



Dominion[®]

**NSR Permit Application (45CSR13)
Installation and Operation of a Fly Ash Separation Process**

Dominion (Virginia Electric and Power Company)

**Mt. Storm Power Station
Mt. Storm, West Virginia**

DEP Air Permit Number: R30-02300003

February 2016

Contents

Proposed Project	1
Project Description.....	1
Emissions And Control Devices	3
Application For NSR Permit	
Attachment A - Business Certificate	
Attachment B - Map	
Attachment C - Installation And Start Up Schedule	
Attachment D - Regulatory Discussion	
Attachment E - Plot Plan – Mt. Storm Power Station Fly Ash Separation Facility	
Attachment F - Detailed Process Flow Diagram	
Attachment G - Process Description	
Attachment H - Material Safety Data Sheets (MSDSs)	
Attachment I - Emission Units Table	
Attachment J - Emission Points Data Summary Sheet	
Attachment K - Fugitive Emissions Data Summary Sheet	
Attachment L-1 - Emissions Unit Data Sheet - General (Units ST-S1 Through ST-S9)	
Attachment L-2 - Fugitive Emissions From Paved Haulroads	
Attachment M - Air Pollution Control Device Sheet (Baghouse) (Control Devices ST-C1 Through ST-C9)	
Attachment N: Supporting Emissions Calculations	
Attachment P: Public Notice	

Proposed Project

Virginia Electric and Power Company (Dominion) proposes to install and operate a process for separating the fly ash generated at the Mt. Storm Power Station (DEP Air Permit No. R30-02300003). This process would be constructed, owned, and operated by a third-party, Separation Technologies LLC (ST) on the Mt. Storm property.

The project consists of a process to separate high-carbon fly ash from low-carbon fly ash. The mineral content ash (ProAsh®) will be used as a supplementary cementitious product for ready mix concrete. The high-carbon fly ash (EcoTherm®) will be returned to the boilers as fuel, which will off-set the use of some virgin coal fuel and subsequently create a higher mineral content ash that can be recovered through the separation process. Capturing and beneficially reusing both the mineral and high-carbon content ash has the benefit of minimizing the amount of fly ash that will need to be landfilled. Currently, all of the ash generated by Mt. Storm is landfilled. This project will not affect the generation or disposal of bottom ash (the ash that forms in the bottom of the boilers and is not entrained in the boiler exhaust).

Initially, a single separator will be installed to process ash from Units 1 and 2, which will utilize approximately half of the plant total fly ash production. Subsequently a second separator will be installed, increasing the capacity to process all of the fly ash produced from Units 1, 2 and 3.

The process and ancillary equipment is expected to generate minimal additional emissions. These emissions are all expected to be forms of particulate matter, whether total PM, PM₁₀, or PM_{2.5}. No other emissions are expected to be generated from this project. Because the expected uncontrolled emission rates exceed the thresholds for exemption in 45CSR13, a preconstruction air emissions permit is required. This package contains an application for a minor new source review permit under the West Virginia air regulations.

Initially, a single separator will be installed to process ash from Units 1 and 2, which will utilize approximately half of the plant total fly ash production. Subsequently a second separator will be installed, increasing the capacity to process all of the fly ash produced from Units 1, 2 and 3. The application addresses both separators.

Project Description

The Mt. Storm Power Station is a coal-fired electric power generating facility that generates ash and other byproducts (such as gypsum) from its operation. Most of these byproducts are currently placed in an on-site landfill that was designed for this purpose. Two general categories of ash are produced by the boilers: fly ash (so called because it becomes airborne in the combustion process) and bottom ash (which forms in the bottoms of the boilers and does not become airborne). This application is only concerning the fly ash portion of these byproducts.

Fly ash has long been used as a substitute for Portland cement. Fly ash is a good substitute or admixture with cement as long as the carbon content of the ash is low. High carbon ash does not result in acceptable concrete for most purposes (the resulting concrete is generally darker and less structurally sound than normal Portland cement). Therefore, only low-carbon ash is desirable as a cement substitute. There are two widely available methods of generating low-carbon ash for the cement market; either processing the ash in a separate circulating fluidized bed boiler which leaves only low-carbon ash, or physically separating the high-carbon ash from the low-carbon ash. The project that is the subject of this application is a physical separation process.

ST Process

A technical discussion of the project follows. Separation Technologies LLC's (ST) proprietary technology consists of a unique, triboelectrostatic belt separator. Fly ash that is collected in the main boilers electrostatic precipitators (ESPs) at Mt. Storm is placed into silos at the facility. From there, it will be fed into the separation process, which is a belt conveyor with a thin gap between two parallel planar electrodes. The ST separator utilizes electrical charge differences between materials to separate the fly ash into two products. The separator produces a 3% "loss on ignition" ("LOI") low-carbon mineral product (ProAsh®), which is sold as a supplementary cementitious material for use in concrete, and a high-carbon ash product (EcoTherm®). For the Mt. Storm facility, the high-carbon ash product (EcoTherm®) will be returned to the utility for re-burning, as discussed below.

A new building will be constructed to accommodate the new separator and its associated equipment. Fly ash will be fed from the existing fly ash silos using new airslide assemblies connecting the existing silos to the separators. ProAsh® will be conveyed from the separators by dilute phase transport to a new ProAsh® silo. The new ProAsh® silo will be equipped with a dry loadout spout assembly and truck scale for loading of bulk pneumatic tanker trucks.

The EcoTherm® from the separators will be conveyed by dilute phase transport to a new storage silo for temporary storage and subsequent re-burning by the utility. For re-burning, the EcoTherm® will be conveyed by pneumatic transport to a carbon return system located just above the existing coal belt. The carbon return system consists of a filter-receiver discharging through a rotary feeder and impact scale to a high speed mixer located over the existing coal conveyors. When a coal conveyor is running and carrying coal to replenish the bunkers, EcoTherm® may be conveyed from the high-carbon ash storage silo to the carbon return filter-receiver. The EcoTherm® is then metered into the high speed mixer where it is mixed with just enough water to suppress dust (typically about 8 weight percent moisture) and discharged onto the operating coal conveyor. A gravity "V" diverter valve is provided on the mixer discharge to permit a selection between the two existing conveyors. For disposal, if necessary, the high-carbon ash will be wet conditioned at the high carbon storage silo. A central vacuum cleaning system will also be installed to facilitate housekeeping in the operating areas.

Emissions and Control Devices

As mentioned above, this operation is not expected to be a significant source of emissions. The only new emissions from this process will be in the forms of PM, PM₁₀, and PM_{2.5}.

Dedicated dust collectors will serve the separation process. The silos will all be equipped with bin vent filters/baghouses. The loadout chutes will be equipped with dust filters to minimize or eliminate any fugitive emissions from the bulk tanker truck loading process.

Estimated emissions from each of these processes are shown in the enclosed calculations. Hourly emissions are based on the maximum rated air flow through the emission point and annual emissions are based on the hourly emissions rate X 8,760 hours per year (i.e., no restriction on hours of operation). Emissions estimates are based on a proposed limit of 0.01 gr/dscf exhaust from each baghouse or other fabric filter. This grain loading level will be specified as a minimum when this equipment is procured. The total post-permit potential to emit from this operation (stack and fugitive emissions) is 7.31 tons per year of PM, 5.47 tons per year of PM₁₀ and 4.12 tons per year of PM_{2.5}. These emissions levels are not additive; PM₁₀ is a subset of PM and PM_{2.5} is a subset of both total PM and PM₁₀.

Overall truck traffic (on a vehicle mile basis) at the facility will not increase as a result of the operation of this project. There will be a decrease in truck traffic since much less ash will be trucked to the landfill. Fugitive dust emissions from truck traffic are expected to decrease due to the decrease in truck traffic to the landfill.

The return of the high-carbon ash (EcoTherm®) to the boilers' coal feed system will not result in increased emissions from the boiler stacks. There will be no increase in maximum hourly emissions from the boiler stacks of PM, SO₂, or NO_x as a result of the use of this material. The boilers' fuel feed system (coal conveyors, bunkers, pulverizers, and meters) will not be changed to accommodate this material, other than the equipment used to place the high-carbon ash onto the coal conveyors. The high-carbon ash is already present in the boilers under normal operations. This material should not be considered a new "fuel" for these units. Therefore, a review under the federal New Source Performance Standards is not required.

The maximum amount of EcoTherm® expected to be generated is about 120,000 tons per year (with two separators). This maximum amount would represent about three percent of Mt. Storm's total normal annual coal consumption on the order of 4,000,000 tons per year. This level of EcoTherm® use is not expected to measurably affect unit or facility emissions.

Estimated emissions were also calculated for regulated West Virginia air toxics using published EPA average data (refer to Attachment N). The evaluation does not change the need for a 45CSR13 Permit or the applicable bag house controls.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

601 57th Street, SE
 Charleston, WV 25304
 (304) 926-0475
www.dep.wv.gov/dag

**APPLICATION FOR NSR PERMIT
 AND
 TITLE V PERMIT REVISION
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):

- CONSTRUCTION MODIFICATION RELOCATION
 CLASS I ADMINISTRATIVE UPDATE TEMPORARY
 CLASS II ADMINISTRATIVE UPDATE AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT MINOR MODIFICATION
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office): Virginia Electric and Power Co.		2. Federal Employer ID No. (FEIN): 54-0418825	
3. Name of facility (if different from above): Mt. Storm Power Station		4. The applicant is the: <input checked="" type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input type="checkbox"/> BOTH	
5A. Applicant's mailing address: 5000 Dominion Blvd. Glen Allen, VA 23060		5B. Facility's present physical address: 436 Dominion Blvd. Mt. Storm, WV 26739-8632	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If YES, provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A . – If NO, provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation:			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If YES, please explain: Applicant owns the proposed site. – If NO, you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Fly ash separation facility. The high-carbon ash will be returned to the boilers as supplemental fuel and the mineral ash will be sold off-site as a construction material (i.e., Portland cement substitute). This process is more fully described in the enclosed application materials.		10. North American Industry Classification System (NAICS) code for the facility: 221112	

11A. DAQ Plant ID No. (for existing facilities only): <p style="text-align: center;">023-00003</p>	11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): <p style="text-align: center;">R30-02300003-2011, R13-656, R13-1660D, R13-1661/R14-10, R13-2034E, R13-2735, G60-C056A</p>	
<p style="text-align: center;"><i>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</i></p>		
12A. <ul style="list-style-type: none"> - For Modifications, Administrative Updates or Temporary permits at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; - For Construction or Relocation permits, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a MAP as Attachment B. <p>From WV Route 93 (Power Station Highway) turn south on to Dominion Boulevard. Proceed 0.35 miles to proposed ash separator site on right. Refer to map in Attachment B.</p>		
12.B. New site address (if applicable):	12C. Nearest city or town: <p style="text-align: center;">Mt. Storm</p>	12D. County: <p style="text-align: center;">Grant</p>
12.E. UTM Northing (KM): 4340.00	12F. UTM Easting (KM): 649.85	12G. UTM Zone: 17
13. Briefly describe the proposed change(s) at the facility: Construction of a new building containing two ash separation units, a new mineral ash (ProAsh®) silo with truck loadout, a new high-carbon fly ash (EcoTherm®) silo with a return system to the coal fuel delivery system and wet-conditioned ash truck loadout if needed for disposal, and associated particulate matter pollution control devices (bag and cartridge filters).		
14A. Provide the date of anticipated installation or change: 06/01/2016 (start construction) <ul style="list-style-type: none"> - If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: ___/___/___ 	14B. Date of anticipated Start-Up if a permit is granted: <p style="text-align: center;">5/29/2017</p>	
14C. Provide a Schedule of the planned Installation of/Change to and Start-Up of each of the units proposed in this permit application as Attachment C (if more than one unit is involved).		
15. Provide maximum projected Operating Schedule of activity/activities outlined in this application: Hours Per Day 24 Days Per Week 7 Weeks Per Year 52		
16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
17. Risk Management Plans. If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your Risk Management Plan (RMP) to U. S. EPA Region III.		
18. Regulatory Discussion. List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (<i>if known</i>). Provide this information as Attachment D .		
<p style="text-align: center;">Section II. Additional attachments and supporting documents.</p>		
19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).		
20. Include a Table of Contents as the first page of your application package.		
21. Provide a Plot Plan , e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as Attachment E (Refer to Plot Plan Guidance) . <ul style="list-style-type: none"> - Indicate the location of the nearest occupied structure (e.g. church, school, business, residence). 		

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F**.

23. Provide a **Process Description** as **Attachment G**.

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input checked="" type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

General Emission Unit, specify **Ash separators, silo storage, loadouts, and feeders**.

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input checked="" type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and **Example Legal Advertisement** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES NO

➤ If **YES**, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "**Precautionary Notice – Claims of Confidentiality**" guidance found in the **General Instructions** as **Attachment Q**.

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

- | | |
|--|---|
| <input type="checkbox"/> Authority of Corporation or Other Business Entity | <input type="checkbox"/> Authority of Partnership |
| <input type="checkbox"/> Authority of Governmental Agency | <input type="checkbox"/> Authority of Limited Partnership |

Submit completed and signed **Authority Form** as **Attachment R**.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned **Responsible Official** / **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE  DATE: 2/2/2016
(Please use blue ink) (Please use blue ink)

35B. Printed name of signee: Peter M. Balkus		35C. Title: Station Director
35D. E-mail: peter.m.balkus@dom.com	36E. Phone: (304) 259-4147	36F. FAX:
36A. Printed name of contact person (if different from above): Andy Gates		36B. Title:
36C. E-mail: andy.gates@dom.com	36D. Phone: (804) 273-2950	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate | <input checked="" type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet |
| <input checked="" type="checkbox"/> Attachment B: Map(s) | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s) |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input checked="" type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s) |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan | <input type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s) | <input checked="" type="checkbox"/> Attachment P: Public Notice |
| <input checked="" type="checkbox"/> Attachment G: Process Description | <input type="checkbox"/> Attachment Q: Business Confidential Claims |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table | <input checked="" type="checkbox"/> Attachment S: Title V Permit Revision Information |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee |

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- Forward 1 copy of the application to the Title V Permitting Group and:*
- For Title V Administrative Amendments:*
 - NSR permit writer should notify Title V permit writer of draft permit,*
- For Title V Minor Modifications:*
 - Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,*
 - NSR permit writer should notify Title V permit writer of draft permit.*
- For Title V Significant Modifications processed in parallel with NSR Permit revision:*
 - NSR permit writer should notify a Title V permit writer of draft permit,*
 - Public notice should reference both 45CSR13 and Title V permits,*
 - EPA has 45 day review period of a draft permit.*

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

VIRGINIA ELECTRIC AND POWER COMPANY

a corporation formed under the laws of Virginia, which is authorized to transact business in West Virginia by a Certificate of Authority has filed in my office as required by the provisions of the West Virginia Code, a copy of an amendment to its Articles of Incorporation authenticated by the proper office of the state or country of its incorporation and was found to conform to law.

Therefore, I issue this

**CERTIFICATE OF AMENDMENT TO
CERTIFICATE OF AUTHORITY**

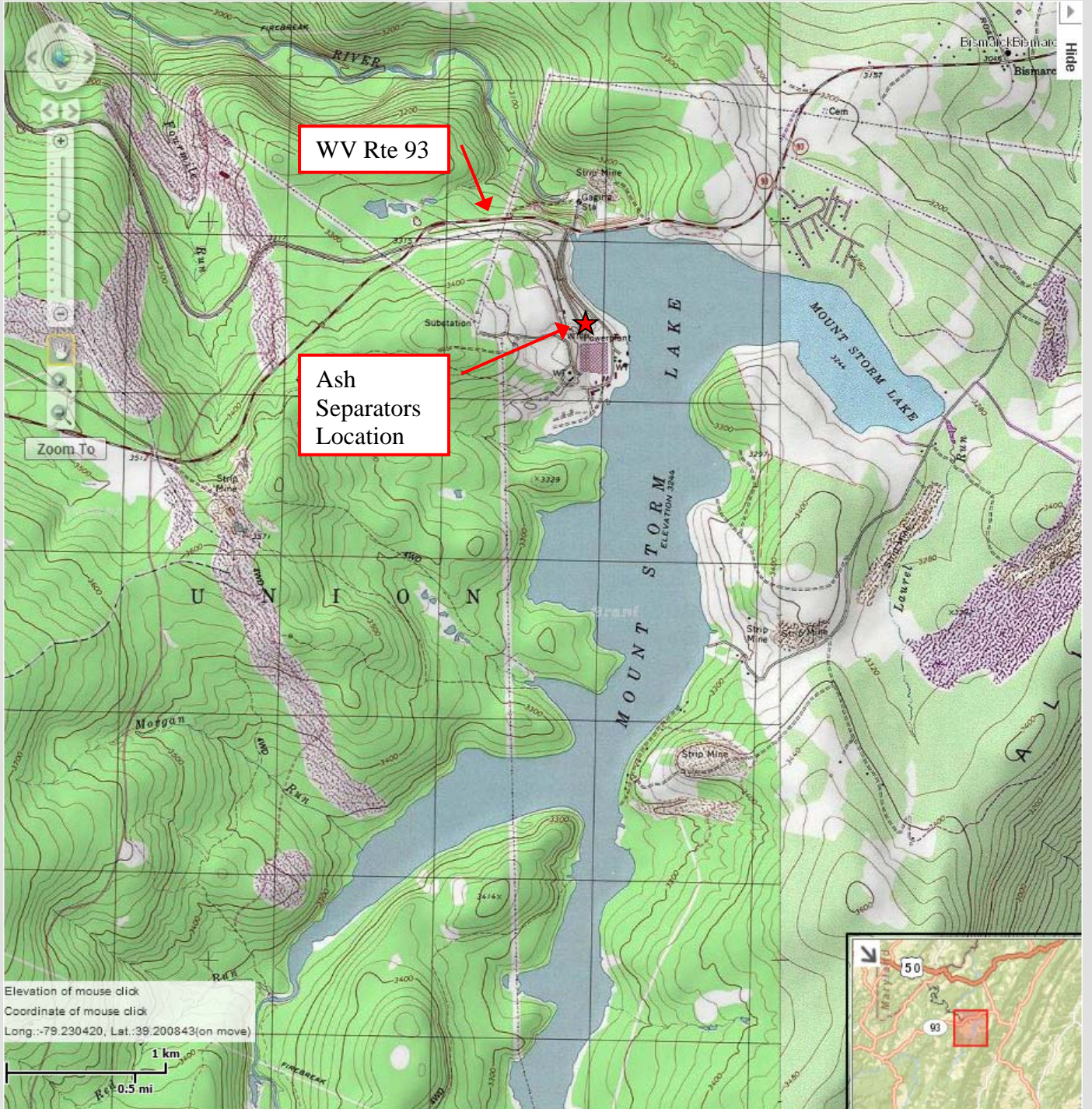


*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
March 23, 2011*

Natalie E. Tennant
Secretary of State

031 4 025.00 03/23/2011 928137

Attachment B: Map(s)



Elevation of mouse click
Coordinate of mouse click
Long.: -79.230420, Lat.: 39.200843 (on move)

1 km
0.5 mi

Source: www.mapwv.gov

Attachment C: Installation and Start Up Schedule

- **June 1, 2016 – Commence Construction of Plant, Silos, high-carbon fly ash (EcoTherm®) return system, Loadouts, and air pollution control devices.**
- **March 1, 2017 – Complete Plant Construction, Commence Installation of Separator 1**
- **March 2017 – May 2017 – Separator 1 Installation and Commissioning**
- **May 28, 2017 – Complete Separator 1 Commissioning**
- **May 29, 2017 - Commence Operations**
- **Separator 2 Installation, Commissioning and Operation – TBD**

Attachment D: Regulatory Discussion

This Attachment discusses applicability/non-applicability for Federal and State air quality regulations. The following regulatory programs are addressed:

- Prevention of Significant Deterioration (PSD) permitting;
- Title V of the 1990 Clean Air Act Amendments;
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- West Virginia State Implementation Plan (SIP) regulations.

Discussion of non-applicability are limited to those regulations for which there may be some question of applicability. Applications that are clearly non-applicable are not discussed.

Prevention of Significant Deterioration (PSD): As summarized in Attachment N, emission increases for the proposed project are below the applicable significant emission rates (SERs) for the respective pollutants. As such, PSD permitting is not triggered by this proposed project.

Title V Operating Permit Program: The Mt. Storm facility is currently a major source with respect to the Title V permit program and will revise the Title V permit within 12 months of commencing operation after the proposed modifications.

New Source Performance Standards (NSPS): NSPS are applicable for covered emission sources at particular industrial source categories. Fly ash separation equipment/operations are not a covered source under any NSPS.

National Emission Standards for Hazardous Air Pollutants (NESHAP): NESHAP are applicable for particular major sources of hazardous air pollutants (HAPs). Fly ash separation equipment/operations are not a covered source under any NESHAP.

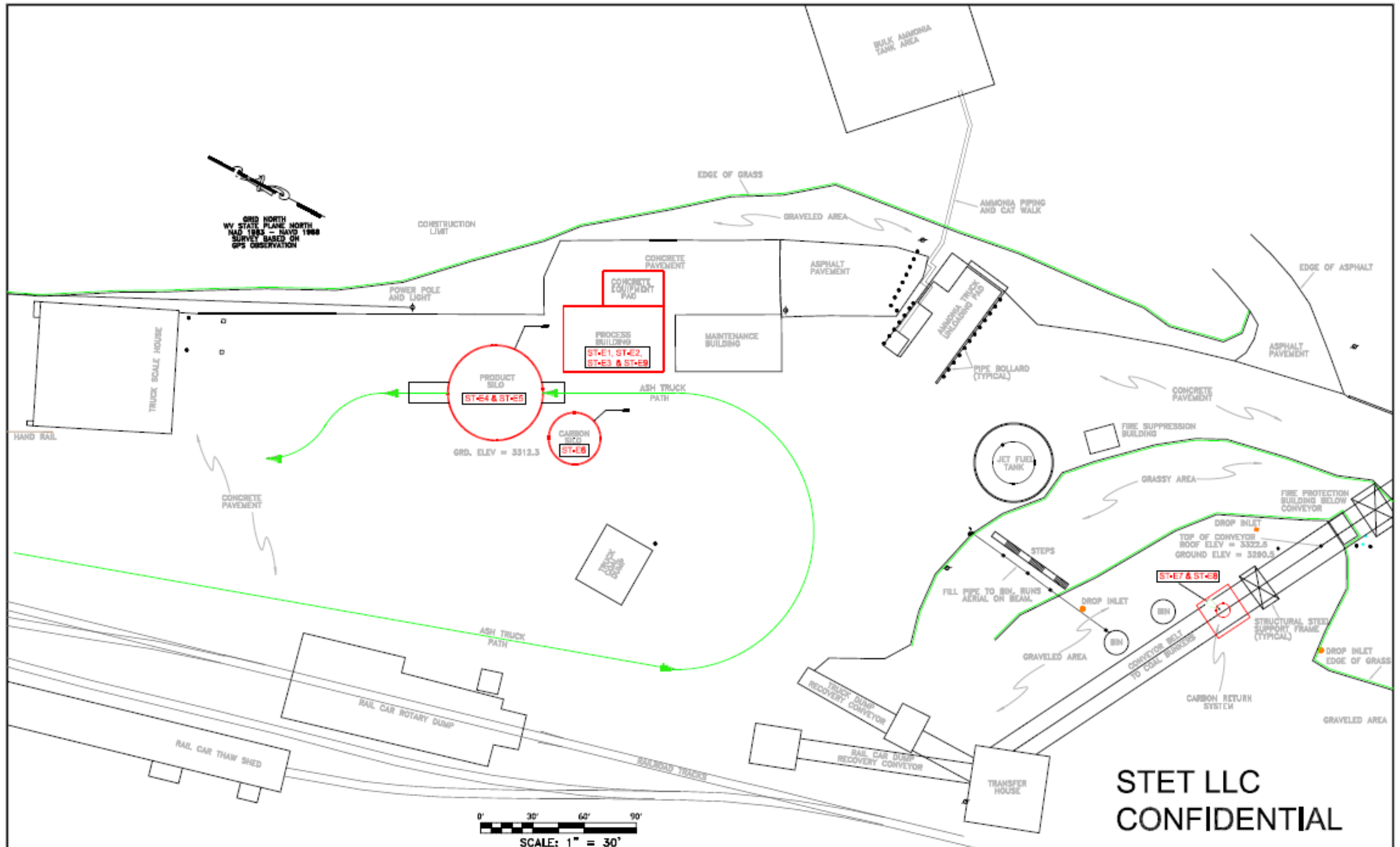
West Virginia Code of State Regulations: West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). That are potentially applicable to the proposed project are discussed below. Generally applicable regulations are not discussed.

1. **45SCR2.** The rule establishes emissions limitations for smoke and particulate matter which are discharged from fuel burning units. The fly ash separation process does not include any fuel combustion. Reuse of the high-carbon ash (EcoTherm®) as a fuel supplement will not impact boiler emissions. Therefore, this section of the West Virginia regulations is not applicable.
2. **45CSR4.** No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to objectionable odor at any location occupied by the public. The fly ash separation process does not produce any odors. Reuse of the high-carbon ash (EcoTherm®) as a fuel supplement will not impact boiler emissions. Therefore, this section of the West Virginia regulations is not applicable to the separation process.
3. **45CSR6.** This rule establishes emission standards for particulate matter and requirements for activities involving incineration of refuse which are not subject to, or are exempted from, regulation under a federal counterpart for specific combustion sources. The fly ash separation process does not include any fuel combustion. Reuse of the high-carbon ash (EcoTherm®) as a fuel supplement does not classify as incineration of refuse. Therefore, this section of the West Virginia regulations is not applicable.
4. **45CSR7.** No person shall cause, suffer, allow, or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A of the rule. The fly ash separation equipment, storage silos, truck loadouts, and the high-carbon ash return feeder will generate particulate emissions and will be controlled with bag filters or cartridge filters. **Therefore, this section of the West Virginia regulations is applicable.**
5. **45CSR10.** The rule is to prevent and control air pollution from emissions of sulfur oxides. The fly ash separation process does not include any fuel combustion. Reuse of the high-carbon ash (EcoTherm®) as a fuel supplement will not impact boiler emissions. Therefore, this section of the West Virginia regulations is not applicable.
6. **45CSR13.** This rule requires the facility to apply for and obtain a permit to construct a stationary source, and to operate within the limits of the permit and in accordance with the permit application. **Therefore, this section of the West Virginia regulations is applicable.**
7. **45 CSR 16.** This rule incorporates the federal Clean Air Act (CAA) standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. As discussed above Fly ash separation equipment/operations are not a covered source under any NSPS. Therefore, this section of the West Virginia regulations is not applicable.

8. **45 CSR 17-3.1.** This rule prohibits fugitive particulate matter to be discharged beyond the boundary lines of the property lines of the property, which causes or contributes to statutory air pollution. Truck traffic from tanker trailers hauling away the mineral ash (ProAsh®) has the potential to generate fugitive dust, although as all fly ash is currently landfilled, the proposed ash separation operations will significantly reduce the amount of ash being landfilled and result in a net reduction of fugitive emissions. **Therefore, this section of the West Virginia regulations is applicable.**
9. **45 CSR 27.** A facility with chemical processing equipment that discharges, or may discharge, a toxic pollutant into the open atmosphere in quantities greater than those delineated in Table A of this rule is required to employ Best Available Technology (BAT) on all chemical processing equipment emitting the pollutant. The ash separator equipment does not meet the definition of chemical processing equipment. Therefore, this section of the West Virginia regulations is not applicable.
10. **45 CSR 34.** This rule adopts the National Emissions Standards for Hazardous Air Pollutants (NESHAPs by reference. As discussed above Fly ash separation equipment/operations are not a covered source under any NESHAP. Therefore, this section of the West Virginia regulations is not applicable.

Attachment E: Plot Plan – Mt. Storm Power Station Fly Ash Separation Facility





**STET LLC
CONFIDENTIAL**

REV	DATE	BY	DESCRIPTION	APPD.

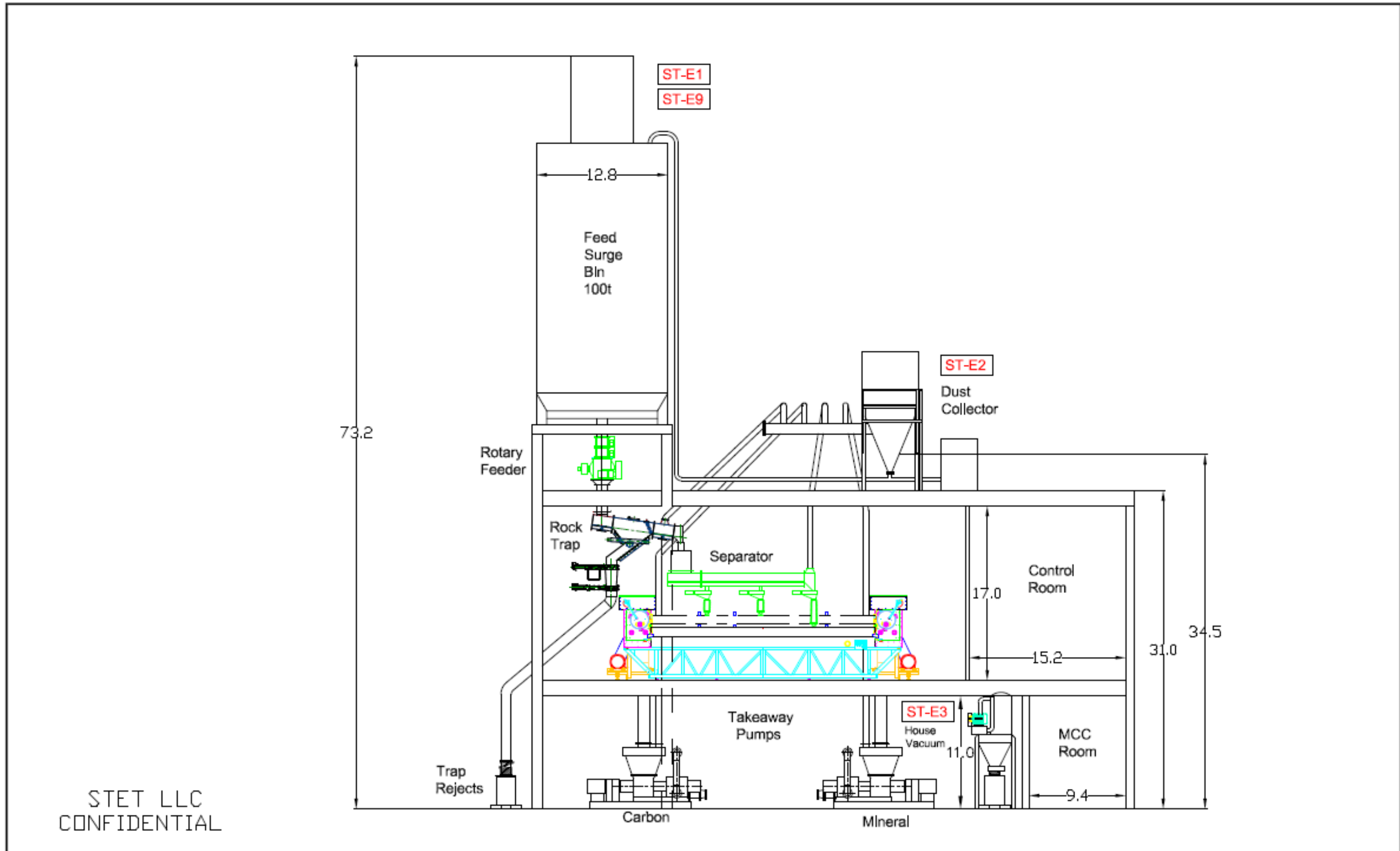
CONFIDENTIAL: THIS DRAWING AND THE DESIGN IS THE CONFIDENTIAL PROPERTY OF ST EQUIPMENT & TECHNOLOGY, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL. IT SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF ST EQUIPMENT & TECHNOLOGY, LLC. THE RECIPIENT AGREES TO KEEP THE INFORMATION PRESENTED CONFIDENTIAL.



PROJECT: _____

OWNER: **Dominion Mt Storm Site Plan**

OWNER: T Bush
 DATE: 10/25/15
 DRAWING NO.: **C-100C**



STET LLC
CONFIDENTIAL

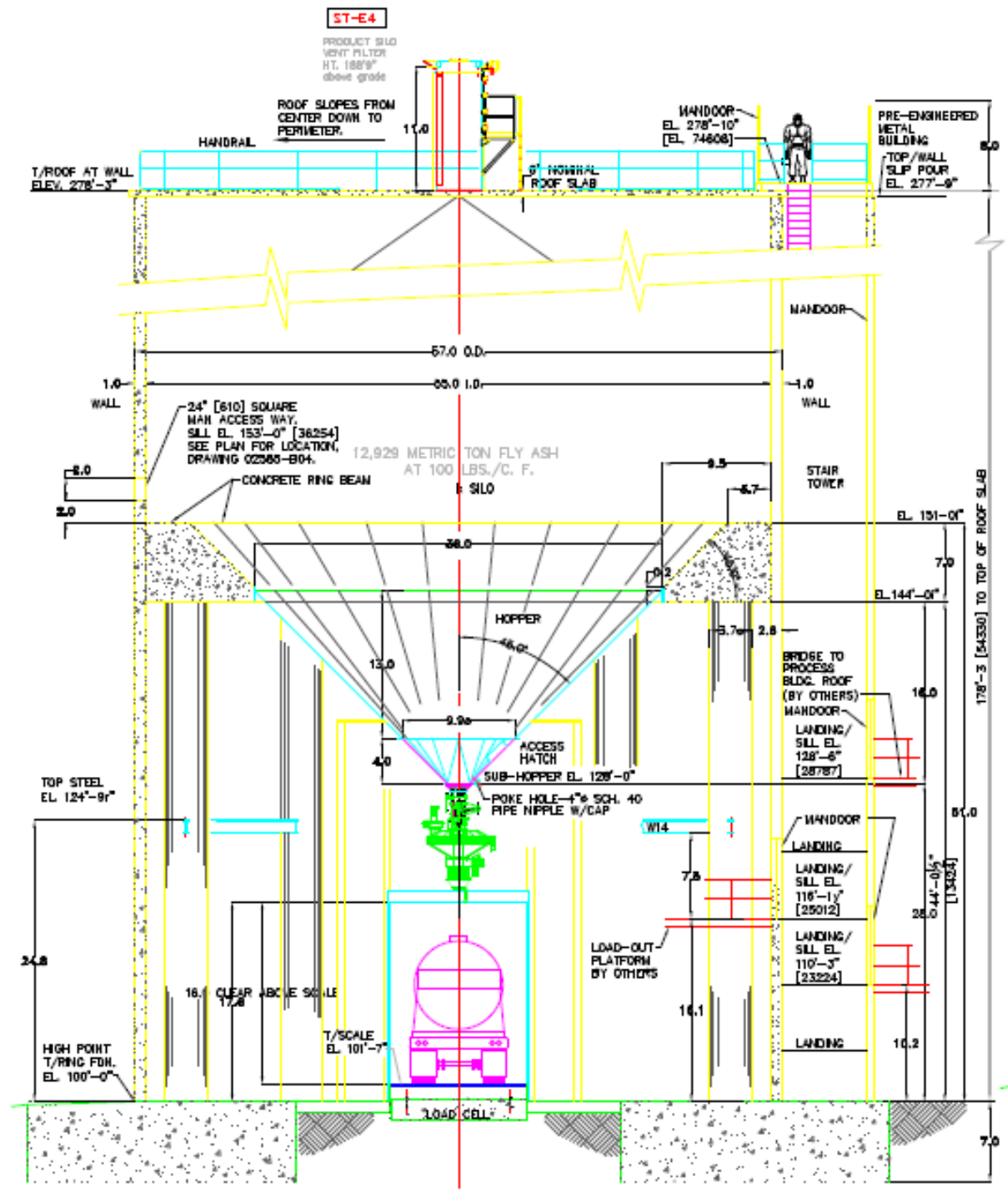
REV	DATE	BY	DESCRIPTION	APPD.

CONFIDENTIAL THIS DRAWING AND THE DESIGN IS THE CONFIDENTIAL PROPERTY OF STET TECHNOLOGY, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL. IT SHALL NOT BE REPRODUCED OR WHOLE OR IN PART WITHOUT WRITTEN CONSENT OF STET TECHNOLOGY, LLC. THE DESIGNER AGREES TO KEEP THE INFORMATION PRESENTED CONFIDENTIAL.

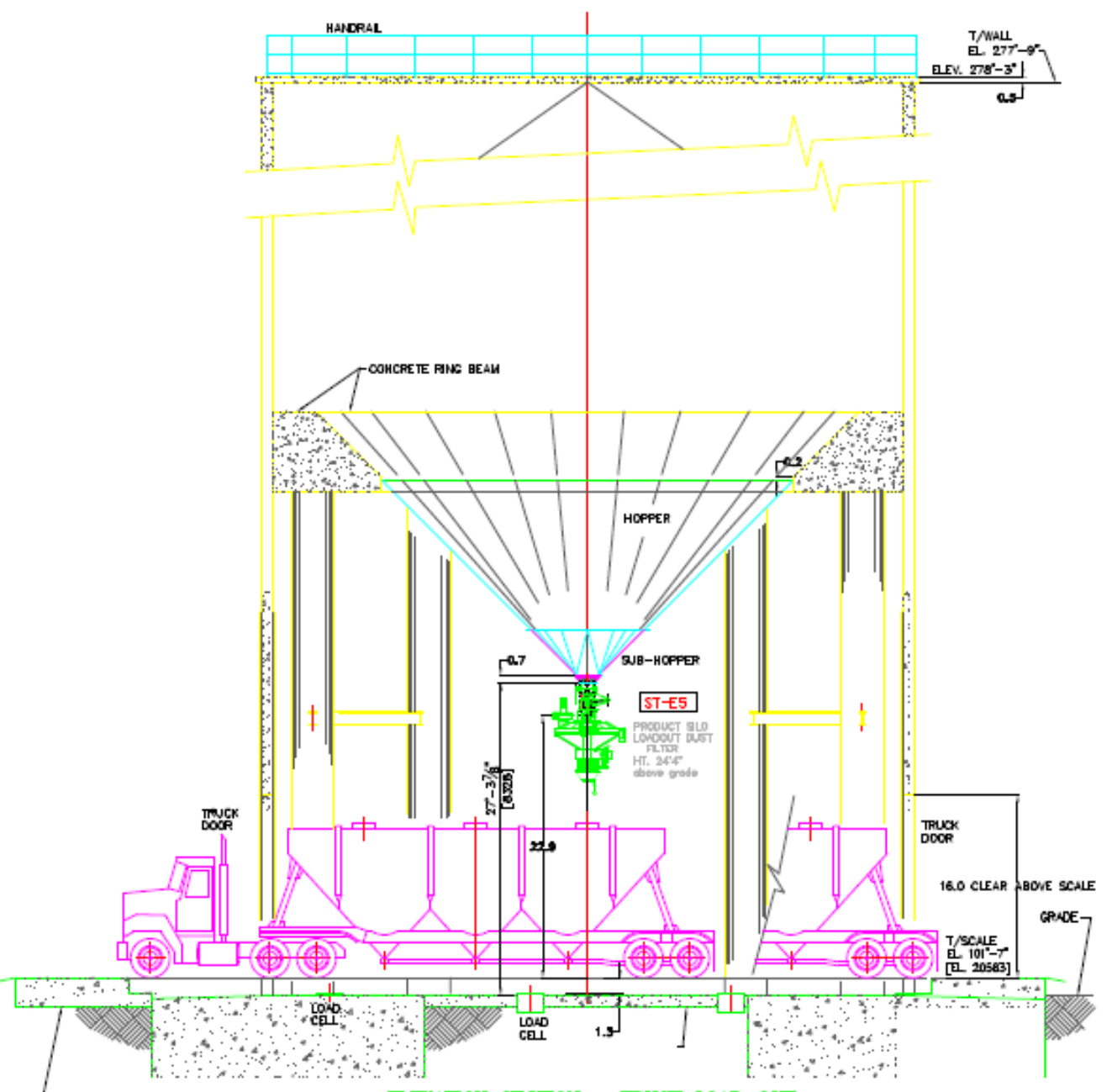


PROJECT:
 DRAWING TITLE: Mt Storm Process Building Elevation with Emission Points

DATE: T 2/21/15
 CHECKED: DATE: 10/21/15
 SCALE:
 DRAWING NO. D - 103C



ELEVATION SECTION - TRUCK LOAD-OUT



ELEVATION SECTION - TRUCK LOAD-OUT

STET LLC CONFIDENTIAL

NO.	DATE	BY	DESCRIPTION	APPD.

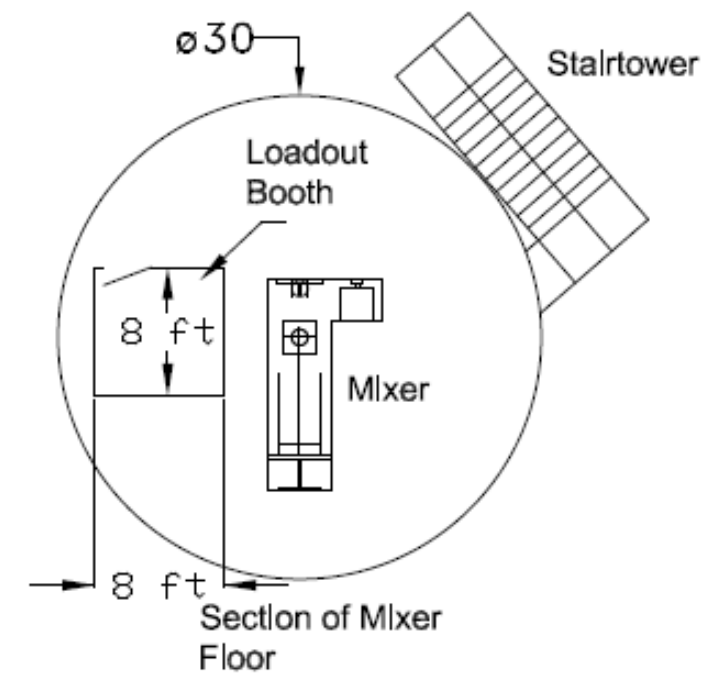
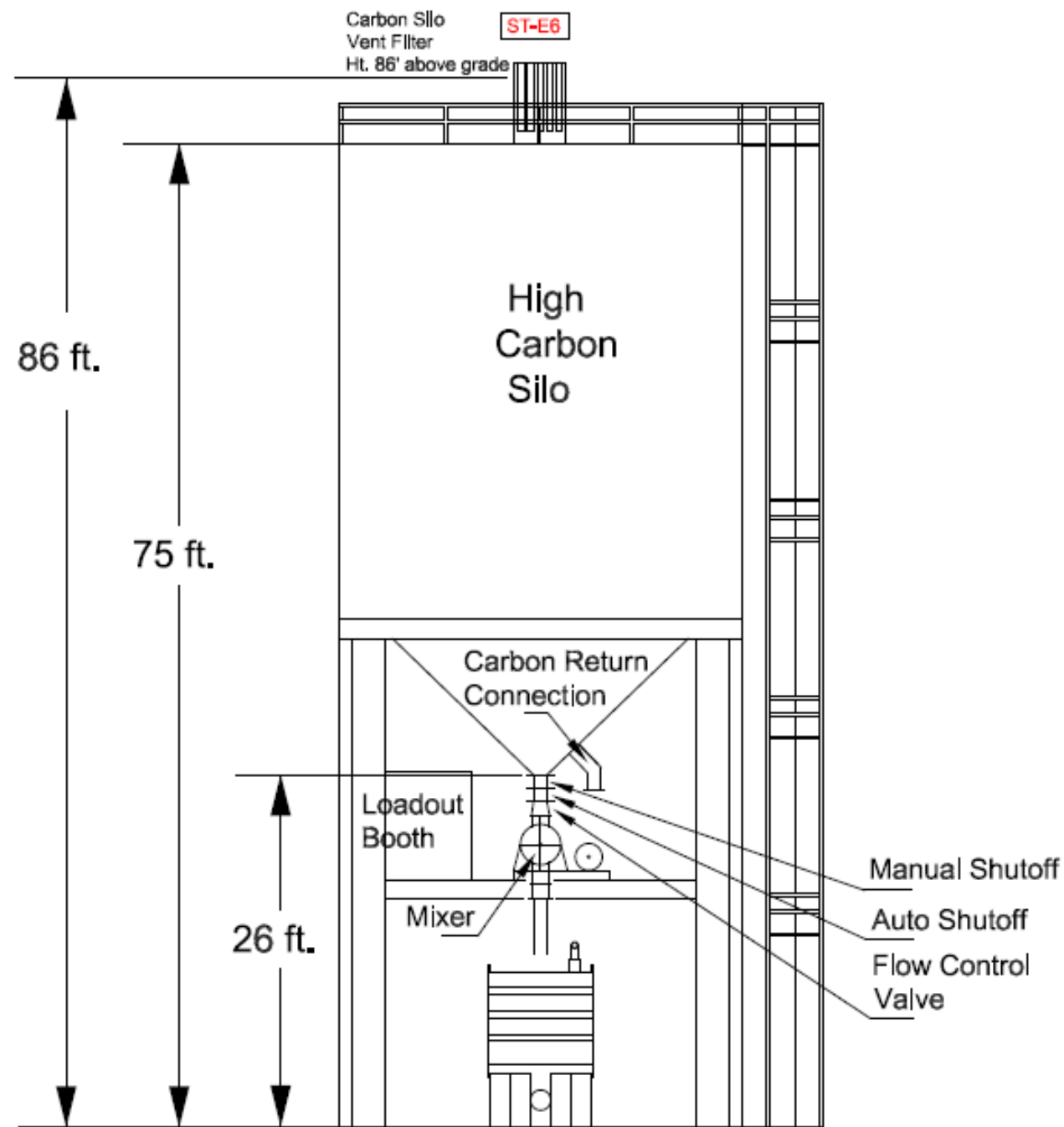
CONFIDENTIAL THIS DRAWING AND THE DESIGN IS THE CONFIDENTIAL PROPERTY OF SEPTEMBER TECHNOLOGIES, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL. IT SHALL NOT BE REPRODUCED OR WHOLE OR IN PART WITHOUT WRITTEN PERMISSION FROM SEPTEMBER TECHNOLOGIES, LLC. THE INFORMATION HEREIN IS TO BE KEPT CONFIDENTIAL.



PROJECT
 FLY ASH PROCESSING PROJECT
 DOMINION
 MT STORM POWER STATION

DRAWING TITLE
 PRODUCT STORAGE & LOADOUT
 EMISSION POINT ELEVATIONS

DESIGNED BY	JOB NO.
CHECKED BY	DATE 11/26/25
SCALE	
DRAWING NO.	D-104C



Mt Storm
High Carbon Silo
Plan & Elevation

STET LLC CONFIDENTIAL

REV	DATE	BY	DESCRIPTION	APPD.

CONFIDENTIAL: THIS DRAWING AND THE SECTION IS THE CONFIDENTIAL PROPERTY OF SEPARATION TECHNOLOGIES, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL ONLY. IT SHALL NOT BE REPRODUCED OR WHELED OR IN PART WITHOUT WRITTEN PERMISSION FROM SEPARATION TECHNOLOGIES, LLC. THE INFORMATION PRESENTED IS CONFIDENTIAL.



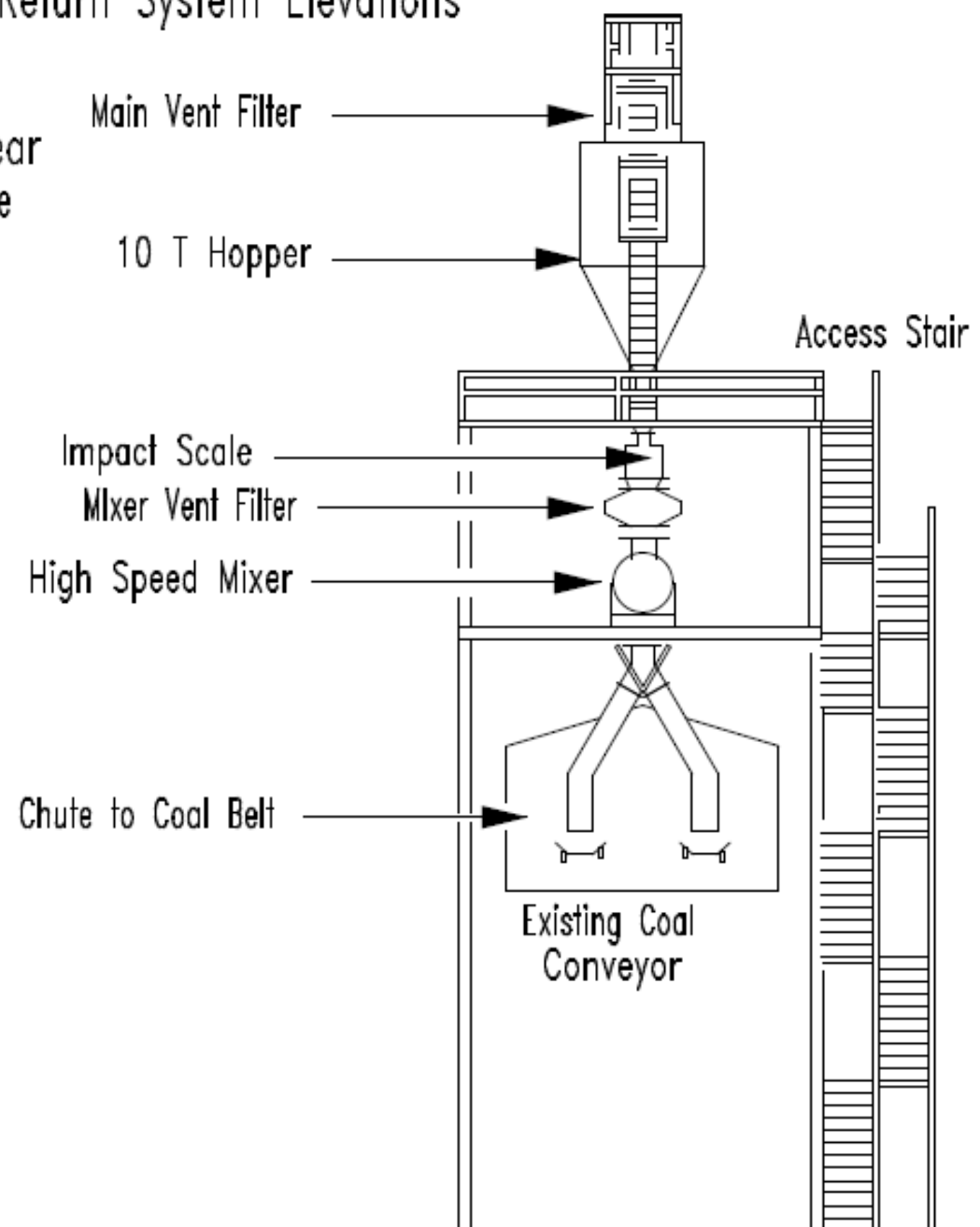
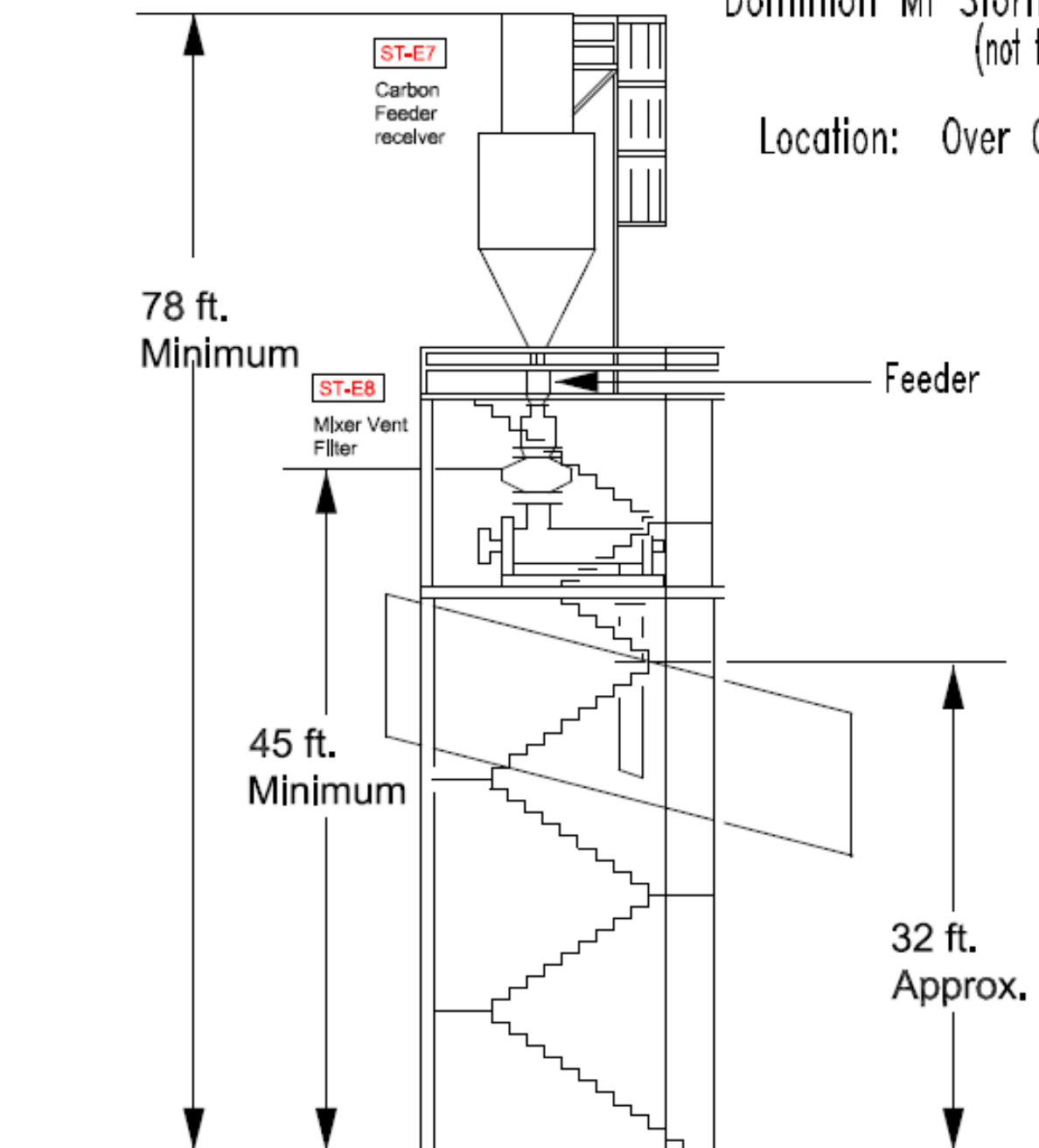
PROJECT:
FLY ASH PROCESSING PROJECT
DOMINION
MT STORM POWER STATION

DRAWING TITLE:
CARBON RETURN SYSTEM
EMISSION POINT ELEVATIONS

DESIGNER: T. BUSH	JOB NO.:
CHECKED:	DATE: 12/24/25
SCALE:	
DRAWING NO.:	D-105C

Dominion Mt Storm Carbon Return System Elevations (not to scale)

Location: Over Conveyor near
Crusher House



STET LLC CONFIDENTIAL

REV	DATE	BY	DESCRIPTION	APPD.

CONFIDENTIAL: THIS DRAWING AND THE DESIGN IS THE CONFIDENTIAL PROPERTY OF SEPARATION TECHNOLOGIES, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL. IT SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT SEPARATION TECHNOLOGIES, LLC'S WRITTEN PERMISSION. THE INFORMATION PRESENTED IS CONFIDENTIAL.

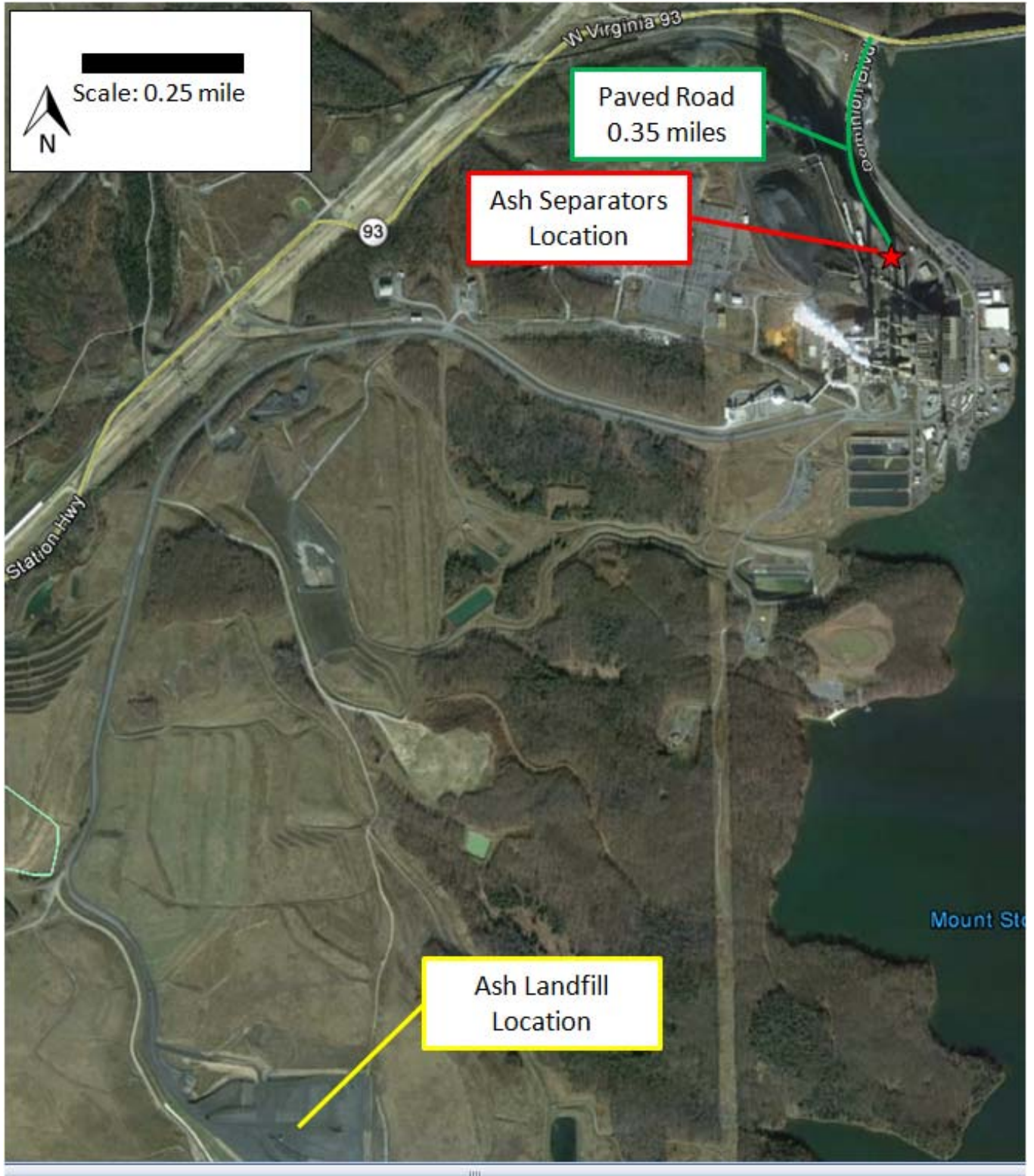


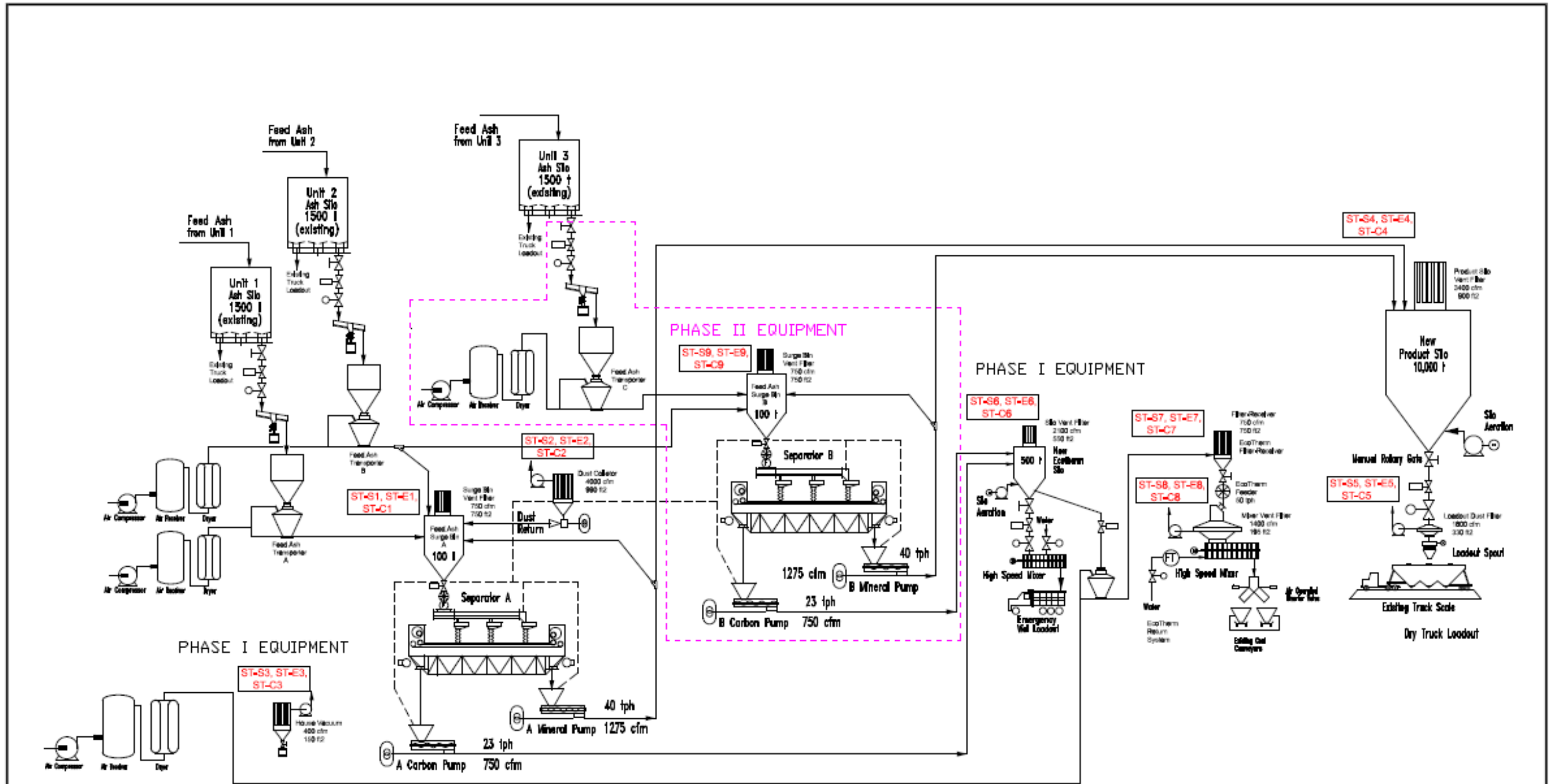
PROJECT:
FLY ASH PROCESSING PROJECT
DOMINION
MT STORM POWER STATION

DRAWING TITLE:
CARBON RETURN SYSTEM
EMISSION POINT ELEVATIONS

DESIGNED BY: CHECKED BY: SCALE: DRAWING NO.:	JOB NO.:
	DATE: 12/01/15
D-106C	

Mt. Storm Power Station – Entrance Road and Landfill Location





Dominion Mt. Storm Plant
Process Flow Diagram
Ash Processing

STET LLC CONFIDENTIAL

REV	DATE	BY	DESCRIPTION	APPD.

ONE INCH TO THIS DRAWING AND THE DESIGN IS THE CONFIDENTIAL PROPERTY OF SEPARATION TECHNOLOGY, LLC AND IS TO BE USED BY AUTHORIZED PERSONNEL. IT SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION FROM SEPARATION TECHNOLOGY, LLC. THE RECIPIENT AGREES TO KEEP THE INFORMATION PRESENTED CONFIDENTIAL.



PROJECT: Dominion Mt Storm Preliminary PFD

DRAWING TITLE: Dominion Mt Storm Preliminary PFD

DATE: 4/27/15

SCALE: PFD - 3

Attachment G: Process Description

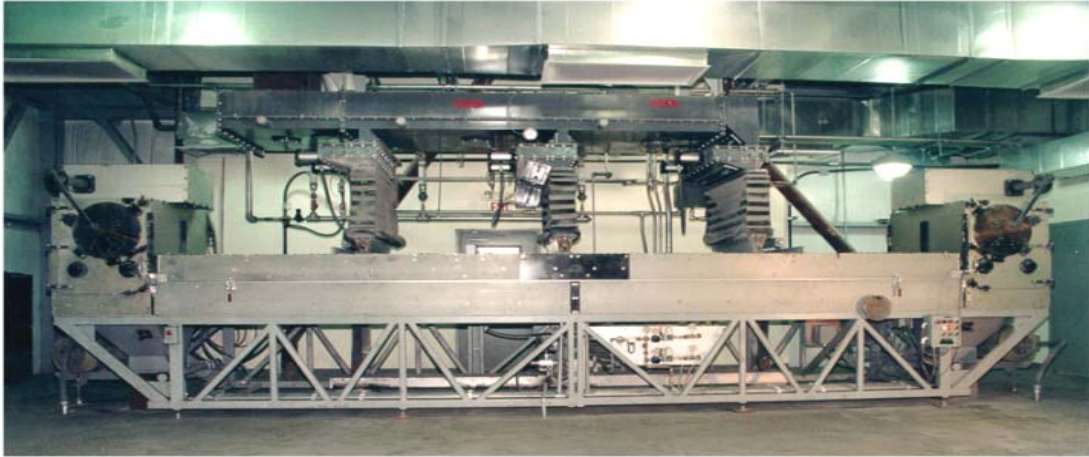
Separation Technologies LLC's (ST) proprietary technology consists of a unique, triboelectrostatic belt separator. Fly ash that is collected in the main boilers electrostatic precipitators (ESPs) at Mt. Storm is placed into silos at the facility. From there, it will be fed into the separation process, which is a belt conveyor with a thin gap between two parallel planar electrodes. The ST separator utilizes electrical charge differences between materials to separate the fly ash into two products. The separator produces a 3% "loss on ignition" ("LOI") low-carbon mineral product (ProAsh®), which is sold as a supplementary cementitious material for use in concrete, and a high-carbon ash product (EcoTherm®). For the Mt. Storm facility, the high-carbon ash product (EcoTherm®) will be returned to the utility for re-burning, as discussed below.

A new building will be constructed to accommodate the new separator and its associated equipment. Fly ash will be fed from the existing fly ash silos using new airslide assemblies connecting the existing silos to the separators. ProAsh® will be conveyed from the separators by dilute phase transport to a new ProAsh® silo. The new ProAsh® silo will be equipped with a dry loadout spout assembly and truck scale for loading of bulk pneumatic tanker trucks.

The EcoTherm® from the separators will be conveyed by dilute phase transport to a new storage silo for temporary storage and subsequent re-burning by the utility. For re-burning, the EcoTherm® will be conveyed by dense phase transport to a carbon return system located just above the existing coal belt. The carbon return system consists of a filter-receiver discharging through a rotary feeder and impact scale to a high speed mixer located over the existing coal conveyors. When a coal conveyor is running and carrying coal to replenish the bunkers, EcoTherm® may be conveyed from the high-carbon ash storage silo to the carbon return filter-receiver. The EcoTherm® is then metered into the high speed mixer where it is mixed with just enough water to suppress dust (typically about 8 weight percent moisture) and discharged onto the operating coal conveyor. A gravity "V" diverter valve is provided on the mixer discharge to permit a selection between the two existing conveyors. For disposal, if necessary, the high-carbon ash will be wet conditioned at the high carbon storage silo. A central vacuum cleaning system will also be installed to facilitate housekeeping in the operating areas.

Process Description

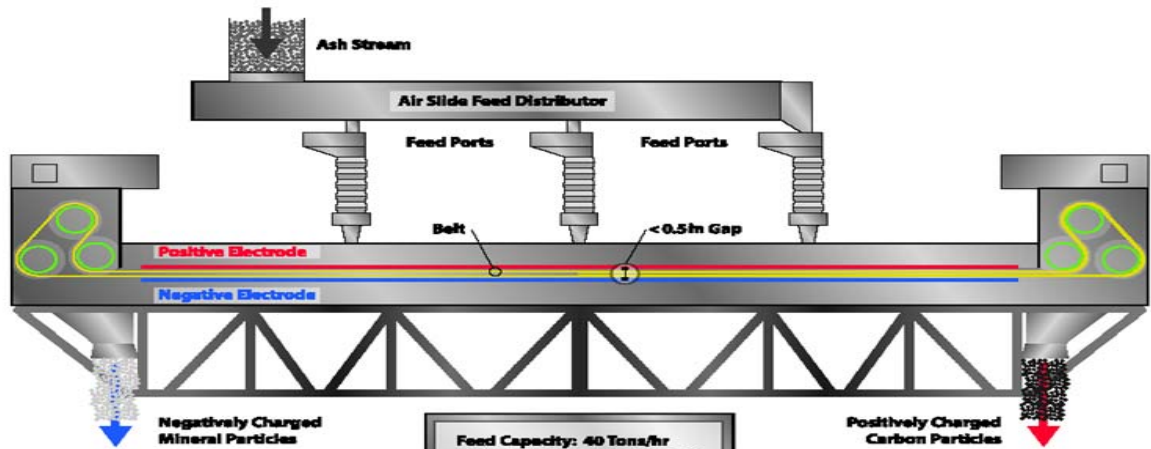
ST Fly Ash Carbon Separator



Think Safety,
Live Safely

Separation Technologies LLC 
A Titan America Business

ST Fly Ash Carbon Separator



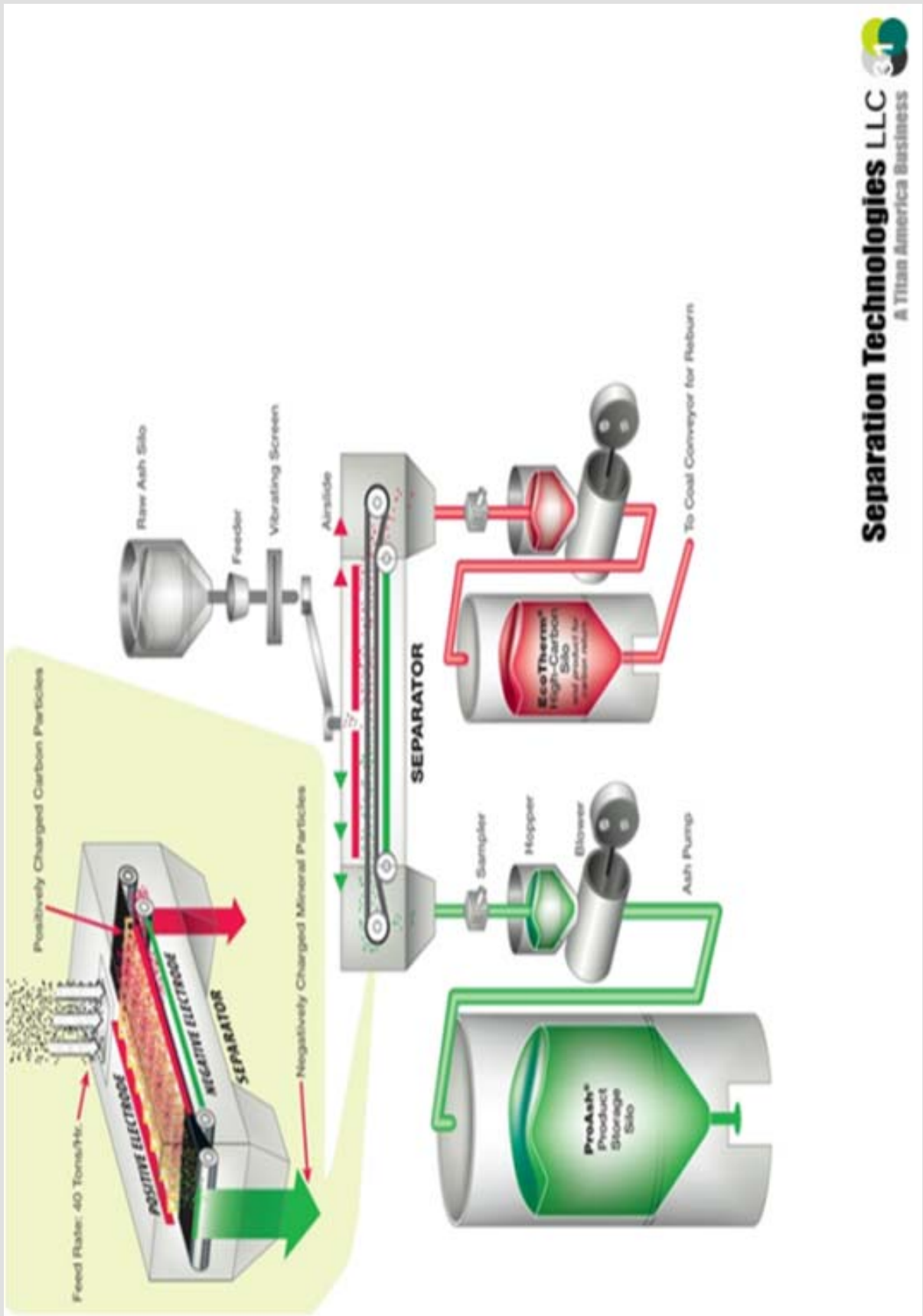
 ProAsh®

Think Safety,
Live Safely

 EcoTherm™

Separation Technologies LLC 
A Titan America Business

Process Description



Separation Technologies LLC
A Titan America Business

Attachment H: Material Safety Data Sheets (MSDS)

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: ProAsh®

Synonyms: Fly Ash

Chemical Family: Bituminous Coal Fly Ash

Intended Use of the Product

Use of the Substance/Mixture: Building materials, construction.

Name, Address, and Telephone of the Responsible Party

Company

Separation Technologies LLC

101 Hampton Ave.

Needham, MA 02494

Emergency Telephone Number CHEMTREC – 800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Eye Irrit. 2B H320

STOT SE 3 H335

STOT RE 2 H372

Full text of H-phrases: see section 16

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Danger

Hazard Statements (GHS-US)

:
H320 - Causes eye irritation
H335 - May cause respiratory irritation
H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US)

: P260 - Do not breathe dust.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P280 - Wear protective gloves, protective clothing, and eye protection.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

* Fly ash and other coal combustion products (CCPs) are UVCB substances (substance of unknown or variable composition or biological). Various CCPs, noted as Ashes; Ash; Ash residues; Ashes, residues, bottom; Bottom ash; Bottom ash residues; Waste solids, ashes under TSCA are defined by the US EPA as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes including fly ash and fluidized bed combustion ash are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel

source and flue additives composed of a large number of constituents. The classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product Identifier	% (w/w)
Ashes, residues	(CAS No) 68131-74-8	100
Contains (Name)	Product Identifier	% (w/w)
Silica, amorphous	(CAS No) 7631-86-9	60 - 90
Iron oxide (Fe ₂ O ₃)	(CAS No) 1309-37-1	1 - 20
Calcium oxide	(CAS No) 1305-78-8	0 - 10
Carbon	(CAS No) 7440-44-0	0 - 6
Quartz	(CAS No) 14808-60-7	1 - 3

Full text of H-phrases: see section 16

*The specific chemical identity and/or exact percentage of composition have been withheld as a trade secret within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200].

**A range of concentration as prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.

***More than one of the ranges of concentration prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 60 minutes. Seek medical attention if irritation persists or later develops.

Ingestion: Do not induce vomiting. Rinse mouth. Seek medical attention if any problems arise.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes serious eye damage. Causes damage to organs through prolonged or repeated exposure.

Inhalation: Repeated exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis.

Skin Contact: Repeated or prolonged skin contact may cause irritation.

Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: No fire hazard present for this material.

Unsuitable Extinguishing Media: No fire hazard present for this material.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: No fire hazard present for this material.

Firefighting Instructions: No fire hazard present for this material.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: None known.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop spill if safe to do so.

Environmental Precautions

Prevent contamination of drains or waterways and dispose according to local and national regulations.

Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill. Utilize a dust suppressant when removing mechanically. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Do not breathe dust.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from incompatible materials. Store away from oxidizers, combustible materials, and all ignition sources.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

Specific End Use(s)

Building materials, construction.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government

Silica, amorphous (7631-86-9)		
USA OSHA	OSHA PEL (TWA) (mg/m ³)	6 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	20 mppcf (80mg/m ³ /%SiO ₂)
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	6 mg/m ³
USA IDLH	US IDLH (mg/m ³)	3000 mg/m ³
Nunavut	OEL TWA (mg/m ³)	2 mg/m ³ (respirable mass) 5 mg/m ³ (total mass) 0.05 mg/m ³ (regulated under Silica flour-respirable mass) 0.15 mg/m ³ (regulated under Silica flour, total mass)
Northwest Territories	OEL TWA (mg/m ³)	2 mg/m ³ (respirable mass) 5 mg/m ³ (total mass)

		0.05 mg/m ³ (regulated under Silica flour-respirable mass) 0.15 mg/m ³ (total mass, regulated under Silica flour)
Yukon	OEL TWA (mg/m ³)	300 particle/mL (as measured by Konimeter instrumentation) 20 mppcf (as measured by Impinger instrumentation) 2 mg/m ³ (respirable mass)
Quartz (14808-60-7)		
Mexico	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH chemical category	A2 - Suspected Human Carcinogen
USA OSHA	OSHA PEL (STEL) (mg/m ³)	250 mppcf/%SiO ₂ +5, 10mg/m ³ /%SiO ₂ +2
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.05 mg/m ³ (respirable dust)
USA IDLH	US IDLH (mg/m ³)	50 mg/m ³ (respirable dust)
Alberta	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable particulate)
British Columbia	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable)
Manitoba	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
New Brunswick	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable fraction)
Newfoundland & Labrador	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Nova Scotia	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Nunavut	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable mass) 0.3 mg/m ³ (total mass)
Northwest Territories	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable mass) 0.3 mg/m ³ (total mass)
Ontario	OEL TWA (mg/m ³)	0.10 mg/m ³ (designated substances regulation-respirable)
Prince Edward Island	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Québec	VEMP (mg/m ³)	0.1 mg/m ³ (respirable dust)
Saskatchewan	OEL TWA (mg/m ³)	0.05 mg/m ³ (respirable fraction)
Yukon	OEL TWA (mg/m ³)	300 particle/mL
Calcium oxide (1305-78-8)		
Mexico	OEL TWA (mg/m ³)	2 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	5 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	2 mg/m ³
USA IDLH	US IDLH (mg/m ³)	25 mg/m ³
Alberta	OEL TWA (mg/m ³)	2 mg/m ³
British Columbia	OEL TWA (mg/m ³)	2 mg/m ³
Manitoba	OEL TWA (mg/m ³)	2 mg/m ³
New Brunswick	OEL TWA (mg/m ³)	2 mg/m ³
Newfoundland & Labrador	OEL TWA (mg/m ³)	2 mg/m ³
Nova Scotia	OEL TWA (mg/m ³)	2 mg/m ³
Nunavut	OEL STEL (mg/m ³)	4 mg/m ³
Nunavut	OEL TWA (mg/m ³)	2 mg/m ³
Northwest Territories	OEL STEL (mg/m ³)	4 mg/m ³
Northwest Territories	OEL TWA (mg/m ³)	2 mg/m ³
Ontario	OEL TWA (mg/m ³)	2 mg/m ³
Prince Edward Island	OEL TWA (mg/m ³)	2 mg/m ³
Québec	VEMP (mg/m ³)	2 mg/m ³
Saskatchewan	OEL STEL (mg/m ³)	4 mg/m ³
Saskatchewan	OEL TWA (mg/m ³)	2 mg/m ³
Yukon	OEL STEL (mg/m ³)	4 mg/m ³
Yukon	OEL TWA (mg/m ³)	2 mg/m ³

ProAsh®

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Iron oxide (Fe2O3) (1309-37-1)		
Mexico	OEL TWA (mg/m ³)	5 mg/m ³
Mexico	OEL STEL (mg/m ³)	10 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m ³)	10 mg/m ³ (fume) 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	5 mg/m ³ (dust and fume)
USA IDLH	US IDLH (mg/m ³)	2500 mg/m ³ (dust and fume)
Alberta	OEL TWA (mg/m ³)	5 mg/m ³ (respirable)
British Columbia	OEL STEL (mg/m ³)	10 mg/m ³ (fume)
British Columbia	OEL TWA (mg/m ³)	10 mg/m ³ (total particulate matter containing no Asbestos and <1% Crystalline silica-total particulate) 3 mg/m ³ (particulate matter containing no Asbestos and <1% Crystalline silica-respirable particulate) 5 mg/m ³ (dust and fume)
Manitoba	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
New Brunswick	OEL TWA (mg/m ³)	5 mg/m ³ (particulate matter containing no Asbestos and <1% Crystalline silica, dust and fume) 10 mg/m ³ (regulated under Rouge-particulate matter containing no Asbestos and <1% Crystalline silica)
Newfoundland & Labrador	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Nova Scotia	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Nunavut	OEL TWA (mg/m ³)	5 mg/m ³ (respirable mass) 10 mg/m ³ (total mass)
Northwest Territories	OEL TWA (mg/m ³)	5 mg/m ³ (respirable mass) 10 mg/m ³ (total mass)
Ontario	OEL TWA (mg/m ³)	5 mg/m ³ (respirable)
Prince Edward Island	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Québec	VEMP (mg/m ³)	5 mg/m ³ (dust and fume) 10 mg/m ³ (containing no Asbestos and <1% Crystalline silica, regulated under Rouge-total dust)
Saskatchewan	OEL STEL (mg/m ³)	10 mg/m ³ (dust and fume) 20 mg/m ³ (regulated under Rouge)
Saskatchewan	OEL TWA (mg/m ³)	5 mg/m ³ (dust and fume) 10 mg/m ³ (regulated under Rouge)
Yukon	OEL STEL (mg/m ³)	10 mg/m ³ (fume) 20 mg/m ³ (regulated under Rouge)
Yukon	OEL TWA (mg/m ³)	5 mg/m ³ (fume) 30 mppcf (regulated under Rouge) 10 mg/m ³ (regulated under Rouge)
Carbon (7440-44-0)		
Mexico	OEL TWA (mg/m ³)	2 mg/m ³ (dust)

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

ProAsh®

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Personal Protective Equipment: Protective goggles or safety glasses with side shields. Gloves. Protective clothing. Dust formation: dust mask.



Materials for Protective Clothing: Wear suitable materials and fabrics.

Hand Protection: Wear protective gloves.

Eye Protection: Goggles or safety glasses with side shields.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: Use NIOSH-approved dust mask if dust has the potential to become airborne.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Fine grained, gray powder
Odor	: Odorless*
Odor Threshold	: Not available
pH	: Not available
Evaporation Rate	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific Gravity	: 2.0 - 3.0
Solubility	: Insoluble in water
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

* The use of urea or aqueous ammonia injected into the flue gas to reduce nitrogen oxides (NO_x) emissions may result in the presence of ammonium sulfate or ammonium bisulfate in the ash at less than 0.1%. When ash containing these substances becomes wet under high pH (>9), free ammonia gas may be released resulting in objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

Possibility of Hazardous Reactions: The material is a relatively stable, inert material; however, when ash containing ammonia becomes wet under high pH (>9), free ammonia gas may be released resulting in an objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces. Polymerization will not occur.

Conditions to Avoid: Incompatible materials.

Incompatible Materials: None known.

Hazardous Decomposition Products: None known.

SECTION 11: TOXICOLOGICAL INFORMATION**Information on Toxicological Effects - Product**

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Causes serious eye damage.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not classified

Carcinogenicity: Not available. Respirable crystalline silica has been identified as a carcinogen by NTP and IARC.

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Repeated exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis.

Symptoms/Injuries After Skin Contact: Repeated or prolonged skin contact may cause irritation.

Symptoms/Injuries After Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ashes, residues (68131-74-8)	
LD50 Oral Rat	> 2000 mg/kg
Silica, amorphous (7631-86-9)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 2.2 mg/l (Exposure time: 1 h)
Quartz (14808-60-7)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 5000 mg/kg
Calcium oxide (1305-78-8)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rabbit	> 2500 mg/kg
Iron oxide (Fe2O3) (1309-37-1)	
LD50 Oral Rat	> 10000 mg/kg

ProAsh®

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Carbon (7440-44-0)	
LD50 Oral Rat	> 10000 mg/kg
Silica, amorphous (7631-86-9)	
IARC Group	3
Quartz (14808-60-7)	
IARC Group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Iron oxide (Fe2O3) (1309-37-1)	
IARC Group	3

SECTION 12: ECOLOGICAL INFORMATION

Toxicity No additional information available

Silica, amorphous (7631-86-9)	
LC50 Fish 1	5000 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
EC50 Daphnia 1	7600 mg/l (Exposure time: 48 h - Species: Ceriodaphnia dubia)
Calcium oxide (1305-78-8)	
LC50 Fish 1	1070 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [static])

Persistence and Degradability Not available

Bioaccumulative Potential

Silica, amorphous (7631-86-9)	
BCF Fish 1	(no bioaccumulation expected)
Calcium oxide (1305-78-8)	
BCF Fish 1	(no bioaccumulation)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT Not regulated for transport

In Accordance with IMDG Not regulated for transport

In Accordance with IATA Not regulated for transport

In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

ProAsh®	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
Ashes, residues (68131-74-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Silica, amorphous (7631-86-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Quartz (14808-60-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

ProAsh®

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
Calcium oxide (1305-78-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Iron oxide (Fe₂O₃) (1309-37-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Carbon (7440-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

US State Regulations

Quartz (14808-60-7)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Silica, amorphous (7631-86-9)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

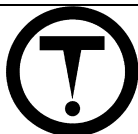
Quartz (14808-60-7)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

Calcium oxide (1305-78-8)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

Iron oxide (Fe₂O₃) (1309-37-1)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

Canadian Regulations

ProAsh®	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects



Ashes, residues (68131-74-8)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Silica, amorphous (7631-86-9)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

Quartz (14808-60-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	

IDL Concentration 1 %	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Calcium oxide (1305-78-8)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Iron oxide (Fe2O3) (1309-37-1)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Carbon (7440-44-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 05/27/2015
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H320	Causes eye irritation
H335	May cause respiratory irritation
H372	Causes damage to organs through prolonged or repeated exposure

“The information provided herein is believed by seller to be accurate at the time of preparation, or prepared from sources believed to be reliable. Health and safety precautions in this data sheet may not be adequate for all individuals or situations. Users have the responsibility to comply with all laws and procedures applicable to the safe handling and use of the product, to determine the suitability of the product for its intended use, and to understand possible hazards associated with mixing this product with other materials. SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT, THE MERCHANTABILITY, OR FITNESS THEREOF FOR ANY PURPOSE, OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY SELLER”.

NA GHS SDS

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: Ecotherm™

Synonyms: EcoTherm™

Chemical Family: High Carbon Bituminous Coal Fly Ash

Intended Use of the Product

Use of the Substance/Mixture: Building materials, construction.

Name, Address, and Telephone of the Responsible Party

Company

Separation Technologies LLC

188 Summerfield Court, Suite 101

Roanoke, VA 24019

Emergency Telephone Number CHEMTREC – 800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Eye Dam. 1 H318

STOT SE 3 H335

STOT RE 1 H372

Full text of H-phrases: see section 16

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Danger

Hazard Statements (GHS-US)

: H318 - Causes serious eye damage.

H335 - May cause respiratory irritation

H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US)

: P260 - Do not breathe dust.

P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear protective gloves, protective clothing, and eye protection.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 - If exposed or concerned: Get medical advice/attention.

P314 - Get medical advice/attention if you feel unwell.

P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

* Fly ash and other coal combustion products (CCPs) are UVCB substances (substance of unknown or variable composition or biological). Various CCPs, noted as Ashes; Ash; Ash residues; Ashes, residues, bottom; Bottom ash; Bottom ash residues; Waste solids, ashes under TSCA are defined by the US EPA as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes including fly ash and fluidized bed combustion ash are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

source and flue additives composed of a large number of constituents. The classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product Identifier	% (w/w)
Ashes, residues	(CAS No) 68131-74-8	100
Contains (Name)	Product Identifier	% (w/w)
Silica, amorphous	(CAS No) 7631-86-9	35 - 75
Carbon	(CAS No) 7440-44-0	15 - 70
Calcium oxide	(CAS No) 1305-78-8	0 - 10
Iron oxide (Fe ₂ O ₃)	(CAS No) 1309-37-1	1 - 10
Quartz	(CAS No) 14808-60-7	1 - 3

*The specific chemical identity and/or exact percentage of composition have been withheld as a trade secret within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200].

**A range of concentration as prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.

***More than one of the ranges of concentration prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 60 minutes. Seek medical attention if irritation persists or later develops.

Ingestion: Do not induce vomiting. Rinse mouth. Seek medical attention if any problems arise.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes serious eye damage. Causes damage to organs through prolonged or repeated exposure.

Inhalation: Repeated exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis.

Skin Contact: Repeated or prolonged skin contact may cause irritation.

Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: No fire hazard present for this material.

Unsuitable Extinguishing Media: No fire hazard present for this material.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: No fire hazard present for this material.

Firefighting Instructions: No fire hazard present for this material.

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: None known.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop spill if safe to do so.

Environmental Precautions

Prevent contamination of drains or waterways and dispose according to local and national regulations.

Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill. Utilize a dust suppressant when removing mechanically. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Do not breathe dust.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep/Store away from Incompatible materials.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

Specific End Use(s)

Building materials, construction.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government

Silica, amorphous (7631-86-9)		
USA OSHA	OSHA PEL (TWA) (mg/m ³)	6 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	20 mppcf (80mg/m ³ /%SiO ₂)
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	6 mg/m ³
USA IDLH	US IDLH (mg/m ³)	3000 mg/m ³
Nunavut	OEL TWA (mg/m ³)	2 mg/m ³ (respirable mass) 5 mg/m ³ (total mass) 0.05 mg/m ³ (regulated under Silica flour-respirable mass) 0.15 mg/m ³ (regulated under Silica flour, total mass)
Northwest Territories	OEL TWA (mg/m ³)	2 mg/m ³ (respirable mass) 5 mg/m ³ (total mass) 0.05 mg/m ³ (regulated under Silica flour-respirable mass) 0.15 mg/m ³ (total mass, regulated under Silica flour)

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Yukon	OEL TWA (mg/m ³)	300 particle/mL (as measured by Konimeter instrumentation) 20 mppcf (as measured by Impinger instrumentation) 2 mg/m ³ (respirable mass)
Quartz (14808-60-7)		
Mexico	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH chemical category	A2 - Suspected Human Carcinogen
USA OSHA	OSHA PEL (STEL) (mg/m ³)	250 mppcf/%SiO ₂ +5, 10mg/m ³ /%SiO ₂ +2
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.05 mg/m ³ (respirable dust)
USA IDLH	US IDLH (mg/m ³)	50 mg/m ³ (respirable dust)
Alberta	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable particulate)
British Columbia	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable)
Manitoba	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
New Brunswick	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable fraction)
Newfoundland & Labrador	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Nova Scotia	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Nunavut	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable mass) 0.3 mg/m ³ (total mass)
Northwest Territories	OEL TWA (mg/m ³)	0.1 mg/m ³ (respirable mass) 0.3 mg/m ³ (total mass)
Ontario	OEL TWA (mg/m ³)	0.10 mg/m ³ (designated substances regulation-respirable)
Prince Edward Island	OEL TWA (mg/m ³)	0.025 mg/m ³ (respirable fraction)
Québec	VEMP (mg/m ³)	0.1 mg/m ³ (respirable dust)
Saskatchewan	OEL TWA (mg/m ³)	0.05 mg/m ³ (respirable fraction)
Yukon	OEL TWA (mg/m ³)	300 particle/mL
Calcium oxide (1305-78-8)		
Mexico	OEL TWA (mg/m ³)	2 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	5 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	2 mg/m ³
USA IDLH	US IDLH (mg/m ³)	25 mg/m ³
Alberta	OEL TWA (mg/m ³)	2 mg/m ³
British Columbia	OEL TWA (mg/m ³)	2 mg/m ³
Manitoba	OEL TWA (mg/m ³)	2 mg/m ³
New Brunswick	OEL TWA (mg/m ³)	2 mg/m ³
Newfoundland & Labrador	OEL TWA (mg/m ³)	2 mg/m ³
Nova Scotia	OEL TWA (mg/m ³)	2 mg/m ³
Nunavut	OEL STEL (mg/m ³)	4 mg/m ³
Nunavut	OEL TWA (mg/m ³)	2 mg/m ³
Northwest Territories	OEL STEL (mg/m ³)	4 mg/m ³
Northwest Territories	OEL TWA (mg/m ³)	2 mg/m ³
Ontario	OEL TWA (mg/m ³)	2 mg/m ³
Prince Edward Island	OEL TWA (mg/m ³)	2 mg/m ³
Québec	VEMP (mg/m ³)	2 mg/m ³
Saskatchewan	OEL STEL (mg/m ³)	4 mg/m ³
Saskatchewan	OEL TWA (mg/m ³)	2 mg/m ³
Yukon	OEL STEL (mg/m ³)	4 mg/m ³
Yukon	OEL TWA (mg/m ³)	2 mg/m ³
Iron oxide (Fe2O3) (1309-37-1)		
Mexico	OEL TWA (mg/m ³)	5 mg/m ³

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Mexico	OEL STEL (mg/m ³)	10 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m ³)	10 mg/m ³ (fume) 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	5 mg/m ³ (dust and fume)
USA IDLH	US IDLH (mg/m ³)	2500 mg/m ³ (dust and fume)
Alberta	OEL TWA (mg/m ³)	5 mg/m ³ (respirable)
British Columbia	OEL STEL (mg/m ³)	10 mg/m ³ (fume)
British Columbia	OEL TWA (mg/m ³)	10 mg/m ³ (total particulate matter containing no Asbestos and <1% Crystalline silica-total particulate) 3 mg/m ³ (particulate matter containing no Asbestos and <1% Crystalline silica-respirable particulate) 5 mg/m ³ (dust and fume)
Manitoba	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
New Brunswick	OEL TWA (mg/m ³)	5 mg/m ³ (particulate matter containing no Asbestos and <1% Crystalline silica, dust and fume) 10 mg/m ³ (regulated under Rouge-particulate matter containing no Asbestos and <1% Crystalline silica)
Newfoundland & Labrador	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Nova Scotia	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Nunavut	OEL TWA (mg/m ³)	5 mg/m ³ (respirable mass) 10 mg/m ³ (total mass)
Northwest Territories	OEL TWA (mg/m ³)	5 mg/m ³ (respirable mass) 10 mg/m ³ (total mass)
Ontario	OEL TWA (mg/m ³)	5 mg/m ³ (respirable)
Prince Edward Island	OEL TWA (mg/m ³)	5 mg/m ³ (respirable fraction)
Québec	VEMP (mg/m ³)	5 mg/m ³ (dust and fume) 10 mg/m ³ (containing no Asbestos and <1% Crystalline silica, regulated under Rouge-total dust)
Saskatchewan	OEL STEL (mg/m ³)	10 mg/m ³ (dust and fume) 20 mg/m ³ (regulated under Rouge)
Saskatchewan	OEL TWA (mg/m ³)	5 mg/m ³ (dust and fume) 10 mg/m ³ (regulated under Rouge)
Yukon	OEL STEL (mg/m ³)	10 mg/m ³ (fume) 20 mg/m ³ (regulated under Rouge)
Yukon	OEL TWA (mg/m ³)	5 mg/m ³ (fume) 30 mppcf (regulated under Rouge) 10 mg/m ³ (regulated under Rouge)
Carbon (7440-44-0)		
Mexico	OEL TWA (mg/m ³)	2 mg/m ³ (dust)

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles or safety glasses with side shields. Gloves. Protective clothing. Dust formation: dust mask.



Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Materials for Protective Clothing: Wear suitable materials and fabrics.

Hand Protection: Wear protective gloves.

Eye Protection: Goggles or safety glasses with side shields.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: Use NIOSH-approved dust mask if dust has the potential to become airborne.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Fine grained, gray powder
Odor	: Odorless*
Odor Threshold	: Not available
pH	: Not available
Evaporation Rate	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific Gravity	: 2.0 - 3.0
Solubility	: Insoluble in water.
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

* The use of urea or aqueous ammonia injected into the flue gas to reduce nitrogen oxides (NOx) emissions may result in the presence of ammonium sulfate or ammonium bisulfate in the ash at less than 0.1%. When ash containing these substances becomes wet under high pH (>9), free ammonia gas may be released resulting in objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

Possibility of Hazardous Reactions: The material is a relatively stable, inert material; however, when ash containing ammonia becomes wet under high pH (>9), free ammonia gas may be released resulting in an objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces. Polymerization will not occur.

Conditions to Avoid: Incompatible materials.

Incompatible Materials: None known.

Hazardous Decomposition Products: None known.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Causes serious eye damage.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not classified

Carcinogenicity: Not available. Respirable crystalline silica has been identified as a carcinogen by NTP and IARC.

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Repeated exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis.

Symptoms/Injuries After Skin Contact: Repeated or prolonged skin contact may cause irritation.

Symptoms/Injuries After Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ashes, residues (68131-74-8)	
LD50 Oral Rat	> 2000 mg/kg
Silica, amorphous (7631-86-9)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 2.2 mg/l (Exposure time: 1 h)
Quartz (14808-60-7)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 5000 mg/kg
Calcium oxide (1305-78-8)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rabbit	> 2500 mg/kg
Iron oxide (Fe2O3) (1309-37-1)	
LD50 Oral Rat	> 10000 mg/kg
Carbon (7440-44-0)	
LD50 Oral Rat	> 10000 mg/kg
Silica, amorphous (7631-86-9)	
IARC Group	3
Quartz (14808-60-7)	
IARC Group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Iron oxide (Fe2O3) (1309-37-1)	
IARC Group	3

SECTION 12: ECOLOGICAL INFORMATION

Toxicity No additional information available

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Silica, amorphous (7631-86-9)	
LC50 Fish 1	5000 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
EC50 Daphnia 1	7600 mg/l (Exposure time: 48 h - Species: Ceriodaphnia dubia)
Calcium oxide (1305-78-8)	
LC50 Fish 1	1070 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [static])

Persistence and Degradability Not available

Bioaccumulative Potential

Silica, amorphous (7631-86-9)	
BCF Fish 1	(no bioaccumulation expected)
Calcium oxide (1305-78-8)	
BCF Fish 1	(no bioaccumulation)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT Not regulated for transport

In Accordance with IMDG Not regulated for transport

In Accordance with IATA Not regulated for transport

In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Ecotherm	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
Ashes, residues (68131-74-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Silica, amorphous (7631-86-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Quartz (14808-60-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
Calcium oxide (1305-78-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Iron oxide (Fe2O3) (1309-37-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Carbon (7440-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

US State Regulations

Quartz (14808-60-7)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Silica, amorphous (7631-86-9)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Quartz (14808-60-7)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Calcium oxide (1305-78-8)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Iron oxide (Fe₂O₃) (1309-37-1)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Ecotherm

WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
----------------------	---



Ashes, residues (68131-74-8)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
----------------------	---

Silica, amorphous (7631-86-9)

Listed on the Canadian DSL (Domestic Substances List)
Listed on the Canadian IDL (Ingredient Disclosure List)

IDL Concentration 1 %

WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
----------------------	---

Quartz (14808-60-7)

Listed on the Canadian DSL (Domestic Substances List)
Listed on the Canadian IDL (Ingredient Disclosure List)

IDL Concentration 1 %

WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
----------------------	---

Calcium oxide (1305-78-8)

Listed on the Canadian DSL (Domestic Substances List)
Listed on the Canadian IDL (Ingredient Disclosure List)

IDL Concentration 1 %

WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
----------------------	---

Iron oxide (Fe₂O₃) (1309-37-1)

Listed on the Canadian DSL (Domestic Substances List)
Listed on the Canadian IDL (Ingredient Disclosure List)

IDL Concentration 1 %

WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
----------------------	---

Ecotherm™

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Carbon (7440-44-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 05/27/2015
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H320	Causes eye irritation
H335	May cause respiratory irritation
H372	Causes damage to organs through prolonged or repeated exposure

“The information provided herein is believed by seller to be accurate at the time of preparation, or prepared from sources believed to be reliable. Health and safety precautions in this data sheet may not be adequate for all individuals or situations. Users have the responsibility to comply with all laws and procedures applicable to the safe handling and use of the product, to determine the suitability of the product for its intended use, and to understand possible hazards associated with mixing this product with other materials. SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT, THE MERCHANTABILITY, OR FITNESS THEREOF FOR ANY PURPOSE, OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY SELLER”.

NA GHS SDS

Attachment I

Emission Units Table

**(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)**

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of Change	Control Device ⁴
ST-S1	ST-E1	Fly Ash Separator A – Feed Surge Bin	2016	100 ton bin 40 tph	New	ST-C1
ST-S2	ST-E2	Dust Collector Vent - Air Slides, Conveyors, Hoppers, Separators	2016	80 tph (2 separators)	New	ST-C2
ST-S3	ST-E3	Clean-up Vacuum Vent	2016	2 tph	New	ST-C3
ST-S4	ST-E4	ProAsh® Product Silo	2016	10,000 ton silo 80 tph (2 separators)	New	ST-C4
ST-S5	ST-E5	ProAsh® Truck Loadout	2016	200 tph	New	ST-C5
ST-S6	ST-E6	EcoTherm Silo with Wet Truck Loadout	2016	500 ton silo Silo receiving 46 tph (2 separators) Wet loadout 120 tph	New	ST-C6
ST-S7	ST-E7	Carbon (EcoTherm®) Feeder Receiver	2016	46 tph	New	ST-C7
ST-S8	ST-E8	EcoTherm® Mixer Vent Filter	2016	50 tph	New	ST-C8
ST-S9	ST-E9	Fly Ash Separator B – Feed Surge Bin	TBD	100 ton bin 40 tph	New	ST-C9
ST-10	Fugitive	Paved Haul Road	Original	n/a	n/a	n/a

¹ For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,...or other appropriate designation.

² For Emission Points use the following numbering system: 1E, 2E, 3E,...or other appropriate designation.

³ New, modification, removal

⁴ For Control Devices use the following numbering system: 1C, 2C, 3C,...or other appropriate designation.

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ⁴)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
ST-E1	Horiz. Stack	ST-S1	Sep. A Feed Surge Bin	ST-C1	Bag House Filter			PM/PM10 PM2.5	50 40	240 190	0.05 0.04	0.24 0.19	Solid	EE	0.01 gr/dscf
ST-E2	Upward Vertical Stack	ST-S2	Dust Collector Vent	ST-C2	Bag House Filter			PM/PM10 PM2.5	300 240	1300 1040	0.30 0.24	1.30 1.04	Solid	EE	0.01 gr/dscf
ST-E3	Upward Vertical Stack	ST-S3	Vacuum Vent	ST-C3	Cartridge Filter			PM/PM10 PM2.5	30 27	150 120	0.03 0.027	0.15 0.12	Solid	EE	0.01 gr/dscf
ST-E4	Horiz Stack	ST-S4	ProAsh® Product Silo	ST-C4	Bag House Filter			PM/PM10 PM2.5	250 200	1100 880	0.25 0.20	1.10 0.88	Solid	EE	0.01 gr/dscf
ST-E5	Upward Vertical Stack	ST-S5	ProAsh® Truck Loadout	ST-C5	Cartridge Filter			PM/PM10 PM2.5	130 110	580 470	0.13 0.11	0.58 0.47	Solid	EE	0.01 gr/dscf
ST-E6	Horiz Stack	ST-S6	EcoTherm Silo with Wet Loadout	ST-C6	Bag House Filter			PM/PM10 PM2.5	160 120	680 550	0.16 0.12	0.68 0.55	Solid	EE	0.01 gr/dscf

ST-E7	Horiz Stack	ST-S7	EcoTherm® Feeder Receiver	ST-C7	Bag House Filter			PM/PM10 PM2.5	60 40	240 190	0.06 0.04	0.24 0.19	Solid	EE	0.01 gr/dscf
ST-E8	Upward Vertical Stack	St-S8	EcoTherm® Mixer Vent Filter	ST-C8	Cartridge Filter			PM/PM10 PM2.5	100 80	450 360	0.10 0.08	0.45 0.36	Solid	EE	0.01 gr/dscf
ST-E9	Horiz Stack	ST-S9	Sep. B Feed Surge Bin	ST-C9	Bag House Filter			PM/PM10 PM2.5	50 40	240 190	0.05 0.04	0.24 0.19	Solid	EE	0.01 gr/dscf

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

- ¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- ² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
- ³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. **DO NOT LIST** H₂, H₂O, N₂, O₂, and Noble Gases.
- ⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- ⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- ⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
- ⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data

Emission Point ID No. <i>(Must match Emission Units Table)</i>	Effective Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height ² <i>(Release height of emissions above ground level)</i>	Northing	Easting
ST-E1	0.7	160	750	32	3312	73	4340.758	649.838
ST-E2	1.2	150	4000	59	3312	34	4340.761	649.834
ST-E3	0.25	77	400	131	3312	11	4340.757	649.836
ST-E4	1.33	150	3400	58	3312	189	4340.779	649.809
ST-E5	0.63	150	1800	96	3312	24	4340.779	649.809
ST-E6	1.33	150	2100	37	3313	86	4340.764	649.808
ST-E7	0.7	150	750	65	3290	78	4340.645	649.841
ST-E8	0.63	150	1400	75	3290	45	4340.645	649.841
ST-E9	0.7	160	750	32	3312	73	4340.756	649.835

¹ Give at operating conditions. Include inerts.

² Release height of emissions above ground level.

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS	
1.)	Will there be haul road activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No There are paved road emissions from enclosed tanker trucks picking up mineral ash (ProAsh®). However, overall there would be reduced road emissions due to decreased volumes of fly ash taken to the on-site landfill. <input checked="" type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET. See Attachment L
2.)	Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING
3.)	Will there be Liquid Loading/Unloading Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT
4.)	Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.)	Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.)	Will there be General Clean-up VOC Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.)	Will there be any other activities that generate fugitive emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."	

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS ¹	Maximum Potential Uncontrolled Emissions ²		Maximum Potential Controlled Emissions ³		Est. Method Used ⁴
		lb/hr	ton/yr	lb/hr	ton/yr	
Road Dust Emissions New Emissions Paved Entrance Road ⁵	PM10	0.948	0.465	0.948	0.465	EE (AP-42)
Storage Pile Emissions	n/a	n/a	n/a	n/a	n/a	n/a
Loading/Unloading Operations	n/a	n/a	n/a	n/a	n/a	n/a
Wastewater Treatment Evaporation & Operations	n/a	n/a	n/a	n/a	n/a	n/a
Equipment Leaks	n/a	Does not apply	n/a	Does not apply	n/a	n/a
General Clean-up VOC Emissions	n/a	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a	n/a

¹ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

² Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

³ Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁴ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁵ Fugitive dust for roads values are for all fly ash being processed by two separators, and half the values shown would apply when only one separator is installed initially.

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S1**

1.	Name or type and model of proposed affected source: 100 ton receiver bin for ash separator (Separator A).
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See Attached and Separator Equipment in Attachment G.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Receiver bin capacity is 100 tons. Separator A is capable of processing 40 tph of feed fly ash.
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Maximum mineral ash (ProAsh®) production is 40 tph. Maximum carbon ash (EcoTherm®) production is 23 tph. Total maximum production of mineral ash (ProAsh®) plus carbon ash (EcoTherm®) for Separator A is 40 tph.
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	160	°F and	15	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	50	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.003	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total feed ash amounts and hours of operation for Separator A</p>	<p>RECORDKEEPING</p> <p>Monthly feed ash and hours of operation records for Separator A</p>
---	--

<p>REPORTING</p> <p>Annual feed ash throughput and hours of operation records for Separator A.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

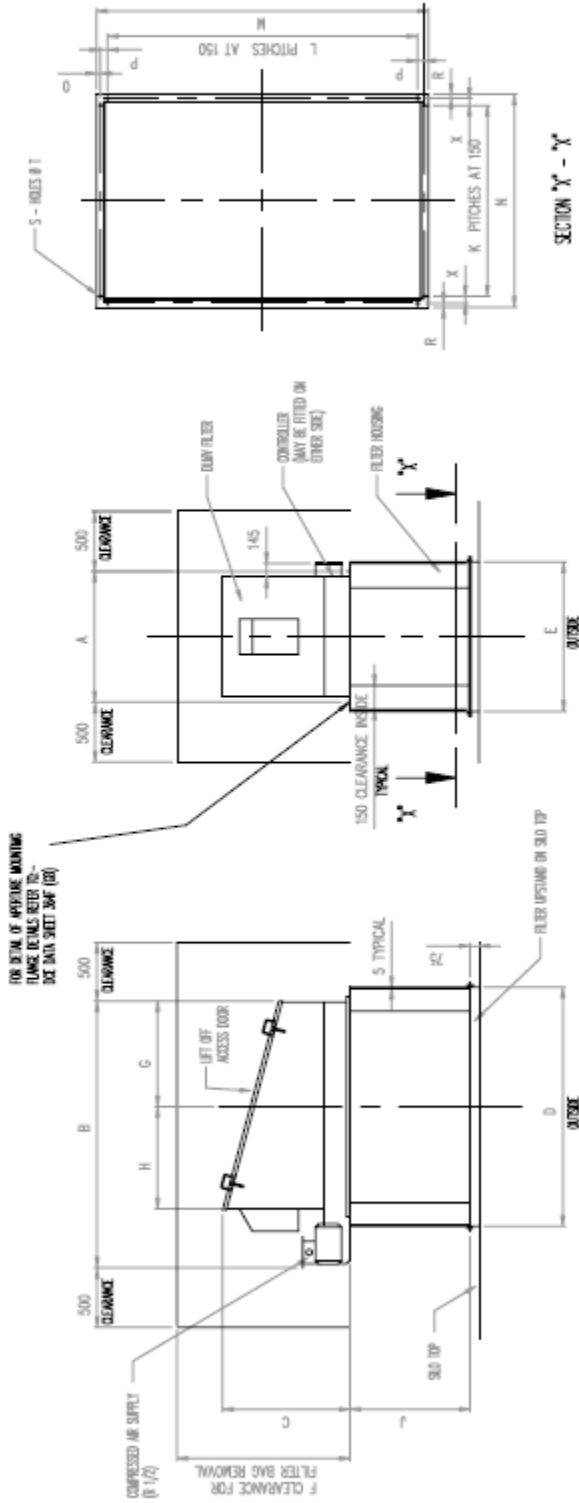
REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None

OR SIMILAR EQUIPMENT



DM TYPE	K PRODES	L PRODES	M	N	O	P	X	R	S	T
V20/10W	7	8	145	130	22	85	88	22	42	12
V30/10W	7	12	200	130	22	83	88	22	42	12
V60/15W	7	6	250	130	22	48	88	22	50	12

DM TYPE	A	B	C	D	E	F	G	H	J
V20/10W	110	165	85	135	130	150	575	55	100
V30/10W	110	225	190	180	130	140	875	85	100
V60/15W	110	270	190	240	130	220	1157	100	100

ABOVE TO BE USED FOR PLANNING IN PURPOSES ONLY
NOT FOR MANUFACTURE

CLYDE MATERIALS HANDLING
1100 INDUSTRIAL AVENUE, SUITE 100
MARIETTA, GEORGIA 30067
TEL: 770.429.1100 FAX: 770.429.1101
WWW.CLYDEMH.COM

DATE: 03/20/2007
DRAWING NO: 92882200
PROJECT NO: 92882
SCALE: 00

REVISION
DATE: 03/20/2007
DRAWN BY: [blank]
CHECKED BY: [blank]
DATE: [blank]

SEPARATION TECHNOLOGIES INC
DUCROT A

DO NOT SCALE. IF IN DOUBT, ASK FOR THE ANGLE PROJECTION

A1

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S2**

1.	Name or type and model of proposed affected source: Dust Collector Vent - Air Slides, Conveyors, Hoppers, Separators A & B
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See Attached and Separator Equipment in Attachment G.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Each separator is capable of processing 40 tph of feed fly ash for a total of 80 tph.
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Maximum mineral ash (ProAsh®) production is 40 tph per separator for a total maximum production of 80 tph. Maximum carbon ash (EcoTherm®) production is 23 tph per separator for a total maximum production of 46 tph. Total maximum production of mineral ash (ProAsh®) plus carbon ash (EcoTherm®) for Separators A & B is 80 tph.
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	150	°F and	14.5	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	300	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.016	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total feed ash amounts and hours of operation for Separators A and B.</p>	<p>RECORDKEEPING</p> <p>Monthly feed ash and hours of operation records for Separators A and B.</p>
---	--

<p>REPORTING</p> <p>Annual feed ash throughput and hours of operation records for Separators A and B.</p>	<p>TESTING</p> <p>None</p>
--	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

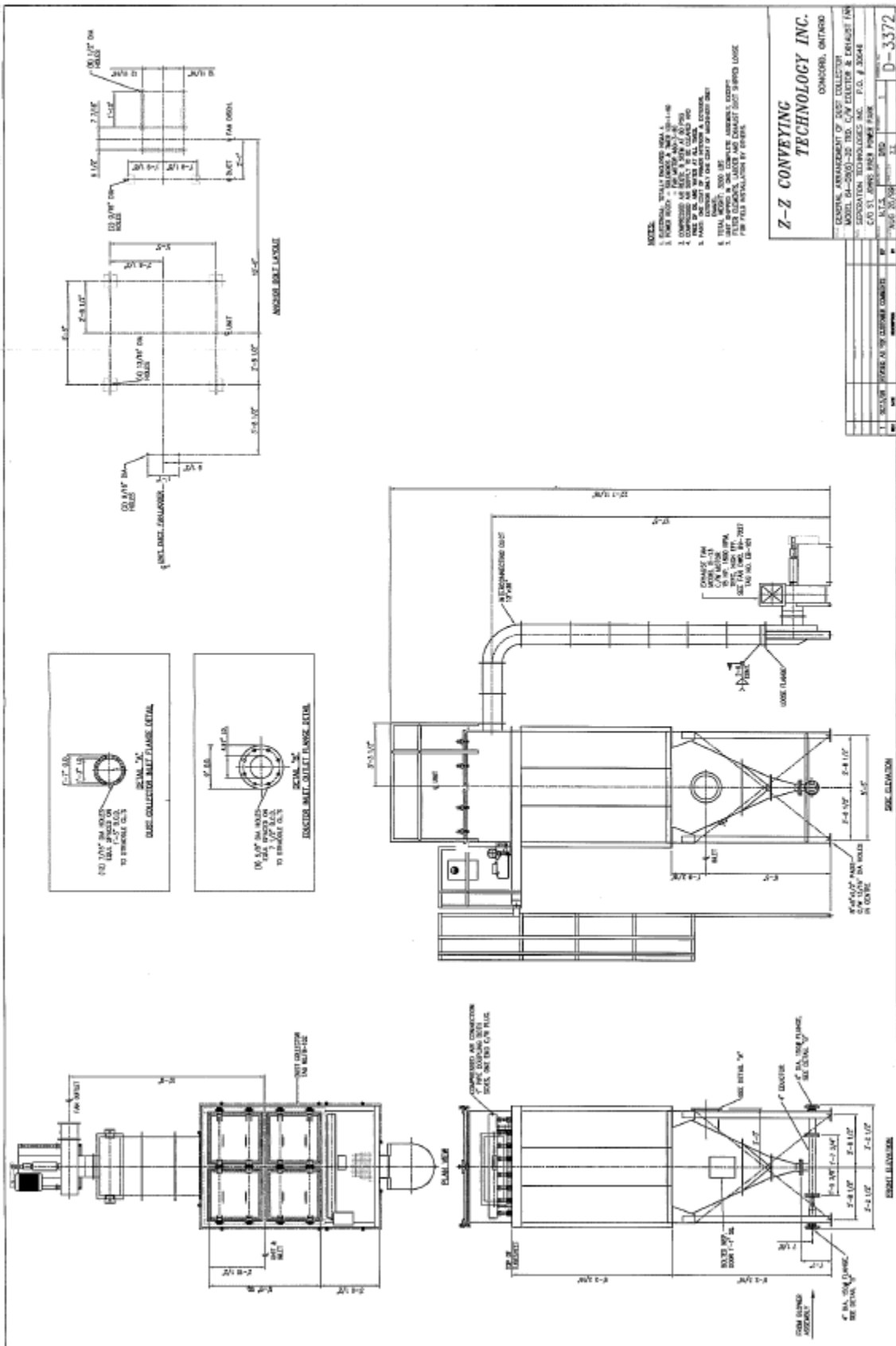
RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None



**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S3**

1. Name or type and model of proposed affected source: Clean-up Vacuum Vent
2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See Attached
3. Name(s) and maximum amount of proposed process material(s) charged per hour: 2 tph, used as needed for housekeeping
4. Name(s) and maximum amount of proposed material(s) produced per hour: Not Applicable
5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:					
@		77	°F and	14	psia
a.	NO _x	n/a	lb/hr	n/a	grains/ACF
b.	SO ₂	n/a	lb/hr	n/a	grains/ACF
c.	CO	n/a	lb/hr	n/a	grains/ACF
d.	PM ₁₀	30	lb/hr	10	grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a	grains/ACF
f.	VOCs	n/a	lb/hr	n/a	grains/ACF
g.	Pb	0.002	lb/hr	n/a	grains/ACF
h.	Specify other(s)				
	HAPs – see Attachment N		lb/hr		grains/ACF
			lb/hr		grains/ACF
			lb/hr		grains/ACF
			lb/hr		grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>None</p>	<p>RECORDKEEPING</p> <p>None</p>
--------------------------------------	---

<p>REPORTING</p> <p>None</p>	<p>TESTING</p> <p>None</p>
-------------------------------------	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None



T1000 Series STATIONARY



DeMARCO® INDUSTRIAL VACUUMS

The Portable DeMARCO® Vacuum T1000 Series is precisely engineered and manufactured to the highest standards, therefore providing you with a level of unsurpassed quality, value and performance.

The T1000 Series is ideal for light to medium-duty wet/dry material volume applications that may require up to a 3-1/2" ID hose size with pick-up capacities up to 8 tons/hour. This design allows for batch or continuous dumping while maintaining hands-free filter cleaning for 24/7 hour operation. The T1000 Series may also be connected to a central manifold system with multiple pick-up point connections.

YOUR SEARCH STOPS HERE™

DeMARCO® Vacuums are purposely built for decades of heavy-duty use with our exclusive performance features that are virtually maintenance-free. From our heavy gauge steel fabrications, to our time tested quality components and expert machine craftsmen, we are confident to stand behind every vacuum system that carries the DeMARCO® name worldwide by offering our exclusive **Limited LIFETIME Warranty - Nothing Less.**

INDUSTRIES SERVED

FOUNDRY

ALUMINUM
BRONZE
CARBON BLACK
METAL
ORES
SAND CLAYS
STEEL SHOT

FOOD

FLOUR
GRAIN
SALT
SUGAR

MILLS

CHEMICALS
SAWDUST
PAPER
PULP
WOOD CHIPS

MINING

ASPHALT
BRICK
CEMENT
CONCRETE
GRAVEL
LIMESTONE
MINERALS

PLASTIC

FLAKES
POWDER
PELLETS
RESINS

POWER PLANT

COAL
FLY ASH
SLURRY

Misc.

COATING
GLASS
SODA ASH
POWDERS
ETC.

PERFORMANCE

Model	HP	Vacuum Rating* ("Hg)	CFM	Inlet ID Hose Size	Tons/ Hour**
1150	15	15"	400	2"	3
1200	20	16"	480	2-1/2"	4
1250	25	16"	950	3"	5
1300	30	16"	1150	3-1/2"	8

Above performances are approximate ratings under STP.

* Vacuum capabilities up to 18" Hg available on select models.

** Actual values may differ based upon distance from blower and material characteristics such as bulk density, particle size and operator's efficiency.

© DeMARCO INDUSTRIAL VACUUM CORPORATION, 2011

DeMARCO® MAXCARTRIDGE™ FILTERS

T1000 Series

- Exclusive Long Lasting Custom Design
- Washable and Reusable
- High Burst Strength with Dimensional Stability
- Dimpled, Non-Clogging Open Pleat Design
- Handles Ultra-Fine Powders
- Abrasion and Chemical Resistant
- Efficiencies up to 99.99% @ 0.2 Microns & Above
- Interval Air-Pulse Cleaning for Uninterrupted Vacuuming. No Manual Filter Shaking Required
- Secondary In-line or HEPA Filters Available
- Various Filter Medias Available
- Filter Performance Guarantee

* Minimum 80 PSI Compressed Air Required for Filter Pulse Cleaning During Vacuuming.

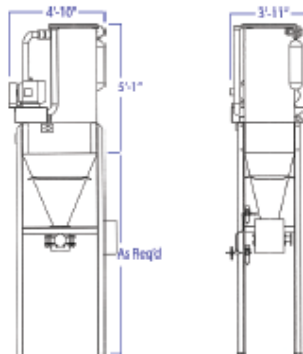


DIMENSIONS & SPECIFICATIONS

Stationary Options

- Ground Mounted Drive Package
- Service Platform with Railing and Access Ladder
- Direct Drum or Bulk Sack Loader
- Hopper Dust Shroud
- Custom Designed Manifold
- Turnkey Installed

- Stationary dimensions to be confirmed upon shop drawings.
- Custom dimensions available upon request.
- HEPA filter option may add to overall height.



Material Discharge Options

- Standard Counter Weighted Dump Gate
- Manual or Auto Butterfly Valve
- Continuous Rotary Air-Lock Discharge Gate
- Manual or Auto Slide Gate
- Manual or Auto Knife Gate
- Pinch Valve

- Others Upon Request

FEATURES & BENEFITS

Patented Features

- DeMARCO® Material Offset Separation Circuit Provides Minimal Carryover to the Filtration Chamber Maximizing Filter Performance.
- Exclusive Line of Cyclone Separators
- DeMARCO® Silencer Base® Muffler
 - Low dBA Rating
 - Compact and Esthetic Design
 - Solid Support Structure for the Drive Package
 - Fork Tine Openings for Vacuum Mobility

Control Panel

- NEMA 4 or 4X Enclosures
- 480V/3PH/60HZ or as Required
- Start/Stop Push-Buttons
- Material High Level Detector with Auto Shutdown
- Differential Pressure Switch for Filter Protection
- Magnehelic and Vacuum Gauges
- Vacuum Pump High Temperature Protection Circuit
- Engineered Electrical Drawings Included
- UL Approved
- Options:
 - NEMA 7/9 X-Proof Packages
 - 12V DC Panel
 - PLC Touch Screen Terminal

Drive Package

- High Performance Positive Displacement Vacuum Pumps
- Continuous 24/7 Operation
- Up to 18" Hg (Mercury) Available
- High Energy Efficient Electric Motors
- V-Belt or Direct Drive

Hopper and Structural Stand

- Material Collection Hoppers up to 27 Cubic Ft. or as Required
- Heavy-Duty Structural Support Stand with Base Plates for Anchor Bolting
- Hopper Access Door for Maintenance and Inspection
- Optional Adjustable Leg Extensions

Custom Engineered Vacuums

Our full service custom engineering department is dedicated to provide customer focused solutions for your toughest applications.

DeMarco Industrial Vacuum Corp
PO Box 1138
Crystal Lake, IL 60039 USA

P: 815.344.2222
F: 815.344.2223
DeMarcoVacuums.com
Sales@DeMarcoVacuums.com



**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S4**

1.	Name or type and model of proposed affected source: 10,000 ton product (ProAsh®) silo
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See elevation drawings in Attachment E for silo and attached for filter.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Silo capacity is 10,000 tons. Maximum transfer is 80 tph of mineral ash (ProAsh®).
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Maximum transfer is 80 tph of mineral ash (ProAsh®).
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	150	°F and	15	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	250	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.014	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total ProAsh® production.</p>	<p>RECORDKEEPING</p> <p>Monthly ProAsh® production records.</p>
---	--

<p>REPORTING</p> <p>Annual ProAsh® production.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S5**

1.	Name or type and model of proposed affected source: Product (ProAsh®) Truck Loadout
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See Attached
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Maximum loadout rate is 200 tph.
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Maximum loadout rate is 200 tph.
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	150	°F and	14.5	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	130	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.007	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total ProAsh® amounts loaded to tanker trucks.</p>	<p>RECORDKEEPING</p> <p>Monthly ProAsh® amounts loaded to tanker trucks.</p>
--	---

<p>REPORTING</p> <p>Annual ProAsh® production.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None



Dust Control and Loading Systems Inc

Leaders in Innovative Bulk Loading Systems Design

UN800 Loading Spout

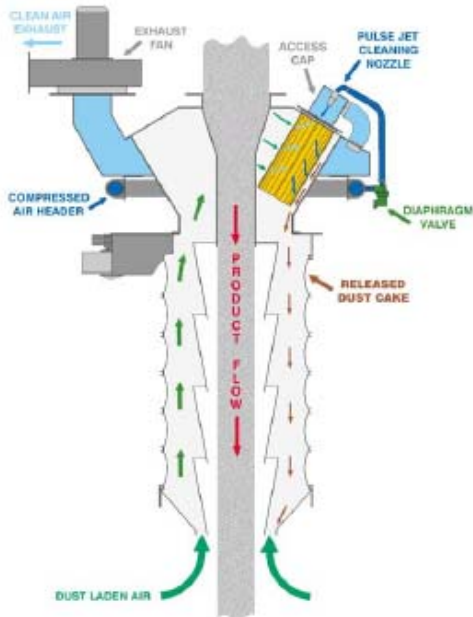
UN800 LOADING SPOUT

EV enclosed vehicle or OV open vehicle spouts provide excellent dust free loading performance for trucks and railcars. DCL has incorporated 20 years of experience in bulk loading of dry materials into this new service friendly retractable spout design. The low profile feature makes this spout the best choice when faced with limited space conditions.



UN800 shown fully retracted in storage position.

- Easy access to drive components.
- Three cable hoist system proving maximum spout stability.
- Shipped completely assembled and tested.
- Slack cable and drive limits factory set.
- Internal stacking product flow control cones are constructed from urethane, AR steel or optional stainless steel.
- Wide selection of flexible outer spout sleeve materials for high and low temperature applications provided with heavy duty aluminum stacking type support rings.
- EV enclosed vehicle or OV open vehicle discharge configuration.
- Vertical travels up to 18 feet.
- Loading capacities of up to 450 cu ft/min of fine aerated materials.
- Collar style dust outlet for connection to a free standing dust collector or vent through frame configuration for connection to an inline filter module.



The CFM filter module adds 30" to the retracted spout height.

SPOUT / CFM COMBINATION

DCL's new Compact Filter Module provides the industries lowest profile filter/loading spout combination. The CFM filter module is used inline with the UN800 Loading Spout for dust control during the loading of dry, dusty materials into open or enclosed vehicles. The dust collected is re-entrained with the material being loaded which makes the CFM Filter Module an ideal and cost effective package. When comparing the new design of the CFM filter module to free standing units, the savings in space and money become apparent with the elimination of expensive duct work, discharge air locks and hopper discharge systems. For detailed CFM specifications see flier PUBc-0499-DCFM.

Po Box 125
08660 Ance Road

Dust Control and Loading Systems Inc
Charlevoix, Michigan 49720
www.dclinc.com or dcl-info@dclinc.com

Tele: 800-748-0563
Fax: 231-547-3343

PUBc-0499-AUL

MODEL	TRAVEL	RETR.	EXTD.	URE WGT	STL WGT	URE HP	STL HP
UN800-02	24.00	18.75	42.75	54.3 LB	586 LB	1 HP	1 HP
UN800-04	48.00	21.50	69.50	576 LB	662 LB	1 HP	1 HP
UN800-06	72.00	24.50	96.50	609 LB	738 LB	1 HP	1 HP
UN800-08	96.00	27.00	123.00	646 LB	817 LB	1 HP	1 HP
UN800-10	120.00	28.38	148.38	673 LB	867 LB	1 HP	1 HP
UN800-12	144.00	31.13	175.13	706 LB	943 LB	1 HP	1.5 HP
UN800-14	168.00	33.88	201.88	743 LB	1022 LB	1 HP	1.5 HP
UN800-16	192.00	36.63	228.63	777 LB	1099 LB	1 HP	2 HP
UN800-18	216.00	38.00	254.00	804 LB	1147 LB	1 HP	2 HP

GENERAL NOTES:
 LOADING CAPACITY: 450 CFM
 AVERAGE AIR WITHDRAWAL: 1400 TO 1800 CFM
 LIFTING SPEED: 16 FPM AVG
 ALL INDUSTRIAL VOLTAGES ARE AVAILABLE FOR ELECTRICAL COMPONENTS.

PREWIRING OF ELECTRICAL COMPONENTS TO SPOUT FRAME JUNCTION BOX OPTIONAL.
 ELECTRICAL ENCLOSURES NEMA 4 STANDARD, NEMA 4X, 7, AND 9 OPTIONAL.

COLLAPSIBLE FABRIC SLEEVE CAN BE CONSTRUCTED OF URETHANE/NYLON, HYPALON/NYLON, OR A NUMBER OF OTHER FABRICS. SLEEVES COME STANDARD WITH ALUMINUM OUTER AND INNER RINGS.
 METAL SURFACES ARE POWER TOOL CLEANED, PRIMED, AND FINISHED WITH INDUSTRIAL ENAMEL.

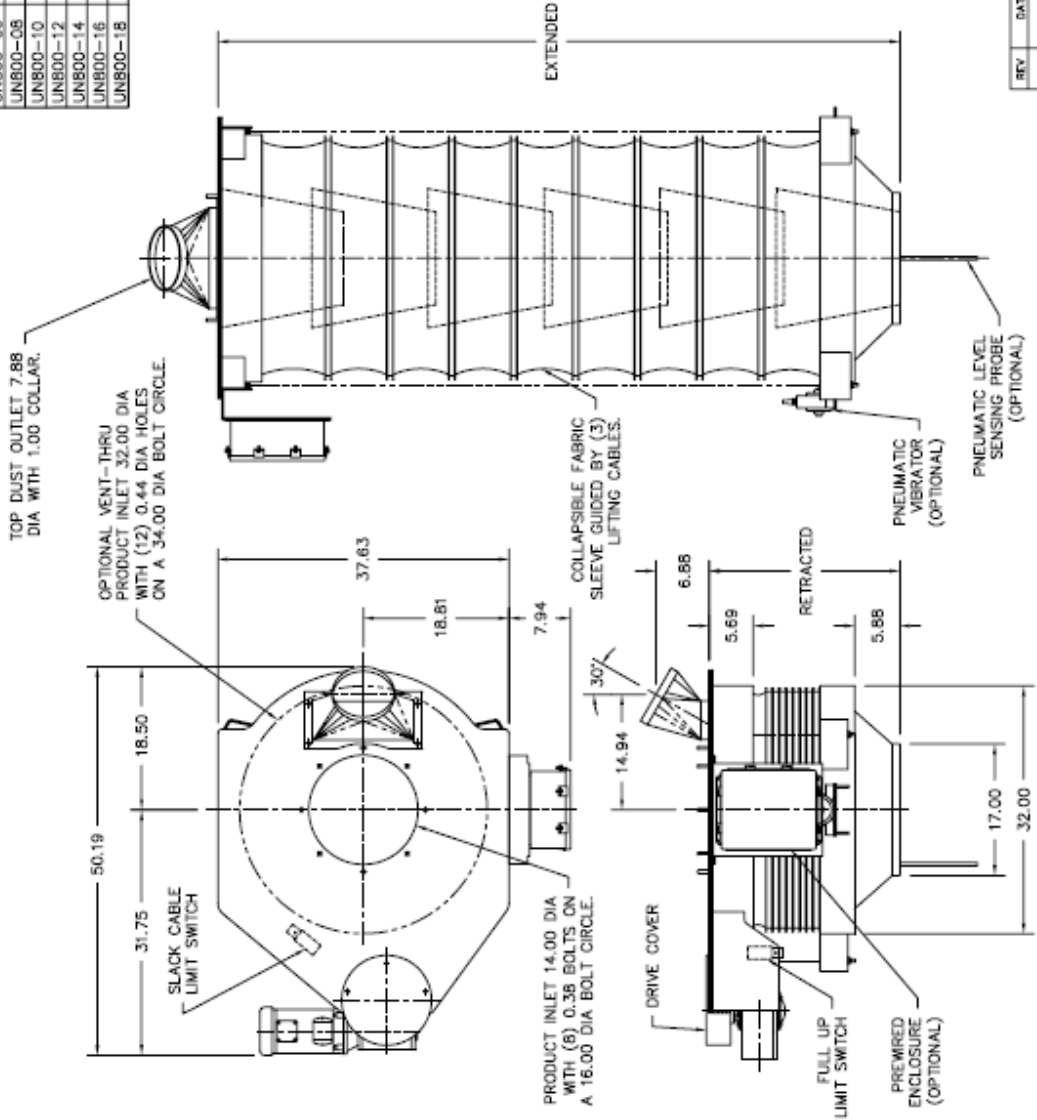
LOADING CAPACITY LISTED IS APPROXIMATE AND BASED ON FREE FLOWING PRODUCTS. CONSULT DCL FOR ACTUAL REQUIREMENTS.

AIR WITHDRAWAL REQUIREMENTS ARE AVERAGE. CONSULT DCL FOR FINAL RECOMMENDATIONS.

CONSTRUCTION NOTES: CONTAINED INNER DESIGN STANDARD WITH 0.13 AR STEEL, AND 0.13 304 OR 316 STAINLESS STEEL. OTHER MATERIALS AVAILABLE TO SUIT APPLICATION.

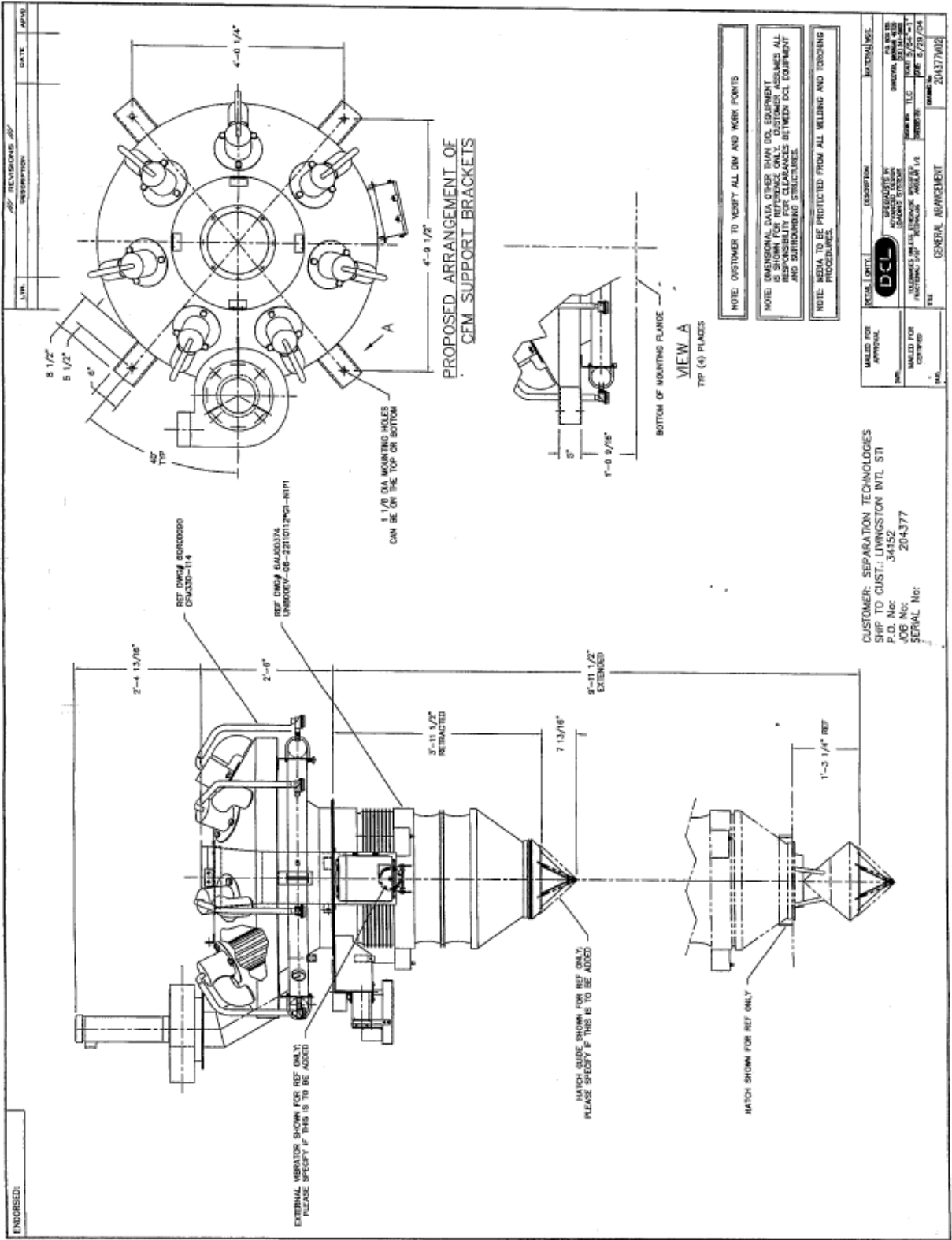
SPECIFICATIONS AND/OR DIMENSIONAL DATA ARE SUBJECT TO CHANGE. CONSULT DCL FOR CERTIFIED DRAWINGS.

OPTIONS:
 150# INLET FLANGE. ADDS 3.00 TO RETRACTED HEIGHT.
 LEVEL SENSORS: TILT PROBE, RF PROBE, CAPACITANCE PROBE, PNEUMATIC PROBE.
 PNEUMATIC VIBRATOR KIT REQUIRES (40) CFM @ (80) PSI.



REV	DATE	BY	
B	04-23-02	JNM	TLL
A	09-26-00	JNM	

		SPECIALISTS IN ADVANCED DESIGN LOADING SYSTEMS	
TEL: 608-785-5555 FAX: 608-785-5555 3100 RD E WAUKESHA, WI 53186	NAME: UN800 SCALE: NONE DATE: 01-04-98	DRAWING NO.: UN800-10001	PROJECT NO.: UN800-10001

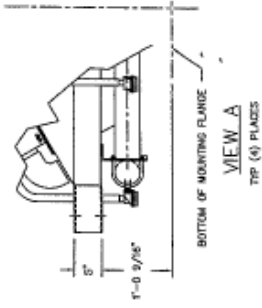


REV.	REVISIONS	DATE	APPROV.

ENDORSED:

PROPOSED ARRANGEMENT OF CFM SUPPORT BRACKETS

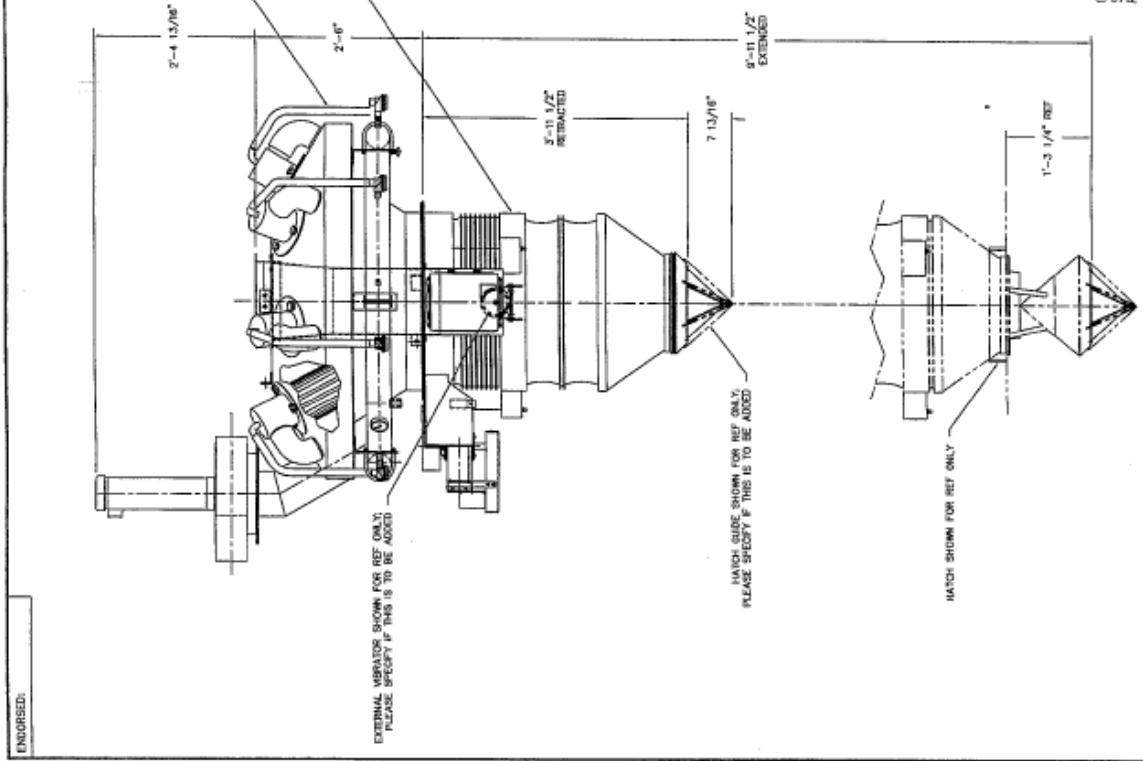
- NOTE: CUSTOMER TO VERIFY ALL DIM AND WORK POINTS
- NOTE: DIMENSIONAL DATA OTHER THAN DCL EQUIPMENT IS SHOWN FOR REFERENCE ONLY. CUSTOMER ASSUMES ALL DIMENSIONS AND CLEARANCES BETWEEN DCL EQUIPMENT AND SURROUNDING STRUCTURES.
- NOTE: MEDIA TO BE PROTECTED FROM ALL WELDING AND COATING PROCEDURES.



VIEW A
TOP (4) PLACES

MAILED FOR APPROVAL	DESCRIPTION	INTERNAL NO.
MAILED FOR CONTROL	GENERAL MANAGEMENT	20437002

CUSTOMER: SEPARATION TECHNOLOGIES
 SHIP TO CUST.: LIVINGSTON INTL ST
 P.O. No: 34152
 JOB No: 204-377
 SERIAL No:



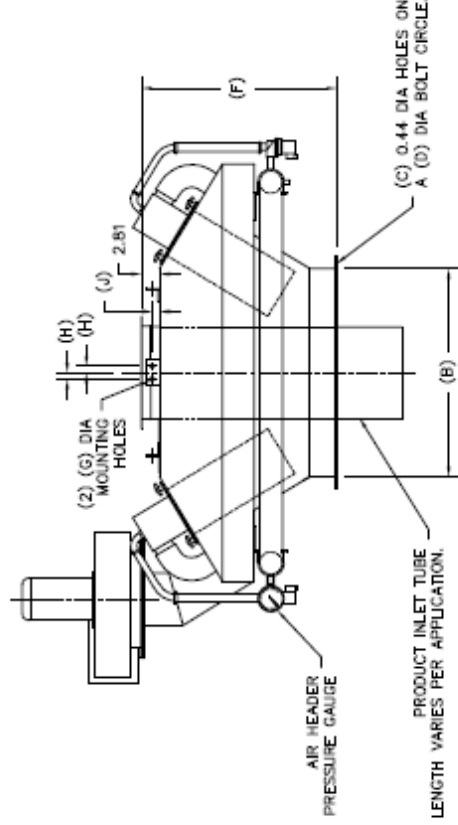
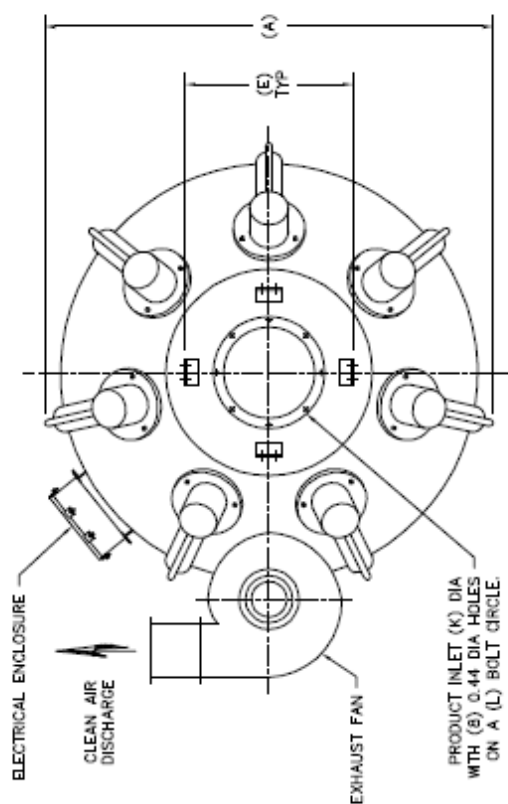
EXTERNAL VIBRATOR SHOWN FOR REF ONLY. PLEASE SPECIFY IF THIS IS TO BE ADDED

HATCH GUIDE SHOWN FOR REF ONLY. PLEASE SPECIFY IF THIS IS TO BE ADDED

HATCH SHOWN FOR REF ONLY

MODEL	EST. WGT.	# FILTER	CLOTH AREA	FILTER LGTH	A	B	C	D	E	F	G	H	J	K	L
CRM155	520 LB*	4	156 SQ FT	18.00	64.00	24.00	12	25.88	22.13	30.00	0.56	1.00	1.13	14.00	16.00
CRM195	520 LB*	5	195 SQ FT	18.00	64.00	24.00	12	25.88	22.13	30.00	0.56	1.00	1.13	14.00	16.00
CRM270	700 LB*	7	273 SQ FT	18.00	68.00	32.00	12	34.00	30.00	30.00	0.56	1.00	1.13	14.00	16.00
CRM330	700 LB*	7	329 SQ FT	22.00	68.00	32.00	12	34.00	30.00	30.00	0.56	1.00	1.13	14.00	16.00
CRM470	1600 LB*	10	470 SQ FT	22.00	90.00	38.00	16	40.00	45.00	43.00	0.69	3.00	2.00	16.00	18.00
CRM660	1600 LB*	14	658 SQ FT	22.00	100.00	42.00	16	40.00	50.00	54.50	0.75	7.00	2.00	16.00	18.00

GENERAL NOTES:
 ALL INDUSTRIAL VOLTAGES AVAILABLE FOR ELECTRICAL COMPONENTS.
 PREWIRING OF ELECTRICAL COMPONENTS TO CFM HOUSING JUNCTION BOX OPTIONAL.
 ELECTRICAL ENCLOSURES NEMA 4 STANDARD. NEMA 4X, 7, AND 9 OPTIONAL.
 METAL SURFACES ARE POWER TOOL CLEANED, PRIMED, AND FINISHED WITH INDUSTRIAL ENAMEL.
 AIR REQUIREMENTS FOR COMPRESSED AIR HEADER ARE (16) CFM @ (80-100) PSI.
 SPECIFICATIONS AND/OR DIMENSIONAL DATA ARE SUBJECT TO CHANGE. CONSULT DCL FOR CERTIFIED DRAWINGS.
 C/F - CONSULT FACTORY
 *ESTIMATED WEIGHTS DO NOT INCLUDE EXHAUST FAN, OPTIONAL EQUIPMENT OR ELECTRICAL COMPONENTS.



REV.	DATE	BY	DESCRIPTION
C	04-23-02	JFM	TELEMARKS UNLESS OTHERWISE SPECIFIED
B	09-28-00	JFM	FUNCTIONAL SUPPLEMENTAL TECHNIQUE MODULE V.4
A	10-18-97	JFM	CFM COMPACT FILTER MODULE

DCL SPECIALIZES IN
 ADVANCED DESIGN
 OF
 CONTROL SYSTEMS
 TELEMARKS UNLESS OTHERWISE SPECIFIED
 FUNCTIONAL SUPPLEMENTAL TECHNIQUE MODULE V.4
 PROJECT ENG DATE 03-03-97
 DRAWING NO. CFM-10001

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S6**

1.	Name or type and model of proposed affected source: 500 ton carbon ash (EcoTherm®) silo with Wet Truck Loadout
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See elevation drawings in Attachment E for silo and attached for filter and wet loadout.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Silo capacity is 500 tons. Silo can receive 46 tph of carbon ash (EcoTherm®). Wet truck loadout maximum rate is 120 tph.
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Silo can receive 46 tph of carbon ash (EcoTherm®). Wet truck loadout maximum rate is 120 tph.
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	150	°F and	15	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	160	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.009	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total EcoTherm® production.</p>	<p>RECORDKEEPING</p> <p>Monthly EcoTherm® production amounts records.</p>
---	--

<p>REPORTING</p> <p>Annual EcoTherm® production.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S7**

1.	Name or type and model of proposed affected source: Feeder receiver for carbon ash (EcoTherm®)
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See equipment information for Emission Unit ST-S1.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Feeder receiver is capable of processing 46 tph of carbon ash (EcoTherm®).
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Feeder receiver is capable of transferring 46 tph of carbon ash (EcoTherm®).
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	150	°F and	15	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	60	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.003	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total EcoTherm® amounts returned to the coal feed for re-burning.</p>	<p>RECORDKEEPING</p> <p>Monthly EcoTherm® amounts returned to the coal feed for re-burning records.</p>
---	--

<p>REPORTING</p> <p>Annual EcoTherm® amounts returned.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

TBD

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S8**

1.	Name or type and model of proposed affected source: Mixer Vent Filter for carbon ash (EcoTherm®)
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See Attached.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Mixer Vent Filter is capable of processing 50 tph of carbon ash (EcoTherm®).
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Mixer Vent Filter is capable of producing 50 tph of wet-conditioned carbon ash (EcoTherm®).
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	160	°F and	14.5	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	100	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.006	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total EcoTherm® amounts returned to the coal feed for re-burning.</p>	<p>RECORDKEEPING</p> <p>Monthly EcoTherm® amounts returned to the coal feed for re-burning records.</p>
---	--

<p>REPORTING</p> <p>Annual EcoTherm® amounts returned.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

TBD

REV. A	DATE	BY	APP'D.
1	06/20/04	WJ	WJ
2	08/20/04	WJ	WJ

DCL COMPACT FILTER MODULE

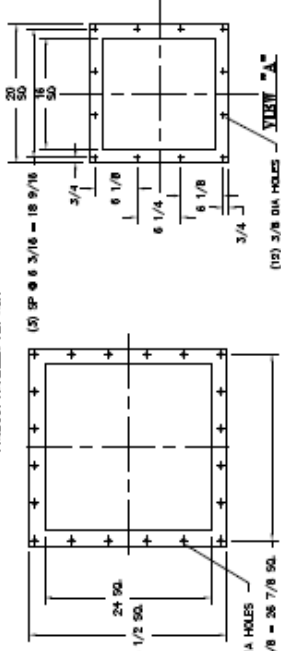
1. GAUGE CONSTRUCTION PULSE SET POINT COLLECTORS
(ALL DIMENSIONS IN INCHES) (1" = 25.4 MILLIMETER PLATED FILTERS)

- I. NUMBER OF VALVES
- II. CUMULATIVE AREA (SQ. FT.)
- III. NUMBER OF CARTRIDGES
- IV. LENGTH OF CARTRIDGE (INCHES)
- V. EST. HEIGHT (LBS)
- VI. EST. WEIGHT (LBS)
- VII. SCFM AIR REQUIRED (90-100) PPM

	I	II	III	IV	V	VI	VII
4	198	5	18	1400	845	7	

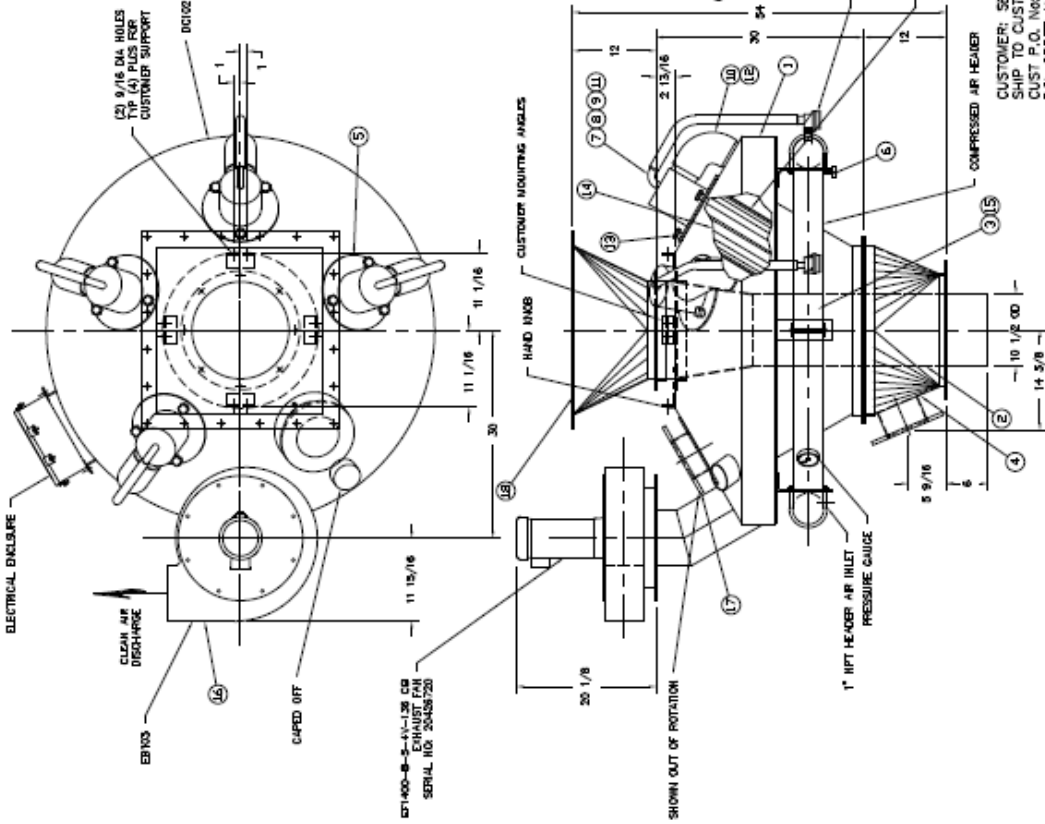
- A. DUST INLET: SIZE 14 IN. MATERIAL: MILD STEEL
- B. BALL PATTERNS: (8) 7/8 DIA HOLES ON A 10 DIA BC
- C. HOUSING HEIGHT: 30 MATERIAL: MILD STEEL
- D. FAN: HP: 9 RPM: 2000 VOLTAGED: 230/400 CAPACITY: 1400 CFM @ 8" S
- E. PULSE SET TIMER: DELAY: 0-30 SECONDS ON TIME: 50-500 MILLISECONDS
- F. FILTER CARTRIDGE: DIAMETER: 1" LENGTH: 18 MATERIAL: POLYESTER QUANTITY: 5
- G. FILTER REMOVAL: TOP REMOVAL, QUICK ACCESS
- H. FILTER PRESSURE DIFFERENTIAL SWITCH
- I. SPECIAL REQUIREMENTS: SCOTT BLOWER MODEL# 3066
- J. FINISH: DCL STANDARD INDUSTRIAL ENAMEL "GRAY"

APPLICATION:
PRODUCT THICKENER: FLY ASH



NO.	DESCRIPTION	QTY	UNIT
1	ASSEMBLY PER SERIAL #		
2	SWASTIKAR SEAL-INLET	185	60
3	SWASTIKAR BRASS-CORNERTOP	185	18
4	EXHAUST FAN-1400 RPM EXHAUST FAN	1	200
5	SCOTT BLOWER-CAPTRIDGE 8 DIA 1.8 LONG	5	18
6	SCOTT BLOWER-TOOL	1	18
7	SCOTT BLOWER-TOOL	1	18
8	SCOTT BLOWER-TOOL	1	18
9	SCOTT BLOWER-TOOL	1	18
10	SCOTT BLOWER-TOOL	1	18
11	SCOTT BLOWER-TOOL	1	18
12	SCOTT BLOWER-TOOL	1	18
13	SCOTT BLOWER-TOOL	1	18
14	SCOTT BLOWER-TOOL	1	18
15	SCOTT BLOWER-TOOL	1	18
16	SCOTT BLOWER-TOOL	1	18
17	SCOTT BLOWER-TOOL	1	18
18	SCOTT BLOWER-TOOL	1	18
19	SCOTT BLOWER-TOOL	1	18
20	SCOTT BLOWER-TOOL	1	18
21	SCOTT BLOWER-TOOL	1	18
22	SCOTT BLOWER-TOOL	1	18
23	SCOTT BLOWER-TOOL	1	18
24	SCOTT BLOWER-TOOL	1	18
25	SCOTT BLOWER-TOOL	1	18
26	SCOTT BLOWER-TOOL	1	18
27	SCOTT BLOWER-TOOL	1	18
28	SCOTT BLOWER-TOOL	1	18
29	SCOTT BLOWER-TOOL	1	18
30	SCOTT BLOWER-TOOL	1	18
31	SCOTT BLOWER-TOOL	1	18
32	SCOTT BLOWER-TOOL	1	18
33	SCOTT BLOWER-TOOL	1	18
34	SCOTT BLOWER-TOOL	1	18
35	SCOTT BLOWER-TOOL	1	18
36	SCOTT BLOWER-TOOL	1	18
37	SCOTT BLOWER-TOOL	1	18
38	SCOTT BLOWER-TOOL	1	18
39	SCOTT BLOWER-TOOL	1	18
40	SCOTT BLOWER-TOOL	1	18
41	SCOTT BLOWER-TOOL	1	18
42	SCOTT BLOWER-TOOL	1	18
43	SCOTT BLOWER-TOOL	1	18
44	SCOTT BLOWER-TOOL	1	18
45	SCOTT BLOWER-TOOL	1	18
46	SCOTT BLOWER-TOOL	1	18
47	SCOTT BLOWER-TOOL	1	18
48	SCOTT BLOWER-TOOL	1	18
49	SCOTT BLOWER-TOOL	1	18
50	SCOTT BLOWER-TOOL	1	18
51	SCOTT BLOWER-TOOL	1	18
52	SCOTT BLOWER-TOOL	1	18
53	SCOTT BLOWER-TOOL	1	18
54	SCOTT BLOWER-TOOL	1	18
55	SCOTT BLOWER-TOOL	1	18
56	SCOTT BLOWER-TOOL	1	18
57	SCOTT BLOWER-TOOL	1	18
58	SCOTT BLOWER-TOOL	1	18
59	SCOTT BLOWER-TOOL	1	18
60	SCOTT BLOWER-TOOL	1	18

REV.	DATE	BY	APP'D.
1	06/20/04	WJ	WJ
2	08/20/04	WJ	WJ



NOTE: SEPARATE ASSET OWNER SHALL BE RESPONSIBLE FOR CLEARANCE BETWEEN DCL EQUIPMENT AND SURROUNDING STRUCTURES.

CUSTOMER: SEPARATION TECHNOLOGIES
SHIP TO: CUST: SEPARATION TECHNOLOGIES
CUST P.O. No: 34013
DCL ORDER No: 20426719
DCL SERIAL No: J012280
TAG: DCL02/EB103

**Attachment L-1
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **ST-S9**

1.	Name or type and model of proposed affected source: 100 ton receiver bin for ash separator (Separator B)
2.	On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants. See equipment information for emission Unit ST-S1.
3.	Name(s) and maximum amount of proposed process material(s) charged per hour: Receiver bin capacity is 100 tons. Separator B is capable of processing 40 tph of feed fly ash
4.	Name(s) and maximum amount of proposed material(s) produced per hour: Maximum mineral ash (ProAsh®) production is 40 tph. Maximum carbon ash (EcoTherm®) production is 23 tph. Total maximum production of mineral ash (ProAsh®) plus carbon ash (EcoTherm®) for Separator B is 40 tph.
5.	Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Not Applicable

* ***The identification number which appears here must correspond to the air pollution control device identification number appearing on the List Form.***

6. Combustion Data (if applicable):					
(a) Type and amount in appropriate units of fuel(s) to be burned:					
Not Applicable					
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:					
Not Applicable					
(c) Theoretical combustion air requirement (ACF/unit of fuel):					
n/a	@	n/a	°F and	n/a	psia.
(d) Percent excess air: n/a					
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:					
Not Applicable					
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:					
Not Applicable					
(g) Proposed maximum design heat input: n/a × 10 ⁶ BTU/hr.					
7. Projected operating schedule:					
Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:				
@	160	°F and	15	psia
a.	NO _x	n/a	lb/hr	n/a grains/ACF
b.	SO ₂	n/a	lb/hr	n/a grains/ACF
c.	CO	n/a	lb/hr	n/a grains/ACF
d.	PM ₁₀	50	lb/hr	10 grains/ACF
e.	Hydrocarbons	n/a	lb/hr	n/a grains/ACF
f.	VOCs	n/a	lb/hr	n/a grains/ACF
g.	Pb	0.003	lb/hr	n/a grains/ACF
h.	Specify other(s)			
	HAPs – see Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

<p>MONITORING</p> <p>Monitor the total feed ash amounts and hours of operation for Separator B.</p>	<p>RECORDKEEPING</p> <p>Monthly feed ash and hours of operation records for Separator B.</p>
--	---

<p>REPORTING</p> <p>Annual feed ash throughput and hours of operation for Separator B.</p>	<p>TESTING</p> <p>None</p>
---	-----------------------------------

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

TBD

Attachment L-2

FUGITIVE EMISSIONS FROM PAVED HAULROADS

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Product Tanker Trucks	27.5	0.7		21024		
2							
3							
4							
5							
6							
7							

Source: AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads 13.2.1 (1/11), Eq.2

$$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7} = \text{See Attachment N}$$

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	
W	Average vehicle weight (tons)	

For lb/hr: $[lb \div VMT] \times [VMT \div trip] \times [Trips \div Hour] = \text{lb/hr}$

For TPY: $[lb \div VMT] \times [VMT \div trip] \times [Trips \div Hour] \times [Ton \div 2000 lb] = \text{Tons/year}$

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	PM10 Uncontrolled		PM10 Controlled	
	lb/hr	TPY	lb/hr	TPY
1	0.948	0.465	0.948	0.465
2				
3				
4				
5				
6				
7				
TOTALS				

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C1**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD	2. Total number of compartments: 1 3. Number of compartment online for normal operation: 1
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
4. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify	
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify	7. Bag Dimension: Diameter TBD in. Length TBD ft. 8. Total cloth area: 750 ft ² 9. Number of bags: TBD 10. Operating air to cloth ratio: 1.0 ft/min
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent	
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet	
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other	
14. Operation Hours: Max. per day: 24 Max. per yr: 8760	15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %

Gas Stream Characteristics

16. Gas flow rate into the collector: 750 ACFM at 160 °F and 15 PSIA ACFM: Design 750 PSIA Maximum: 15 PSIA Average Expected: 14.8 PSIA	
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air	
18. Gas Stream Temperature: 160 °F	19. Fan Requirements: n/a hp OR ft ³ /min
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O	
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.05	0.01
PM2.5			0.04	0.01

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector		Fraction Efficiency of Collector	
	Weight % for Size Range		Weight % for Size Range	
0 – 2	Undetermined	Undetermined	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined	Undetermined	Undetermined
>100	Undetermined	Undetermined	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to feed silo.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.3	0.01
PM2.5			0.24	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to feed silo.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M Air Pollution Control Device Sheet (BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C3**

Equipment Information and Filter Characteristics

<p>1. Manufacturer: TBD Model No. TBD</p>	<p>2. Total number of compartments: 1</p> <p>3. Number of compartment online for normal operation: 1</p>
<p>4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.</p>	
<p>6. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input type="checkbox"/> Closed Pressure <input checked="" type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify</p>	
<p>6. Filter Fabric Bag Material:</p> <p><input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify</p>	<p>7. Bag Dimension:</p> <p style="text-align: right;">Diameter TBD in. Length TBD ft.</p> <p>8. Total cloth area: 150 ft²</p> <p>9. Number of bags: TBD</p> <p>10. Operating air to cloth ratio: 2.67 ft/min</p>
<p>11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent</p>	
<p>12. Method used to clean bags:</p> <p><input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet</p>	
<p>13. Cleaning initiated by:</p> <p><input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other</p>	
<p>14. Operation Hours: Max. per day: 24 Max. per yr: 8760</p>	<p>15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %</p>

Gas Stream Characteristics

<p>16. Gas flow rate into the collector: 400 ACFM at 77 °F and 10.3 PSIA ACFM: Design 400 PSIA Maximum: 14.7 PSIA Average Expected: 10.3 PSIA</p>	
<p>17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air</p>	
<p>18. Gas Stream Temperature: 77 °F</p>	<p>19. Fan Requirements: hp OR 400 ft³/min</p>
<p>20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H₂O Low 5 in. H₂O</p>	
<p>21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf</p>	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.03	0.01
PM2.5			0.027	0.01

25. Complete the table: **Particle Size Distribution at Inlet to Collector** **Fraction Efficiency of Collector**

Particulate Size Range (microns)	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: Every Use
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is collected for proper disposal.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C4**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD	2. Total number of compartments: 1 3. Number of compartment online for normal operation: 1
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
7. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify	
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify	7. Bag Dimension: Diameter TBD in. Length TBD ft. 8. Total cloth area: 900 ft ² 9. Number of bags: TBD 10. Operating air to cloth ratio: 3.78 ft/min
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent	
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet	
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other	
14. Operation Hours: Max. per day: 24 Max. per yr: 8760	15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %

Gas Stream Characteristics

16. Gas flow rate into the collector: 3400 ACFM at 150 °F and 15 PSIA ACFM: Design 3400 PSIA Maximum: 15 PSIA Average Expected: 14.8 PSIA	
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air	
18. Gas Stream Temperature: 150 °F	19. Fan Requirements: n/a hp OR ft ³ /min
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O	
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.25	0.01
PM2.5			0.20	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to product silo.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M Air Pollution Control Device Sheet (BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C5**

Equipment Information and Filter Characteristics

1. Manufacturer: DCL Inc. Model No. CFM 330	2. Total number of compartments: 1 3. Number of compartment online for normal operation: 1
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
8. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input type="checkbox"/> Closed Pressure <input checked="" type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify	
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify	7. Bag Dimension: Diameter TBD in. Length TBD ft. 8. Total cloth area: 330 ft ² 9. Number of bags: 7 (cartridges) 10. Operating air to cloth ratio: 5.45 ft/min
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent	
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet	
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other	
14. Operation Hours: Max. per day: 24 Max. per yr: 8760	15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %

Gas Stream Characteristics

16. Gas flow rate into the collector: 1800 ACFM at 150 °F and 14.4 PSIA ACFM: Design 1800 PSIA Maximum: 14.7 PSIA Average Expected: 14.4 PSIA	
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air	
18. Gas Stream Temperature: 150 °F	19. Fan Requirements: hp OR 1800 ft ³ /min
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O	
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.13	0.01
PM2.5			0.11	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: Every Use
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to truck being loaded.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C6**

Equipment Information and Filter Characteristics

<p>1. Manufacturer: TBD Model No. TBD</p>	<p>2. Total number of compartments: 1</p> <p>3. Number of compartment online for normal operation: 1</p>
<p>4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.</p>	
<p>9. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify</p>	
<p>6. Filter Fabric Bag Material:</p> <p><input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify</p>	<p>7. Bag Dimension:</p> <p style="padding-left: 40px;">Diameter TBD in. Length TBD ft.</p> <p>8. Total cloth area: 550 ft²</p> <p>9. Number of bags: TBD</p> <p>10. Operating air to cloth ratio: 3.82 ft/min</p>
<p>11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent</p>	
<p>12. Method used to clean bags:</p> <p><input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet</p>	
<p>13. Cleaning initiated by:</p> <p><input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other</p>	
<p>14. Operation Hours: Max. per day: 24 Max. per yr: 8760</p>	<p>15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %</p>

Gas Stream Characteristics

<p>16. Gas flow rate into the collector: 2100 ACFM at 150 °F and 15 PSIA ACFM: Design 2100 PSIA Maximum: 15 PSIA Average Expected: 14.8 PSIA</p>	
<p>17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air</p>	
<p>18. Gas Stream Temperature: 150 °F</p>	<p>19. Fan Requirements: n/a hp OR ft³/min</p>
<p>20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H₂O Low 5 in. H₂O</p>	
<p>21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf</p>	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.16	0.01
PM2.5			0.12	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to the silo.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

**Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)**

Control Device ID No. (must match Emission Units Table): **ST-C7**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD		2. Total number of compartments: 1	
		3. Number of compartment online for normal operation: 1	
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.			
10. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify			
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify		7. Bag Dimension: Diameter TBD in. Length TBD ft.	
		8. Total cloth area: 750 ft ²	
		9. Number of bags: TBD	
		10. Operating air to cloth ratio: 1.0 ft/min	
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent			
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet			
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other			
14. Operation Hours: Max. per day: 24 Max. per yr: 8760		15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %	
Gas Stream Characteristics			
16. Gas flow rate into the collector: 750 ACFM at 150 °F and 15 PSIA ACFM: Design 750 PSIA Maximum: 15 PSIA Average Expected: 14.8 PSIA			
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air			
18. Gas Stream Temperature: 150 °F		19. Fan Requirements: n/a hp OR ft ³ /min	
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O			
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf			

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.06	0.01
PM2.5			0.04	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to process.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C8**

Equipment Information and Filter Characteristics

1. Manufacturer: DCL Inc. Model No. CFM 195		2. Total number of compartments: 1	
		3. Number of compartment online for normal operation: 1	
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.			
11. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify			
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify		7. Bag Dimension: Diameter TBD in. Length TBD ft.	
		8. Total cloth area: 195 ft ²	
		9. Number of bags: 5 (cartridges)	
		10. Operating air to cloth ratio: 7.18 ft/min	
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent			
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet			
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other			
14. Operation Hours: Max. per day: 24 Max. per yr: 8760		15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %	

Gas Stream Characteristics

16. Gas flow rate into the collector: 1400 ACFM at 150 °F and 14.4 PSIA ACFM: Design 1400 PSIA Maximum: 14.7 PSIA Average Expected: 14.4 PSIA	
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air	
18. Gas Stream Temperature: 150 °F	19. Fan Requirements: hp OR 1400 ft ³ /min
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O	
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.10	0.01
PM2.5			0.08	0.01

25. Complete the table:

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
	Weight % for Size Range	Weight % for Size Range
0 – 2	Undetermined	Undetermined
2 – 4	Undetermined	Undetermined
4 – 6	Undetermined	Undetermined
6 – 8	Undetermined	Undetermined
8 – 10	Undetermined	Undetermined
10 – 12	Undetermined	Undetermined
12 – 16	Undetermined	Undetermined
16 – 20	Undetermined	Undetermined
20 – 30	Undetermined	Undetermined
30 – 40	Undetermined	Undetermined
40 – 50	Undetermined	Undetermined
50 – 60	Undetermined	Undetermined
60 – 70	Undetermined	Undetermined
70 – 80	Undetermined	Undetermined
80 – 90	Undetermined	Undetermined
90 – 100	Undetermined	Undetermined
>100	Undetermined	Undetermined

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to process.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **ST-C9**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD	2. Total number of compartments: 1 3. Number of compartment online for normal operation: 1
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
12. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify	
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input type="checkbox"/> Others, specify	7. Bag Dimension: Diameter TBD in. Length TBD ft. 8. Total cloth area: 750 ft ² 9. Number of bags: TBD 10. Operating air to cloth ratio: 1. ft/min
11. Baghouse Operation: <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Intermittent	
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet	
13. Cleaning initiated by: <input checked="" type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input type="checkbox"/> Expected pressure drop range in. of water <input type="checkbox"/> Other	
14. Operation Hours: Max. per day: 24 Max. per yr: 8760	15. Collection efficiency: Rating: 99.9% Guaranteed minimum: 99.9 %

Gas Stream Characteristics

16. Gas flow rate into the collector: 750 ACFM at 160 °F and 15 PSIA ACFM: Design 750 PSIA Maximum: 15 PSIA Average Expected: 14.7 PSIA	
17. Water Vapor Content of Effluent Stream: ambient air lb. Water/lb. Dry Air	
18. Gas Stream Temperature: 160 °F	19. Fan Requirements: n/a hp OR ft ³ /min
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 15 in. H ₂ O Low 5 in. H ₂ O	
21. Particulate Loading: Inlet: >10 grain/scf Outlet: 0.01 grain/scf	

22. Type of Pollutant(s) to be collected (if particulate give specific type):
 PM, PM10, PM2.5 --fly ash

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
PM=PM10			0.05	0.01
PM2.5			0.04	0.01

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector		Fraction Efficiency of Collector	
	Weight % for Size Range		Weight % for Size Range	
0 – 2	Undetermined		Undetermined	
2 – 4	Undetermined		Undetermined	
4 – 6	Undetermined		Undetermined	
6 – 8	Undetermined		Undetermined	
8 – 10	Undetermined		Undetermined	
10 – 12	Undetermined		Undetermined	
12 – 16	Undetermined		Undetermined	
16 – 20	Undetermined		Undetermined	
20 – 30	Undetermined		Undetermined	
30 – 40	Undetermined		Undetermined	
40 – 50	Undetermined		Undetermined	
50 – 60	Undetermined		Undetermined	
60 – 70	Undetermined		Undetermined	
70 – 80	Undetermined		Undetermined	
80 – 90	Undetermined		Undetermined	
90 – 100	Undetermined		Undetermined	
>100	Undetermined		Undetermined	

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency:
- Other, specify:

27. Describe any recording device and frequency of log entries:

None

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Captured dust is returned to feed silo.

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? Yes

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Periodic visual checks

RECORDKEEPING:

Periodic visual checks and maintenance records

REPORTING:

Deviation reporting as required in Title V permit

TESTING:

None

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

TBD. Expect 99+%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

TBD. Expect 99.9%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

TBD

Attachment N: Supporting Emissions Calculations

Fly Ash Separation Emissions - Dominion Mt. Storm Station

Start Construction Date: 4/1/2016

DATE: 2/09/2016

Start Operation Date: 2/28/2017

Equipment Group	Emission Source No.	Emission Point	Process Unit	Baghouse ID	Control Device ID	Flow Rate	Temp	Flow Rate	Grain Loading	Operating Hours	PM Emissions	PM Emissions	PM10 Fraction	PM10 Emissions	PM10 Emissions	PM2.5 Fraction	PM2.5 Emissions	PM2.5 Emissions	Type	Stack Height
						acfm	deg F	scfm	gr/scf	hrs/yr	lb/hr	TPY		lb/hr	TPY		lb/hr	TPY		m
Fly Ash Separator A	ST-S1	ST-E1	Feed Surge Bin	ST-C1	ST-C1	750	160	639	0.01	8760	0.05	0.24	1.0	0.05	0.24	0.8	0.04	0.19	Fabric Filter/ Bag House	22.3
Fly Ash Separator B	ST-S9	ST-E9	Feed Surge Bin	ST-C9	ST-C9	750	160	639	0.01	8760	0.05	0.24	1.0	0.05	0.24	0.8	0.04	0.19	Fabric Filter/ Bag House	22.3
Fly Ash Separator	ST-S2	ST-E2	Dust Collector Vent - Air Slides, Conveyors, Hoppers,	ST-C2	ST-C2	4000	150	3462	0.01	8760	0.30	1.30	1.0	0.30	1.30	0.8	0.24	1.04	Fabric Filter/ Bag House	10.4
Fly Ash Separator	ST-S3	ST-E3	Clean-up Vacuum Vent	ST-C3	ST-C3	400	77	393	0.01	8760	0.03	0.15	1.0	0.03	0.15	0.8	0.027	0.12	Fabric Filter/ Cartridge Filter	3.4
Product Storage	ST-S4	ST-E4	ProAsh Product Silo	ST-C4	ST-C4	3400	150	2943	0.01	8760	0.25	1.10	1.0	0.25	1.10	0.8	0.20	0.88	Fabric Filter/ Bag House	57.6
Product Loading	ST-S5	ST-E5	ProAsh Truck Loadout	ST-C5	ST-C5	1800	150	1558	0.01	8760	0.13	0.58	1.0	0.13	0.58	0.8	0.11	0.47	Fabric Filter/ Cartridge Filter	7.3
EcoTherm (High-Carbon) Ash Storage and Loadout	ST-S6	ST-E6	EcoTherm Silo with Wet Truck Loadout	ST-C6	ST-C6	2100	150	1818	0.01	8760	0.16	0.68	1.0	0.16	0.68	0.8	0.12	0.55	Fabric Filter/ Bag House	26.2
EcoTherm Return System	ST-S7	ST-E7	Carbon (EcoTherm) Feeder Receiver	ST-C7	ST-C7	750	150	649	0.01	8760	0.06	0.24	1.0	0.06	0.24	0.8	0.04	0.19	Fabric Filter/ Bag House	23.8
EcoTherm Return System	ST-S8	ST-E8	EcoTherm Mixer Vent Filter	ST-C8	ST-C8	1400	150	1212	0.01	8760	0.10	0.45	1.0	0.10	0.45	0.8	0.08	0.36	Fabric Filter/ Cartridge Filter	13.7
Total											1.14	5.00		1.14	5.00		0.91	4.00		

NEW TRAFFIC FUGITIVE DUST FOR FLY ASH*	Material	Total Taken to Landfill or Shipped (tpy)	Truck Weight (tons)	Load (tons)	Total Trips per Year	Annual Hours of Truck Operation	PAVED ROADS									
							Paved Distance 1-Way (mi)	Total PM			PM10			PM2.5		
								EF (lb/VMT)	Uncontrolled (lb/hr)	Uncontrolled (tpy)	EF (lb/VMT)	Uncontrolled (lb/hr)	Uncontrolled (tpy)	EF (lb/VMT)	Uncontrolled (lb/hr)	Uncontrolled (tpy)
Max Future (Product Ship)**	ProAsh	525,600	15	25	21024	981	0.35	0.314	4.715	2.313	0.063	0.948	0.465	0.016	0.236	0.116

*New traffic is for product shipments off-site.

Average Speed 15 mph

**Maximum processed ash = 80 tph x 8760 hours (75% Pro Ash, 25% EcoTherm)

PAVED ROADS			
Emissions based on AP-42 Section 13.2.1 (1/11), Equation (2).			
$E_{ext} = [k * (sL/2)^{0.91} * (W)^{1.02} + C] * (1 - P/4N)$, where:			
E_{ext} = long-term average emission factor, lb/VMT	k = particle size multiplier	k (PM-30) = 0.011 lb/VMT	Table 13.2.1-1 (1/11)
sL = road surface silt loading, g/m ²	Table 13.2.1-2 (1/11) Corn Mill - similar due to traffic of bulk solids tanker trucks	k (PM-10) = 0.0022 lb/VMT	Table 13.2.1-1 (1/11)
Product Trucks, sL = 1.1		k (PM-2.5) = 0.00054 lb/VMT	Table 13.2.1-1 (1/11)
W = average vehicle weight, tons	Product Trucks, W = 27.5	C (PM) = 0.00047 lb/VMT	Sect. 13.2.1 (11/06)
		C (PM-10) = 0.00047 lb/VMT	Sect. 13.2.1 (11/06)
P = number of days with >= 0.01 in precipitation	160 Fig. 13.2.1-2 (1/11)	C (PM-2.5) = 0.00036 lb/VMT	Sect. 13.2.1 (11/06)
N = number of days in the averaging period (365)	365		

Bag Filter/Dust Collector Information															Uncontrolled Emissions		
Equipment Group	Emission Source No.	Emission Point	Process Unit	Stack Height	Exit Diameter (Effective)	Exit Velocity	Filter Area	A/C Ratio	Number of Compartments	Number of Bags per Comp.	Bag Length	Bag Diameter	Manufacturer	Model No.	Process Rate	99.9% Bag Filter Efficiency	
				ft	ft	ft/s	sf				in	in			tph	lb/hr	tpy
Fly Ash Separator A	ST-S1	ST-E1	Feed Surge Bin	73	0.7	32	750	1.00	1	TBD	TBD	TBD	TBD	TBD	40	54.7	239.8
Fly Ash Separator B	ST-S9	ST-E9	Feed Surge Bin	73	0.7	32	750	1.00	1	TBD	TBD	TBD	TBD	TBD	40	54.7	239.8
Fly Ash Separator	ST-S2	ST-E2	Dust Collector Vent - Air Slides, Conveyors, Hoppers, etc.	34	1.2	59	990	4.04	1	TBD	TBD	TBD	TBD	TBD	80	296.8	1299.8
Fly Ash Separator	ST-S3	ST-E3	Clean-up Vacuum Vent	11	0.25	131	150	2.67	1	TBD	TBD	TBD	TBD	TBD	2	33.7	147.7
Product Storage	ST-S4	ST-E4	ProAsh Product Silo	189	1.33	58	900	3.78	1	TBD	TBD	TBD	TBD	TBD	80	252.3	1104.9
Product Loading	ST-S5	ST-E5	ProAsh Truck Loadout	24	0.63	96	330	5.45	1	7	TBD	TBD	DCL	CFM330	200	133.5	584.9
EcoTherm (High-Carbon) Ash Storage and Loadout	ST-S6	ST-E6	EcoTherm Silo with Wet Truck Loadout	86	1.33	37	550	3.82	1	TBD	TBD	TBD	TBD	TBD	46	155.8	682.4
EcoTherm Return System	ST-S7	ST-E7	Carbon (EcoTherm) Feeder Receiver	78	0.7	65	750	1.00	1	TBD	TBD	TBD	TBD	TBD	46	55.6	243.7
EcoTherm Return System	ST-S8	ST-E8	EcoTherm Mixer Vent Filter	45	0.63	75	195	7.18	1	5	TBD	TBD	DCL	CFM195	50	103.9	454.9
																1141.09	4997.96

Hazardous Air Pollutants	West Virginia Air Toxics Modification Rates (10% of Plantwide Limit)		Ash Total Concentration	Data Source	Facility Total			Exceeds Trigger	TAPs by Emission Source											
					Max Hourly		Annual PTE		ST-S1			ST-S9			ST-S2			ST-S3		
					lb/hr	tpy	ppm		lb/hr		tpy	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Antimony		n/a	6.2	EPA Fly Ash/Concrete RA	7.07E-06		3.10E-05	n/a	3.39E-07	8.15E-06	2.97E-03	3.39E-07	8.15E-06	2.97E-03	1.84E-06	4.42E-05	1.61E-02	2.09E-07	5.02E-06	1.83E-03
Arsenic		0.01	50.1	EPA Fly Ash/Concrete RA	5.72E-05		2.50E-04	NO	2.74E-06	6.58E-05	2.40E-02	2.74E-06	6.58E-05	2.40E-02	1.49E-05	3.57E-04	1.30E-01	1.69E-06	4.05E-05	1.48E-02
Beryllium		0.00004	10.5	EPA Fly Ash/Concrete RA	1.20E-05		5.25E-05	YES	5.75E-07	1.38E-05	5.04E-03	5.75E-07	1.38E-05	5.04E-03	3.12E-06	7.48E-05	2.73E-02	3.54E-07	8.50E-06	3.10E-03
Cadmium		n/a	1.3	EPA Fly Ash/Concrete RA	1.48E-06		6.50E-06	n/a	7.12E-08	1.71E-06	6.23E-04	7.12E-08	1.71E-06	6.23E-04	3.86E-07	9.26E-06	3.38E-03	4.38E-08	1.05E-06	3.84E-04
Chromium		n/a	107	EPA Fly Ash/Concrete RA	1.22E-04		5.35E-04	n/a	5.86E-06	1.41E-04	5.13E-02	5.86E-06	1.41E-04	5.13E-02	3.18E-05	7.62E-04	2.78E-01	3.61E-06	8.66E-05	3.16E-02
Hexavalent Cr		n/a	12.84	EPA Fly Ash/Concrete RA	1.47E-05		6.42E-05	n/a	7.03E-07	1.69E-05	6.16E-03	7.03E-07	1.69E-05	6.16E-03	3.81E-06	9.15E-05	3.34E-02	4.33E-07	1.04E-05	3.79E-03
Cobalt		n/a	45.3	EPA Fly Ash/Concrete RA	5.17E-05		2.26E-04	n/a	2.48E-06	5.95E-05	2.17E-02	2.48E-06	5.95E-05	2.17E-02	1.34E-05	3.23E-04	1.18E-01	1.53E-06	3.67E-05	1.34E-02
Lead		0.06	55	EPA Fly Ash/Concrete RA	6.28E-05		2.75E-04	NO	3.01E-06	7.23E-05	2.64E-02	3.01E-06	7.23E-05	2.64E-02	1.63E-05	3.92E-04	1.43E-01	1.85E-06	4.45E-05	1.62E-02
Manganese		n/a	219	EPA Fly Ash/Concrete RA	2.50E-04		1.09E-03	n/a	1.20E-05	2.88E-04	1.05E-01	1.20E-05	2.88E-04	1.05E-01	6.50E-05	1.56E-03	5.69E-01	7.38E-06	1.77E-04	6.47E-02
Mercury		0.01	0.17	EPA Fly Ash/Concrete RA	1.94E-07		8.50E-07	NO	9.31E-09	2.23E-07	8.15E-05	9.31E-09	2.23E-07	8.15E-05	5.05E-08	1.21E-06	4.42E-04	5.73E-09	1.38E-07	5.02E-05
Nickel		n/a	76.7	EPA Fly Ash/Concrete RA	8.75E-05		3.83E-04	n/a	4.20E-06	1.01E-04	3.68E-02	4.20E-06	1.01E-04	3.68E-02	2.28E-05	5.46E-04	1.99E-01	2.59E-06	6.21E-05	2.27E-02
Selenium		n/a	8.8	EPA Fly Ash/Concrete RA	1.00E-05		4.40E-05	n/a	4.82E-07	1.16E-05	4.22E-03	4.82E-07	1.16E-05	4.22E-03	2.61E-06	6.27E-05	2.29E-02	2.97E-07	7.12E-06	2.60E-03

HAPs Triggers for 45C SR13 Permit							
Uncontrolled Total	2	5	Assumes 99.9% Efficiency	1.21E+00	NO	5.32E+00	YES

Data Source for Metals: EPA Coal Combustion Residual Beneficial Use Evaluation: Fly Ash Concrete and FGD Gypsum Wallboard, February 2014

ST-S4			ST-S5			ST-S6			ST-S7			ST-S8		
lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
1.56E-06	3.75E-05	1.37E-02	8.28E-07	1.99E-05	7.25E-03	9.66E-07	2.32E-05	8.46E-03	3.45E-07	8.28E-06	3.02E-03	6.44E-07	1.55E-05	5.64E-03
1.26E-05	3.03E-04	1.11E-01	6.69E-06	1.61E-04	5.86E-02	7.81E-06	1.87E-04	6.84E-02	2.79E-06	6.69E-05	2.44E-02	5.20E-06	1.25E-04	4.56E-02
2.65E-06	6.36E-05	2.32E-02	1.40E-06	3.37E-05	1.23E-02	1.64E-06	3.93E-05	1.43E-02	5.84E-07	1.40E-05	5.12E-03	1.09E-06	2.62E-05	9.55E-03
3.28E-07	7.87E-06	2.87E-03	1.74E-07	4.17E-06	1.52E-03	2.03E-07	4.86E-06	1.77E-03	7.23E-08	1.74E-06	6.34E-04	1.35E-07	3.24E-06	1.18E-03
2.70E-05	6.48E-04	2.36E-01	1.43E-05	3.43E-04	1.25E-01	1.67E-05	4.00E-04	1.46E-01	5.95E-06	1.43E-04	5.22E-02	1.11E-05	2.67E-04	9.74E-02
3.24E-06	7.77E-05	2.84E-02	1.71E-06	4.12E-05	1.50E-02	2.00E-06	4.80E-05	1.75E-02	7.14E-07	1.71E-05	6.26E-03	1.33E-06	3.20E-05	1.17E-02
1.14E-05	2.74E-04	1.00E-01	6.05E-06	1.45E-04	5.30E-02	7.06E-06	1.69E-04	6.18E-02	2.52E-06	6.05E-05	2.21E-02	4.71E-06	1.13E-04	4.12E-02
1.39E-05	3.33E-04	1.22E-01	7.35E-06	1.76E-04	6.43E-02	8.57E-06	2.06E-04	7.51E-02	3.06E-06	7.35E-05	2.68E-02	5.71E-06	1.37E-04	5.00E-02
5.52E-05	1.33E-03	4.84E-01	2.92E-05	7.02E-04	2.56E-01	3.41E-05	8.19E-04	2.99E-01	1.22E-05	2.92E-04	1.07E-01	2.27E-05	5.46E-04	1.99E-01
4.29E-08	1.03E-06	3.76E-04	2.27E-08	5.45E-07	1.99E-04	2.65E-08	6.36E-07	2.32E-04	9.46E-09	2.27E-07	8.29E-05	1.77E-08	4.24E-07	1.55E-04
1.93E-05	4.64E-04	1.69E-01	1.02E-05	2.46E-04	8.97E-02	1.20E-05	2.87E-04	1.05E-01	4.27E-06	1.02E-04	3.74E-02	7.97E-06	1.91E-04	6.98E-02
2.22E-06	5.33E-05	1.94E-02	1.18E-06	2.82E-05	1.03E-02	1.37E-06	3.29E-05	1.20E-02	4.90E-07	1.18E-05	4.29E-03	9.14E-07	2.19E-05	8.01E-03

**AIR QUALITY PERMIT NOTICE
Notice of Application**

Notice is given that Virginia Electric and Power Co. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Construction Permit for a fly ash recycling system located at the Mt. Storm Power Station located at 436 Dominion Boulevard near Mt. Storm, in Grant County, West Virginia. The latitude and longitude coordinates are: 39.203N and 79.265W

The applicant estimates the increased potential to discharge the following Regulated Air Pollutants will be: 7.3 tons of total particulate matter, 5.5 tons of PM10, or 4.1 tons of PM2.5 per year from new equipment and fugitive sources.

Startup of operation is planned to begin on or about the 29th day of May, 2017. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 18th day of February, 2016.

By: Virginia Electric and Power Co.
Peter M. Balkus
Station Director
Mt. Storm Power Station
436 Dominion Boulevard
Mt. Storm, West Virginia 26739