	13.9	5.6	4.7	24	30.4
22	6.3	2.7	7.7	8.1	9.6	10.2	13.8	7.7	9.1	7.2	10.3	8.3	7.8	8.5	6.9	9.7	10.7	4.3	-.7	-1.6	-3.6	-1.2	3.3	-.1	24	13.8
23	6.2	.4	4.4	.0	1.6	-.1	5.0	8.7	8.4	2.5	3.1	3.3	8.0	4.8	3.9	3.8	.4	2.2	5.1	-.3	2.2	3.5	1.4	3.2	24	8.7
24	3.0	6.1	4.7	.9	1.3	5.2	5.5	2.0	6.3	3.4	7.4	4.0	6.4	1.7	2.6	.9	5.2	-.9	4.4	4.9	3.6	3.8	5.2	5.1	24	7.4
25	11.2	3.6	3.6	12.0	5.4	5.7	9.1	2.3	3.4	9.6	11.2	1.3	6.3	5.9	1.1	3.9	3.7	3.3	4.2	6.5	2.8	5.5	3.3	6.9	24	12.0
26	2.6	4.5	2.6	4.5	.5	2.4	6.3	3.7	-.1	1.8	3.8	-1.8	2.5	1.4	2.0	2.8	-.7	-1.0	-1.4	.7	.0	2.9	3.7	3.2	24	6.3
27	4.7	4.6	4.9	4.2	8.0	6.1	3.5	2.7	5.1	7.5	9.6	7.6	3.6	8.3	1.2	5.1	6.6	8.6	4.1	3.6	3.6	7.4	4.4	9.4	24	9.6
28	8.6	6.1	7.4	8.7	3.1	10.1	5.5	3.1	3.0	8.3	13.2	8.3	9.0	8.9	8.3	4.8	5.5	4.3	7.1	9.8	5.8	5.9	12.7	19.7	24	19.7
29	12.7	9.8	13.2	5.6	7.4	7.4	8.2	9.6	9.2	6.1	10.3	1.3	6.4	4.1	9.4	5.5	8.9	4.6	5.1	7.0	6.0	7.4	4.5	4.2	24	13.2
30	2.1	2.2	8.7	7.6	4.0	6.4	4.6	5.5	8.6	6.5	8.9	6.7	8.0	9.6	12.7	9.7	10.9	14.7	16.5	21.0	13.5	.2	1.7	4.9	24	21.0
31	3.3	5.6	5.2	3.0	5.7	6.2	10.0	7.7	7.8	AV	AV	AV	AV	AV	2.8	7.6	7.5	7.4	5.9	4.0	1.6	5.2	6.7	6.6	19	10.0
NO.:	31	31	31	31	31	31	31	31	31	30	30	30	29	29	31	31	31	31	31	31	31	31	31	31		
MAX:	27.0	25.0	19.0	18.1	22.2	23.4	17.8	23.9	21.0	17.6	19.8	14.7	11.9	12.9	22.7	19.1	20.8	18.8	32.3	30.4	24.5	17.4	18.4	22.0		
AVG:	6.93	5.85	6.00	5.49	5.50	6.79	6.00	5.65	6.03	5.91	8.45	6.05	4.85	4.91	5.86	5.75	4.95	5.05	7.69	5.97	5.40	5.15	5.35	5.96		

MONTHLY OBSERVATIONS: 737 MONTHLY MEAN: 5.90 MONTHLY MAX: 32.3

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: APRIL 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	5.6	5.0	4.8	6.1	3.0	2.1	9.2	5.8	.4	-.2	3.7	7.4	2.9	1.8	5.8	3.9	3.8	1.4	3.3	.1	-1.1	4.8	3.2	5.0	24	9.2
2	3.3	2.3	3.7	6.0	2.6	5.6	6.6	7.8	5.3	2.5	9.6	8.3	6.7	3.7	6.3	6.6	2.7	3.4	6.0	17.7	10.9	4.2	4.8	7.3	24	17.7
3	5.4 6	8.6 6	8.8 6	5.8 6	3.4 6	5.5 6	7.0 6	3.4 6	7.4 6	11.6 6	8.4 6	4.8 6	4.0 6	2.3 6	2.6 6	9.2 6	5.0 6	4.3 6	4.7 6	6.3 6	2.5 6	2.1 6	8.4 6	7.1 6	24	11.6
4	1.1 6	8.3 6	5.1 6	5.0 6	3.3 6	4.0 6	6.1 6	5.9 6	2.1 6	8.8 6	6.8 6	8.1 6	7.3 6	6.4 6	2.8 6	7.9 6	5.7 6	6.3 6	14.4 6	11.4 6	10.7 6	13.1 6	5.1 6	9.6 6	24	14.4
5	11.7 6	4.3 6	7.8 6	12.3 6	19.0 6	7.7 6	3.5 6	4.1 6	-4.3 6	.8 6	2.1 6	1.2 6	1.4 6	5.5 6	5.0 6	7.6 6	8.6 6	10.6 6	7.2 6	3.7 6	11.2 6	5.0 6	7.5 6	5.2 6	24	19.0
6	6.8 6	8.4 6	9.1 6	6.7 6	5.2 6	5.9 6	6.1 6	6.1 6	10.1 6	5.2 6	12.7 6	AX	BA	11.2	60.4	19.3	25.8	19.4	24.7	12.1	9.7	4.6	.7	1.6	22	60.4
7	1.8	6.8	.6	4.2	2.2	4.7	3.6	-2.5	-.2	8.7	1.8	6.7	5.9	3.7	3.7	3.6	6.1	5.9	1.2	2.0	-1.0	4.4	6.9	6.0	24	8.7
8	7.2	5.0	3.5	4.6	5.8	8.8	4.4	7.8	2.0	10.1	4.3	7.6	7.8	4.9	1.4	4.6	1.4	2.4	5.8	4.7	3.1	2.1	1.6	.4	24	10.1
9	7.1	5.2	3.0	5.1	1.0	6.0	4.2	-1.1	-1.0	5.2	4.6	3.7	4.6	1.7	3.2	1.2	2.9	2.9	10.0	4.7	2.7	4.1	4.7	6.5	24	10.0
10	3.4	5.1	5.7	6.8	3.8	7.4	5.4	1.2	2.3	11.4	9.6	6.5	2.2	AV	-3.4	3.2	6.6	2.3	7.9	3.0	2.2	2.9	2.9	5.4	23	11.4
11	9.4	7.0	7.4	3.9	6.3	6.3	5.1	2.1	9.0	7.0	9.7	5.7	6.5	4.3	4.2	7.6	8.0	8.6	8.8	8.7	7.5	7.5	7.1	9.3	24	9.7
12	10.3	6.5	6.5	3.8	6.6	1.5	4.7	6.4	8.5	8.2	8.5	7.4	9.7	8.1	5.7	6.0	10.1	11.9	9.8	7.5	5.7	8.0	7.0	7.4	24	11.9
13	8.7	8.6	7.7	5.6	8.1	5.1	2.0	3.4	-2.9	7.2	7.6	6.3	6.6	9.6	6.1	7.6	6.8	8.4	4.0	6.9	7.0	AV	AV	AV	21	9.6
14	AV	AV	AV	AV	AV	AV	AV	AV	AV	BA	5.9	7.4	6.3	5.7	4.2	4.3	5.2	5.4	8.5	6.8	3.3	5.0	6.9	6.0	14	8.5
15	4.8	3.9	2.1	6.3	6.2	6.1	4.1	3.4	-1.4	8.8	5.0	4.4	3.4	6.1	8.6	4.9	9.1	3.4	1.9	8.4	7.9	9.1	7.4	4.0	24	9.1
16	7.1	8.8	3.4	4.4	8.2	5.8	7.4	5.5	AV	2.7	5.0	4.0	1.7	10.1	.1	2.4	2.1	1.5	7.0	2.9	.8	2.6	-1.3	-2.1	23	10.1
17	.6	3.7	3.5	2.0	5.7	2.5	2.0	4.4	4.6	4.0	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	10	5.7
18	AV	AV	AV	AV	AV	AV	AV	AV	BA	BA	6.3	5.0	.1	4.3	5.2	6.2	7.3	2.8	9.9	5.8	10.9	7.5	6.2	7.8	14	10.9
19	8.1	5.9	6.0	7.8	4.5	5.9	5.1	3.5	-1.9	8.3	2.1	1.2	4.5	.6	4.2	1.8	2.5	1.8	5.2	4.9	5.6	4.7	2.8	4.5	24	8.3
20	-.2	2.9	3.1	5.5	3.8	3.5	.3	7.0	5.9	8.8	5.8	9.6	1.7	5.3	6.5	3.6	13.0	2.4	6.5	8.6	9.3	10.2	5.4	9.4	24	13.0
21	10.1	8.0	9.8	4.4	6.4	9.5	8.0	6.9	2.9	8.8	10.3	9.0	6.7	10.5	5.4	8.3	9.7	4.6	14.6	16.5	14.7	18.9	20.6	14.9	24	20.6
22	10.7	10.0	13.8	11.0	8.6	13.8	9.5	12.3	11.7	9.6	10.5	9.6	7.3	9.5	8.3	6.3	9.7	10.0	7.5	6.2	8.2	7.0	10.4	9.9	24	13.8
23	9.6	8.4	9.7	3.5	8.7	5.5	9.4	8.5	4.2	13.3	25.5	7.3	8.2	5.1	9.1	7.1	3.7	6.9	6.6	6.4	7.1	7.8	7.9	10.2	24	25.5
24	7.7	4.7	3.3	3.1	6.5	4.1	4.4	3.3	4.6	8.5	9.8	7.7	7.4	4.2	5.8	7.4	7.4	9.1	9.0	4.2	8.8	7.9	4.4	10.2	24	10.2
25	8.1	7.4	3.3	1.7	7.8	5.1	6.1	8.7	6.8	9.9	8.7	4.4	9.4	10.4	6.0	3.3	7.4	13.7	3.3	7.9	5.5	5.6	9.4	3.3	24	13.7
26	3.1	6.6	1.6	5.8	3.1	2.7	8.4	4.4	7.5	2.4	4.0	7.3	5.2	4.8	2.2	3.7	3.8	4.5	2.7	3.7	1.5	5.2	6.6	7.0	24	8.4
27	5.2	1.7	4.9	5.1	.3	4.3	2.5	2.7	4.3	6.7	4.9	8.0	4.3	6.5	5.8	4.7	5.8	5.2	7.4	6.8	7.7	7.0	8.8	9.1	24	9.1
28	8.7	10.0	12.0	8.7	11.8	9.6	8.0	5.0	4.2	12.3	13.4	12.8	7.0	6.5	9.3	9.0	18.4	17.3	23.7	17.7	19.7	20.1	20.8	22.0	24	23.7
29	20.1	19.4	19.4	18.6	16.6	16.8	17.3	16.9	16.9	19.4	15.3	9.9	10.7	7.9	6.5	5.4	10.7	8.2	10.0	8.5	8.7	8.0	8.4	8.8	24	20.1
30	5.9	6.2	6.0	5.6	12.1	7.3	9.4	7.6	5.6	8.2	6.6	12.7	7.2	7.9	3.3	5.0	8.1	4.7	6.1	7.0	11.3	8.0	5.7	5.3	24	12.7
31																									0	
NO.:	28	28	28	28	28	28	28	28	27	28	29	28	28	28	29	29	29	29	29	29	29	28	28	28		
MAX:	20.1	19.4	19.4	18.6	19.0	16.8	17.3	16.9	16.9	19.4	25.5	12.8	10.7	11.2	60.4	19.3	25.8	19.4	24.7	17.7	19.7	20.1	20.8	22.0		
AVG:	6.84	6.74	6.27	6.05	6.45	6.18	6.06	5.38	4.24	7.79	7.88	6.93	5.60	6.02	6.70	5.92	7.50	6.53	8.20	7.28	6.97	7.05	6.80	7.18		

MONTHLY OBSERVATIONS: 679 MONTHLY MEAN: 6.62 MONTHLY MAX: 60.4

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MAY 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	8.6	9.9	10.0	10.1	5.7	5.6	8.4	5.8	7.0	5.3	8.8	6.2	10.8	5.3	6.4	4.5	3.9	5.9	14.4	6.1	5.5	8.3	5.0	6.4	24	14.4
2	3.5	1.5	4.3	5.9	4.9	1.8	2.1	7.5	9.6	10.9	11.2	8.8	5.5	12.3	11.2	8.4	7.0	7.4	6.9	10.6	7.0	6.7	5.1	11.7	24	12.3
3	8.1	8.0	2.3	6.2	2.1	6.7	4.9	4.1	1.5	5.5	BL	AX	BA	8.3	3.3	5.3	8.9	9.1	7.2	10.0	8.6	8.4	5.5	5.3	21	10.0
4	6.4	6.8	4.8	5.4	6.6	4.5	5.4	5.7	6.7	7.9	6.3	8.5	10.8	11.3	6.3	12.4	8.3	9.6	7.5	10.1	9.8	55.1	10.9	8.6	24	55.1
5	7.6	2.2	8.3	5.7	7.7	8.0	4.0	5.5	5.6	10.1	5.4	3.8	5.3	2.8	5.1	4.3	2.2	4.3	4.0	2.3	3.1	6.7	6.6	9.7	24	10.1
6	4.8	7.9	6.2	-1.4	5.7	1.0	3.7	3.0	-2.2	4.5	4.1	4.5	1.9	4.6	3.2	7.5	3.5	7.5	3.0	6.3	5.4	2.2	3.5	7.4	24	7.9
7	5.5	6.8	4.5	5.8	3.3	2.0	.2	5.7	1.6	2.7	3.9	3.4	.8	3.2	1.7	7.3	5.0	3.4	3.6	5.1	3.5	10.3	6.0	2.0	24	10.3
8	7.5	5.7	6.9	6.8	7.2	4.1	4.4	5.6	1.6	9.4	7.2	8.7	5.4	1.9	-1.4	-1.0	2.4	3.6	9.5	7.3	3.1	6.7	7.0	3.1	24	9.5
9	7.7	3.4	7.5	7.5	6.4	3.9	6.5	3.7	1.7	9.6	8.2	5.4	4.6	6.6	17.4	21.2	20.5	21.7	19.2	11.9	15.5	14.7	10.0	7.6	24	21.7
10	10.4	8.3	9.3	6.9	7.2	10.4	10.1	11.0	7.7	6.3	13.5	9.4	7.8	9.2	8.4	7.6	9.1	8.1	9.3	13.0	10.8	8.5	12.4	4.9	24	13.5
11	9.6	10.0	9.7	8.5	5.8	9.1	9.1	5.8	9.2	14.4	10.3	7.2	12.4	9.8	12.0	14.9	17.4	15.6	20.4	16.5	18.4	18.6	16.9	15.5	24	20.4
12	15.9	14.1	14.9	17.5	12.9	12.9	16.3	20.1	22.7	19.1	21.6	20.5	20.2	22.4	16.7	8.8	22.0	19.2	11.1	12.8	10.2	10.8	13.8	14.5	24	22.7
13	12.6	7.5	9.2	10.5	6.9	8.7	7.0	16.4	9.4	10.5	8.8	6.4	7.8	6.3	9.7	11.9	6.2	4.1	4.9	4.2	8.3	5.3	5.6	6.7	24	16.4
14	8.6	9.5	6.2	9.2	11.6	6.3	6.9	2.5	6.8	8.4	8.7	11.7	6.3	8.1	7.9	11.5	7.4	8.3	7.4	2.5	5.9	9.6	4.8	2.1	24	11.7
15	5.6	4.5	5.9	4.9	7.9	4.3	3.3	4.1	6.5	12.3	5.5	11.2	8.2	9.3	8.9	6.0	10.5	13.8	5.3	13.3	5.5	6.8	4.8	4.8	24	13.8
16	8.8	8.7	6.3	8.6	7.0	6.6	5.8	4.9	6.1	4.6	9.1	5.1	8.0	11.5	5.0	16.0	12.1	11.2	7.9	11.5	10.0	11.5	10.7	9.8	24	16.0
17	10.0	6.3	7.7	12.4	7.8	10.8	6.6	7.9	1.3	11.0	4.9	7.6	10.8	7.4	8.5	8.9	9.1	7.6	5.9	4.6	12.3	11.0	7.6	8.5	24	12.4
18	11.1	8.8	6.0	5.5	8.4	7.1	7.7	5.2	6.4	14.8	13.0	18.1	15.2	16.6	16.3	16.9	13.9	19.1	19.4	17.7	19.1	17.4	17.7	17.9	24	19.4
19	18.1	12.9	10.6	15.0	14.7	15.6	12.9	12.5	6.2	10.4	9.1	10.9	5.7	7.7	9.3	8.8	8.4	12.2	9.0	10.6	10.7	14.8	10.9	9.5	24	18.1
20	8.8	6.5	11.2	5.7	7.6	9.2	8.7	9.4	4.1	8.1	7.9	5.4	3.3	5.0	4.8	4.6	6.5	7.6	9.3	10.2	5.7	9.1	12.4	9.5	24	12.4
21	10.2	18.1	12.0	9.2	7.9	10.3	AV	AV	11.0	5.7	AV	4.5	8.2	8.8	11.7	10.6	6.9	11.2	6.8	4.0	5.5	7.0	6.2	6.4	21	18.1
22	8.3	5.7	5.2	6.3	6.8	2.5	5.5	5.8	7.6	11.9	10.7	6.2	8.6	7.9	5.1	8.6	9.5	3.8	13.2	7.1	7.7	10.6	16.5	5.6	24	16.5
23	9.1	7.4	9.6	11.6	10.2	8.9	8.5	7.8	7.1	4.7	11.8	12.2	14.7	.6	12.4	5.8	10.1	10.5	9.1	11.8	9.3	8.0	11.3	7.2	24	14.7
24	8.4	10.4	11.8	13.1	11.3	8.4	3.1	4.3	2.0	4.3	5.9	11.4	11.8	8.8	12.5	7.9	6.2	7.5	6.9	5.9	7.8	7.1	3.8	2.5	24	13.1
25	6.5	5.9	4.2	5.0	3.4	2.4	2.1	2.1	BR	2.8	2.7	3.5	5.8	4.2	5.2	3.5	8.4	7.3	3.1	2.7	3.2	-.4	7.2	7.0	23	8.4
26	8.1	7.0	4.5	7.2	1.0	3.9	.2	5.0	8.6	2.4	8.3	3.6	5.2	8.4	7.8	8.0	7.2	4.2	9.8	4.8	8.5	3.5	13.7	5.4	24	13.7
27	6.5	9.5	7.7	6.7	11.6	7.5	5.9	5.1	.6	9.6	6.1	5.7	3.9	3.7	-.6	4.5	1.9	1.2	-.3	4.8	5.7	5.9	3.6	7.2	24	11.6
28	5.4	7.4	4.8	5.6	6.2	5.6	4.1	7.7	-2.8	8.4	4.9	1.1	3.9	4.6	7.7	3.5	3.1	3.0	7.0	6.0	8.8	6.6	5.3	7.7	24	8.8
29	8.2	8.4	4.0	7.7	4.1	3.8	2.1	3.6	1.8	11.8	6.9	8.0	6.2	7.1	9.3	8.7	10.0	7.7	4.4	7.5	12.5	9.5	11.1	8.5	24	12.5
30	8.1	8.9	7.0	4.5	8.3	3.7	4.1	8.2	5.1	6.4	5.4	2.3	3.2	.9	8.4	7.5	7.8	4.1	6.2	8.2	8.7	7.6	8.6	10.2	24	10.2
31	7.4	12.8	10.8	5.9	12.4	8.5	8.0	14.8	8.0	14.2	4.7	5.1	7.2	5.6	.3	7.4	7.8	5.4	10.4	9.8	9.5	6.7	10.2	AV	23	14.8
NO.:	31	31	31	31	31	31	30	30	30	31	29	30	30	31	31	31	31	31	31	31	31	31	31	30		
MAX:	18.1	18.1	14.9	17.5	14.7	15.6	16.3	20.1	22.7	19.1	21.6	20.5	20.2	22.4	17.4	21.2	22.0	21.7	20.4	17.7	19.1	55.1	17.7	17.9		
AVG:	8.56	8.09	7.53	7.73	7.44	6.58	5.92	7.03	5.62	8.65	8.10	7.55	7.65	7.43	7.76	8.45	8.49	8.55	8.45	8.36	8.57	10.15	8.86	7.77		

MONTHLY OBSERVATIONS: 736 MONTHLY MEAN: 7.89 MONTHLY MAX: 55.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JUNE 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	-8.9	2.2	7.1	6.8	6.6	.6	1.6	4.8	.9	6.5	4.7	8.4	6.7	7.5	AX	BC	8.0	5.8	8.6	8.2	9.8	4.8	9.5	6.6	22	9.8
2	5.0	8.2	10.4	9.2	4.0	6.9	5.3	7.3	6.5	13.3	9.8	9.2	7.9	4.4	8.7	2.8	4.4	3.2	6.9	14.5	6.7	6.8	6.7	4.5	24	14.5
3	7.5	8.8	7.5	5.6	9.8	10.1	10.0	.9	8.8	7.9	7.5	4.9	6.1	7.2	4.7	6.7	8.3	5.8	4.9	6.4	6.1	5.6	5.1	3.3	24	10.1
4	4.2	3.7	9.3	7.7	7.4	5.5	7.6	6.5	5.0	12.5	8.6	7.7	8.2	5.8	4.6	5.7	4.1	6.5	9.2	6.4	13.2	7.1	8.4	7.1	24	13.2
5	10.0	8.5	9.8	11.4	8.3	9.4	11.9	11.8	13.2	9.9	12.6	12.5	8.9	12.9	8.3	9.9	9.0	10.0	8.9	7.6	9.5	11.2	10.9	10.4	24	13.2
6	8.0	11.6	12.2	9.0	10.2	9.6	12.3	14.0	4.0	9.0	10.2	9.8	9.1	9.9	20.1	7.5	11.9	11.4	12.1	14.0	11.6	12.4	12.5	17.8	24	20.1
7	15.8	13.0	14.3	11.2	14.1	11.0	10.2	8.2	4.5	5.9	5.8	5.4	3.8	5.5	2.0	6.5	9.4	2.7	4.4	6.4	8.1	8.0	8.9	9.8	24	15.8
8	8.8	10.3	9.5	7.1	9.4	8.3	8.5	7.0	5.9	6.8	10.0	7.3	7.3	8.4	7.2	6.6	6.5	5.8	7.6	7.7	9.7	8.9	9.3	11.4	24	11.4
9	6.6	8.0	6.3	AV	-7.0	3.6	5.4	2.5	3.8	7.5	6.9	7.8	5.4	4.4	7.2	5.7	4.3	4.4	2.9	6.5	7.8	9.6	10.0	3.7	23	10.0
10	2.3	6.1	7.7	6.5	8.1	5.6	5.0	9.1	6.9	9.5	7.2	7.6	11.4	11.5	7.9	14.0	12.3	3.6	1.2	4.3	.2	3.8	3.8	2.4	24	14.0
11	4.5	.7	4.8	10.9	4.0	8.1	6.7	2.5	2.8	3.3	7.2	5.6	7.1	4.7	6.6	8.0	5.1	5.1	9.7	8.9	6.0	8.2	9.6	8.4	24	10.9
12	2.0	5.3	7.4	3.2	6.5	7.2	5.6	10.4	3.6	10.7	13.5	13.0	13.1	12.4	11.5	13.2	10.0	9.4	8.3	8.5	11.0	9.0	9.7	10.8	24	13.5
13	9.1	4.8	6.6	5.4	6.7	6.0	8.4	10.3	19.5	26.9	31.6	26.8	21.7	26.4	22.6	21.6	23.5	19.0	23.0	20.9	21.3	23.8	19.9	13.5	24	31.6
14	18.5	11.9	17.7	19.6	18.4	16.5	16.3	24.6	31.7	33.8	35.1	35.3	36.3	32.8	29.2	28.3	33.3	28.5	26.4	25.4	25.7	23.4	22.2	16.9	24	36.3
15	10.8	14.3	11.3	10.6	9.7	11.8	9.0	16.2	23.5	28.3	30.5	29.6	26.4	26.7	24.5	24.3	19.4	22.2	19.2	21.2	13.0	10.8	10.8	AV	23	30.5
16	AV	9.1	10.3	10.8	11.3	5.6	8.8	11.0	7.5	10.3	10.0	10.8	12.2	5.6	14.1	11.1	11.7	11.5	13.6	16.2	12.7	12.5	10.4	10.3	23	16.2
17	9.0	10.0	18.0	15.9	13.7	11.5	13.6	14.5	10.5	17.7	15.1	17.7	15.4	15.5	10.3	12.4	10.3	11.3	7.5	9.0	9.6	12.7	15.5	10.7	24	18.0
18	13.8	10.6	12.8	7.6	11.1	9.2	12.1	8.3	8.8	13.1	18.2	21.6	18.6	14.5	14.3	12.2	19.3	12.5	10.4	9.3	15.3	11.3	10.5	9.8	24	21.6
19	10.0	6.9	8.3	7.7	8.4	7.3	8.8	4.7	3.8	9.8	6.8	5.7	3.3	5.4	7.4	6.7	6.2	6.6	10.6	8.2	8.1	10.7	7.8	9.6	24	10.7
20	9.5	9.5	8.5	10.2	7.2	6.7	6.9	7.0	5.9	13.9	11.5	14.8	9.7	11.5	9.3	10.8	12.5	9.9	11.2	11.3	9.4	9.1	12.6	12.4	24	14.8
21	10.1	13.5	9.3	13.3	9.3	13.0	9.7	11.0	4.9	12.5	12.9	10.7	9.6	11.4	13.0	10.9	14.2	12.4	14.5	13.4	13.0	13.3	15.8	13.7	24	15.8
22	15.0	9.4	10.4	11.2	11.1	8.7	7.8	9.1	11.0	16.8	14.3	10.9	8.6	13.5	16.1	11.0	13.9	15.2	12.1	12.7	15.4	14.0	11.4	17.2	24	17.2
23	12.4	8.3	14.4	12.7	14.1	13.9	11.7	11.8	14.1	15.2	19.5	14.5	14.2	11.7	16.8	15.1	13.4	15.9	11.1	13.5	18.3	16.6	16.8	16.6	24	19.5
24	14.6	11.3	15.8	12.3	16.2	16.8	12.6	15.0	11.3	13.2	17.1	12.3	7.6	8.0	11.0	9.4	8.6	8.5	8.7	7.7	8.4	11.0	14.7	9.6	24	17.1
25	11.6	10.1	AV	-5.8	12.1	12.7	10.1	13.2	15.3	21.2	13.7	13.5	12.4	12.1	12.0	15.5	16.9	11.1	11.0	9.9	11.2	11.7	11.2	10.6	23	21.2
26	8.4	9.5	8.6	12.8	7.9	12.7	11.4	10.2	10.5	14.6	6.7	12.0	11.4	16.3	14.9	15.9	12.2	21.0	11.1	13.5	13.8	12.9	13.0	4.9	24	21.0
27	6.9	9.1	7.1	7.0	4.7	6.4	6.7	5.8	7.7	11.6	8.7	9.3	7.9	5.5	7.4	11.1	8.1	10.5	7.9	10.3	5.5	5.2	4.8	6.6	24	11.6
28	8.5	8.6	6.4	6.0	5.5	6.8	6.2	7.3	6.7	8.2	7.9	6.7	10.5	11.7	10.6	12.2	12.5	16.0	6.7	10.9	13.3	12.1	9.8	13.2	24	16.0
29	11.3	14.1	9.4	7.9	9.0	5.2	4.6	4.6	.8	9.2	10.3	8.9	10.5	16.1	2.1	6.3	7.7	.5	2.7	4.2	3.2	1.4	1.3	1.3	24	16.1
30	3.0	4.4	-1.5	2.0	-.8	.3	5.2	10.5	2.0	4.5	11.6	4.2	7.1	-7.1	-1.7	-.9	7.3	7.5	4.4	-.3	3.2	4.6	6.1	7.0	24	11.6
31																									0	
NO.:	29	30	29	29	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	29		
MAX:	18.5	14.3	18.0	19.6	18.4	16.8	16.3	24.6	31.7	33.8	35.1	35.3	36.3	32.8	29.2	28.3	33.3	28.5	26.4	25.4	25.7	23.8	22.2	17.8		
AVG:	8.56	8.73	9.64	8.82	8.57	8.57	8.67	9.34	8.71	12.79	12.85	12.15	11.28	11.07	11.13	11.05	11.48	10.46	9.89	10.56	10.67	10.42	10.63	9.66		

MONTHLY OBSERVATIONS: 714 MONTHLY MEAN: 10.24 MONTHLY MAX: 36.3

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JULY 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	6.0	2.3	4.0	4.1	4.6	3.6	5.6	.5	2.7	9.1	4.3	6.9	6.1	2.6	4.6	7.6	1.6	4.9	8.7	2.8	4.0	3.0	2.5	4.1	24	9.1
2	1.1 6	2.6 6	1.1 6	4.7 6	-.1 6	2.3 6	2.5 6	-1.8 6	-2.2 6	6.4 6	3.9 6	3.3 6	4.0 6	5.0 6	3.6 6	3.6 6	7.3 6	1.4 6	3.2 6	2.8 6	3.0 6	8.6 6	8.7 6	AV	23	8.7
3	AV	AV	4.0 6	.6 6	2.4 6	2.4 6	9.5 6	3.6 6	1.7 6	.8 6	1.1 6	15.9 6	2.7 6	4.2 6	-2.7 6	AV	-6.7 6	2.6 6	5.2 6	3.2 6	7.5 6	3.6 6	6.2 6	4.4 6	21	15.9
4	2.6 6	6.3 6	2.9 6	2.9 6	5.8 6	2.7 6	3.3 6	2.2 6	2.0 6	6.8 6	3.4 6	8.5 6	9.4 6	11.4 6	5.6 6	5.3 6	3.9 6	.3 6	3.7 6	3.2 6	AV	AV	3.7 6	3.2 6	22	11.4
5	6.3 6	4.7 6	4.8 6	1.0 6	2.7 6	AV	AV	1.7 6	5.8 6	6.1 6	4.8 6	9.5 6	AX	9.9	9.0	12.4	8.5	3.1	1.6	5.4	4.8	5.8	6.4	5.2	21	12.4
6	5.5	5.1	7.0	5.1	5.5	7.8	3.8	AV	AV	1.3	8.3	5.3	3.5	5.7	3.4	8.1	3.7	4.5	6.2	7.0	8.4	9.8	4.2	2.9	22	9.8
7	4.8	5.9	4.7	6.0	7.7	8.4	3.9	10.0	4.5	12.8	8.9	8.1	9.3	7.7	3.1	8.4	5.4	AV	6.0	2.4	9.2	8.5	6.3	8.7	23	12.8
8	8.6	5.4	6.8	3.7	5.8	5.7	8.5	9.7	6.9	10.2	9.4	11.8	10.0	6.9	AV	-.7	8.5	10.5	8.2	6.1	3.7	10.9	6.3	9.0	23	11.8
9	5.6	15.3	14.0	10.5	13.5	14.4	9.8	11.0	4.7	10.0	9.7	9.0	7.6	4.0	11.1	14.0	12.9	11.5	13.6	7.9	AV	AV	7.1	5.4	22	15.3
10	6.9	6.4	3.8	5.2	4.9	1.7	7.8	4.6	4.5	9.4	5.3	13.9	7.5	11.7	5.8	13.1	8.3	8.6	7.0	7.7	11.8	8.5	10.1	10.5	24	13.9
11	10.6	8.1	8.9	7.7	6.0	3.0	4.7	8.0	1.7	13.8	7.3	8.1	11.9	8.9	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	14	13.8
12	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	0	
13	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	BA	BA	10.5	8.4	6.7	3.0	5.8	7.9	4.4	9.8	1.2	3.8	6.1	11	10.5
14	3.3	.3	3.8	2.6	6.9	8.4	5.4	4.0	5.2	2.4	4.1	7.2	4.3	6.7	10.9	9.9	10.5	7.0	11.5	10.9	7.7	7.6	6.6	3.5	24	11.5
15	-.4	1.1	5.3	3.5	5.0	4.7	4.9	3.6	-.4	5.9	10.0	8.1	6.3	6.6	4.4	8.6	5.6	-.8	1.6	3.0	7.2	6.2	7.9	9.4	24	10.0
16	8.7	6.8	7.4	6.0	4.7	5.7	7.0	6.0	5.4	7.4	11.7	10.0	8.3	9.2	6.9	13.6	8.4	9.7	8.6	13.7	12.2	11.4	14.3	8.1	24	14.3
17	10.5	11.6	10.7	5.8	10.3	5.0	6.2	13.0	6.1	14.1	8.0	7.3	9.2	6.1	7.0	3.3	3.1	4.9	5.5	4.8	5.7	8.1	4.7	5.1	24	14.1
18	5.6	6.2	5.0	1.5	7.7	4.6	2.3	1.5	2.2	12.6	12.2	12.5	3.5	5.6	11.5	7.6	3.2	11.4	14.3	9.4	15.3	13.4	10.7	10.8	24	15.3
19	9.5	13.7	12.5	7.4	10.9	12.4	8.3	10.6	4.7	8.8	8.0	5.7	4.4	3.6	7.6	3.2	10.1	6.1	9.8	9.6	6.8	8.9	11.1	9.2	24	13.7
20	8.0	8.6	5.0	7.1	5.4	9.1	3.9	6.7	3.7	8.1	6.1	6.5	9.3	9.3	10.0	8.7	12.8	11.6	7.4	5.7	9.4	7.9	11.0	9.2	24	12.8
21	14.3	12.9	8.7	12.6	12.0	10.2	8.1	11.0	10.0	13.5	11.1	7.3	10.2	6.8	8.2	10.3	12.1	14.5	13.7	13.3	19.9	7.7	5.5	-.6	24	19.9
22	6.0	2.1	3.8	6.0	2.8	4.7	3.0	3.3	7.0	4.9	6.9	9.5	7.3	2.2	2.5	6.0	7.2	5.5	7.6	4.9	7.0	8.8	11.5	7.5	24	11.5
23	6.8	6.8	8.3	4.2	6.5	6.5	3.1	5.1	6.1	13.3	7.9	5.3	14.2	14.1	-2.3	-.4	5.6	9.3	6.7	8.5	12.0	6.9	9.0	10.7	24	14.2
24	7.7	8.3	5.2	8.0	5.5	9.2	5.9	4.2	1.5	10.2	9.2	7.8	28.7	9.0	6.4	9.3	.5	5.6	1.4	4.1	7.1	1.5	6.0	2.8	24	28.7
25	1.8	2.7	5.2	5.0	7.1	4.7	-1.1	8.4	.9	10.0	5.8	9.6	5.9	8.1	1.2	6.6	18.3	-1.2	3.4	10.6	3.9	3.9	.9	2.9	24	18.3
26	1.3	5.0	6.5	7.1	.8	5.0	-2.2	2.8	7.5	4.9	4.5	AX	1.6	5.1	6.4	3.0	6.5	3.8	-.6	5.3	10.9	7.0	11.3	7.6	23	11.3
27	5.0	3.7	1.5	3.2	4.9	4.7	6.8	3.7	3.2	6.6	2.9	5.0	1.2	4.8	6.3	3.7	6.3	2.6	6.2	6.7	5.6	7.1	9.1	8.8	24	9.1
28	10.3	7.2	7.3	8.7	6.6	5.3	3.9	2.7	3.3	11.4	7.0	2.7	3.9	4.9	3.1	5.6	-.3	8.8	8.0	6.2	8.3	7.6	9.3	6.2	24	11.4
29	8.1	4.8	5.0	7.0	5.8	7.1	6.1	7.2	2.0	12.0	5.8	4.4	5.8	8.2	3.5	1.8	4.8	8.6	10.8	3.9	7.2	4.6	4.3	6.2	24	12.0
30	6.9	1.1	4.5	3.1	2.8	5.7	3.1	5.1	7.4	2.6	8.2	7.8	11.6	8.4	8.3	-2.3	-.2	2.6	1.5	3.7	5.9	1.3	.6	7.2	24	11.6
31	-1.0	6.7	3.0	3.7	4.2	1.3	1.1	-.6	.4	6.3	12.9	12.7	14.6	11.9	17.8	15.5	17.3	15.4	17.6	16.0	14.0	17.9	8.9	13.0	24	17.9
NO.:	28	28	29	29	29	28	28	28	28	29	29	28	28	30	28	28	29	28	29	29	27	27	29	28		
MAX:	14.3	15.3	14.0	12.6	13.5	14.4	9.8	13.0	10.0	14.1	12.9	15.9	28.7	14.1	17.8	15.5	18.3	15.4	17.6	16.0	19.9	17.9	14.3	13.0		
AVG:	6.09	6.13	5.89	5.31	5.82	5.94	4.83	5.28	3.88	8.33	7.20	8.20	7.94	7.30	6.13	6.88	6.49	6.38	7.11	6.66	8.46	7.32	7.17	6.68		

MONTHLY OBSERVATIONS: 681 MONTHLY MEAN: 6.56 MONTHLY MAX: 28.7

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: AUGUST 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	11.9	8.9	5.5	12.6	8.8	7.1	6.0	8.2	9.2	2.8	4.2	4.2	16.6	3.0	10.1	-3.4	2.0	3.4	1.2	.8	3.1	2.7	3.4	2.2	24	16.6
2	1.1	1.2	.4	2.5	2.7	2.4	6.7	5.7	4.6	4.0	7.5	6.0	6.5	5.0	4.4	3.6	4.9	3.2	5.9	2.7	2.2	4.1	4.7	3.9	24	7.5
3	2.6	-.1	-.2	3.2	3.4	4.6	-2.0	2.8	3.9	5.6	8.2	5.7	8.6	6.8	5.8	4.6	8.2	2.0	5.5	7.1	2.3	8.1	5.3	5.6	24	8.6
4	3.2	6.6	4.5	3.3	2.4	3.0	5.1	2.4	6.4	7.5	8.5	1.6	4.9	5.9	2.7	4.1	3.3	6.7	4.0	3.3	2.3	6.6	2.1	2.5	24	8.5
5	3.6	4.6	4.0	3.5	3.5	4.0	.6	7.3	4.2	8.7	5.6	2.6	1.8	6.6	7.3	3.9	5.9	7.4	9.9	10.7	4.8	7.1	7.8	6.4	24	10.7
6	7.3	6.5	3.7	8.4	3.3	2.6	1.5	2.8	5.1	7.4	6.6	8.1	8.2	3.0	3.7	1.8	5.3	2.7	4.3	11.2	7.1	7.3	6.7	8.2	24	11.2
7	7.0	3.0	6.0	8.5	1.3	2.2	6.4	1.8	2.2	8.5	8.0	7.3	6.1	8.0	.1	8.5	4.7	1.9	7.5	10.7	7.8	5.2	6.3	6.9	24	10.7
8	5.9	2.5	5.7	7.0	4.8	7.0	-.5	6.3	3.1	6.8	2.0	6.1	5.3	6.7	9.3	4.1	9.3	5.7	4.7	4.4	1.2	3.1	1.0	2.5	24	9.3
9	1.6	-.5	1.8	3.3	3.4	3.4	1.9	1.0	-1.9	3.3	.5	2.6	6.6	4.8	2.6	1.3	6.5	6.2	4.7	5.5	11.1	4.7	4.5	4.9	24	11.1
10	3.6	5.3	1.9	6.7	.7	3.1	2.4	2.8	5.5	AV	AV	-2.5	2.9	-2.4	5.6	.8	4.5	6.4	2.3	6.5	3.3	4.5	7.4	5.0	22	7.4
11	4.3	2.0	4.2	5.5	6.3	5.6	.1	11.0	1.1	5.8	3.4	11.5	6.0	9.6	8.3	9.0	10.6	AV	AV	AV	8.9	4.6	4.5	5.8	21	11.5
12	6.1	2.8	.4	2.4	3.6	4.5	.5	3.6	4.7	7.5	3.1	8.7	8.2	2.4	5.5	6.0	4.8	6.1	5.7	9.0	7.8	6.8	7.4	5.4	24	9.0
13	8.0	6.6	6.0	2.2	8.1	6.9	4.8	1.6	10.2	5.5	6.1	9.1	6.6	8.0	5.0	11.0	15.1	10.3	6.5	10.1	11.6	9.0	8.5	11.0	24	15.1
14	7.5	6.1	9.4	9.7	8.4	3.3	3.0	4.2	6.5	6.8	8.4	12.2	8.4	4.3	10.6	10.1	10.9	7.4	12.6	10.4	10.9	7.4	9.1	8.0	24	12.6
15	8.2	5.3	10.8	7.5	10.1	9.1	10.7	9.2	8.5	15.3	12.6	8.4	8.9	4.1	10.5	6.9	9.9	7.2	11.0	7.2	10.5	11.7	8.9	8.6	24	15.3
16	10.7	9.3	12.0	11.8	10.2	5.7	8.8	13.0	9.8	13.2	11.3	15.6	9.3	10.6	11.8	13.0	AV	AV	3.4	8.8	5.0	11.1	3.7	7.6	22	15.6
17	7.2	4.8	4.8	8.2	9.6	1.8	9.4	2.7	9.1	7.4	10.2	8.4	12.1	8.7	12.9	3.9	5.4	9.6	9.0	7.4	8.4	8.5	11.9	10.0	24	12.9
18	8.4	8.9	8.9	4.6	9.8	10.7	8.5	4.0	10.4	6.7	11.6	17.0	13.3	8.1	6.3	13.2	7.1	4.1	10.3	12.4	9.8	7.6	9.9	7.9	24	17.0
19	10.4	7.4	11.5	7.3	8.9	7.1	6.3	12.4	6.5	AV	4.2	5.5	6.9	4.3	6.6	5.6	8.1	-4.4	1.5	7.1	2.0	4.7	2.9	5.3	23	12.4
20	4.7	3.4	8.3	6.2	5.7	3.0	4.3	5.3	5.6	3.2	6.7	6.3	2.8	3.4	4.6	9.1	8.0	6.7	5.3	6.2	5.1	1.6	.9	.8	24	9.1
21	.3	.7	2.0	1.0	-.6	1.7	2.2	-2.0	-1.9	6.1	10.3	5.2	4.0	5.1	19.4	-4.5	3.8	-.9	1.6	.2	3.9	3.3	1.4	-.3	24	19.4
22	.1	-.1	6.6	2.0	.5	6.0	6.1	.2	3.5	AX	AV	AV	.2	5.9	AV	AV	2.9	5.8	7.1	.0	9.4	4.5	.2	4.1	19	9.4
23	1.4	AV	4.8	5.3	3.3	5.4	-1.2	1.2	-1.0	2.4	5.9	7.7	9.1	3.4	1.3	3.1	3.9	6.0	3.0	1.0	.0	2.7	3.1	2.7	23	9.1
24	4.5	2.2	4.3	8.3	-.6	4.4	5.8	-3.5	4.5	-1.7	4.0	-.2	2.2	3.2	-.5	3.8	2.4	2.2	2.5	.8	2.6	1.2	2.7	2.6	24	8.3
25	5.3	3.9	6.9	1.0	1.1	3.7	2.0	3.6	AV	AV	4.5	7.9	6.1	10.3	-4.6	2.9	4.0	3.3	6.1	-1.0	4.8	6.6	2.1	-.7	22	10.3
26	1.5	1.3	7.7	.8	1.3	3.6	2.0	1.8	1.7	-.6	1.5	3.8	3.8	2.3	2.8	-3.4	3.5	5.6	5.9	3.1	2.9	.8	4.0	3.1	24	7.7
27	5.1	5.8	3.9	2.7	4.6	2.2	2.6	3.9	.9	2.2	3.8	8.6	1.9	1.2	4.7	4.9	2.3	5.9	3.2	5.6	6.3	.1	1.3	4.0	24	8.6
28	7.0	6.8	3.0	2.3	1.0	2.4	1.5	2.6	-.2	5.3	6.9	.3	2.2	3.6	5.9	5.4	7.4	1.7	7.5	3.1	6.2	4.3	4.7	2.7	24	7.5
29	6.7	6.2	3.4	3.2	3.5	3.0	5.6	2.9	2.9	6.5	11.9	4.1	9.8	7.5	5.7	6.7	2.6	9.4	9.2	7.5	8.2	9.3	4.3	11.6	24	11.9
30	3.3	5.2	7.3	3.7	5.9	4.9	6.2	3.0	7.6	10.8	15.3	-1.0	10.4	14.9	31.1	BR	3.1	8.2	4.2	8.9	5.9	4.4	BR	BR	21	31.1
31	1.3	3.6	2.5	4.1	7.4	5.6	2.4	5.4	6.0	7.2	8.4	8.2	7.9	9.2	7.2	9.9	10.6	9.3	9.8	16.2	11.1	6.2	4.3	11.4	24	16.2
NO.:	31	30	31	31	31	31	31	31	30	27	29	30	31	31	30	29	30	29	30	30	31	31	30	30		
MAX:	11.9	9.3	12.0	12.6	10.2	10.7	10.7	13.0	10.4	15.3	15.3	17.0	16.6	14.9	31.1	13.2	15.1	10.3	12.6	16.2	11.6	11.7	11.9	11.6		
AVG:	5.15	4.34	5.23	5.12	4.59	4.52	3.86	4.10	4.62	6.08	6.94	6.30	6.70	5.73	6.89	5.03	6.03	5.14	5.85	6.23	6.02	5.48	4.83	5.32		

MONTHLY OBSERVATIONS: 725 MONTHLY MEAN: 5.41 MONTHLY MAX: 31.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: SEPTEMBER 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	9.8	6.8	5.9	7.6	9.4	3.4	5.3	10.4	10.3	9.8	13.1	12.1	8.6	11.5	7.6	12.9	15.4	13.1	13.1	13.8	12.0	9.8	11.7	10.3	24	15.4
2	8.1	7.9	14.1	11.4	12.2	12.1	9.7	11.8	12.1	17.0	12.0	16.5	20.6	18.1	14.2	13.6	9.1	4.2	12.0	2.3	5.8	3.1	1.9	2.1	24	20.6
3	7.2	6.6	6.9	5.4	6.0	5.0	5.5	7.8	.0	6.6	11.8	8.9	10.0	12.6	12.6	19.1	11.8	11.7	16.6	10.9	11.5	17.9	13.9	15.5	24	19.1
4	10.3	11.5	13.4	7.8	12.1	13.9	13.6	11.0	10.8	9.5	11.2	5.6	8.8	4.0	14.9	2.9	10.9	3.3	4.0	-.9	6.7	4.3	6.0	6.0	24	14.9
5	5.2	11.1	7.3	1.5	2.4	7.4	4.2	1.2	3.1	3.9	8.7	5.1	8.6	14.4	8.5	12.4	3.7	8.2	13.8	9.1	9.8	9.5	10.1	9.8	24	14.4
6	6.9	7.7	6.8	11.4	8.7	8.7	4.5	9.8	9.5	BA	11.2	17.9	13.7	13.8	15.8	11.0	15.0	11.1	13.3	11.9	14.4	14.0	14.6	9.9	23	17.9
7	13.2	11.5	15.2	16.9	16.8	13.0	11.1	9.1	6.9	13.5	12.0	7.6	11.4	12.0	3.2	6.6	12.7	9.2	4.1	5.3	5.9	6.6	1.5	5.9	24	16.9
8	5.4	5.0	7.1	6.9	6.9	9.4	8.7	7.6	8.6	6.9	11.7	7.3	8.2	4.0	5.6	9.2	4.0	6.4	5.0	5.6	8.7	4.6	3.7	9.5	24	11.7
9	7.4	9.0	5.7	5.6	4.9	7.5	10.3	8.9	2.4	8.4	11.9	10.0	9.5	12.0	10.0	8.4	11.6	4.9	6.0	7.1	7.2	3.4	1.2	2.1	24	12.0
10	5.0	.6	4.7	8.0	8.0	4.0	6.8	10.8	6.1	6.8	9.1	6.7	11.0	4.6	8.8	10.8	8.5	11.6	7.9	11.8	7.9	5.6	7.6	6.3	24	11.8
11	8.0	7.6	2.2	1.7	6.6	2.6	2.0	.9	4.4	4.3	5.2	9.5	8.6	12.5	-4.1	10.8	8.3	10.0	15.2	-2.4	4.8	5.7	6.8	6.0	24	15.2
12	4.4	2.8	5.5	5.7	5.8	9.6	11.6	11.3	7.3	8.2	7.3	5.3	5.1	6.6	7.6	9.2	8.2	8.8	6.5	9.7	9.7	7.9	7.6	7.2	24	11.6
13	10.1	5.2	7.0	2.6	5.6	7.3	4.7	3.2	8.2	4.7	15.3	4.2	7.0	2.0	4.3	7.6	7.7	5.8	8.6	5.0	6.3	3.1	6.2	6.0	24	15.3
14	9.0	2.9	9.1	5.0	6.3	6.3	2.4	7.5	6.9	6.0	11.2	8.8	6.5	8.3	9.5	10.1	9.9	7.0	8.5	9.4	10.6	11.1	9.5	7.8	24	11.2
15	7.3	10.3	10.4	7.6	11.0	6.4	7.6	6.4	13.4	8.9	16.8	9.7	7.5	12.2	9.5	11.4	13.8	7.4	9.3	11.2	9.7	9.6	8.6	9.5	24	16.8
16	11.5	5.4	9.5	7.0	7.9	10.0	6.2	6.6	8.4	12.5	16.1	AL	6.0	7.2	6.5	11.9	13.3	8.8	8.5	8.9	11.1	9.2	12.7	6.2	23	16.1
17	9.6	6.6	6.2	3.7	7.5	7.8	5.8	3.6	12.4	11.3	9.6	15.3	10.3	8.1	8.9	15.3	9.7	9.5	12.4	10.5	11.3	15.6	9.1	11.1	24	15.6
18	10.1	8.6	11.4	5.5	10.1	9.1	12.7	10.2	6.6	14.0	14.9	12.8	6.2	12.6	8.1	14.3	12.1	12.4	15.0	15.5	9.5	14.3	14.8	9.6	24	15.5
19	9.8	10.8	9.7	4.2	8.3	14.6	13.7	9.6	11.8	13.1	AX	10.5	11.6	12.9	11.9	13.9	14.9	10.6	18.5	13.7	15.6	14.1	9.5	10.5	23	18.5
20	5.9	10.8	12.1	13.3	13.7	5.5	9.7	11.8	12.8	16.6	16.6	20.9	19.2	14.5	15.4	14.5	13.6	14.9	18.8	17.2	14.3	17.8	15.5	15.1	24	20.9
21	10.7	12.2	14.3	15.0	15.3	12.2	14.0	14.0	16.0	14.9	19.6	17.2	17.0	17.0	15.4	13.6	13.0	14.1	22.9	21.5	16.3	14.8	13.6	15.6	24	22.9
22	9.2	12.8	5.6	9.8	6.5	15.5	9.6	11.3	13.6	18.1	16.7	13.3	19.6	16.5	16.7	19.0	14.2	14.1	20.7	7.0	11.6	13.3	15.8	8.9	24	20.7
23	7.0	4.8	7.1	9.1	6.8	6.3	5.5	10.7	7.6	.8	8.7	7.9	7.2	5.8	6.8	9.7	3.0	10.4	9.2	6.4	6.1	5.6	9.9	4.9	24	10.7
24	6.6	1.9	8.3	6.4	6.3	6.9	3.8	3.1	5.9	15.7	17.8	7.9	13.2	7.8	10.2	10.9	6.5	9.6	10.7	14.0	8.4	10.4	12.4	10.7	24	17.8
25	10.9	10.6	11.3	6.7	6.3	10.1	11.1	8.9	12.9	15.3	15.9	5.9	7.0	8.3	5.2	12.2	12.0	12.3	12.0	11.3	9.7	8.6	8.1	8.0	24	15.9
26	8.6	11.2	11.7	10.7	10.3	8.6	8.5	8.1	10.2	8.9	11.9	11.4	5.3	4.4	3.3	9.9	6.3	5.9	4.3	4.9	4.5	4.5	1.9	6.0	24	11.9
27	6.1	3.3	8.0	5.2	6.1	5.7	10.2	4.9	2.7	5.3	8.4	7.6	7.7	6.3	-1.7	6.9	2.7	4.0	4.2	6.5	3.1	7.2	2.6	6.5	24	10.2
28	2.1	2.8	5.6	5.2	7.7	10.9	6.1	3.3	9.7	4.9	3.1	8.2	8.6	1.0	2.7	2.3	4.3	5.2	3.2	.4	-.2	4.6	6.2	7.4	24	10.9
29	4.4	2.1	5.3	5.5	1.5	3.0	6.7	3.9	3.7	AV	.4	9.2	7.6	6.6	5.0	7.1	5.2	4.8	7.9	4.3	6.6	7.3	8.7	5.9	23	9.2
30	7.0	7.1	3.3	9.3	5.6	6.6	5.4	5.5	6.0	5.3	10.7	4.0	7.9	4.1	2.6	2.3	2.7	5.9	10.8	6.0	9.2	5.3	7.2	8.7	24	10.8
31																									0	
NO.:	30	30	30	30	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30	30	30		
MAX:	13.2	12.8	15.2	16.9	16.8	15.5	14.0	14.0	16.0	18.1	19.6	20.9	20.6	18.1	16.7	19.1	15.4	14.9	22.9	21.5	16.3	17.9	15.8	15.6		
AVG:	7.89	7.25	8.36	7.39	8.09	8.31	7.90	7.77	8.34	9.69	11.69	9.91	9.98	9.39	8.17	10.66	9.47	8.84	10.77	8.60	8.94	8.96	8.63	8.30		

MONTHLY OBSERVATIONS: 716 MONTHLY MEAN: 8.88 MONTHLY MAX: 22.9

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: OCTOBER 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	4.0	9.0	7.4	6.2	5.9	8.3	9.4	4.6	5.9	1.8	11.9	5.7	3.2	6.8	2.8	3.7	6.6	6.0	6.5	3.3	2.2	8.9	7.9	4.4	24	11.9
2	6.8	6.2	7.0	7.2	6.6	9.4	2.4	5.2	6.0	2.3	14.7	8.6	3.3	6.0	5.4	5.0	.4	3.7	6.8	6.4	3.1	4.2	4.6	4.3	24	14.7
3	7.7	6.2	9.7	5.2	7.9	4.1	6.5	2.9	5.4	1.3	12.9	10.1	9.2	8.2	10.6	9.0	6.1	5.2	13.1	4.2	4.8	4.9	5.4	7.1	24	13.1
4	7.7	10.9	7.1	6.2	6.8	5.7	2.0	-1.0	12.4	2.4	8.9	9.4	7.6	3.4	11.1	5.0	8.4	6.4	7.5	3.7	8.0	7.8	7.1	7.3	24	12.4
5	10.3	9.2	8.5	6.4	10.8	7.6	5.3	5.6	10.0	6.8	16.9	9.8	11.7	4.0	7.4	9.3	9.6	10.4	7.6	6.2	7.1	4.2	5.3	6.2	24	16.9
6	6.3	6.2	7.7	10.8	7.1	5.0	8.1	2.7	5.1	8.2	16.3	11.9	12.2	10.7	8.1	7.0	9.0	15.1	7.8	12.5	10.8	9.1	10.8	12.1	24	16.3
7	11.6	8.9	11.6	7.7	8.7	4.6	5.3	7.8	11.7	8.5	18.2	12.5	17.5	14.3	14.6	13.2	15.0	19.3	12.5	13.2	15.1	14.5	12.6	9.9	24	19.3
8	9.2	23.0	-2.4	14.0	14.4	10.7	13.4	8.4	11.4	9.0	11.0	6.9	5.6	4.6	8.1	8.1	6.5	5.1	1.9	8.5	8.4	3.4	9.8	6.8	24	23.0
9	6.3	5.8	4.7	7.5	7.0	4.7	6.6	8.2	3.3	.3	5.4	10.6	11.0	4.3	6.6	6.5	7.3	2.1	3.5	3.9	7.1	8.1	11.1	9.8	24	11.1
10	4.6	4.0	7.7	6.5	6.2	6.1	10.9	4.7	5.2	.1	14.3	9.1	9.3	12.5	10.1	14.0	11.8	12.4	7.3	6.3	7.2	11.3	11.1	10.0	24	14.3
11	10.2	13.2	9.9	11.9	11.0	10.6	11.2	11.1	13.4	14.5	26.5	17.5	13.5	14.0	17.0	15.9	12.0	13.8	11.8	11.5	13.0	12.5	17.2	15.3	24	26.5
12	15.8	9.6	12.9	11.6	12.6	18.2	19.1	18.7	21.0	16.8	4.0	-1.0	5.5	3.7	8.4	-.3	6.5	7.4	7.3	5.0	6.7	5.6	4.8	6.8	24	21.0
13	7.6	6.8	7.4	1.1	4.9	1.6	6.7	5.7	8.2	9.8	5.4	11.9	6.6	6.6	9.3	8.9	8.2	14.3	13.7	10.5	14.2	12.1	5.9	6.6	24	14.3
14	11.2	11.5	13.7	7.3	8.7	9.8	7.3	3.6	8.0	4.6	17.0	6.0	8.3	7.8	7.6	5.2	8.4	12.3	6.4	6.7	2.9	7.2	6.9	5.4	24	17.0
15	6.4	9.6	8.4	5.5	9.2	10.6	8.2	9.0	8.4	7.3	14.9	11.5	9.1	13.6	7.1	7.0	6.4	14.8	12.9	5.8	7.0	11.8	11.9	5.0	24	14.9
16	7.4	7.5	10.4	11.1	8.2	8.4	11.4	6.2	11.9	11.1	17.9	18.8	13.6	11.8	13.5	8.4	12.4	18.4	11.1	8.3	10.3	10.4	9.8	12.6	24	18.8
17	13.8	11.9	15.5	10.3	14.2	13.2	16.3	12.9	14.1	9.3	9.0	14.5	7.0	12.5	8.3	10.2	15.0	10.7	8.8	11.3	10.1	12.9	12.2	8.7	24	16.3
18	9.8	4.6	8.5	11.5	4.9	4.6	10.7	6.7	5.5	3.9	5.6	6.8	.2	8.4	-.2	4.0	6.8	3.7	4.0	5.6	6.7	7.5	7.6	11.7	24	11.7
19	11.8	10.9	10.7	7.1	9.9	9.1	10.7	10.3	3.7	-3.5	AX	9.0	1.3	4.4	4.0	6.7	5.1	7.6	15.6	19.9	26.8	29.9	29.1	31.8	23	31.8
20	31.2	31.5	31.5	27.3	29.9	25.6	22.1	22.6	19.5	9.3	7.3	6.9	12.5	8.6	9.1	7.6	7.8	9.1	3.0	.3	7.7	10.1	6.9	8.0	24	31.5
21	10.5	6.7	3.1	9.9	11.0	11.3	8.2	6.5	8.9	6.3	13.9	14.6	12.0	12.4	13.9	12.6	10.6	11.5	10.3	13.0	9.7	13.4	15.9	15.8	24	15.9
22	17.3	12.5	10.4	13.2	13.0	13.3	9.5	15.7	16.1	17.6	22.8	16.6	13.6	11.3	11.9	13.2	14.8	11.0	15.3	9.7	10.6	14.7	13.3	17.6	24	22.8
23	13.3	12.2	11.7	14.4	14.2	16.5	12.6	12.7	14.8	16.1	14.6	15.4	9.2	11.8	12.1	14.2	10.8	10.1	5.4	8.1	11.5	9.4	9.2	10.3	24	16.5
24	9.1	8.1	8.5	6.6	7.9	7.8	10.8	11.3	7.4	AV	5.3	20.6	11.9	11.4	11.0	10.2	7.1	5.1	17.0	12.7	9.9	10.4	6.6	6.4	23	20.6
25	8.2	11.9	9.7	9.5	5.1	8.7	8.4	11.9	.0	7.3	5.0	7.8	16.0	5.5	6.6	9.5	4.8	10.6	5.1	4.6	6.8	5.9	8.4	1.2	24	16.0
26	7.0	5.6	5.4	6.0	6.3	4.9	8.4	5.8	3.6	4.8	6.5	5.9	9.7	7.6	7.1	3.3	3.0	9.2	6.6	8.1	3.4	4.8	4.1	4.0	24	9.7
27	5.7	4.7	5.3	9.9	10.3	9.2	10.5	11.4	8.6	-.1	8.4	13.1	5.8	6.7	14.3	9.6	11.5	9.7	4.7	7.1	7.5	3.0	6.9	3.6	24	14.3
28	8.2	8.9	8.4	4.8	9.2	8.1	8.5	9.6	17.3	14.0	11.3	17.2	12.8	16.6	13.9	13.1	16.0	12.5	13.8	8.0	15.0	13.5	16.3	13.8	24	17.3
29	13.4	13.8	8.1	10.3	13.0	8.9	10.1	6.9	8.3	10.1	13.2	11.8	15.5	12.1	9.3	7.2	10.6	12.6	9.1	16.7	9.6	10.3	9.6	7.1	24	16.7
30	4.8	4.4	11.2	-1.7	6.8	4.9	2.6	4.9	7.8	7.4	7.5	7.5	10.2	11.4	18.3	15.7	11.5	14.8	14.0	11.9	11.4	15.9	10.8	10.9	24	18.3
31	13.1	16.9	11.3	16.1	13.6	16.5	15.8	15.1	14.1	17.4	17.0	14.0	7.2	7.8	8.1	3.5	6.0	8.8	6.7	4.0	6.1	6.2	7.7	7.3	24	17.4
NO.:	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	31.2	31.5	31.5	27.3	29.9	25.6	22.1	22.6	21.0	17.6	26.5	20.6	17.5	16.6	18.3	15.9	16.0	19.3	17.0	19.9	26.8	29.9	29.1	31.8		
AVG:	10.01	10.07	9.39	9.08	9.85	9.29	9.65	8.64	9.58	7.49	12.12	11.00	9.42	9.06	9.53	8.60	8.90	10.12	8.94	8.29	9.05	9.80	9.90	9.28		

MONTHLY OBSERVATIONS: 742 MONTHLY MEAN: 9.46 MONTHLY MAX: 31.8

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: NOVEMBER 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	7.2	8.0	9.5	10.4	7.9	5.7	6.5	9.6	9.0	10.5	20.6	13.2	9.3	11.2	10.4	10.7	10.2	11.3	7.2	9.4	9.7	11.1	10.4	12.3	24	20.6
2	15.1	18.3	16.8	14.6	13.6	17.5	15.4	13.3	13.2	10.5	13.6	13.3	12.5	12.8	11.6	14.7	9.3	17.3	9.3	12.7	10.9	11.7	14.3	12.0	24	18.3
3	11.4	11.7	15.2	10.6	17.6	12.2	19.8	10.8	15.0	21.4	20.4	17.6	17.0	16.1	14.5	15.3	15.2	15.4	11.5	13.3	14.5	10.9	12.0	10.3	24	21.4
4	12.5	15.5	11.0	14.9	10.1	10.0	15.0	14.6	18.6	18.5	15.7	12.0	11.9	18.0	8.0	12.0	16.2	11.7	9.4	10.5	13.9	13.0	15.8	18.0	24	18.6
5	12.7	15.8	17.3	18.3	14.3	12.8	12.8	10.1	10.6	6.1	11.5	15.6	16.7	10.4	5.7	3.0	7.4	5.8	3.1	8.7	4.5	9.3	5.9	6.4	24	18.3
6	5.1	3.7	4.3	6.2	9.2	9.3	8.0	5.9	11.7	13.2	6.5	7.0	9.6	9.9	6.2	6.5	9.4	10.9	8.5	7.0	11.4	10.6	10.3	8.8	24	13.2
7	7.9	5.5	11.6	11.3	5.1	7.3	9.9	13.6	8.4	16.0	9.5	14.1	6.2	4.8	9.6	8.7	4.5	13.8	8.7	8.5	8.5	7.4	10.3	8.1	24	16.0
8	8.4	7.1	3.3	8.6	6.6	5.3	4.3	8.6	5.7	14.1	17.3	16.7	10.4	9.4	14.5	17.4	11.1	15.5	12.0	11.1	11.3	8.8	9.6	9.0	24	17.4
9	6.0	10.7	8.1	9.0	11.7	14.8	9.7	13.8	8.9	13.0	5.3	9.1	6.7	.2	12.4	.6	4.0	7.5	4.3	5.1	8.2	4.5	9.8	3.1	24	14.8
10	6.5	8.2	10.5	6.0	9.8	7.8	9.5	6.5	5.2	9.7	15.1	11.3	10.6	14.1	10.2	7.6	7.9	5.3	9.1	11.9	9.2	6.9	7.3	10.6	24	15.1
11	8.6	5.4	4.0	8.1	8.3	8.7	6.3	6.6	8.4	8.7	7.5	9.7	11.0	8.4	5.7	10.4	3.1	12.3	10.2	8.7	2.7	6.8	11.8	6.4	24	12.3
12	6.6	10.9	8.4	9.5	11.5	9.3	11.1	14.8	8.5	6.1	7.4	9.3	4.0	7.9	6.3	5.3	9.6	8.2	7.5	6.3	6.1	7.9	5.6	8.4	24	14.8
13	6.6	9.5	8.1	.9	11.1	7.4	10.0	10.2	13.2	9.2	14.9	6.5	9.9	8.8	8.8	12.4	8.2	10.4	7.4	7.4	10.6	12.6	10.0	11.2	24	14.9
14	6.4	12.5	4.1	6.9	9.5	6.5	4.6	4.8	5.3	11.3	AX	BL	BC	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	10	12.5
15	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
16	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
17	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
18	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
19	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
20	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
21	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
22	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	3.4	10.4	7.2	11.6	9.5	9.9	12.5	6.5	5.7	7.5	6.9	5.3	6.3	4.0	14	12.5
23	7.5	11.2	7.4	10.1	11.8	6.5	5.8	10.0	8.1	7.4	14.6	15.4	10.2	8.2	6.2	12.7	4.5	9.1	6.5	7.7	11.2	9.5	8.0	10.4	24	15.4
24	5.8	5.6	7.0	1.8	9.0	6.1	5.1	10.4	.5	14.6	12.6	15.8	9.1	6.0	3.0	5.0	5.3	6.4	6.6	6.5	16.5	7.9	11.4	6.0	24	16.5
25	7.6	7.5	-1.3	2.8	2.6	7.6	4.1	4.1	9.4	5.9	4.8	3.2	.8	3.8	3.9	5.4	2.4	5.7	10.5	11.7	6.9	5.5	3.2	4.3	24	11.7
26	3.5	8.9	5.0	6.9	7.3	6.2	5.0	8.1	12.4	11.3	9.5	6.6	9.8	8.9	6.8	10.0	8.4	4.7	.8	7.1	3.6	1.3	-.2	3.5	24	12.4
27	3.1	3.4	3.6	3.7	4.1	.5	4.8	4.4	1.4	5.0	.8	3.3	1.4	1.5	.9	-1.5	3.1	3.9	.9	3.2	4.8	5.2	3.2	4.4	24	5.2
28	2.7	5.3	3.2	3.8	4.7	4.9	-.1	1.4	1.9	5.3	10.7	1.8	3.2	2.9	6.0	3.1	4.6	3.3	1.5	5.0	1.4	7.5	4.9	6.9	24	10.7
29	3.9	3.1	5.7	2.2	5.2	3.0	9.3	4.8	2.6	13.2	10.4	10.3	4.1	4.8	9.1	8.8	7.0	1.5	2.2	-2.6	5.3	-4.5	3.8	.3	24	13.2
30	2.0	AV	AV	AV	AV	AV	5.9	6.6	-1.2	5.8	4.0	2.1	1.5	3.6	1.0	1.3	.2	2.5	2.4	1.5	-2.9	3.5	.2	1.2	19	6.6
31																									0	
NO.:	22	21	21	21	21	21	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22		
MAX:	15.1	18.3	17.3	18.3	17.6	17.5	19.8	14.8	18.6	21.4	20.6	17.6	17.0	18.0	14.5	17.4	16.2	17.3	12.0	13.3	16.5	13.0	15.8	18.0		
AVG:	7.14	8.94	7.75	7.93	9.10	8.07	8.31	8.77	8.04	10.76	10.73	10.20	8.32	8.33	7.74	8.15	7.46	8.59	6.60	7.65	7.96	7.40	7.90	7.53		

MONTHLY OBSERVATIONS: 523 MONTHLY MEAN: 8.31 MONTHLY MAX: 21.4

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: DECEMBER 2022

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.5	.5	7.6	1.2	3.7	.3	-1.3	4.3	-5.4	2.0	-1.7	1.7	.0	-3.5	1.8	-2.3	-2.8	2.3	-.4	.7	-.3	1.1	2.0	-3.7	24	7.6
2	-1.2	1.4	6.1	-1.0	5.4	-2.1	1.0	2.4	1.5	9.9	9.6	2.0	8.7	7.5	4.3	4.2	6.0	4.0	2.7	8.9	2.2	5.5	6.9	6.5	24	9.9
3	4.4	3.0	5.5	7.9	1.0	-1.8	3.9	.2	4.1	1.6	.4	5.8	4.2	2.2	6.8	4.8	8.9	3.2	5.1	-1.0	2.3	4.7	4.0	2.8	24	8.9
4	4.0	4.2	.5	7.6	3.5	3.5	1.7	2.2	4.6	.8	3.4	1.9	4.4	3.3	6.1	5.4	1.8	2.3	7.0	2.1	.8	1.4	3.0	1.0	24	7.6
5	.8	5.1	5.9	1.2	5.0	3.4	5.1	1.1	9.8	7.3	1.2	12.8	15.2	6.1	14.1	8.2	5.9	2.7	1.4	3.2	3.4	2.8	3.9	2.2	24	15.2
6	4.4	5.5	1.9	2.7	7.8	2.0	4.0	6.1	1.9	8.7	5.2	3.5	6.8	4.3	-1.9	1.9	-.1	1.2	2.5	3.0	.4	2.1	.5	3.9	24	8.7
7	.7	4.7	3.9	2.2	6.0	7.3	3.6	.5	2.8	1.7	5.6	4.2	4.4	3.7	8.4	8.3	6.9	9.1	1.9	2.7	6.0	4.0	3.7	-.6	24	9.1
8	3.9	5.4	5.2	4.5	2.0	3.4	5.3	4.0	-.2	2.6	7.8	1.0	3.0	10.6	.3	3.1	7.5	5.6	3.9	3.8	4.3	3.6	4.1	3.2	24	10.6
9	4.3	5.5	6.6	3.8	3.4	2.9	1.9	-.2	1.6	8.6	10.7	8.6	11.6	10.3	12.9	8.9	13.0	17.3	11.4	12.6	13.7	13.4	10.6	6.6	24	17.3
10	14.9	8.6	8.7	6.2	8.4	4.6	2.0	2.1	5.8	4.2	1.6	5.6	13.0	12.3	13.5	20.2	24.1	17.5	16.5	13.4	14.7	10.5	13.6	9.4	24	24.1
11	9.2	9.1	13.7	12.2	17.1	12.0	14.5	19.2	20.4	17.6	14.6	15.9	8.8	8.5	10.0	11.1	9.4	4.4	1.8	3.5	-1.9	7.9	5.1	6.3	24	20.4
12	-.2	4.5	2.9	6.8	5.1	7.8	-.3	4.4	-6.5	-3.3	-.5	1.9	1.7	2.3	3.0	4.4	5.5	6.9	1.7	3.3	3.7	3.4	.5	4.7	24	7.8
13	3.5	2.4	.0	1.0	4.4	1.6	-1.9	3.3	5.6	AX	AX	AX	8.4	8.3	5.9	5.3	10.9	5.8	9.0	4.3	7.0	4.6	7.1	2.6	21	10.9
14	4.3	7.9	5.7	4.8	7.0	5.8	2.5	2.1	2.2	1.0	1.7	5.9	2.4	.9	6.9	5.1	AV	-.2	10.2	5.4	-5.8	-2.8	-3.2	-1.1	23	10.2
15	.4	-.9	3.9	-1.1	1.4	2.3	.9	1.6	1.2	.4	-.8	-.2	.5	2.2	-.9	-2.6	1.8	1.8	1.2	-.3	.5	1.4	3.7	3.1	24	3.9
16	1.9	-.1	1.8	1.7	2.1	3.2	-1.0	1.7	-2.7	3.7	2.1	.8	-1.5	-3.5	-1.0	-2.4	-.3	4.2	-1.5	1.2	1.6	.5	-.8	1.3	24	4.2
17	-.1	.3	.2	1.8	5.7	2.2	-1.3	1.2	.3	.4	.1	.7	-.8	6.1	-.9	1.9	-1.6	3.0	5.2	-.8	2.7	.3	1.4	4.9	24	6.1
18	6.4	-.2	-1.2	2.3	2.0	.1	2.5	.0	-2.7	7.1	5.4	1.5	3.3	-2.4	-.8	1.9	-.9	5.5	.3	.3	-2.3	-.4	1.2	-4.9	24	7.1
19	3.0	-.3	3.3	-.7	-1.1	9.1	3.4	.7	.1	2.4	5.4	4.6	5.3	.4	3.2	6.4	.2	6.6	2.4	2.2	1.9	.8	3.7	5.5	24	9.1
20	8.5	5.8	3.9	2.9	4.9	.5	5.4	6.2	2.8	4.1	10.4	5.8	-.6	5.7	5.1	5.2	-.4	3.5	3.3	8.4	5.9	.5	1.4	7.6	24	10.4
21	7.1	3.1	7.1	-1.5	1.1	6.7	.8	2.2	5.6	5.1	4.2	3.6	2.0	1.6	2.5	3.9	-1.3	7.3	5.6	4.4	3.7	8.5	-1.2	1.0	24	8.5
22	-1.1	2.5	5.1	.4	3.3	-.7	-1.8	-8.2	1.1	-3.1	.9	-4.1	.0	-.4	4.8	1.6	2.7	-.6	1.5	4.3	5.2	-3.1	2.3	AV	23	5.2
23	AV	6.0	1.0	-3.5	-3.1	-4.4	-5.8	.5	-7.4	-.8	-3.8	-3.0	-5.7	-8.2	-3.4	-2.0	-2.2	.4	-7.1	-3.6	-.5	-5.5	-2.9	-8.7	23	6.0
24	1.1	-3.1	-5.0	-2.6	-1.8	-.5	-2.3	-1.1	-5.5	-4.2	-1.4	-3.4	.2	-1.2	.8	.3	4.5	-.3	-4.1	-2.3	-1.5	-1.5	-4.4	-3.6	24	4.5
25	-5.1	-2.9	-3.1	-5.2	-.9	-1.5	-1.3	-3.6	-5.3	3.1	-3.2	-1.4	4.8	-4.9	1.6	-3.0	-.3	-2.1	-4.3	-3.4	-5.0	-5.9	.5	.8	24	4.8
26	-2.4	-3.0	-2.6	.5	-3.0	-3.6	-1.2	-2.5	-4.9	-1.0	1.3	2.2	2.3	3.5	1.8	1.1	-1.8	1.0	-.6	-2.3	-1.3	1.5	1.2	-.5	24	3.5
27	-.8	4.3	10.2	5.0	4.1	4.6	-.1	1.9	-3.7	11.2	4.6	7.6	9.0	7.7	2.5	.5	9.4	AV	-4.8	4.5	6.7	8.2	6.2	4.2	23	11.2
28	15.8	7.2	6.0	6.9	8.5	4.4	3.8	6.3	.6	11.5	7.8	8.6	7.6	3.5	5.8	7.1	6.1	.9	6.9	5.7	6.6	.4	.6	5.3	24	15.8
29	4.6	7.8	8.1	8.0	9.2	8.3	6.4	5.0	4.0	4.3	7.9	3.7	5.4	.6	-.9	1.2	.2	2.5	1.8	6.6	2.3	6.0	7.4	1.4	24	9.2
30	.1	-1.0	.6	1.5	2.1	.1	4.5	4.0	-1.0	3.0	4.7	2.5	7.1	6.9	1.7	-.9	3.2	.7	-.4	-2.9	1.4	3.9	5.1	5.5	24	7.1
31	3.6	4.8	3.6	3.3	-3.0	3.5	1.4	-.9	1.0	.8	2.6	.4	2.0	2.6	4.7	.5	3.2	3.0	3.9	2.1	-3.1	.6	1.0	6.3	24	6.3
NO.:	30	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	30	30	31	31	31	31	31	30		
MAX:	15.8	9.1	13.7	12.2	17.1	12.0	14.5	19.2	20.4	17.6	14.6	15.9	15.2	12.3	14.1	20.2	24.1	17.5	16.5	13.4	14.7	13.4	13.6	9.4		
AVG:	3.22	3.16	3.78	2.61	3.59	2.74	1.82	2.15	1.02	3.69	3.59	3.36	4.31	3.13	3.83	3.53	3.98	3.98	2.71	2.90	2.43	2.53	2.85	2.43		

MONTHLY OBSERVATIONS: 737 MONTHLY MEAN: 3.05 MONTHLY MAX: 24.1

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JANUARY 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	10.9	5.7	4.3	6.1	6.1	8.6	3.5	-1.3	.1	8.0	6.3	6.1	5.0	11.5	3.0	4.4	5.8	3.8	.9	4.2	7.5	7.5	.4	2.8	24	11.5
2	-1.4	6.0	5.3	6.9	3.4	7.0	6.3	6.1	4.8	5.0	2.7	3.4	-1.7	4.8	2.4	6.3	6.1	1.4	3.9	4.3	2.2	-.6	1.5	2.6	24	7.0
3	2.7	3.5	2.7	3.6	3.5	2.9	6.9	.9	6.4	3.4	8.5	AV	AV	AV	AV	4.2	4.7	3.1	-1.9	-1.0	1.8	4.9	1.6	.7	20	8.5
4	3.9	3.8	-.5	2.6	-.7	-2.4	-.9	.7	-2.5	-.5	7.2	3.4	.8	3.3	-.3	1.5	2.9	5.9	-2.0	4.7	-.9	7.4	1.5	5.3	24	7.4
5	2.9	-4.4	3.7	2.0	3.3	1.9	4.4	2.6	.3	1.9	2.0	4.6	1.1	.3	-1.3	-3.1	-4.3	-2.4	-5.2	-1.4	1.8	-.5	2.1	.7	24	4.6
6	-.2	5.1	.8	-1.7	3.0	-.3	.8	2.4	-2.8	.6	2.2	2.8	.7	-4.6	3.0	3.4	-3.7	1.8	-.3	-3.1	1.0	-.2	2.7	5.2	24	5.2
7	1.6	2.2	2.9	1.8	.5	4.9	4.9	2.8	-.3	.0	10.1	3.4	2.0	4.9	2.1	2.4	5.4	6.7	2.9	.2	-1.4	.4	2.9	3.0	24	10.1
8	6.3	-2.0	4.6	3.4	3.4	1.9	1.2	1.4	3.9	4.2	6.1	10.2	-2.6	3.0	2.5	-2.9	1.6	.3	-2.0	2.2	-.7	.1	-1.3	1.8	24	10.2
9	3.5	3.2	.9	3.0	-.2	-1.9	1.7	3.3	4.1	8.4	8.3	4.4	.8	1.4	.1	-2.7	-4.7	-.3	-3.0	-1.4	-1.2	.9	-1.1	-.8	24	8.4
10	-1.2	-3.1	-3.0	-2.0	-3.5	1.2	-6.2	-2.7	-2.8	.2	5.9	3.2	-3.3	-2.0	-3.8	.1	-.5	2.9	-1.8	-1.7	-2.4	3.1	3.0	.8	24	5.9
11	1.5	3.8	6.2	2.9	6.3	5.2	5.8	4.7	4.6	5.8	4.6	6.8	4.2	3.3	6.0	8.8	5.2	6.0	4.8	1.5	3.3	7.7	4.1	6.5	24	8.8
12	3.9	1.5	2.6	2.9	-3.6	-.8	1.5	-2.0	-.6	.2	AX	AX	AX	-5.2	3.3	7.5	5.9	8.8	9.1	5.3	8.5	5.3	2.4	4.0	21	9.1
13	.4	4.4	3.4	-3.2	3.2	1.3	9.5	5.7	3.5	4.3	5.5	2.3	2.9	-.2	-1.1	3.0	7.4	-7.6	.0	1.0	3.7	-2.7	1.7	3.2	24	9.5
14	1.5	-.3	.2	-.5	1.9	1.6	-.6	1.4	.9	1.9	-1.1	4.4	-2.1	-1.6	6.4	-2.6	4.2	3.7	2.9	1.3	1.3	4.5	3.4	5.4	24	6.4
15	-.5	.5	.3	-3.4	-1.7	-.8	-2.4	.1	-1.2	4.6	3.6	5.3	6.2	4.0	.6	20.5	10.5	.0	5.5	1.0	-.3	1.6	5.3	2.1	24	20.5
16	5.7	4.0	5.4	2.1	4.3	1.2	2.7	1.1	2.3	4.2	2.3	4.3	2.7	1.1	-.6	-.7	-.3	.7	4.1	9.9	5.1	-.7	3.7	3.4	24	9.9
17	3.0	-.6	3.8	4.3	-1.5	2.7	-2.4	1.5	5.8	-2.6	2.8	-1.9	6.4	2.0	3.5	8.2	6.8	8.5	.1	-4.0	-2.1	.8	.4	-2.8	24	8.5
18	3.3	2.3	.9	4.6	-1.2	3.0	2.0	-.9	.5	1.2	-.8	4.1	3.1	-1.4	6.5	6.1	2.2	6.8	4.6	3.8	6.4	6.5	4.5	10.7	24	10.7
19	1.9	6.2	6.8	-1.7	-.1	-1.0	3.6	4.5	-4.3	-.3	-.1	1.0	5.0	9.3	3.5	4.0	2.4	1.1	1.7	2.6	4.0	3.9	5.9	6.8	24	9.3
20	7.0	4.2	3.0	3.3	1.5	.4	4.1	-2.0	-.4	.2	-.3	1.2	2.8	1.5	-3.0	-2.6	-6.1	-1.3	-2.7	-.4	2.6	5.2	6.0	2.4	24	7.0
21	5.6	-1.4	1.3	1.6	-2.0	-5.1	4.7	2.4	.2	4.1	4.3	-.6	2.2	3.0	1.0	.9	3.1	2.7	2.4	6.8	-2.8	1.8	-1.6	1.6	24	6.8
22	.1	-.6	1.6	-1.4	-2.8	3.8	2.6	2.4	2.9	.4	-.6	-2.3	-4.1	.5	1.9	-2.9	.0	-2.9	-2.3	.0	-6.1	-4.9	-3.3	-.9	24	3.8
23	1.0	-1.3	-1.2	-1.7	.3	.0	-3.0	-4.7	-2.5	-2.8	-.6	-1.9	3.3	-2.0	-.3	-2.1	-.9	-3.4	4.0	.7	.0	-.8	.9	-.1	24	4.0
24	.1	-1.4	-1.4	-1.7	-.6	-3.5	2.8	-1.6	-.4	AV	8.1	3.0	.4	4.9	.0	-2.1	2.5	1.6	.0	.5	4.6	1.1	6.7	4.9	23	8.1
25	6.4	2.7	.6	3.0	-.4	6.3	.2	-5.5	-3.6	.6	-1.3	2.3	-2.2	1.7	-2.4	5.6	-1.2	-1.0	3.1	1.0	-1.1	.4	-1.0	2.1	24	6.4
26	4.6	4.0	.1	1.1	-2.9	.7	.6	1.3	4.5	2.6	BA	BA	-.6	1.1	3.3	2.7	3.9	-2.9	-1.3	3.9	2.2	.6	-.9	-2.3	22	4.6
27	.8	1.0	-2.0	4.1	2.6	-1.6	-1.0	1.8	.3	-1.6	9.8	12.3	-3.0	6.6	2.6	-7.7	.9	-2.4	1.4	.6	-.3	-2.3	1.0	3.3	24	12.3
28	-.1	-1.5	3.0	3.2	2.3	4.1	-1.0	2.8	-3.7	12.7	3.5	8.0	-.3	-3.3	1.4	4.2	4.6	.4	3.6	-2.7	-2.4	5.5	6.1	5.7	24	12.7
29	5.8	1.2	1.7	2.1	3.2	5.4	2.0	3.2	4.5	6.3	12.9	11.0	12.4	13.1	10.8	15.1	16.3	13.5	7.8	5.7	7.6	6.1	5.9	6.1	24	16.3
30	4.5	-1.6	2.0	.7	.1	1.1	-1.3	3.7	2.8	5.0	2.7	1.2	2.5	1.5	1.0	4.1	.2	-.5	2.0	6.9	4.5	1.5	4.0	3.1	24	6.9
31	2.9	-.3	.4	-5.3	1.9	2.8	-.3	3.7	1.6	5.7	2.7	-5.0	-6.3	3.8	4.9	-.1	-3.2	5.7	.6	4.3	-1.0	1.7	1.6	-2.0	24	5.7
NO.:	31	31	31	31	31	31	31	31	31	30	29	28	29	30	30	31	31	31	31	31	31	31	31	31		
MAX:	10.9	6.2	6.8	6.9	6.3	8.6	9.5	6.1	6.4	12.7	12.9	12.3	12.4	13.1	10.8	20.5	16.3	13.5	9.1	9.9	8.5	7.7	6.7	10.7		
AVG:	2.85	1.51	1.95	1.38	.95	1.63	1.70	1.28	.93	2.79	4.04	3.46	1.32	2.21	1.90	2.69	2.51	1.96	1.38	1.83	1.46	2.12	2.26	2.75		

MONTHLY OBSERVATIONS: 734 MONTHLY MEAN: 2.03 MONTHLY MAX: 20.5

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: FEBRUARY 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	-.9	.0	-1.8	.6	1.3	-3.7	.2	8.1	-2.8	-4.5	-.9	-1.3	-4.6	-5.2	.7	-.9	-.1	-2.7	2.0	-.3	4.7	3.3	1.8	-.2	24	8.1
2	-.5	1.7	-2.3	.7	-2.4	3.8	-2.3	-3.0	-2.9	3.4	.1	.6	-3.0	3.5	-.4	.9	-6.8	-.3	-5.6	-.6	1.5	-5.2	-1.2	-6.7	24	3.8
3	2.7	-.6	1.4	3.1	-1.1	5.5	1.3	9.2	2.8	1.6	2.5	6.6	5.5	4.9	2.3	-1.4	1.4	2.4	1.8	3.5	3.5	3.3	1.8	3.8	24	9.2
4	.9	6.0	-1.8	3.3	4.3	3.3	5.8	2.6	-.1	2.3	7.1	6.1	.5	-1.6	4.6	3.0	6.2	2.1	.6	-2.1	-2.2	4.0	5.4	4.8	24	7.1
5	6.2	5.8	7.0	5.6	10.0	6.7	3.2	6.0	9.8	12.2	9.2	9.1	2.3	2.5	.8	2.7	2.0	5.1	5.5	.1	2.1	1.3	2.9	4.9	24	12.2
6	4.8	3.8	7.6	3.7	2.1	1.0	5.1	2.5	1.9	-.6	13.5	8.3	5.8	4.2	8.0	4.0	3.9	-1.3	4.4	-2.1	-1.6	5.8	-.3	2.5	24	13.5
7	3.5	3.5	.2	6.2	4.9	5.5	6.9	4.2	8.8	10.0	6.1	AX	AX	9.5	10.0	.8	5.6	10.7	8.5	5.9	4.1	4.4	5.4	7.4	22	10.7
8	11.2	8.1	9.3	8.9	9.6	4.3	.3	2.9	4.9	11.1	8.2	5.7	5.5	5.0	8.2	11.4	7.7	5.6	3.8	9.5	1.6	5.7	7.0	5.0	24	11.4
9	11.2	2.5	5.7	2.7	3.1	5.8	-1.7	-8.2	2.9	-2.5	-1.8	-4.3	-4.2	-1.1	-1.7	-3.0	-2.2	2.1	-2.9	-4.4	-3.8	-2.0	-2.6	.5	24	11.2
10	-3.1IF	-1.1IF	-2.4IF	1.5IF	43.3IF	-1.8IF	-2.0IF	3.0IF	-.8IF	-1.8IF	-3.4IF	1.7IF	AV	2.4IF	.0IF	-7.0IF	-.9IF	2.4IF	-2.1IF	-2.7IF	-.8IF	.0IF	2.2IF	4.5IF	23	43.3
11	.2	-1.1	-1.2	-.4	.4	2.3	-.3	3.2	9.9	5.0	8.6	4.9	5.5	5.2	1.3	2.3	.8	-.8	.3	-4.0	.1	AV	-1.1	-1.8	23	9.9
12	2.9	.7	2.5	-3.3	2.0	1.5	2.1	3.3	1.0	.1	8.4	2.2	-.3	2.5	-.9	-.2	-2.5	-4.1	.6	-4.1	-1.0	-2.1	-1.3	-3.6	24	8.4
13	3.6	-.8	2.7	1.5	-2.8	.1	-2.4	1.3	-3.9	-2.1	2.6	6.1	4.5	4.6	1.4	1.8	1.6	-.9	4.1	-6.8	-3.3	3.9	-.5	-.7	24	6.1
14	4.2	-.3	5.0	6.6	-2.2	6.0	5.7	-2.6	.7	10.4	3.6	2.3	-1.6	.8	4.9	.4	1.1	5.5	-1.8	-.7	3.5	2.1	-.8	3.0	24	10.4
15	.5	1.9	.0	.8	-4.4	1.4	-1.3	.8	-1.3	1.0	2.4	.1	-.1	7.0	1.1	-.4	.0	.4	.6	3.7	-2.8	1.9	2.0	6.5	24	7.0
16	5.8	9.3	AV	AV	9.3	10.6	9.6	10.1	14.2	12.4	9.7	10.2	3.0	7.2	8.6	2.5	8.7	11.2	6.1	5.7	4.3	7.3	-.4	-4.0	22	14.2
17	-4.6	-.1	AV	-5.9	-3.4	.4	1.2	3.0	.6	2.8	2.4	-1.8	-1.9	-.8	3.1	1.9	.8	-2.2	-2.6	-4.2	2.5	-2.2	5.4	2.1	23	5.4
18	-.4	AV	AV	-.1	-2.8	-.3	-2.0	-2.7	.2	5.1	.7	-1.8	1.2	.8	-.7	.1	3.1	-.8	3.8	-1.5	1.0	-.1	-.9	-.3	22	5.1
19	-1.4	-.2	-1.0	2.9	3.3	AV	3.7	2.9	.4	2.1	8.5	5.5	3.1	1.7	-1.2	4.1	2.8	7.4	.4	-.4	.7	4.9	4.9	5.4	23	8.5
20	.0	3.4	4.5	9.0	11.5	7.9	6.6	9.4	7.3	4.6	5.5	8.1	8.9	5.7	1.5	4.2	7.0	2.0	5.2	5.1	2.5	5.1	.5	3.7	24	11.5
21	4.2	1.2	7.8	6.9	5.8	5.4	7.8	3.6	3.5	2.9	6.1	3.2	6.2	9.4	5.4	6.7	10.3	4.1	10.4	9.3	5.0	7.0	4.1	5.8	24	10.4
22	2.5	9.7	4.6	3.7	.9	4.7	.7	5.3	7.9	6.3	6.2	3.5	7.9	AV	-1.9	7.3	7.3	3.5	4.6	.9	6.0	5.0	5.7	6.8	23	9.7
23	5.7	5.6	AV	-6.7	9.5	5.1	9.4	5.9	7.1	8.3	5.9	6.0	9.0	8.3	7.0	12.2	9.6	6.9	12.8	12.8	12.6	13.5	10.9	11.6	23	13.5
24	9.5	4.6	6.6	7.3	12.2	9.1	9.5	10.2	15.8	7.2	10.2	12.5	6.7	9.8	6.1	5.2	9.9	8.2	4.3	3.7	2.6	10.7	2.0	6.9	24	15.8
25	4.6	5.4	6.3	3.7	-1.1	5.2	7.0	6.3	6.4	8.7	9.4	7.2	9.6	7.7	10.2	11.0	9.7	4.0	10.3	18.6	23.2	13.1	10.6	10.9	24	23.2
26	5.1	9.8	11.6	12.1	9.9	15.1	4.8	10.8	8.9	5.7	7.8	9.3	12.7	5.8	12.9	12.8	12.6	3.8	8.4	8.0	11.7	8.1	17.7	8.4	24	17.7
27	7.1	4.8	2.2	1.2	8.2	2.7	2.4	3.7	9.5	6.4	7.5	AV	-6.0	7.7	8.2	11.0	11.4	9.7	8.6	12.8	13.9	9.7	11.1	16.1	23	16.1
28	14.0IF	18.4IF	12.7IF	16.4IF	12.3IF	11.4IF	7.8IF	3.1IF	11.0IF	13.9IF	27.1IF	21.9IF	26.1IF	18.7IF	18.8IF	23.7IF	31.7IF	26.5IF	26.7IF	25.7IF	23.1IF	21.1IF	21.1IF	22.0IF	24	31.7
29																									0	
30																									0	
31																									0	
NO.:	28	27	24	27	28	27	28	28	28	28	28	26	26	27	28	28	28	28	28	28	28	27	28	28		
MAX:	14.0	18.4	12.7	16.4	43.3	15.1	9.6	10.8	15.8	13.9	27.1	21.9	26.1	18.7	18.8	23.7	31.7	26.5	26.7	25.7	23.2	21.1	21.1	22.0		
AVG:	3.55	3.78	3.63	3.41	5.13	4.41	3.18	3.75	4.42	4.71	6.19	5.07	3.93	4.67	4.23	4.18	5.10	3.95	4.24	3.26	4.10	4.80	4.05	4.48		

MONTHLY OBSERVATIONS: 659 MONTHLY MEAN: 4.26 MONTHLY MAX: 43.3

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MARCH 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	17.5	17.1	18.6	14.7	15.5	22.0	16.8	15.1	18.9	17.2	14.2	13.1	12.3	7.4	9.2	8.2	12.6	12.6	7.5	5.8	4.4	8.7	8.3	4.2	24	22.0
2	5.8	9.2	8.9	8.9	7.9	.6	4.7	9.2	6.3	8.2	6.8	9.9	2.0	2.3	-4.0	-1.1	1.0	3.1	2.6	1.7	.5	-3.5	4.4	2.2	24	9.9
3	6.3	8.2	7.4	10.9	4.7	10.2	13.8	12.8	AV	-4.2	13.7	9.6	5.7	8.3	1.8	1.7	-.1	-3.1	-2.1	-.3	-1.2	.7	-.8	5.5	23	13.8
4	-.3	.8	-.3	3.1	3.4	4.4	4.5	-1.5	.6	-1.2	4.5	.3	2.5	2.6	3.2	-1.0	4.5	4.2	.5	13.7	17.2	14.9	2.8	3.0	24	17.2
5	4.3	-1.7	7.3	4.5	2.1	1.2	3.1	1.8	6.1	3.5	6.9	7.4	1.1	.0	18.8	24.7	9.2	5.2	3.9	2.7	2.1	2.7	6.3	6.2	24	24.7
6	6.3	5.7	10.1	10.5	10.8	11.4	8.3	5.5	10.2	18.8	29.3	14.5	11.4	8.9	11.4	6.4	9.8	12.8	13.8	11.5	14.4	10.1	16.2	16.6	24	29.3
7	12.3IF	10.3IF	10.8IF	12.0IF	16.9IF	7.2IF	10.2IF	16.3IF	15.8IF	20.8IF	20.0IF	20.5IF	43.0IF	43.9IF	25.5IF	14.3IF	15.9IF	12.7IF	23.9IF	39.4IF	24.2IF	26.3IF	31.0IF	27.0IF	24	43.9
8	21.9IF	23.9IF	24.8IF	28.2IF	27.6IF	18.9IF	14.7IF	11.6IF	10.3IF	13.0IF	11.6IF	13.4IF	11.3IF	15.9IF	11.5IF	17.8IF	22.4IF	9.2IF	17.1IF	17.8IF	14.6IF	17.0IF	14.7IF	10.6IF	24	28.2
9	16.9IF	12.4IF	14.4IF	14.8IF	14.9IF	16.3IF	17.3IF	28.0IF	29.4IF	36.1IF	33.5IF	AX	AX	27.0IF	26.0IF	30.2IF	27.7IF	34.7IF	31.4IF	34.0IF	25.6IF	36.6IF	28.5IF	25.4IF	22	36.6
10	27.2	23.4	25.6	24.0	26.5	25.2	27.0	21.4	11.0	9.9	.0	.4	1.4	1.7	.3	.9	.8	-1.7	2.2	-.4	3.4	2.4	4.7	3.5	24	27.2
11	1.4	1.8	1.6	3.2	-.8	.9	.7	.1	3.0	.4	3.3	2.0	.9	7.1	10.3	1.1	5.2	3.6	7.3	1.8	7.2	5.8	11.4	12.1	24	12.1
12	15.4	14.6	5.5	8.0	7.6	12.5	1.5	1.7	3.5	.7	.3	-.5	5.3	2.3	.2	4.6	-.1	1.1	5.0	5.5	-.1	1.4	1.1	1.7	24	15.4
13	-1.3	5.1	1.0	2.7	3.5	3.1	3.6	1.5	1.5	.7	3.6	4.1	1.4	-1.1	.1	.3	.4	1.8	-1.2	-1.4	.3	1.9	-.1	-3.4	24	5.1
14	4.9	3.7	2.4	2.6	1.6	2.7	4.8	3.6	.3	2.4	6.5	1.1	-.1	1.2	1.0	.7	-1.0	-1.4	.2	-4.4	1.3	-4.0	-.6	5.2	24	6.5
15	2.3	1.7	.0	1.8	-1.0	.4	1.1	.7	1.1	.5	4.6	2.3	1.4	3.2	9.2	3.6	9.1	8.6	10.2	9.2	6.4	19.8	19.7	16.3	24	19.8
16	14.8	11.1	17.1	12.2	11.0	17.1	16.7	15.2	17.0	18.3	20.1	11.8	9.5	8.9	5.4	12.1	7.5	2.9	10.1	13.8	4.2	1.7	4.7	6.9	24	20.1
17	6.7	4.8	3.3	7.0	3.7	3.7	.1	-.5	-.1	AV	AV	5.9	-3.4	-2.4	-2.4	-1.1	.1	-1.0	1.6	1.8	-1.0	-1.6	.6	-.6	22	7.0
18	1.6	2.1	6.8	-.9	2.5	-1.5	7.4	-1.5	1.9	-2.4	1.8	-3.1	.2	.0	-2.9	-2.4	-4.8	-1.1	-2.4	-.5	-2.4	.2	-1.3	-.3	24	7.4
19	-1.4	.2	-3.5	-2.9	-3.1	-1.0	-.2	-7.5	-1.7	-.3	6.7	1.8	-.4	-4.0	-.4	-1.2	1.7	-1.0	-.1	.6	3.7	1.7	.0	-1.4	24	6.7
20	-.5	-.6	2.4	6.4	5.5	12.3	10.1	5.4	1.9	-3.3	4.9	9.8	3.2	8.6	8.1	12.4	1.6	3.7	4.8	-1.7	.2	1.8	4.1	2.1	24	12.4
21	1.0	2.3	1.3	1.3	3.7	-.1	1.3	-.5	3.4	4.3	18.0	8.0	11.5	1.1	6.8	4.3	9.8	9.4	9.4	10.6	14.3	12.2	12.5	17.8	24	18.0
22	11.4	11.9	13.9	9.5	13.8	9.2	8.6	8.9	8.9	2.5	7.6	7.3	3.2	3.7	1.8	6.1	5.4	7.1	5.5	6.3	8.3	11.8	9.8	8.1	24	13.9
23	12.9	5.7	4.7	5.2	3.7	9.5	8.2	7.6	10.8	6.3	7.9	4.9	-.2	7.0	9.1	17.3	12.5	9.9	13.0	9.9	4.6	7.9	4.8	3.6	24	17.3
24	3.2	4.4	2.4	5.1	8.5	3.4	2.7	1.5	2.6	7.0	9.0	5.2	5.0	8.9	6.6	9.4	7.8	.1	3.1	6.3	5.7	.4	2.1	3.8	24	9.4
25	2.4	7.0	2.3	4.2	3.1	.1	7.1	.2	6.8	9.3	12.1	9.1	7.8	8.1	-.4	1.7	6.1	6.7	4.2	-1.4	6.0	9.4	4.6	7.3	24	12.1
26	4.5	2.2	8.5	3.1	2.6	8.0	6.3	2.4	3.6	5.1	5.1	8.2	5.1	4.0	4.8	7.0	8.6	7.4	9.3	AV	AV	4.5	-4.4	-4.5	22	9.3
27	.1	-1.8	-2.1	-1.4	1.4	3.1	4.0	4.4	1.7	1.3	5.9	10.0	2.8	6.1	6.0	2.4	5.5	6.4	1.6	2.7	10.8	2.4	6.3	3.6	24	10.8
28	5.9	2.0	.3	5.0	5.9	1.3	4.5	1.8	AV	-9.3	9.5	4.8	6.5	5.1	7.3	1.1	.7	1.2	3.8	2.3	3.7	.4	3.3	1.1	23	9.5
29	1.5	2.0	2.0	.5	5.7	2.7	1.2	-.5	3.5	-2.1	2.0	3.1	-.2	-5.6	.1	4.5	.5	1.1	2.6	.1	1.7	-1.9	1.3	.3	24	5.7
30	-.2	.5	-.9	-2.2	1.8	.2	4.2	-.2	1.0	6.2	14.9	6.1	8.4	2.9	-1.6	3.7	-2.3	.9	.1	.5	-1.8	-1.2	-3.0	5.7	24	14.9
31	9.9	8.5	10.8	8.7	8.3	8.1	6.9	6.0	6.7	8.2	2.5	5.7	5.9	6.5	6.3	7.3	8.9	6.4	3.6	7.6	7.9	6.8	6.8	3.1	24	10.8
NO.:	31	31	31	31	31	31	31	31	29	30	30	30	30	31	31	31	31	31	31	30	30	31	31	31		
MAX:	27.2	23.9	25.6	28.2	27.6	25.2	27.0	28.0	29.4	36.1	33.5	20.5	43.0	43.9	26.0	30.2	27.7	34.7	31.4	39.4	25.6	36.6	31.0	27.0		
AVG:	6.93	6.40	6.69	6.80	7.07	6.87	7.14	5.50	6.41	5.93	9.56	6.56	5.48	6.12	5.78	6.35	6.03	5.27	6.21	6.52	6.21	6.36	6.45	6.22		

MONTHLY OBSERVATIONS: 736 MONTHLY MEAN: 6.45 MONTHLY MAX: 43.9

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: APRIL 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	8.1	6.3	3.6	9.4	4.6	3.5	-3.7	.8	1.6	2.7	12.6	10.1	11.9	8.8	4.4	2.6	3.1	2.8	3.4	3.9	6.6	2.0	-.3	3.0	24	12.6
2	3.3	4.7	1.3	2.2	-.9	2.7	-1.1	.3	-2.1	5.4	-.2	2.1	-2.3	2.2	-1.5	-2.7	-.3	-6.5	-.6	-3.3	-1.7	-5.3	-.4	4.3	24	5.4
3	1.9	1.1	5.1	4.8	3.4	2.2	-.6	-1.6	1.5	-4.3	-.9	AV	-5.2	15.9	10.0	10.9	3.8	6.3	7.1	5.0	5.7	3.6	9.4	4.1	23	15.9
4	5.2	9.4	6.1	3.1	5.3	7.5	7.7	5.3	7.6	4.8	6.2	8.7	5.4	4.9	3.5	7.5	7.8	1.0	9.7	5.6	7.0	4.9	5.8	9.0	24	9.7
5	7.4	8.0	5.3	5.5	4.7	6.0	4.8	11.0	5.4	2.4	7.5	6.6	9.1	5.2	5.1	7.0	7.2	3.4	.4	4.0	4.2	6.6	.2	4.0	24	11.0
6	4.2	1.1	.0	.7	2.8	-.2	-.2	3.1	2.4	4.7	AX	AX	4.3	5.7	-4.2	-3.4	.3	-.3	-1.2	-2.8	-2.7	-5.8	7.9	1.0	22	7.9
7	-.9	3.0	-1.5	-.1	-1.3	1.5	-2.4	-2.9	-3.8	-3.3	-3.6	.0	-1.7	-2.3	-5.1	-.2	-3.7	-.4	-3.2	.3	-3.2	-4.9	-2.8	1.1	24	3.0
8	-4.0	-1.4	-1.3	-1.0	-2.1	1.1	-2.2	-7.2	-3.5	-.5	-2.1	-2.0	-3.4	-3.1	-5.6	-2.0	-.5	-.1	-2.9	-1.0	-2.8	-3.3	-4.3	-.5	24	1.1
9	3.4	-.6	-.8	-2.4	-5.4	-5.8	-2.9	-2.5	-4.8	-4.5	-3.2	1.0	-2.5	-.3	-2.8	-3.5	-.6	-3.0	-4.7	.2	-5.1	-.6	-4.1	-.9	24	3.4
10	-4.5	-3.8	-1.5	-2.2	-3.1	-1.4	-2.3	-3.7	AV	6.1	9.3	-.8	.4	1.3	.1	-1.8	-.3	1.1	-.6	-3.4	2.8	.0	1.8	.8	23	9.3
11	1.7	4.4	1.4	1.5	.5	8.3	5.0	2.9	3.6	.8	1.2	4.6	5.0	.9	.4	3.9	2.4	3.2	1.8	-1.4	.2	2.8	.4	.1	24	8.3
12	-.3	2.8	-1.5	1.2	1.8	3.6	.9	-1.4	-.1	8.1	.0	.0	-2.3	.6	1.0	2.2	-1.0	5.1	4.7	-2.6	1.1	2.9	1.4	1.0	24	8.1
13	1.5	-1.0	4.3	5.6	5.0	9.7	5.5	-.4	.8	-2.7	4.2	-2.6	AV	AV	4.7	.4	-3.2	.3	-.8	-1.8	.6	-.8	.6	.4	22	9.7
14	1.0	4.6	2.7	-.6	3.8	4.9	.0	.2	4.0	2.2	3.0	8.7	8.7	2.3	4.6	2.8	6.7	2.7	2.3	3.8	3.5	5.5	2.9	5.0	24	8.7
15	4.1	7.4	4.2	10.5	4.3	.2	4.7	8.1	2.1	2.7	6.2	4.3	-3.3	.7	.4	1.3	-1.9	-2.6	-1.1	.7	-1.2	-5.5	1.7	-2.6	24	10.5
16	3.7	.0	-1.8	-3.2	-3.4	-4.6	.1	-1.6	-.2	-.9	-3.2	-7.0	-1.6	.8	-1.6	-.8	-.7	-4.9	-3.2	-2.0	-4.1	-2.5	-2.0	.0	24	3.7
17	4.0	.1	1.5	.0	1.5	1.2	-1.2	.2	-1.5	9.7	4.9	-.4	.3	-3.3	-1.8	2.0	-3.0	-.8	-4.7	-.6	-5.1	-.8	.2	1.1	24	9.7
18	1.5	.8	2.1	-.6	-.1	-.7	1.9	1.0	-1.7	4.6	8.0	7.5	3.3	5.7	5.5	10.2	6.9	14.0	17.3	15.0	12.6	15.8	16.0	15.5	24	17.3
19	16.9	17.1	13.1	15.5	14.0	14.1	12.6	15.3	10.2	12.6	8.7	7.3	3.4	6.9	7.3	8.8	4.4	-.8	4.1	5.0	3.1	5.6	.6	2.8	24	17.1
20	9.7	8.0	8.2	8.2	4.9	4.6	3.4	7.8	8.7	13.5	AV	10.1	5.7	7.0	7.4	8.0	5.5	7.2	6.5	2.5	5.1	10.2	8.6	4.5	23	13.5
21	11.1	7.0	1.9	2.2	2.5	6.7	3.0	6.0	7.4	5.2	1.5	4.3	4.8	1.1	4.0	1.2	-1.4	6.0	4.6	.1	4.3	-3.8	-1.1	-2.7	24	11.1
22	-.8	-2.8	1.3	-2.2	-.7	-1.6	-.6	-2.1	-2.3	.7	4.2	-1.6	.1	-1.6	-3.4	-1.5	1.2	-6.3	-5.2	-.4	-2.3	-4.3	-1.9	3.9	24	4.2
23	-.1	2.3	1.4	1.5	.1	2.8	-1.7	3.4	.1	3.4	-.9	2.2	-.4	-1.4	-1.4	AV	-3.1	-.5	-.1	1.7	-.6	3.3	2.7	.7	23	3.4
24	3.1	-2.7	-.2	-2.6	.6	.8	-1.6	-1.0	-2.1	4.0	-3.1	1.5	-.7	1.7	.3	2.1	1.5	.3	-.4	-1.4	3.3	.6	-3.6	5.2	24	5.2
25	3.8	.9	3.3	-.4	.9	1.8	2.4	3.6	-1.3	9.9	6.4	5.7	5.7	5.7	3.9	2.6	5.2	6.6	-3.0	1.7	.4	4.7	10.7	8.8	24	10.7
26	8.2	5.1	6.8	6.6	4.0	6.2	7.4	1.9	3.1	9.9	11.2	13.7	8.9	9.5	10.4	10.5	12.5	11.7	10.6	10.4	12.4	9.7	9.4	8.0	24	13.7
27	7.1	8.8	5.9	7.7	7.6	5.4	6.3	11.1	2.2	1.7	5.9	2.7	4.8	3.7	5.2	.8	2.4	-.1	-1.3	-2.0	-1.6	1.3	1.1	1.0	24	11.1
28	.5	-2.4	.6	-.4	-1.5	-2.8	1.0	.8	-1.0	3.7	3.4	1.2	.8	2.6	1.3	.0	4.7	2.7	-.4	-1.2	-3.6	.1	-.3	3.6	24	4.7
29	-1.2	-1.6	.7	-1.4	2.3	.8	-4.8	-1.8	2.4	3.3	6.1	.8	2.3	4.5	4.4	4.1	-.7	3.8	3.2	-.7	.8	-.8	1.6	-.6	24	6.1
30	2.7	-1.2	.3	.8	1.5	3.4	3.1	-1.7	-4.0	5.7	.7	2.9	-.7	-5.9	-2.5	.6	-1.7	.1	-4.5	-1.9	.2	-5.0	-.1	-.2	24	5.7
31																									0	
NO.:	30	30	30	30	30	30	30	30	29	30	28	28	29	29	30	29	30	30	30	30	30	30	30	30		
MAX:	16.9	17.1	13.1	15.5	14.0	14.1	12.6	15.3	10.2	13.5	12.6	13.7	11.9	15.9	10.4	10.9	12.5	14.0	17.3	15.0	12.6	15.8	16.0	15.5		
AVG:	3.41	2.85	2.42	2.33	1.92	2.73	1.48	1.83	1.20	3.72	3.36	3.27	2.10	2.75	1.80	2.54	1.78	1.73	1.26	1.11	1.33	1.21	2.07	2.71		

MONTHLY OBSERVATIONS: 712 MONTHLY MEAN: 2.20 MONTHLY MAX: 17.3

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: MAY 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	-1.8IF	.7IF	-.2IF	1.3IF	-1.9IF	.8IF	-1.5IF	-.3IF	-2.1IF	1.8IF	-2.2IF	-2.1IF	-2.7IF	-2.8IF	2.6IF	5.0IF	-3.8IF	.2IF	-.3IF	-2.1IF	-.4IF	-1.6IF	48.6IF	-.9IF	24	48.6
2	-1.7	1.1	.0	.0	-1.6	-5.7	.9	-.6	-1.2	10.3	AX	AX	1.3	-.8	1.8	.9	7.1	4.5	1.1	22.9	3.3	10.1	3.7	5.7	22	22.9
3	.1	4.0	-.1	5.8	7.6	2.6	3.5	.3	-1.0	10.5	2.1	.2	-.6	4.3	2.9	1.1	3.3	.9	2.9	3.5	3.4	4.6	6.8	3.2	24	10.5
4	-.5	1.7	2.8	4.6	2.4	2.5	.9	4.5	6.2	2.5	8.4	BL	2.0	-1.1	5.4	3.3	5.9	2.9	AV	AV	6.4	5.5	6.5	-3.3	21	8.4
5	7.5	3.1	7.0	6.2	6.1	3.1	8.5	8.6	10.2	4.5	7.2	5.6	9.4	11.0	13.3	15.7	11.6	14.3	6.8	6.6	7.8	9.6	8.3	8.9	24	15.7
6	12.7	10.6	11.2	11.3	11.3	17.1	11.7	10.1	10.2	17.4	14.3	7.7	10.2	6.6	4.7	10.3	4.9	1.5	7.5	5.1	7.1	4.9	8.7	.2	24	17.4
7	3.1	1.4	1.8	5.2	7.4	1.4	-.5	4.0	3.3	AV	-4.1	11.5	6.9	3.7	5.7	10.5	7.6	13.9	7.7	8.8	7.0	12.7	2.1	3.3	23	13.9
8	2.6	4.7	6.4	6.9	5.8	5.5	8.4	3.8	5.3	8.0	5.2	8.2	11.2	15.0	15.7	5.7	11.3	12.6	8.2	9.3	6.9	5.3	7.7	6.6	24	15.7
9	7.7	6.9	8.7	8.1	8.8	3.2	8.2	7.5	10.0	12.1	12.1	13.2	13.0	11.2	14.6	13.4	3.2	5.2	7.0	13.4	7.5	10.1	6.6	11.1	24	14.6
10	10.4	11.6	11.4	10.8	10.1	8.4	5.8	10.6	11.2	7.8	10.3	16.3	12.1	13.2	10.1	12.5	5.5	5.9	8.1	10.0	4.5	14.3	3.2	7.3	24	16.3
11	6.5	6.5	4.3	7.4	7.4	10.8	6.4	11.9	10.7	8.4	12.8	7.9	10.9	9.2	7.6	2.0	3.1	10.9	-3.5	-1.4	.6	5.9	4.1	6.2	24	12.8
12	3.5	3.2	3.8	.8	-.9	2.4	4.8	-1.0	.0	6.7	1.6	2.9	7.7	7.4	1.4	4.2	10.6	9.6	AV	AV	4.3	.6	-1.8	1.2	22	10.6
13	-.9	.7	2.8	.7	2.5	-.5	-.2	-1.2	-.7	4.4	4.6	5.2	6.8	8.3	13.1	6.3	3.7	13.0	10.2	3.4	4.2	3.0	11.1	4.5	24	13.1
14	4.7	6.2	8.5	10.5	6.6	4.6	7.1	4.3	13.9	16.8	15.3	9.2	9.5	7.9	7.3	10.9	9.4	9.2	4.7	3.4	9.7	8.6	6.1	7.0	24	16.8
15	3.0	2.9	4.3	5.1	7.6	5.0	6.5	9.9	9.5	22.3	5.5	10.4	10.5	7.6	8.8	8.0	10.6	6.5	4.9	5.5	6.2	5.5	7.0	9.3	24	22.3
16	4.9	8.3	8.3	6.3	6.0	11.0	8.2	5.6	7.5	13.1	11.5	11.1	8.4	6.6	-.1	-.3	2.0	5.6	5.1	6.8	3.6	6.5	7.8	8.7	24	13.1
17	3.5	2.6	2.8	2.2	.9	5.2	.3	3.4	4.1	4.0	6.7	7.5	2.9	12.0	2.7	1.2	.5	1.3	8.1	-3.3	5.2	3.6	.5	3.7	24	12.0
18	.2	5.1	AV	AV	2.9	3.2	3.4	-.3	-.8	.2	5.9	BA	BA	3.3	1.7	-.2	1.2	3.5	4.2	3.4	1.5	6.3	3.3	3.7	20	6.3
19	5.8	6.7	-1.2	.9	3.0	2.2	5.6	6.0	-.6	6.9	10.2	3.0	4.5	3.2	5.0	3.1	5.0	-.2	5.0	6.2	8.1	11.7	6.0	4.3	24	11.7
20	5.6	1.1	5.0	6.5	5.3	6.4	10.4	9.7	7.6	10.4	8.2	13.7	15.7	7.2	8.9	2.4	9.1	-1.5	3.3	5.6	3.4	-1.0	.6	5.0	24	15.7
21	4.5IF	7.7IF	7.0IF	8.0IF	11.8IF	16.0IF	11.7IF	AV	19.7IF	21.9IF	13.7IF	19.8IF	16.5IF	9.4IF	10.3IF	9.4IF	7.5IF	16.8IF	17.6IF	17.4IF	13.7IF	18.6IF	18.4IF	18.5IF	23	21.9
22	16.6IF	16.8IF	17.1IF	15.4IF	18.7IF	17.4IF	15.5IF	19.7IF	15.5IF	19.3IF	12.6IF	18.2IF	15.8IF	BA	2.7IF	5.6IF	5.3IF	10.2IF	9.7IF	2.6IF	1.0IF	4.8IF	8.2IF	6.4IF	23	19.7
23	7.1IF	4.7IF	5.6IF	3.7IF	4.8IF	1.0IF	-.6IF	4.5IF	4.0IF	5.6IF	9.2IF	5.2IF	14.2IF	13.2IF	15.9IF	12.1IF	10.9IF	8.2IF	8.9IF	7.1IF	11.6IF	11.1IF	12.2IF	11.3IF	24	15.9
24	8.7IF	10.2IF	11.3IF	11.8IF	15.3IF	13.5IF	11.7IF	12.1IF	9.5IF	13.0IF	7.6IF	9.1IF	12.2IF	11.7IF	11.3IF	13.8IF	15.4IF	14.5IF	9.2IF	7.5IF	10.7IF	5.4IF	5.9IF	5.2IF	24	15.4
25	7.9IF	8.7IF	11.3IF	6.8IF	4.9IF	7.0IF	1.2IF	12.8IF	12.1IF	17.0IF	AX	BC	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	10	17.0
26	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
27	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
28	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
29	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
30	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
31	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	0	
NO.:	25	25	24	24	25	25	25	24	25	24	23	21	23	23	24	24	24	24	22	22	24	24	24	24		
MAX:	16.6	16.8	17.1	15.4	18.7	17.4	15.5	19.7	19.7	22.3	15.3	19.8	16.5	15.0	15.9	15.7	15.4	16.8	17.6	22.9	13.7	18.6	48.6	18.5		
AVG:	4.87	5.49	5.83	6.10	6.11	5.76	5.52	6.08	6.56	10.20	7.77	8.75	8.63	7.27	7.23	6.54	6.29	7.06	6.20	6.44	5.72	6.92	7.98	5.71		

MONTHLY OBSERVATIONS: 572 MONTHLY MEAN: 6.69 MONTHLY MAX: 48.6

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JUNE 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	14.5	11.2	10.4	6.8	11.2	16.5	10.0	10.7	11.6	9.4	10.6	9.3	12	16.5
2	7.5	9.5	7.2	9.8	10.2	13.9	11.5	12.0	9.7	13.3	10.0	8.6	6.9	9.9	4.8	5.6	16.8	4.8	10.5	9.2	9.4	12.5	9.1	13.2	24	16.8
3	13.0	9.0	9.4	8.5	7.7	7.9	4.5	12.2	10.4	13.0	13.7	11.8	7.8	4.8	11.9	4.4	3.7	-2.1	11.8	9.1	8.1	10.4	9.0	5.9	24	13.7
4	7.2	12.3	10.5	10.6	10.7	13.4	8.7	13.3	15.1	21.7	17.6	9.7	11.7	7.9	9.5	4.8	10.7	10.6	8.6	8.0	4.5	8.3	12.2	8.1	24	21.7
5	14.2	10.5	14.8	8.9	12.4	7.8	6.7	9.5	8.5	13.0	13.7	12.4	14.6	5.3	16.7	10.3	6.3	12.3	8.9	8.9	11.3	14.1	8.8	9.3	24	16.7
6	9.8	1.7	15.1	9.0	11.4	8.5	6.4	10.6	7.0	14.3	8.1	2.3	7.0	6.5	6.5	5.7	9.3	4.3	3.7	10.2	3.5	4.3	1.4	3.0	24	15.1
7	7.4	.0	6.1	.4	4.5	-1.5	5.8	10.6	7.3	11.9	13.5	11.7	10.6	8.7	7.0	11.3	6.5	12.1	9.8	13.9	15.9	12.1	12.4	16.2	24	16.2
8	12.9	9.4	11.9	9.6	6.3	13.8	13.1	13.4	17.7	21.9	21.4	21.5	18.4	18.1	17.0	18.9	14.9	17.7	17.6	22.0	16.6	20.8	20.5	13.5	24	22.0
9	17.7	17.0	16.0	9.5	14.5	13.4	15.1	10.0	11.9	17.6	19.5	21.7	16.0	12.0	17.9	13.9	18.3	15.9	13.1	13.8	18.7	18.6	16.9	16.1	24	21.7
10	17.6	13.1	19.2	22.1	15.2	15.2	14.7	15.4	22.8	23.4	21.0	22.2	19.7	16.8	15.5	21.0	8.3	8.8	5.2	15.1	8.1	-.5	5.7	-.2	24	23.4
11	.7	8.5	4.9	8.1	5.6	9.1	6.3	7.0	10.4	9.8	12.7	11.8	11.7	10.3	6.7	7.8	8.1	12.7	.3	3.2	6.5	7.0	9.6	6.2	24	12.7
12	12.1	15.1	AV	AV	3.8	4.8	1.5	8.4	5.1	11.3	12.4	3.7	10.1	10.5	3.4	8.3	12.8	3.9	11.5	10.1	12.8	10.6	10.9	10.9	22	15.1
13	14.8	9.4	7.0	8.1	5.8	6.4	8.5	9.1	11.8	12.7	23.0	12.1	14.5	16.0	10.8	14.8	15.5	10.5	9.1	14.9	7.5	9.5	12.6	8.0	24	23.0
14	8.8	8.0	9.1	9.9	7.7	7.2	8.6	9.1	13.6	14.8	9.4	9.8	11.5	9.2	18.3	10.2	8.0	-1.9	8.5	2.0	7.8	10.7	2.5	10.4	24	18.3
15	9.0	5.1	10.0	1.1	-.1	1.6	9.7	2.3	4.5	-2.9	2.1	-3.0	2.3	6.0	12.9	1.2	9.5	3.3	4.1	7.5	4.0	9.3	6.8	2.2	24	12.9
16	2.1	3.7	1.4	3.7	-1.8	4.7	2.5	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	7	4.7
17	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	AV	3.3	19.8	16.5	9.8	6.6	8.5	5.5	8.5	8	19.8
18	6.3	10.3	8.2	6.9	7.1	13.3	10.7	12.4	6.5	4.7	10.7	4.8	1.6	6.1	2.0	4.7	4.7	3.3	7.3	3.7	8.1	4.6	6.3	10.6	24	13.3
19	4.3	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	1	4.3
20	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ	6.6	18.0	7.5	10.8	16.5	14.8	9.0	14.8	15.7	16.4	14.5	9.5	12	18.0
21	17.0	14.6	16.6	11.7	16.3	11.9	13.0	14.7	9.2	12.2	7.6	7.1	1.9	8.4	4.6	2.4	4.1	-8.3	2.1	5.4	6.2	7.7	2.9	7.0	24	17.0
22	6.9	5.8	7.2	7.3	3.0	.0	4.0	5.2	5.4	3.5	.2	10.1	1.1	-.6	3.6	4.2	9.4	-.4	1.1	-.5	9.2	1.3	.4	6.0	24	10.1
23	4.3	4.3	2.2	.9	2.2	2.5	4.9	7.3	2.1	8.8	9.0	3.3	5.8	6.4	7.7	8.5	9.4	6.7	7.1	13.0	14.4	8.9	8.8	9.3	24	14.4
24	12.2	8.1	13.4	10.7	6.5	2.9	5.6	7.3	12.2	15.9	15.0	13.8	15.6	14.9	15.7	11.9	14.8	9.6	10.3	15.7	16.0	9.2	15.8	15.9	24	16.0
25	18.2 6	12.5 6	12.7 6	17.1 6	13.6 6	15.1 6	10.5 6	15.1 6	8.8 6	14.6 6	14.3 6	7.8 6	10.0 6	8.4 6	9.8 6	6.0 6	10.9 6	4.2 6	7.2 6	8.5 6	5.5 6	8.4 6	7.9 6	5.0 6	24	18.2
26	7.4 6	AV	AV	10.1 6	3.6 6	1.1 6	5.1 6	4.4 6	3.9 6	10.6 6	6.9 6	6.3 6	6.8 6	5.2 6	6.3 6	11.3 6	4.4 6	6.5 6	5.3 6	4.0 6	4.4 6	2.5 6	6.8 6	3.8 6	22	11.3
27	5.7 6	5.8 6	-.7 6	3.2 6	1.7 6	6.4 6	7.4 6	3.4 6	4.6 6	AX	AX	-2.1	9.2	15.9	8.3	13.2	16.2	12.6	16.4	10.7	12.0	10.6	21.7	9.7	22	21.7
28	15.7IF	16.9IF	12.0IF	10.4IF	7.6IF	14.0IF	11.6IF	14.9IF	19.3IF	26.8IF	24.9IF	19.6IF	19.7IF	16.9IF	16.3IF	21.7IF	19.8IF	22.1IF	14.1IF	16.9IF	16.9IF	17.7IF	18.1IF	11.0IF	24	26.8
29	15.3IF	15.6IF	18.8IF	11.7IF	13.0IF	10.8IF	9.1IF	-7.5IF	10.1IF	23.0IF	19.3IF	15.4IF	17.2IF	14.4IF	18.0IF	21.9IF	12.9IF	19.4IF	17.6IF	14.4IF	21.6IF	20.5IF	21.1IF	16.7IF	24	23.0
30	18.1IF	15.8IF	16.9IF	15.6IF	15.8IF	14.5IF	11.2IF	13.9IF	15.4IF	21.7IF	21.3IF	25.6IF	21.4IF	20.7IF	23.6IF	16.4IF	16.0IF	21.8IF	19.6IF	23.5IF	17.3IF	21.6IF	13.1IF	18.5IF	24	25.6
31																									0	
NO.:	27	25	24	25	26	26	26	25	25	24	24	25	27	27	27	27	28	28	28	28	28	28	28	28		
MAX:	18.2	17.0	19.2	22.1	16.3	15.2	15.1	15.4	22.8	26.8	24.9	25.6	21.4	20.7	23.6	21.9	19.8	22.1	19.6	23.5	21.6	21.6	21.7	18.5		
AVG:	10.60	9.68	10.41	9.00	7.86	8.41	8.33	9.36	10.13	14.07	13.64	10.72	10.90	10.66	10.84	10.30	10.80	9.34	9.51	10.66	10.72	10.54	10.43	9.41		

MONTHLY OBSERVATIONS: 634 MONTHLY MEAN: 10.24 MONTHLY MAX: 26.8

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: JULY 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	14.1IF	13.1IF	17.7IF	17.0IF	13.0IF	14.9IF	14.2IF	22.7IF	17.8IF	24.0IF	18.2IF	17.7IF	20.2IF	16.4IF	15.5IF	18.2IF	17.8IF	15.6IF	13.0IF	15.9IF	17.9IF	15.8IF	14.7IF	11.1IF	24	24.0
2	11.4IF	12.4IF	13.3IF	14.1IF	13.5IF	8.5IF	8.2IF	20.4IF	12.4IF	19.6IF	16.3IF	18.6IF	22.5IF	20.7IF	19.2IF	15.0IF	AV	AV	AV	7.8IF	8.7IF	5.6IF	5.3IF	5.0IF	21	22.5
3	6.3	5.7	6.5	9.1	7.1	2.6	8.5	10.3	10.4	15.9	9.5	14.9	11.5	10.5	11.4	11.8	16.1	10.4	14.9	13.7	11.5	4.0	2.8	4.7	24	16.1
4	3.1	.9	.5	5.2	4.3	5.2	3.6	-.1	3.1	12.1	5.9	5.5	10.3	13.4	7.2	5.2	-2.5	4.3	1.6	6.1	2.8	4.9	10.3	5.3	24	13.4
5	7.6	6.1	5.6	4.5	3.2	-1.1	6.8	3.5	5.3	10.6	8.8	13.1	11.1	8.0	4.9	.1	2.6	1.4	5.9	8.0	5.1	.9	8.4	6.6	24	13.1
6	3.5	.6	4.6	3.9	2.4	2.3	-.9	-1.8	2.3	7.3	6.4	5.8	3.7	6.4	7.8	8.2	7.1	4.6	5.0	10.7	-1.8	4.1	5.3	2.0	24	10.7
7	5.0	3.0	1.9	8.4	5.8	7.1	6.3	6.6	1.8	6.4	8.8	6.5	10.7	4.5	15.5	1.0	-1.1	5.7	3.0	4.9	4.5	-.3	7.2	1.3	24	15.5
8	7.3	3.0	9.6	3.1	6.8	4.5	3.6	6.1	6.7	12.9	14.4	5.2	6.2	15.8	-2.0	7.4	13.0	3.8	3.2	3.6	2.3	-2.1	2.9	1.1	24	15.8
9	2.4	3.7	1.4	2.2	4.9	5.1	1.3	5.1	1.5	11.1	7.8	11.2	-4.1	8.6	11.0	6.6	3.7	10.8	-4.5	5.7	3.4	-1.2	-.7	8.0	24	11.2
10	5.6	5.0	-1.6	-5.0	2.5	2.6	.4	3.3	1.3	5.8	2.4	3.2	-1.4	2.6	-2.0	-1.2	2.9	5.8	6.6	6.2	2.1	1.0	.8	3.8	24	6.6
11	4.8	-.2	6.2	1.5	1.3	1.0	3.2	3.6	7.4	12.9	4.8	2.1	4.0	4.4	8.0	1.9	6.1	11.5	4.8	4.3	6.2	1.3	1.6	3.6	24	12.9
12	-.3	.1	3.2	1.7	4.0	-.1	3.4	2.5	3.2	5.3	7.6	11.9	9.2	9.2	19.2	1.9	12.9	2.6	1.0	5.1	-.7	3.6	2.7	2.0	24	19.2
13	1.1	1.0	.3	8.7	AV	AV	AV	AV	.7	5.4	6.3	.1	4.4	3.0	-1.8	1.7	2.0	7.4	.2	3.3	1.9	1.4	2.6	2.6	20	8.7
14	7.3	6.4	3.4	6.5	-.8	1.4	-.7	.0	6.0	10.2	17.9	19.3	14.0	12.4	16.7	-2.8	8.4	7.5	2.7	.6	6.1	6.9	3.9	-.3	24	19.3
15	7.6	1.9	10.3	4.6	1.7	.7	3.8	7.0	6.9	6.3	1.5	5.5	5.9	5.2	10.4	6.8	10.6	.1	13.6	10.7	12.3	7.9	7.4	4.9	24	13.6
16	8.0	1.4	.8	5.5	10.5	7.6	7.2	7.5	6.1	10.6	10.8	13.1	8.3	11.0	7.8	4.2	7.9	.3	7.4	2.2	11.3	6.0	5.1	-.1	24	13.1
17	6.7	4.5	7.7	8.5	9.3	3.3	10.3	4.2	4.5	15.1	11.4	17.3	12.8	7.6	15.2	20.3	8.5	BK	BK	BK	BK	BK	BK	BK	17	20.3
18	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	0	
19	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	0	
20	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	11.4	15.8	14.9	17.8	16.0	17.2	17.6	7	17.8
21	16.7	12.5	14.8	13.3	13.7	15.9	14.0	10.9	16.9	19.1	19.7	12.5	8.8	15.8	17.0	13.1	16.7	10.8	9.3	9.2	12.8	11.0	6.1	9.5	24	19.7
22	7.8	6.6	9.6	9.0	7.2	5.3	6.5	5.7	3.9	.9	.9	5.9	.6	3.4	12.0	10.0	5.5	6.5	2.6	8.3	6.2	10.6	2.5	7.7	24	12.0
23	5.7	1.9	5.7	5.5	6.4	8.0	7.0	9.4	8.0	7.3	7.8	11.5	4.7	3.4	5.7	6.1	3.3	5.6	7.2	8.6	5.8	5.9	7.2	4.7	24	11.5
24	3.3	8.2	6.2	11.5	6.7	8.0	9.0	9.6	9.4	6.2	8.6	12.2	9.3	6.1	12.6	9.1	5.5	9.5	8.0	5.5	12.3	8.8	11.6	9.9	24	12.6
25	7.8	10.6	10.8	6.3	9.7	7.9	7.0	9.1	12.0	9.3	10.9	8.5	10.0	12.9	11.4	9.3	9.0	7.6	8.8	12.6	11.2	14.5	8.0	11.9	24	14.5
26	9.2	9.2	9.3	11.3	12.0	8.5	5.1	8.9	9.2	18.7	12.5	15.0	12.5	13.4	14.6	17.2	13.5	13.6	16.7	17.8	14.9	17.5	19.2	16.0	24	19.2
27	16.3	10.8	11.1	9.7	12.5	12.7	12.2	14.0	15.6	AX	AX	AX	22.2	14.7	18.3	16.4	19.5	16.5	14.6	14.2	11.2	13.2	16.2	13.7	21	22.2
28	13.5	18.2	13.9	11.0	14.2	11.1	8.2	11.3	22.9	16.5	20.3	13.9	17.4	18.6	18.6	7.9	6.1	10.7	11.5	12.8	12.2	10.1	9.0	10.6	24	22.9
29	7.1	4.2	6.3	5.5	6.8	6.7	5.9	7.1	12.4	17.2	16.1	9.7	15.1	14.2	11.6	19.2	7.8	10.1	17.4	15.9	11.4	16.9	14.0	12.6	24	19.2
30	9.0	9.3	11.5	9.1	6.6	11.6	13.6	7.1	10.7	13.8	14.5	11.1	15.9	AV	AV	AV	10.2	1.0	7.2	4.1	1.5	4.6	6.1	3.9	21	15.9
31	2.6	1.5	-.9	6.2	.7	-1.7	1.2	8.7	5.0	13.5	13.0	13.8	7.4	12.0	10.3	13.6	2.8	5.1	2.2	7.3	6.6	3.1	4.6	3.2	24	13.8
NO.:	28	28	28	28	27	27	27	27	28	27	27	27	28	27	27	27	27	27	27	28	28	28	28	28		
MAX:	16.7	18.2	17.7	17.0	14.2	15.9	14.2	22.7	22.9	24.0	20.3	19.3	22.5	20.7	19.2	20.3	19.5	16.5	17.4	17.8	17.9	17.5	19.2	17.6		
AVG:	7.16	5.77	6.78	7.07	6.89	5.91	6.26	7.51	7.98	11.63	10.49	10.56	9.76	10.16	10.97	8.45	8.00	7.41	7.40	8.57	7.77	6.86	7.21	6.53		

MONTHLY OBSERVATIONS: 659 MONTHLY MEAN: 8.03 MONTHLY MAX: 24.0

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: AUGUST 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	9.5	4.2	6.3	7.1	3.6	7.6	7.2	7.4	5.8	12.7	13.0	8.9	9.7	9.4	9.9	7.7	6.7	5.8	6.3	5.6	6.0	11.6	8.5	7.2	24	13.0
2	8.9	3.2	11.3	7.3	4.5	8.1	8.8	4.3	10.1	10.5	9.4	9.0	12.6	10.9	7.9	13.6	12.9	6.0	10.9	10.3	6.7	6.8	7.4	7.4	24	13.6
3	11.3	4.7	6.7	8.6	8.5	9.3	9.1	10.2	13.7	15.1	16.1	13.2	14.2	12.8	17.3	14.0	15.6	11.3	13.4	12.3	9.5	11.8	16.2	10.1	24	17.3
4	10.7	18.2	15.2	16.5	14.8	13.3	9.6	15.0	7.7	9.2	8.8	10.7	9.5	9.3	AV	AV	AV	AV	-.7	4.1	1.9	7.0	1.4	1.8	20	18.2
5	2.0	3.8	-.8	-1.4	3.4	.3	2.5	1.8	6.4	11.4	10.5	15.3	11.9	13.8	12.6	21.5	1.7	5.6	8.6	9.9	6.5	8.2	5.4	10.9	24	21.5
6	7.5	9.1	10.4	10.3	4.1	7.3	5.6	7.5	6.9	10.4	10.1	10.2	6.5	7.0	6.5	8.2	6.3	8.7	8.9	5.2	7.5	6.9	4.5	2.5	24	10.4
7	7.5	6.7	6.6	9.1	8.5	229.9 5	8.0	5.5	8.4	13.3	9.4	5.3	10.7	8.3	7.7	3.4	2.6	4.5	13.4	7.4	9.9	6.4	11.1	10.2	24	229.9
8	1.7	5.5	6.7	5.3	6.8	7.9	5.1	1.8	8.6	10.7	6.5	8.0	BK	BK	BK	BK	-.1	4.6	3.3	4.5	.2	2.3	.3	4.5	20	10.7
9	1.4	3.4	1.1	1.0	3.0	.9	-1.5	-.4	9.4	7.8	BK	8.0	6.8	3.3	5.2	13.7	4.7	8.1	8.2	9.3	8.9	8.1	7.1	1.0	23	13.7
10	1.5	8.4	.8	6.7	8.4	7.5	1.9	5.7	5.6	12.2	-9.4	2.4	4.9	.3	5.1	BK	BK	BK	BK	BK	BK	BK	BK	BK	15	12.2
11	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	3.7	4.6	6.9	8.2	2.5	12.6	9.3	6.1	6.9	4.6	5.1	2.4	6.2	13	12.6
12	1.6	7.2	3.0	5.5	1.6	1.1	4.1	3.5	8.8	4.0	10.8	2.9	7.3	4.6	12.3	9.0	6.5	6.2	4.2	8.0	5.8	4.1	7.1	5.7	24	12.3
13	4.5	7.1	4.6	8.8	8.0	9.2	5.1	5.8	4.9	10.7	10.8	12.1	5.6	8.6	9.3	9.9	10.2	7.0	11.9	6.0	6.6	8.8	9.1	4.7	24	12.1
14	5.7IF	10.2IF	11.9IF	12.1IF	11.8IF	10.6IF	5.9IF	8.5IF	12.0IF	14.0IF	11.5IF	13.5IF	12.6IF	11.5IF	9.4IF	16.4IF	AV	9.7IF	10.3IF	9.7IF	-.9IF	13.2IF	11.7IF	9.2IF	23	16.4
15	10.4	12.4	10.1	13.6	9.6	11.2	10.6	8.6	5.8	8.1	5.8	1.0	3.9	3.0	8.3	2.7	4.7	5.5	6.4	-.7	3.3	3.7	3.6	.9	24	13.6
16	3.4	3.8	3.9	4.8	5.4	6.8	4.1	1.1	1.1	9.4	7.5	5.8	5.5	1.1	6.4	.4	-2.0	4.1	2.9	-1.2	.2	3.2	5.7	3.7	24	9.4
17	4.2	4.2	-.1	-.5	3.8	.6	277.4 5	4.5	3.7	3.7	7.1	12.2	6.0	11.9	10.1	3.2	8.3	3.9	1.9	5.1	6.1	4.9	7.9	5.9	24	277.4
18	2.1	5.2	5.5	5.4	2.9	8.0	5.0	6.8	10.1	10.6	15.6	11.7	6.8	5.8	7.3	7.2	8.9	4.6	2.8	3.1	6.7	4.6	2.5	1.0	24	15.6
19	5.7	.7	8.1	3.3	2.9	6.8	.9	3.6	6.0	15.5	11.2	9.7	13.8	9.7	8.2	8.7	8.1	5.7	11.5	7.5	8.4	8.5	11.7	7.2	24	15.5
20	9.8	11.0	7.5	7.8	6.1	6.5	7.8	2.5	10.8	17.0	12.4	12.8	9.2	12.4	11.7	9.3	11.9	6.0	11.7	9.6	5.8	10.3	11.1	5.6	24	17.0
21	8.0	13.0	2.3	7.7	7.1	7.9	6.8	4.7	13.0	19.7	13.8	14.7	11.4	14.2	10.3	19.5	21.0	29.8	25.4	26.9	25.1	18.4	19.1	10.6	24	29.8
22	14.4IF	9.2IF	8.6IF	13.9IF	8.2IF	10.3IF	9.3IF	7.1IF	12.4IF	24.0IF	25.0IF	30.4IF	22.4IF	13.5IF	21.1IF	15.8IF	21.2IF	14.1IF	16.2IF	18.5IF	19.5IF	20.2IF	16.7IF	16.8IF	24	30.4
23	18.9	19.8	13.5	13.2	13.4	12.8	8.3	10.7	12.8	23.2	16.3	17.7	13.7	17.3	15.8	18.0	12.8	13.6	14.9	14.9	14.0	18.4	19.0	14.9	24	23.2
24	13.7	14.1	14.9	14.8	9.5	12.0	10.4	10.4	16.0	26.8	AX	23.7	19.4	19.3	20.3	12.6	15.5	5.8	13.5	10.1	10.3	10.3	13.3	10.7	23	26.8
25	11.2	14.0	14.3	13.5	12.9	11.8	10.5	6.8	20.3	18.9	18.7	19.6	21.2	17.0	339.7 5	12.7	15.9	14.3	10.9	1.8	4.9	12.7	11.9	9.3	24	339.7
26	10.7IF	11.9IF	10.5IF	13.7IF	11.3IF	12.0IF	11.1IF	8.9IF	17.0IF	24.5IF	34.1IF	25.2IF	21.6IF	21.7IF	30.8IF	4.2IF	17.5IF	21.0IF	22.0IF	18.4IF	15.9IF	13.4IF	16.3IF	17.4IF	24	34.1
27	14.2	15.4	18.0	10.5	18.3	11.8	15.2	18.2	16.3	24.8	23.1	9.6	8.8	4.9	2.7	2.2	4.6	-1.4	-1.2	3.7	1.2	3.1	2.6	6.4	24	24.8
28	3.3	4.9	3.8	5.7	8.0	2.2	6.3	4.6	10.4	5.5	2.6	10.4	6.1	6.5	3.9	6.4	4.6	4.2	.5	8.4	-6.8	3.6	2.8	4.3	24	10.4
29	6.6	4.0	2.2	2.3	5.8	5.4	6.9	6.7	9.1	11.3	5.3	9.5	5.6	4.0	8.1	5.2	17.7	2.0	6.6	7.9	.4	3.4	1.4	3.9	24	17.7
30	1.3	2.2	2.3	5.9	6.6	7.3	7.9	2.8	4.8	11.4	7.0	8.7	10.4	6.3	3.0	8.7	2.3	4.2	6.6	7.9	8.8	3.9	8.1	5.0	24	11.4
31	5.2	5.9	7.2	5.8	9.1	9.9	10.2	5.6	6.4	12.0	BA	4.4	12.6	7.3	3.4	6.5	5.9	5.9	4.2	5.8	9.6	7.1	1.2	4.0	23	12.6
NO.:	30	30	30	30	30	30	30	30	30	30	27	31	30	30	29	28	28	29	30	30	30	30	30	30		
MAX:	18.9	19.8	18.0	16.5	18.3	229.9	277.4	18.2	20.3	26.8	34.1	30.4	22.4	21.7	339.7	21.5	21.2	29.8	25.4	26.9	25.1	20.2	19.1	17.4		
AVG:	7.23	8.11	7.21	7.94	7.60	15.21	16.00	6.34	9.48	13.61	11.59	11.30	10.51	9.42	21.47	9.40	9.24	7.93	8.72	8.23	6.89	8.33	8.24	6.97		

MONTHLY OBSERVATIONS: 712 MONTHLY MEAN: 9.86 MONTHLY MAX: 339.7

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: SEPTEMBER 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	5.5IF	11.5IF	7.3IF	6.7IF	5.2IF	4.8IF	6.2IF	2.6IF	1.8IF	10.3IF	14.3IF	13.9IF	11.0IF	14.4IF	6.5IF	AV	AV	5.9IF	-3.3IF	-2.5IF	-1.2IF	.6IF	-4.8IF	-2.5IF	22	14.4
2	-2.3	3.8	2.2	3.8	3.6	3.0	4.7	.4	1.9	1.1	5.4	8.4	4.9	9.0	6.9	1.9	11.2	5.7	4.0	1.7	4.0	4.1	4.0	4.5	24	11.2
3	6.0	4.4	6.5	7.5	7.3	5.1	6.0	3.5	7.1	7.9	7.8	6.7	6.8	4.0	8.1	5.5	2.5	.9	1.3	1.5	9.4	5.0	6.3	5.1	24	9.4
4	3.3	4.1	3.2	1.4	.1	3.7	-2.2	1.0	8.0	2.4	6.5	2.6	7.2	8.2	2.8	3.5	7.0	5.1	.7	8.6	3.6	4.4	5.9	3.0	24	8.6
5	2.7	1.3	2.7	2.9	.4	.2	3.9	-1.7	3.5	5.7	4.6	4.2	7.8	1.7	-4.5	5.1	3.0	-1.8	5.3	1.4	4.2	1.2	.3	.6	24	7.8
6	2.3	.7	2.4	2.8	1.4	-2.5	-.2	AV	-1.1	5.8	6.0	5.4	4.2	4.1	6.0	2.1	.8	7.2	2.3	1.9	2.3	1.7	.7	10.6	23	10.6
7	AV	AV	5.3	-1.9	2.2	1.8	.7	-2.2	1.4	2.7	7.9	1.2	8.5	2.5	4.7	3.8	5.4	-1.2	7.4	4.7	6.9	7.1	4.9	9.5	22	9.5
8	9.6	6.9	8.1	7.5	5.2	9.5	9.0	5.5	10.3	22.2	24.9	24.6	22.8	19.6	21.8	22.0	18.1	11.2	15.6	13.4	14.0	12.0	12.6	14.0	24	24.9
9	13.7	10.1	13.7	9.7	10.8	13.2	11.2	8.5	9.4	9.5	9.0	13.0	8.0	8.4	7.5	1.7	2.0	5.9	6.1	2.3	5.0	3.7	6.5	8.2	24	13.7
10	3.5	2.3	3.7	5.6	4.9	5.2	6.6	3.3	3.9	7.2	7.7	3.1	7.6	3.7	.5	4.0	3.4	5.7	7.2	5.1	2.3	1.2	3.4	5.8	24	7.7
11	2.1	1.9	4.4	5.0	2.9	6.6	3.8	7.9	7.3	11.3	13.9	10.7	10.3	5.8	2.7	7.0	5.5	5.5	8.9	6.3	5.6	3.3	6.0	2.2	24	13.9
12	6.7	4.3	8.2	5.6	2.6	1.3	3.0	5.0	9.5	12.9	13.2	13.2	9.5	11.8	8.3	4.0	9.4	8.2	6.8	10.3	10.8	11.2	12.3	12.1	24	13.2
13	13.1	11.0	12.2	15.8	17.7	14.4	11.8	11.1	9.5	9.6	12.3	9.7	13.7	12.6	9.0	9.5	8.7	8.4	8.1	7.0	9.6	9.3	5.8	9.3	24	17.7
14	7.6	5.7	7.3	10.2	10.8	4.1	10.5	5.2	3.9	8.0	4.5	2.8	8.2	6.8	8.8	8.7	6.2	6.2	9.4	4.4	6.2	4.4	5.8	6.1	24	10.8
15	6.3	7.4	8.3	8.7	6.2	8.7	10.8	4.9	7.8	8.7	11.0	7.2	11.9	5.0	7.5	11.8	9.2	6.6	3.7	4.1	9.7	3.9	8.6	6.1	24	11.9
16	-1.2	4.5	7.2	2.6	5.3	7.2	8.1	7.1	6.5	6.6	17.3	11.1	8.7	4.9	10.1	12.8	9.4	9.3	8.4	8.0	7.5	8.0	3.9	5.7	24	17.3
17	5.0	3.6	5.4	1.4	5.3	10.1	8.3	9.2	8.7	8.9	13.2	5.9	10.4	3.2	8.4	5.7	1.4	7.4	4.4	3.6	6.8	7.7	9.2	3.4	24	13.2
18	5.1	6.8	9.6	.9	5.8	3.4	5.6	5.9	AX	AX	AX	21.1	7.1	9.2	7.7	10.6	7.6	10.1	10.2	6.6	7.7	9.2	9.8	8.7	21	21.1
19	5.9	9.1	9.4	5.6	5.4	6.7	4.6	4.5	8.6	8.6	15.6	14.9	11.6	9.0	10.7	6.5	10.2	9.7	14.0	18.3	14.5	13.2	17.5	14.9	24	18.3
20	10.0	11.9	6.5	10.3	9.4	10.6	10.5	4.3	10.8	12.9	9.2	12.6	16.8	12.2	8.3	10.8	9.3	9.6	11.2	9.7	8.9	10.5	9.6	12.5	24	16.8
21	6.3	9.9	6.4	8.1	6.6	10.8	8.2	8.2	8.3	9.0	8.2	6.2	3.9	12.9	3.8	7.4	6.1	8.6	2.9	2.8	6.7	6.7	9.5	8.4	24	12.9
22	9.8	8.3	5.4	11.0	6.3	6.9	5.4	4.7	7.8	9.7	10.6	11.1	5.4	2.0	6.6	5.8	.6	2.0	6.0	.6	2.8	4.5	4.4	-3.9	24	11.1
23	-.8	3.4	1.0	1.0	1.8	.6	2.8	.8	2.1	5.0	11.8	9.9	7.4	1.9	6.9	3.6	7.6	5.0	8.6	5.7	6.8	5.0	9.0	4.8	24	11.8
24	3.7	6.7	3.8	5.0	7.5	4.0	6.6	7.1	5.5	7.8	16.0	6.5	5.7	4.4	5.7	10.4	11.3	10.7	7.5	4.4	10.3	3.3	9.3	7.1	24	16.0
25	2.4	4.5	10.8	13.1	5.5	9.6	5.8	11.6	11.3	9.2	8.0	13.5	11.5	13.8	6.7	10.4	5.2	6.8	6.0	13.6	.5	-.6	2.9	.9	24	13.8
26	2.8	3.0	7.3	2.4	2.6	5.6	4.7	1.8	9.2	6.3	10.9	7.4	7.9	7.9	10.2	13.0	12.2	13.7	14.7	11.5	14.9	11.9	12.4	9.9	24	14.9
27	10.1	6.8	7.3	3.6	6.1	7.2	7.1	6.1	6.4	4.6	8.1	6.1	3.7	4.9	1.8	2.0	4.4	11.2	-.6	2.6	-2.2	3.2	4.3	4.8	24	11.2
28	1.8	5.3	.8	2.4	2.0	6.0	5.5	5.7	7.3	6.8	8.1	4.8	4.0	3.3	4.2	3.2	5.6	3.8	2.9	-3.8	4.0	-1.7	5.1	3.3	24	8.1
29	-2.8	1.4	.7	1.7	4.2	-2.5	-.6	-3.3	.8	4.5	5.9	8.4	2.0	1.4	3.0	4.0	-.1	-.6	3.8	-.2	-1.5	.7	1.4	.0	24	8.4
30	-1.3	2.7	1.6	4.0	2.8	-1.9	-1.1	-1.1	3.3	7.5	13.5	7.6	6.3	6.4	7.4	7.1	5.5	3.6	3.9	5.9	5.1	7.2	6.9	6.7	24	13.5
31																									0	
NO.:	29	29	30	30	30	30	30	29	29	29	29	30	30	30	30	29	29	30	30	30	30	30	30	30		
MAX:	13.7	11.9	13.7	15.8	17.7	14.4	11.8	11.6	11.3	22.2	24.9	24.6	22.8	19.6	21.8	22.0	18.1	13.7	15.6	18.3	14.9	13.2	17.5	14.9		
AVG:	4.72	5.63	5.96	5.48	5.26	5.45	5.58	4.40	6.23	8.02	10.53	9.13	8.49	7.17	6.60	7.03	6.51	6.35	6.25	5.32	6.17	5.40	6.45	6.06		

MONTHLY OBSERVATIONS: 712 MONTHLY MEAN: 6.42 MONTHLY MAX: 24.9

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: OCTOBER 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	.8	3.9	5.2	6.2	5.1	1.6	3.4	4.2	2.9	4.8	9.1	3.7	3.2	1.2	4.8	-1.7	1.7	5.1	10.4	2.5	-.1	-.6	.9	-.8	24	10.4
2	1.4	-3.1	.8	.1	-2.0	3.2	-2.1	2.8	1.9	1.5	8.4	3.3	2.2	-1.0	-.4	-1.7	6.4	13.8	15.2	6.8	10.5	11.5	13.1	10.7	24	15.2
3	13.1IF	13.0IF	7.7IF	11.2IF	10.5IF	7.9IF	9.0IF	6.1IF	7.2IF	16.4IF	22.1IF	31.9IF	33.5IF	30.4IF	31.3IF	29.4IF	27.7IF	28.2IF	21.5IF	24.9IF	23.3IF	21.5IF	19.3IF	25.4IF	24	33.5
4	18.2IF	17.6IF	18.1IF	15.2IF	13.5IF	13.4IF	15.0IF	9.0IF	10.7IF	20.0IF	31.5IF	35.0IF	27.0IF	26.6IF	20.9IF	15.9IF	19.9IF	19.7IF	15.7IF	17.8IF	14.9IF	12.9IF	10.4IF	15.4IF	24	35.0
5	9.4	13.4	10.4	9.3	8.2	5.5	5.6	5.1	10.0	10.2	14.2	13.9	10.9	11.2	5.3	6.1	7.5	2.6	7.2	4.6	8.9	8.4	4.6	5.6	24	14.2
6	10.1	3.1	7.0	6.1	9.6	6.9	.6	8.3	11.4	10.4	8.3	11.0	5.5	6.3	13.6	5.5	1.4	-.9	3.3	4.6	3.5	4.7	3.1	5.2	24	13.6
7	1.2	2.7	10.4	-.6	3.6	-.9	3.4	-3.5	4.0	-6.0	4.0	3.2	-.5	-5.0	3.8	-.7	-.9	1.1	-.5	-3.1	-.7	-2.4	-1.6	-2.8	24	10.4
8	-2.4	.4	1.5	1.2	-4.3	-.6	-1.0	-3.6	-.6	-6.0	.6	2.6	-4.2	-5.5	-.2	-2.2	-1.4	-1.8	-6.2	-5.4	-1.8	-3.3	1.9	-1.7	24	2.6
9	-2.0	-.8	-4.1	-2.0	-.4	-2.5	-1.9	-.1	-1.2	-2.9	3.6	2.9	-1.4	-2.0	4.9	.7	-.1	3.3	-2.2	2.0	1.5	-5.8	1.5	-.5	24	4.9
10	3.5	.8	-3.4	-2.1	2.3	2.4	2.8	3.2	.8	6.8	8.4	8.5	8.5	10.8	7.3	7.7	5.5	6.7	6.4	8.3	6.5	9.1	7.7	4.0	24	10.8
11	3.1	7.9	5.0	2.3	4.3	5.6	3.4	2.6	8.5	7.6	6.8	9.9	7.3	8.1	9.4	-1.1	1.2	.9	5.5	3.4	1.3	-2.3	-1.9	-1.0	24	9.9
12	-.9	-3.4	.1	-2.1	-2.6	4.9	1.6	.9	-.1	.2	.4	-2.5	1.2	.4	5.6	-.2	-1.5	2.5	-1.1	2.7	3.8	1.8	.5	1.1	24	5.6
13	1.1	1.8	2.8	5.3	3.6	4.6	-.6	3.3	.3	3.7	3.5	1.0	3.1	2.0	.6	7.2	-1.4	5.7	.6	2.4	1.1	3.8	1.7	-.7	24	7.2
14	-4.1	-2.0	-.9	2.2	-.7	-.2	.1	.8	4.0	-.4	6.5	-.6	-2.6	2.1	2.5	.4	1.9	1.0	-5.4	.8	-5.7	1.9	-2.7	-3.2	24	6.5
15	.4	4.6	4.7	3.6	-.7	1.6	-.2	2.0	-3.3	-.1	-2.5	-3.8	3.2	-7.6	1.8	.9	-2.8	-3.2	-6.7	-.4	-.5	2.3	4.4	-1.0	24	4.7
16	1.2	.9	-1.6	3.3	-.6	.0	1.0	-1.9	-1.7	-2.3	3.9	3.0	-1.1	2.1	1.0	1.5	.6	1.4	-4.8	-5.5	2.3	1.1	-1.9	2.7	24	3.9
17	.0	-.7	-.9	.0	-4.3	4.2	3.0	-1.0	2.2	-2.8	3.1	7.1	.3	.0	-2.1	3.2	4.0	AV	-7.0	-.2	2.5	1.7	-3.1	2.6	23	7.1
18	-4.5	1.5	-1.1	-3.3	1.2	1.3	1.6	-6.5	5.2	15.0	BL	AX	AX	11.0	7.7	7.1	7.3	9.3	1.0	2.0	4.8	7.5	3.4	5.8	21	15.0
19	3.2	3.2	4.7	3.5	1.9	1.8	3.5	3.3	8.8	11.7	17.3	12.0	8.3	12.9	11.9	16.4	7.3	2.6	2.7	7.1	3.6	5.1	2.0	8.1	24	17.3
20	3.2	1.8	1.7	2.8	3.5	4.2	3.4	2.7	6.8	5.0	8.7	2.5	9.0	.3	2.2	.2	1.2	-4.0	-7.7	1.8	1.0	.4	-1.4	1.0	24	9.0
21	1.5	1.0	-1.5	1.9	.8	2.5	2.2	-3.7	1.5	4.3	10.8	6.0	7.6	7.3	7.0	4.8	5.5	5.6	-.7	5.8	1.6	4.2	4.6	4.0	24	10.8
22	5.5	1.4	6.0	4.5	3.1	6.5	5.4	3.2	3.7	5.8	16.5	12.4	10.3	9.3	6.1	4.9	2.6	3.7	-4.6	.7	3.8	2.0	5.0	4.1	24	16.5
23	4.5	4.2	3.9	3.6	7.9	2.4	.6	2.4	6.0	6.7	11.2	11.8	8.0	8.6	8.6	4.1	6.1	1.2	.7	1.0	7.6	4.3	3.8	6.3	24	11.8
24	4.6	4.6	5.1	4.5	5.6	3.3	5.0	4.6	6.1	9.0	5.2	9.6	3.5	1.8	3.9	4.8	3.0	1.7	-4.5	4.8	.8	4.0	1.4	6.2	24	9.6
25	5.8	6.8	8.8	6.6	9.5	7.5	4.8	3.3	4.4	1.5	9.3	8.0	4.2	8.0	-1.5	.3	1.8	1.0	-1.0	.8	-1.5	1.2	1.1	-.8	24	9.5
26	3.2	4.4	3.2	-.5	2.1	.8	4.1	4.5	3.5	4.2	AV	2.0	3.7	4.7	2.2	1.8	1.8	-.2	-4.0	-3.3	.7	-3.0	1.0	3.0	23	4.7
27	-4.3	-4.5	-.2	-1.1	-.6	1.8	1.0	.6	1.7	6.4	11.1	8.3	5.5	4.4	-1.8	6.9	-2.3	5.1	-2.3	.0	-2.0	2.5	2.8	.6	24	11.1
28	2.6	.1	3.0	.2	1.7	5.3	2.3	-.4	2.1	7.8	8.7	8.6	6.6	5.3	4.6	4.6	1.3	.3	2.7	3.1	3.2	.9	5.2	.8	24	8.7
29	7.1	1.3	2.0	.8	3.0	3.1	1.6	-.7	.9	3.6	9.7	5.9	4.1	3.5	2.9	1.6	4.2	2.6	-1.0	.3	1.2	-.7	-2.9	1.2	24	9.7
30	1.3	1.2	-1.2	.6	1.9	2.7	3.5	6.2	3.4	5.7	3.2	2.4	-1.2	-1.1	-3.0	1.2	-7.8	-.4	.6	1.8	1.5	-.9	-.9	.5	24	6.2
31	-1.3	-5.3	2.8	2.0	1.5	2.2	2.1	4.7	.6	-1.2	6.8	4.2	1.9	.0	1.0	-1.5	1.4	-.9	-1.1	-1.3	1.7	1.4	-1.2	.1	24	6.8
NO.:	31	31	31	31	31	31	31	31	31	31	29	30	30	31	31	31	31	30	31	31	31	31	31	31		
MAX:	18.2	17.6	18.1	15.2	13.5	13.4	15.0	9.0	11.4	20.0	31.5	35.0	33.5	30.4	31.3	29.4	27.7	28.2	21.5	24.9	23.3	21.5	19.3	25.4		
AVG:	2.79	2.64	3.23	2.75	2.85	3.32	2.72	2.01	3.60	4.73	8.63	7.46	5.59	5.04	5.22	4.13	3.33	3.79	1.05	2.93	3.20	3.07	2.64	3.29		

MONTHLY OBSERVATIONS: 739 MONTHLY MEAN: 3.73 MONTHLY MAX: 35.0

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: NOVEMBER 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.5	2.7	.9	1.1	2.7	3.5	3.1	2.1	-.3	3.0	3.4	1.1	1.0	.9	-2.8	3.6	.6	-1.5	1.2	-4.3	-.9	.9	.4	-1.2	24	3.6
2	-.3	.1	1.4	5.6	2.3	4.2	4.1	.5	2.5	2.1	9.6	4.8	2.5	1.9	-1.5	4.1	.2	2.0	-5.7	.7	.6	3.7	4.0	.4	24	9.6
3	2.2	.2	3.4	2.8	2.2	.3	1.7	1.2	1.7	12.0	12.1	13.3	9.5	3.0	2.8	4.6	-2.2	8.8	-3.5	3.0	4.6	7.4	7.6	6.6	24	13.3
4	3.2	7.5	4.4	4.3	1.4	3.3	2.1	3.8	4.4	9.5	11.4	7.1	3.2	5.6	2.7	1.5	4.0	4.1	-4.8	3.5	2.6	5.2	6.9	8.6	24	11.4
5	4.5	1.8	4.6	3.7	6.0	4.3	5.9	3.3	1.2	7.6	9.9	8.6	8.2	3.8	6.0	3.8	5.3	4.0	2.5	4.8	6.8	8.2	8.0	6.0	24	9.9
6	4.4IF	7.7IF	9.8IF	5.7IF	4.1IF	7.5IF	3.7IF	5.4IF	2.9IF	33.8IF	32.5IF	21.5IF	12.1IF	6.1IF	10.1IF	6.8IF	4.9IF	1.2IF	4.2IF	5.4IF	4.7IF	6.5IF	7.5IF	4.9IF	24	33.8
7	2.9	4.8	4.7	7.9	6.7	5.8	3.9	5.9	8.6	15.4	10.9	BA	BA	24.2	4.7	4.5	2.7	4.6	.4	5.2	2.9	3.1	7.2	4.5	22	24.2
8	-.7	4.9	3.1	3.1	3.8	1.3	6.9	3.6	6.0	8.5	5.9	7.9	2.3	3.9	4.0	13.2	1.8	.2	2.3	1.0	4.3	3.0	.6	4.9	24	13.2
9	.3	6.9	4.7	2.4	3.0	2.2	5.3	6.6	4.0	10.3	6.5	10.2	4.3	4.8	4.8	4.8	.3	.2	1.5	2.2	3.8	3.7	3.2	5.2	24	10.3
10	1.9	4.3	4.1	6.5	6.1	7.9	3.3	8.2	9.3	4.7	-1.9	-1.6	2.3	2.7	7.7	6.9	5.6	12.3	7.0	6.3	6.2	1.8	2.8	.9	24	12.3
11	4.9	4.5	4.2	4.0	2.8	-.2	-2.2	-4.1	-2.9	-2.7	-.2	.4	.2	.6	-.9	-1.7	-2.7	2.1	1.1	-2.1	4.6	5.1	3.9	1.0	24	5.1
12	2.6	3.6	3.5	1.5	-.4	2.2	-1.1	-.8	-1.3	2.0	1.9	2.4	3.6	3.3	5.5	4.0	4.3	5.2	4.0	7.3	8.2	6.5	6.6	10.1	24	10.1
13	4.5	7.8	10.4	6.1	8.9	8.3	6.6	8.5	6.9	6.3	6.7	6.3	8.7	7.1	4.5	4.3	2.6	5.4	4.5	7.4	6.9	6.6	8.6	8.4	24	10.4
14	3.8	7.9	6.8	6.7	8.0	5.8	6.2	10.8	9.8	7.5	11.7	11.6	5.2	6.8	3.8	4.2	6.2	7.2	6.2	5.4	2.5	4.6	5.1	5.8	24	11.7
15	5.9	1.1	5.5	6.0	8.8	6.3	3.9	1.2	3.0	2.0	.0	2.3	3.7	4.5	6.5	4.7	5.9	6.3	2.3	1.3	3.5	.2	1.4	1.6	24	8.8
16	3.9	5.7	4.8	6.9	4.3	6.0	7.1	2.2	6.7	3.6	AX	AX	10.6	7.2	5.8	.9	7.1	3.1	-1.2	9.4	3.9	4.7	1.9	6.1	22	10.6
17	2.1	3.8	3.3	6.1	3.9	4.1	3.9	4.4	4.1	6.7	9.3	3.8	10.2	5.3	7.9	5.9	4.0	5.3	8.7	5.0	5.1	8.2	8.3	9.1	24	10.2
18	4.9	4.7	1.6	-2.1	.2	1.5	.3	1.7	-1.1	5.9	AV	AV	3.2	10.3	-.6	2.6	2.7	1.3	2.6	1.0	1.4	-1.4	1.2	4.8	22	10.3
19	4.6	-1.5	.4	3.1	3.1	1.4	3.8	3.3	.1	9.4	6.0	6.4	5.0	5.6	1.1	.2	-.7	-3.8	-2.1	-.1	3.7	2.4	1.9	5.1	24	9.4
20	4.3	4.8	5.2	4.2	.9	4.7	-.4	1.1	1.8	7.9	11.5	15.1	6.5	8.7	8.6	12.9	6.3	3.8	2.7	3.6	5.2	.6	5.2	4.7	24	15.1
21	.8	-1.8	-1.3	2.9	-5.5	-.1	-.7	-4.4	-.2	-.8	-1.1	-1.7	.1	-1.2	.0	-1.5	-1.7	.4	3.4	3.0	2.9	-1.0	-1.9	-1.1	24	3.4
22	1.9	3.0	.5	2.0	2.5	1.4	.6	3.3	2.5	5.7	4.9	1.7	5.3	1.3	4.8	2.8	2.0	6.1	.6	-.1	4.1	1.0	6.4	2.0	24	6.4
23	.6	4.3	6.9	4.3	4.5	3.2	4.6	.5	.0	4.6	3.9	5.7	5.4	3.2	10.3	3.5	-1.2	1.7	2.7	2.4	3.5	5.3	.3	4.9	24	10.3
24	1.3	6.2	.8	7.5	3.8	6.8	4.5	-1.3	1.6	6.3	7.6	3.4	4.7	2.3	-1.6	.5	6.0	2.2	2.1	7.1	4.6	1.5	1.5	5.1	24	7.6
25	3.5	6.9	3.4	4.2	6.2	4.1	2.8	7.0	4.2	10.2	8.2	5.6	3.7	2.8	3.4	2.3	-2.4	5.5	-.3	1.1	5.2	5.4	5.6	3.9	24	10.2
26	5.9	1.9	1.7	4.6	2.6	8.2	4.8	6.2	7.3	9.9	8.7	5.3	6.6	6.3	3.2	4.6	2.9	3.1	1.4	2.2	3.9	1.0	3.4	-2.5	24	9.9
27	-.9	-3.5	3.8	3.2	1.9	7.7	3.2	4.4	.4	7.1	1.3	2.1	3.1	.4	-3.7	-1.3	-2.6	-1.1	-1.8	-3.4	-1.6	.5	-1.4	2.9	24	7.7
28	-5.2	3.5	4.9	1.7	2.2	3.8	.5	.1	-1.9	2.9	3.2	3.3	-.9	-1.1	.5	.4	-.7	1.8	-2.9	-.1	-1.5	-.3	.6	1.2	24	4.9
29	-2.4	1.1	2.9	3.9	3.2	.4	2.6	3.6	.6	4.7	5.8	3.6	3.5	2.8	5.1	6.5	9.9	3.5	4.7	8.4	9.6	7.2	10.1	10.0	24	10.1
30	11.4	10.5	10.1	10.2	14.7	15.1	9.1	8.5	14.7	7.6	10.3	AX	AX	AX	9.1	7.6	BC	BC	BC	9.8	8.4	10.7	13.4	17.1	18	17.1
31																									0	
NO.:	30	30	30	30	30	30	30	30	30	30	28	26	28	29	30	30	29	29	29	30	30	30	30	30		
MAX:	11.4	10.5	10.4	10.2	14.7	15.1	9.1	10.8	14.7	33.8	32.5	21.5	12.1	24.2	10.3	13.2	9.9	12.3	8.7	9.8	9.6	10.7	13.4	17.1		
AVG:	2.68	3.85	4.02	4.34	3.83	4.37	3.34	3.23	3.22	7.12	7.14	5.78	4.78	4.59	3.73	3.91	2.45	3.28	1.51	3.21	3.99	3.74	4.34	4.70		

MONTHLY OBSERVATIONS: 708 MONTHLY MEAN: 4.03 MONTHLY MAX: 33.8

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 01-119-0003 POC: 3
COUNTY: (119) Sumter
CITY: (00000) Not in a city
SITE ADDRESS: NNE of Ward Post Office, Sumter Co., Alabama
SITE COMMENTS: This Rural Sumter Co., site (Ward Al) was establised in 2013 replacing Gaston site
MONITOR COMMENTS: THIS MONITORING SITE SWITCHED TO 1022 FROM 2021-0101

STATE: (01) Alabama
AQCR: (004) METROPOLITAN BIRMINGHAM
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 32.3626060009
LONGITUDE: -88.277992
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 63.7032
PROBE HEIGHT: 3

SUPPORT AGENCY: (0013) Al Dept Of Env Mgt
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (209) Met One BAM-1022 Mass Monitor w/ V
PQAO: (0013) Al Dept Of Env Mgt

REPORT FOR: DECEMBER 2023

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 5

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	12.2	13.3	11.1	14.2	10.5	15.2	14.6	12.8	12.8	13.7	10.7	16.6	12.8	8.1	6.9	5.5	7.3	1.6	5.0	3.6	2.1	.4	3.2	1.1	24	16.6
2	1.1	3.7	2.8	.2	1.4	1.9	-1.8	2.1	-2.6	-3.4	.9	.9	-1.2	1.7	-1.2	1.6	.2	-.3	-.6	-2.2	.7	-4.1	1.2	-2.1	24	3.7
3	-2.1	-.1	.9	-4.2	-1.2	-.8	-3.6	-5.8	.2	2.7	.9	1.9	3.0	4.2	5.2	3.0	3.2	2.4	-1.0	3.1	4.0	.6	1.7	.6	24	5.2
4	-1.7	-2.5	2.5	-1.2	2.8	3.0	-3.1	1.8	3.9	3.8	10.0	7.2	-.1	1.0	1.5	-.8	-3.5	-.9	-5.5	5.6	4.6	1.0	.3	2.8	24	10.0
5	-1.5	1.2	-1.4	.2	2.7	.4	-2.1	.2	.5	2.4	2.0	4.6	1.9	5.0	3.9	.4	-.6	.6	-1.8	-1.4	.0	4.7	4.3	6.8	24	6.8
6	.1	5.1	1.2	.0	2.0	1.0	-1.0	4.4	-2.0	4.3	7.4	7.8	2.3	2.0	2.1	-.2	-2.6	-2.7	-1.7	-.4	6.3	2.5	2.1	1.8	24	7.8
7	.4	-1.4	-3.1	-1.0	-.2	3.7	-.4	-.3	-.9	4.5	7.1	6.0	5.7	1.2	4.1	1.1	10.2	2.9	-.1	3.1	1.4	8.4	5.8	7.1	24	10.2
8	5.4	2.5	3.9	2.0	6.9	6.5	9.8	7.0	7.0	8.7	8.0	5.3	7.2	7.2	3.9	3.5	5.3	2.3	1.2	3.0	.8	5.7	6.8	1.7	24	9.8
9	5.9	3.6	6.2	5.4	1.5	6.7	5.8	1.4	3.2	5.2	4.5	2.4	1.6	7.4	-.4	3.6	-.4	-1.6	-.8	-1.1	6.5	.9	1.1	-.3	24	7.4
10	-.2	-5.1	-1.5	-4.0	2.6	-3.5	1.4	.8	1.3	-2.6	1.4	-2.0	-1.1	3.1	-2.0	-1.0	-.4	-.7	-5.1	-.5	-.1	-2.0	1.6	.5	24	3.1
11	-2.0	-.3	3.9	-.2	.8	2.1	-1.4	1.4	-2.1	4.5	6.0	3.2	.1	2.6	-2.7	-1.5	2.1	.8	-3.6	-4.2	.1	2.8	.1	2.2	24	6.0
12	-3.3	.3	-2.0	1.0	-2.2	.0	-3.3	.4	1.3	2.6	5.7	1.6	4.2	-1.1	-2.2	.4	1.2	2.2	-5.9	4.2	-.1	7.8	3.5	9.5	24	9.5
13	5.3	2.1	1.3	-.5	.7	.6	1.4	5.5	2.3	6.5	12.2	4.9	AV	2.1	6.3	1.8	3.7	-1.7	.5	14.4	9.4	16.2	20.6	18.5	23	20.6
14	16.7	10.9	13.3	12.8	15.0	8.4	12.3	6.5	3.6	4.5	8.4	8.9	3.7	AH	3.2	-.6	4.7	-1.0	-4.0	-3.6	1.8	4.6	3.3	-2.6	23	16.7
15	2.4	4.1	7.7	2.5	6.1	7.3	5.3	4.9	4.2	.1	1.9	6.9	3.8	6.6	1.8	3.2	5.0	-1.7	-2.6	.0	4.4	3.3	.3	3.7	24	7.7
16	4.6	4.2	7.7	2.7	5.2	4.6	3.5	3.7	4.1	6.5	5.5	8.4	6.8	-1.0	6.9	1.9	-2.5	2.3	.6	2.0	2.9	6.1	3.1	2.3	24	8.4
17	-.1	.0	3.8	3.7	7.5	3.2	1.3	4.8	2.9	1.4	.1	-1.1	.0	.5	-2.7	-.4	1.3	-.9	-3.2	2.1	-1.2	-.3	-1.0	-1.3	24	7.5
18	.3	.6	.1	2.0	2.1	3.8	1.2	.2	.2	5.1	2.2	3.0	.8	.9	2.5	-2.6	1.2	-5.6	-3.4	-6.2	.5	-2.8	.3	1.1	24	5.1
19	-1.4	.5	2.2	1.5	2.3	1.9	-.1	1.2	-3.3	2.1	2.0	AX	5.3	7.4	2.1	2.3	.7	1.4	-3.7	-1.2	1.2	2.0	1.3	-2.6	23	7.4
20	1.5	-.6	2.5	2.4	-2.0	1.1	-1.3	.9	3.2	5.1	5.0	8.0	5.1	7.3	1.6	5.9	1.9	2.4	-1.7	2.7	1.9	1.6	.2	4.5	24	8.0
21	4.7	3.4	1.1	-.5	2.2	1.3	3.9	5.2	4.9	9.6	15.2	7.9	12.0	4.4	7.7	3.8	6.1	5.1	1.3	6.4	2.9	4.5	10.2	5.1	24	15.2
22	7.1	7.6	3.8	4.8	3.7	8.7	3.0	7.4	6.5	6.1	10.1	16.1	14.0	12.8	3.9	6.4	4.9	5.5	-2.5	3.3	6.9	1.8	3.4	3.9	24	16.1
23	3.7	2.8	2.3	2.4	4.0	.6	5.4	4.8	-1.7	6.0	13.5	11.5	7.0	7.0	6.2	6.9	6.4	2.8	2.2	1.9	3.1	2.3	2.2	5.3	24	13.5
24	4.6	2.6	9.6	3.2	-.3	.3	4.2	5.1	3.7	5.7	7.9	AV	8.3	2.9	5.2	-.6	.1	-2.8	2.0	-.4	1.6	.1	3.8	2.0	23	9.6
25	-.1	-.5	.4	1.3	-1.5	1.4	-2.5	-3.9	-2.6	4.5	1.6	.9	-.3	-1.2	-.1	1.5	-.8	-.6	-.1	2.9	4.7	2.4	-.4	3.2	24	4.7
26	-2.2	-.2	.0	.2	-1.8	-.6	-1.6	-3.1	-1.4	.1	-2.7	-5.2	3.5	.4	-.7	-2.0	2.1	-2.3	-4.0	-1.4	-.1	2.2	-1.7	5.1	24	5.1
27	-2.0	2.2	1.5	-2.4	2.3	-.2	3.5	1.3	-1.7	.8	1.2	24.4	2.9	6.9	-.2	2.3	.0	2.4	-1.9	5.3	2.4	4.8	2.7	6.6	24	24.4
28	2.7	5.4	1.1	.5	4.1	.1	2.5	.3	.9	.2	1.9	5.7	-.1	.0	-1.4	-1.9	1.0	-.6	2.5	2.5	-2.4	.9	-.1	1.1	24	5.7
29	-2.6	.7	3.6	.4	3.8	4.5	1.9	3.6	-.7	8.1	5.1	6.5	3.9	3.9	.8	5.8	-1.8	.6	3.9	.5	-3.0	1.5	1.5	5.0	24	8.1
30	-3.0	2.0	3.7	-.9	1.6	3.0	6.5	2.7	5.0	3.5	2.1	5.0	2.5	-1.5	1.6	-1.2	-.4	-1.3	-2.5	-4.3	.2	-.9	2.1	3.6	24	6.5
31	1.4	1.9	5.0	.1	3.1	4.7	-.3	-.7	-1.0	2.8	6.7	11.4	2.8	8.0	7.9	-.6	2.2	.9	1.9	-1.3	4.2	2.9	2.7	1.0	24	11.4
NO.:	31	31	31	31	31	31	31	31	31	31	31	29	30	30	31	31	31	31	31	31	31	31	31	31		
MAX:	16.7	13.3	13.3	14.2	15.0	15.2	14.6	12.8	12.8	13.7	15.2	24.4	14.0	12.8	7.9	6.9	10.2	5.5	5.0	14.4	9.4	16.2	20.6	18.5		
AVG:	1.87	2.26	3.07	1.57	2.76	2.93	2.10	2.47	1.67	4.04	5.31	6.16	3.95	3.66	2.31	1.53	1.86	.37	-1.12	1.24	2.18	2.64	2.78	3.14		

MONTHLY OBSERVATIONS: 740 MONTHLY MEAN: 2.52 MONTHLY MAX: 24.4

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

QUALIFIER CODES:

Qualifier Code	Qualifier Description	Qualifier Type
5	Outlier.	QA
6	QAPP Issue.	QA
AH	Sample Flow Rate or CV out of Limits.	NULL
AJ	Filter Damage.	NULL
AL	Voided by Operator.	NULL
AN	Machine Malfunction.	NULL
AQ	Collection Error.	NULL
AT	Calibration.	NULL
AV	Power Failure.	NULL
AX	Precision Check.	NULL
BA	Maintenance/Routine Repairs.	NULL
BC	Multi-point Calibration.	NULL
BK	Site computer/data logger down.	NULL
BL	QA Audit.	NULL
BR	Sample Value Below Acceptable Range.	NULL
IF	Fire - Canadian.	INFORM

Note: Qualifier codes with regional concurrence are shown in upper case,
and those without regional concurrence are shown in lower case.

APPENDIX C

Correspondence with Federal Land Managers regarding Class I Areas

Request for Applicability of Class I Area Modeling Analysis
Southern Region, U.S. Forest Service

Facility Name (Company Name)	**Alabama River Cellulose Mill (Georgia-Pacific LLC)**
New Facility or Modification?	**Modification to existing major stationary source**
Source Type	**Kraft pulp and cellulose mill**
Project Location (County/State/ Lat. & Long. in decimal degrees)	**Perdue Hill (Monroe County), Alabama (31.582, -87.489)**

Application Contacts

Applicant		*Consultant*		*Air Agency Permit Engineer*	
Company	**Georgia-Pacific LLC**	**Company**		**Agency**	**Alabama Department of Environmental Management (ADEM)**
Contact	**Ryan Gesser**	**Contact**		**Contact**	**Steven Bissey**
Address	**133 Peachtree Street NE Atlanta, GA 30303**	**Address**		**Address**	**Post Office Box 301463 Montgomery, AL 36130-1463**
Phone #	**404-652-6933**	**Phone #**		**Phone #**	**334-270-5671**
Email	**ryan.gesser@gapac.com**	**Email**		**Email**	**steven.bissey@adem.alabama.gov**

Briefly Describe the Proposed Project

GP intends to conduct a project to modernize the existing mill's pulp and cellulose manufacturing process by replacing certain existing process units with new equipment and modifying other existing equipment to ensure reliable operations at higher production capacity after the project is completed. Please refer to attached project description summary, initial PSD permitting applicability analysis, and Class I area screening analyses for additional information about the proposed project and emissions changes.

Proposed Emissions and BACT

Criteria Pollutant	*Proposed Emissions (tons/year)*	*Emission Factor (AP-42, Stack Test, etc?)*	*Proposed BACT*
Nitrogen Oxides			
Sulfur Dioxide	Please refer to attached project description summary, initial PSD permitting applicability analysis, and Class I area screening analyses for additional information about the proposed project and emissions changes.		
Particulate Matter (filterable+condensable)			
Volatile Organic Compounds			

Proximity to U.S. Forest Service Class I Areas

Class I Area	**Breton Wilderness**	**Sipsey Wilderness**	
Distance from Facility (km)	**215**	**299**	
Calculated Q/d (from above)	**6.3**	**4.5**	

For Additional Information or Questions, Contact Melanie Pitrolo
(828) 257-4213 or mpitrolo@fs.fed.us

1. EXECUTIVE SUMMARY

Alabama River Cellulose LLC (ARC or the "mill"), a wholly owned subsidiary of Georgia-Pacific LLC (GP), operates a kraft pulp mill in Perdue Hill, Monroe County, Alabama. ARC is an existing major source of air pollutants and operates under Title V Operating Permit No. 106-0010 issued by the Alabama Department of Environmental Management (ADEM) Air Division effective November 9, 2022.

GP initially submitted a Prevention of Significant Deterioration (PSD) permit application on December 20, 2024, to request a construction permit authorizing a *project*[1] to modernize the mill's operations by replacing certain process equipment with new equipment and modify other process equipment to increase capacity and ensure existing equipment can reliably meet higher production targets. After initial review and subsequent discussion with ADEM, an updated application was submitted on June 4, 2025.

This air quality modeling protocol provides a summary description of the existing mill, proposed *project*, and PSD permitting applicability, consistent with applicable EPA and ADEM guidance. GP is providing this protocol based on the best available current information about the *project* to promote mutual understanding of the expected analytical techniques and data resources GP intends to use to demonstrate compliance with applicable air quality standards and meet regulatory requirements for PSD permitting. GP submitted an initial modeling protocol on November 24, 2024, received comments from ADEM on December 16, 2024, and further discussed questions, comments, and analytical techniques on December 18, 2024, February 5, 2025, and May 1, 2025. This revised modeling protocol addresses ADEM's comments and provides additional information to support the proposed PSD air quality analyses.

The remainder of this modeling protocol describes applicable regulations, guidance, data resources, analytical techniques, and preliminary results to demonstrate that successful PSD air quality analyses will demonstrate attainment of applicable standards. Information about the scope of the *project* including emissions changes and initial modeling results should be considered preliminary, non-binding, and subject to change based on revisions to the project scope, comments from ADEM upon review of the modeling protocol, and any updates to EPA's regulatory modeling system (i.e., AERMOD), changes to prescribed EPA modeling guidelines and techniques (i.e., 40 CFR Part 51 Appendix W), data resources (i.e., updated meteorological data) after submittal of this modeling protocol. Substantial changes will be communicated in writing as part of the permitting record. GP's PSD permit application provides more detailed information about the proposed *project*, emissions calculations, regulatory applicability, and best available control technology determinations. Upon approval of this modeling protocol, GP will prepare and submit the final modeling report and electronic data files for review.

[1] Throughout this modeling protocol, italicized terms are used consistent with a specific regulatory definition. For example, a *project* is "a physical change in, or change in the method of operation of, an existing major stationary source" (ADEM Admin Code r. 335-3-5-.04(14)(1)(yy)).

1.1. MILL AND PROJECT DESCRIPTION

ARC owns and operates a bleached Kraft pulp mill classified under North American Industrial Classification System (NAICS) code 322110 and Standard Industrial Classification (SIC) code 2611. The ARC Mill is located at 2373 Lena Landegger Highway between U.S. Highway 84 and State Highway 41 in Perdue Hill (Monroe County), Alabama. Monroe County has been designated by the EPA as "attainment" or "unclassified" for all criteria pollutants.[2] The centroid of the main process area is approximately 453.7 km East, 3,494.2 km North (Universal Transverse Mercator [UTM] Zone 16, North American Datum [NAD] 1983). Figure 1-1 illustrates the location and layout of the facility and surrounding area.

The mill operates two existing pulping lines: the No. 7 Line and the No. 8 Line. The mill produces bleached softwood Kraft pulp for sale as market (baled) pulp and rolled (fluff) pulp. Although the two lines were originally constructed separately and each line could operate independently because each maintains a woodyard, power boiler to generate steam and electricity, pulping and bleaching lines, chemical recovery system (i.e., recovery furnace, lime kiln, and recausticizing), pulp dryer, and finishing system, both lines have the ability to utilize bark, chips, steam, black liquor, and pulp from the other line. Both lines feed a combined crude tall oil (CTO) and turpentine system to recover valuable byproducts, and both are served by the mill's effluent treatment system. The mill is an existing *major stationary source* of air pollutants and is subject to PSD review for *projects* that are a *major modification* because they cause a *significant emissions increase* and a *significant* ***net*** *emissions increase* of *regulated NSR pollutants*.

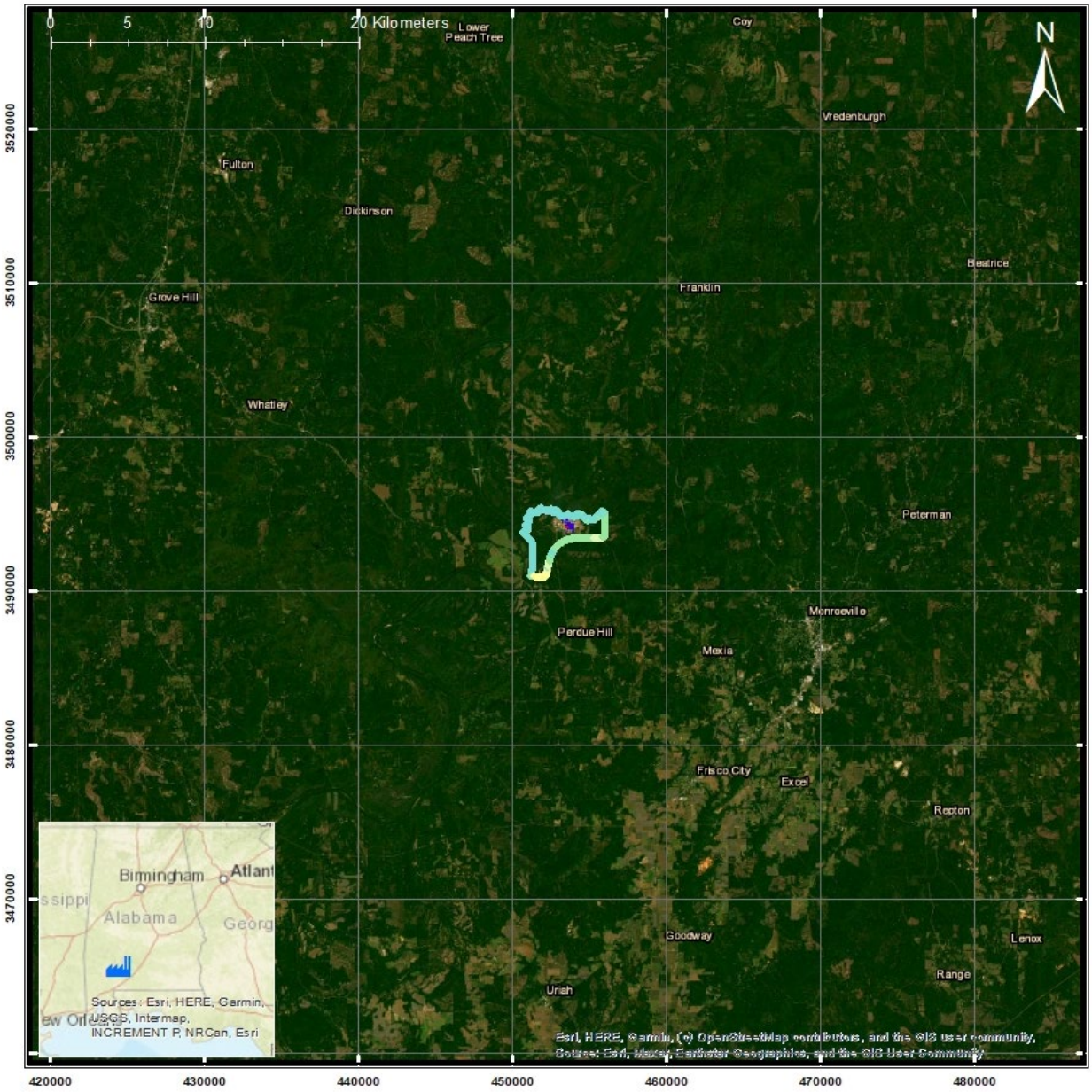
GP intends to conduct a *project* to modernize the mill's pulp manufacturing process by replacing certain existing process units with new equipment and modifying other existing equipment to ensure reliable operations at higher production capacity after the *project* is completed ("modernization project"). Other process units will not be physically modified but will nevertheless be affected in the sense that utilization, and therefore *actual emissions*, may increase to support modified existing and new equipment operating at higher production rates. GP's PSD permit application provided a complete description of the proposed project, process flow diagrams, emissions inventory, regulatory applicability analysis, and best available control technology (BACT) determination to meet requirements for PSD permitting.

As a distinct *project* that will be permitted separately from the modernization project, ARC intends to install a new power boiler to primarily generate steam for the No. 8 Line, which will replace the stationary existing No. 8 Power Boiler that has recently been shut down and obviate the need for multiple natural gas-fired package boilers that ARC has rented and operated since approximately November 2022. Although the No. 8 Power Boiler replacement is a separate *project* that is unlikely to trigger PSD review in and of itself, the replacement is expected to occur after the modernization project is permitted and commences construction, but before the

[2] 40 CFR §81.301.

mill resumes normal operations, such that the No. 8 Power Boiler replacement project is *contemporaneous* with the modernization project and the emissions changes will be accounted as part of the Step 2 emissions netting analysis. The PSD permit application submitted on December 20, 2024, provides detailed information about the scope of the *project* and affected emissions units.

Figure 1-1. Alabama River Cellulose and surrounding area.
(Universal Transverse Mercator [NAD 1983] Zone 16 coordinates expressed in meters as described in Section 2.4 of this modeling protocol.)



1.2. PSD PERMITTING APPLICABILITY

Prevention of Significant Deterioration (PSD) permitting requirements are established in ADEM's State Implementation Plan (SIP) approved regulations at ADEM Admin. Code r. 335-3-14-.04 "Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting (PSD)]." PSD permitting is required when a *project* at an existing *major stationary source* is a *major modification* because it causes a *significant emissions increase* and a *significant* ***net*** *emissions increase* of a *regulated NSR pollutant*. GP's PSD permit application will provide detailed calculations to quantify the emissions changes resulting from the *project* ("Step 1 emissions changes") based on the "hybrid test for projects that involve multiple types of emissions units" by comparing *baseline actual emissions* to *projected actual emissions* for existing emission units and accounting *potential emissions* from new emission units.[3]

The proposed *project* will affect most of the mill's emission units through replacement of existing emissions units with new emissions units, *modification* of existing units, and increased utilization of existing emissions units that are not otherwise modified, for which GP will submit a detailed PSD permitting applicability analysis to quantify the Step 1 emissions increases associated with the *project* and the Step 2 *net emissions increases* including *projects* that are *contemporaneous* and otherwise *creditable*. Table 1-1 summarizes GP's analysis of net emissions changes resulting from the project for each *regulated NSR pollutant* relative to the PSD *significant emission rate* (SER) thresholds, above which the *project* triggers PSD permitting requirements. The PSD permit application submitted on December 20, 2024, provided detailed information about emissions calculations and PSD permitting applicability.

Table 1-1. Summary of *net emissions increases* associated with the proposed *major modification* relative to PSD *Significant Emission Rates* (SER).

Regulated NSR Pollutant	Emissions Changes (tpy)			SER	PSD Review?
	Project (Step 1)	Contemporaneous (Step 2)	Net		
Filterable PM	225.53	256.54	**482.07**	25	Yes
Total PM_{10}	146.96	120.54	**267.51**	15	Yes
Total $PM_{2.5}$	108.57	72.91	**181.49**	10	Yes
SO_2	39.79			40	No
NO_X	774.54	31.13	**805.67**	40	Yes
CO	1,828.97	1,545.28	**3,374.25**	100	Yes
VOC	259.14	571.15	**830.29**	40	Yes
SAM	130.49	114.20	**244.69**	7	Yes
Lead	0.00093			0.6	No
H_2S	9.88	5.32	**15.21**	10	Yes
TRS	38.38	76.08	**114.46**	10	Yes
Total GHG as $CO2_e$	584,287	338,774	**923,061**	75,000	Yes

[3] Unless otherwise specified, references to *potential emissions* generally refer to permitted emission limits in the mill's most recent construction and operating permits, and in prior permit application submittals upon which the current permits are based or anticipated (but subject to change) proposed permit limits for new or modified equipment. *Actual emissions – baseline*, *projected*, and *past* – are expressed consistent with regulatory definitions in the appropriate context as described in subsequent sections of this modeling protocol.

Based on the analysis summarized in Table 1-1, the proposed ***net*** *emissions increases* will exceed the PSD SER and be a *major modification* for the following *regulated NSR pollutants*:

- Filterable Particulate matter (PM)
- Total particulate matter (including condensable PM) less than 10 microns in aerodynamic diameter (PM_{10})
- Total particulate matter (including condensable PM) less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Volatile organic compounds (VOC)
- Sulfuric acid mist (SAM)
- Hydrogen sulfide (H_2S)
- Total reduced sulfur compounds (TRS)
- Greenhouse gases (GHG)

Among the preceding *regulated NSR pollutants*, only certain ones are also *criteria air pollutants* for which EPA has established National Ambient Air Quality Standards (NAAQS) and PSD Increments that are evaluated in the PSD air quality analyses: PM_{10}, $PM_{2.5}$, CO, and NO_2. VOC emissions are addressed as a precursor to secondary ozone formation. Notably, GP does not anticipate a *significant* ***net*** *emissions increase* of sulfur dioxide (SO_2); therefore, no additional modeling analyses for this pollutant are required. However, SO_2 is evaluated as a precursor to secondary formation of $PM_{2.5}$ as prescribed by recent EPA guidance and described in subsequent sections of this modeling protocol.

1.3. FEDERAL AND ALABAMA AIR QUALITY STANDARDS

The Clean Air Act of 1970 required the EPA to establish ambient concentration thresholds for certain compounds based upon the identifiable effects that the compounds may have on the public health and welfare. Subsequently, the EPA promulgated regulations that set NAAQS for six criteria pollutants: SO_2, CO, NO_2, particulate matter (PM, PM_{10} and $PM_{2.5}$), lead (Pb), and ozone. Two classes of ambient air quality standards have been established: (1) primary standards defining levels of air quality that the EPA has judged as necessary to protect public health; and, (2) secondary standards defining levels for protecting soils, vegetation, wildlife, and other aspects of public welfare.

ADEM has adopted the federal primary and secondary NAAQS for the State of Alabama in ADEM Admin. Code r. 335-3-1-.03 "Ambient Air Quality Standards." Table 1-2 summarizes the applicable ambient air quality standards indicating the averaging period, form, and concentration level of each. Attainment is typically determined in terms of a *design value* or *concentration* consistent with the form of each standard. When ambient monitoring data are

7. CLASS I AIR QUALITY COMPLIANCE DEMONSTRATIONS

Federally designated Class I areas are afforded a higher level of air quality protection though more stringent PSD Increments and air quality related values (visibility and acidic deposition). Two Class I areas are located within 300 km of ARC:

1. Breton Wilderness Area is located approximately 215 km southwest.
2. Sipsey Wilderness Area is located approximately 300 km north.

ADEM Guidelines require air quality analyses only for Class I areas within 100 km.

FLAG 2010 establishes an emissions screening test to determine whether detailed modeling analyses are necessary to assess impacts on AQRV at distant (i.e., greater than 50 km) Class I areas. The "*Q*/*D*" test quantifies total AQRV-affecting emissions *Q* divided by the distance *D* (km) to each Class I area. FLAG 2010 establishes that *Q*/*D* less than 10 is a screening threshold indicating no adverse impacts may be presumed and no additional analyses are required. FLAG 2010 (Section 3.2, "Initial Screening Criteria (New)") specifies that *Q* is determined from "total SO_2, NO_X, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D)." In the accompanying response to comments, FLAG 2010 affirmed "for modified sources, applicants should only include the emission increases associated with the modification, not the total from the facility."[25] Notwithstanding this clarification, the screening estimate is challenging to construct for the proposed *project* that involves numerous emissions units – including all of the mill's significant emissions units that emit AQRV-affecting pollutants – some of which will be newly installed, others modified, yet others not physically modified as part of the *project* but affected in the sense of increased utilization and/or modified in a separate *project* that is *contemporaneous* and therefore part of the *major modification*. Accordingly, GP analyzed the screening *Q* parameter by comparing the maximum allowable hourly emission rates – as a representation of the "24-hour maximum allowable emissions" – before and after the *project* for all AQRV-affecting pollutants emitted from the mill from significant units. Table 7-1 summarizes this analysis.

[25] https://npshistory.com/publications/air-quality/flag-responses-2010.pdf.

Table 7-1. Maximum allowable emissions for AQRV-affecting pollutants before and after the proposed *major modification*.

Emission Unit	Project Status	PM_{10} [1] (lb/hr)		NO_X (lb/hr)		SO_2 (lb/hr)		H_2SO_4 (lb/hr)	
		Before [2]	After [3]	Before [2]	After [3]	Before [2]	After [3]	Before [2]	After [3]
No. 7 Power Boiler	Unmodified/Affected	56.04	65.23	151.20	179.52	403.20	478.72	2.22	2.19
No. 7 Recovery Furnace	Unmodified/Affected	52.67	52.24	223.00	223.27	345.00	345.46	26.48	26.44
No. 7 Smelt Dissolving Tank	Unmodified/Affected	14.38	14.38			5.40	5.40		
No. 7 Lime Kiln	Modified	27.43	2.61	58.90	27.76	23.30	5.52	1.20	1.20
No. 7 Lime Slaker	Replaced/New	0.51	0.56						
No. 7 Pulp Dryer	Replaced/New	4.49	2.41						
No. 8 Power Boiler	Contemporaneous/New	28.77	1.79	66.50	12.90	79.80	0.21	4.00	
No. 8 Recovery Furnace	Modified	57.67	48.63	192.70	237.69	357.30	225.00	27.40	33.78
No. 8 Smelt Dissolving Tank	Removed [4]	17.68				6.67			
No. 8 Lime Kiln	Unmodified/Affected	29.78	10.77	36.30	36.35	25.30	25.31	1.30	1.30
No. 8 Lime Slaker	Contemporaneous	0.65	0.65						
No. 8 Pulp Dryer	Contemporaneous	5.49	5.49						
NCG Incinerator	Unmodified/Affected	5.44	5.79	7.11	7.58	230.99	230.99	0.74	0.79
Total Hourly Maximum Emissions		**301 lb/hr**	**211 lb/hr**	**736 lb/hr**	**725 lb/hr**	**1,477 lb/hr**	**1,317 lb/hr**	**63 lb/hr**	**66 lb/hr**
Annualized Emissions		**1,318 tpy**	**922 tpy**	**3,222 tpy**	**3,176 tpy**	**6,469 tpy**	**5,767 tpy**	**277 tpy**	**288 tpy**
Difference	**-1,135 tpy**	**-396 tpy**		**-47 tpy**		**-702 tpy**		**10 tpy**	

1. PM_{10} emissions include filterable PM_{10} and condensable PM consistent with the methodology described in Section 2.8.3 of this modeling protocol.
2. Maximum allowable emissions "before" the proposed *major modification* represent current permit limits or calculated potential emissions rates for units that are not specifically regulated or listed in the mill's major source operating permit.
3. Maximum allowable emissions "after" the proposed *major modification* represented anticipated permit limits or potential emissions rates calculated from expected BACT determinations and/or applicable regulatory standards.
4. The No. 8 Smelt Dissolving Tank is being modified and removed as an emission point because emissions from the unit will be routed to the No. 8 Recovery Furnace as part of the proposed *project*.

This analysis indicates a reduction in maximum allowable 24-hour average emissions of AQRV-affecting pollutants, due primarily to *modification* of the existing No. 7 Lime Kiln to fire lower-sulfur fuels and using a more efficient particulate control technology, *modification* of the existing No. 8 Recovery Furnace resulting in lower BACT emissions limits, and contemporaneous replacement of the combination fuel-fired No. 8 Power Boiler with a new, natural gas-fired boiler.

Alternatively, GP calculates the following using the PSD applicability calculation of the emissions increases resulting from the proposed *major modification*, which indicates PSD review is triggered for PM_{10}, NO_X, and H_2SO_4 (but not SO_2) because of increased capacity and annual utilization, even though hourly (24-hour) allowable emissions would not increase.

$$\frac{Q}{D} = \frac{267.51 \text{ tpy } PM_{10} + 805.67 \text{ tpy } NO_x + 39.79 \text{ tpy } SO_2 + 244.69 \text{ tpy } H_2SO_4}{215 \text{ km}} = 6.31 < 10$$

Because the emissions increases resulting from the proposed *major modification* are less than the screening threshold (using either screening approach), no adverse impacts on AQRV are expected and no further analyses are required. GP previously notified Federal Land Managers of the proposed project, availability of this modeling protocol, and summary determination using the recommended "Request for Applicability of Class I Area Modeling Analysis" form.[26]

[26] Electronic communication from Ms. Gisele Majidi-Weese, PE (United States Department of Agriculture [USDA]) dated April 1, 2025, indicated the USDA "anticipates that modeling would not show any significant additional impacts to Air Quality Related Values (AQRV) at the Class I area administered by the USDA Forest Service. Therefore, we are not requesting that a Class I AQRV analysis be included in the PSD permit application." As this initial assessment represents the distant (299 km) Sipsey Wilderness, GP will seek a similar determination from the FWS representative for the Breton Wildlife Refuge (215 km distant).

From:	Ghazal Majidi-Weese - FS, Asheville - FS, NC
To:	Gesser, Ryan A
Cc:	Bissey, Steven; mjleach@adem.alabama.gov; LBB@ADEM.Alabama.Gov; Cole, Lisa B; GAH@adem.alabama.gov; Pitrolo, Melanie - FS, NC; Shepherd, Lorinda; Allen, Tim
Subject:	RE: [External Email]Alabama River Cellulose PSD Modeling Class I Notification - USFS
Date:	Tuesday, April 1, 2025 10:15:49
Attachments:	image001.png

Sent by an external sender

Dear Ryan:

Thank you for sending the information regarding Georgia-Pacific LLC's proposed Alabama River Cellulose Mill project in Perdue Hill, Monroe County, Alabama. Based on the emission rates and distance from the Class I area listed below, the United States Department of Agriculture (USDA) anticipates that modeling would not show any significant additional impacts to Air Quality Related Values (AQRV) at the Class I area administered by the USDA Forest Service. Therefore, we are not requesting that a Class I AQRV analysis be included in the PSD permit application. Our screening of this analysis does not indicate agreement with any AQRV analysis protocols or conclusions applicants may make independent of Federal Land Manager review. Please note that we are specifically addressing the need for an AQRV analysis for Class I areas managed by the USDA Forest Service.

Class I Area	Distance to Facility (km)	Annual Emissions (tpy [1])
Sipsey Wilderness	299	1338.73

1. Sulfur dioxide, nitrogen oxides, total fine particulate matter (PM, PM_{10}, and $PM_{2.5}$), and sulfuric acid mist.

The state and/or EPA may have a different opinion regarding the need for a Class I increment analysis. Should the emissions or the nature of the project change significantly, please contact myself, Gisele Majidi-Weese (ghazal.majidi-weese@usda.gov, 828-337-2323) of the USDA Forest Service so that we might re-evaluate the project proposal.

Thank you for keeping us informed and involving the USDA Forest Service in the project review.

Regards,
Gisele

Gisele Majidi-Weese, PE, COR II
Air Resource Specialist
Timber Sale Construction – Engineering Representative
Forest Service
R8 Biological & Physical

Resources
c: 828-337-2323
ghazal.majidi-weese@usda.gov
Asheville, NC 28804

From: Gesser, Ryan A <Ryan.Gesser@gapac.com>
Sent: Tuesday, November 26, 2024 9:48 AM
To: Ghazal Majidi-Weese - FS, Asheville - FS, NC <ghazal.majidi-weese@usda.gov>; Pitrolo, Melanie - FS, NC <melanie.pitrolo@usda.gov>
Cc: Bissey, Steven <steven.bissey@adem.alabama.gov>; mjleach@adem.alabama.gov
Subject: [External Email]Alabama River Cellulose PSD Modeling Class I Notification - USFS

Some people who received this message don't often get email from ryan.gesser@gapac.com. Learn why this is important

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Melanie & Ghazal…

Please find attached a summary notification form for an upcoming PSD project at the Alabama River Cellulose Mill (ARC) operated by Georgia-Pacific (GP) in Perdue Hill, Monroe County, Alabama. We have submitted the PSD modeling protocol to ADEM as described below including analyses summarized in the attached form that indicate no adverse impacts are expected at distant Class I areas (Breton, about 215 km southwest of the mill and Sipsey, about 300 km north of the mill).

Please let me know of any questions or comments about this information or contact our regulatory partners at ADEM for more information about the PSD modeling protocol and PSD permit application once it is submitted in the coming weeks (or months).

Thank you very much in advance for your review and have a nice, safe holiday this week.

…Ryan

==========

Ryan A. Gesser, CCM
Senior Manager, Air Quality
Georgia-Pacific LLC
133 Peachtree Street NE
Atlanta, GA 30303
404-652-6933
ryan.gesser@gapac.com

From: Gesser, Ryan A
Sent: Monday, November 25, 2024 17:01
To: Bissey, Steven <steven.bissey@adem.alabama.gov>; Leach, Michael J <mjleach@adem.alabama.gov>
Cc: Bacon, Leigh <LBB@adem.alabama.gov>; Healan, Geoffrey <GAH@adem.alabama.gov>; Sims, Samantha P <SSims@adem.alabama.gov>; Zufall, Maria J <Maria.Zufall@gapac.com>; Missildine, Andrea K <Andrea.Missildine@GAPAC.com>; Bates, Justin <Justin.Bates@gapac.com>
Subject: Alabama River Cellulose PSD Modeling Protocol
Importance: High

Please find attached the PSD modeling protocol for an upcoming proposed major modification to the Alabama River Cellulose Mill (ARC) operated by Georgia-Pacific (GP) in Perdue Hill, Monroe County, Alabama. This modeling protocol provides a summary of the proposed changes that will be described in detail (including process description and proposed changes, emissions inventory, PSD permitting applicability analysis, regulatory applicability analysis, and best available control technology determinations) in the final PSD permit application. This modeling protocol provides a detailed description of the modeling techniques and data resources GP anticipates using to demonstrate attainment of all relevant standards in the final PSD permit application. Please consider the following notes as you review the modeling protocol…

- GP has prepared this modeling protocol with extraordinary detail to demonstrate how the final analyses will demonstrate attainment of all relevant standards including the recently revised, more stringent annual average PM2.5 NAAQS and associated lower significant impact level. This includes a detailed description of the methods and data used to formulate model inputs for emission rates of both direct emissions and secondary formation of ozone and PM2.5 from precursor emissions, stack and building conditions before and after the project, background concentrations (including regional sources specified by ADEM) for the cumulative NAAQS analyses, and PSD Increment-affecting changes for PM2.5 (since this major modification may be the first for PM2.5 in the area). We anticipate that the modeling sections of the final PSD application will substantially resemble this protocol, with necessary revisions based on ADEM's comments and suggestions.
- GP is providing preliminary modeling results for all relevant pollutants and standards to demonstrate how final analyses would be prepared using the preceding methods. As noted throughout the protocol, all modeling results should be considered preliminary and subject to change based on ADEM's (and EPA's) comments on the modeling protocol, possible changes to project scope with additional analysis and quality assurance, and changes to available data resources.
    - All preliminary analyses were prepared using AERMOD regulatory version 23132; GP is aware that EPA released an updated regulatory version (24142) just last week on November 20, 2024, and we anticipate using that version for all final analyses.
    - Although we do not anticipate any substantial changes to this analysis solely because of the updated regulatory guideline and model version, GP is aware that ADEM intends to re-process representative meteorological data using the updated version of AERMET and a more recent 5-year data set (2019-2023) than used in preliminary analyses (2018-2022), which is likely to affect the preliminary modeled design concentrations

reported in the protocol. GP will appreciate receiving the updated data as soon as possible to begin preparation of the final analyses with updated versions.

- GP has assessed the possibility of modeled violations in the vicinity of certain sources in the regional inventory provided by ADEM; GP's preliminary analyses described in the modeling protocol demonstrate our expectation that ARC does not cause or contribute to modeled violations, which may not actually be expected due to simulation of source characteristics and receptors associated with regional sources. GP will update such analyses as recommended by ADEM if refinements to source input parameters and nearby receptors are appropriate.
- Modeling input/output files are not provided with this protocol, but (of course) will be provided as part of the final PSD permit application. Please let us know if modeling files or any other supporting information would be useful to ADEM during review of the modeling protocol.
- GP anticipates that no refined analyses are necessary for distant Class I areas based on the screening analyses presented in Section 7 of the modeling protocol. GP will separately notify the FLM of this project and screening analyses using the attached recommended form.

Thank you very much in advance for your detailed review of GP's modeling protocol for this project. Please do not hesitate to contact me to discuss any questions, comments, suggestions, or additional information needs as you review. In the meantime, we will be preparing final analyses to be submitted as soon as possible after receiving updated meteorological data and ADEM's comments and approval of the modeling protocol.

Have a nice, safe holiday week and long weekend!

…Ryan

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Ryan A. Gesser, CCM
Senior Manager, Air Quality
Georgia-Pacific LLC
133 Peachtree Street NE
Atlanta, GA 30303
404-652-6933
ryan.gesser@gapac.com

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From: Allen, Tim
To: Gesser, Ryan A
Cc: Bissey, Steven; mjleach@adem.alabama.gov; GAH@adem.alabama.gov
Subject: Re: [EXTERNAL] RE: Alabama River Cellulose PSD Modeling Class I Notification
Date: Wednesday, June 11, 2025 16:53:55
Attachments: image001.png

Sent by an external sender

Hi Ryan,

Thank you for the notification. Given the Q/d calculation to Breton, USFWS will not request additional AQRV analysis for the ARC GP project as described. If a significant change to the project occurs, please submit the revised project for further review.

Thank you,
Tim Allen

From: Gesser, Ryan A <Ryan.Gesser@gapac.com>
Sent: Wednesday, June 11, 2025 2:18 PM
To: Allen, Tim <tim_allen@fws.gov>
Cc: Bissey, Steven <steven.bissey@adem.alabama.gov>; mjleach@adem.alabama.gov <mjleach@adem.alabama.gov>; GAH@adem.alabama.gov <GAH@adem.alabama.gov>
Subject: [EXTERNAL] RE: Alabama River Cellulose PSD Modeling Class I Notification

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Tim…

Following up on a prior request, please see attached a PSD Class I notification form with summary information and screening analysis for an upcoming PSD project at the Alabama River Cellulose Mill (ARC) operated by Georgia-Pacific (GP) in Perdue Hill, Monroe County, Alabama. Having received confirmation from Ghazal Majidi-Weese at USFS (shown below) that no additional AQRV analyses are expected for Sipsey, we anticipate receiving confirmation from you that no additional analyses are expected for Breton so that we may include this determination in the permitting record.

We have submitted the PSD modeling protocol to ADEM as described below including analyses summarized in the attached form that indicate no adverse impacts are expected at distant Class I areas (Breton, about 215 km southwest of the mill and Sipsey, about 300 km north of the mill). This form and the modeling protocol have been revised to reflect the final permit application since we initially shared it with you in November 2024. Emissions calculations have been updated resulting in a slight change in the Q/d calculation from 6.2 to 6.3 at Breton Wilderness.

Please let me know of any questions or comments about this information or contact our regulatory partners at ADEM for more information about the PSD permit application. Thank you very much in advance for your review and reply.

…Ryan

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Ryan A. Gesser, CCM
Senior Manager, Air Quality
Georgia-Pacific LLC
133 Peachtree Street NE
Atlanta, GA 30303
404-652-6933
ryan.gesser@gapac.com

From: Ghazal Majidi-Weese - FS, Asheville - FS, NC <ghazal.majidi-weese@usda.gov>
Sent: Tuesday, April 1, 2025 10:16
To: Gesser, Ryan A <Ryan.Gesser@gapac.com>
Cc: Bissey, Steven <steven.bissey@adem.alabama.gov>; mjleach@adem.alabama.gov; LBB@ADEM.Alabama.Gov; Cole, Lisa B <LBCole@adem.alabama.gov>; GAH@adem.alabama.gov; Pitrolo, Melanie - FS, NC <melanie.pitrolo@usda.gov>; Shepherd, Lorinda <Shepherd.Lorinda@epa.gov>; Allen, Tim <tim_allen@fws.gov>
Subject: RE: [External Email]Alabama River Cellulose PSD Modeling Class I Notification - USFS

Sent by an external sender

Dear Ryan:

Thank you for sending the information regarding Georgia-Pacific LLC's proposed Alabama River Cellulose Mill project in Perdue Hill, Monroe County, Alabama. Based on the emission rates and distance from the Class I area listed below, the United States Department of Agriculture (USDA) anticipates that modeling would not show any significant additional impacts to Air Quality Related Values (AQRV) at the Class I area administered by the USDA Forest Service. Therefore, we are not requesting that a Class I AQRV analysis be included in the PSD permit application. Our screening of this analysis does not indicate agreement with any AQRV analysis protocols or conclusions applicants may make independent of Federal Land Manager review. Please note that we are specifically addressing the need for an AQRV analysis for Class I areas managed by the USDA Forest Service.

Class I Area	Distance to Facility (km)	Annual Emissions (tpy [1])
Sipsey Wilderness	299	1338.73

1. Sulfur dioxide, nitrogen oxides, total fine particulate matter (PM, PM_{10}, and $PM_{2.5}$), and sulfuric acid mist.

The state and/or EPA may have a different opinion regarding the need for a Class I increment analysis. Should the emissions or the nature of the project change significantly, please contact myself, Gisele Majidi-Weese (ghazal.majidi-weese@usda.gov, 828-337-2323) of the USDA Forest Service so that we might re-evaluate the project proposal.

Thank you for keeping us informed and involving the USDA Forest Service in the project review.

Regards,
Gisele

Gisele Majidi-Weese, PE, COR II
Air Resource Specialist
Timber Sale Construction –
Engineering Representative
Forest Service
R8 Biological & Physical Resources
c: 828-337-2323
ghazal.majidi-weese@usda.gov
Asheville, NC 28804

From: Gesser, Ryan A <Ryan.Gesser@gapac.com>
Sent: Tuesday, November 26, 2024 9:48 AM
To: Ghazal Majidi-Weese - FS, Asheville - FS, NC <ghazal.majidi-weese@usda.gov>; Pitrolo, Melanie - FS, NC <melanie.pitrolo@usda.gov>
Cc: Bissey, Steven <steven.bissey@adem.alabama.gov>; mjleach@adem.alabama.gov
Subject: [External Email]Alabama River Cellulose PSD Modeling Class I Notification - USFS

Some people who received this message don't often get email from ryan.gesser@gapac.com. Learn why this is important

[External Email]
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Use caution before clicking links or opening attachments.
Please send any concerns or suspicious messages to: Spam.Abuse@usda.gov

Melanie & Ghazal…

Please find attached a summary notification form for an upcoming PSD project at the Alabama River Cellulose Mill (ARC) operated by Georgia-Pacific (GP) in Perdue Hill, Monroe County, Alabama. We have submitted the PSD modeling protocol to ADEM as described below including analyses summarized in the attached form that indicate no adverse impacts are expected at distant Class I areas (Breton, about 215 km southwest of the mill and Sipsey, about 300 km north of the mill).

Please let me know of any questions or comments about this information or contact our regulatory partners at ADEM for more information about the PSD modeling protocol and PSD permit

application once it is submitted in the coming weeks (or months).

Thank you very much in advance for your review and have a nice, safe holiday this week.

…Ryan

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Ryan A. Gesser, CCM
Senior Manager, Air Quality
Georgia-Pacific LLC
133 Peachtree Street NE
Atlanta, GA 30303
404-652-6933
ryan.gesser@gapac.com

From: Gesser, Ryan A
Sent: Monday, November 25, 2024 17:01
To: Bissey, Steven <steven.bissey@adem.alabama.gov>; Leach, Michael J <mjleach@adem.alabama.gov>
Cc: Bacon, Leigh <LBB@adem.alabama.gov>; Healan, Geoffrey <GAH@adem.alabama.gov>; Sims, Samantha P <SSims@adem.alabama.gov>; Zufall, Maria J <Maria.Zufall@gapac.com>; Missildine, Andrea K <Andrea.Missildine@GAPAC.com>; Bates, Justin <Justin.Bates@gapac.com>
Subject: Alabama River Cellulose PSD Modeling Protocol
Importance: High

Please find attached the PSD modeling protocol for an upcoming proposed major modification to the Alabama River Cellulose Mill (ARC) operated by Georgia-Pacific (GP) in Perdue Hill, Monroe County, Alabama. This modeling protocol provides a summary of the proposed changes that will be described in detail (including process description and proposed changes, emissions inventory, PSD permitting applicability analysis, regulatory applicability analysis, and best available control technology determinations) in the final PSD permit application. This modeling protocol provides a detailed description of the modeling techniques and data resources GP anticipates using to demonstrate attainment of all relevant standards in the final PSD permit application. Please consider the following notes as you review the modeling protocol…

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Have a nice, safe holiday week and long weekend!

…Ryan

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Bissey, Steven

From: Gesser, Ryan A <Ryan.Gesser@gapac.com>
Sent: Friday, July 25, 2025 3:47 PM
To: Bissey, Steven
Subject: Gesser, Ryan A shared the folder "PSD Air Quality Analyses Submittal (2025-07-25 Update)" with you

Gesser, Ryan A shared a folder with you

Please use this link to access a folder containing two files...

1. PDF of updated PSD permit application Andrea sent an email about.
2. ZIP file containing updated modeling files and air quality analyses report corresponding to the updates Andrea described.

In case this link to the folder doesn't work, I will separately send two other links to those files. Please confirm you are able to access and download these.

Thanks...

Ryan

PSD Air Quality Analyses Submittal (2025-07-25 Update)

This link only works for the direct recipients of this message.

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