Sterling Environmental Engineering, P.C.

APPLICATION FOR
AIR FACILITY PERMIT

FOR

SARATOGA BIOCHAR SOLUTIONS, LLC
CARBON FERTILIZER™ MANUFACTURING FACILITY
MOREAU, NY

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March 31, 2022

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1.0 INTRODUCTION

This narrative and attached supporting documentation provide a complete application for a State Facility Air Permit under 6 NYCRR 201-5. Saratoga Biochar Solutions, LLC (SBS) is proposing to construct and operate a solid waste management facility (SWMF) to manufacture Carbon Fertilizer™ from biosolids and wood waste feedstock (hereinafter the "Facility") with an annual throughput up to 235,200 wet tons of received biosolids and up to 35,280 tons of wood waste. The Facility is designed to be constructed in three phases with each phase consisting of a process line capable of processing up to 10 wet tons per hour of biosolids and up to 1.5 tons per hour of wood waste. Each process line is capable of manufacturing approximately 1 ton per hour of Exceptional Quality (EQ) Class A biosolids product (i.e., "Carbon Fertilizer™") in accordance with 40 CFR Part 503 and 6 NYCRR 361. The selected location is on 5.89 acres composed of Tax Parcels 50.-4-16 (3.07 acres) and 50.-4-22 (2.82 acres), on Farnan Road within the Moreau Industrial Park in the Town of Moreau, Saratoga County, New York, owned by Moreau Industrial Park, LLC. A Site Location Map on a United States Geological Survey quadrangle map is provided as Figure 1, and a Site Vicinity Map on an aerial image is provided as Figures 2.

Authorization to operate the Facility is the subject of a separate Solid Waste Management Facility Permit application to the New York State Department of Environmental Conservation (NYSDEC) pursuant to 6 NYCRR Part 360. As described in this narrative, all manufacturing activities are conducted indoors, and the Facility is maintained under negative pressure to mitigate potential fugitive odor emissions. All exhaust air is treated through engineered air pollution control devices for particulate, ammonia, sulfur dioxide, and odor control.

The Facility ventilation system exhausts to the atmosphere at three emission points subject to air pollution control devices (i.e., one emission point for each process line). This submittal evaluates anticipated emissions at full buildout of the Facility and is based on emission factors and performance data from bench scale testing. In practice, one process line will be constructed and operated before constructing the second and third process lines. This will allow the Facility to obtain actual full-scale emission factors to refine the emission calculations, if needed, before proceeding with construction of the additional process lines. The Facility proposes to cap the annual biosolids throughput at full buildout of three process lines to maintain emissions of Nitrogen Dioxide and Carbon Dioxide below their corresponding Major Source thresholds of 100 tons per year and 100,000 tons per year, respectively.

Table 1 provides a checklist of the application contents.

Table 1 - 6 NYCRR Part 201-5.2 State Facility Air Permit Checklist

Regulatory Requirement	Description	Location
6 NYCRR 201-5.2	**State Facility Permit Application Content**	
6 NYCRR 201-5.2(a)	Application for State Facility Permit	Attachment 1. State Facility Air Permit Forms
6 NYCRR 201-5.2(b)(1)	Identifying information, including owner name and address, facility name and address.	Attachment 1 State Facility Air Permit Forms
6 NYCRR 201-5.2(b)(2)	Facility Location Map / Site Plan drawings	Figures 1 and 2, Attachment 2

6 NYCRR 201-5.2(b)(3)	A list and description of all emission sources at the facility except those that are exempt or trivial.	Narrative Section 6.0
6 NYCRR 201-5.2(b)(4)	Listing of SIC or NAICS corresponding to the primary operations carried out at the facility.	Attachment 1 State Facility Air Permit Forms, Narrative Section 6.0
6 NYCRR 201-5.2(b)(5)	A description of all processes, their associated emission sources, and products.	Narrative Section 6.0, Attachments 1-4, Appendix A
6 NYCRR 201-5.2(b)(6)	List of all emission points including the following parameters: stack height (ft), stack height above building (ft), internal stack diameter (in), exit temperature (degrees F), exit velocity (ft/sec), exit flow (acfm), distance from emission point to the property line (ft), and NYTM coordinates.	Attachment 1 State Facility Air Permit Forms
6 NYCRR 201-5.2(b)(7)	A Process Flow Diagram detailing which process emissions and emission sources exhaust from which emission point.	Figures 3 and 4
6 NYCRR 201-5.2(b)(8)	A list including the type, rate, and quantity of all regulated air pollutant emissions and persistent, bioaccumulative, and toxic compound emissions, as listed in Subpart 201-9.	Attachment 3, Narrative Section 6.0
6 NYCRR 201-5.2(b)(9)	List of applicable New York State and Federal air pollution control requirements applicable to the Facility.	Attachment 1
6 NYCRR 212-2	Allowable Emissions Analysis	Narrative Section 8.0 Attachment 4 – AERSCREEN Model Outputs
CLCPA Section 7(2)	Identify each GHG and calculate the project's potential to emit GHG in units of tons per year and carbon dioxide equivalents using 20-year global warming potentials found in 6 NYCRR 496.5. Include upstream emissions using NYSDEC "preliminary interim draft emissions factors for use by state agencies and project proponents".	Narrative Section 9.0

2.0 DESCRIPTION OF PROJECT

The Facility is designed to process biosolids and wood waste feedstock through low-temperature drying and pyrolysis to produce a marketable Carbon Fertilizer™ that meets specific end-use requirements. The Facility is subject to a New York State Department of Environmental Conservation (NYSDEC) SWMF permit under 6 NYCRR 362-1 (Thermal Treatment Facilities). There is no incineration or combustion of feedstock involved in the manufacturing process, and the feedstock is limited to biosolids sourced from wastewater treatment plants and wood waste consisting of land clearing debris and/or unadulterated wood, wood chips, or bark from logging operations, pulp and paper production, and wood products manufacturing; unauthorized waste that will not be accepted includes municipal solid waste, construction and demolition debris, friable asbestos-containing material (ACM), mercury-added consumer products, radioactive waste, infectious and regulated medical waste, and hazardous wastes.

All manufacturing activities are conducted indoors, and the Facility is maintained under negative pressure to mitigate potential fugitive odor emissions. All exhaust air is treated through engineered air pollution control devices for particulate, ammonia, sulfur dioxide, and odor control.

3.0 6 NYCRR PART 201-5.2(a) APPLICATION FOR STATE FACILITY AIR PERMIT

A completed NYSDEC State Facility Air Permit Form is provided as Attachment 1. Required elements of the application are included as additional attachments as indicated in Table 1.

4.0 6 NYCRR PART 201-5.2(b)(1) IDENTIFYING INFORMATION

Identifying information for the facility and facility owner is provided in the completed State Facility Air Permit Form (Attachment 1).

5.0 6 NYCRR PART 201-5.3(b)(2) FACILITY LOCATION MAP

The Facility will be located on 5.89 acres composed of Tax Parcels 50.-4-16 (3.07 acres) and 50.-4-22 (2.82 acres), on Farnan Road within the Moreau Industrial Park in the Town of Moreau, Saratoga County, New York, owned by Moreau Industrial Park, LLC. A Site Location Map on a United States Geological Survey quadrangle map is provided as Figure 1, and a Site Vicinity Map on an aerial image is provided as Figures 2. Site Plan Drawings showing the Facility layout are provided in Attachment 2.

6.0 6 NYCRR PART 201-5.2(b)(3) DETAILED DESCRIPTION OF THE OPERATIONS

The Facility uses low-temperature thermal drying and low-temperature pyrolysis to process biosolids and wood waste into a marketable EQ Class A biosolids product that meets specific end-use requirements contained in 40 CFR Part 503 and 6 NYCRR 361. Wood waste feedstock is an optional minor feedstock component that is not required for processing biosolids. Pyrolysis is a heating process in the absence of oxygen that separates volatile organic compounds (as syngas) from the inorganic solid fraction, which forms the Carbon Fertilizer™. The Facility consists of the following components and processes that are shown on the Site Plan Drawings included in Attachment 2 and in the Manufacturing Equipment Process Flow Diagram (Figure 3) and Air Treatment System Process Flow Diagram (Figure 4):

A. Scale House and Administrative Office – The Scale House and Administrative Office includes a scale operations center, restrooms, showers, and administrative support offices. This area is a specific portion of the Carbon Manufacturing Building that is separated from process equipment.

B. Carbon Manufacturing Building – The Carbon Manufacturing Building is completely enclosed and includes a Biosolids Receiving Area, a Process Input Feed Pit, and a Carbon Manufacturing Area. Attached to the Carbon Manufacturing Building is a partially enclosed, covered Wood Feedstock Receiving, Storage, and Processing Area and an outdoor Carbon Storage and Loading Area. As shown in the Site Plan Drawings, the Facility construction is anticipated to be built out over three phases with each phase capable of processing up to 10 tons per hour of received biosolids and up to 1.5 tons per hour of wood waste. Phases two and three are planned to be constructed over a five year timeframe following completion of Phase one. Descriptions of each area and associated processes are as follows:

1. Biosolids Receiving Area – Biosolids are delivered by licensed haulers using standard hauling trucks with covers that will not require modifications. The Facility will receive biosolids Monday through Saturday at a rate of approximately 240 tons per day per processing line (i.e., approximately 283 cubic yards per day per processing line). Delivered biosolids are received inside the Carbon Manufacturing Building, which minimizes fugitive noise and odor emissions. The receiving area is isolated from the process area and is serviced by the air treatment system. Trucks back into the building through quick opening and closing garage doors and tip the biosolids into a recessed reception pit. The reception pit is equipped with a scalping grate with 8-inch square openings to separate and remove any oversized material that may be in a load (e.g., unauthorized waste). The receiving area is slightly pitched to ensure that any spillage is contained within the enclosed building. A high-pressure water source is available to wash the wheels and tailgate of delivery trucks if needed. Wash water is collected through a trench drain and for disposal to the sanitary sewer. The Facility has contracted with Casella Organics ("Casella") for an initial 10-year term with two 5-year extensions to source and transport biosolids to the Facility. Since biosolids feedstock is being obtained from a single contracted supplier directly from wastewater treatment plants, the presence of oversized debris is expected to be minimal. If oversized debris is captured on the scalping screens, the first method of removal is manually by personnel with an extension hook. This method of removal is suitable for light debris (e.g., plastics). If large and potentially heavy oversized debris is encountered, a piece of equipment (e.g., excavator or similar) will remove the debris. All removed debris will be washed clean of biosolids using the truck wash and placed in a roll-off container for offsite disposal.

2. Process Input Feed Pit – Following biosolids reception, screw conveyors located at the bottom of the reception pit transfer the biosolids across the receiving pit into the Process Input Feed Pit. The receiving pits and storage silos are sized to provide a combined three-day storage capacity in accordance with NYSDEC regulations (6 NYCRR 362-1.5(b)(3)). The two reception pits provide a combined 855.2 cubic yards of storage capacity for the first process line. The second and third processing lines will each include a biosolids storage silo that each have a capacity of at least 850 cubic yards. Indoor storage of biosolids is necessary to provide sufficient material for continuous operation of the manufacturing process 24 hours per day while only receiving biosolids between 6:00 AM and 6:00 PM Monday through Saturday.

3. Wood Feedstock Receiving, Storage, and Processing Area – Adjacent to the Biosolids Receiving Area is a covered outdoor receiving and storage area for wood waste feedstock. Wood is used as an optional blending agent with biosolids to control moisture content and to boost energy and carbon content. Received wood waste will include land clearing debris and/or unadulterated wood, wood chips, or bark from logging operations, pulp and paper production, and wood products manufacturing material. Unauthorized

wood waste includes wood products that are painted, chemically treated (e.g., pressure-treated wood or railroad ties), or manufactured with chemicals such as glues or adhesives (e.g., plywood or particle board). Received wood will be stored in bunkers and loaded into the Process Input Feed Pit using a bucket loader or similar piece of mobile equipment. To ensure consistent particle size, all wood waste material is passed through an electric grinder to reduce oversized material. A dust hood is located above the grinder to collect any particulate emissions, and the grinder is locally shielded for noise control. The grinder will only operate during daytime hours.

4. Carbon Manufacturing Area – Biosolids and wood waste feedstock move by conveyor to the manufacturing process equipment that consist of a rotary dryer, a pyrolysis reactor, and a thermal oxidizer, among other system components as shown on the Process Flow Diagram in Figure 4. Drying high-moisture biosolids is the first step in the carbon manufacturing process, which is common in many municipalities throughout the U.S. The drying process is the only point-source of odor emissions from the Facility. Dryer emissions are ducted to the air treatment system, and dry feedstock is collected in a hopper bin for sizing prior to the second step. Sizing the dried feedstock consists of screening and milling. Only properly sized particles (i.e., the under screen fraction) are sent to the pyrolysis reactor. Oversized particles are reduced to fines through the use of a hammermill and returned to the dryer along with process dust to facilitate particle agglomeration and to reduce dust in the final product.

   The second step in the carbon manufacturing process is pyrolysis. The dried and sized feedstock is received from the dry hopper bin into an oxygen-free chamber that heats the material without direct exposure to flame. The kiln uses natural gas to indirectly heat the feedstock across four sections of the kiln to ensure uniformity of the pyrolysis process along the length of the kiln. The products of pyrolysis are the manufactured Carbon Fertilizer™ solids and a synthetic gas (i.e., syngas). The solid Carbon Fertilizer™ is cooled by an indirect heat exchanger, hydrated to 10% moisture content, and transferred by conveyor to the product storage area. The generated syngas is ducted to the thermal oxidizer to generate heat for the dryer. The drying process accounts for approximately 83% of the heat energy needed for the Facility and is expected to be supplied from the syngas generated in the pyrolysis process as renewable energy. Exhaust from the thermal oxidizer is ducted to the dryer for thermal efficiency.

   The feedstock is never directly combusted or incinerated inside the kiln, which substantially reduces the potential for air emissions. The organic constituents in the feedstock are separated as a synthetic gas (i.e., syngas), which contains methane, sulfur, and other odor compounds. The syngas is piped to and combusted in a thermal oxidizer at a temperature that generates heat, destroys odor compounds, and reduces the formation of nitrogen oxide emissions (i.e., NOx) through the use of low-NOx burners. The generated syngas is a renewable energy that is burned in the thermal oxidizer to produce heat for continuous operation of the dryer. The thermal oxidizer must initiate operations using natural gas or a blend of syngas and natural gas. However, once fully operational, the drying process achieves auto-thermal operations on the generated syngas from the pyrolysis process. The thermal oxidizer is specified to have a minimum destruction efficiency of 99.5%, but may achieve 99.9% or better. The inorganic solids that remain after separating the syngas from the dried feedstock is the Carbon Fertilizer™ that is cooled and stabilized with water for storage and offsite shipment.

5. Carbon Storage and Loading Area – Manufactured Carbon Fertilizer™ is moved by jacketed cooling conveyor to the Carbon Storage and Loading Area for temporary storage in vertical silos. Each storage silo has a diameter of 24 feet and a height of 44 feet that provides a total storage capacity of approximately 1,230 cubic yards (~615 cubic yards per silo). Each process line has a target production rate of 1 ton of manufactured Carbon Fertilizer™ per hour (i.e., 2.4 cubic yards per hour at a bulk density of 0.41 tons per cubic yard). Therefore, the silos provide approximately 7 days of storage capacity at full buildout, which meets the maximum onsite storage allowed in 6 NYCRR 362.15(d). Each process line will produce up to approximately 7,840 dry tons of Carbon Fertilizer™ annually as agglomerated pellets with a solids content of 95 to 98%. At full buildout, the Facility will produce up to approximately 23,500 tons of Carbon Fertilizer™ per year. Carbon Fertilizer™ will be loaded directly into delivery trucks or into approximately 1 and 2 cubic yard super sacks.

   The product bagging area is located outdoors and under roof cover between the process area and storage silos. The bagging line intercepts Carbon Fertilizer™ that is being conveyed from the process area to the storage silos. The Carbon Fertilizer™ will be hydrated to 10% moisture after the jacketed cooling conveyor and prior to storage to eliminate dust throughout. In addition, a dust chute will be used at the end of the bulk loading conveyor for dust control when loading trucks. To mitigate combustion risks from combustible dusts, the process and conveyance equipment include dust ports for dust removal as well as nitrogen purging to eliminate a combustible atmosphere. Recovered dust is fed into the dryer exhaust prior to the dry cyclone for reclamation into the Carbon Fertilizer™ manufacturing process. The entire process area will be outfitted with sprinkler systems as a secondary form of fire control in accordance with fire protection requirements.

6. Emissions Air Treatment – Process air emissions from the Carbon Fertilizer™ manufacturing process, containing particulates, ammonia, sulfur dioxide, and odors, are treated through air pollution control systems prior to exhaust to the atmosphere. The receiving area, reception pits, and process area are all maintained under negative pressure to mitigate potential for fugitive emissions. The biosolids receiving area and reception pits are ducted directly into the combustion air intake of the thermal oxidizer. Auxiliary air input into the dryer is ducted directly from the process area. Therefore, all air inside the Carbon Manufacturing Building is maintained under negative pressure induced by the air treatment system fans. When the manufacturing equipment is not operating, air is continuously pulled through the equipment and the air treatment system to ensure proper odor management at all times.

   Air treatment begins with high efficiency dry cyclones that recover most of the particulates from the air stream. After the dry cyclones, fine particulates are removed through multiple venturi heads that cool the air stream to the dew point. The cooled air stream passes through a packed bed wet scrubber where caustic or sodium bicarbonate is introduced to remove sulfur dioxide (SO_2) and other odorous compounds. The effluent from the SO_2 scrubber is discharged as wastewater effluent. After SO_2 removal, the air stream passes through a second packed bed wet scrubber that uses sulfuric acid for ammonia removal. The effluent from the ammonia scrubber contains ammonium sulfate, which is either discharged as wastewater effluent or recycled into the Carbon Fertilizer™ to improve nutrient value. The final component of the air treatment system is a bio-scrubber that consists of two beds in series packed with microbes to polish the air by removing residual odors and SO_2 prior to release to the atmosphere.

Process water from the air treatment system that is not recycled is discharged through a direct sewer connection for treatment at the City of Glens Falls publicly owned treatment works (POTW).

6.1 Emission Sources and Emission Points

The Facility is considered a one (1) Emission Unit with three (3) stack Emission Points associated with one (1) Process and two (2) Emission Sources. Each Emission Source is subject to a treatment train of six (6) Emission Controls prior to discharge to the atmosphere. These are summarized as follows and identified on the Process Flow Diagrams included as Figures 3 and 4:

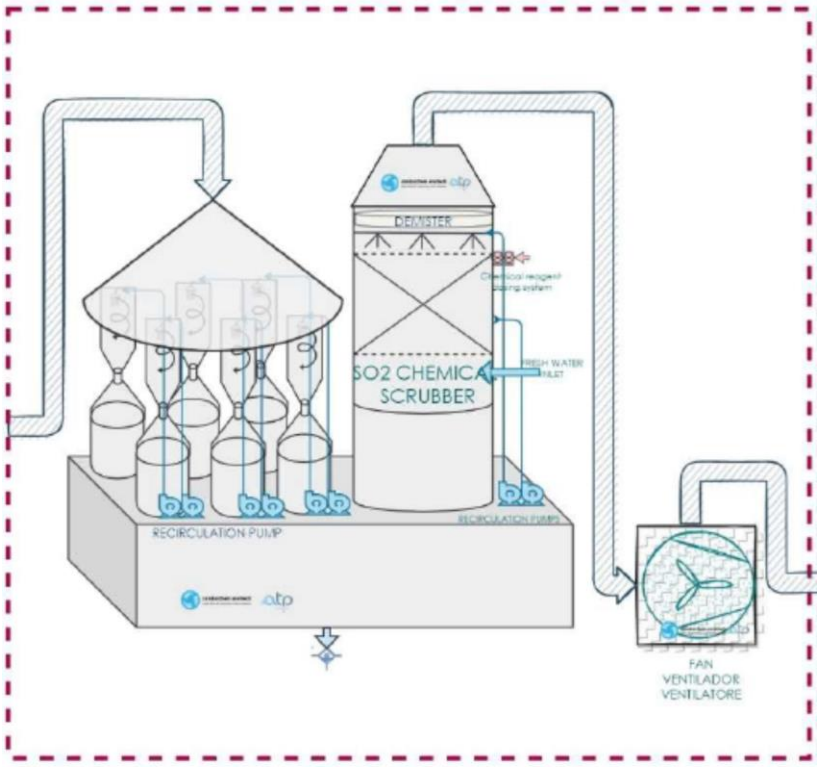
- Emission Unit: (1) U-00SBS – Carbon Fertilizer™ manufacturing facility
- Process: (1) CMF – Carbon Fertilizer™ manufacturing
- Emission Points: (1) SBS01 – Stack from first process line
  (2) SBS02 – Stack from second process line
  (3) SBS03 – Stack from third process line
- Emission Source: (1) BIOSD – Odors from biosolids unloading and storage
  (2) DRYER – Process Emissions from biosolids drying
- Emission Controls: (1) DCYCL – Dry Cyclone for bulk particulate control
  (2) VCYCL – Venturi Cyclone for fine particulate control
  (3) SO2SC – Packed Bed Wet Chemical Scrubber for SO2 removal
  (4) NH3SC – Packed Bed Wet Chemical Scrubber for NH3 removal
  (5) BIOSC – Wet Biological Scrubber for residual odor and SO2 removal
  (6) THOXD – Thermal Oxidizer for syngas combustion and dryer heat

6.2 Emission Controls

To control process emissions, the following 2-stage treatment process will treat all exhaust air from the Facility. The described air treatment will be integral to each process line and emission point:

Stage 1 – Pre-Treatment:

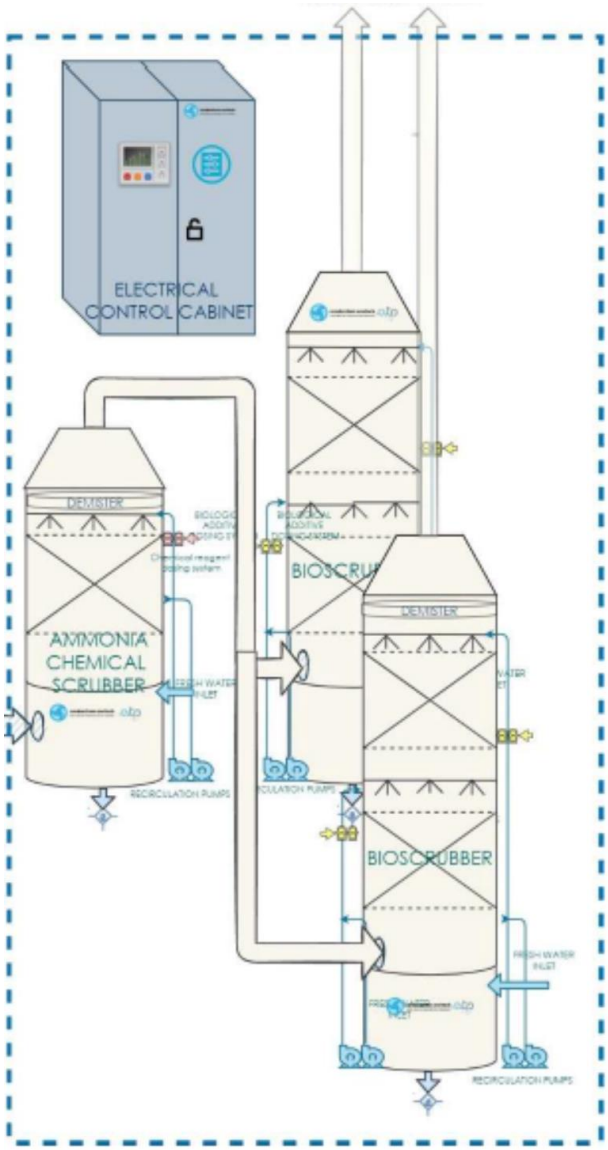
1. Dry cyclones that are integral to the process dryer perform bulk particulate removal (not pictured).
2. Cooling of the air stream with the venturi cyclone. The venturi stage performs pre-treatment conditioning of the air stream with cooling, and fine particulate removal through the strong turbulence created in the throat by high velocity.
3. SO_2 and odor removal with a packed bed wet chemical scrubber. A basic washing occurs in the wet chemical scrubber using an alkaline chemical solution to eliminate SO_2. The air is washed at low speed in a large contact surface for intimate contact with the washing solution.



Stage 1: Pre-Treatment With Venturi Cyclone and SO_2 Chemical Scrubber

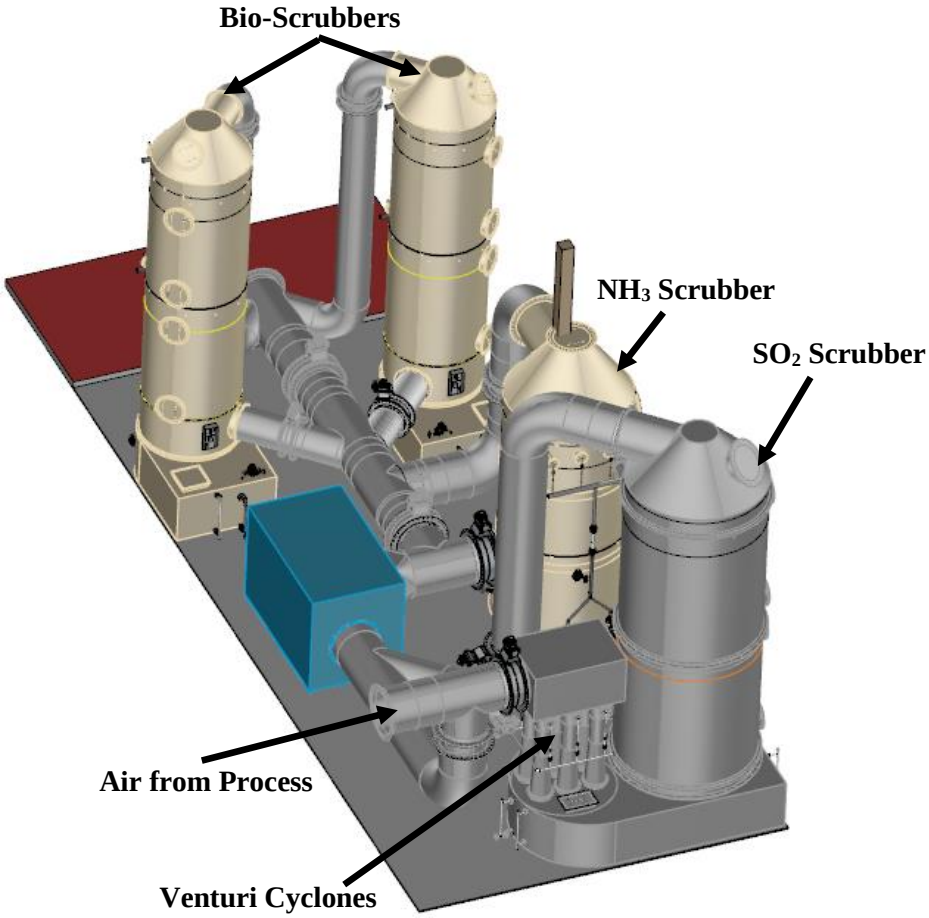
Stage 2 – Main Deodorizing System:

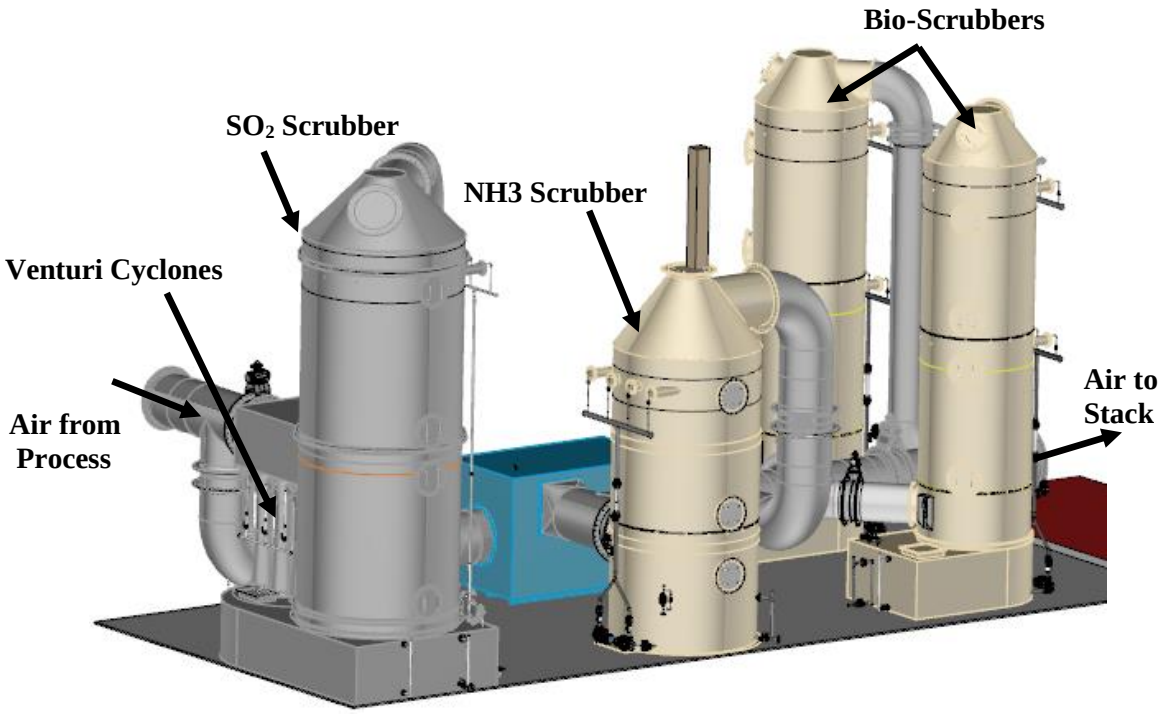
4. Ammonia removal with a packed bed wet chemical scrubber. Ammonia is eliminated in the wet chemical scrubber using an acidic chemical solution with sulfuric acid. The air is washed at a low speed in a large contact surface for intimate contact with the washing solution.
5. Odor and SO_2 removal with a double-stage bio-scrubber. Two overlapped bio-scrubbing towers will be the last treatment step for odor removal prior to discharge to the atmosphere.



Stage 2: Main Deodorizing System

The air treatment system is shown in the following 3-D renderings and in the Process Flow Diagram in Figure 4.





7.0 6 NYCRR PART 201-5.2(b)(4) LISTING OF SIC OR NAICS CODES

Applicable SIC and NAICS codes are included in the Air State Facility Permit Application (Attachment 1) and listed below:

- SIC: 3999 – Manufacturing Industries, Not Elsewhere Classified
- NAICS: 339999 – All Other Miscellaneous Manufacturing

8.0 6 NYCRR PART 201-5.2(b)(8) LIST OF EMITTED REGULATED POLLUTANTS

8.1 Emission Factors and Potential to Emit

Emission Factors are included in Attachment 3 and were provided by the technology provider based on bench scale testing with representative biosolids and using the following assumptions:

- Biosolids at 23% moisture content and 10 wet ton per hour feed rate.
- Wood waste at 40% moisture content (60% solids) and 1 ton per hour feed rate.
- 100% natural gas use in the Pyrolysis Reactor.
- 100% syngas use for the dryer with a heating value of 6,000 BTU/lb.

This is considered the base operational case based on the anticipated and target biosolids solid content of 23%. The Facility will perform frequent moisture content testing of received biosolids to ensure the process stays at or closely around the target solids content.

The Facility will operate up to three identical process lines. Each process line consists of a biosolids dryer, pyrolysis reactor, kiln, and air pollution control devices. Each process line will have an independent emissions stack. Due to the proximity of the stacks (less than 100 meters apart), dispersion modeling was performed for a single process line emission and the resulting downwind pollutant concentration was tripled.

Emissions were calculated as Emission Rate Potential (ERP) and Potential to Emit (PTE) based on the following methodology and assumptions included in Attachment 3.

Emission Rate Potential:

- Facility emissions were assumed to occur 24 hours per day, 365 days per year.
- Facility emissions were assumed to occur with no pollution controls.

Potential to Emit:

- Facility emissions were assumed to occur 24 hours per day, 365 days per year, and with an average operational uptime of 90% (i.e., 7,840 hours per year)
- Facility emissions were assumed to occur with full emissions controls.

Based on the calculations provided in Attachment 3, the Facility emissions are expected to be below the Major Source thresholds contained in 6 NYCRR Part 201 by capping annual biosolids throughput to maintain emissions at full buildout below Major Source thresholds for NOx (threshold of 100 tons per year) and CO_2 (threshold of 100,000 tons per year). The Facility intends to construct and operate one

process line prior to constructing and operating the second and third process lines. Once the first process line is operational, stack tests will be performed to verify the actual emission factors to refine the emissions estimates for the second and third process lines. The Facility may request to increase the annual biosolids throughput at full buildout of all three process lines if actual emissions indicate that Major Source thresholds will not be exceeded.

8.2 Allowable Emissions Analysis (6 NYCRR 212-2)

Facility emissions are restricted pursuant to the following requirements:

- 6 NYCRR Part 212-2.3(a) Table 3 Degree of Air Cleaning Required for criteria air contaminants (i.e., particulate matter, sulfur dioxide, and nitrogen dioxide)
- 6 NYCRR Part 212-2.3(b) Table 4 Degree of Air Cleaning Required for remaining non-criteria air contaminants.

Emissions are evaluated for the Degree of Air Cleaning Required (6 NYCRR 212-2.3), Ambient Air Quality Standards (6 NYCRR 257), and Annual and Short-term Guideline Concentrations (AGC/SGC) established in NYSDEC Program Policy DAR-1 "Guidelines for the Evaluation and Control of Ambient Air Contaminants under Part 212."

Emissions modeling was performed using the USEPA AERSCREEN air quality dispersion model to evaluate maximum impact concentrations of plant emissions to compare to regulatory emission restrictions. Assumptions used in the screening model are described in the following sections and model outputs are provided in Attachment 4.

The following model input parameters were consistent for all modeled emissions:

Table 2 – AERSCREEN Model Input Parameters

Model Input Parameter	Selected Input
Source type:	Point "P"
Emission Rate	See Attachment 3
Stack height:	75 ft
Stack inside Diameter:	33 inches
Stack gas exit flow rate:	91.0 feet per second
Stack gas temperature:	93.4 °F above ambient
Rural or Urban	Rural
Terrain Elevations	No
Distance to ambient air	140 ft (to closest property line)
Receptor height:	5 feet (receptor breathing zone)
Minimum Probe Distance:	140 feet (property line)
Maximum Probe Distance:	16,405 feet (5,000 meters)
Building downwash:	Yes
Building height	50
Max horizontal	272 feet
Min Horizontal	180 feet
Building Orientation	90 degrees clockwise from North
Stack from center	180 degrees clockwise from center

Stack distance from center	60 feet
Source Elevation	0 m (default)
Min/Max Temperature	-10 / 100°F (default)
Min Wind Speed	0.5 m/s (default)
Anemometer Height	10 m (default)
Surface Characteristics	AERMET Seasonal Tables
Dominant Surface Profile	Deciduous Forest
Dominant Climate Profile	Average Moisture
Adjust u*?	No
Apply Inversion Breakup?	No
Apply Shoreline Fumigation?	No
Debug?	No

A table of modeled ambient concentrations at the distance of the maximum impact concentration is presented in the following sections for each modeled contaminant. The maximum impact concentrations occurred at a distance of 190 feet from the Emission Point

8.2.1 Particulate Matter

Particulate Matter is a Criteria Contaminant under the National Ambient Air Quality Standards (NAAQS) of the Clean Air Act. In accordance with DAR-1, particulate matter consisting primarily of nuisance particles is assigned an Environmental Rating of "B" and emissions are restricted by the following:

- The Degree of Air Cleaning Required must limit particulate emissions to less than 0.05 grains per cubic foot of exhaust gas.
- The primary NAAQS for particulate matter (PM-2.5) is an annual mean of 12 µg/m^3 and a 24-hour 98th percentile of 35 µg/m^3.
- The primary NAAQS for particulate matter (PM-10) is a 24-hour mean of 150 µg/m^3.

AERSCREEN model output are summarized in the following table:

Table 3 – PM Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	11.91	7.15	1.19
	TWO PROCESS LINES		
	23.82	14.3	2.38
	THREE PROCESS LINES		
	35.73	21.45	3.57

The maximum 24-hour concentrations meet the primary 24-hour NAAQS for both PM10 and PM2.5. The maximum annual concentrations meet annual NAAQS for PM2.5. The PM emission rate of 0.61 lb/hr for all particulate matter emissions corresponds to 0.002 grains per cubic foot of exhaust gas, which achieves the Degree of Air Cleaning Required.

8.2.2 Nitrogen Dioxide (NOx)

The Facility has potential to emit NOx from the use of natural gas in the carbon manufacturing process and the nitrogen released from biosolids in the pyrolysis reactor. Pyrolysis is a low-emission technology where the generation of NOx varies based on feedstock type and process temperature. Ammonia-rich feedstocks such as municipal sewage sludge (i.e., biosolids), poultry litter, animal manure, etc. impart an inherent benefit to the pyrolysis process for limiting NOx emissions.

Biosolids, like all animal manures, contains ammonia and other nitrogen-laden compounds that are released simultaneously in the pyrolysis reactor and combusted in the combustion chamber. Combusting ammonia and nitrogen-laden compounds together replicates a selective non-catalytic reduction (SNCR) principle, which is commonly used to reduce NOx emissions in conventional power plants and other industries that burn biomass waste, coal, etc. Typically, SNCR reduces NOx emissions by injecting either ammonia or urea to react with the nitrogen oxides to form molecular nitrogen (N_2), carbon dioxide (CO_2), and water (H_2O).

In the Facility's pyrolysis process, the ammonia and nitrogen-laden compounds present in the biosolids feedstock are released simultaneously in the pyrolysis reactor and pneumatically conveyed into the combustion chamber as a component of the generated syngas. The syngas is combusted at a temperature ranging from 1,400°F to 2,000°F, as required for a SNCR, which reacts any remaining ammonia with the nitrogen oxides formed in the combustion process to further reduce NOx.

The plant has potential to emit NOx from the use of natural gas fuel for combustion. Nitrogen dioxide is designated as a Criteria Contaminant under the NAAQS of the Clean Air Act. NOx emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the primary NAAQS as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 3).
- The primary NAAQS for nitrogen dioxide is an annual mean of 53 ppb (100 µg/m^3) and a 1-hour 98th percentile maximum of 100 ppb (188 µg/m^3).

AERSCREEN model output are summarized in the following table:

Table 4 – Nitrogen Dioxide Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	166.0	99.60	16.60
	TWO PROCESS LINES		
	332.0	199.2	33.2
	THREE PROCESS LINES		
	498.0	298.8	49.8

The maximum 1-hour concentration meets the primary 1-hour NAAQS for the first process line, and exceeds the 1-hour NAAQS with the addition of the second and third process lines. By achieving the NAAQS, the Facility achieves the necessary Degree of Air Cleaning Required for the first process line. Review of the AERSCREEN model output indicates that the 1-hour maximum concentration sharply decreases beyond a distance of 100 meters (328 ft) from the emission point. The Facility will be constructed in a phased approach and the emission rate will be refined based on actual operating conditions of the first process line before constructing and operating the second and third process lines.

8.2.3 Sulfur Dioxide (SO_2)

Sulfur dioxide is designated as is a Criteria Contaminant under the NAAQS of the Clean Air Act. In accordance with DAR-1, SO_2 emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the primary NAAQS as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 3).
- The primary NAAQS for sulfur dioxide is a 1-hour 99th percentile daily maximum of 75 ppb (195 µg/m^3).
- The 6 NYCRR Part 257 standard for sulfur dioxide is:
    - 99th percentile of 3-hour average of 0.25 ppm (650 µg/m^3) and 3-hour maximum average of 0.5 ppm (1,300 µg/m^3) during a 12 month period.
    - 99th percentile of 24-hour hour average of 0.10 ppm (260 µg/m^3) and 24-hour maximum average of 0.14 ppm (365 µg/m^3) during a 12 month period.
    - Annual 24-hour average of 0.03 ppm (80 µg/m^3) during a 12 month period.

AERSCREEN model output are summarized in the following table:

Table 5 – Sulfur Dioxide Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 3-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**			
	91.99	91.99	55.20	9.20
	TWO PROCESS LINES			
	183.98	183.98	110.4	18.4
	THREE PROCESS LINES			
	275.97	275.97	165.6	27.6

The maximum 1-hour concentration meets the primary 1-hour NAAQS for the first and second process line, and exceeds the 1-hour NAAQS with the addition of the third process line. The maximum 3-hour and 24-hour concentrations meet the 6 NYCRR 257 ambient air quality standards. The SO2 scrubber is design to achieve a removal efficiency of 95%. By achieving the NAAQS, the Facility achieves the necessary Degree of Air Cleaning Required for the first and second process line. Review of the AERSCREEN model output indicates that the 1-hour maximum concentration sharply decreases beyond a

distance of 100 meters (328 ft) from the emission point. The Facility will be constructed in a phased approach and the emission rate for SO_2 will be refined based on actual operating conditions of the first process line before constructing and operating the second and third process lines.

8.2.4 Ammonia

In accordance with DAR-1, ammonia is designated as "L" for low toxicity and is assigned an Environmental Rating of "C". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 100.0 µg/m^3. There is no SGC.

AERSCREEN model output are summarized in the following table:

Table 6 – Ammonia Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	11.91	7.15	1.19
	TWO PROCESS LINES		
	23.82	14.3	2.38
	THREE PROCESS LINES		
	35.73	21.45	3.57

The maximum ammonia annual concentration meets the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.5 Hydrogen Sulfide

In accordance with DAR-1, hydrogen sulfide is designated as "M" for medium toxicity and is assigned an Environmental Rating of "B". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The 6 NYCRR Part 257 ambient air quality standard for hydrogen sulfide is a 1-hour average of 0.01 ppm (14 µg/m^3) due to the potential to cause odors that unreasonably interfere with the comfortable enjoyment of life and property.
- The AGC is 2.0 µg/m^3. There is no SGC.

AERSCREEN model output are summarized in the following table:

Table 7 – Hydrogen Sulfide Modeled Concentrations

Distance	Maximum 1-hour Concentration ($\mu g/m^3$)	Maximum 24-hour Concentration ($\mu g/m^3$)	Maximum Annual Concentration ($\mu g/m^3$)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	2.34	1.41	0.234
	TWO PROCESS LINES		
	4.68	2.82	0.468
	THREE PROCESS LINES		
	7.02	4.23	0.702

The maximum 1-hour concentrations meet the 6 NYCRR 257 ambient air quality standard, and the maximum annual concentrations meet the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.6 Methyl and Ethylamines

The pollutant category includes methylamine, di-methylamine, tri-methylamine, ethylamine, di-ethylamine, and tri-ethylamine. The most restrictive pollutant in the category is methylamine, which is designated as "M" for medium toxicity in accordance with DAR-1 and is assigned an environmental rating of "B". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 15.0 $\mu g/m^3$.
- The SGC is 1,900 $\mu g/m^3$.

AERSCREEN model output are summarized in the following table:

Table 8 – Methyl and Ethylamine Modeled Concentrations

Distance	Maximum 1-hour Concentration ($\mu g/m^3$)	Maximum 24-hour Concentration ($\mu g/m^3$)	Maximum Annual Concentration ($\mu g/m^3$)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	4.69	2.81	0.469
	TWO PROCESS LINES		
	9.38	5.62	0.938
	THREE PROCESS LINES		
	14.07	8.43	1.41

The maximum 1-hour concentration meets the SGC, and the maximum annual concentration meets the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.7 Hydrogen Chloride

In accordance with DAR-1, hydrochloric acid is designated as "L" for low toxicity and is assigned an Environmental Rating of "C". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 20.0 µg/m^3.
- The SGC is 2,100 µg/m^3.

AERSCREEN model output are summarized in the following table:

Table 9 – Hydrogen Chloride Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	2.15	1.29	0.215
	TWO PROCESS LINES		
	4.30	2.58	0.430
	THREE PROCESS LINES		
	6.45	3.87	0.645

The maximum 1-hour concentration meets the SGC, and the maximum annual concentration meets the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.8 Acetic Acid

In accordance with DAR-1, acetic acid does not have a designated toxicity and is assigned an environmental rating of "C". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 60.0 µg/m^3.
- The SGC is 3,700 µg/m^3.

AERSCREEN model output are summarized in the following table:

Table 10 – Acetic Acid Modeled Concentrations

Distance	Maximum 1-hour Concentration ($\mu g/m^3$)	Maximum 24-hour Concentration ($\mu g/m^3$)	Maximum Annual Concentration ($\mu g/m^3$)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	1.37	0.820	0.137
	TWO PROCESS LINES		
	2.74	1.64	0.274
	THREE PROCESS LINES		
	4.11	2.46	0.411

The maximum 1-hour concentration meets the SGC, and the maximum annual concentration meets the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.9 Methyl Disulfides and Trisulfides

This pollutant category includes di-methyl disulfide, which is the only methyl di/trisulfide listed in DAR-1. In accordance with DAR-1, di-methyl disulfide is designated as "M" for medium toxicity and is assigned an environmental rating of "B". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 4.8 $\mu g/m^3$.
- The SGC is 14.0 $\mu g/m^3$.

AERSCREEN model output are summarized in the following table:

Table 11 – Methyl Disulfides and Trisulfides Modeled Concentrations

Distance	Maximum 1-hour Concentration ($\mu g/m^3$)	Maximum 24-hour Concentration ($\mu g/m^3$)	Maximum Annual Concentration ($\mu g/m^3$)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	2.42	1.45	0.242
	TWO PROCESS LINES		
	4.84	2.9	0.484
	THREE PROCESS LINES		
	7.26	4.35	0.726

The maximum 1-hour concentration meets the SGC, and the maximum annual concentration meets the AGC. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required.

8.2.10 Naphthalene

In accordance with DAR-1, the group of polycyclic aromatic hydrocarbons is designated as "M" for high toxicity and is assigned an Environmental Rating of "B". Emissions are restricted by the following:

- The Degree of Air Cleaning Required must achieve the Guideline Concentration as demonstrated through air dispersion modeling (6 NYCRR 212-2.3 Table 4).
- The AGC is 3.0 µg/m^3.
- The SGC is 7,900.0 µg/m^3.

AERSCREEN model output are summarized in the following table:

Table 12 – Naphthalene Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	14.26	8.55	1.43
	TWO PROCESS LINES		
	28.52	17.1	2.86
	THREE PROCESS LINES		
	42.78	25.65	**4.29**

The maximum 1-hour concentration meets the SGC, and the maximum annual concentration meets the AGC for up to two process lines. By achieving the Guideline Concentrations, the Facility achieves the necessary Degree of Air Cleaning Required for the two process lines. Review of the AERSCREEN model output indicates that the maximum annual concentration sharply decreases beyond a distance of 100 meters (328 ft) from the emission point. The Facility will be constructed in a phased approach and the emission rate for Naphthalene will be refined based on actual operating conditions of the first process line before constructing and operating the third process lines. The naphthalene emissions are based on a destruction efficiency of 99.5% for the thermal oxidizer, which is conservative. The final destruction efficiency specification of the thermal oxidizer provided by the equipment supplier may be 99.9% or better.

9.0 CLCPA CONSISTENCY ASSESSMENT

As required by the Climate Leadership and Community Protection Act (CLCPA) and set out in Article 75 of the Environmental Conservation Law (ECL), the NYSDEC must consider whether this project is inconsistent with, or will interfere with, the attainment of the statewide greenhouse gas (GHG) emission limits. The CLCPA includes economy-wide requirements to reduce GHG emissions in New York State by 40% below 1990 levels by 2030 and 85% below 1990 levels by 2050. NYSDEC has promulgated GHG emission limits in 6 NYCRR 496. This assessment has been prepared consistent with draft NYSDEC Program Policy DAR-21 "The Climate Leadership and Community Protection Act and Air Permit Applications."

9.1 GHG Emissions

The following table identifies the plant's potential GHG emissions including calculated carbon dioxide equivalent (CO2e) using 20-year global warming potentials (GWP20) established in 6 NYCRR Part 496.5.

Table 13 – Potential GHG Emissions

Greenhouse Gas	Greenhouse Gas Emission Rate (ton/yr)	Carbon Dioxide Equivalent Multiplier (6 NYCRR 496.5)	20-Year Global Warming Potential CO2e (ton/yr)
Carbon Dioxide (CO_2)	96,232	1	96,232
Methane (CH_4)	0	NA	0
Nitrous Oxide (N_2O)	0	NA	0
Hydrofluorocarbons	0	NA	0
Perfluorocarbons	0	NA	0
Sulfur Hexafluoride	0	NA	0
Total GWP20 CO2e Emission Rate (ton/yr)			**96,232**

The upstream out-of-state emissions associated with extraction, production, and transmission of natural gas as the plant's fuel source is summarized in the following table per NYSDEC presumptive values:

Table 14 – Potential Upstream GHG Emissions

Greenhouse Gas	Greenhouse Gas Emission Rate (g/mmbtu)	Carbon Dioxide Equivalent Multiplier (6 NYCRR 496.5)	20-Year Global Warming Potential CO2e Emission Rate (g/mmbtu)
Natural Gas			
Carbon Dioxide (CO_2)	11,913	1	11,913
Methane (CH_4)	384	84	32,256
Nitrous Oxide (N_2O)	0.136	264	35.904
Total GWP20 CO2 Equivalent Emission Rate (g/mmbtu)			44,205
Total GWP20 CO2 Equivalent Emission Rate (lb/mmbtu)			97.47
Total GWP20 CO2 Equivalent Emission Rate (ton/mmbtu)			0.0487
Plant Annual Natural Gas Energy Demand			126,776 mmbtu/yr
Total GWP20 CO2e Upstream Emission Rate (ton/yr)			**6,174 ton/yr**

9.2 GHG Emission Reductions

Currently in New York State, the primary management method for biosolids is through landfill disposal. Therefore, an appropriate comparison in the projected Facility GHG emissions is to the current practice of landfilling. In respects to landfilling biosolids, a relevant study was performed by the North East Biosolids and Residuals Association (NEBRA) to evaluate GHG emissions from landfill disposal of biosolids generated in Merrimack, NH[1]. In this example, the GHG emissions are accounted for as debits (i.e., emissions) and credits (i.e., offsets). The landfill emissions are offset by carbon sequestration credits and electric generation from methane, which makes it an exemplary landfill. Nevertheless, the goal with biosolids management methods is to minimize the generation and emission of methane, which is a much more potent GHG compared to CO_2. Landfills have significant fugitive emissions from the open working face, and biosolids quickly decompose to create fugitive methane emissions, as shown in the following table.

Table 15 – GHG Emissions from Biosolids Landfill Disposal

Activity	CO2e (metric tons/year)
Biosolids Transport to Landfill	72
Landfill Operations	7.1
Fugitive Methane Emissions	4,018.2
Carbon Sequestration Credit	-132.3
Electric Generation Credit	-294.79
Total	**3,670.21**
Biosolids, Dry tons/year	1,841
Landfilling, CO2e (MT) per Dry ton	**1.99**

[1] "A Greenhouse Gas Emissions Analysis of Biosolids Management Options for Merrimack, NH", North East Biosolids Residuals Association, Tamworth, NY, April 2008.

Dividing the total GHG emissions by the annual disposal capacity at the landfill results in 1.99 metric tons of CO2e emissions for each dry ton of landfilled biosolids. The SBS Facility CO_2 emissions estimate is similarly assessed in the following table.

Table 16 - GHG Emissions from SBS Facility

Activity	CO2e/year
Carbon Dioxide Emissions	96,232 US Ton/year
Carbon Dioxide Emissions	**87,483.6 MT/year**
Biosolids, Dry Tons/year	57,463.2
SBS Facility, CO2e (MT) per Dry Ton	**1.52**

Dividing the total GHG emissions by the annual disposal capacity at the SBS Facility results in 1.52 metric tons of CO2e emissions for each dry ton of landfilled biosolids. This basic comparison does not take into account any GHG credits associated with the SBS Facility due to carbon sequestration from land application of the manufactured Carbon Fertilizer™ or avoided emissions from the manufacturing of synthetic chemical fertilizers. A comprehensive GHG accounting study will be completed with actual operating data to fully quantify net GHG emissions. The Facility fully intends to participate in carbon markets to monetize the carbon offset.

9.3 Alternatives

This Facility is being proposed to meet an existing demand for alternative practices to manage biosolids. Applicable alternatives include the following:

1. No Action: Under this alternative, the proposed Facility is not constructed. Biosolids continue to be managed under current practices, which relies largely on landfilling. This alternative is inconsistent with New York State strategies to reduce GHG emissions associated with landfill disposal of biosolids.
2. Modify the proposed plant equipment: The proposed plant is incorporating state-of-the-art equipment to operate predominantly on syngas generated at the Facility. A small amount of clean burning natural gas is used for the rotary calciner to provide consistent operating conditions to produce Carbon Fertilizer™. If new technology becomes available in the future to reduce or eliminate the use of natural gas, the plant will consider incorporating the technology as part of ongoing maintenance and operational review.
3. Modify the proposed plant size: The proposed capacity is based on a combination of pilot scale testing and the known local and regional biosolids market. These factors have resulted in an optimal design that can be constructed in phases. Following startup of Phase 1, actual GHG emissions will be determined and reviewed prior to receiving NYSDEC approval to construct Phases 2 and 3. This review will include confirming that this CLCPA consistency assessment remains valid.

9.4 CLCPA Consistency

In accordance with the draft NYSDEC Program Policy, the proposed plant is not inconsistent with the CLCPA based on the following:

Biosolids management is an essential service that is integral to daily waste management for municipalities across New York State. The following measures will be implemented to limit and reduce GHG emissions over time:

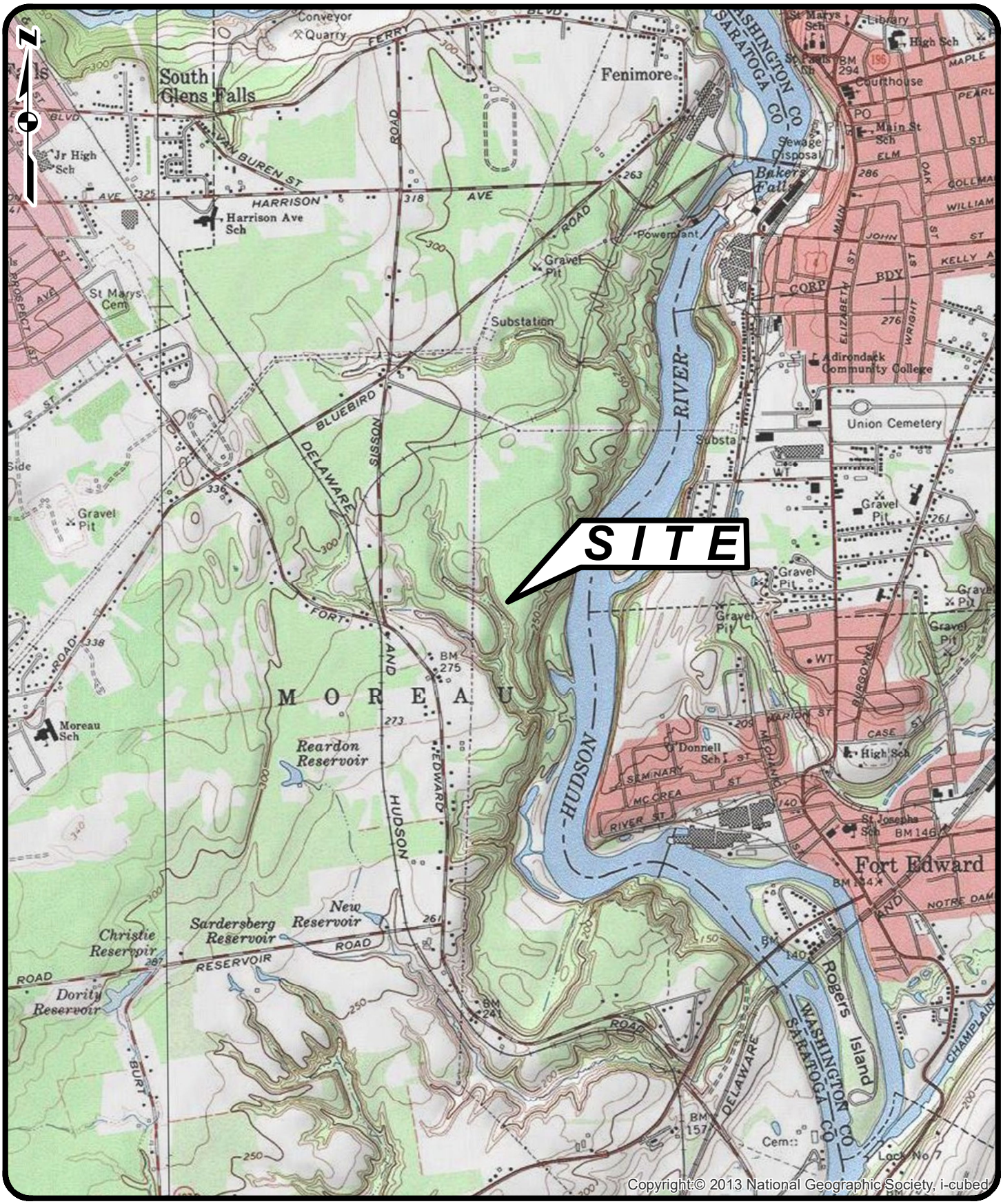
- The Facility does not create a significant new source of GHG emissions. The emissions for the Facility itself are minor by not exceeding any threshold for a Major Source.
- The Facility will not be directly responsible for a significant increase in demand for a known source of GHG emissions. The Facility emissions are based on the finite biosolids market that currently exists in New York State. The Facility will divert emissions from other existing management practices with higher GHG emissions (e.g., landfills).
- The Facility does not directly reduce the market demand for, or access to, GHG emission reduction technologies or strategies. The Facility in fact facilitates achieving the New York State strategy to reduce GHG emissions by diverting biosolids from landfills.
- The Facility does not prevent or make it more difficult or expensive for New York State to reduce GHG emissions.
- The Facility does not facilitate the expanded or continued use of fossil fuels through infrastructure development.
- The Facility does not interfere with the CLCPA requirement to attain zero-emissions in the electric generation sector by 2040. The Facility is not part of the electric generation sector.

Based on the provided information, the proposed plant is consistent with the CLCPA for reducing GHG emissions.

10.0 CONCLUSIONS

Based on the emissions assessment described in this narrative and supporting attachments, the proposed Facility is expected to operate in compliance with regulatory emissions restrictions. The emission factors and assumptions used in the assessment are generally conservative for the full buildout of the proposed Facility. Following startup of the Facility's first process line, a stack test will be performed for compliance verification and to refine emission estimates for future construction of a second and third process line.

FIGURES

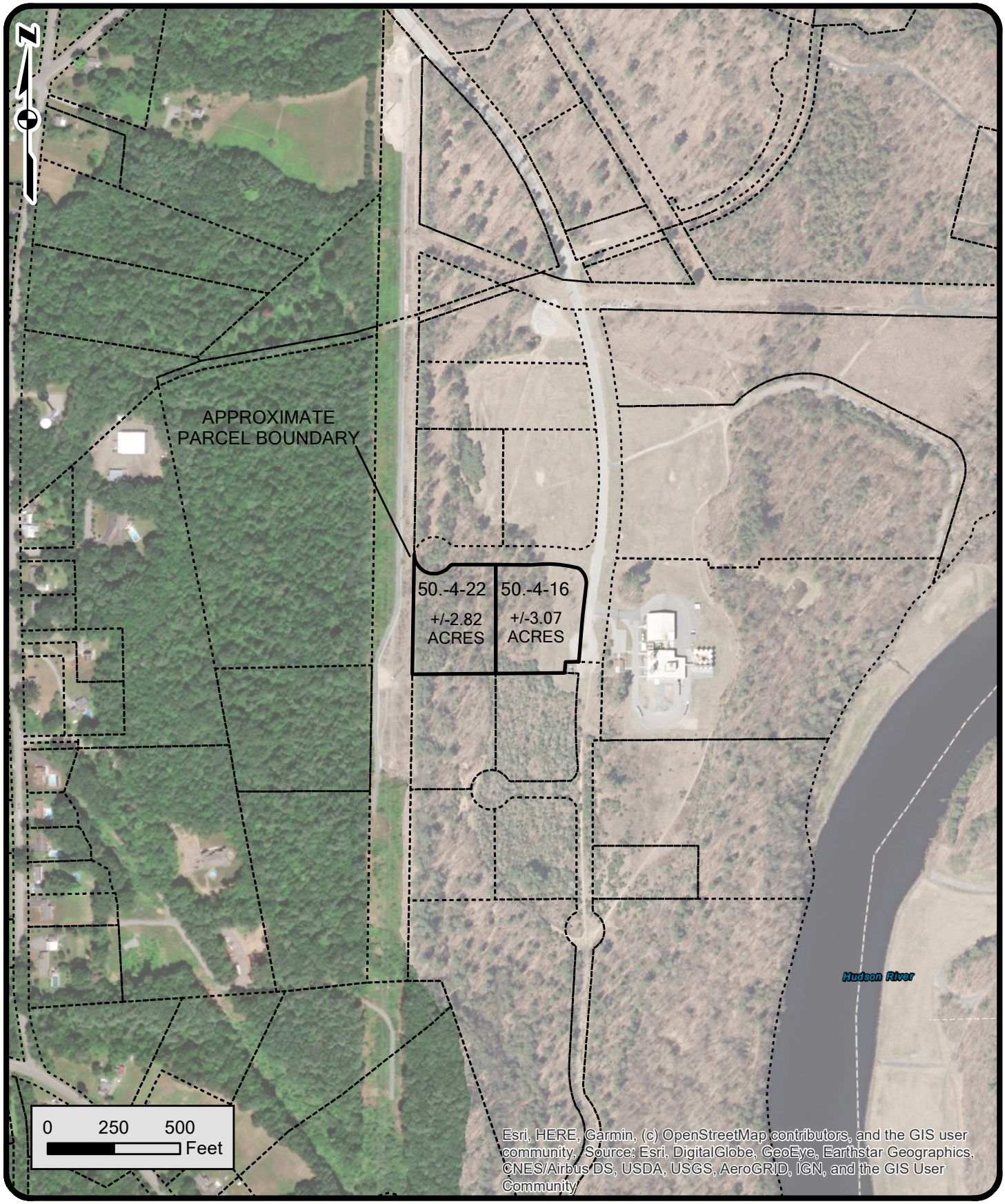


S:\Sterling\Projects\2020 Projects\Saratoga Biochar Solutions - 2020-20\Drawings-Maps-Figures\GIS\2020-20001G- FIG 1 SITE LOC MAP.mxd\

Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

SITE LOCATION MAP
SARATOGA BIOCHAR SOLUTIONS, LLC
CARBON FERTILIZER MANUFACTURING FACILITY
TOWN OF MOREAU SARATOGA CO., NY

PROJ.NO. 2020-20	DATE: 10/25/2021	SCALE: 1 " = 2,000 '	DWG.NO. 2020-20001G	FIGURE 1



S:\Sterling\Projects\2020 Projects\Saratoga Biochar Solutions - 2020-20\Drawings-Maps-Figures\GIS\2020-20003G- FIG 2 SITE LAYOUT.mxd\

STERLING

Sterling Environmental Engineering, P.C.

24 Wade Road • Latham, New York 12110

SITE VICINITY MAP

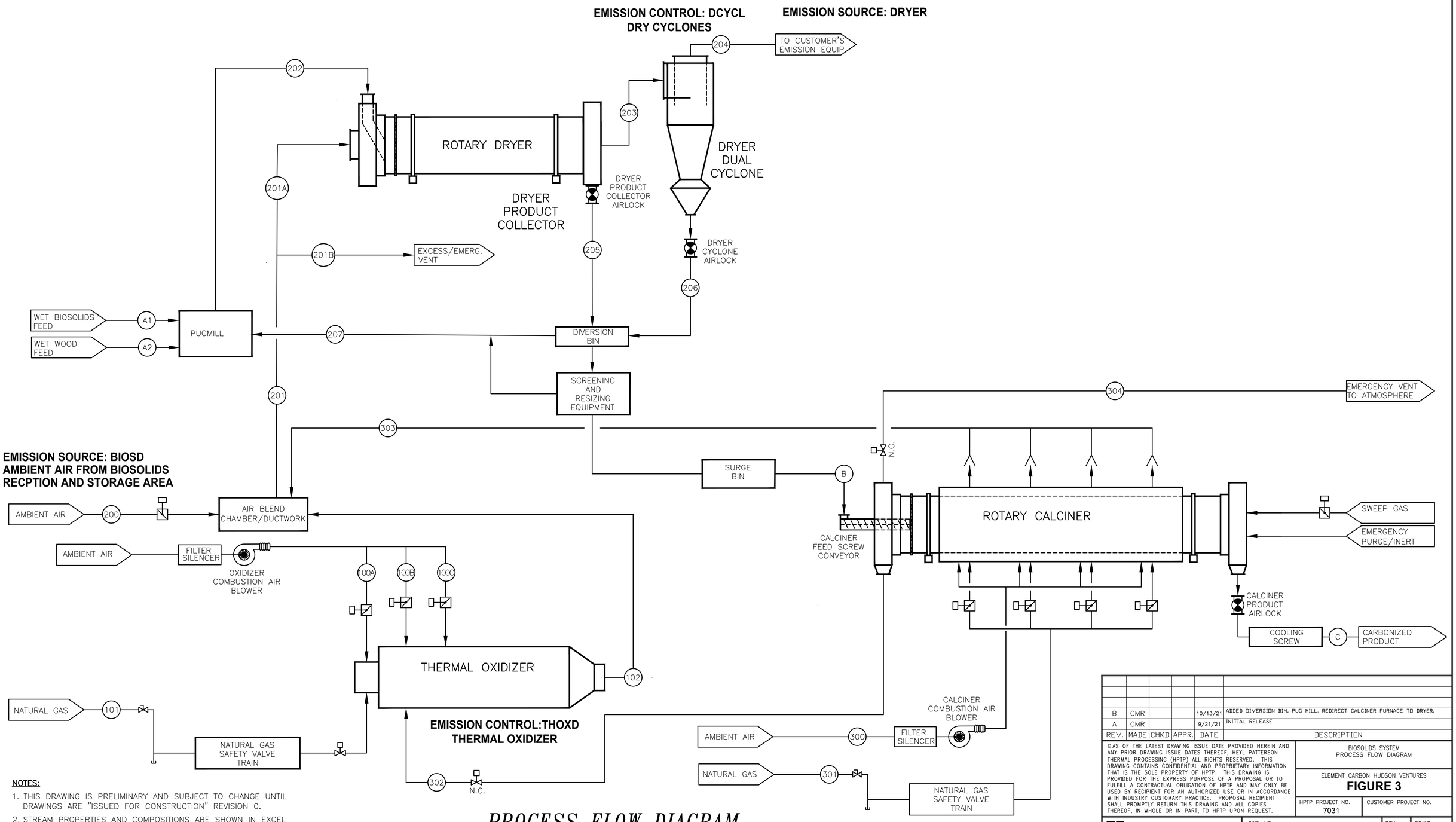
SARATOGA BIOCHAR SOLUTIONS, LLC

CARBON FERTILIZER MANUFACTURING FACILITY

TOWN OF MOREAU SARATOGA CO., NY

PROJ.NO. 2020-20	DATE: 10/14/2021	SCALE: 1 " = 500 '	DWG.NO. 2020-20003G	FIGURE 2

EMISSION UNIT: U-00SBS
PROCESS ID: CMF (CARBON FERTILIZER MANUFACTURING)



NOTES:

1. THIS DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE UNTIL DRAWINGS ARE "ISSUED FOR CONSTRUCTION" REVISION 0.
2. STREAM PROPERTIES AND COMPOSITIONS ARE SHOWN IN EXCEL FILE THAT ACCOMPANIES THIS DRAWING.

PROCESS FLOW DIAGRAM

REV.	MADE	CHKD.	APPR.	DATE	DESCRIPTION
B	CMR			10/13/21	ADDED DIVERSION BIN, PUG MILL. REDIRECT CALCINER FURNACE TO DRYER.
A	CMR			9/21/21	INITIAL RELEASE

BIOSOLIDS SYSTEM
PROCESS FLOW DIAGRAM

ELEMENT CARBON HUDSON VENTURES
FIGURE 3

HPTP PROJECT NO. 7031
CUSTOMER PROJECT NO.

HEYL PATTERSON CPEG THERMAL PROCESSING

DWG. NO. **7031-2401**

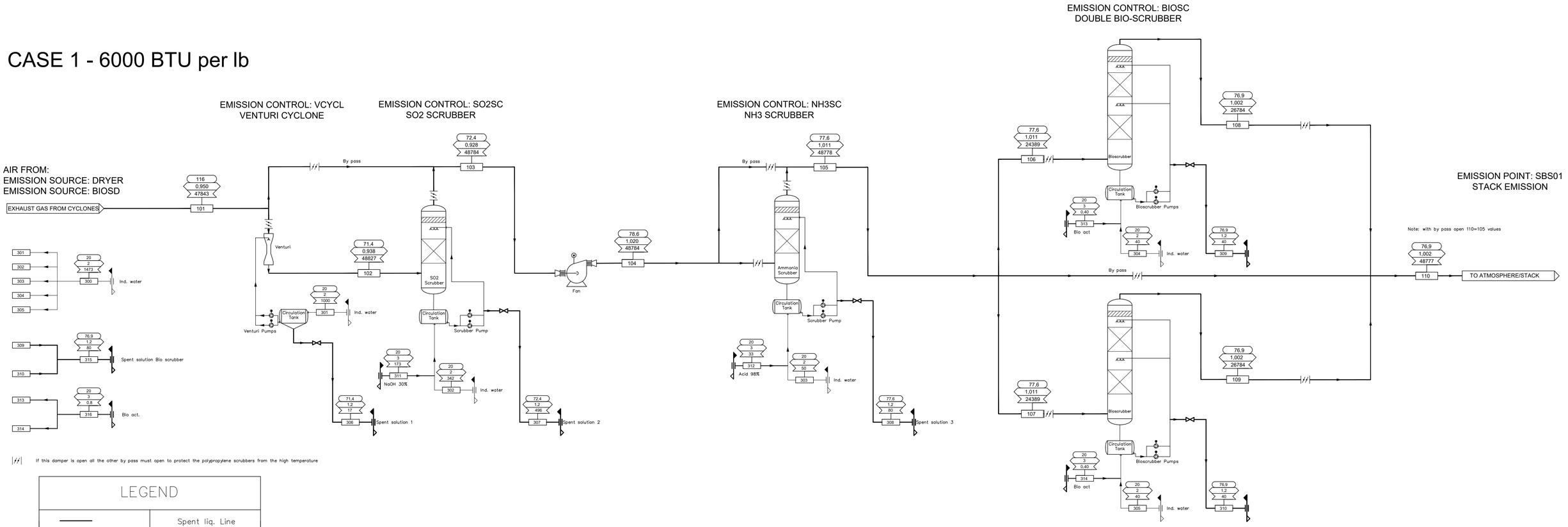
REV. **B**

SCALE 12"=1'-0"

DIV. NO. 24

EMISSION UNIT: U-00SBS
PROCESS ID: CMF (CARBON FERTILIZER MANUFACTURING)

CASE 1 - 6000 BTU per lb



If this damper is open all the other by pass must open to protect the polypropylene scrubbers from the high temperature

LEGEND	
———	Spent liq. Line
———	Reagents Line
———	Scrubbing liq. Line
———	Industrial Water Line
———	Air Line
———	Hot air
———	Dust Line
⬭	Temperature (°C)
⬡	Pressure (atm)
⋈	Mass Flow Rate (kg/h)

SOURCE NOTE:
PROCESS FLOW DIAGRAM PROVIDED BY CONDORCHEM ENVITECH.

NO.	DATE	RECORD OF WORK	DRN	CKD	APPR

PROJECT	
PROJ. ENGR.:	AMM
PROJ. NO.:	2020-20

0
N.T.S

AIR TREATMENT SYSTEM
PROCESS FLOW DIAGRAM
SARATOGA BIOCHAR SOLUTIONS, LLC
CARBON FERTILIZER MANUFACTURING FACILITY
TOWN OF MOREAU SARATOGA CO., NY

STERLING
Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

DATE: 10/29/2021 | SCALE: N.T.S. | DWG. NO. 2020-20001 | FIGURE 4

B:\Sterling Projects\2020 Projects\Drawings Biochar Solutions - 2020-20\Drawings-Mass-Figures\ACAD\2020-20001_F-4 - Air Treatment PFD.dwg 10/30/2021 4:48 PM CAD

ATTACHMENT 1

STATE FACILITY AIR PERMIT FORMS

New York State Department of Environmental Conservation
Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID	Application ID	Application Type
- -	- /	State Facility ☐ Title V

Section I - Certification

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information required to complete this application, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Responsible Official Raymond Apy	Title President
Signature	Date 11/1/2021

Professional Engineer Certification

I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments as they pertain to the practice of engineering. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Professional Engineer Andrew Millspaugh	NYS License No. 094708
Signature	Date 11/1/2021

Section II - Identification Information

Type of Permit Action Requested

☒ New ☐ Renewal ☐ Significant Modification ☐ Administrative Amendment ☐ Minor Modification

☒ Application for the construction of a new facility ☐ Application involves the construction of new emission unit(s)

Facility Information

Name Saratoga Biochar Solutions, LLC

Location Address 2-12 Electric Drive

☐ City / ☒ Town / ☐ Village Moreau — Zip 12803

Owner/Firm Information

Business Taxpayer ID: 8 4 4 0 8 7 3 0 7

Name Saratoga Biochar Solutions, LLC

Street Address 26F Congress Street #346

City Saratoga Springs | State/Province New York | Country USA | Zip 12866

Owner Classification: Federal State Municipal ☒ Corporation/Partnership Individual

Owner/Firm Contact Information

Name Raymond Apy — Phone 518-391-0566

E-mail Address rapy@northeasternbiochar.com — Fax

Affiliation Saratoga Biochar Solutions, LLC — Title President

Street Address 26F Congress Street #346

City Saratoga Springs | State/Province New York | Country USA | Zip 12866

Facility Contact Information

Name Raymond Apy — Phone 518-391-0566

E-mail Address rapy@northeasternbiochar.com — Fax

Affiliation Saratoga Biochar Solutions, LLC — Title President

Street Address 26F Congress Street #346

City Saratoga Springs | State/Province New York | Country USA | Zip 12866

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Project Description ☐ Continuation Sheet(s)

Saratoga Biochar Solutions, LLC (SBS) is proposing to construct and operate a solid waste management facility (SWMF) to manufacture carbon fertilizer from biosolids and wood waste feedstock (hereinafter the "Facility") with an annual throughput up to 235,200 wet tons of received biosolids and up to 35,280 tons of wood waste. The Facility is designed to be constructed in three phases with each phase consisting of a process line capable of processing up to 10 wet tons per hour of biosolids and up to 1.5 tons per hour of wood waste. The Facility will have three stack emission points associated with emissions from each process line. Refer to supporting narrative.

Section III - Facility Information

Facility Classification

Hospital | Residential | Educational/Institutional | × Commercial | Industrial | Utility

Affected States (Title V Applications Only)

Vermont | Massachusetts | Rhode Island | Pennsylvania | Tribal Land: _____
New Hampshire | Connecticut | New Jersey | Ohio | Tribal Land: _____

SIC Code(s)			NAICS Code(s)			
3999			339999			

Facility Description ☐ Continuation Sheet(s)

The Facility will operate up to three identical process lines. Each process line consists of a biosolids dryer, pyrolysis reactor, kiln, and air pollution control devices. The Facility is considered a one (1) Emission Unit with three (3) stack Emission Points associated with one (1) Process and two (2) Emission Sources. Each Emission Source is subject to a treatment train of six (6) Emission Controls prior to discharge to the atmosphere. Refer to supporting narrative.

Compliance Statements (Title V Applications Only)

I certify that as of the date of this application the facility is in compliance with all applicable requirements. Yes No

If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at the facility that are operating in compliance with all applicable requirements, complete the following:

This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those emission units referenced in the compliance plan portion of this application.

For all emission units subject to any applicable requirements that will become effective during the term of the permit, this facility will meet such requirements on a timely basis.

Compliance certification reports will be submitted at least once per year. Each report will certify compliance status with respect to each applicable requirement, and the method used to determine the status.

Facility Applicable Federal Requirements ☐ Continuation Sheet(s)

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
40	CFR	60	A						

Facility State Only Requirements × Continuation Sheet(s)

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	201	5						
6	NYCRR	201	7						
6	NYCRR	212	2						
6	NYCRR	257	2						

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Facility Compliance Certification

☐ Continuation Sheet(s)

Rule Citation

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	201	2.1						

Applicable Federal Requirement / State Only Requirement	× Capping	CAS Number	Contaminant Name

Monitoring Information

☐ Work Practice Involving Specific Operations ☐ Ambient Air Monitoring × Record Keeping/Maintenance Procedures

Compliance Activity Description

The Facility will cap annual throughput of biosolids to maintain emissions of NOx and CO2 below applicable Major Source Thresholds.

Work Practice Type Code	Process Material Code	Process Material Description	Reference Test Method

Monitored Parameter Code	Monitored Parameter Description	Manufacturer's Name/Model Number
05	Sewage Sludge	

Limit Upper	Limit Lower	Limit Units Code	Limit Units Description
235,200			Wet Tons per Year

Averaging Method Code	Averaging Method Description	Monitoring Frequency Code	Monitoring Frequency Description	Reporting Requirements Code	Reporting Requirements Description
		03	Daily	09	Annually

Facility Emissions Summary

× Continuation Sheet(s)

CAS Number	Contaminant Name	Potential to Emit (tons/yr)	Actual Emissions (pounds/yr)
0NY075 - 00 - 5	PM-10	7.14	
0NY750 - 02 - 5	PM-2.5	7.14	
007446 - 09 - 5	Sulfur Dioxide	55.4	
0NY210 - 00 - 0	Oxides of Nitrogen	99.9	
000630 - 08 - 0	Carbon Monoxide		
007439 - 92 - 1	Lead (elemental)		
0NY998 - 00 - 0	Total Volatile Organic Compounds	0	
0NY100 - 00 - 0	Total Hazardous Air Pollutants	8.5	
0NY750 - 00 - 0	Carbon Dioxide Equivalents	96,232	
07644-41-7	Ammonia	7.1	
07783-06-4	Hydrogen Sulfide	1.4	
multiple	Methyl & Ethylamines	2.9	
07647-01-0	Hydrogen Chloride	1.3	

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Section IV - Emission Unit Information

Emission Unit Description	☐ Continuation Sheet(s)
Emission Unit: U-00SBS	

The emission unit consists of the Carbon Manufacturing Facility with an annual throughput up to 235,200 wet tons of received biosolids and up to 35,280 tons of wood waste. The Facility is designed to be constructed in three phases with each phase consisting of a process line capable of processing up to 10 wet tons per hour of biosolids and up to 1.5 tons per hour of wood waste. the Facility is maintained under negative pressure to mitigate potential fugitive odor emissions. All exhaust air is treated through engineered air pollution control devices for particulate, ammonia, sulfur dioxide, and odor control. Refer to supporting narrative.

Building Information ☐ Continuation Sheet(s)

Building ID	Building Name	Length (ft)	Width (ft)	Orientation
1	Carbon Manufacturing Building	272	180	90

Emission Unit: U-00SBS

Emission Unit Emissions Summary ☐ Continuation Sheet(s)

CAS Number	Contaminant Name			
NY075-00-0	Particulate Matter			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
95,709	1.82	14,277		
CAS Number	Contaminant Name			
0NY210-00-0	Nitrogen Dioxide			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
223,321	25.49	199,873		
CAS Number	Contaminant Name			
007446-09-5	Sulfur Dioxide			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
2,475,038	14.13	110,787		
CAS Number	Contaminant Name			
00124-38-9	Carbon Dioxide			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
215,043,500	24,548	192,463,932		

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Emission Point Information

☐ Continuation Sheet(s)

Emission Point	SBS01					
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
280	75	25	33	250		
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal
91.0	32,409	613.193	4,793.258	1	158	
Emission Point	SBS02					
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
280	75	25	33	250		
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal
91.0	32,409	636.193	4,793.258	1	158	
Emission Point	SBS03					
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
280	75	25	33	250		
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal
91.0	32,409	659.193	4,793.258	1	140	

Emission Source/Control Information

☐ Continuation Sheet(s)

Emission Source ID	Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model Number
BIOSD	I						

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
720	37	Tons Per Day	04	Conveyor	05	Sewage Sludge

Emission Source ID	Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model Number
DRYER	I						

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model Number
VCYCL	K				111	Venturi	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

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Process Information ☐ Continuation Sheet(s)

Emission Unit	U - 0 0 S B S	Process	C M F

Process Description

Refer to supporting narrative Section 6.0

Source Classification Code (SCC)	Total Throughput		Throughput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description
2399000000	30	235,200	0365	Tons Processed

☐ Confidential ☐ Operating at Maximum Capacity	Operating Schedule		Building	Floor/Location
	Hours/Day	Days/Year		
	24	328	1	1

Emission Point Identifier(s)

SBS01	SBS02	SBS03				

Emission Source/Control Identifier(s)

BIOSD	DRYER					
VCYCL	SO2SC	NH3SC	BIOSC			

Emission Unit	-	Process

Process Description

Source Classification Code (SCC)	Total Throughput		Throughput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description

☐ Confidential ☐ Operating at Maximum Capacity	Operating Schedule		Building	Floor/Location
	Hours/Day	Days/Year		

Emission Point Identifier(s)

Emission Source/Control Identifier(s)

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Process Emissions Summary

☐ Continuation Sheet(s)

Emission Unit	-				Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

Emission Unit	-				Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

Emission Unit	-				Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

Emission Source Emissions Summary

☐ Continuation Sheet(s)

Emission Source					Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

Emission Source					Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

Emission Source					Process	
CAS Number	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined

Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions	
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)

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Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements							☐ Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements							☐ Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit Compliance Certification ☐ Continuation Sheet(s)

Rule Citation

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause

☐ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

Emission Unit	Emission Point	Process	Emission Source	CAS Number	Contaminant Name

Monitoring Information

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of a Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

Compliance Activity Description

Work Practice Type Code	Process Material		Reference Test Method
	Code	Description	

Monitored Parameter		Manufacturer's Name/Model Number
Code	Description	

Limit		Limit Units	
Upper	Lower	Code	Description

Averaging Method		Monitoring Frequency		Reporting Requirements	
Code	Description	Code	Description	Code	Description

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Determination of Non-Applicability (Title V Applications Only)

☐ Continuation Sheet(s)

Rule Citation

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause

Emission Unit	Emission Point	Process	Emission Source	Applicable Federal Requirement State Only Requirement

Non-Applicability Description

Rule Citation

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause

Emission Unit	Emission Point	Process	Emission Source	Applicable Federal Requirement State Only Requirement

Non- Applicability Description

Compliance Plan

☐ Continuation Sheet(s)

For any emission units which are not in compliance at the time of permit application, the applicant shall complete the following:

Consent Order		Certified progress reports are to be submitted every 6 months beginning / /

Emission Unit	Process	Emission Source	Applicable Federal Requirement									
			Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Clause	Subcl.

Remedial Measures and Intermediate Milestones	R/I	Date Scheduled

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Request for Emission Reduction Credits

☐ Continuation Sheet(s)

Emission Source

Emission Reduction Description

Contaminant Emission Reduction Data

Baseline Period ____/____/_____ to ____/____/_____

CAS Number	Contaminant Name	Reduction Date	Reduction Method	ERC (lbs/yr) Netting	ERC (lbs/yr) Offset

Facility to Use Future Reduction

Name

Application ID - - /

Location Address

City/ Town / Village | State | Zip

Use of Emission Reduction Credits

☐ Continuation Sheet(s)

Emission Source

Proposed Project Description

Contaminant Emissions Increase Data

CAS Number	Contaminant Name	Project Emission Potential (lbs/yr)

Statement of Compliance

All facilities under the ownership of this "owner/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.

Source of Emission Reduction Credit - Facility

Name

Permit ID - - /

Location Address

City/ Town / Village | State | Zip

Emission Source	CAS Number	Contaminant Name	ERC (lbs/yr) Netting	ERC (lbs/yr) Offset

DEC ID
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Supporting Documentation and Attachments	
Required Supporting Documentation	Date of Document
List of Exempt Activities (attach form)	
× Plot Plan	10/29/2021
× Process Flow Diagram	10/29/2021
Methods Used to Determine Compliance (attach form)	10/29/2021
× Emissions Calculations	
Optional Supporting Documentation	Date of Document
× Air Quality Model	10/29/2021
Confidentiality Justification	
Ambient Air Quality Monitoring Plan or Reports	
Stack Test Protocol	
Stack Test Report	
Continuous Emissions Monitoring Plan	
Lowest Achievable Emission Rate (LAER) Demonstration	
Best Available Control Technology (BACT) Demonstration	
Reasonably Available Control Technology (RACT) Demonstration	
Toxic Impact Assessment (TIA)	
Environmental Rating Demonstration	
Operational Flexibility Protocol/Description of Alternate Operating Scenarios	
Title IV Permit Application	
Emission Reduction Credit (ERC) Quantification (attach form)	
Baseline Period Demonstration	
Use of Emission Reduction Credits (attach form)	
Analysis of Contemporaneous Emissions Increase/Decrease	
Other Supporting Documentation	Date of Document

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Section III - Facility Information

Facility State Only Requirements (continuation)									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	257	5						
6	NYCRR	496	5						

Continuation Sheet 1 of 4

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Section III - Facility Information

Facility Emissions Summary (continuation)

CAS No.	Contaminant Name	Potential to Emit (lbs/yr)	Potential to Emit Range	Actual Emissions (lbs/yr)
00064-19-7	Acetic Acid	1,713		
Multiple	Methyl Disulfides & Trisulfides	2,855		
00091-20-3	Naphthalene	17,089		

Continuation Sheet 2 of 4

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Section IV - Emission Unit Information

Emission Source/Control (continuation)

Emission Unit: U - 0 0 S B S

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
SO2SC	K				001	Wet Scrubber	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
NY3SC	K				038	NH3 Scrubber	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
BIOSC	K				113	Bio Scrubber	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
THOXD	K				127	Thermal Oxidation	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
DCYCL	K				075	Single Cyclone	

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description
32,409	39	Cubic Feet Per Minute				

Emission Source ID	Emission Source Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description

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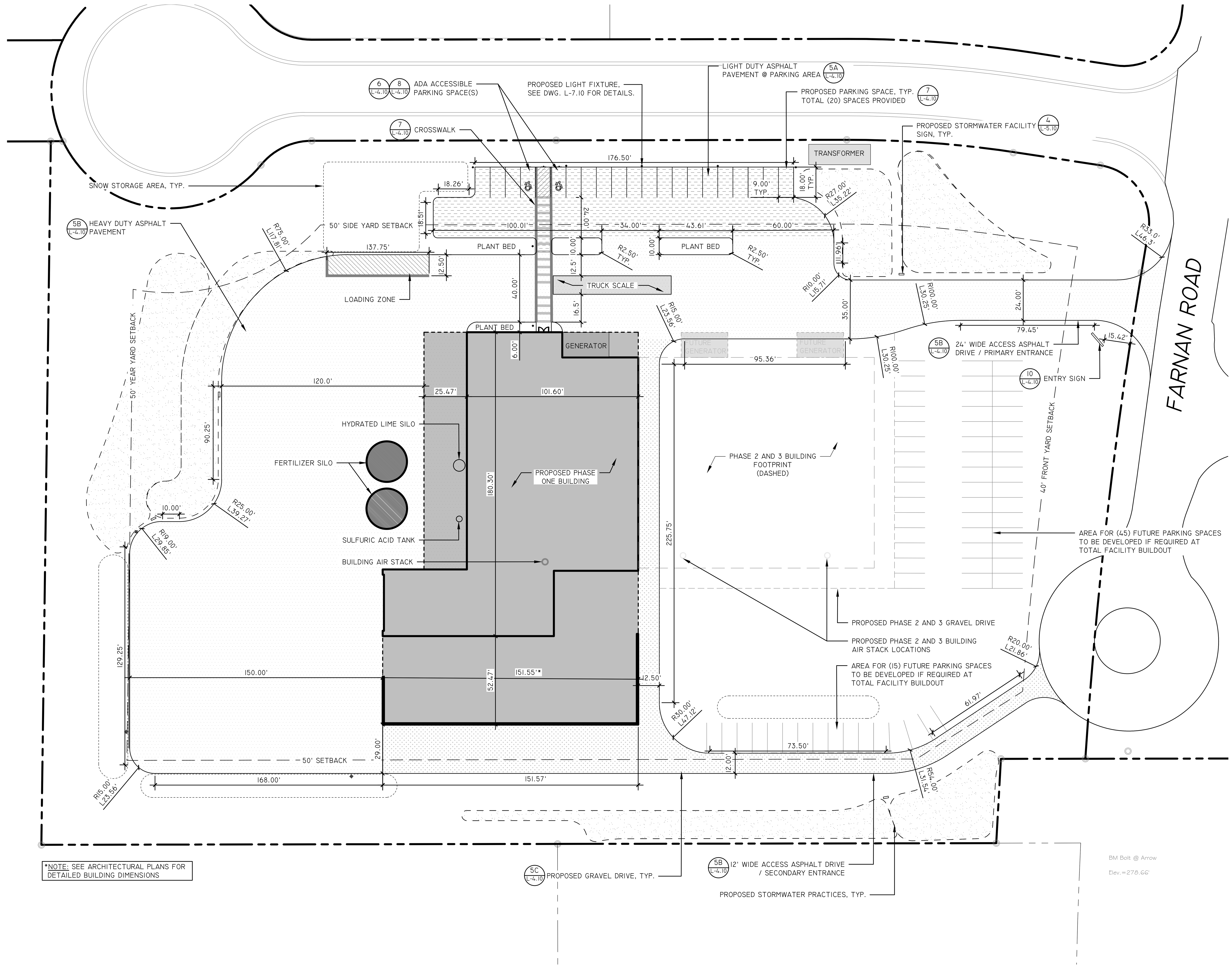
Section IV - Emission Unit Information

Emission Unit U-00SBS	Emission Unit Emissions Summary (continuation)			
CAS Number	Contaminant Name			
07644-41-7	Ammonia			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
358,909	1.8	14,277		
CAS Number	Contaminant Name			
07783-06-4	Hydrogen Sulfide			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
79,758	0.4	2,855		
CAS Number	Contaminant Name			
multiple	Methyl and Ethylamines			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
36,050	0.7	5,711		
CAS Number	Contaminant Name			
07647-01-0	Hydrogen Chloride			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
2,871	0.3	2,570		
CAS Number	Contaminant Name			
0064-19-7	Acetic Acid			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
1,914	0.2	1,713		
CAS Number	Contaminant Name			
multiple	Methyl Disulfides and Trisulfides			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
21,056	0.4	2,855		
CAS Number	Contaminant Name			
00091-20-3	Naphthalene			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
3,818,795	2.18	17,089		

ATTACHMENT 2

FACILITY SITE PLAN AND ENGINEERING DRAWINGS



LAYOUT NOTES:

1. VERIFY LOCATION OF ALL BUILDINGS, WALLS, ROADS AND CURBS AFFECTING SCOPE OF WORK.
2. VERIFY LOCATION OF ALL VAULTS, ELECTRICAL DUCT BANKS, MANHOLES, CONDUIT AND PIPING, DRAINAGE STRUCTURES AND OTHER UTILITIES WITH THE APPROPRIATE ENGINEERING DRAWINGS. NOTIFY ENGINEER OF ANY CONFLICTS WITH ENGINEER SCOPE.
3. TAKE ALL DIMENSIONS FROM FACE OF GRAVEL PARKING AREA OR BUILDING TO CENTERLINE OF DRIVE OR TREES UNLESS OTHERWISE NOTED.
4. ALL ANGLES TO BE 90 DEGREES AND ALL LINES OF PAVING AND FENCING TO BE PARALLEL UNLESS NOTED OTHERWISE. MAINTAIN HORIZONTAL ALIGNMENT OF ADJACENT ELEMENTS AS NOTED ON THE DRAWINGS.
5. REFERENCE TO NORTH REFERS TO PLAN NORTH, REFERENCE TO SCALE IS FOR FULL-SIZED DRAWINGS ONLY. DO NOT SCALE FROM REDUCED DRAWINGS.

STACK PARAMETERS:
HEIGHT: 75 FT ABOVE GROUND (25 FT ABOVE ROOF)
DIAMETER: 2.75 FT (33 INCHES)
AREA: 5.9 SF
EXIT FLOW: 32,409 ACFM
EXIT VELOCITY: 91.0 FPS
EXIT TEMPERATURE: 170.4 F
AMBIENT TEMP: 77 F
TEMPERATURE DELTA: 93.4 F
DISTANCE TO AMBIENT AIR: 140 FT

LEGEND:
- PROPERTY LINE
- PROPERTY LINE SETBACK
- LIMITS OF DISTURBANCE
- PROPOSED HEAVY DUTY ASPHALT SURFACE
- PROPOSED LIGHT DUTY ASPHALT SURFACE
- PROPOSED GRAVEL SURFACE
- PROPOSED STORMWATER PRACTICES
- PROPOSED LIGHT FIXTURES
- PROPOSED SNOW STORAGE AREA

GRAPHIC SCALE
30 0 15 30 60
1 INCH = 30 FEET
ON 24" X 36" SHEET

N

MAP REFERENCE:
BASE MAP INFORMATION OBTAINED FROM "MAP OF TOPOGRAPHIC SURVEY MADE FOR NORTHEAST BIOCHAR SOLUTIONS, INC., TOWN OF MOREAU, SARATOGA COUNTY, NEW YORK" PREPARED BY VAN DUSEN & STEVES SURVEYORS, DATED JULY 28, 2021.

DIG SAFE NOTE:
THIS PLAN SET WAS DRAFTED WITHOUT THE BENEFIT OF "DIG SAFE" MARKINGS. UTILITIES SHOWN ARE NOT WARRANTED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT "DIG SAFE" AT 811 BEFORE COMMENCING ANY WORK AND SHALL PRESERVE EXISTING UTILITIES WHICH ARE NOT SPECIFIED TO BE REMOVED IN THIS PLAN SET.

studioA
Landscape Architecture + Engineering, DPC
STUDIO A
LANDSCAPE ARCHITECTURE + ENGINEERING, DPC
MAILING:
PO BOX 272
SARATOGA SPRINGS, NY 12866
OFFICE LOCATION:
38 HIGH ROCK AVE, SUITE 3
SARATOGA SPRINGS, NY 12866
(518) 450-4030

DRAWINGS NOT FOR CONSTRUCTION

REVISIONS	
DATE	DESCRIPTION

northeastern BIOCHAR SOLUTIONS
WASTE NOT

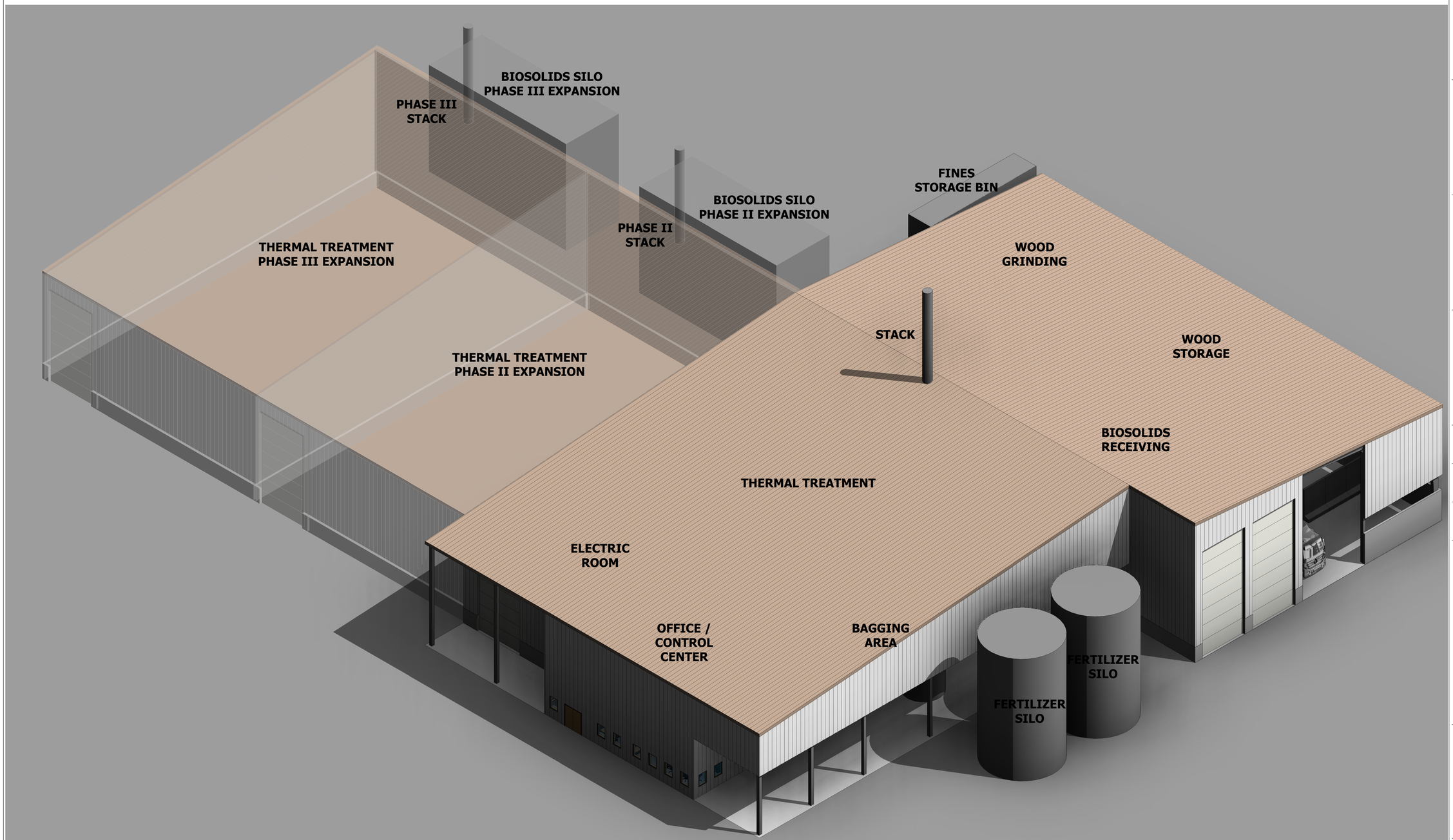
PREPARED FOR
SARATOGA BIOCHAR SOLUTIONS, LLC
26 F CONGRESS ST. #346
SARATOGA SPRINGS, NY 12866

PROJECT
SARATOGA BIOCHAR SOLUTIONS, LLC

DRAWING TITLE
LAYOUT PLAN

DATE: 03/25/2022
PROJECT NO. 20019
DRAWING NO.
L-1.10
DWG 2 OF 9

DESIGN BY: ####
DRAWN BY: ####
CHECKED BY: ####



SEAL

PROJECT TITLE

SARATOGA
BIOCHAR
SOLUTIONS

2 Electric Drive
South Glens Falls, NY 12803

SHEET
TITLE

AXONOMETRIC

CONSULTANT

DRAWN BY: CMS

CHECKED BY: GLM

DATE: 3/30/22

PROJECT NO.: 20-020

REVISIONS

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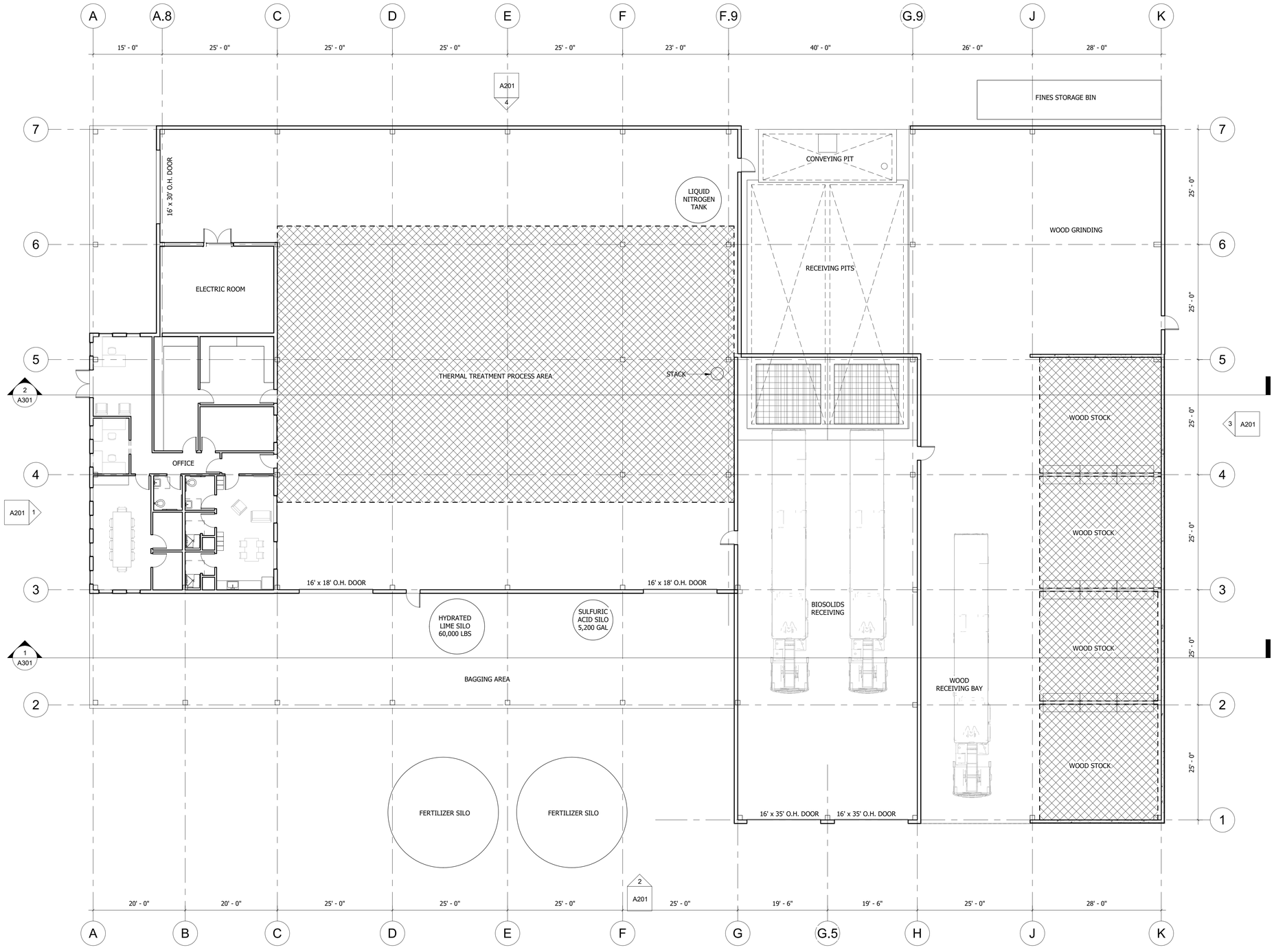
A100



SEAL

PROJECT TITLE

SARATOGA BIOCHAR SOLUTIONS

2 Electric Drive
South Glens Falls, NY 12803

SHEET TITLE

PLAN

CONSULTANT

DRAWN BY	CHECKED BY
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3/30/22

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20-020

REVISIONS

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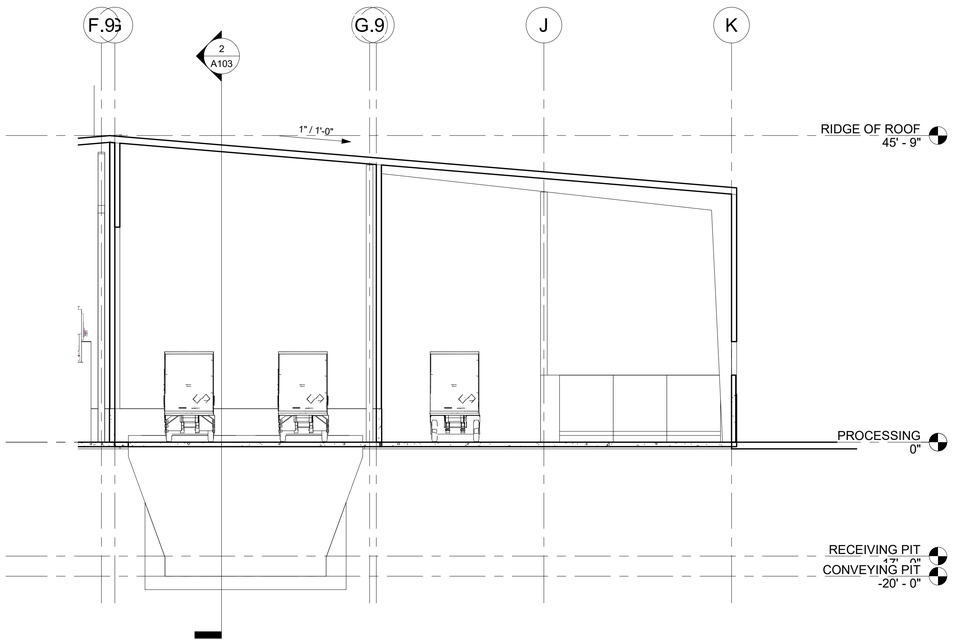
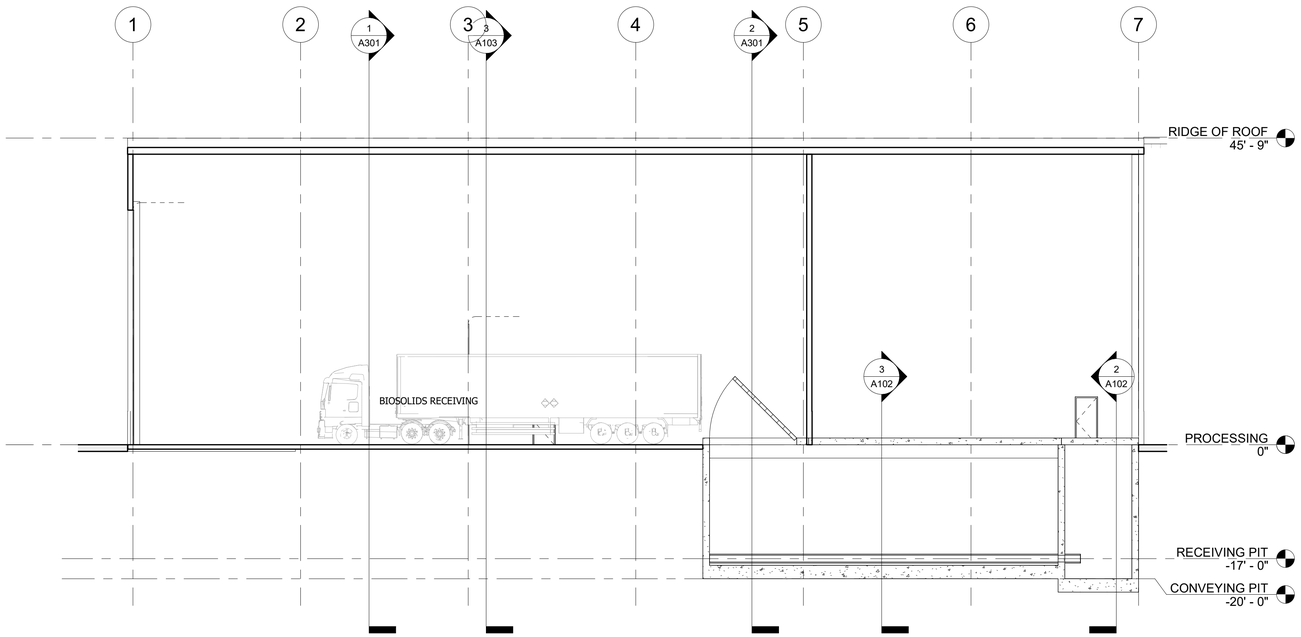


3 TRASNVERSE SECTION @ BIOSOLIDS RECEIVING
3/32" = 1'-0"



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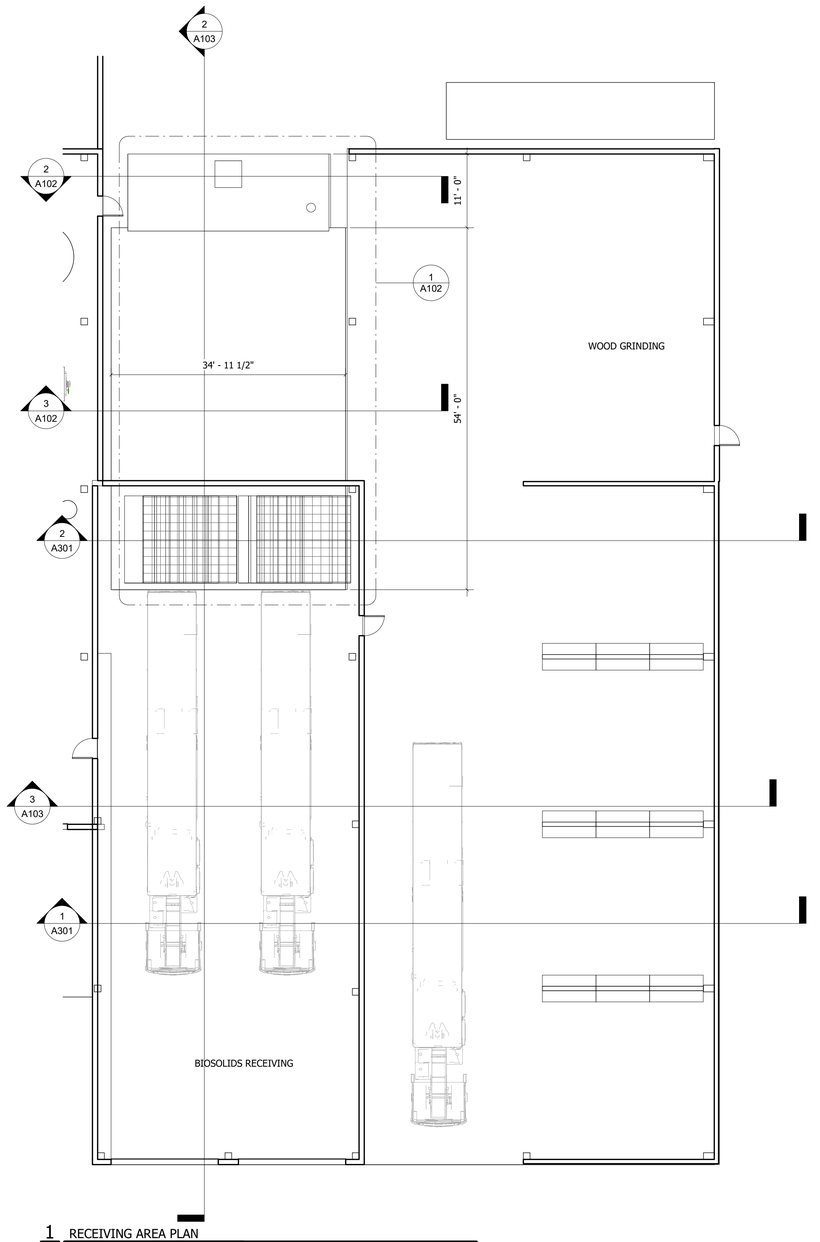
3/32" = 1'-0"



1 RECEIVING AREA PLAN
3/32" = 1'-0"

SEAL

PROJECT TITLE

SARATOGA BIOCHAR SOLUTIONS

2 Electric Drive
South Glens Falls, NY 12803

SHEET TITLE

RECEIVING BUILDING

CONSULTANT

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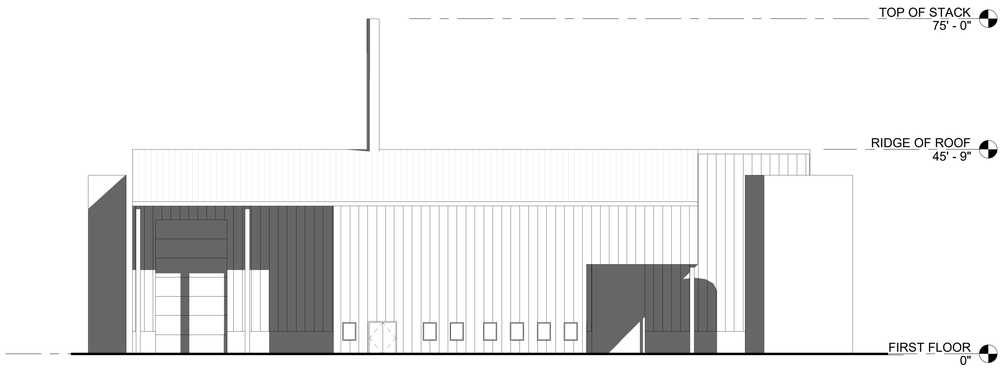
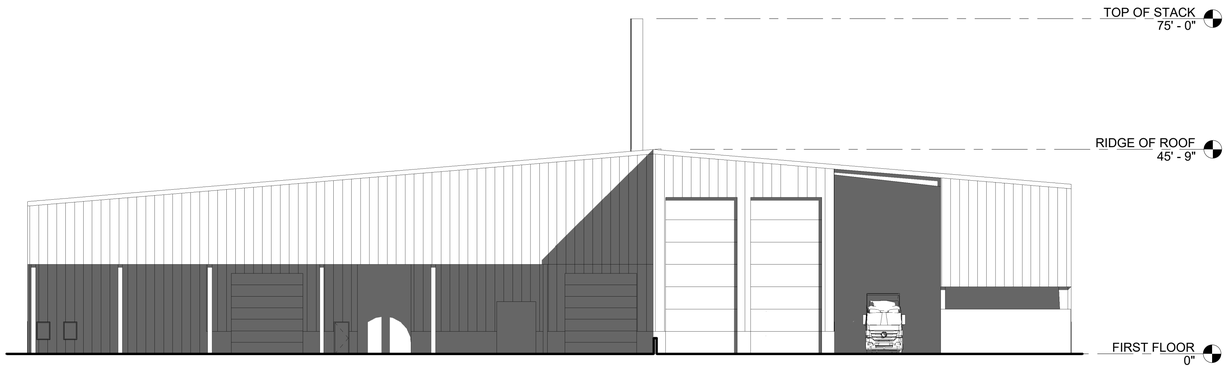
A103

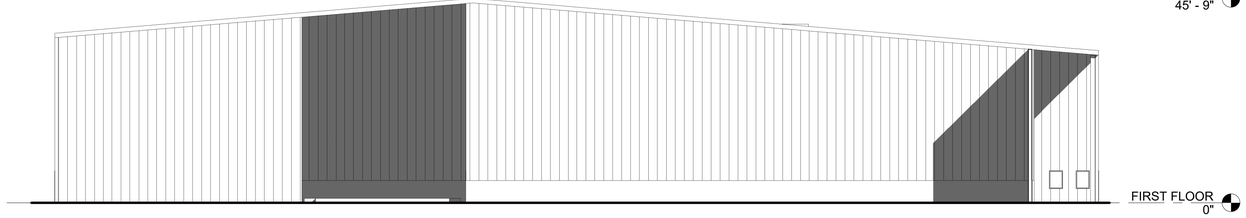


1 EXTERIOR ELEVATION - WEST
1/16" = 1'-0"



2 EXTERIOR ELEVATION - SOUTH
1/16" = 1'-0"

3 EXTERIOR ELEVATION - EAST
1/16" = 1'-0"



4 EXTERIOR ELEVATION - NORTH
1/16" = 1'-0"

SEAL

PROJECT TITLE

SARATOGA BIOCHAR SOLUTIONS

2 Electric Drive
South Glens Falls, NY 12803

SHEET TITLE

EXTERIOR ELEVATIONS

CONSULTANT

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CMS	GLM

DATE
3/30/22

PROJECT NO.
20-020

REVISIONS

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A201

ATTACHMENT 3

FACILITY EMISSIONS SUMMARY

SARATOGA BIOCHAR SOLUTIONS, LLC
CARBON FERTILIZER MANUFACTURING FACILITY
MOREAU, NY

FACILITY EMISSIONS SUMMARY - EMISSION RATE POTENTIAL (ERP)

Biosolids input at 23% solids content and wood waste input at 60% solids. Syngas heating value at 6,000 BTU per pound.

Description: **Carbon Fertilizer Manufacturing Facility**
Fuel: **Natural Gas & Syngas[3]**
Capacity: **10** **wet tons/hour biosolids (per process line)**
Process Operations: **8,760** **hours/year (24 hr/day, 365 day/year)**
Air Extraction: **32,409** **actual cubic feet per minute (acfm, per process line)**

Description/ CAS number	Chemical name	Source Emission Rate[1] mg/m^3	Source Emission Rate lb/ft^3	Single Process Line Emission Rate Potential (ERP) lb/hr	(lb/yr)	(ton/yr)	Maximum Facility ERP (Three Process Lines) lb/hr	(lb/yr)	(ton/yr)
Criteria Pollutants:									
NY075-00-0	Particulate Matter (PM)[2]	30.00	1.87E-06	3.64	31,903	15.95	10.93	95,709	47.9
0NY210-00-0	Nitrogen Oxides (NOx)	70.00	4.37E-06	8.50	74,440	37.22	25.49	223,321	111.7
007446-09-5	Sulfur Dioxide (SO_2)	775.80	4.84E-05	94.18	825,013	412.51	282.54	2,475,038	1237.5
Non-Criteria Pollutants:									
00124-38-9	Carbon Dioxide (CO_2)	67,405	4.21E-03	8,183	71,681,167	35,841	24,548	215,043,500	107,522
07644-41-7	Ammonia (NH3)	112.50	7.02E-06	13.66	119,636	59.82	41.0	358,909	179.5
07783-06-4	Hydrogen Sulfide (H2S)	25.00	1.56E-06	3.03	26,586	13.29	9.1	79,758	39.9
multiple	Methyl and Ethylamines	11.30	7.05E-07	1.37	12,017	6.01	4.1	36,050	18.0
07647-01-0	Hydrochloric Acid	0.90	5.62E-08	0.11	957	0.48	0.3	2,871	1.4
00064-19-7	Acetic Acid	0.60	3.75E-08	0.07	638	0.32	0.2	1,914	1.0
multiple	Methyl Disulfides and Trisulfides	6.60	4.12E-07	0.80	7,019	3.51	2.4	21,056	10.5
00091-20-3	Naphthalene	1,197	7.47E-05	145.3	1,272,932	636.5	436	3,818,795	1,909

Notes:

1. Source Emission Rates provided by facility designer based on bench tests with representative biosolids. To be verified after startup of first process line.
2. All particulate matter assumed to be PM-2.5
3. Natural gas is only used in the pyrolysis reactor. Under normal operations, renewable syngas generated by the facility will fuel drying equipment.

FACILITY EMISSIONS SUMMARY - POTENTIAL TO EMIT (PTE)

Biosolids input at 23% solids content and wood waste input at 60% solids. Syngas heating value at 6,000 BTU per pound.

Description:	**Carbon Fertilizer Manufacturing Facility**	
Fuel:	**Natural Gas & Syngas[3]**	
Capacity:	**10**	**wet tons/hour biosolids (per process line)**
Process Operations:	**7,840**	**hours/year (24 hr/day, 365 day/year, 90% uptime)**
Air Extraction:	**32,409**	**actual cubic feet per minute (acfm, per process line)**

Description/ CAS number	Chemical name	Source Emission Rate[1] mg/m^3	Source Emission Rate lb/ft^3	Single Process Line Potential to Emit (PTE) lb/hr	(lb/yr)	(ton/yr)	Maximum Facility PTE (Three Process Lines) lb/hr	(lb/yr)	(ton/yr)
Criteria Pollutants:									
NY075-00-0	Particulate Matter (PM)[2]	5.00	3.12E-07	0.61	4,759	2.38	1.82	14,277	7.14
0NY210-00-0	Nitrogen Oxides (NOx)	70.00	4.37E-06	8.50	66,624	33.31	25.49	199,873	99.9
007446-09-5	Sulfur Dioxide (SO_2)	38.80	2.42E-06	4.71	36,929	18.46	14.13	110,787	55.4
Non-Criteria Pollutants:									
00124-38-9	Carbon Dioxide (CO_2)	67,405	4.21E-03	8,183	64,154,644	32,077	24,548	192,463,932	96,232
07644-41-7	Ammonia (NH3)	5.00	3.12E-07	0.61	4,759	2.38	1.8	14,277	7.1
07783-06-4	Hydrogen Sulfide (H2S)	1.00	6.24E-08	0.12	952	0.48	0.4	2,855	1.4
multiple	Methyl and Ethylamines	2.00	1.25E-07	0.24	1,904	0.95	0.7	5,711	2.9
07647-01-0	Hydrochloric Acid	0.90	5.62E-08	0.11	857	0.43	0.3	2,570	1.3
00064-19-7	Acetic Acid	0.60	3.75E-08	0.07	571	0.29	0.2	1,713	0.9
multiple	Methyl Disulfides and Trisulfides	1.00	6.24E-08	0.12	952	0.48	0.4	2,855	1.4
00091-20-3	Naphthalene	5.99	3.74E-07	0.73	5,696	2.85	2.18	17,089	8.5

Notes:

1. Source Emission Rates provided by facility designer based on bench tests with representative biosolids. To be verified after startup of first process line.
2. All particulate matter assumed to be PM-2.5
3. Natural gas is only used in the pyrolysis reactor. Under normal operations, renewable syngas generated by the facility will fuel drying equipment.

ATTACHMENT 4

AERSCREEN MODEL OUTPUTS

TITLE: SBS_PM

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0769	g/s	0.610	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	11.79	75.0	SUM
20*	96.66	79.91	-22.77	6.26	11.91	75.0	SUM

30	99.22	88.96	-28.64	9.15	11.62	75.0	SUM
40	98.77	95.31	-33.65	11.76	10.79	75.0	SUM
50	95.31	98.77	-37.63	14.01	10.26	75.0	SUM
60	88.96	99.22	-40.47	15.84	9.678	75.0	SUM
70	79.90	96.66	-42.08	17.19	8.813	75.0	SPR
80	68.42	91.17	-42.41	18.01	7.550	50.0	SUM
90	54.86	82.90	-41.45	18.29	7.208	75.0	SUM
100	68.42	91.17	-48.76	18.01	8.343	75.0	SUM
110	79.91	96.66	-54.59	17.19	6.641	42.7	SPR
120	88.96	99.22	-58.76	15.84	7.541	42.7	SPR
130	95.31	98.77	-61.14	14.01	8.069	42.7	SPR
140	98.77	95.31	-61.67	11.76	8.672	42.7	SPR
150	99.22	88.96	-60.32	9.14	7.426	42.7	AUT
160	96.66	79.90	-57.14	6.26	4.297	42.7	AUT
170	91.17	68.42	-52.22	3.18	4.018	350.0	WIN
180	82.90	54.86	-45.72	0.00	3.979	375.0	SUM
190	91.17	68.42	-52.22	-3.18	4.018	350.0	WIN
200	96.66	79.91	-57.14	-6.26	4.299	42.7	AUT
210	99.22	88.96	-60.32	-9.15	7.425	42.7	AUT
220	98.77	95.31	-61.67	-11.76	8.672	42.7	SPR
230	95.31	98.77	-61.14	-14.01	8.069	42.7	SPR
240	88.96	99.22	-58.76	-15.84	7.541	42.7	SPR
250	79.90	96.66	-54.59	-17.19	6.640	42.7	SPR
260	68.42	91.17	-48.76	-18.01	8.343	75.0	SUM
270	54.86	82.90	-41.45	-18.29	7.208	75.0	SUM
280	68.42	91.17	-42.41	-18.01	7.550	50.0	SUM
290	79.91	96.66	-42.08	-17.19	8.813	75.0	SPR
300	88.96	99.22	-40.47	-15.84	9.678	75.0	SUM
310	95.31	98.77	-37.63	-14.01	10.26	75.0	SUM
320	98.77	95.31	-33.65	-11.76	10.79	75.0	SUM
330	99.22	88.96	-28.64	-9.14	11.62	75.0	SUM
340	96.66	79.90	-22.77	-6.26	11.91	75.0	SUM
350	91.17	68.42	-16.20	-3.18	11.79	75.0	SUM
360	82.90	54.86	-9.14	0.00	10.57	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	10.14	2525.00	0.7407
50.00	11.40	2550.00	0.7159
75.00	11.91	2575.00	0.6916
100.00	11.62	2600.00	0.6679
125.00	5.199	2625.00	0.6446
150.00	5.227	2650.00	0.6220
175.00	5.209	2675.00	0.5998
200.00	5.157	2700.00	0.5782
225.00	5.075	2725.00	0.5571
250.00	4.974	2750.00	0.5503
275.00	4.862	2775.00	0.5470
300.00	4.744	2800.00	0.5438
325.00	4.624	2825.00	0.5405
350.00	4.503	2850.00	0.5373
375.00	4.414	2875.00	0.5342
400.00	4.334	2900.00	0.5312
425.00	4.250	2925.00	0.5282
450.00	4.163	2950.00	0.5252
475.00	4.074	2975.00	0.5223
500.00	3.986	3000.00	0.5194
525.00	3.904	3025.00	0.5165
550.00	3.829	3050.00	0.5136
575.00	3.759	3075.00	0.5108
600.00	3.692	3100.00	0.5080
625.00	3.627	3125.00	0.5052
650.00	3.563	3150.00	0.5024
675.00	3.502	3175.00	0.4997
700.00	3.443	3200.00	0.4970
725.00	3.386	3225.00	0.4943
750.00	3.330	3250.00	0.4916
775.00	3.276	3275.00	0.4890
800.00	3.225	3300.00	0.4863
825.00	3.174	3325.00	0.4837
850.00	3.126	3350.00	0.4812
875.00	3.078	3375.00	0.4786
900.00	3.029	3400.00	0.4761

925.00	2.980	3425.00	0.4736
950.00	2.930	3450.00	0.4711
975.00	2.878	3475.00	0.4687
1000.00	2.831	3500.00	0.4662
1025.00	2.790	3525.00	0.4638
1050.00	2.749	3550.00	0.4614
1075.00	2.711	3575.00	0.4591
1100.00	2.676	3600.00	0.4567
1125.00	2.641	3625.00	0.4544
1150.00	2.607	3650.00	0.4521
1175.00	2.572	3675.00	0.4498
1200.00	2.537	3700.00	0.4475
1225.00	2.502	3725.00	0.4453
1250.00	2.466	3750.00	0.4431
1275.00	2.430	3775.00	0.4409
1300.00	2.395	3800.00	0.4387
1325.00	2.358	3825.00	0.4365
1350.00	2.322	3850.00	0.4344
1375.00	2.286	3875.00	0.4323
1400.00	2.249	3900.00	0.4302
1425.00	2.213	3925.00	0.4281
1450.00	2.176	3950.00	0.4261
1475.00	2.139	3975.00	0.4240
1500.00	2.102	4000.00	0.4220
1525.00	2.065	4025.00	0.4200
1550.00	2.028	4050.00	0.4180
1575.00	1.991	4075.00	0.4160
1600.00	1.954	4100.00	0.4141
1625.00	1.917	4125.00	0.4121
1650.00	1.880	4150.00	0.4102
1675.00	1.842	4175.00	0.4083
1700.00	1.806	4200.00	0.4065
1725.00	1.769	4225.00	0.4047
1750.00	1.732	4250.00	0.4029
1775.00	1.695	4275.00	0.4011
1800.00	1.659	4300.00	0.3994
1825.00	1.622	4325.00	0.3976
1850.00	1.586	4350.00	0.3959
1875.00	1.550	4375.00	0.3942
1900.00	1.514	4400.00	0.3925
1925.00	1.479	4425.00	0.3908
1950.00	1.444	4450.00	0.3891
1975.00	1.409	4475.00	0.3874
2000.00	1.374	4500.00	0.3858
2025.00	1.340	4525.00	0.3841
2050.00	1.306	4550.00	0.3825
2075.00	1.272	4575.00	0.3809
2100.00	1.239	4600.00	0.3793
2125.00	1.206	4625.00	0.3777
2150.00	1.173	4650.00	0.3762

2175.00	1.141	4675.00	0.3746
2200.00	1.110	4700.00	0.3731
2225.00	1.078	4725.00	0.3715
2250.00	1.048	4750.00	0.3700
2275.00	1.017	4775.00	0.3685
2300.00	0.9874	4800.00	0.3670
2325.00	0.9580	4825.00	0.3655
2350.00	0.9290	4850.00	0.3641
2375.00	0.9006	4875.00	0.3626
2400.00	0.8727	4900.00	0.3611
2425.00	0.8452	4925.00	0.3597
2450.00	0.8183	4950.00	0.3583
2475.00	0.7919	4975.00	0.3569
2500.00	0.7661	5000.00	0.3555

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	11.91	11.91	10.72	7.148	1.191

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	10.14	10.14	9.127	6.085	1.014

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
14:58:35

TITLE: SBS_NOX

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	1.0710	g/s	8.500	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	164.2	75.0	SUM
20*	96.66	79.91	-22.77	6.26	166.0	75.0	SUM

30	99.22	88.96	-28.64	9.15	161.9	75.0	SUM
40	98.77	95.31	-33.65	11.76	150.4	75.0	SUM
50	95.31	98.77	-37.63	14.01	143.0	75.0	SUM
60	88.96	99.22	-40.47	15.84	134.9	75.0	SUM
70	79.90	96.66	-42.08	17.19	122.8	75.0	SPR
80	68.42	91.17	-42.41	18.01	105.2	50.0	SUM
90	54.86	82.90	-41.45	18.29	100.4	75.0	SUM
100	68.42	91.17	-48.76	18.01	116.3	75.0	SUM
110	79.91	96.66	-54.59	17.19	92.54	42.7	SPR
120	88.96	99.22	-58.76	15.84	105.1	42.7	SPR
130	95.31	98.77	-61.14	14.01	112.4	42.7	SPR
140	98.77	95.31	-61.67	11.76	120.8	42.7	SPR
150	99.22	88.96	-60.32	9.14	103.5	42.7	AUT
160	96.66	79.90	-57.14	6.26	59.88	42.7	AUT
170	91.17	68.42	-52.22	3.18	55.99	350.0	WIN
180	82.90	54.86	-45.72	0.00	55.44	375.0	SUM
190	91.17	68.42	-52.22	-3.18	55.99	350.0	WIN
200	96.66	79.91	-57.14	-6.26	59.90	42.7	AUT
210	99.22	88.96	-60.32	-9.15	103.5	42.7	AUT
220	98.77	95.31	-61.67	-11.76	120.8	42.7	SPR
230	95.31	98.77	-61.14	-14.01	112.4	42.7	SPR
240	88.96	99.22	-58.76	-15.84	105.1	42.7	SPR
250	79.90	96.66	-54.59	-17.19	92.53	42.7	SPR
260	68.42	91.17	-48.76	-18.01	116.3	75.0	SUM
270	54.86	82.90	-41.45	-18.29	100.4	75.0	SUM
280	68.42	91.17	-42.41	-18.01	105.2	50.0	SUM
290	79.91	96.66	-42.08	-17.19	122.8	75.0	SPR
300	88.96	99.22	-40.47	-15.84	134.9	75.0	SUM
310	95.31	98.77	-37.63	-14.01	143.0	75.0	SUM
320	98.77	95.31	-33.65	-11.76	150.4	75.0	SUM
330	99.22	88.96	-28.64	-9.14	161.9	75.0	SUM
340	96.66	79.90	-22.77	-6.26	166.0	75.0	SUM
350	91.17	68.42	-16.20	-3.18	164.2	75.0	SUM
360	82.90	54.86	-9.14	0.00	147.2	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	141.3	2525.00	10.32
50.00	158.9	2550.00	9.976
75.00	166.0	2575.00	9.637
100.00	161.9	2600.00	9.306
125.00	72.45	2625.00	8.983
150.00	72.84	2650.00	8.667
175.00	72.58	2675.00	8.358
200.00	71.86	2700.00	8.057
225.00	70.71	2725.00	7.763
250.00	69.31	2750.00	7.668
275.00	67.75	2775.00	7.622
300.00	66.10	2800.00	7.577
325.00	64.43	2825.00	7.532
350.00	62.74	2850.00	7.487
375.00	61.51	2875.00	7.444
400.00	60.40	2900.00	7.402
425.00	59.22	2925.00	7.360
450.00	58.00	2950.00	7.319
475.00	56.76	2975.00	7.278
500.00	55.54	3000.00	7.237
525.00	54.39	3025.00	7.197
550.00	53.35	3050.00	7.157
575.00	52.38	3075.00	7.117
600.00	51.44	3100.00	7.078
625.00	50.53	3125.00	7.039
650.00	49.65	3150.00	7.001
675.00	48.80	3175.00	6.963
700.00	47.97	3200.00	6.925
725.00	47.18	3225.00	6.887
750.00	46.40	3250.00	6.850
775.00	45.66	3275.00	6.813
800.00	44.93	3300.00	6.777
825.00	44.23	3325.00	6.741
850.00	43.56	3350.00	6.705
875.00	42.89	3375.00	6.669
900.00	42.21	3400.00	6.634

925.00	41.52	3425.00	6.599
950.00	40.82	3450.00	6.565
975.00	40.11	3475.00	6.530
1000.00	39.44	3500.00	6.496
1025.00	38.88	3525.00	6.463
1050.00	38.31	3550.00	6.430
1075.00	37.77	3575.00	6.397
1100.00	37.28	3600.00	6.364
1125.00	36.80	3625.00	6.332
1150.00	36.32	3650.00	6.299
1175.00	35.84	3675.00	6.268
1200.00	35.35	3700.00	6.236
1225.00	34.86	3725.00	6.205
1250.00	34.36	3750.00	6.174
1275.00	33.87	3775.00	6.143
1300.00	33.37	3800.00	6.113
1325.00	32.86	3825.00	6.083
1350.00	32.36	3850.00	6.053
1375.00	31.85	3875.00	6.024
1400.00	31.34	3900.00	5.994
1425.00	30.83	3925.00	5.966
1450.00	30.32	3950.00	5.937
1475.00	29.81	3975.00	5.908
1500.00	29.29	4000.00	5.880
1525.00	28.78	4025.00	5.852
1550.00	28.26	4050.00	5.824
1575.00	27.74	4075.00	5.797
1600.00	27.22	4100.00	5.770
1625.00	26.71	4125.00	5.743
1650.00	26.19	4150.00	5.716
1675.00	25.67	4175.00	5.690
1700.00	25.16	4200.00	5.665
1725.00	24.64	4225.00	5.639
1750.00	24.13	4250.00	5.614
1775.00	23.62	4275.00	5.589
1800.00	23.11	4300.00	5.565
1825.00	22.61	4325.00	5.541
1850.00	22.10	4350.00	5.516
1875.00	21.60	4375.00	5.492
1900.00	21.10	4400.00	5.469
1925.00	20.61	4425.00	5.445
1950.00	20.12	4450.00	5.422
1975.00	19.63	4475.00	5.398
2000.00	19.15	4500.00	5.376
2025.00	18.67	4525.00	5.353
2050.00	18.20	4550.00	5.330
2075.00	17.73	4575.00	5.308
2100.00	17.26	4600.00	5.285
2125.00	16.80	4625.00	5.263
2150.00	16.35	4650.00	5.242

2175.00	15.90	4675.00	5.220
2200.00	15.46	4700.00	5.198
2225.00	15.03	4725.00	5.177
2250.00	14.60	4750.00	5.156
2275.00	14.18	4775.00	5.135
2300.00	13.76	4800.00	5.114
2325.00	13.35	4825.00	5.093
2350.00	12.95	4850.00	5.073
2375.00	12.55	4875.00	5.053
2400.00	12.16	4900.00	5.032
2425.00	11.78	4925.00	5.012
2450.00	11.40	4950.00	4.992
2475.00	11.04	4975.00	4.973
2500.00	10.67	5000.00	4.953

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	166.0	166.0	149.4	99.60	16.60

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	141.3	141.3	127.2	84.79	14.13

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
15:11:09

TITLE: SBS_SO2

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.5935	g/s	4.710	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	91.01	75.0	SUM
20*	96.66	79.91	-22.77	6.26	91.99	75.0	SUM

30	99.22	88.96	-28.64	9.15	89.74	75.0	SUM
40	98.77	95.31	-33.65	11.76	83.33	75.0	SUM
50	95.31	98.77	-37.63	14.01	79.24	75.0	SUM
60	88.96	99.22	-40.47	15.84	74.73	75.0	SUM
70	79.90	96.66	-42.08	17.19	68.05	75.0	SPR
80	68.42	91.17	-42.41	18.01	58.30	50.0	SUM
90	54.86	82.90	-41.45	18.29	55.66	75.0	SUM
100	68.42	91.17	-48.76	18.01	64.42	75.0	SUM
110	79.91	96.66	-54.59	17.19	51.28	42.7	SPR
120	88.96	99.22	-58.76	15.84	58.23	42.7	SPR
130	95.31	98.77	-61.14	14.01	62.31	42.7	SPR
140	98.77	95.31	-61.67	11.76	66.97	42.7	SPR
150	99.22	88.96	-60.32	9.14	57.34	42.7	AUT
160	96.66	79.90	-57.14	6.26	33.18	42.7	AUT
170	91.17	68.42	-52.22	3.18	31.03	350.0	WIN
180	82.90	54.86	-45.72	0.00	30.72	375.0	SUM
190	91.17	68.42	-52.22	-3.18	31.03	350.0	WIN
200	96.66	79.91	-57.14	-6.26	33.19	42.7	AUT
210	99.22	88.96	-60.32	-9.15	57.34	42.7	AUT
220	98.77	95.31	-61.67	-11.76	66.97	42.7	SPR
230	95.31	98.77	-61.14	-14.01	62.31	42.7	SPR
240	88.96	99.22	-58.76	-15.84	58.23	42.7	SPR
250	79.90	96.66	-54.59	-17.19	51.28	42.7	SPR
260	68.42	91.17	-48.76	-18.01	64.42	75.0	SUM
270	54.86	82.90	-41.45	-18.29	55.66	75.0	SUM
280	68.42	91.17	-42.41	-18.01	58.30	50.0	SUM
290	79.91	96.66	-42.08	-17.19	68.05	75.0	SPR
300	88.96	99.22	-40.47	-15.84	74.73	75.0	SUM
310	95.31	98.77	-37.63	-14.01	79.24	75.0	SUM
320	98.77	95.31	-33.65	-11.76	83.33	75.0	SUM
330	99.22	88.96	-28.64	-9.14	89.74	75.0	SUM
340	96.66	79.90	-22.77	-6.26	91.98	75.0	SUM
350	91.17	68.42	-16.20	-3.18	91.01	75.0	SUM
360	82.90	54.86	-9.14	0.00	81.59	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	78.31	2525.00	5.720
50.00	88.06	2550.00	5.528
75.00	91.99	2575.00	5.340
100.00	89.74	2600.00	5.157
125.00	40.15	2625.00	4.978
150.00	40.36	2650.00	4.803
175.00	40.22	2675.00	4.632
200.00	39.82	2700.00	4.465
225.00	39.19	2725.00	4.302
250.00	38.41	2750.00	4.249
275.00	37.54	2775.00	4.224
300.00	36.63	2800.00	4.199
325.00	35.70	2825.00	4.174
350.00	34.77	2850.00	4.149
375.00	34.09	2875.00	4.125
400.00	33.47	2900.00	4.102
425.00	32.82	2925.00	4.079
450.00	32.14	2950.00	4.056
475.00	31.46	2975.00	4.033
500.00	30.78	3000.00	4.011
525.00	30.14	3025.00	3.988
550.00	29.57	3050.00	3.966
575.00	29.03	3075.00	3.944
600.00	28.51	3100.00	3.922
625.00	28.00	3125.00	3.901
650.00	27.52	3150.00	3.880
675.00	27.04	3175.00	3.858
700.00	26.59	3200.00	3.837
725.00	26.14	3225.00	3.817
750.00	25.71	3250.00	3.796
775.00	25.30	3275.00	3.776
800.00	24.90	3300.00	3.755
825.00	24.51	3325.00	3.735
850.00	24.14	3350.00	3.715
875.00	23.77	3375.00	3.696
900.00	23.39	3400.00	3.676

925.00	23.01	3425.00	3.657
950.00	22.62	3450.00	3.638
975.00	22.23	3475.00	3.619
1000.00	21.86	3500.00	3.600
1025.00	21.55	3525.00	3.581
1050.00	21.23	3550.00	3.563
1075.00	20.93	3575.00	3.545
1100.00	20.66	3600.00	3.527
1125.00	20.39	3625.00	3.509
1150.00	20.13	3650.00	3.491
1175.00	19.86	3675.00	3.473
1200.00	19.59	3700.00	3.456
1225.00	19.32	3725.00	3.439
1250.00	19.04	3750.00	3.421
1275.00	18.77	3775.00	3.404
1300.00	18.49	3800.00	3.388
1325.00	18.21	3825.00	3.371
1350.00	17.93	3850.00	3.354
1375.00	17.65	3875.00	3.338
1400.00	17.37	3900.00	3.322
1425.00	17.09	3925.00	3.306
1450.00	16.80	3950.00	3.290
1475.00	16.52	3975.00	3.274
1500.00	16.23	4000.00	3.259
1525.00	15.95	4025.00	3.243
1550.00	15.66	4050.00	3.228
1575.00	15.37	4075.00	3.212
1600.00	15.09	4100.00	3.197
1625.00	14.80	4125.00	3.182
1650.00	14.51	4150.00	3.168
1675.00	14.23	4175.00	3.153
1700.00	13.94	4200.00	3.139
1725.00	13.66	4225.00	3.125
1750.00	13.37	4250.00	3.111
1775.00	13.09	4275.00	3.097
1800.00	12.81	4300.00	3.084
1825.00	12.53	4325.00	3.070
1850.00	12.25	4350.00	3.057
1875.00	11.97	4375.00	3.044
1900.00	11.69	4400.00	3.030
1925.00	11.42	4425.00	3.017
1950.00	11.15	4450.00	3.004
1975.00	10.88	4475.00	2.992
2000.00	10.61	4500.00	2.979
2025.00	10.35	4525.00	2.966
2050.00	10.08	4550.00	2.954
2075.00	9.824	4575.00	2.941
2100.00	9.567	4600.00	2.929
2125.00	9.313	4625.00	2.917
2150.00	9.061	4650.00	2.905

2175.00	8.814	4675.00	2.893
2200.00	8.569	4700.00	2.881
2225.00	8.328	4725.00	2.869
2250.00	8.090	4750.00	2.857
2275.00	7.855	4775.00	2.846
2300.00	7.624	4800.00	2.834
2325.00	7.397	4825.00	2.823
2350.00	7.174	4850.00	2.811
2375.00	6.954	4875.00	2.800
2400.00	6.739	4900.00	2.789
2425.00	6.527	4925.00	2.778
2450.00	6.319	4950.00	2.767
2475.00	6.115	4975.00	2.756
2500.00	5.915	5000.00	2.745

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	91.99	91.99	82.79	55.20	9.199

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	78.31	78.31	70.48	46.98	7.831

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
15:30:26

TITLE: SBS_NH3

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0769	g/s	0.610	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	11.79	75.0	SUM
20*	96.66	79.91	-22.77	6.26	11.91	75.0	SUM

30	99.22	88.96	-28.64	9.15	11.62	75.0	SUM
40	98.77	95.31	-33.65	11.76	10.79	75.0	SUM
50	95.31	98.77	-37.63	14.01	10.26	75.0	SUM
60	88.96	99.22	-40.47	15.84	9.678	75.0	SUM
70	79.90	96.66	-42.08	17.19	8.813	75.0	SPR
80	68.42	91.17	-42.41	18.01	7.550	50.0	SUM
90	54.86	82.90	-41.45	18.29	7.208	75.0	SUM
100	68.42	91.17	-48.76	18.01	8.343	75.0	SUM
110	79.91	96.66	-54.59	17.19	6.641	42.7	SPR
120	88.96	99.22	-58.76	15.84	7.541	42.7	SPR
130	95.31	98.77	-61.14	14.01	8.069	42.7	SPR
140	98.77	95.31	-61.67	11.76	8.672	42.7	SPR
150	99.22	88.96	-60.32	9.14	7.426	42.7	AUT
160	96.66	79.90	-57.14	6.26	4.297	42.7	AUT
170	91.17	68.42	-52.22	3.18	4.018	350.0	WIN
180	82.90	54.86	-45.72	0.00	3.979	375.0	SUM
190	91.17	68.42	-52.22	-3.18	4.018	350.0	WIN
200	96.66	79.91	-57.14	-6.26	4.299	42.7	AUT
210	99.22	88.96	-60.32	-9.15	7.425	42.7	AUT
220	98.77	95.31	-61.67	-11.76	8.672	42.7	SPR
230	95.31	98.77	-61.14	-14.01	8.069	42.7	SPR
240	88.96	99.22	-58.76	-15.84	7.541	42.7	SPR
250	79.90	96.66	-54.59	-17.19	6.640	42.7	SPR
260	68.42	91.17	-48.76	-18.01	8.343	75.0	SUM
270	54.86	82.90	-41.45	-18.29	7.208	75.0	SUM
280	68.42	91.17	-42.41	-18.01	7.550	50.0	SUM
290	79.91	96.66	-42.08	-17.19	8.813	75.0	SPR
300	88.96	99.22	-40.47	-15.84	9.678	75.0	SUM
310	95.31	98.77	-37.63	-14.01	10.26	75.0	SUM
320	98.77	95.31	-33.65	-11.76	10.79	75.0	SUM
330	99.22	88.96	-28.64	-9.14	11.62	75.0	SUM
340	96.66	79.90	-22.77	-6.26	11.91	75.0	SUM
350	91.17	68.42	-16.20	-3.18	11.79	75.0	SUM
360	82.90	54.86	-9.14	0.00	10.57	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	10.14	2525.00	0.7407
50.00	11.40	2550.00	0.7159
75.00	11.91	2575.00	0.6916
100.00	11.62	2600.00	0.6679
125.00	5.199	2625.00	0.6446
150.00	5.227	2650.00	0.6220
175.00	5.209	2675.00	0.5998
200.00	5.157	2700.00	0.5782
225.00	5.075	2725.00	0.5571
250.00	4.974	2750.00	0.5503
275.00	4.862	2775.00	0.5470
300.00	4.744	2800.00	0.5438
325.00	4.624	2825.00	0.5405
350.00	4.503	2850.00	0.5373
375.00	4.414	2875.00	0.5342
400.00	4.334	2900.00	0.5312
425.00	4.250	2925.00	0.5282
450.00	4.163	2950.00	0.5252
475.00	4.074	2975.00	0.5223
500.00	3.986	3000.00	0.5194
525.00	3.904	3025.00	0.5165
550.00	3.829	3050.00	0.5136
575.00	3.759	3075.00	0.5108
600.00	3.692	3100.00	0.5080
625.00	3.627	3125.00	0.5052
650.00	3.563	3150.00	0.5024
675.00	3.502	3175.00	0.4997
700.00	3.443	3200.00	0.4970
725.00	3.386	3225.00	0.4943
750.00	3.330	3250.00	0.4916
775.00	3.276	3275.00	0.4890
800.00	3.225	3300.00	0.4863
825.00	3.174	3325.00	0.4837
850.00	3.126	3350.00	0.4812
875.00	3.078	3375.00	0.4786
900.00	3.029	3400.00	0.4761

925.00	2.980	3425.00	0.4736
950.00	2.930	3450.00	0.4711
975.00	2.878	3475.00	0.4687
1000.00	2.831	3500.00	0.4662
1025.00	2.790	3525.00	0.4638
1050.00	2.749	3550.00	0.4614
1075.00	2.711	3575.00	0.4591
1100.00	2.676	3600.00	0.4567
1125.00	2.641	3625.00	0.4544
1150.00	2.607	3650.00	0.4521
1175.00	2.572	3675.00	0.4498
1200.00	2.537	3700.00	0.4475
1225.00	2.502	3725.00	0.4453
1250.00	2.466	3750.00	0.4431
1275.00	2.430	3775.00	0.4409
1300.00	2.395	3800.00	0.4387
1325.00	2.358	3825.00	0.4365
1350.00	2.322	3850.00	0.4344
1375.00	2.286	3875.00	0.4323
1400.00	2.249	3900.00	0.4302
1425.00	2.213	3925.00	0.4281
1450.00	2.176	3950.00	0.4261
1475.00	2.139	3975.00	0.4240
1500.00	2.102	4000.00	0.4220
1525.00	2.065	4025.00	0.4200
1550.00	2.028	4050.00	0.4180
1575.00	1.991	4075.00	0.4160
1600.00	1.954	4100.00	0.4141
1625.00	1.917	4125.00	0.4121
1650.00	1.880	4150.00	0.4102
1675.00	1.842	4175.00	0.4083
1700.00	1.806	4200.00	0.4065
1725.00	1.769	4225.00	0.4047
1750.00	1.732	4250.00	0.4029
1775.00	1.695	4275.00	0.4011
1800.00	1.659	4300.00	0.3994
1825.00	1.622	4325.00	0.3976
1850.00	1.586	4350.00	0.3959
1875.00	1.550	4375.00	0.3942
1900.00	1.514	4400.00	0.3925
1925.00	1.479	4425.00	0.3908
1950.00	1.444	4450.00	0.3891
1975.00	1.409	4475.00	0.3874
2000.00	1.374	4500.00	0.3858
2025.00	1.340	4525.00	0.3841
2050.00	1.306	4550.00	0.3825
2075.00	1.272	4575.00	0.3809
2100.00	1.239	4600.00	0.3793
2125.00	1.206	4625.00	0.3777
2150.00	1.173	4650.00	0.3762

2175.00	1.141	4675.00	0.3746
2200.00	1.110	4700.00	0.3731
2225.00	1.078	4725.00	0.3715
2250.00	1.048	4750.00	0.3700
2275.00	1.017	4775.00	0.3685
2300.00	0.9874	4800.00	0.3670
2325.00	0.9580	4825.00	0.3655
2350.00	0.9290	4850.00	0.3641
2375.00	0.9006	4875.00	0.3626
2400.00	0.8727	4900.00	0.3611
2425.00	0.8452	4925.00	0.3597
2450.00	0.8183	4950.00	0.3583
2475.00	0.7919	4975.00	0.3569
2500.00	0.7661	5000.00	0.3555

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	11.91	11.91	10.72	7.148	1.191

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	10.14	10.14	9.127	6.085	1.014

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
15:41:16

TITLE: SBS_H2S

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0151	g/s	0.120	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********
25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	2.319	75.0	SUM
20*	96.66	79.91	-22.77	6.26	2.344	75.0	SUM

30	99.22	88.96	-28.64	9.15	2.286	75.0	SUM
40	98.77	95.31	-33.65	11.76	2.123	75.0	SUM
50	95.31	98.77	-37.63	14.01	2.019	75.0	SUM
60	88.96	99.22	-40.47	15.84	1.904	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.734	75.0	SPR
80	68.42	91.17	-42.41	18.01	1.485	50.0	SUM
90	54.86	82.90	-41.45	18.29	1.418	75.0	SUM
100	68.42	91.17	-48.76	18.01	1.641	75.0	SUM
110	79.91	96.66	-54.59	17.19	1.306	42.7	SPR
120	88.96	99.22	-58.76	15.84	1.483	42.7	SPR
130	95.31	98.77	-61.14	14.01	1.587	42.7	SPR
140	98.77	95.31	-61.67	11.76	1.706	42.7	SPR
150	99.22	88.96	-60.32	9.14	1.461	42.7	AUT
160	96.66	79.90	-57.14	6.26	0.8453	42.7	AUT
170	91.17	68.42	-52.22	3.18	0.7904	350.0	WIN
180	82.90	54.86	-45.72	0.00	0.7827	375.0	SUM
190	91.17	68.42	-52.22	-3.18	0.7904	350.0	WIN
200	96.66	79.91	-57.14	-6.26	0.8456	42.7	AUT
210	99.22	88.96	-60.32	-9.15	1.461	42.7	AUT
220	98.77	95.31	-61.67	-11.76	1.706	42.7	SPR
230	95.31	98.77	-61.14	-14.01	1.587	42.7	SPR
240	88.96	99.22	-58.76	-15.84	1.483	42.7	SPR
250	79.90	96.66	-54.59	-17.19	1.306	42.7	SPR
260	68.42	91.17	-48.76	-18.01	1.641	75.0	SUM
270	54.86	82.90	-41.45	-18.29	1.418	75.0	SUM
280	68.42	91.17	-42.41	-18.01	1.485	50.0	SUM
290	79.91	96.66	-42.08	-17.19	1.734	75.0	SPR
300	88.96	99.22	-40.47	-15.84	1.904	75.0	SUM
310	95.31	98.77	-37.63	-14.01	2.019	75.0	SUM
320	98.77	95.31	-33.65	-11.76	2.123	75.0	SUM
330	99.22	88.96	-28.64	-9.14	2.286	75.0	SUM
340	96.66	79.90	-22.77	-6.26	2.343	75.0	SUM
350	91.17	68.42	-16.20	-3.18	2.319	75.0	SUM
360	82.90	54.86	-9.14	0.00	2.079	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	1.995	2525.00	0.1457
50.00	2.243	2550.00	0.1408
75.00	2.344	2575.00	0.1361
100.00	2.286	2600.00	0.1314
125.00	1.023	2625.00	0.1268
150.00	1.028	2650.00	0.1224
175.00	1.025	2675.00	0.1180
200.00	1.014	2700.00	0.1137
225.00	0.9983	2725.00	0.1096
250.00	0.9785	2750.00	0.1083
275.00	0.9564	2775.00	0.1076
300.00	0.9332	2800.00	0.1070
325.00	0.9096	2825.00	0.1063
350.00	0.8858	2850.00	0.1057
375.00	0.8684	2875.00	0.1051
400.00	0.8527	2900.00	0.1045
425.00	0.8361	2925.00	0.1039
450.00	0.8189	2950.00	0.1033
475.00	0.8014	2975.00	0.1027
500.00	0.7842	3000.00	0.1022
525.00	0.7679	3025.00	0.1016
550.00	0.7532	3050.00	0.1010
575.00	0.7395	3075.00	0.1005
600.00	0.7263	3100.00	0.9993E-01
625.00	0.7134	3125.00	0.9938E-01
650.00	0.7010	3150.00	0.9884E-01
675.00	0.6889	3175.00	0.9830E-01
700.00	0.6773	3200.00	0.9776E-01
725.00	0.6660	3225.00	0.9723E-01
750.00	0.6551	3250.00	0.9671E-01
775.00	0.6446	3275.00	0.9619E-01
800.00	0.6344	3300.00	0.9567E-01
825.00	0.6245	3325.00	0.9516E-01
850.00	0.6149	3350.00	0.9465E-01
875.00	0.6055	3375.00	0.9415E-01
900.00	0.5960	3400.00	0.9366E-01

925.00	0.5862	3425.00	0.9316E-01
950.00	0.5763	3450.00	0.9268E-01
975.00	0.5662	3475.00	0.9219E-01
1000.00	0.5568	3500.00	0.9172E-01
1025.00	0.5489	3525.00	0.9124E-01
1050.00	0.5408	3550.00	0.9077E-01
1075.00	0.5332	3575.00	0.9031E-01
1100.00	0.5263	3600.00	0.8984E-01
1125.00	0.5196	3625.00	0.8939E-01
1150.00	0.5128	3650.00	0.8893E-01
1175.00	0.5059	3675.00	0.8849E-01
1200.00	0.4990	3700.00	0.8804E-01
1225.00	0.4921	3725.00	0.8760E-01
1250.00	0.4851	3750.00	0.8716E-01
1275.00	0.4781	3775.00	0.8673E-01
1300.00	0.4711	3800.00	0.8630E-01
1325.00	0.4640	3825.00	0.8588E-01
1350.00	0.4568	3850.00	0.8546E-01
1375.00	0.4497	3875.00	0.8504E-01
1400.00	0.4425	3900.00	0.8463E-01
1425.00	0.4353	3925.00	0.8422E-01
1450.00	0.4281	3950.00	0.8381E-01
1475.00	0.4208	3975.00	0.8341E-01
1500.00	0.4135	4000.00	0.8301E-01
1525.00	0.4062	4025.00	0.8262E-01
1550.00	0.3989	4050.00	0.8223E-01
1575.00	0.3916	4075.00	0.8184E-01
1600.00	0.3843	4100.00	0.8146E-01
1625.00	0.3770	4125.00	0.8108E-01
1650.00	0.3697	4150.00	0.8070E-01
1675.00	0.3625	4175.00	0.8033E-01
1700.00	0.3552	4200.00	0.7997E-01
1725.00	0.3479	4225.00	0.7961E-01
1750.00	0.3407	4250.00	0.7926E-01
1775.00	0.3335	4275.00	0.7891E-01
1800.00	0.3263	4300.00	0.7856E-01
1825.00	0.3191	4325.00	0.7822E-01
1850.00	0.3120	4350.00	0.7788E-01
1875.00	0.3050	4375.00	0.7754E-01
1900.00	0.2979	4400.00	0.7720E-01
1925.00	0.2909	4425.00	0.7687E-01
1950.00	0.2840	4450.00	0.7654E-01
1975.00	0.2771	4475.00	0.7621E-01
2000.00	0.2703	4500.00	0.7589E-01
2025.00	0.2636	4525.00	0.7557E-01
2050.00	0.2569	4550.00	0.7525E-01
2075.00	0.2503	4575.00	0.7493E-01
2100.00	0.2437	4600.00	0.7462E-01
2125.00	0.2372	4625.00	0.7431E-01
2150.00	0.2308	4650.00	0.7400E-01

2175.00	0.2245	4675.00	0.7369E-01
2200.00	0.2183	4700.00	0.7339E-01
2225.00	0.2122	4725.00	0.7309E-01
2250.00	0.2061	4750.00	0.7279E-01
2275.00	0.2001	4775.00	0.7249E-01
2300.00	0.1942	4800.00	0.7220E-01
2325.00	0.1885	4825.00	0.7191E-01
2350.00	0.1828	4850.00	0.7162E-01
2375.00	0.1772	4875.00	0.7133E-01
2400.00	0.1717	4900.00	0.7105E-01
2425.00	0.1663	4925.00	0.7076E-01
2450.00	0.1610	4950.00	0.7048E-01
2475.00	0.1558	4975.00	0.7020E-01
2500.00	0.1507	5000.00	0.6993E-01

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	2.344	2.344	2.109	1.406	0.2344

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.995	1.995	1.795	1.197	0.1995

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
15:53:30

TITLE: SBS_ME-AMINES

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0302	g/s	0.240	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	4.637	75.0	SUM
20*	96.66	79.91	-22.77	6.26	4.687	75.0	SUM

30	99.22	88.96	-28.64	9.15	4.572	75.0	SUM
40	98.77	95.31	-33.65	11.76	4.246	75.0	SUM
50	95.31	98.77	-37.63	14.01	4.037	75.0	SUM
60	88.96	99.22	-40.47	15.84	3.808	75.0	SUM
70	79.90	96.66	-42.08	17.19	3.467	75.0	SPR
80	68.42	91.17	-42.41	18.01	2.971	50.0	SUM
90	54.86	82.90	-41.45	18.29	2.836	75.0	SUM
100	68.42	91.17	-48.76	18.01	3.282	75.0	SUM
110	79.91	96.66	-54.59	17.19	2.613	42.7	SPR
120	88.96	99.22	-58.76	15.84	2.967	42.7	SPR
130	95.31	98.77	-61.14	14.01	3.175	42.7	SPR
140	98.77	95.31	-61.67	11.76	3.412	42.7	SPR
150	99.22	88.96	-60.32	9.14	2.922	42.7	AUT
160	96.66	79.90	-57.14	6.26	1.691	42.7	AUT
170	91.17	68.42	-52.22	3.18	1.581	350.0	WIN
180	82.90	54.86	-45.72	0.00	1.565	375.0	SUM
190	91.17	68.42	-52.22	-3.18	1.581	350.0	WIN
200	96.66	79.91	-57.14	-6.26	1.691	42.7	AUT
210	99.22	88.96	-60.32	-9.15	2.922	42.7	AUT
220	98.77	95.31	-61.67	-11.76	3.412	42.7	SPR
230	95.31	98.77	-61.14	-14.01	3.175	42.7	SPR
240	88.96	99.22	-58.76	-15.84	2.967	42.7	SPR
250	79.90	96.66	-54.59	-17.19	2.613	42.7	SPR
260	68.42	91.17	-48.76	-18.01	3.282	75.0	SUM
270	54.86	82.90	-41.45	-18.29	2.836	75.0	SUM
280	68.42	91.17	-42.41	-18.01	2.971	50.0	SUM
290	79.91	96.66	-42.08	-17.19	3.467	75.0	SPR
300	88.96	99.22	-40.47	-15.84	3.808	75.0	SUM
310	95.31	98.77	-37.63	-14.01	4.037	75.0	SUM
320	98.77	95.31	-33.65	-11.76	4.246	75.0	SUM
330	99.22	88.96	-28.64	-9.14	4.573	75.0	SUM
340	96.66	79.90	-22.77	-6.26	4.687	75.0	SUM
350	91.17	68.42	-16.20	-3.18	4.637	75.0	SUM
360	82.90	54.86	-9.14	0.00	4.157	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	3.990	2525.00	0.2914
50.00	4.487	2550.00	0.2817
75.00	4.687	2575.00	0.2721
100.00	4.573	2600.00	0.2628
125.00	2.046	2625.00	0.2536
150.00	2.057	2650.00	0.2447
175.00	2.049	2675.00	0.2360
200.00	2.029	2700.00	0.2275
225.00	1.997	2725.00	0.2192
250.00	1.957	2750.00	0.2165
275.00	1.913	2775.00	0.2152
300.00	1.866	2800.00	0.2139
325.00	1.819	2825.00	0.2127
350.00	1.771	2850.00	0.2114
375.00	1.737	2875.00	0.2102
400.00	1.705	2900.00	0.2090
425.00	1.672	2925.00	0.2078
450.00	1.638	2950.00	0.2067
475.00	1.603	2975.00	0.2055
500.00	1.568	3000.00	0.2043
525.00	1.536	3025.00	0.2032
550.00	1.506	3050.00	0.2021
575.00	1.479	3075.00	0.2010
600.00	1.453	3100.00	0.1999
625.00	1.427	3125.00	0.1988
650.00	1.402	3150.00	0.1977
675.00	1.378	3175.00	0.1966
700.00	1.355	3200.00	0.1955
725.00	1.332	3225.00	0.1945
750.00	1.310	3250.00	0.1934
775.00	1.289	3275.00	0.1924
800.00	1.269	3300.00	0.1913
825.00	1.249	3325.00	0.1903
850.00	1.230	3350.00	0.1893
875.00	1.211	3375.00	0.1883
900.00	1.192	3400.00	0.1873

925.00	1.172	3425.00	0.1863
950.00	1.153	3450.00	0.1854
975.00	1.132	3475.00	0.1844
1000.00	1.114	3500.00	0.1834
1025.00	1.098	3525.00	0.1825
1050.00	1.082	3550.00	0.1815
1075.00	1.066	3575.00	0.1806
1100.00	1.053	3600.00	0.1797
1125.00	1.039	3625.00	0.1788
1150.00	1.026	3650.00	0.1779
1175.00	1.012	3675.00	0.1770
1200.00	0.9981	3700.00	0.1761
1225.00	0.9842	3725.00	0.1752
1250.00	0.9703	3750.00	0.1743
1275.00	0.9562	3775.00	0.1735
1300.00	0.9421	3800.00	0.1726
1325.00	0.9279	3825.00	0.1718
1350.00	0.9137	3850.00	0.1709
1375.00	0.8994	3875.00	0.1701
1400.00	0.8850	3900.00	0.1693
1425.00	0.8706	3925.00	0.1684
1450.00	0.8561	3950.00	0.1676
1475.00	0.8416	3975.00	0.1668
1500.00	0.8270	4000.00	0.1660
1525.00	0.8125	4025.00	0.1652
1550.00	0.7979	4050.00	0.1645
1575.00	0.7833	4075.00	0.1637
1600.00	0.7687	4100.00	0.1629
1625.00	0.7541	4125.00	0.1622
1650.00	0.7395	4150.00	0.1614
1675.00	0.7249	4175.00	0.1607
1700.00	0.7104	4200.00	0.1599
1725.00	0.6958	4225.00	0.1592
1750.00	0.6814	4250.00	0.1585
1775.00	0.6669	4275.00	0.1578
1800.00	0.6526	4300.00	0.1571
1825.00	0.6383	4325.00	0.1564
1850.00	0.6241	4350.00	0.1558
1875.00	0.6099	4375.00	0.1551
1900.00	0.5959	4400.00	0.1544
1925.00	0.5819	4425.00	0.1537
1950.00	0.5680	4450.00	0.1531
1975.00	0.5543	4475.00	0.1524
2000.00	0.5407	4500.00	0.1518
2025.00	0.5271	4525.00	0.1511
2050.00	0.5138	4550.00	0.1505
2075.00	0.5005	4575.00	0.1499
2100.00	0.4874	4600.00	0.1492
2125.00	0.4745	4625.00	0.1486
2150.00	0.4617	4650.00	0.1480

2175.00	0.4491	4675.00	0.1474
2200.00	0.4366	4700.00	0.1468
2225.00	0.4243	4725.00	0.1462
2250.00	0.4122	4750.00	0.1456
2275.00	0.4002	4775.00	0.1450
2300.00	0.3885	4800.00	0.1444
2325.00	0.3769	4825.00	0.1438
2350.00	0.3655	4850.00	0.1432
2375.00	0.3543	4875.00	0.1427
2400.00	0.3433	4900.00	0.1421
2425.00	0.3326	4925.00	0.1415
2450.00	0.3220	4950.00	0.1410
2475.00	0.3116	4975.00	0.1404
2500.00	0.3014	5000.00	0.1399

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	4.687	4.687	4.218	2.812	0.4687

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	3.990	3.990	3.591	2.394	0.3990

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
16:27:20

TITLE: SBS_HCL

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0139	g/s	0.110	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	2.125	75.0	SUM
20*	96.66	79.91	-22.77	6.26	2.148	75.0	SUM

30	99.22	88.96	-28.64	9.15	2.096	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.946	75.0	SUM
50	95.31	98.77	-37.63	14.01	1.851	75.0	SUM
60	88.96	99.22	-40.47	15.84	1.745	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.589	75.0	SPR
80	68.42	91.17	-42.41	18.01	1.362	50.0	SUM
90	54.86	82.90	-41.45	18.29	1.300	75.0	SUM
100	68.42	91.17	-48.76	18.01	1.504	75.0	SUM
110	79.91	96.66	-54.59	17.19	1.198	42.7	SPR
120	88.96	99.22	-58.76	15.84	1.360	42.7	SPR
130	95.31	98.77	-61.14	14.01	1.455	42.7	SPR
140	98.77	95.31	-61.67	11.76	1.564	42.7	SPR
150	99.22	88.96	-60.32	9.14	1.339	42.7	AUT
160	96.66	79.90	-57.14	6.26	0.7749	42.7	AUT
170	91.17	68.42	-52.22	3.18	0.7246	350.0	WIN
180	82.90	54.86	-45.72	0.00	0.7175	375.0	SUM
190	91.17	68.42	-52.22	-3.18	0.7246	350.0	WIN
200	96.66	79.91	-57.14	-6.26	0.7752	42.7	AUT
210	99.22	88.96	-60.32	-9.15	1.339	42.7	AUT
220	98.77	95.31	-61.67	-11.76	1.564	42.7	SPR
230	95.31	98.77	-61.14	-14.01	1.455	42.7	SPR
240	88.96	99.22	-58.76	-15.84	1.360	42.7	SPR
250	79.90	96.66	-54.59	-17.19	1.197	42.7	SPR
260	68.42	91.17	-48.76	-18.01	1.504	75.0	SUM
270	54.86	82.90	-41.45	-18.29	1.300	75.0	SUM
280	68.42	91.17	-42.41	-18.01	1.362	50.0	SUM
290	79.91	96.66	-42.08	-17.19	1.589	75.0	SPR
300	88.96	99.22	-40.47	-15.84	1.745	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.851	75.0	SUM
320	98.77	95.31	-33.65	-11.76	1.946	75.0	SUM
330	99.22	88.96	-28.64	-9.14	2.096	75.0	SUM
340	96.66	79.90	-22.77	-6.26	2.148	75.0	SUM
350	91.17	68.42	-16.20	-3.18	2.125	75.0	SUM
360	82.90	54.86	-9.14	0.00	1.905	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	1.829	2525.00	0.1336
50.00	2.056	2550.00	0.1291
75.00	2.148	2575.00	0.1247
100.00	2.096	2600.00	0.1204
125.00	0.9376	2625.00	0.1162
150.00	0.9426	2650.00	0.1122
175.00	0.9393	2675.00	0.1082
200.00	0.9299	2700.00	0.1043
225.00	0.9151	2725.00	0.1005
250.00	0.8969	2750.00	0.9924E-01
275.00	0.8767	2775.00	0.9864E-01
300.00	0.8555	2800.00	0.9806E-01
325.00	0.8338	2825.00	0.9747E-01
350.00	0.8119	2850.00	0.9690E-01
375.00	0.7960	2875.00	0.9633E-01
400.00	0.7816	2900.00	0.9579E-01
425.00	0.7664	2925.00	0.9525E-01
450.00	0.7506	2950.00	0.9471E-01
475.00	0.7346	2975.00	0.9418E-01
500.00	0.7188	3000.00	0.9366E-01
525.00	0.7039	3025.00	0.9314E-01
550.00	0.6905	3050.00	0.9262E-01
575.00	0.6779	3075.00	0.9211E-01
600.00	0.6657	3100.00	0.9160E-01
625.00	0.6540	3125.00	0.9110E-01
650.00	0.6426	3150.00	0.9060E-01
675.00	0.6315	3175.00	0.9010E-01
700.00	0.6208	3200.00	0.8961E-01
725.00	0.6105	3225.00	0.8913E-01
750.00	0.6005	3250.00	0.8865E-01
775.00	0.5908	3275.00	0.8817E-01
800.00	0.5815	3300.00	0.8770E-01
825.00	0.5724	3325.00	0.8723E-01
850.00	0.5637	3350.00	0.8677E-01
875.00	0.5551	3375.00	0.8631E-01
900.00	0.5463	3400.00	0.8585E-01

925.00	0.5374	3425.00	0.8540E-01
950.00	0.5283	3450.00	0.8495E-01
975.00	0.5190	3475.00	0.8451E-01
1000.00	0.5104	3500.00	0.8407E-01
1025.00	0.5032	3525.00	0.8364E-01
1050.00	0.4957	3550.00	0.8321E-01
1075.00	0.4888	3575.00	0.8278E-01
1100.00	0.4825	3600.00	0.8236E-01
1125.00	0.4763	3625.00	0.8194E-01
1150.00	0.4700	3650.00	0.8152E-01
1175.00	0.4638	3675.00	0.8111E-01
1200.00	0.4574	3700.00	0.8070E-01
1225.00	0.4511	3725.00	0.8030E-01
1250.00	0.4447	3750.00	0.7990E-01
1275.00	0.4383	3775.00	0.7950E-01
1300.00	0.4318	3800.00	0.7911E-01
1325.00	0.4253	3825.00	0.7872E-01
1350.00	0.4188	3850.00	0.7834E-01
1375.00	0.4122	3875.00	0.7795E-01
1400.00	0.4056	3900.00	0.7758E-01
1425.00	0.3990	3925.00	0.7720E-01
1450.00	0.3924	3950.00	0.7683E-01
1475.00	0.3857	3975.00	0.7646E-01
1500.00	0.3791	4000.00	0.7610E-01
1525.00	0.3724	4025.00	0.7573E-01
1550.00	0.3657	4050.00	0.7538E-01
1575.00	0.3590	4075.00	0.7502E-01
1600.00	0.3523	4100.00	0.7467E-01
1625.00	0.3456	4125.00	0.7432E-01
1650.00	0.3389	4150.00	0.7397E-01
1675.00	0.3322	4175.00	0.7363E-01
1700.00	0.3256	4200.00	0.7331E-01
1725.00	0.3189	4225.00	0.7298E-01
1750.00	0.3123	4250.00	0.7266E-01
1775.00	0.3057	4275.00	0.7233E-01
1800.00	0.2991	4300.00	0.7202E-01
1825.00	0.2925	4325.00	0.7170E-01
1850.00	0.2860	4350.00	0.7139E-01
1875.00	0.2795	4375.00	0.7108E-01
1900.00	0.2731	4400.00	0.7077E-01
1925.00	0.2667	4425.00	0.7047E-01
1950.00	0.2603	4450.00	0.7016E-01
1975.00	0.2540	4475.00	0.6986E-01
2000.00	0.2478	4500.00	0.6957E-01
2025.00	0.2416	4525.00	0.6927E-01
2050.00	0.2355	4550.00	0.6898E-01
2075.00	0.2294	4575.00	0.6869E-01
2100.00	0.2234	4600.00	0.6840E-01
2125.00	0.2175	4625.00	0.6811E-01
2150.00	0.2116	4650.00	0.6783E-01

2175.00	0.2058	4675.00	0.6755E-01
2200.00	0.2001	4700.00	0.6727E-01
2225.00	0.1945	4725.00	0.6700E-01
2250.00	0.1889	4750.00	0.6672E-01
2275.00	0.1834	4775.00	0.6645E-01
2300.00	0.1781	4800.00	0.6618E-01
2325.00	0.1727	4825.00	0.6591E-01
2350.00	0.1675	4850.00	0.6565E-01
2375.00	0.1624	4875.00	0.6539E-01
2400.00	0.1574	4900.00	0.6512E-01
2425.00	0.1524	4925.00	0.6487E-01
2450.00	0.1476	4950.00	0.6461E-01
2475.00	0.1428	4975.00	0.6435E-01
2500.00	0.1381	5000.00	0.6410E-01

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	2.148	2.148	1.933	1.289	0.2148

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.829	1.829	1.646	1.097	0.1829

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

AERSCREEN 21112 / AERMOD 21112 01/11/22
16:41:56

TITLE: SBS_ACETIC

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.882E-02	g/s	0.700E-01	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0 feet
MAX BUILDING DIMENSION:	82.9	meters	272.0 feet
MIN BUILDING DIMENSION:	54.9	meters	180.0 feet
BUILDING ORIENTATION TO NORTH:	90.	degrees	
STACK DIRECTION FROM CENTER:	180.	degrees	
STACK DISTANCE FROM CENTER:	18.3	meters	60.0 feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	1.352	75.0	SUM
20*	96.66	79.91	-22.77	6.26	1.367	75.0	SUM

30	99.22	88.96	-28.64	9.15	1.334	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.238	75.0	SUM
50	95.31	98.77	-37.63	14.01	1.178	75.0	SUM
60	88.96	99.22	-40.47	15.84	1.111	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.011	75.0	SPR
80	68.42	91.17	-42.41	18.01	0.8664	50.0	SUM
90	54.86	82.90	-41.45	18.29	0.8271	75.0	SUM
100	68.42	91.17	-48.76	18.01	0.9574	75.0	SUM
110	79.91	96.66	-54.59	17.19	0.7621	42.7	SPR
120	88.96	99.22	-58.76	15.84	0.8654	42.7	SPR
130	95.31	98.77	-61.14	14.01	0.9259	42.7	SPR
140	98.77	95.31	-61.67	11.76	0.9952	42.7	SPR
150	99.22	88.96	-60.32	9.14	0.8522	42.7	AUT
160	96.66	79.90	-57.14	6.26	0.4931	42.7	AUT
170	91.17	68.42	-52.22	3.18	0.4611	350.0	WIN
180	82.90	54.86	-45.72	0.00	0.4566	375.0	SUM
190	91.17	68.42	-52.22	-3.18	0.4611	350.0	WIN
200	96.66	79.91	-57.14	-6.26	0.4933	42.7	AUT
210	99.22	88.96	-60.32	-9.15	0.8521	42.7	AUT
220	98.77	95.31	-61.67	-11.76	0.9952	42.7	SPR
230	95.31	98.77	-61.14	-14.01	0.9259	42.7	SPR
240	88.96	99.22	-58.76	-15.84	0.8654	42.7	SPR
250	79.90	96.66	-54.59	-17.19	0.7620	42.7	SPR
260	68.42	91.17	-48.76	-18.01	0.9574	75.0	SUM
270	54.86	82.90	-41.45	-18.29	0.8271	75.0	SUM
280	68.42	91.17	-42.41	-18.01	0.8664	50.0	SUM
290	79.91	96.66	-42.08	-17.19	1.011	75.0	SPR
300	88.96	99.22	-40.47	-15.84	1.111	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.178	75.0	SUM
320	98.77	95.31	-33.65	-11.76	1.238	75.0	SUM
330	99.22	88.96	-28.64	-9.14	1.334	75.0	SUM
340	96.66	79.90	-22.77	-6.26	1.367	75.0	SUM
350	91.17	68.42	-16.20	-3.18	1.352	75.0	SUM
360	82.90	54.86	-9.14	0.00	1.212	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	1.164	2525.00	0.8500E-01
50.00	1.309	2550.00	0.8215E-01
75.00	1.367	2575.00	0.7936E-01
100.00	1.334	2600.00	0.7664E-01
125.00	0.5967	2625.00	0.7398E-01
150.00	0.5998	2650.00	0.7137E-01
175.00	0.5977	2675.00	0.6883E-01
200.00	0.5918	2700.00	0.6635E-01
225.00	0.5823	2725.00	0.6393E-01
250.00	0.5708	2750.00	0.6315E-01
275.00	0.5579	2775.00	0.6277E-01
300.00	0.5444	2800.00	0.6240E-01
325.00	0.5306	2825.00	0.6203E-01
350.00	0.5167	2850.00	0.6166E-01
375.00	0.5065	2875.00	0.6130E-01
400.00	0.4974	2900.00	0.6096E-01
425.00	0.4877	2925.00	0.6061E-01
450.00	0.4777	2950.00	0.6027E-01
475.00	0.4675	2975.00	0.5994E-01
500.00	0.4574	3000.00	0.5960E-01
525.00	0.4480	3025.00	0.5927E-01
550.00	0.4394	3050.00	0.5894E-01
575.00	0.4314	3075.00	0.5861E-01
600.00	0.4237	3100.00	0.5829E-01
625.00	0.4162	3125.00	0.5797E-01
650.00	0.4089	3150.00	0.5765E-01
675.00	0.4019	3175.00	0.5734E-01
700.00	0.3951	3200.00	0.5703E-01
725.00	0.3885	3225.00	0.5672E-01
750.00	0.3821	3250.00	0.5641E-01
775.00	0.3760	3275.00	0.5611E-01
800.00	0.3700	3300.00	0.5581E-01
825.00	0.3643	3325.00	0.5551E-01
850.00	0.3587	3350.00	0.5522E-01
875.00	0.3532	3375.00	0.5492E-01
900.00	0.3476	3400.00	0.5463E-01

925.00	0.3420	3425.00	0.5435E-01
950.00	0.3362	3450.00	0.5406E-01
975.00	0.3303	3475.00	0.5378E-01
1000.00	0.3248	3500.00	0.5350E-01
1025.00	0.3202	3525.00	0.5322E-01
1050.00	0.3155	3550.00	0.5295E-01
1075.00	0.3111	3575.00	0.5268E-01
1100.00	0.3070	3600.00	0.5241E-01
1125.00	0.3031	3625.00	0.5214E-01
1150.00	0.2991	3650.00	0.5188E-01
1175.00	0.2951	3675.00	0.5162E-01
1200.00	0.2911	3700.00	0.5136E-01
1225.00	0.2871	3725.00	0.5110E-01
1250.00	0.2830	3750.00	0.5085E-01
1275.00	0.2789	3775.00	0.5059E-01
1300.00	0.2748	3800.00	0.5034E-01
1325.00	0.2706	3825.00	0.5010E-01
1350.00	0.2665	3850.00	0.4985E-01
1375.00	0.2623	3875.00	0.4961E-01
1400.00	0.2581	3900.00	0.4937E-01
1425.00	0.2539	3925.00	0.4913E-01
1450.00	0.2497	3950.00	0.4889E-01
1475.00	0.2455	3975.00	0.4866E-01
1500.00	0.2412	4000.00	0.4842E-01
1525.00	0.2370	4025.00	0.4819E-01
1550.00	0.2327	4050.00	0.4797E-01
1575.00	0.2285	4075.00	0.4774E-01
1600.00	0.2242	4100.00	0.4752E-01
1625.00	0.2199	4125.00	0.4729E-01
1650.00	0.2157	4150.00	0.4707E-01
1675.00	0.2114	4175.00	0.4686E-01
1700.00	0.2072	4200.00	0.4665E-01
1725.00	0.2030	4225.00	0.4644E-01
1750.00	0.1987	4250.00	0.4624E-01
1775.00	0.1945	4275.00	0.4603E-01
1800.00	0.1903	4300.00	0.4583E-01
1825.00	0.1862	4325.00	0.4563E-01
1850.00	0.1820	4350.00	0.4543E-01
1875.00	0.1779	4375.00	0.4523E-01
1900.00	0.1738	4400.00	0.4504E-01
1925.00	0.1697	4425.00	0.4484E-01
1950.00	0.1657	4450.00	0.4465E-01
1975.00	0.1617	4475.00	0.4446E-01
2000.00	0.1577	4500.00	0.4427E-01
2025.00	0.1538	4525.00	0.4408E-01
2050.00	0.1499	4550.00	0.4390E-01
2075.00	0.1460	4575.00	0.4371E-01
2100.00	0.1422	4600.00	0.4353E-01
2125.00	0.1384	4625.00	0.4335E-01
2150.00	0.1347	4650.00	0.4317E-01

2175.00	0.1310	4675.00	0.4299E-01
2200.00	0.1273	4700.00	0.4281E-01
2225.00	0.1238	4725.00	0.4263E-01
2250.00	0.1202	4750.00	0.4246E-01
2275.00	0.1167	4775.00	0.4229E-01
2300.00	0.1133	4800.00	0.4212E-01
2325.00	0.1099	4825.00	0.4195E-01
2350.00	0.1066	4850.00	0.4178E-01
2375.00	0.1033	4875.00	0.4161E-01
2400.00	0.1001	4900.00	0.4144E-01
2425.00	0.9700E-01	4925.00	0.4128E-01
2450.00	0.9391E-01	4950.00	0.4111E-01
2475.00	0.9088E-01	4975.00	0.4095E-01
2500.00	0.8791E-01	5000.00	0.4079E-01

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	1.367	1.367	1.230	0.8203	0.1367

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.164	1.164	1.047	0.6982	0.1164

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees

TITLE: SBS_DISULFIDES

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0151	g/s	0.120	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	91.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	90.47	67.16	-15.57	3.18	2.297	75.0	SUM
20*	96.25	78.87	-22.25	6.26	2.421	75.0	SUM

30	99.11	88.18	-28.26	9.15	2.279	75.0	SUM
40	98.96	94.82	-33.40	11.76	2.114	75.0	SUM
50	95.80	98.57	-37.53	14.01	2.095	75.0	SUM
60	89.73	99.33	-40.52	15.84	1.916	75.0	SUM
70	80.93	97.07	-42.28	17.19	1.752	75.0	SPR
80	69.67	91.86	-42.76	18.01	1.505	50.0	SPR
90	56.30	83.86	-41.93	18.29	1.514	75.0	SUM
100	67.16	90.47	-48.41	18.01	1.640	75.0	SUM
110	78.87	96.25	-54.38	17.18	1.288	42.7	SPR
120	88.18	99.11	-58.70	15.84	1.477	42.7	SPR
130	94.82	98.96	-61.24	14.01	1.584	42.7	SPR
140	98.57	95.80	-61.91	11.75	1.590	42.7	AUT
150	99.33	89.73	-60.70	9.14	1.628	42.7	SPR
160	97.07	80.93	-57.65	6.25	0.8575	42.7	AUT
170	91.86	69.67	-52.85	3.18	0.7926	350.0	WIN
180	83.86	56.30	-46.44	0.00	0.7831	375.0	SUM
190	90.47	67.16	-51.59	-3.18	0.7888	350.0	WIN
200	96.25	78.87	-56.62	-6.26	0.8038	350.0	WIN
210	99.11	88.18	-59.93	-9.15	1.336	42.7	SUM
220	98.96	94.82	-61.42	-11.76	1.703	42.7	WIN
230	95.80	98.57	-61.04	-14.01	1.590	42.7	SPR
240	89.73	99.33	-58.81	-15.84	1.491	42.7	SPR
250	80.93	97.07	-54.79	-17.19	1.326	42.7	SPR
260	69.67	91.86	-49.11	-18.01	1.246	50.0	SUM
270	56.30	83.86	-41.93	-18.29	1.514	75.0	SUM
280	67.16	90.47	-42.06	-18.01	1.456	50.0	SUM
290	78.87	96.25	-41.87	-17.18	1.713	75.0	SPR
300	88.18	99.11	-40.41	-15.84	1.941	75.0	SUM
310	94.82	98.96	-37.72	-14.01	2.010	75.0	SUM
320	98.57	95.80	-33.89	-11.75	2.129	75.0	SUM
330	99.33	89.73	-29.02	-9.14	2.232	75.0	SUM
340	97.07	80.93	-23.28	-6.25	2.357	75.0	SUM
350	91.86	69.67	-16.82	-3.18	2.352	75.0	SUM
360	83.86	56.30	-9.86	0.00	2.121	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	2.008	2525.00	0.1467
50.00	2.256	2550.00	0.1418
75.00	2.421	2575.00	0.1370
100.00	2.343	2600.00	0.1323
125.00	1.021	2625.00	0.1277
150.00	1.026	2650.00	0.1232
175.00	1.022	2675.00	0.1188
200.00	1.011	2700.00	0.1146
225.00	0.9957	2725.00	0.1104
250.00	0.9770	2750.00	0.1083
275.00	0.9564	2775.00	0.1076
300.00	0.9347	2800.00	0.1070
325.00	0.9126	2825.00	0.1063
350.00	0.8903	2850.00	0.1057
375.00	0.8751	2875.00	0.1051
400.00	0.8591	2900.00	0.1045
425.00	0.8423	2925.00	0.1039
450.00	0.8248	2950.00	0.1033
475.00	0.8071	2975.00	0.1027
500.00	0.7897	3000.00	0.1022
525.00	0.7734	3025.00	0.1016
550.00	0.7577	3050.00	0.1010
575.00	0.7426	3075.00	0.1005
600.00	0.7281	3100.00	0.9993E-01
625.00	0.7142	3125.00	0.9938E-01
650.00	0.7009	3150.00	0.9884E-01
675.00	0.6881	3175.00	0.9830E-01
700.00	0.6758	3200.00	0.9776E-01
725.00	0.6640	3225.00	0.9723E-01
750.00	0.6526	3250.00	0.9671E-01
775.00	0.6417	3275.00	0.9619E-01
800.00	0.6316	3300.00	0.9567E-01
825.00	0.6218	3325.00	0.9516E-01
850.00	0.6123	3350.00	0.9465E-01
875.00	0.6030	3375.00	0.9415E-01
900.00	0.5936	3400.00	0.9366E-01

925.00	0.5840	3425.00	0.9316E-01
950.00	0.5755	3450.00	0.9268E-01
975.00	0.5675	3475.00	0.9219E-01
1000.00	0.5596	3500.00	0.9172E-01
1025.00	0.5518	3525.00	0.9124E-01
1050.00	0.5444	3550.00	0.9077E-01
1075.00	0.5372	3575.00	0.9031E-01
1100.00	0.5303	3600.00	0.8984E-01
1125.00	0.5235	3625.00	0.8939E-01
1150.00	0.5166	3650.00	0.8893E-01
1175.00	0.5097	3675.00	0.8849E-01
1200.00	0.5028	3700.00	0.8804E-01
1225.00	0.4958	3725.00	0.8760E-01
1250.00	0.4888	3750.00	0.8716E-01
1275.00	0.4817	3775.00	0.8673E-01
1300.00	0.4746	3800.00	0.8630E-01
1325.00	0.4674	3825.00	0.8588E-01
1350.00	0.4602	3850.00	0.8546E-01
1375.00	0.4530	3875.00	0.8504E-01
1400.00	0.4458	3900.00	0.8463E-01
1425.00	0.4385	3925.00	0.8422E-01
1450.00	0.4312	3950.00	0.8381E-01
1475.00	0.4239	3975.00	0.8341E-01
1500.00	0.4166	4000.00	0.8301E-01
1525.00	0.4092	4025.00	0.8262E-01
1550.00	0.4018	4050.00	0.8223E-01
1575.00	0.3945	4075.00	0.8184E-01
1600.00	0.3871	4100.00	0.8146E-01
1625.00	0.3797	4125.00	0.8108E-01
1650.00	0.3724	4150.00	0.8070E-01
1675.00	0.3650	4175.00	0.8033E-01
1700.00	0.3577	4200.00	0.7997E-01
1725.00	0.3504	4225.00	0.7961E-01
1750.00	0.3431	4250.00	0.7926E-01
1775.00	0.3358	4275.00	0.7891E-01
1800.00	0.3285	4300.00	0.7856E-01
1825.00	0.3213	4325.00	0.7822E-01
1850.00	0.3142	4350.00	0.7788E-01
1875.00	0.3070	4375.00	0.7754E-01
1900.00	0.2999	4400.00	0.7720E-01
1925.00	0.2929	4425.00	0.7687E-01
1950.00	0.2859	4450.00	0.7654E-01
1975.00	0.2790	4475.00	0.7621E-01
2000.00	0.2721	4500.00	0.7589E-01
2025.00	0.2653	4525.00	0.7557E-01
2050.00	0.2585	4550.00	0.7525E-01
2075.00	0.2519	4575.00	0.7493E-01
2100.00	0.2453	4600.00	0.7462E-01
2125.00	0.2387	4625.00	0.7431E-01
2150.00	0.2323	4650.00	0.7400E-01

2175.00	0.2259	4675.00	0.7369E-01
2200.00	0.2196	4700.00	0.7339E-01
2225.00	0.2134	4725.00	0.7309E-01
2250.00	0.2073	4750.00	0.7279E-01
2275.00	0.2013	4775.00	0.7249E-01
2300.00	0.1954	4800.00	0.7220E-01
2325.00	0.1896	4825.00	0.7191E-01
2350.00	0.1838	4850.00	0.7162E-01
2375.00	0.1782	4875.00	0.7133E-01
2400.00	0.1727	4900.00	0.7105E-01
2425.00	0.1673	4925.00	0.7076E-01
2450.00	0.1620	4950.00	0.7048E-01
2475.00	0.1568	4975.00	0.7020E-01
2500.00	0.1517	5000.00	0.6993E-01

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	2.421	2.421	2.179	1.453	0.2421

DISTANCE FROM SOURCE 57.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	2.008	2.008	1.807	1.205	0.2008

DISTANCE FROM SOURCE 42.67 meters directed toward 350 degrees

TITLE: SBS_NAPHTHALENE

********** STACK PARAMETERS **********

SOURCE EMISSION RATE:	0.0920	g/s	0.730	lb/hr
STACK HEIGHT:	22.86	meters	75.00	feet
STACK INNER DIAMETER:	0.838	meters	33.00	inches
PLUME EXIT TEMPERATURE:	51.9	K above ambient	93.4	Deg F above ambient
PLUME EXIT VELOCITY:	27.737	m/s	91.00	ft/s
STACK AIR FLOW RATE:	32430	ACFM		
RURAL OR URBAN:	RURAL			
FLAGPOLE RECEPTOR HEIGHT:	1.52	meters	5.00	feet
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING HEIGHT:	15.2	meters	50.0	feet
MAX BUILDING DIMENSION:	82.9	meters	272.0	feet
MIN BUILDING DIMENSION:	54.9	meters	180.0	feet
BUILDING ORIENTATION TO NORTH:	90.	degrees		
STACK DIRECTION FROM CENTER:	180.	degrees		
STACK DISTANCE FROM CENTER:	18.3	meters	60.0	feet

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 43. meters - 5000. meters

FLOW SECTOR	BUILD WIDTH	BUILD LENGTH	XBADJ	YBADJ	MAX 1-HR CONC	DIST (m)	TEMPORAL PERIOD
10	91.17	68.42	-16.20	3.18	14.10	75.0	SUM
20*	96.66	79.91	-22.77	6.26	14.26	75.0	SUM

30	99.22	88.96	-28.64	9.15	13.91	75.0	SUM
40	98.77	95.31	-33.65	11.76	12.91	75.0	SUM
50	95.31	98.77	-37.63	14.01	12.28	75.0	SUM
60	88.96	99.22	-40.47	15.84	11.58	75.0	SUM
70	79.90	96.66	-42.08	17.19	10.55	75.0	SPR
80	68.42	91.17	-42.41	18.01	9.036	50.0	SUM
90	54.86	82.90	-41.45	18.29	8.626	75.0	SUM
100	68.42	91.17	-48.76	18.01	9.984	75.0	SUM
110	79.91	96.66	-54.59	17.19	7.947	42.7	SPR
120	88.96	99.22	-58.76	15.84	9.024	42.7	SPR
130	95.31	98.77	-61.14	14.01	9.656	42.7	SPR
140	98.77	95.31	-61.67	11.76	10.38	42.7	SPR
150	99.22	88.96	-60.32	9.14	8.887	42.7	AUT
160	96.66	79.90	-57.14	6.26	5.143	42.7	AUT
170	91.17	68.42	-52.22	3.18	4.808	350.0	WIN
180	82.90	54.86	-45.72	0.00	4.762	375.0	SUM
190	91.17	68.42	-52.22	-3.18	4.808	350.0	WIN
200	96.66	79.91	-57.14	-6.26	5.144	42.7	AUT
210	99.22	88.96	-60.32	-9.15	8.886	42.7	AUT
220	98.77	95.31	-61.67	-11.76	10.38	42.7	SPR
230	95.31	98.77	-61.14	-14.01	9.656	42.7	SPR
240	88.96	99.22	-58.76	-15.84	9.024	42.7	SPR
250	79.90	96.66	-54.59	-17.19	7.947	42.7	SPR
260	68.42	91.17	-48.76	-18.01	9.984	75.0	SUM
270	54.86	82.90	-41.45	-18.29	8.626	75.0	SUM
280	68.42	91.17	-42.41	-18.01	9.036	50.0	SUM
290	79.91	96.66	-42.08	-17.19	10.55	75.0	SPR
300	88.96	99.22	-40.47	-15.84	11.58	75.0	SUM
310	95.31	98.77	-37.63	-14.01	12.28	75.0	SUM
320	98.77	95.31	-33.65	-11.76	12.91	75.0	SUM
330	99.22	88.96	-28.64	-9.14	13.91	75.0	SUM
340	96.66	79.90	-22.77	-6.26	14.26	75.0	SUM
350	91.17	68.42	-16.20	-3.18	14.10	75.0	SUM
360	82.90	54.86	-9.14	0.00	12.64	50.0	SUM

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Deciduous Forest
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.12
BOWEN RATIO: 0.30
ROUGHNESS LENGTH: 1.300 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):   22.9 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	03	01	1	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-14.02	0.147	-9.000	0.020	-999.	130.	21.7	1.300	0.30	0.12	1.50

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   2.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 22.9 meters

********** AERSCREEN AUTOMATED DISTANCES **********

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
42.67	12.14	2525.00	0.8864
50.00	13.65	2550.00	0.8567
75.00	14.26	2575.00	0.8277
100.00	13.91	2600.00	0.7992
125.00	6.222	2625.00	0.7715
150.00	6.255	2650.00	0.7443
175.00	6.233	2675.00	0.7178
200.00	6.171	2700.00	0.6920
225.00	6.073	2725.00	0.6667
250.00	5.952	2750.00	0.6586
275.00	5.818	2775.00	0.6546
300.00	5.677	2800.00	0.6507
325.00	5.533	2825.00	0.6469
350.00	5.388	2850.00	0.6430
375.00	5.283	2875.00	0.6393
400.00	5.187	2900.00	0.6357
425.00	5.086	2925.00	0.6321
450.00	4.981	2950.00	0.6286
475.00	4.875	2975.00	0.6250
500.00	4.770	3000.00	0.6216
525.00	4.672	3025.00	0.6181
550.00	4.582	3050.00	0.6147
575.00	4.499	3075.00	0.6113
600.00	4.418	3100.00	0.6079
625.00	4.340	3125.00	0.6046
650.00	4.264	3150.00	0.6012
675.00	4.191	3175.00	0.5980
700.00	4.120	3200.00	0.5947
725.00	4.052	3225.00	0.5915
750.00	3.985	3250.00	0.5883
775.00	3.921	3275.00	0.5851
800.00	3.859	3300.00	0.5820
825.00	3.799	3325.00	0.5789
850.00	3.741	3350.00	0.5758
875.00	3.684	3375.00	0.5728
900.00	3.625	3400.00	0.5697

925.00	3.566	3425.00	0.5668
950.00	3.506	3450.00	0.5638
975.00	3.445	3475.00	0.5608
1000.00	3.387	3500.00	0.5579
1025.00	3.339	3525.00	0.5550
1050.00	3.290	3550.00	0.5522
1075.00	3.244	3575.00	0.5494
1100.00	3.202	3600.00	0.5465
1125.00	3.161	3625.00	0.5438
1150.00	3.119	3650.00	0.5410
1175.00	3.078	3675.00	0.5383
1200.00	3.036	3700.00	0.5356
1225.00	2.994	3725.00	0.5329
1250.00	2.951	3750.00	0.5302
1275.00	2.908	3775.00	0.5276
1300.00	2.866	3800.00	0.5250
1325.00	2.822	3825.00	0.5224
1350.00	2.779	3850.00	0.5199
1375.00	2.736	3875.00	0.5173
1400.00	2.692	3900.00	0.5148
1425.00	2.648	3925.00	0.5123
1450.00	2.604	3950.00	0.5099
1475.00	2.560	3975.00	0.5074
1500.00	2.516	4000.00	0.5050
1525.00	2.471	4025.00	0.5026
1550.00	2.427	4050.00	0.5002
1575.00	2.382	4075.00	0.4979
1600.00	2.338	4100.00	0.4955
1625.00	2.294	4125.00	0.4932
1650.00	2.249	4150.00	0.4909
1675.00	2.205	4175.00	0.4887
1700.00	2.161	4200.00	0.4865
1725.00	2.117	4225.00	0.4843
1750.00	2.073	4250.00	0.4822
1775.00	2.029	4275.00	0.4800
1800.00	1.985	4300.00	0.4779
1825.00	1.941	4325.00	0.4758
1850.00	1.898	4350.00	0.4738
1875.00	1.855	4375.00	0.4717
1900.00	1.812	4400.00	0.4697
1925.00	1.770	4425.00	0.4676
1950.00	1.728	4450.00	0.4656
1975.00	1.686	4475.00	0.4636
2000.00	1.644	4500.00	0.4617
2025.00	1.603	4525.00	0.4597
2050.00	1.563	4550.00	0.4578
2075.00	1.522	4575.00	0.4558
2100.00	1.483	4600.00	0.4539
2125.00	1.443	4625.00	0.4520
2150.00	1.404	4650.00	0.4502

2175.00	1.366	4675.00	0.4483
2200.00	1.328	4700.00	0.4464
2225.00	1.291	4725.00	0.4446
2250.00	1.254	4750.00	0.4428
2275.00	1.217	4775.00	0.4410
2300.00	1.182	4800.00	0.4392
2325.00	1.146	4825.00	0.4374
2350.00	1.112	4850.00	0.4357
2375.00	1.078	4875.00	0.4339
2400.00	1.044	4900.00	0.4322
2425.00	1.012	4925.00	0.4305
2450.00	0.9793	4950.00	0.4288
2475.00	0.9477	4975.00	0.4271
2500.00	0.9168	5000.00	0.4254

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	14.26	14.26	12.83	8.554	1.426

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	12.14	12.14	10.92	7.282	1.214

DISTANCE FROM SOURCE 42.67 meters directed toward 10 degrees