Sterling Environmental Engineering, P.C.

APPLICATION FOR
AIR FACILITY PERMIT

FOR

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

Prepared For:

Saratoga Biochar Solutions, LLC.
26F Congress Street #346
Saratoga Springs, NY 12866

Prepared By:

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

October 29, 2021

"Serving our clients and the environment since 1993"

APPLICATION FOR
AIR FACILITY PERMIT

FOR

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

Table of Contents

Tables

Figures

Attachments

S:\Sterling\Projects\2020 Projects\Saratoga Biochar Solutions - 2020-20\Reports & Work Plans\Air Pemit Application\2021-10-29_Saratoga Biochar_Moreau_Air Facility Permit.docx

1.0 INTRODUCTION

This narrative and attached supporting documentation provides 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 up to 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 is used as a supplemental minor feedstock component for moisture control. 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 and Biosolids Storage Area, and a Carbon Manufacturing Area. Attached to the Carbon Manufacturing Building is an outdoor and covered Wood Feedstock Receiving and Storage 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. 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 garage doors and tip the biosolids into a recessed reception pit. The reception pit is equipped with a scalping grate 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.

2. Process Input and Biosolids Storage Area – Following biosolids reception, screw conveyors located at the bottom of the reception pit transfer the biosolids across the receiving pit into the Process Input and Storage Area. The receiving pits are sized to provide a combined three-day storage capacity in accordance with NYSDEC regulations (6 NYCRR 362-1.5(b)(3)). 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 and Storage Area – Adjacent to the Biosolids Receiving Area is a covered outdoor receiving and storage area for wood waste feedstock. Wood is used as a blending agent with biosolids to control moisture 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. Received wood will be stored in bunkers and loaded into the process input using a bucket loader or similar piece of mobile equipment. To ensure consistent particle size, all wood waste material is passed through a 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 in a dedicated grinder building.

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 through milling 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. Exhaust from the kiln is ducted to the dryer for thermal efficiency. Under a contingency situation for surplus system heat, the kiln exhaust is vented to the atmosphere in as an uncontrolled release. Additional detail about process emissions and air treatment is included in the supporting documents for the State Facility Air Permit application.

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 for storage and offsite shipment.

5. Carbon Storage and Loading Area – Manufactured carbon fertilizer is moved by conveyor to the Carbon Storage and Loading Area for temporary storage in vertical silos. Each process line will produce up to approximately 8,322 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 25,000 tons of carbon fertilizer per year. Carbon fertilizer will be loaded directly into delivery trucks or into approximately one and two cubic yard sacks.

6. Emissions Air Treatment – Particulate, ammonia, sulfur dioxide, and odor emissions from the carbon fertilizer manufacturing process 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 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). The air treatment system and associated process emissions are subject to a State Facility Air Permit. Additional details regarding emissions and air treatment are provided in the air permit application narrative.

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:

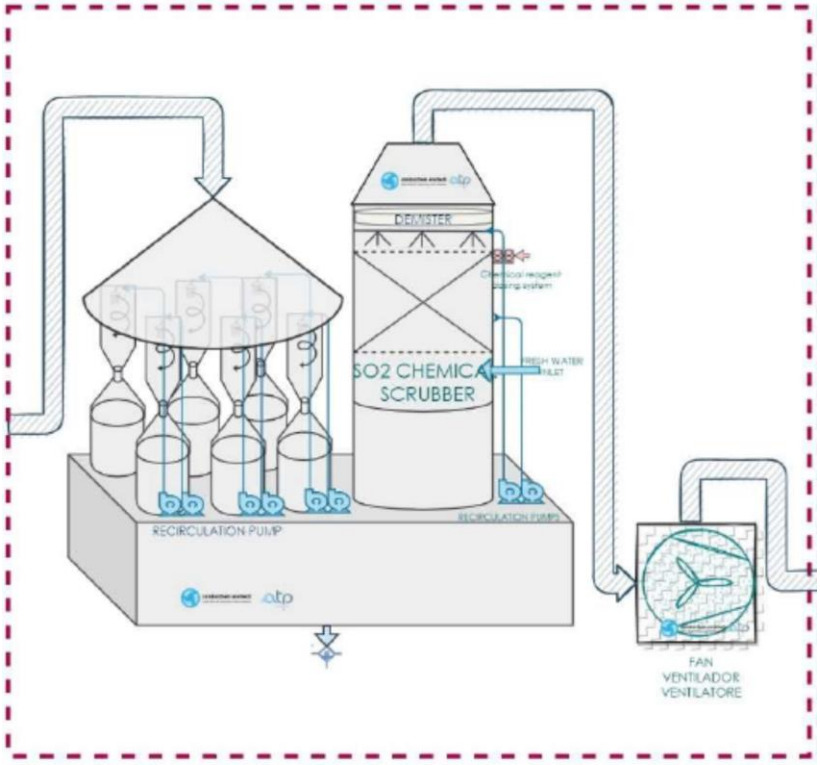
- Emission Unit: (1) U-00SBS – Carbon fertilizer manufacturing facility
- Process: (1) CMF – Carbon fertilizer manufacturing
- Emission Points: (1) SBS01 – Stack from first process line
  (2) SBS02 – Stack from second process line
  (3) SBS03 – Stack from third process line
- Emission Source: (1) BIOSD – 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:

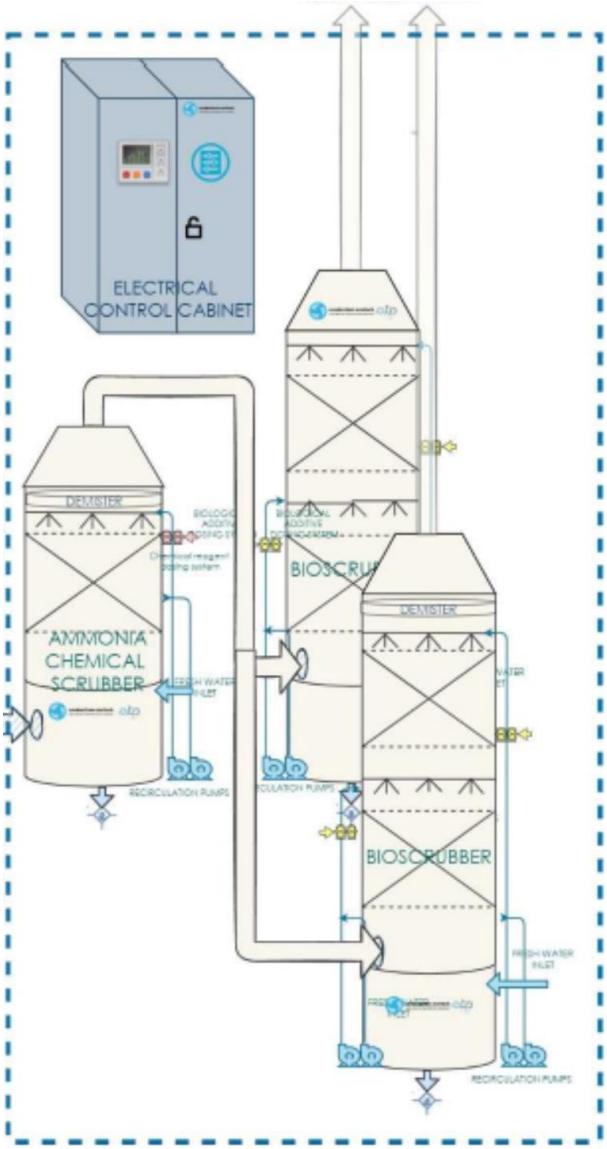
1. Dry cyclones that are integral to the process dryer perform bulk particulate removal (not pictured).
2. Cooling of the air stream with the venturi cyclone. The venturi stage performs pre-treatment conditioning of the air stream with cooling, and fine particulate removal through the strong turbulence 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

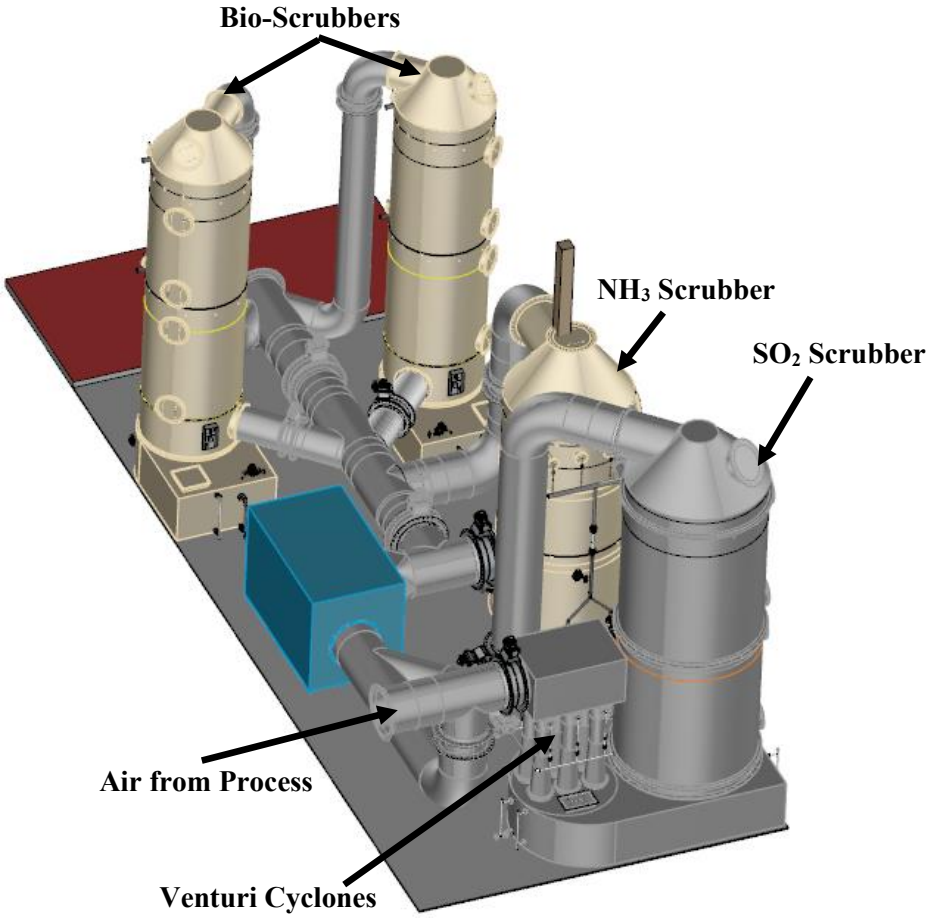
Stage 2 – Main Deodorizing System:

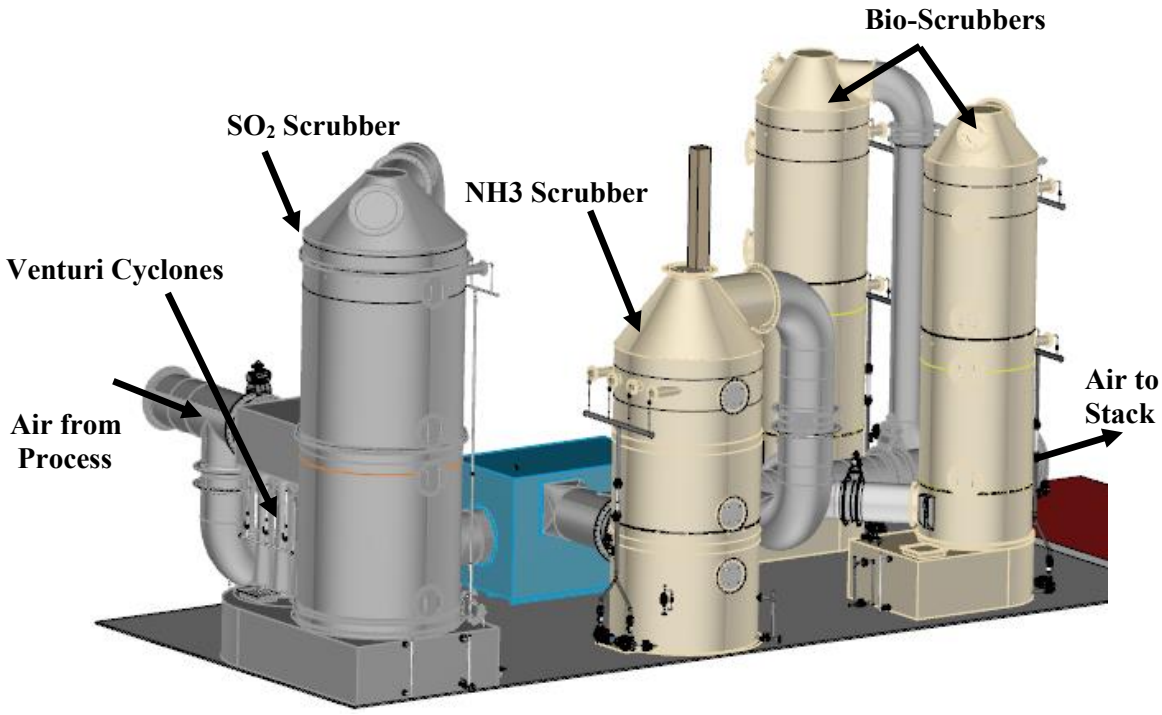
4. Ammonia removal with a packed bed wet chemical scrubber. Ammonia is eliminated in the wet chemical scrubber using an acidic chemical solution with sulfuric acid. The air is washed at a low speed in a large contact surface for intimate contact with the washing solution.
5. Odor and SO_2 removal with 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 60% moisture content 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:	173 °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**		
	10.79	6.47	1.08
	TWO PROCESS LINES		
	21.58	12.94	2.16
	THREE PROCESS LINES		
	32.37	19.41	3.24

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 $\mu g/m^3$) and a 1-hour 98th percentile maximum of 100 ppb (188 $\mu g/m^3$).

AERSCREEN model output are summarized in the following table:

Table 4 – Nitrogen Dioxide 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**		
	150.3	90.2	15.03
	TWO PROCESS LINES		
	300.6	180.4	30.06
	THREE PROCESS LINES		
	450.9	270.6	45.09

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. 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 $\mu g/m^3$).
- The 6 NYCRR Part 257 standard for sulfur dioxide is:
    - 99th percentile of 3-hour average of 0.25 ppm (650 $\mu g/m^3$) and 3-hour maximum average of 0.5 ppm (1,300 $\mu g/m^3$) during a 12 month period.
    - 99th percentile of 24-hour hour average of 0.10 ppm (260 $\mu g/m^3$) and 24-hour maximum average of 0.14 ppm (365 $\mu g/m^3$) during a 12 month period.
    - Annual 24-hour average of 0.03 ppm (80 $\mu g/m^3$) 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/m³)	Maximum 3-hour Concentration (µg/m³)	Maximum 24-hour Concentration (µg/m³)	Maximum Annual Concentration (µg/m³)
Maximum Impact (190 ft)	**ONE PROCESS LINE**			
	83.29	83.29	49.97	8.33
	TWO PROCESS LINES			
	166.58	166.58	99.94	16.66
	THREE PROCESS LINES			
	249.87	249.87	149.91	24.99

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. 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/m³. There is no SGC.

AERSCREEN model output are summarized in the following table:

Table 6 – Ammonia Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m³)	Maximum 24-hour Concentration (µg/m³)	Maximum Annual Concentration (µg/m³)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	10.79	6.47	1.08
	TWO PROCESS LINES		
	21.58	12.94	2.16
	THREE PROCESS LINES		
	32.37	19.41	3.24

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 (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	2.12	1.27	0.212
	TWO PROCESS LINES		
	4.24	2.54	0.424
	THREE PROCESS LINES		
	6.36	3.81	0.636

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 µg/m^3.
- The SGC is 1,900 µg/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**		
	4.24	2.55	0.424
	TWO PROCESS LINES		
	8.48	5.10	0.848
	THREE PROCESS LINES		
	12.72	7.65	1.27

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 $\mu g/m^3$.
- The SGC is 2,100 $\mu g/m^3$.

AERSCREEN model output are summarized in the following table:

Table 9 – Hydrogen Chloride 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**		
	1.95	1.17	0.195
	TWO PROCESS LINES		
	3.96	2.34	0.39
	THREE PROCESS LINES		
	5.85	3.51	0.585

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 (µg/m^3)	Maximum 24-hour Concentration (µg/m^3)	Maximum Annual Concentration (µg/m^3)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	1.24	0.743	0.124
	TWO PROCESS LINES		
	2.48	1.49	0.248
	THREE PROCESS LINES		
	3.72	2.23	0.372

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 µg/m^3.
- The SGC is 14.0 µg/m^3.

AERSCREEN model output are summarized in the following table:

Table 11 – Methyl Disulfides and Trisulfides Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m³)	Maximum 24-hour Concentration (µg/m³)	Maximum Annual Concentration (µg/m³)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	2.12	1.27	0.212
	TWO PROCESS LINES		
	4.24	2.54	0.424
	THREE PROCESS LINES		
	6.36	3.81	0.636

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/m³.
- The SGC is 7,900.0 µg/m³.

AERSCREEN model output are summarized in the following table:

Table 12 – Naphthalene Modeled Concentrations

Distance	Maximum 1-hour Concentration (µg/m³)	Maximum 24-hour Concentration (µg/m³)	Maximum Annual Concentration (µg/m³)
Maximum Impact (190 ft)	**ONE PROCESS LINE**		
	12.91	7.75	1.29
	TWO PROCESS LINES		
	25.82	15.5	2.58
	THREE PROCESS LINES		
	38.73	23.25	**3.87**

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. 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 POTENTIAL GHG EMISSIONS

As required by the Climate Leadership and Community Protection Act (CLCPA) and set out in Article 75 of the Environmental Conservation Law (ECL), potential greenhouse gas (GHG) emissions were calculated for the proposed Facility.

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**

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:

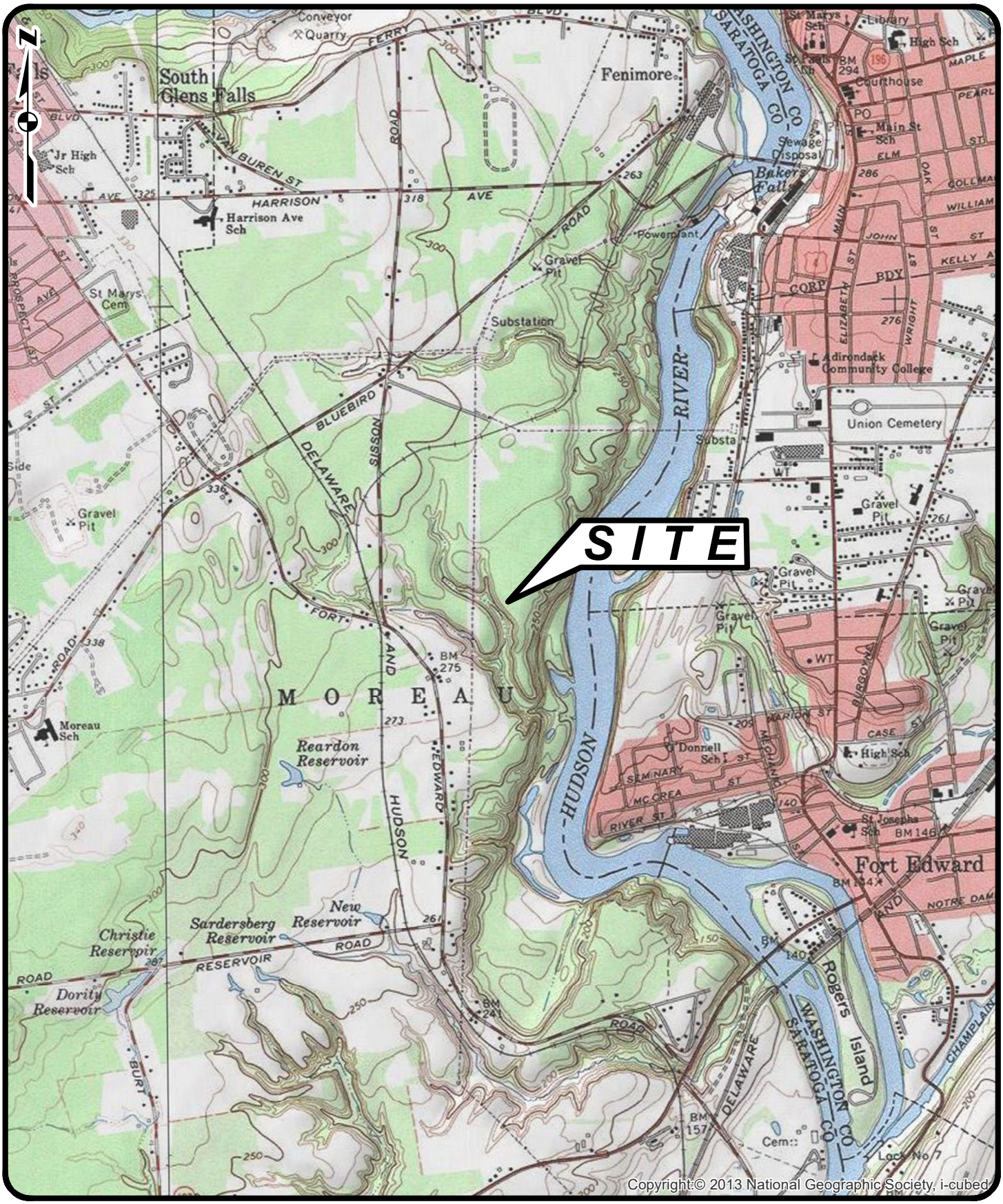
1. The Facility will employ low-NOx burners within the thermal oxidizer with annual tune-ups.
2. The Facility will reduce emissions associated with transportation for current long-haul landfill disposal practices.
3. The Facility will operate the biosolids dryer entirely on syngas produced onsite from the pyrolysis of biosolids and wood feedstock.
4. The Facility will offset carbon emissions associated with the manufacturing of chemical fertilizers by manufacturing a direct substitute with biosolids otherwise destined for landfill disposal or incineration.

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

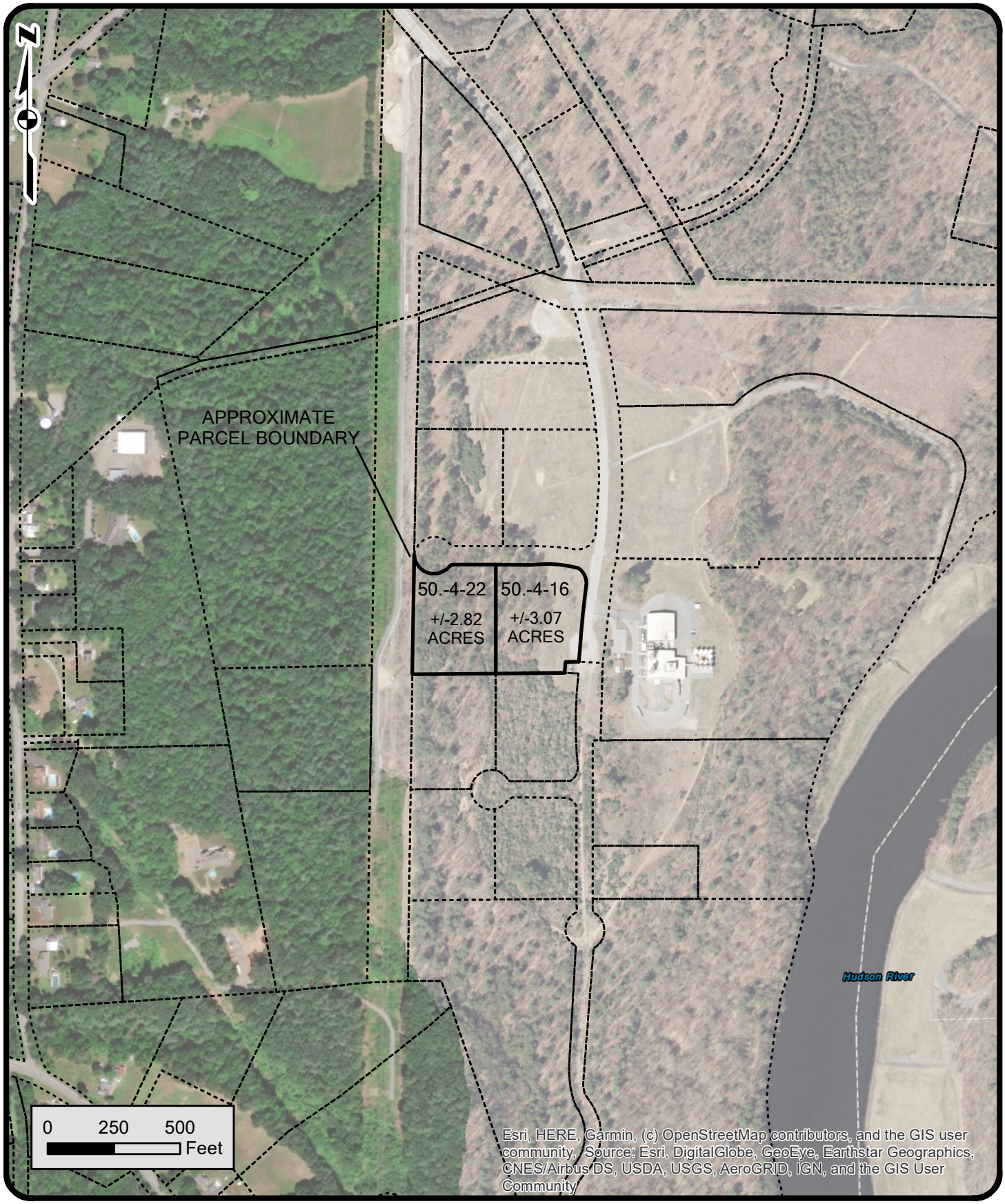


S:\Sterling\Projects\2020 Projects\Saratoga Biochar Solutions - 2020-20\Drawings-Maps-Figures\GIS\2020-20001G- FIG 1 SITE LOC MAP.mxd\

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

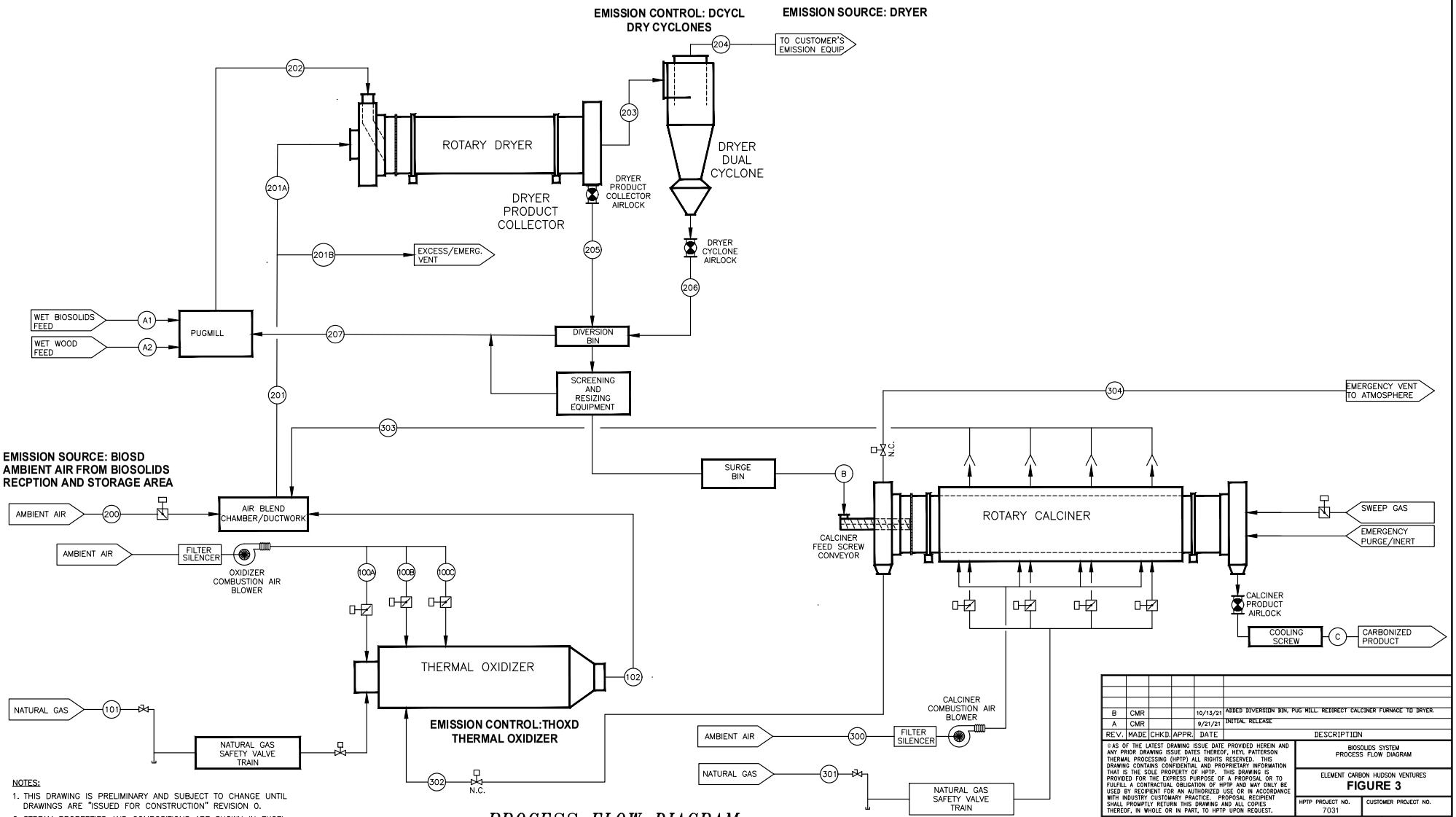
SARATOGA BIOCHAR SOLUTIONS, LLC

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	CHK'D.	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 THERMAL PROCESSING

DWG. NO. **7031-2401**

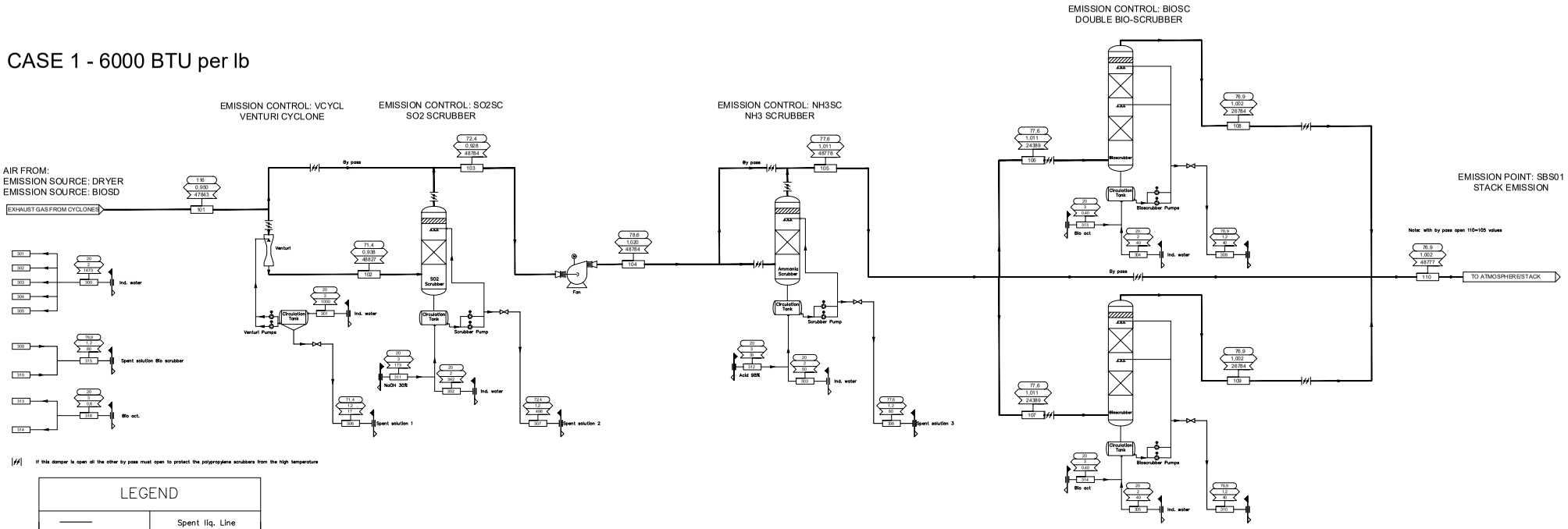
REV. **B**

SCALE 12"=1'-0"

DIV. NO. 24

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

CASE 1 - 6000 BTU per lb



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

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

New York State Department of Environmental Conservation
Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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						

New York State Department of Environmental Conservation
Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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	

DEC ID
- - - - - - - - - -

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		

DEC ID
- - - - - - - - -

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				

New York State Department of Environmental Conservation
Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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	DCYCL	THOXD	

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)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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

New York State Department of Environmental Conservation
Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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
- -

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

New York State Department of Environmental Conservation
Air Permit Application Form

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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

New York State Department of Environmental Conservation
Air Permit Application Form

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

DEC ID
- -

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

DEC ID
- - - - - - - - - -

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

New York State Department of Environmental Conservation
Air Permit Application Form

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

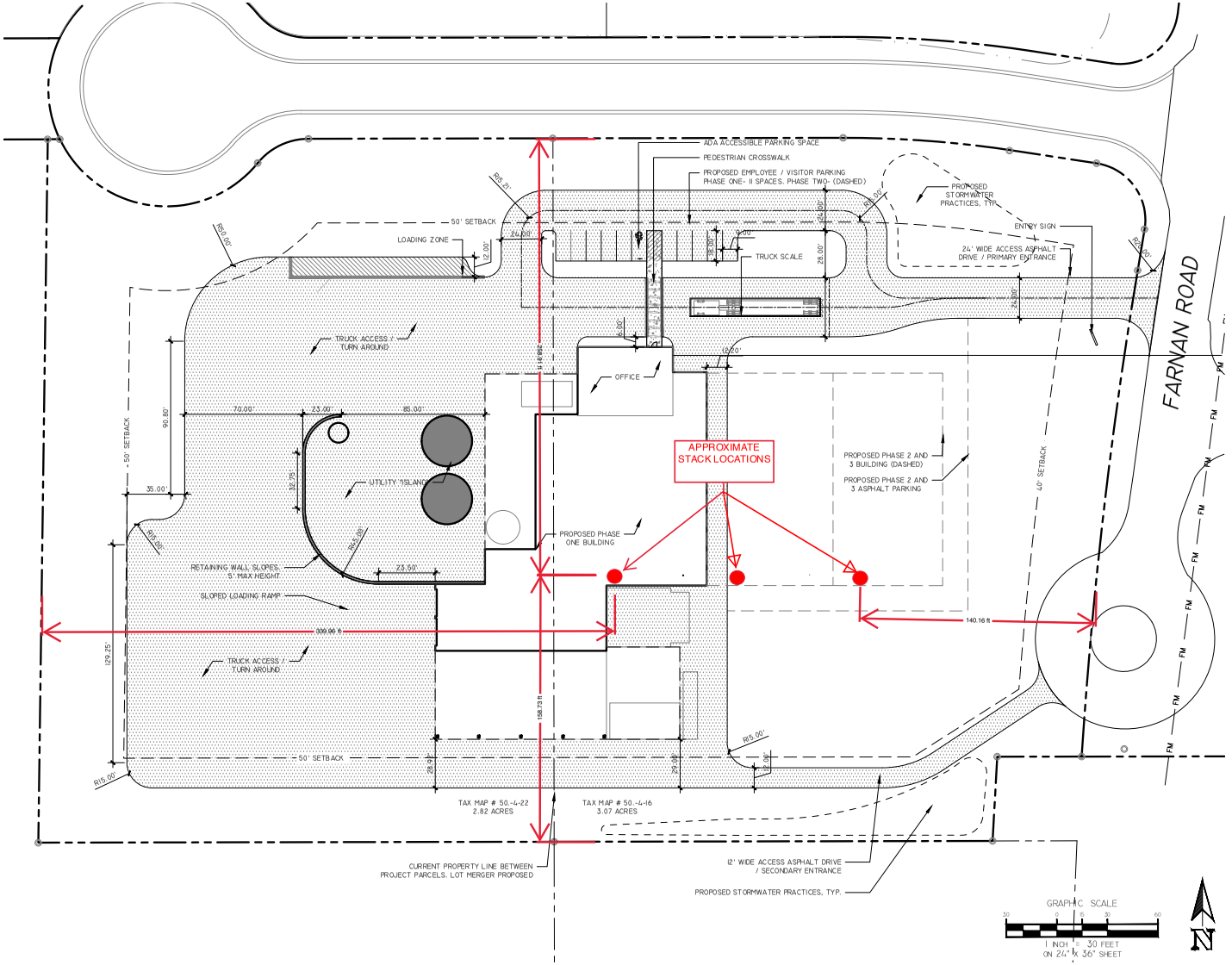
DEC ID
- -

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



LEGEND:

- PROPERTY LINE
- PROPERTY LINE SETBACK
- LIMITS OF DISTURBANCE
- ROAD CENTERLINE
- PROPOSED ASPHALT SURFACE
- PROPOSED CONCRETE WALKWAY
- PROPOSED SITE WALL
- PROPOSED STORMWATER PRACTICES

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: 250.0 F
AMBIENT TEMP: 77 F
TEMPERATURE DELTA: 173 F
DISTANCE TO CLOSEST PROPERTY LINE: 140 FT

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	DESCRIPTION	DATE

northeastern BIOCHAR SOLUTIONS — WASTE NOT

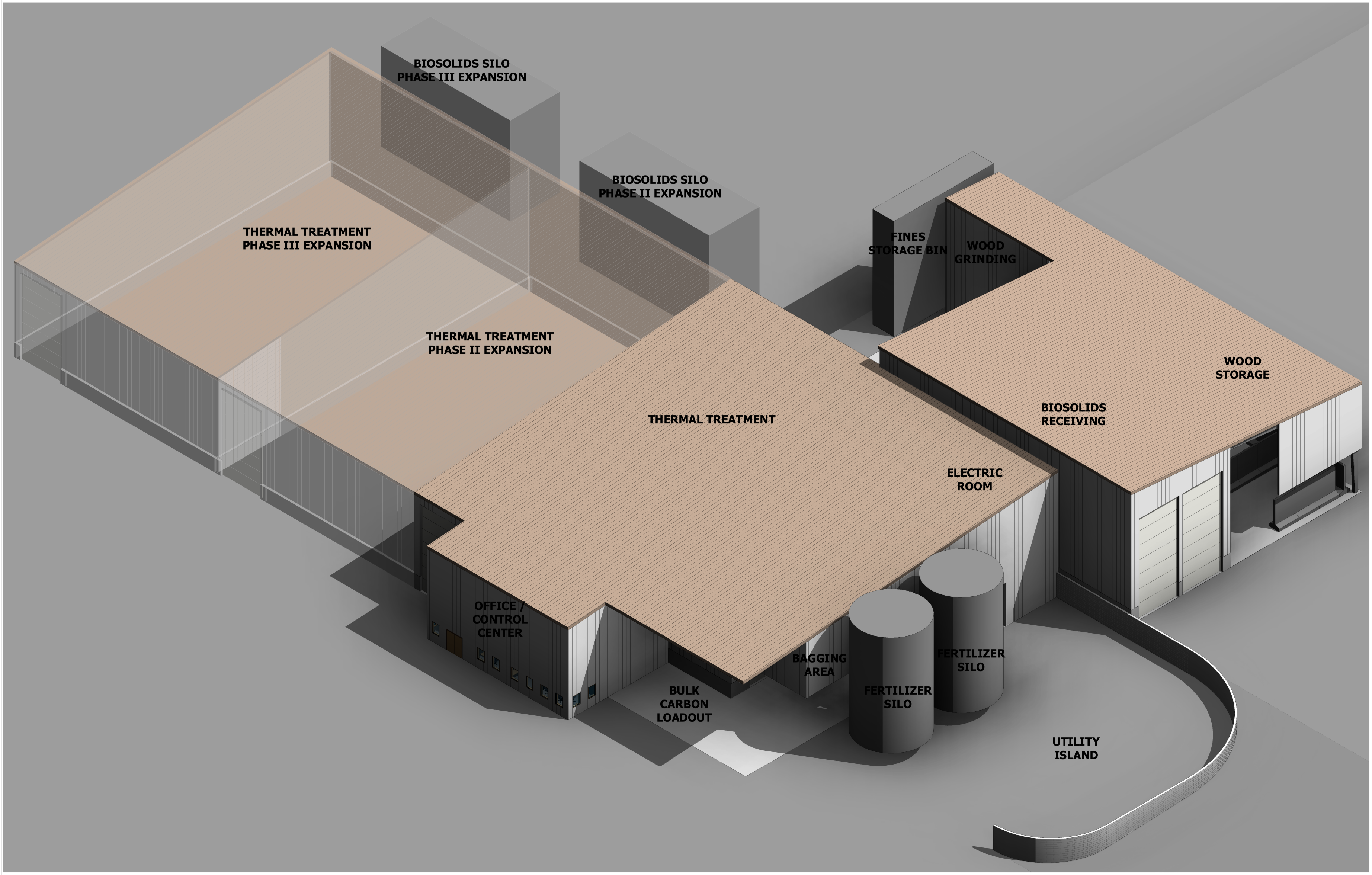
PREPARED FOR
SARATOGA BIOCHAR SOLUTIONS, LLC
26 F CONGRESS ST. #346
SARATOGA SPRINGS, NY 12866

PROJECT
SARATOGA BIOCHAR SOLUTIONS, LLC

DRAWING TITLE
LAYOUT PLAN

DATE: 10/29/2021
PROJECT NO. 20019
DRAWING NO. L-0.10
DWG 2 OF 6

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



SEAL

PROJECT TITLE

10/28/21
SARATOGA
BIOCHAR

Street Address, Suite#
City, State Zip

SHEET TITLE

AXONOMETRIC

CONSULTANT

DRAWN BY	CHECKED BY
Author	Checker

DATE

X/X/XX

PROJECT NO.

20-020

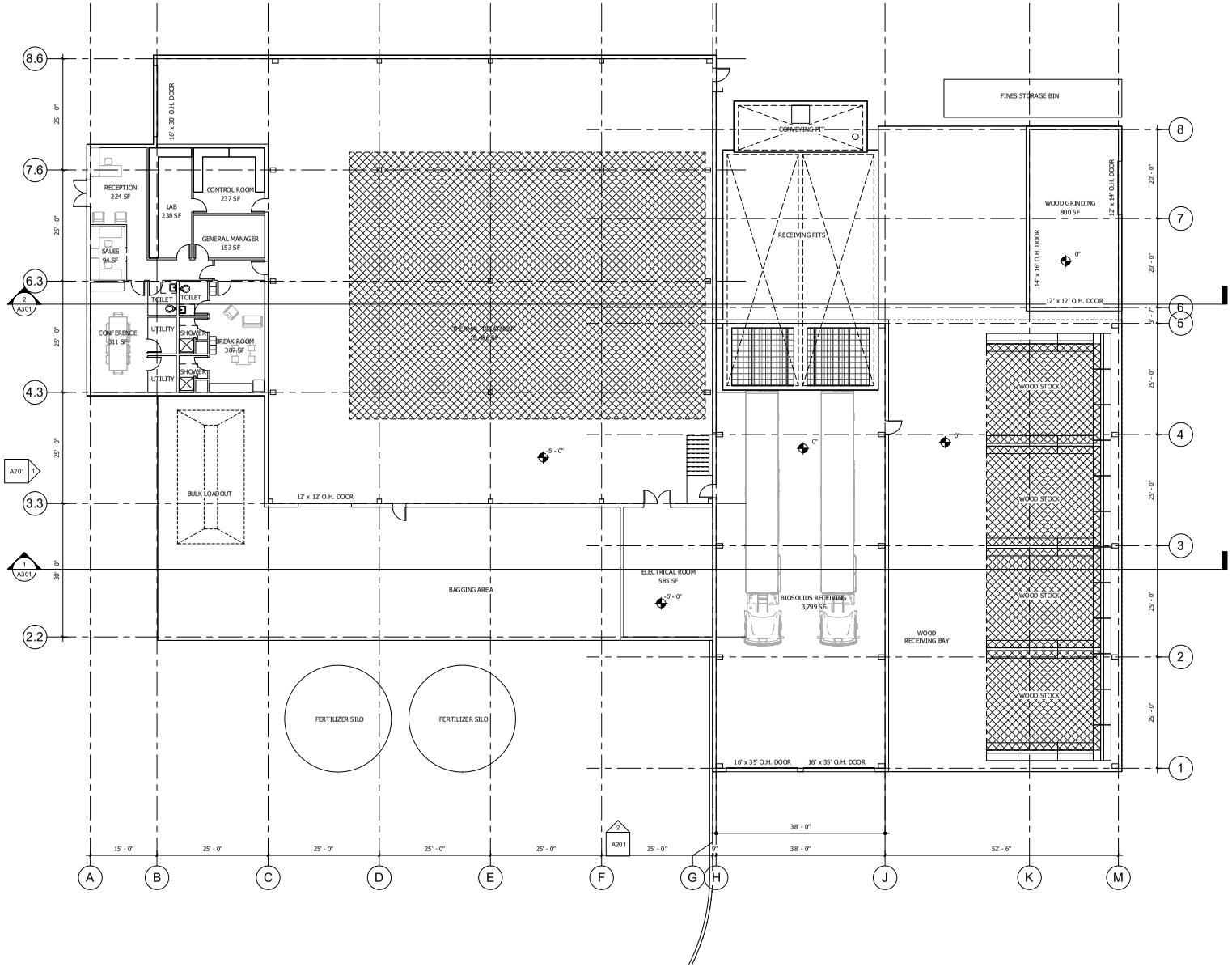
REVISIONS NO.	DESCRIPTION	DATE

PRINTED ON: 10/28/2021 12:28:20 PM

3tarchitects.com
283 RIVER STREET • TROY, NY • 12180
PH 518 618 0900 FX 518 618 0901

SHEET NO.

A100



SEAL

PROJECT TITLE

10/28/21
SARATOGA
BIOCHAR

Street Address, Suite#
City, State Zip

SHEET TITLE

PLAN

CONSULTANT

DRAWN BY: Author
CHECKED BY: Checker

DATE: XX/XX/XX

PROJECT NO.: 20-020

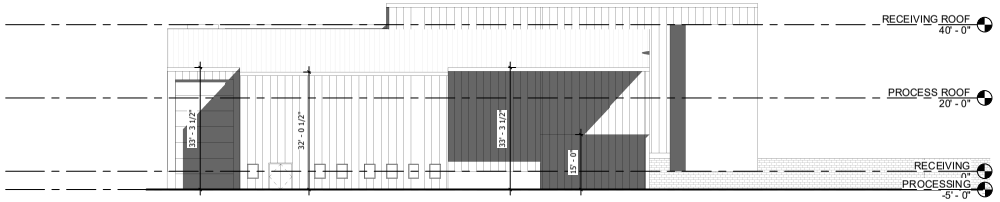
REVISION S
NO. DESCRIPTION DATE

PRINTED ON: 10/28/2021 12:28:20 PM

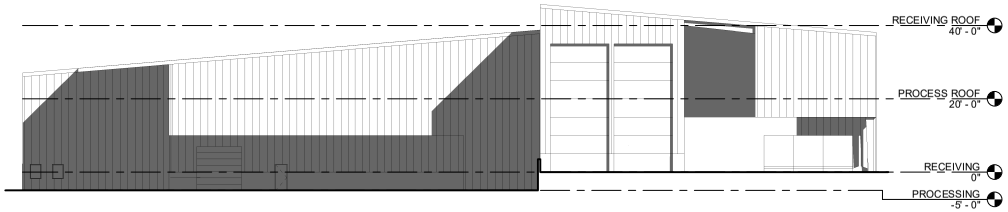
3tarchitects.com
283 RIVER STREET•TROY, NY•12180
PH 518 618 0900 FX 518 618 0901

SHEET NO.

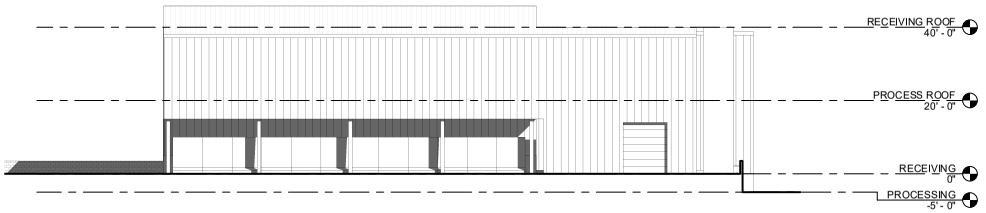
A101



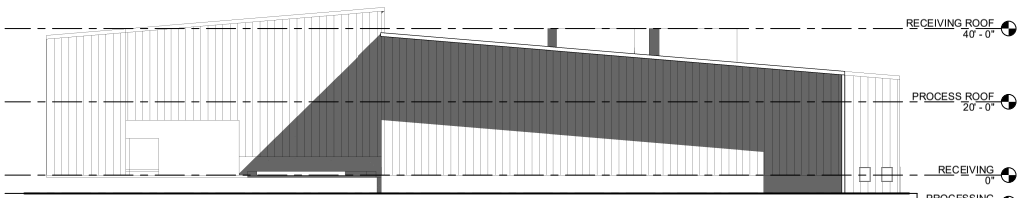
1 EXTERIOR ELEVATION - WEST
1/16" = 1'-0"



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

10/28/21
SARATOGA
BIOCHAR

Street Address, Suite#
City, State Zip

SHEET
TITLE

EXTERIOR
ELEVATIONS

CONSULTANT

DRAWN
BY
Author

CHECKED
BY
Checker

DATE

XX/XX/XX

PROJECT NO.

20-020

REVISION
S
NO. DESCRIPTION DATE

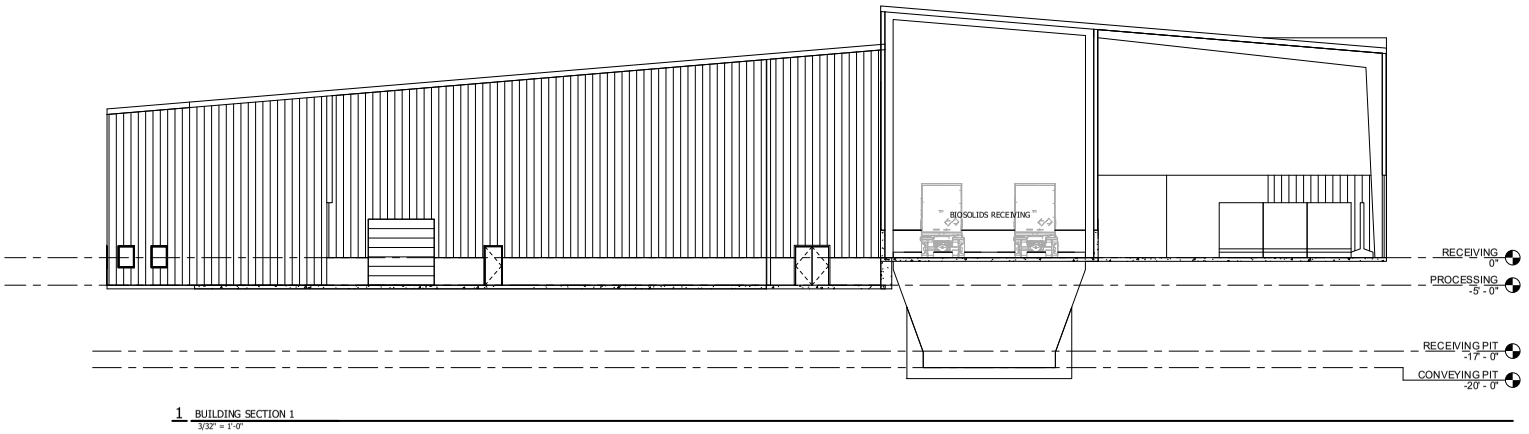
PRINTED
ON
10/28/2021 12:28:33 PM

3tarchitects.com

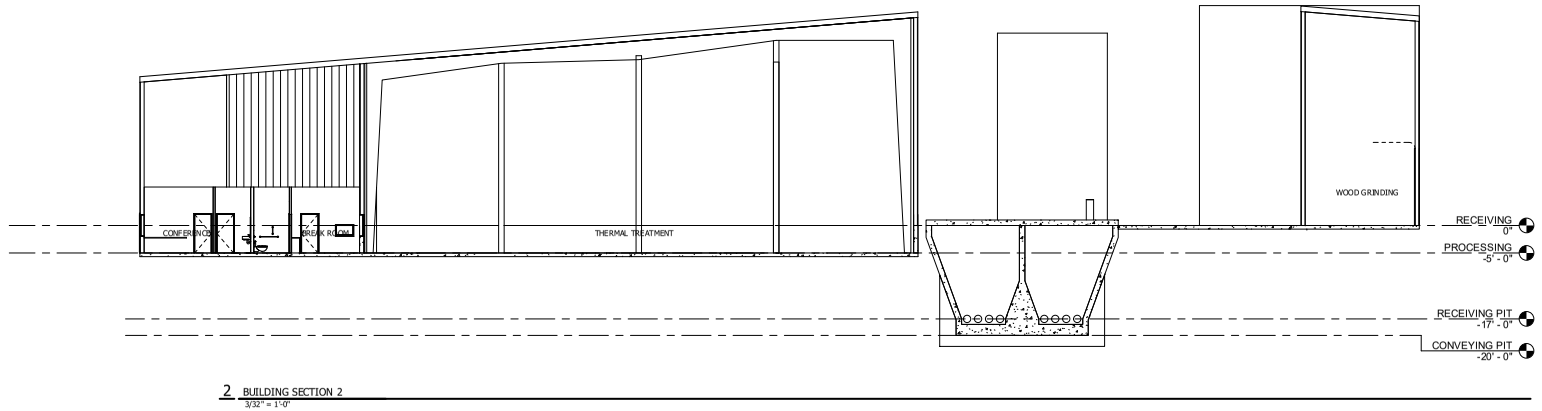
283 RIVER STREET • TROY, NY • 12180
PH 518 618 0900 FX 518 618 0901

SHEET
NO.

A201



1 BUILDING SECTION 1
3/32" = 1'-0"



2 BUILDING SECTION 2
3/32" = 1'-0"

SEAL

PROJECT TITLE

10/28/21
SARATOGA
BIOCHAR

Street Address, Suite#
City, State Zip

SHEET
TITLE

BUILDING
SECTIONS

CONSULTANT

DRAWN
BY
Author

CHECKED
BY
Checker

DATE

XX/XX/XX

PROJECT NO.

20-020

REVISION
S
NO. DESCRIPTION DATE

PRINTED
ON
10/28/2021 12:28:35 PM

3tarchitects.com

283 RIVER STREET • TROY, NY • 12180
PH 518 618 0900 FX 518 618 0901

SHEET
NO.

A301

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

AERSCREEN 21112 / AERMOD 21112 10/31/21
09:47:04

TITLE: SBS_PM_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	10.76	75.0	SUM
20*	96.66	79.91	-22.77	6.26	10.79	75.0	SUM

30	99.22	88.96	-28.64	9.15	10.39	75.0	SUM
40	98.77	95.31	-33.65	11.76	9.747	75.0	SPR
50	95.31	98.77	-37.63	14.01	9.094	75.0	SPR
60	88.96	99.22	-40.47	15.84	8.712	75.0	SUM
70	79.90	96.66	-42.08	17.19	7.886	75.0	SUM
80	68.42	91.17	-42.41	18.01	6.700	50.0	SPR
90	54.86	82.90	-41.45	18.29	6.822	75.0	SUM
100	68.42	91.17	-48.76	18.01	7.766	75.0	SUM
110	79.91	96.66	-54.59	17.19	6.254	42.7	SUM
120	88.96	99.22	-58.76	15.84	6.168	42.7	SUM
130	95.31	98.77	-61.14	14.01	6.667	42.7	SUM
140	98.77	95.31	-61.67	11.76	7.203	42.7	SUM
150	99.22	88.96	-60.32	9.14	4.661	42.7	SUM
160	96.66	79.90	-57.14	6.26	3.495	42.7	SPR
170	91.17	68.42	-52.22	3.18	3.253	425.0	WIN
180	82.90	54.86	-45.72	0.00	3.271	400.0	WIN
190	91.17	68.42	-52.22	-3.18	3.253	425.0	WIN
200	96.66	79.91	-57.14	-6.26	3.497	42.7	SPR
210	99.22	88.96	-60.32	-9.15	4.661	42.7	SUM
220	98.77	95.31	-61.67	-11.76	7.203	42.7	SUM
230	95.31	98.77	-61.14	-14.01	6.667	42.7	SUM
240	88.96	99.22	-58.76	-15.84	6.168	42.7	SUM
250	79.90	96.66	-54.59	-17.19	6.254	42.7	SUM
260	68.42	91.17	-48.76	-18.01	7.766	75.0	SUM
270	54.86	82.90	-41.45	-18.29	6.822	75.0	SUM
280	68.42	91.17	-42.41	-18.01	6.700	50.0	SPR
290	79.91	96.66	-42.08	-17.19	7.887	75.0	SUM
300	88.96	99.22	-40.47	-15.84	8.712	75.0	SUM
310	95.31	98.77	-37.63	-14.01	9.094	75.0	SPR
320	98.77	95.31	-33.65	-11.76	9.747	75.0	SPR
330	99.22	88.96	-28.64	-9.14	10.39	75.0	SUM
340	96.66	79.90	-22.77	-6.26	10.78	75.0	SUM
350	91.17	68.42	-16.20	-3.18	10.76	75.0	SUM
360	82.90	54.86	-9.14	0.00	10.42	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	9.840	2525.00	0.6349
50.00	10.42	2550.00	0.6136
75.00	10.79	2575.00	0.5928
100.00	10.39	2600.00	0.5725
125.00	4.473	2625.00	0.5526
150.00	4.460	2650.00	0.5332
175.00	4.468	2675.00	0.5143
200.00	4.450	2700.00	0.4958
225.00	4.412	2725.00	0.4778
250.00	4.360	2750.00	0.4602
275.00	4.291	2775.00	0.4500
300.00	4.211	2800.00	0.4477
325.00	4.124	2825.00	0.4454
350.00	4.033	2850.00	0.4432
375.00	3.941	2875.00	0.4409
400.00	3.860	2900.00	0.4386
425.00	3.800	2925.00	0.4364
450.00	3.740	2950.00	0.4342
475.00	3.676	2975.00	0.4319
500.00	3.609	3000.00	0.4297
525.00	3.545	3025.00	0.4275
550.00	3.482	3050.00	0.4254
575.00	3.421	3075.00	0.4232
600.00	3.361	3100.00	0.4211
625.00	3.303	3125.00	0.4189
650.00	3.247	3150.00	0.4168
675.00	3.192	3175.00	0.4147
700.00	3.139	3200.00	0.4126
725.00	3.087	3225.00	0.4105
750.00	3.037	3250.00	0.4085
775.00	2.986	3275.00	0.4064
800.00	2.941	3300.00	0.4044
825.00	2.902	3325.00	0.4023
850.00	2.865	3350.00	0.4003
875.00	2.828	3375.00	0.3983
900.00	2.792	3400.00	0.3964

925.00	2.756	3425.00	0.3944
950.00	2.721	3450.00	0.3924
975.00	2.685	3475.00	0.3905
1000.00	2.647	3500.00	0.3886
1025.00	2.609	3525.00	0.3867
1050.00	2.569	3550.00	0.3848
1075.00	2.529	3575.00	0.3829
1100.00	2.488	3600.00	0.3810
1125.00	2.447	3625.00	0.3792
1150.00	2.405	3650.00	0.3774
1175.00	2.362	3675.00	0.3755
1200.00	2.318	3700.00	0.3737
1225.00	2.274	3725.00	0.3719
1250.00	2.230	3750.00	0.3702
1275.00	2.185	3775.00	0.3684
1300.00	2.140	3800.00	0.3666
1325.00	2.095	3825.00	0.3649
1350.00	2.052	3850.00	0.3632
1375.00	2.011	3875.00	0.3615
1400.00	1.970	3900.00	0.3598
1425.00	1.928	3925.00	0.3581
1450.00	1.887	3950.00	0.3564
1475.00	1.845	3975.00	0.3547
1500.00	1.808	4000.00	0.3531
1525.00	1.776	4025.00	0.3515
1550.00	1.744	4050.00	0.3499
1575.00	1.711	4075.00	0.3482
1600.00	1.679	4100.00	0.3467
1625.00	1.647	4125.00	0.3451
1650.00	1.615	4150.00	0.3435
1675.00	1.583	4175.00	0.3419
1700.00	1.551	4200.00	0.3404
1725.00	1.519	4225.00	0.3389
1750.00	1.487	4250.00	0.3374
1775.00	1.455	4275.00	0.3359
1800.00	1.424	4300.00	0.3344
1825.00	1.392	4325.00	0.3329
1850.00	1.361	4350.00	0.3314
1875.00	1.330	4375.00	0.3299
1900.00	1.299	4400.00	0.3285
1925.00	1.269	4425.00	0.3271
1950.00	1.238	4450.00	0.3256
1975.00	1.208	4475.00	0.3242
2000.00	1.178	4500.00	0.3228
2025.00	1.149	4525.00	0.3214
2050.00	1.120	4550.00	0.3200
2075.00	1.091	4575.00	0.3187
2100.00	1.062	4600.00	0.3173
2125.00	1.034	4625.00	0.3160
2150.00	1.006	4650.00	0.3146

2175.00	0.9783	4675.00	0.3133
2200.00	0.9511	4700.00	0.3120
2225.00	0.9242	4725.00	0.3107
2250.00	0.8978	4750.00	0.3094
2275.00	0.8718	4775.00	0.3081
2300.00	0.8462	4800.00	0.3068
2325.00	0.8210	4825.00	0.3056
2350.00	0.7962	4850.00	0.3043
2375.00	0.7718	4875.00	0.3030
2400.00	0.7479	4900.00	0.3018
2425.00	0.7244	4925.00	0.3006
2450.00	0.7013	4950.00	0.2994
2475.00	0.6787	4975.00	0.2982
2500.00	0.6566	5000.00	0.2970

********** 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	10.79	10.79	9.707	6.472	1.079

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	9.840	9.840	8.856	5.904	0.9840

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
09:33:37

TITLE: SBS_NOX_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	150.0	75.0	SUM
20*	96.66	79.91	-22.77	6.26	150.3	75.0	SUM

30	99.22	88.96	-28.64	9.15	144.8	75.0	SUM
40	98.77	95.31	-33.65	11.76	135.8	75.0	SPR
50	95.31	98.77	-37.63	14.01	126.7	75.0	SPR
60	88.96	99.22	-40.47	15.84	121.4	75.0	SUM
70	79.90	96.66	-42.08	17.19	109.9	75.0	SUM
80	68.42	91.17	-42.41	18.01	93.36	50.0	SPR
90	54.86	82.90	-41.45	18.29	95.07	75.0	SUM
100	68.42	91.17	-48.76	18.01	108.2	75.0	SUM
110	79.91	96.66	-54.59	17.19	87.15	42.7	SUM
120	88.96	99.22	-58.76	15.84	85.95	42.7	SUM
130	95.31	98.77	-61.14	14.01	92.90	42.7	SUM
140	98.77	95.31	-61.67	11.76	100.4	42.7	SUM
150	99.22	88.96	-60.32	9.14	64.95	42.7	SUM
160	96.66	79.90	-57.14	6.26	48.70	42.7	SPR
170	91.17	68.42	-52.22	3.18	45.34	425.0	WIN
180	82.90	54.86	-45.72	0.00	45.58	400.0	WIN
190	91.17	68.42	-52.22	-3.18	45.34	425.0	WIN
200	96.66	79.91	-57.14	-6.26	48.72	42.7	SPR
210	99.22	88.96	-60.32	-9.15	64.94	42.7	SUM
220	98.77	95.31	-61.67	-11.76	100.4	42.7	SUM
230	95.31	98.77	-61.14	-14.01	92.90	42.7	SUM
240	88.96	99.22	-58.76	-15.84	85.95	42.7	SUM
250	79.90	96.66	-54.59	-17.19	87.15	42.7	SUM
260	68.42	91.17	-48.76	-18.01	108.2	75.0	SUM
270	54.86	82.90	-41.45	-18.29	95.07	75.0	SUM
280	68.42	91.17	-42.41	-18.01	93.36	50.0	SPR
290	79.91	96.66	-42.08	-17.19	109.9	75.0	SUM
300	88.96	99.22	-40.47	-15.84	121.4	75.0	SUM
310	95.31	98.77	-37.63	-14.01	126.7	75.0	SPR
320	98.77	95.31	-33.65	-11.76	135.8	75.0	SPR
330	99.22	88.96	-28.64	-9.14	144.8	75.0	SUM
340	96.66	79.90	-22.77	-6.26	150.3	75.0	SUM
350	91.17	68.42	-16.20	-3.18	150.0	75.0	SUM
360	82.90	54.86	-9.14	0.00	145.2	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	137.1	2525.00	8.847
50.00	145.2	2550.00	8.550
75.00	150.3	2575.00	8.261
100.00	144.8	2600.00	7.978
125.00	62.33	2625.00	7.701
150.00	62.14	2650.00	7.430
175.00	62.26	2675.00	7.166
200.00	62.01	2700.00	6.909
225.00	61.48	2725.00	6.658
250.00	60.76	2750.00	6.413
275.00	59.80	2775.00	6.271
300.00	58.68	2800.00	6.239
325.00	57.46	2825.00	6.207
350.00	56.19	2850.00	6.175
375.00	54.91	2875.00	6.143
400.00	53.79	2900.00	6.112
425.00	52.95	2925.00	6.081
450.00	52.11	2950.00	6.050
475.00	51.22	2975.00	6.019
500.00	50.30	3000.00	5.988
525.00	49.40	3025.00	5.958
550.00	48.52	3050.00	5.927
575.00	47.67	3075.00	5.897
600.00	46.84	3100.00	5.867
625.00	46.03	3125.00	5.837
650.00	45.24	3150.00	5.808
675.00	44.48	3175.00	5.778
700.00	43.74	3200.00	5.749
725.00	43.02	3225.00	5.720
750.00	42.32	3250.00	5.692
775.00	41.61	3275.00	5.663
800.00	40.98	3300.00	5.635
825.00	40.44	3325.00	5.606
850.00	39.92	3350.00	5.578
875.00	39.40	3375.00	5.551
900.00	38.90	3400.00	5.523

925.00	38.41	3425.00	5.496
950.00	37.92	3450.00	5.468
975.00	37.41	3475.00	5.442
1000.00	36.89	3500.00	5.415
1025.00	36.35	3525.00	5.388
1050.00	35.80	3550.00	5.362
1075.00	35.25	3575.00	5.336
1100.00	34.68	3600.00	5.310
1125.00	34.10	3625.00	5.284
1150.00	33.51	3650.00	5.258
1175.00	32.91	3675.00	5.233
1200.00	32.30	3700.00	5.208
1225.00	31.69	3725.00	5.183
1250.00	31.07	3750.00	5.158
1275.00	30.45	3775.00	5.133
1300.00	29.82	3800.00	5.109
1325.00	29.19	3825.00	5.085
1350.00	28.59	3850.00	5.061
1375.00	28.02	3875.00	5.037
1400.00	27.45	3900.00	5.013
1425.00	26.87	3925.00	4.990
1450.00	26.29	3950.00	4.966
1475.00	25.71	3975.00	4.943
1500.00	25.20	4000.00	4.920
1525.00	24.75	4025.00	4.898
1550.00	24.30	4050.00	4.875
1575.00	23.85	4075.00	4.853
1600.00	23.40	4100.00	4.830
1625.00	22.95	4125.00	4.808
1650.00	22.50	4150.00	4.787
1675.00	22.05	4175.00	4.765
1700.00	21.61	4200.00	4.743
1725.00	21.16	4225.00	4.722
1750.00	20.72	4250.00	4.701
1775.00	20.28	4275.00	4.680
1800.00	19.84	4300.00	4.659
1825.00	19.40	4325.00	4.638
1850.00	18.96	4350.00	4.618
1875.00	18.53	4375.00	4.598
1900.00	18.10	4400.00	4.577
1925.00	17.68	4425.00	4.557
1950.00	17.25	4450.00	4.537
1975.00	16.83	4475.00	4.518
2000.00	16.42	4500.00	4.498
2025.00	16.01	4525.00	4.479
2050.00	15.60	4550.00	4.460
2075.00	15.20	4575.00	4.441
2100.00	14.80	4600.00	4.422
2125.00	14.40	4625.00	4.403
2150.00	14.02	4650.00	4.384

2175.00	13.63	4675.00	4.366
2200.00	13.25	4700.00	4.347
2225.00	12.88	4725.00	4.329
2250.00	12.51	4750.00	4.311
2275.00	12.15	4775.00	4.293
2300.00	11.79	4800.00	4.275
2325.00	11.44	4825.00	4.258
2350.00	11.09	4850.00	4.240
2375.00	10.75	4875.00	4.223
2400.00	10.42	4900.00	4.206
2425.00	10.09	4925.00	4.188
2450.00	9.773	4950.00	4.171
2475.00	9.458	4975.00	4.155
2500.00	9.149	5000.00	4.138

********** 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	150.3	150.3	135.3	90.18	15.03

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	137.1	137.1	123.4	82.27	13.71

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
09:57:17

TITLE: SBS_SO2_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	83.12	75.0	SUM
20*	96.66	79.91	-22.77	6.26	83.29	75.0	SUM

30	99.22	88.96	-28.64	9.15	80.23	75.0	SUM
40	98.77	95.31	-33.65	11.76	75.26	75.0	SPR
50	95.31	98.77	-37.63	14.01	70.23	75.0	SPR
60	88.96	99.22	-40.47	15.84	67.28	75.0	SUM
70	79.90	96.66	-42.08	17.19	60.90	75.0	SUM
80	68.42	91.17	-42.41	18.01	51.73	50.0	SPR
90	54.86	82.90	-41.45	18.29	52.68	75.0	SUM
100	68.42	91.17	-48.76	18.01	59.96	75.0	SUM
110	79.91	96.66	-54.59	17.19	48.29	42.7	SUM
120	88.96	99.22	-58.76	15.84	47.63	42.7	SUM
130	95.31	98.77	-61.14	14.01	51.48	42.7	SUM
140	98.77	95.31	-61.67	11.76	55.62	42.7	SUM
150	99.22	88.96	-60.32	9.14	35.99	42.7	SUM
160	96.66	79.90	-57.14	6.26	26.99	42.7	SPR
170	91.17	68.42	-52.22	3.18	25.12	425.0	WIN
180	82.90	54.86	-45.72	0.00	25.26	400.0	WIN
190	91.17	68.42	-52.22	-3.18	25.12	425.0	WIN
200	96.66	79.91	-57.14	-6.26	27.00	42.7	SPR
210	99.22	88.96	-60.32	-9.15	35.99	42.7	SUM
220	98.77	95.31	-61.67	-11.76	55.62	42.7	SUM
230	95.31	98.77	-61.14	-14.01	51.48	42.7	SUM
240	88.96	99.22	-58.76	-15.84	47.63	42.7	SUM
250	79.90	96.66	-54.59	-17.19	48.29	42.7	SUM
260	68.42	91.17	-48.76	-18.01	59.96	75.0	SUM
270	54.86	82.90	-41.45	-18.29	52.68	75.0	SUM
280	68.42	91.17	-42.41	-18.01	51.73	50.0	SPR
290	79.91	96.66	-42.08	-17.19	60.90	75.0	SUM
300	88.96	99.22	-40.47	-15.84	67.28	75.0	SUM
310	95.31	98.77	-37.63	-14.01	70.23	75.0	SPR
320	98.77	95.31	-33.65	-11.76	75.26	75.0	SPR
330	99.22	88.96	-28.64	-9.14	80.24	75.0	SUM
340	96.66	79.90	-22.77	-6.26	83.27	75.0	SUM
350	91.17	68.42	-16.20	-3.18	83.12	75.0	SUM
360	82.90	54.86	-9.14	0.00	80.46	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	75.99	2525.00	4.902
50.00	80.46	2550.00	4.738
75.00	83.29	2575.00	4.578
100.00	80.24	2600.00	4.421
125.00	34.54	2625.00	4.267
150.00	34.44	2650.00	4.118
175.00	34.50	2675.00	3.971
200.00	34.37	2700.00	3.829
225.00	34.07	2725.00	3.689
250.00	33.67	2750.00	3.554
275.00	33.14	2775.00	3.475
300.00	32.52	2800.00	3.457
325.00	31.84	2825.00	3.440
350.00	31.14	2850.00	3.422
375.00	30.43	2875.00	3.404
400.00	29.81	2900.00	3.387
425.00	29.34	2925.00	3.370
450.00	28.88	2950.00	3.352
475.00	28.38	2975.00	3.335
500.00	27.87	3000.00	3.318
525.00	27.38	3025.00	3.301
550.00	26.89	3050.00	3.285
575.00	26.42	3075.00	3.268
600.00	25.96	3100.00	3.251
625.00	25.51	3125.00	3.235
650.00	25.07	3150.00	3.218
675.00	24.65	3175.00	3.202
700.00	24.24	3200.00	3.186
725.00	23.84	3225.00	3.170
750.00	23.45	3250.00	3.154
775.00	23.06	3275.00	3.138
800.00	22.71	3300.00	3.122
825.00	22.41	3325.00	3.107
850.00	22.12	3350.00	3.091
875.00	21.83	3375.00	3.076
900.00	21.56	3400.00	3.061

925.00	21.28	3425.00	3.045
950.00	21.01	3450.00	3.030
975.00	20.73	3475.00	3.015
1000.00	20.44	3500.00	3.001
1025.00	20.14	3525.00	2.986
1050.00	19.84	3550.00	2.971
1075.00	19.53	3575.00	2.957
1100.00	19.22	3600.00	2.942
1125.00	18.89	3625.00	2.928
1150.00	18.57	3650.00	2.914
1175.00	18.24	3675.00	2.900
1200.00	17.90	3700.00	2.886
1225.00	17.56	3725.00	2.872
1250.00	17.22	3750.00	2.858
1275.00	16.87	3775.00	2.845
1300.00	16.53	3800.00	2.831
1325.00	16.18	3825.00	2.818
1350.00	15.84	3850.00	2.804
1375.00	15.53	3875.00	2.791
1400.00	15.21	3900.00	2.778
1425.00	14.89	3925.00	2.765
1450.00	14.57	3950.00	2.752
1475.00	14.25	3975.00	2.739
1500.00	13.96	4000.00	2.727
1525.00	13.71	4025.00	2.714
1550.00	13.46	4050.00	2.702
1575.00	13.22	4075.00	2.689
1600.00	12.97	4100.00	2.677
1625.00	12.72	4125.00	2.665
1650.00	12.47	4150.00	2.652
1675.00	12.22	4175.00	2.640
1700.00	11.97	4200.00	2.629
1725.00	11.73	4225.00	2.617
1750.00	11.48	4250.00	2.605
1775.00	11.24	4275.00	2.593
1800.00	10.99	4300.00	2.582
1825.00	10.75	4325.00	2.570
1850.00	10.51	4350.00	2.559
1875.00	10.27	4375.00	2.548
1900.00	10.03	4400.00	2.537
1925.00	9.795	4425.00	2.525
1950.00	9.561	4450.00	2.514
1975.00	9.329	4475.00	2.504
2000.00	9.099	4500.00	2.493
2025.00	8.870	4525.00	2.482
2050.00	8.645	4550.00	2.471
2075.00	8.421	4575.00	2.461
2100.00	8.201	4600.00	2.450
2125.00	7.982	4625.00	2.440
2150.00	7.767	4650.00	2.430

2175.00	7.554	4675.00	2.419
2200.00	7.344	4700.00	2.409
2225.00	7.137	4725.00	2.399
2250.00	6.933	4750.00	2.389
2275.00	6.732	4775.00	2.379
2300.00	6.534	4800.00	2.369
2325.00	6.339	4825.00	2.359
2350.00	6.148	4850.00	2.350
2375.00	5.960	4875.00	2.340
2400.00	5.775	4900.00	2.331
2425.00	5.593	4925.00	2.321
2450.00	5.416	4950.00	2.312
2475.00	5.241	4975.00	2.302
2500.00	5.070	5000.00	2.293

********** 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	83.29	83.29	74.96	49.97	8.329

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	75.99	75.99	68.39	45.59	7.599

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:10:12

TITLE: SBS_NH3_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	10.76	75.0	SUM
20*	96.66	79.91	-22.77	6.26	10.79	75.0	SUM

30	99.22	88.96	-28.64	9.15	10.39	75.0	SUM
40	98.77	95.31	-33.65	11.76	9.747	75.0	SPR
50	95.31	98.77	-37.63	14.01	9.094	75.0	SPR
60	88.96	99.22	-40.47	15.84	8.712	75.0	SUM
70	79.90	96.66	-42.08	17.19	7.886	75.0	SUM
80	68.42	91.17	-42.41	18.01	6.700	50.0	SPR
90	54.86	82.90	-41.45	18.29	6.822	75.0	SUM
100	68.42	91.17	-48.76	18.01	7.766	75.0	SUM
110	79.91	96.66	-54.59	17.19	6.254	42.7	SUM
120	88.96	99.22	-58.76	15.84	6.168	42.7	SUM
130	95.31	98.77	-61.14	14.01	6.667	42.7	SUM
140	98.77	95.31	-61.67	11.76	7.203	42.7	SUM
150	99.22	88.96	-60.32	9.14	4.661	42.7	SUM
160	96.66	79.90	-57.14	6.26	3.495	42.7	SPR
170	91.17	68.42	-52.22	3.18	3.253	425.0	WIN
180	82.90	54.86	-45.72	0.00	3.271	400.0	WIN
190	91.17	68.42	-52.22	-3.18	3.253	425.0	WIN
200	96.66	79.91	-57.14	-6.26	3.497	42.7	SPR
210	99.22	88.96	-60.32	-9.15	4.661	42.7	SUM
220	98.77	95.31	-61.67	-11.76	7.203	42.7	SUM
230	95.31	98.77	-61.14	-14.01	6.667	42.7	SUM
240	88.96	99.22	-58.76	-15.84	6.168	42.7	SUM
250	79.90	96.66	-54.59	-17.19	6.254	42.7	SUM
260	68.42	91.17	-48.76	-18.01	7.766	75.0	SUM
270	54.86	82.90	-41.45	-18.29	6.822	75.0	SUM
280	68.42	91.17	-42.41	-18.01	6.700	50.0	SPR
290	79.91	96.66	-42.08	-17.19	7.887	75.0	SUM
300	88.96	99.22	-40.47	-15.84	8.712	75.0	SUM
310	95.31	98.77	-37.63	-14.01	9.094	75.0	SPR
320	98.77	95.31	-33.65	-11.76	9.747	75.0	SPR
330	99.22	88.96	-28.64	-9.14	10.39	75.0	SUM
340	96.66	79.90	-22.77	-6.26	10.78	75.0	SUM
350	91.17	68.42	-16.20	-3.18	10.76	75.0	SUM
360	82.90	54.86	-9.14	0.00	10.42	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	9.840	2525.00	0.6349
50.00	10.42	2550.00	0.6136
75.00	10.79	2575.00	0.5928
100.00	10.39	2600.00	0.5725
125.00	4.473	2625.00	0.5526
150.00	4.460	2650.00	0.5332
175.00	4.468	2675.00	0.5143
200.00	4.450	2700.00	0.4958
225.00	4.412	2725.00	0.4778
250.00	4.360	2750.00	0.4602
275.00	4.291	2775.00	0.4500
300.00	4.211	2800.00	0.4477
325.00	4.124	2825.00	0.4454
350.00	4.033	2850.00	0.4432
375.00	3.941	2875.00	0.4409
400.00	3.860	2900.00	0.4386
425.00	3.800	2925.00	0.4364
450.00	3.740	2950.00	0.4342
475.00	3.676	2975.00	0.4319
500.00	3.609	3000.00	0.4297
525.00	3.545	3025.00	0.4275
550.00	3.482	3050.00	0.4254
575.00	3.421	3075.00	0.4232
600.00	3.361	3100.00	0.4211
625.00	3.303	3125.00	0.4189
650.00	3.247	3150.00	0.4168
675.00	3.192	3175.00	0.4147
700.00	3.139	3200.00	0.4126
725.00	3.087	3225.00	0.4105
750.00	3.037	3250.00	0.4085
775.00	2.986	3275.00	0.4064
800.00	2.941	3300.00	0.4044
825.00	2.902	3325.00	0.4023
850.00	2.865	3350.00	0.4003
875.00	2.828	3375.00	0.3983
900.00	2.792	3400.00	0.3964

925.00	2.756	3425.00	0.3944
950.00	2.721	3450.00	0.3924
975.00	2.685	3475.00	0.3905
1000.00	2.647	3500.00	0.3886
1025.00	2.609	3525.00	0.3867
1050.00	2.569	3550.00	0.3848
1075.00	2.529	3575.00	0.3829
1100.00	2.488	3600.00	0.3810
1125.00	2.447	3625.00	0.3792
1150.00	2.405	3650.00	0.3774
1175.00	2.362	3675.00	0.3755
1200.00	2.318	3700.00	0.3737
1225.00	2.274	3725.00	0.3719
1250.00	2.230	3750.00	0.3702
1275.00	2.185	3775.00	0.3684
1300.00	2.140	3800.00	0.3666
1325.00	2.095	3825.00	0.3649
1350.00	2.052	3850.00	0.3632
1375.00	2.011	3875.00	0.3615
1400.00	1.970	3900.00	0.3598
1425.00	1.928	3925.00	0.3581
1450.00	1.887	3950.00	0.3564
1475.00	1.845	3975.00	0.3547
1500.00	1.808	4000.00	0.3531
1525.00	1.776	4025.00	0.3515
1550.00	1.744	4050.00	0.3499
1575.00	1.711	4075.00	0.3482
1600.00	1.679	4100.00	0.3467
1625.00	1.647	4125.00	0.3451
1650.00	1.615	4150.00	0.3435
1675.00	1.583	4175.00	0.3419
1700.00	1.551	4200.00	0.3404
1725.00	1.519	4225.00	0.3389
1750.00	1.487	4250.00	0.3374
1775.00	1.455	4275.00	0.3359
1800.00	1.424	4300.00	0.3344
1825.00	1.392	4325.00	0.3329
1850.00	1.361	4350.00	0.3314
1875.00	1.330	4375.00	0.3299
1900.00	1.299	4400.00	0.3285
1925.00	1.269	4425.00	0.3271
1950.00	1.238	4450.00	0.3256
1975.00	1.208	4475.00	0.3242
2000.00	1.178	4500.00	0.3228
2025.00	1.149	4525.00	0.3214
2050.00	1.120	4550.00	0.3200
2075.00	1.091	4575.00	0.3187
2100.00	1.062	4600.00	0.3173
2125.00	1.034	4625.00	0.3160
2150.00	1.006	4650.00	0.3146

2175.00	0.9783	4675.00	0.3133
2200.00	0.9511	4700.00	0.3120
2225.00	0.9242	4725.00	0.3107
2250.00	0.8978	4750.00	0.3094
2275.00	0.8718	4775.00	0.3081
2300.00	0.8462	4800.00	0.3068
2325.00	0.8210	4825.00	0.3056
2350.00	0.7962	4850.00	0.3043
2375.00	0.7718	4875.00	0.3030
2400.00	0.7479	4900.00	0.3018
2425.00	0.7244	4925.00	0.3006
2450.00	0.7013	4950.00	0.2994
2475.00	0.6787	4975.00	0.2982
2500.00	0.6566	5000.00	0.2970

********** 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	10.79	10.79	9.707	6.472	1.079

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	9.840	9.840	8.856	5.904	0.9840

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:17:39

TITLE: SBS_H2S_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	2.117	75.0	SUM
20*	96.66	79.91	-22.77	6.26	2.122	75.0	SUM

30	99.22	88.96	-28.64	9.15	2.044	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.917	75.0	SPR
50	95.31	98.77	-37.63	14.01	1.789	75.0	SPR
60	88.96	99.22	-40.47	15.84	1.714	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.551	75.0	SUM
80	68.42	91.17	-42.41	18.01	1.318	50.0	SPR
90	54.86	82.90	-41.45	18.29	1.342	75.0	SUM
100	68.42	91.17	-48.76	18.01	1.528	75.0	SUM
110	79.91	96.66	-54.59	17.19	1.230	42.7	SUM
120	88.96	99.22	-58.76	15.84	1.213	42.7	SUM
130	95.31	98.77	-61.14	14.01	1.312	42.7	SUM
140	98.77	95.31	-61.67	11.76	1.417	42.7	SUM
150	99.22	88.96	-60.32	9.14	0.9169	42.7	SUM
160	96.66	79.90	-57.14	6.26	0.6875	42.7	SPR
170	91.17	68.42	-52.22	3.18	0.6400	425.0	WIN
180	82.90	54.86	-45.72	0.00	0.6435	400.0	WIN
190	91.17	68.42	-52.22	-3.18	0.6400	425.0	WIN
200	96.66	79.91	-57.14	-6.26	0.6878	42.7	SPR
210	99.22	88.96	-60.32	-9.15	0.9169	42.7	SUM
220	98.77	95.31	-61.67	-11.76	1.417	42.7	SUM
230	95.31	98.77	-61.14	-14.01	1.312	42.7	SUM
240	88.96	99.22	-58.76	-15.84	1.213	42.7	SUM
250	79.90	96.66	-54.59	-17.19	1.230	42.7	SUM
260	68.42	91.17	-48.76	-18.01	1.528	75.0	SUM
270	54.86	82.90	-41.45	-18.29	1.342	75.0	SUM
280	68.42	91.17	-42.41	-18.01	1.318	50.0	SPR
290	79.91	96.66	-42.08	-17.19	1.551	75.0	SUM
300	88.96	99.22	-40.47	-15.84	1.714	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.789	75.0	SPR
320	98.77	95.31	-33.65	-11.76	1.917	75.0	SPR
330	99.22	88.96	-28.64	-9.14	2.044	75.0	SUM
340	96.66	79.90	-22.77	-6.26	2.121	75.0	SUM
350	91.17	68.42	-16.20	-3.18	2.117	75.0	SUM
360	82.90	54.86	-9.14	0.00	2.050	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	1.936	2525.00	0.1249
50.00	2.050	2550.00	0.1207
75.00	2.122	2575.00	0.1166
100.00	2.044	2600.00	0.1126
125.00	0.8799	2625.00	0.1087
150.00	0.8773	2650.00	0.1049
175.00	0.8789	2675.00	0.1012
200.00	0.8755	2700.00	0.9754E-01
225.00	0.8680	2725.00	0.9399E-01
250.00	0.8577	2750.00	0.9053E-01
275.00	0.8442	2775.00	0.8853E-01
300.00	0.8284	2800.00	0.8808E-01
325.00	0.8113	2825.00	0.8763E-01
350.00	0.7933	2850.00	0.8718E-01
375.00	0.7752	2875.00	0.8673E-01
400.00	0.7594	2900.00	0.8629E-01
425.00	0.7476	2925.00	0.8585E-01
450.00	0.7357	2950.00	0.8541E-01
475.00	0.7231	2975.00	0.8497E-01
500.00	0.7101	3000.00	0.8454E-01
525.00	0.6974	3025.00	0.8411E-01
550.00	0.6851	3050.00	0.8368E-01
575.00	0.6730	3075.00	0.8325E-01
600.00	0.6613	3100.00	0.8283E-01
625.00	0.6498	3125.00	0.8241E-01
650.00	0.6387	3150.00	0.8199E-01
675.00	0.6279	3175.00	0.8158E-01
700.00	0.6175	3200.00	0.8117E-01
725.00	0.6073	3225.00	0.8076E-01
750.00	0.5974	3250.00	0.8035E-01
775.00	0.5874	3275.00	0.7995E-01
800.00	0.5785	3300.00	0.7955E-01
825.00	0.5709	3325.00	0.7915E-01
850.00	0.5635	3350.00	0.7875E-01
875.00	0.5563	3375.00	0.7836E-01
900.00	0.5492	3400.00	0.7797E-01

925.00	0.5422	3425.00	0.7759E-01
950.00	0.5353	3450.00	0.7720E-01
975.00	0.5281	3475.00	0.7682E-01
1000.00	0.5207	3500.00	0.7644E-01
1025.00	0.5132	3525.00	0.7607E-01
1050.00	0.5055	3550.00	0.7570E-01
1075.00	0.4976	3575.00	0.7533E-01
1100.00	0.4895	3600.00	0.7496E-01
1125.00	0.4814	3625.00	0.7460E-01
1150.00	0.4730	3650.00	0.7423E-01
1175.00	0.4646	3675.00	0.7388E-01
1200.00	0.4561	3700.00	0.7352E-01
1225.00	0.4474	3725.00	0.7317E-01
1250.00	0.4387	3750.00	0.7282E-01
1275.00	0.4299	3775.00	0.7247E-01
1300.00	0.4210	3800.00	0.7213E-01
1325.00	0.4121	3825.00	0.7178E-01
1350.00	0.4036	3850.00	0.7144E-01
1375.00	0.3956	3875.00	0.7111E-01
1400.00	0.3875	3900.00	0.7077E-01
1425.00	0.3793	3925.00	0.7044E-01
1450.00	0.3712	3950.00	0.7011E-01
1475.00	0.3630	3975.00	0.6979E-01
1500.00	0.3557	4000.00	0.6946E-01
1525.00	0.3494	4025.00	0.6914E-01
1550.00	0.3430	4050.00	0.6882E-01
1575.00	0.3367	4075.00	0.6851E-01
1600.00	0.3303	4100.00	0.6819E-01
1625.00	0.3240	4125.00	0.6788E-01
1650.00	0.3176	4150.00	0.6757E-01
1675.00	0.3113	4175.00	0.6727E-01
1700.00	0.3050	4200.00	0.6697E-01
1725.00	0.2987	4225.00	0.6666E-01
1750.00	0.2925	4250.00	0.6637E-01
1775.00	0.2862	4275.00	0.6607E-01
1800.00	0.2800	4300.00	0.6577E-01
1825.00	0.2739	4325.00	0.6548E-01
1850.00	0.2677	4350.00	0.6519E-01
1875.00	0.2616	4375.00	0.6491E-01
1900.00	0.2556	4400.00	0.6462E-01
1925.00	0.2495	4425.00	0.6434E-01
1950.00	0.2436	4450.00	0.6406E-01
1975.00	0.2377	4475.00	0.6378E-01
2000.00	0.2318	4500.00	0.6350E-01
2025.00	0.2260	4525.00	0.6323E-01
2050.00	0.2202	4550.00	0.6296E-01
2075.00	0.2145	4575.00	0.6269E-01
2100.00	0.2089	4600.00	0.6242E-01
2125.00	0.2034	4625.00	0.6216E-01
2150.00	0.1979	4650.00	0.6189E-01

2175.00	0.1924	4675.00	0.6163E-01
2200.00	0.1871	4700.00	0.6137E-01
2225.00	0.1818	4725.00	0.6112E-01
2250.00	0.1766	4750.00	0.6086E-01
2275.00	0.1715	4775.00	0.6061E-01
2300.00	0.1665	4800.00	0.6036E-01
2325.00	0.1615	4825.00	0.6011E-01
2350.00	0.1566	4850.00	0.5986E-01
2375.00	0.1518	4875.00	0.5962E-01
2400.00	0.1471	4900.00	0.5937E-01
2425.00	0.1425	4925.00	0.5913E-01
2450.00	0.1380	4950.00	0.5889E-01
2475.00	0.1335	4975.00	0.5865E-01
2500.00	0.1292	5000.00	0.5842E-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	2.122	2.122	1.910	1.273	0.2122

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.936	1.936	1.742	1.161	0.1936

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:28:49

TITLE: SBS_ME-AMINE_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	4.235	75.0	SUM
20*	96.66	79.91	-22.77	6.26	4.244	75.0	SUM

30	99.22	88.96	-28.64	9.15	4.088	75.0	SUM
40	98.77	95.31	-33.65	11.76	3.835	75.0	SPR
50	95.31	98.77	-37.63	14.01	3.578	75.0	SPR
60	88.96	99.22	-40.47	15.84	3.428	75.0	SUM
70	79.90	96.66	-42.08	17.19	3.103	75.0	SUM
80	68.42	91.17	-42.41	18.01	2.636	50.0	SPR
90	54.86	82.90	-41.45	18.29	2.684	75.0	SUM
100	68.42	91.17	-48.76	18.01	3.055	75.0	SUM
110	79.91	96.66	-54.59	17.19	2.461	42.7	SUM
120	88.96	99.22	-58.76	15.84	2.427	42.7	SUM
130	95.31	98.77	-61.14	14.01	2.623	42.7	SUM
140	98.77	95.31	-61.67	11.76	2.834	42.7	SUM
150	99.22	88.96	-60.32	9.14	1.834	42.7	SUM
160	96.66	79.90	-57.14	6.26	1.375	42.7	SPR
170	91.17	68.42	-52.22	3.18	1.280	425.0	WIN
180	82.90	54.86	-45.72	0.00	1.287	400.0	WIN
190	91.17	68.42	-52.22	-3.18	1.280	425.0	WIN
200	96.66	79.91	-57.14	-6.26	1.376	42.7	SPR
210	99.22	88.96	-60.32	-9.15	1.834	42.7	SUM
220	98.77	95.31	-61.67	-11.76	2.834	42.7	SUM
230	95.31	98.77	-61.14	-14.01	2.623	42.7	SUM
240	88.96	99.22	-58.76	-15.84	2.427	42.7	SUM
250	79.90	96.66	-54.59	-17.19	2.461	42.7	SUM
260	68.42	91.17	-48.76	-18.01	3.055	75.0	SUM
270	54.86	82.90	-41.45	-18.29	2.684	75.0	SUM
280	68.42	91.17	-42.41	-18.01	2.636	50.0	SPR
290	79.91	96.66	-42.08	-17.19	3.103	75.0	SUM
300	88.96	99.22	-40.47	-15.84	3.428	75.0	SUM
310	95.31	98.77	-37.63	-14.01	3.578	75.0	SPR
320	98.77	95.31	-33.65	-11.76	3.835	75.0	SPR
330	99.22	88.96	-28.64	-9.14	4.088	75.0	SUM
340	96.66	79.90	-22.77	-6.26	4.243	75.0	SUM
350	91.17	68.42	-16.20	-3.18	4.235	75.0	SUM
360	82.90	54.86	-9.14	0.00	4.100	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	3.872	2525.00	0.2498
50.00	4.100	2550.00	0.2414
75.00	4.244	2575.00	0.2332
100.00	4.088	2600.00	0.2253
125.00	1.760	2625.00	0.2174
150.00	1.755	2650.00	0.2098
175.00	1.758	2675.00	0.2023
200.00	1.751	2700.00	0.1951
225.00	1.736	2725.00	0.1880
250.00	1.715	2750.00	0.1811
275.00	1.688	2775.00	0.1771
300.00	1.657	2800.00	0.1762
325.00	1.623	2825.00	0.1753
350.00	1.587	2850.00	0.1744
375.00	1.550	2875.00	0.1735
400.00	1.519	2900.00	0.1726
425.00	1.495	2925.00	0.1717
450.00	1.471	2950.00	0.1708
475.00	1.446	2975.00	0.1699
500.00	1.420	3000.00	0.1691
525.00	1.395	3025.00	0.1682
550.00	1.370	3050.00	0.1674
575.00	1.346	3075.00	0.1665
600.00	1.323	3100.00	0.1657
625.00	1.300	3125.00	0.1648
650.00	1.277	3150.00	0.1640
675.00	1.256	3175.00	0.1632
700.00	1.235	3200.00	0.1623
725.00	1.215	3225.00	0.1615
750.00	1.195	3250.00	0.1607
775.00	1.175	3275.00	0.1599
800.00	1.157	3300.00	0.1591
825.00	1.142	3325.00	0.1583
850.00	1.127	3350.00	0.1575
875.00	1.113	3375.00	0.1567
900.00	1.098	3400.00	0.1559

925.00	1.084	3425.00	0.1552
950.00	1.071	3450.00	0.1544
975.00	1.056	3475.00	0.1536
1000.00	1.041	3500.00	0.1529
1025.00	1.026	3525.00	0.1521
1050.00	1.011	3550.00	0.1514
1075.00	0.9952	3575.00	0.1507
1100.00	0.9791	3600.00	0.1499
1125.00	0.9627	3625.00	0.1492
1150.00	0.9461	3650.00	0.1485
1175.00	0.9292	3675.00	0.1478
1200.00	0.9121	3700.00	0.1470
1225.00	0.8948	3725.00	0.1463
1250.00	0.8774	3750.00	0.1456
1275.00	0.8598	3775.00	0.1449
1300.00	0.8420	3800.00	0.1443
1325.00	0.8242	3825.00	0.1436
1350.00	0.8073	3850.00	0.1429
1375.00	0.7912	3875.00	0.1422
1400.00	0.7750	3900.00	0.1415
1425.00	0.7587	3925.00	0.1409
1450.00	0.7424	3950.00	0.1402
1475.00	0.7260	3975.00	0.1396
1500.00	0.7114	4000.00	0.1389
1525.00	0.6987	4025.00	0.1383
1550.00	0.6860	4050.00	0.1376
1575.00	0.6733	4075.00	0.1370
1600.00	0.6606	4100.00	0.1364
1625.00	0.6480	4125.00	0.1358
1650.00	0.6353	4150.00	0.1352
1675.00	0.6227	4175.00	0.1345
1700.00	0.6100	4200.00	0.1339
1725.00	0.5975	4225.00	0.1333
1750.00	0.5850	4250.00	0.1327
1775.00	0.5725	4275.00	0.1321
1800.00	0.5601	4300.00	0.1315
1825.00	0.5477	4325.00	0.1310
1850.00	0.5354	4350.00	0.1304
1875.00	0.5232	4375.00	0.1298
1900.00	0.5111	4400.00	0.1292
1925.00	0.4991	4425.00	0.1287
1950.00	0.4872	4450.00	0.1281
1975.00	0.4753	4475.00	0.1276
2000.00	0.4636	4500.00	0.1270
2025.00	0.4520	4525.00	0.1265
2050.00	0.4405	4550.00	0.1259
2075.00	0.4291	4575.00	0.1254
2100.00	0.4178	4600.00	0.1248
2125.00	0.4067	4625.00	0.1243
2150.00	0.3957	4650.00	0.1238

2175.00	0.3849	4675.00	0.1233
2200.00	0.3742	4700.00	0.1227
2225.00	0.3636	4725.00	0.1222
2250.00	0.3532	4750.00	0.1217
2275.00	0.3430	4775.00	0.1212
2300.00	0.3329	4800.00	0.1207
2325.00	0.3230	4825.00	0.1202
2350.00	0.3132	4850.00	0.1197
2375.00	0.3037	4875.00	0.1192
2400.00	0.2942	4900.00	0.1187
2425.00	0.2850	4925.00	0.1183
2450.00	0.2759	4950.00	0.1178
2475.00	0.2670	4975.00	0.1173
2500.00	0.2583	5000.00	0.1168

********** 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	4.244	4.244	3.819	2.546	0.4244

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	3.872	3.872	3.484	2.323	0.3872

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:36:52

TITLE: SBS_HCL_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	1.941	75.0	SUM
20*	96.66	79.91	-22.77	6.26	1.945	75.0	SUM

30	99.22	88.96	-28.64	9.15	1.874	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.758	75.0	SPR
50	95.31	98.77	-37.63	14.01	1.640	75.0	SPR
60	88.96	99.22	-40.47	15.84	1.571	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.422	75.0	SUM
80	68.42	91.17	-42.41	18.01	1.208	50.0	SPR
90	54.86	82.90	-41.45	18.29	1.230	75.0	SUM
100	68.42	91.17	-48.76	18.01	1.400	75.0	SUM
110	79.91	96.66	-54.59	17.19	1.128	42.7	SUM
120	88.96	99.22	-58.76	15.84	1.112	42.7	SUM
130	95.31	98.77	-61.14	14.01	1.202	42.7	SUM
140	98.77	95.31	-61.67	11.76	1.299	42.7	SUM
150	99.22	88.96	-60.32	9.14	0.8405	42.7	SUM
160	96.66	79.90	-57.14	6.26	0.6302	42.7	SPR
170	91.17	68.42	-52.22	3.18	0.5867	425.0	WIN
180	82.90	54.86	-45.72	0.00	0.5899	400.0	WIN
190	91.17	68.42	-52.22	-3.18	0.5867	425.0	WIN
200	96.66	79.91	-57.14	-6.26	0.6305	42.7	SPR
210	99.22	88.96	-60.32	-9.15	0.8405	42.7	SUM
220	98.77	95.31	-61.67	-11.76	1.299	42.7	SUM
230	95.31	98.77	-61.14	-14.01	1.202	42.7	SUM
240	88.96	99.22	-58.76	-15.84	1.112	42.7	SUM
250	79.90	96.66	-54.59	-17.19	1.128	42.7	SUM
260	68.42	91.17	-48.76	-18.01	1.400	75.0	SUM
270	54.86	82.90	-41.45	-18.29	1.230	75.0	SUM
280	68.42	91.17	-42.41	-18.01	1.208	50.0	SPR
290	79.91	96.66	-42.08	-17.19	1.422	75.0	SUM
300	88.96	99.22	-40.47	-15.84	1.571	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.640	75.0	SPR
320	98.77	95.31	-33.65	-11.76	1.758	75.0	SPR
330	99.22	88.96	-28.64	-9.14	1.874	75.0	SUM
340	96.66	79.90	-22.77	-6.26	1.945	75.0	SUM
350	91.17	68.42	-16.20	-3.18	1.941	75.0	SUM
360	82.90	54.86	-9.14	0.00	1.879	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	1.775	2525.00	0.1145
50.00	1.879	2550.00	0.1107
75.00	1.945	2575.00	0.1069
100.00	1.874	2600.00	0.1032
125.00	0.8066	2625.00	0.9966E-01
150.00	0.8042	2650.00	0.9616E-01
175.00	0.8057	2675.00	0.9274E-01
200.00	0.8025	2700.00	0.8941E-01
225.00	0.7957	2725.00	0.8616E-01
250.00	0.7863	2750.00	0.8299E-01
275.00	0.7738	2775.00	0.8115E-01
300.00	0.7594	2800.00	0.8074E-01
325.00	0.7437	2825.00	0.8032E-01
350.00	0.7272	2850.00	0.7991E-01
375.00	0.7106	2875.00	0.7950E-01
400.00	0.6961	2900.00	0.7910E-01
425.00	0.6853	2925.00	0.7869E-01
450.00	0.6744	2950.00	0.7829E-01
475.00	0.6628	2975.00	0.7789E-01
500.00	0.6509	3000.00	0.7749E-01
525.00	0.6393	3025.00	0.7710E-01
550.00	0.6280	3050.00	0.7671E-01
575.00	0.6169	3075.00	0.7632E-01
600.00	0.6062	3100.00	0.7593E-01
625.00	0.5957	3125.00	0.7554E-01
650.00	0.5855	3150.00	0.7516E-01
675.00	0.5756	3175.00	0.7478E-01
700.00	0.5660	3200.00	0.7440E-01
725.00	0.5567	3225.00	0.7403E-01
750.00	0.5476	3250.00	0.7366E-01
775.00	0.5385	3275.00	0.7329E-01
800.00	0.5303	3300.00	0.7292E-01
825.00	0.5234	3325.00	0.7255E-01
850.00	0.5166	3350.00	0.7219E-01
875.00	0.5099	3375.00	0.7183E-01
900.00	0.5034	3400.00	0.7147E-01

925.00	0.4971	3425.00	0.7112E-01
950.00	0.4907	3450.00	0.7077E-01
975.00	0.4841	3475.00	0.7042E-01
1000.00	0.4774	3500.00	0.7007E-01
1025.00	0.4704	3525.00	0.6973E-01
1050.00	0.4633	3550.00	0.6939E-01
1075.00	0.4561	3575.00	0.6905E-01
1100.00	0.4487	3600.00	0.6871E-01
1125.00	0.4412	3625.00	0.6838E-01
1150.00	0.4336	3650.00	0.6805E-01
1175.00	0.4259	3675.00	0.6772E-01
1200.00	0.4181	3700.00	0.6739E-01
1225.00	0.4101	3725.00	0.6707E-01
1250.00	0.4021	3750.00	0.6675E-01
1275.00	0.3941	3775.00	0.6643E-01
1300.00	0.3859	3800.00	0.6611E-01
1325.00	0.3778	3825.00	0.6580E-01
1350.00	0.3700	3850.00	0.6549E-01
1375.00	0.3626	3875.00	0.6518E-01
1400.00	0.3552	3900.00	0.6488E-01
1425.00	0.3477	3925.00	0.6457E-01
1450.00	0.3403	3950.00	0.6427E-01
1475.00	0.3328	3975.00	0.6397E-01
1500.00	0.3261	4000.00	0.6367E-01
1525.00	0.3203	4025.00	0.6338E-01
1550.00	0.3144	4050.00	0.6309E-01
1575.00	0.3086	4075.00	0.6280E-01
1600.00	0.3028	4100.00	0.6251E-01
1625.00	0.2970	4125.00	0.6223E-01
1650.00	0.2912	4150.00	0.6194E-01
1675.00	0.2854	4175.00	0.6166E-01
1700.00	0.2796	4200.00	0.6138E-01
1725.00	0.2738	4225.00	0.6111E-01
1750.00	0.2681	4250.00	0.6083E-01
1775.00	0.2624	4275.00	0.6056E-01
1800.00	0.2567	4300.00	0.6029E-01
1825.00	0.2510	4325.00	0.6003E-01
1850.00	0.2454	4350.00	0.5976E-01
1875.00	0.2398	4375.00	0.5950E-01
1900.00	0.2343	4400.00	0.5924E-01
1925.00	0.2287	4425.00	0.5898E-01
1950.00	0.2233	4450.00	0.5872E-01
1975.00	0.2179	4475.00	0.5847E-01
2000.00	0.2125	4500.00	0.5821E-01
2025.00	0.2072	4525.00	0.5796E-01
2050.00	0.2019	4550.00	0.5771E-01
2075.00	0.1967	4575.00	0.5747E-01
2100.00	0.1915	4600.00	0.5722E-01
2125.00	0.1864	4625.00	0.5698E-01
2150.00	0.1814	4650.00	0.5674E-01

2175.00	0.1764	4675.00	0.5650E-01
2200.00	0.1715	4700.00	0.5626E-01
2225.00	0.1667	4725.00	0.5602E-01
2250.00	0.1619	4750.00	0.5579E-01
2275.00	0.1572	4775.00	0.5556E-01
2300.00	0.1526	4800.00	0.5533E-01
2325.00	0.1480	4825.00	0.5510E-01
2350.00	0.1436	4850.00	0.5487E-01
2375.00	0.1392	4875.00	0.5465E-01
2400.00	0.1349	4900.00	0.5442E-01
2425.00	0.1306	4925.00	0.5420E-01
2450.00	0.1265	4950.00	0.5398E-01
2475.00	0.1224	4975.00	0.5376E-01
2500.00	0.1184	5000.00	0.5355E-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	1.945	1.945	1.751	1.167	0.1945

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.775	1.775	1.597	1.065	0.1775

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:45:07

TITLE: SBS_ACETIC_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	1.235	75.0	SUM
20*	96.66	79.91	-22.77	6.26	1.238	75.0	SUM

30	99.22	88.96	-28.64	9.15	1.192	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.118	75.0	SPR
50	95.31	98.77	-37.63	14.01	1.044	75.0	SPR
60	88.96	99.22	-40.47	15.84	0.9998	75.0	SUM
70	79.90	96.66	-42.08	17.19	0.9050	75.0	SUM
80	68.42	91.17	-42.41	18.01	0.7688	50.0	SPR
90	54.86	82.90	-41.45	18.29	0.7829	75.0	SUM
100	68.42	91.17	-48.76	18.01	0.8911	75.0	SUM
110	79.91	96.66	-54.59	17.19	0.7177	42.7	SUM
120	88.96	99.22	-58.76	15.84	0.7078	42.7	SUM
130	95.31	98.77	-61.14	14.01	0.7651	42.7	SUM
140	98.77	95.31	-61.67	11.76	0.8266	42.7	SUM
150	99.22	88.96	-60.32	9.14	0.5349	42.7	SUM
160	96.66	79.90	-57.14	6.26	0.4011	42.7	SPR
170	91.17	68.42	-52.22	3.18	0.3734	425.0	WIN
180	82.90	54.86	-45.72	0.00	0.3754	400.0	WIN
190	91.17	68.42	-52.22	-3.18	0.3734	425.0	WIN
200	96.66	79.91	-57.14	-6.26	0.4012	42.7	SPR
210	99.22	88.96	-60.32	-9.15	0.5348	42.7	SUM
220	98.77	95.31	-61.67	-11.76	0.8266	42.7	SUM
230	95.31	98.77	-61.14	-14.01	0.7651	42.7	SUM
240	88.96	99.22	-58.76	-15.84	0.7078	42.7	SUM
250	79.90	96.66	-54.59	-17.19	0.7177	42.7	SUM
260	68.42	91.17	-48.76	-18.01	0.8911	75.0	SUM
270	54.86	82.90	-41.45	-18.29	0.7829	75.0	SUM
280	68.42	91.17	-42.41	-18.01	0.7688	50.0	SPR
290	79.91	96.66	-42.08	-17.19	0.9050	75.0	SUM
300	88.96	99.22	-40.47	-15.84	0.9998	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.044	75.0	SPR
320	98.77	95.31	-33.65	-11.76	1.118	75.0	SPR
330	99.22	88.96	-28.64	-9.14	1.192	75.0	SUM
340	96.66	79.90	-22.77	-6.26	1.238	75.0	SUM
350	91.17	68.42	-16.20	-3.18	1.235	75.0	SUM
360	82.90	54.86	-9.14	0.00	1.196	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	1.129	2525.00	0.7285E-01
50.00	1.196	2550.00	0.7042E-01
75.00	1.238	2575.00	0.6803E-01
100.00	1.192	2600.00	0.6570E-01
125.00	0.5133	2625.00	0.6342E-01
150.00	0.5118	2650.00	0.6119E-01
175.00	0.5127	2675.00	0.5902E-01
200.00	0.5107	2700.00	0.5690E-01
225.00	0.5063	2725.00	0.5483E-01
250.00	0.5004	2750.00	0.5281E-01
275.00	0.4924	2775.00	0.5164E-01
300.00	0.4832	2800.00	0.5138E-01
325.00	0.4732	2825.00	0.5111E-01
350.00	0.4628	2850.00	0.5085E-01
375.00	0.4522	2875.00	0.5059E-01
400.00	0.4430	2900.00	0.5033E-01
425.00	0.4361	2925.00	0.5008E-01
450.00	0.4292	2950.00	0.4982E-01
475.00	0.4218	2975.00	0.4957E-01
500.00	0.4142	3000.00	0.4931E-01
525.00	0.4068	3025.00	0.4906E-01
550.00	0.3996	3050.00	0.4881E-01
575.00	0.3926	3075.00	0.4856E-01
600.00	0.3857	3100.00	0.4832E-01
625.00	0.3791	3125.00	0.4807E-01
650.00	0.3726	3150.00	0.4783E-01
675.00	0.3663	3175.00	0.4759E-01
700.00	0.3602	3200.00	0.4735E-01
725.00	0.3543	3225.00	0.4711E-01
750.00	0.3485	3250.00	0.4687E-01
775.00	0.3427	3275.00	0.4664E-01
800.00	0.3375	3300.00	0.4640E-01
825.00	0.3330	3325.00	0.4617E-01
850.00	0.3287	3350.00	0.4594E-01
875.00	0.3245	3375.00	0.4571E-01
900.00	0.3203	3400.00	0.4548E-01

925.00	0.3163	3425.00	0.4526E-01
950.00	0.3122	3450.00	0.4503E-01
975.00	0.3081	3475.00	0.4481E-01
1000.00	0.3038	3500.00	0.4459E-01
1025.00	0.2994	3525.00	0.4437E-01
1050.00	0.2949	3550.00	0.4416E-01
1075.00	0.2903	3575.00	0.4394E-01
1100.00	0.2856	3600.00	0.4373E-01
1125.00	0.2808	3625.00	0.4351E-01
1150.00	0.2759	3650.00	0.4330E-01
1175.00	0.2710	3675.00	0.4309E-01
1200.00	0.2660	3700.00	0.4289E-01
1225.00	0.2610	3725.00	0.4268E-01
1250.00	0.2559	3750.00	0.4248E-01
1275.00	0.2508	3775.00	0.4227E-01
1300.00	0.2456	3800.00	0.4207E-01
1325.00	0.2404	3825.00	0.4187E-01
1350.00	0.2354	3850.00	0.4168E-01
1375.00	0.2308	3875.00	0.4148E-01
1400.00	0.2260	3900.00	0.4128E-01
1425.00	0.2213	3925.00	0.4109E-01
1450.00	0.2165	3950.00	0.4090E-01
1475.00	0.2118	3975.00	0.4071E-01
1500.00	0.2075	4000.00	0.4052E-01
1525.00	0.2038	4025.00	0.4033E-01
1550.00	0.2001	4050.00	0.4015E-01
1575.00	0.1964	4075.00	0.3996E-01
1600.00	0.1927	4100.00	0.3978E-01
1625.00	0.1890	4125.00	0.3960E-01
1650.00	0.1853	4150.00	0.3942E-01
1675.00	0.1816	4175.00	0.3924E-01
1700.00	0.1779	4200.00	0.3906E-01
1725.00	0.1743	4225.00	0.3889E-01
1750.00	0.1706	4250.00	0.3871E-01
1775.00	0.1670	4275.00	0.3854E-01
1800.00	0.1634	4300.00	0.3837E-01
1825.00	0.1598	4325.00	0.3820E-01
1850.00	0.1562	4350.00	0.3803E-01
1875.00	0.1526	4375.00	0.3786E-01
1900.00	0.1491	4400.00	0.3770E-01
1925.00	0.1456	4425.00	0.3753E-01
1950.00	0.1421	4450.00	0.3737E-01
1975.00	0.1386	4475.00	0.3721E-01
2000.00	0.1352	4500.00	0.3704E-01
2025.00	0.1318	4525.00	0.3688E-01
2050.00	0.1285	4550.00	0.3673E-01
2075.00	0.1251	4575.00	0.3657E-01
2100.00	0.1219	4600.00	0.3641E-01
2125.00	0.1186	4625.00	0.3626E-01
2150.00	0.1154	4650.00	0.3610E-01

2175.00	0.1123	4675.00	0.3595E-01
2200.00	0.1091	4700.00	0.3580E-01
2225.00	0.1061	4725.00	0.3565E-01
2250.00	0.1030	4750.00	0.3550E-01
2275.00	0.1000	4775.00	0.3535E-01
2300.00	0.9710E-01	4800.00	0.3521E-01
2325.00	0.9421E-01	4825.00	0.3506E-01
2350.00	0.9136E-01	4850.00	0.3492E-01
2375.00	0.8857E-01	4875.00	0.3478E-01
2400.00	0.8582E-01	4900.00	0.3463E-01
2425.00	0.8312E-01	4925.00	0.3449E-01
2450.00	0.8048E-01	4950.00	0.3435E-01
2475.00	0.7789E-01	4975.00	0.3421E-01
2500.00	0.7534E-01	5000.00	0.3408E-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	1.238	1.238	1.114	0.7426	0.1238

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.129	1.129	1.016	0.6775	0.1129

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 10/31/21
10:55:15

TITLE: SBS_MDT-SULFIDES_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	2.117	75.0	SUM
20*	96.66	79.91	-22.77	6.26	2.122	75.0	SUM

30	99.22	88.96	-28.64	9.15	2.044	75.0	SUM
40	98.77	95.31	-33.65	11.76	1.917	75.0	SPR
50	95.31	98.77	-37.63	14.01	1.789	75.0	SPR
60	88.96	99.22	-40.47	15.84	1.714	75.0	SUM
70	79.90	96.66	-42.08	17.19	1.551	75.0	SUM
80	68.42	91.17	-42.41	18.01	1.318	50.0	SPR
90	54.86	82.90	-41.45	18.29	1.342	75.0	SUM
100	68.42	91.17	-48.76	18.01	1.528	75.0	SUM
110	79.91	96.66	-54.59	17.19	1.230	42.7	SUM
120	88.96	99.22	-58.76	15.84	1.213	42.7	SUM
130	95.31	98.77	-61.14	14.01	1.312	42.7	SUM
140	98.77	95.31	-61.67	11.76	1.417	42.7	SUM
150	99.22	88.96	-60.32	9.14	0.9169	42.7	SUM
160	96.66	79.90	-57.14	6.26	0.6875	42.7	SPR
170	91.17	68.42	-52.22	3.18	0.6400	425.0	WIN
180	82.90	54.86	-45.72	0.00	0.6435	400.0	WIN
190	91.17	68.42	-52.22	-3.18	0.6400	425.0	WIN
200	96.66	79.91	-57.14	-6.26	0.6878	42.7	SPR
210	99.22	88.96	-60.32	-9.15	0.9169	42.7	SUM
220	98.77	95.31	-61.67	-11.76	1.417	42.7	SUM
230	95.31	98.77	-61.14	-14.01	1.312	42.7	SUM
240	88.96	99.22	-58.76	-15.84	1.213	42.7	SUM
250	79.90	96.66	-54.59	-17.19	1.230	42.7	SUM
260	68.42	91.17	-48.76	-18.01	1.528	75.0	SUM
270	54.86	82.90	-41.45	-18.29	1.342	75.0	SUM
280	68.42	91.17	-42.41	-18.01	1.318	50.0	SPR
290	79.91	96.66	-42.08	-17.19	1.551	75.0	SUM
300	88.96	99.22	-40.47	-15.84	1.714	75.0	SUM
310	95.31	98.77	-37.63	-14.01	1.789	75.0	SPR
320	98.77	95.31	-33.65	-11.76	1.917	75.0	SPR
330	99.22	88.96	-28.64	-9.14	2.044	75.0	SUM
340	96.66	79.90	-22.77	-6.26	2.121	75.0	SUM
350	91.17	68.42	-16.20	-3.18	2.117	75.0	SUM
360	82.90	54.86	-9.14	0.00	2.050	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	1.936	2525.00	0.1249
50.00	2.050	2550.00	0.1207
75.00	2.122	2575.00	0.1166
100.00	2.044	2600.00	0.1126
125.00	0.8799	2625.00	0.1087
150.00	0.8773	2650.00	0.1049
175.00	0.8789	2675.00	0.1012
200.00	0.8755	2700.00	0.9754E-01
225.00	0.8680	2725.00	0.9399E-01
250.00	0.8577	2750.00	0.9053E-01
275.00	0.8442	2775.00	0.8853E-01
300.00	0.8284	2800.00	0.8808E-01
325.00	0.8113	2825.00	0.8763E-01
350.00	0.7933	2850.00	0.8718E-01
375.00	0.7752	2875.00	0.8673E-01
400.00	0.7594	2900.00	0.8629E-01
425.00	0.7476	2925.00	0.8585E-01
450.00	0.7357	2950.00	0.8541E-01
475.00	0.7231	2975.00	0.8497E-01
500.00	0.7101	3000.00	0.8454E-01
525.00	0.6974	3025.00	0.8411E-01
550.00	0.6851	3050.00	0.8368E-01
575.00	0.6730	3075.00	0.8325E-01
600.00	0.6613	3100.00	0.8283E-01
625.00	0.6498	3125.00	0.8241E-01
650.00	0.6387	3150.00	0.8199E-01
675.00	0.6279	3175.00	0.8158E-01
700.00	0.6175	3200.00	0.8117E-01
725.00	0.6073	3225.00	0.8076E-01
750.00	0.5974	3250.00	0.8035E-01
775.00	0.5874	3275.00	0.7995E-01
800.00	0.5785	3300.00	0.7955E-01
825.00	0.5709	3325.00	0.7915E-01
850.00	0.5635	3350.00	0.7875E-01
875.00	0.5563	3375.00	0.7836E-01
900.00	0.5492	3400.00	0.7797E-01

925.00	0.5422	3425.00	0.7759E-01
950.00	0.5353	3450.00	0.7720E-01
975.00	0.5281	3475.00	0.7682E-01
1000.00	0.5207	3500.00	0.7644E-01
1025.00	0.5132	3525.00	0.7607E-01
1050.00	0.5055	3550.00	0.7570E-01
1075.00	0.4976	3575.00	0.7533E-01
1100.00	0.4895	3600.00	0.7496E-01
1125.00	0.4814	3625.00	0.7460E-01
1150.00	0.4730	3650.00	0.7423E-01
1175.00	0.4646	3675.00	0.7388E-01
1200.00	0.4561	3700.00	0.7352E-01
1225.00	0.4474	3725.00	0.7317E-01
1250.00	0.4387	3750.00	0.7282E-01
1275.00	0.4299	3775.00	0.7247E-01
1300.00	0.4210	3800.00	0.7213E-01
1325.00	0.4121	3825.00	0.7178E-01
1350.00	0.4036	3850.00	0.7144E-01
1375.00	0.3956	3875.00	0.7111E-01
1400.00	0.3875	3900.00	0.7077E-01
1425.00	0.3793	3925.00	0.7044E-01
1450.00	0.3712	3950.00	0.7011E-01
1475.00	0.3630	3975.00	0.6979E-01
1500.00	0.3557	4000.00	0.6946E-01
1525.00	0.3494	4025.00	0.6914E-01
1550.00	0.3430	4050.00	0.6882E-01
1575.00	0.3367	4075.00	0.6851E-01
1600.00	0.3303	4100.00	0.6819E-01
1625.00	0.3240	4125.00	0.6788E-01
1650.00	0.3176	4150.00	0.6757E-01
1675.00	0.3113	4175.00	0.6727E-01
1700.00	0.3050	4200.00	0.6697E-01
1725.00	0.2987	4225.00	0.6666E-01
1750.00	0.2925	4250.00	0.6637E-01
1775.00	0.2862	4275.00	0.6607E-01
1800.00	0.2800	4300.00	0.6577E-01
1825.00	0.2739	4325.00	0.6548E-01
1850.00	0.2677	4350.00	0.6519E-01
1875.00	0.2616	4375.00	0.6491E-01
1900.00	0.2556	4400.00	0.6462E-01
1925.00	0.2495	4425.00	0.6434E-01
1950.00	0.2436	4450.00	0.6406E-01
1975.00	0.2377	4475.00	0.6378E-01
2000.00	0.2318	4500.00	0.6350E-01
2025.00	0.2260	4525.00	0.6323E-01
2050.00	0.2202	4550.00	0.6296E-01
2075.00	0.2145	4575.00	0.6269E-01
2100.00	0.2089	4600.00	0.6242E-01
2125.00	0.2034	4625.00	0.6216E-01
2150.00	0.1979	4650.00	0.6189E-01

2175.00	0.1924	4675.00	0.6163E-01
2200.00	0.1871	4700.00	0.6137E-01
2225.00	0.1818	4725.00	0.6112E-01
2250.00	0.1766	4750.00	0.6086E-01
2275.00	0.1715	4775.00	0.6061E-01
2300.00	0.1665	4800.00	0.6036E-01
2325.00	0.1615	4825.00	0.6011E-01
2350.00	0.1566	4850.00	0.5986E-01
2375.00	0.1518	4875.00	0.5962E-01
2400.00	0.1471	4900.00	0.5937E-01
2425.00	0.1425	4925.00	0.5913E-01
2450.00	0.1380	4950.00	0.5889E-01
2475.00	0.1335	4975.00	0.5865E-01
2500.00	0.1292	5000.00	0.5842E-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	2.122	2.122	1.910	1.273	0.2122

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	1.936	1.936	1.742	1.161	0.1936

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees

AERSCREEN 21112 / AERMOD 21112 11/01/21
12:31:38

TITLE: SBS_NAPHTHALENE_AERSCREEN

********** 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:	96.1	K above ambient	173.0	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	12.88	75.0	SUM
20*	96.66	79.91	-22.77	6.26	12.91	75.0	SUM

30	99.22	88.96	-28.64	9.15	12.43	75.0	SUM
40	98.77	95.31	-33.65	11.76	11.66	75.0	SPR
50	95.31	98.77	-37.63	14.01	10.88	75.0	SPR
60	88.96	99.22	-40.47	15.84	10.43	75.0	SUM
70	79.90	96.66	-42.08	17.19	9.438	75.0	SUM
80	68.42	91.17	-42.41	18.01	8.018	50.0	SPR
90	54.86	82.90	-41.45	18.29	8.165	75.0	SUM
100	68.42	91.17	-48.76	18.01	9.293	75.0	SUM
110	79.91	96.66	-54.59	17.19	7.485	42.7	SUM
120	88.96	99.22	-58.76	15.84	7.381	42.7	SUM
130	95.31	98.77	-61.14	14.01	7.979	42.7	SUM
140	98.77	95.31	-61.67	11.76	8.620	42.7	SUM
150	99.22	88.96	-60.32	9.14	5.578	42.7	SUM
160	96.66	79.90	-57.14	6.26	4.183	42.7	SPR
170	91.17	68.42	-52.22	3.18	3.894	425.0	WIN
180	82.90	54.86	-45.72	0.00	3.915	400.0	WIN
190	91.17	68.42	-52.22	-3.18	3.894	425.0	WIN
200	96.66	79.91	-57.14	-6.26	4.184	42.7	SPR
210	99.22	88.96	-60.32	-9.15	5.578	42.7	SUM
220	98.77	95.31	-61.67	-11.76	8.620	42.7	SUM
230	95.31	98.77	-61.14	-14.01	7.979	42.7	SUM
240	88.96	99.22	-58.76	-15.84	7.381	42.7	SUM
250	79.90	96.66	-54.59	-17.19	7.484	42.7	SUM
260	68.42	91.17	-48.76	-18.01	9.293	75.0	SUM
270	54.86	82.90	-41.45	-18.29	8.165	75.0	SUM
280	68.42	91.17	-42.41	-18.01	8.018	50.0	SPR
290	79.91	96.66	-42.08	-17.19	9.438	75.0	SUM
300	88.96	99.22	-40.47	-15.84	10.43	75.0	SUM
310	95.31	98.77	-37.63	-14.01	10.88	75.0	SPR
320	98.77	95.31	-33.65	-11.76	11.66	75.0	SPR
330	99.22	88.96	-28.64	-9.14	12.44	75.0	SUM
340	96.66	79.90	-22.77	-6.26	12.91	75.0	SUM
350	91.17	68.42	-16.20	-3.18	12.88	75.0	SUM
360	82.90	54.86	-9.14	0.00	12.47	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	12	30	1	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
148.41	0.819	1.200	0.020	445.	1704.	-353.0	1.300	0.30	0.12	4.00

HT	REF TA	HT
10.0	310.9	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):   5.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 22.9 meters
ESTIMATED FINAL PLUME RISE (non-downwash):   12.7 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 35.6 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	11.78	2525.00	0.7598
50.00	12.47	2550.00	0.7343
75.00	12.91	2575.00	0.7095
100.00	12.44	2600.00	0.6851
125.00	5.353	2625.00	0.6614
150.00	5.337	2650.00	0.6381
175.00	5.347	2675.00	0.6155
200.00	5.326	2700.00	0.5933
225.00	5.280	2725.00	0.5718
250.00	5.218	2750.00	0.5507
275.00	5.135	2775.00	0.5386
300.00	5.039	2800.00	0.5358
325.00	4.935	2825.00	0.5331
350.00	4.826	2850.00	0.5303
375.00	4.716	2875.00	0.5276
400.00	4.620	2900.00	0.5249
425.00	4.548	2925.00	0.5222
450.00	4.476	2950.00	0.5196
475.00	4.399	2975.00	0.5169
500.00	4.320	3000.00	0.5143
525.00	4.243	3025.00	0.5117
550.00	4.167	3050.00	0.5090
575.00	4.094	3075.00	0.5065
600.00	4.023	3100.00	0.5039
625.00	3.953	3125.00	0.5013
650.00	3.886	3150.00	0.4988
675.00	3.820	3175.00	0.4963
700.00	3.756	3200.00	0.4938
725.00	3.694	3225.00	0.4913
750.00	3.634	3250.00	0.4888
775.00	3.573	3275.00	0.4863
800.00	3.519	3300.00	0.4839
825.00	3.473	3325.00	0.4815
850.00	3.428	3350.00	0.4791
875.00	3.384	3375.00	0.4767
900.00	3.341	3400.00	0.4743

925.00	3.299	3425.00	0.4720
950.00	3.256	3450.00	0.4696
975.00	3.213	3475.00	0.4673
1000.00	3.168	3500.00	0.4650
1025.00	3.122	3525.00	0.4627
1050.00	3.075	3550.00	0.4605
1075.00	3.027	3575.00	0.4582
1100.00	2.978	3600.00	0.4560
1125.00	2.928	3625.00	0.4538
1150.00	2.878	3650.00	0.4516
1175.00	2.826	3675.00	0.4494
1200.00	2.774	3700.00	0.4472
1225.00	2.722	3725.00	0.4451
1250.00	2.669	3750.00	0.4430
1275.00	2.615	3775.00	0.4409
1300.00	2.561	3800.00	0.4388
1325.00	2.507	3825.00	0.4367
1350.00	2.455	3850.00	0.4346
1375.00	2.406	3875.00	0.4326
1400.00	2.357	3900.00	0.4305
1425.00	2.308	3925.00	0.4285
1450.00	2.258	3950.00	0.4265
1475.00	2.208	3975.00	0.4245
1500.00	2.164	4000.00	0.4226
1525.00	2.125	4025.00	0.4206
1550.00	2.087	4050.00	0.4187
1575.00	2.048	4075.00	0.4168
1600.00	2.009	4100.00	0.4148
1625.00	1.971	4125.00	0.4130
1650.00	1.932	4150.00	0.4111
1675.00	1.894	4175.00	0.4092
1700.00	1.856	4200.00	0.4074
1725.00	1.817	4225.00	0.4055
1750.00	1.779	4250.00	0.4037
1775.00	1.741	4275.00	0.4019
1800.00	1.704	4300.00	0.4001
1825.00	1.666	4325.00	0.3984
1850.00	1.629	4350.00	0.3966
1875.00	1.592	4375.00	0.3948
1900.00	1.555	4400.00	0.3931
1925.00	1.518	4425.00	0.3914
1950.00	1.482	4450.00	0.3897
1975.00	1.446	4475.00	0.3880
2000.00	1.410	4500.00	0.3863
2025.00	1.375	4525.00	0.3847
2050.00	1.340	4550.00	0.3830
2075.00	1.305	4575.00	0.3814
2100.00	1.271	4600.00	0.3797
2125.00	1.237	4625.00	0.3781
2150.00	1.204	4650.00	0.3765

2175.00	1.171	4675.00	0.3749
2200.00	1.138	4700.00	0.3734
2225.00	1.106	4725.00	0.3718
2250.00	1.074	4750.00	0.3702
2275.00	1.043	4775.00	0.3687
2300.00	1.013	4800.00	0.3672
2325.00	0.9825	4825.00	0.3657
2350.00	0.9528	4850.00	0.3642
2375.00	0.9236	4875.00	0.3627
2400.00	0.8950	4900.00	0.3612
2425.00	0.8669	4925.00	0.3597
2450.00	0.8393	4950.00	0.3583
2475.00	0.8122	4975.00	0.3568
2500.00	0.7857	5000.00	0.3554

********** 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	12.91	12.91	11.62	7.745	1.291

DISTANCE FROM SOURCE 58.00 meters directed toward 20 degrees

IMPACT AT THE AMBIENT BOUNDARY	11.78	11.78	10.60	7.066	1.178

DISTANCE FROM SOURCE 42.67 meters directed toward 360 degrees