PERMIT-TO-INSTALL APPLICATION
OHIO RIVER CLEAN FUELS FACILITY
VILLAGE OF WELLSVILLE, COLUMBIANA AND JEFFERSON COUNTIES, OHIO

SUBMITTED TO:

OHIO ENVIRONMENTAL PROTECTION AGENCY

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MODULE 4

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1.0 PROCESS DESCRIPTION

This section describes activities associated with the collection, storage, and shipment of fly ash and slag produced by the gasifiers at ORCF. All components discussed below are present in each of six identical process trains, unless indicated otherwise. Figure 11 (Attachment 4A) is a block flow diagram of these activities including components of the gasifiers discussed in Module 3.

1.1 Fly Ash

The bulk of the fly ash contained in the raw syngas will be removed and conveyed to intermediate storage vessels, as described in Module 5. From each of the six intermediate storage vessels, fly ash can either be transferred back to the Coal Milling and Drying Unit (see Module 2) or to a fly ash silo (total of six) for storage and transfer to trucks. Fly ash will be pneumatically conveyed from the silos to trucks. Passive bin vent filters will control particulate emissions associated with the transfer of the fly ash from silos. An estimated 835,850 tons per year of fly ash will be transferred at a maximum rate of 95.4 tons per hour.

1.2 Slag

Most of the mineral content of the coal will leave the gasification zone as molten slag. The high gasifier temperature will ensure that the molten slag flows freely down the membrane wall into a water-filled compartment at the bottom of the gasifier. As the molten slag contacts the water bath, the slag will vitrify into dense, glassy granules.

An estimated 2.24 million tons per year of slag will be generated at a maximum rate of about 255 tons per hour. The slag will be transported from a slag accumulator at the base of each gasifier to a pressurized slag sluice vessel. During sluicing of the slag, water will be circulated by pump between a sluice vessel and its slag accumulator. When all the slag has been collected in the sluice vessel, the vessel will be isolated from the accumulator, depressurized, and emptied into the slag dewatering silo. Subsequently, the sluice vessel will be flushed, refilled, pressurized with HP nitrogen, and reconnected with the accumulator vessel. When the water of the slag bath system comes in contact with syngas, traces of syngas will be absorbed. The sluice sequence will be set up to minimize the discharge of this contaminated water. The vent gas originating from depressurization in the slag sluice vessel will be sent to the low pressure flare (see Module 6). The dewatering silos will be equipped with ventilation systems that will discharge to the atmosphere through dewatering silo vents.

The dewatered slag from each of the six gasifiers will be conveyed to on-site storage. The slag storage area will be surrounded on three sides by low barriers to contain the material. The storage area will have the capacity to contain up to 14 days of slag generation (about 2.4 million cubic feet). The slag storage pile area is estimated at 1.2 acres (diameter of 260 feet) with a pile height of approximately 130 feet. The actual pile configuration will be subject to final design considerations.

2.0 AIR EMISSIONS INVENTORY

Fugitive and point source emissions of particulate matter will be produced by material handling of fly ash and slag.

2.1 Fly Ash

Particulate matter will be emitted during pneumatic transfer of fly ash from the high pressure high temperature filter to the intermediate fly ash storage vessel in each train. Emissions will occur due to displacement of the air volume within the vessel as ash is transferred. The volume of displaced air has been estimated based on the volume of fly ash that will pass through the intermediate fly ash storage vessels. Based on the expected fly ash production rate, use of six trains and an assumed dense-phase air to fly ash ratio of 25:1, a displacement air flow rate of 344 scfm has been estimated. Actual emission estimates are based on the assumption that the displaced air from each intermediate fly ash storage vessel will be exhausted through a passive bin vent filter that will achieve a grain loading equal to 0.005 gr/dscf. Because particle size data is not available for this process, total particulate, PM10, and PM2.5 are reported as being equivalent. Potential emission estimates are based on the OEPA Reasonably Available Control Measures (RACM) guidance for transfer and conveying of coal (0.20 lbs per ton handled).

Particulate matter will also be emitted during fly ash storage silo loading and unloading. The sources of particulate emissions will be the bin vents located on the six ash storage silos. These silos will displace particulate-laden air as ash is loaded and unloaded. As discussed above for the intermediate fly ash vessel vents, it is assumed that 344 scfm will be displaced and that the storage silo bin vent filters will achieve a grain loading equal to 0.005 gr/dscf. Potential emission estimates for these transfers are also based on the OEPA RACM (Table 2.19-2) guidance for transfer and conveying of coal (0.20 lbs per ton handled).

Total particulate emissions from fly ash handling operations are summarized in the Supporting Calculations in Attachment 4B.

2.2 Slag

<u>Slag Handling</u>

Three material handling steps are required to transport slag from the slag sluice vessels to on-site storage. Those steps and associated sources of particulate emissions are:

- transfer of slag from the sluice vessel to the dewatering silo resulting in point source emissions from the six dewatering silo vents,

- fugitive emissions from transfer of slag from the dewatering silos to the storage conveyors, and
- fugitive emissions from transfer of slag from storage conveyors to the storage area.

Potential particulate emissions for the slag handling processes listed above were calculated using the amount of slag handled per unit time, based on the RACM Table 2.2.2-1 slag handling emission factor of 0.02 pounds of uncontrolled particulate emissions per ton of slag handled. This emission factor represents the low end of the RACM range for slag handling and was selected to reflect the high moisture content of the slag.

Actual particulate emissions associated with transfers from the slag sluice vessels to dewatering silos, slag dewatering silos to the storage conveyors, and from slag conveying to the storage areas have been adjusted to reflect the Best Available Control Technology (BACT) determinations for these activities.

Slag Storage

Slag will be stored outdoors. The estimated storage pile area is 1.2-acres (~ 260-foot diameter) containing a 130-foot tall pile. Emissions from the storage pile will be caused by wind erosion. Wind erosion emissions have been based on the continuously active pile equation provided in Control of Open Fugitive Dust Sources (U.S. EPA, September 1988). The following equation is based on the assumption that the entire storage pile undergoes continuous disruption which makes silt available for wind erosion.

$$E = (k) \times (s/1.5) \times [(365 - p)/235] \times (f/15)$$

Where:

E	= Emission factor, in lb PE or lb PM10/day/acre
k	= 1.7 for PE, 0.85 for PM10
s	= silt content of the stored material, weight percent = 7.3% potential (AP-42 Table 13.2.4.1)
p	= number of days with > 0.01 inches of precipitation per year, = 150 (AP-42 Figure 13.2.2-1)
f	= percentage of time wind speed exceeds 12 mph, = 28% based on review of Youngstown wind data without the use of a wind barrier.

Because a "k" factor is not provided to derived emission estimates for PM2.5 using this equation, the AP-42 Section 13.2.5 relationship indicating that PM2.5 is 7.5% of total particulate has been used here.

The storage pile is assumed to be continuously active for both actual and potential estimates. The storage pile fugitive dust emissions are shown on the accompanying Supporting Calculations (see Attachment 4B).

Slag Load-Out

The final slag handling step is transfer from the storage area to trucks for transfer off site. Fugitive particulate matter emission estimates for truck loading are based on the AP-42, Section 13.2.4.3 equation for load-out of aggregate for shipment (batch drop operations).

Total particulate emissions from slag storage and handling operations are summarized in the Supporting Calculations in Attachment 4B.

3.0 SOURCE-SPECIFIC APPLICABLE REGULATIONS

3.1 State Regulations

3.1.1 Control of Visible Particulate Emissions from Stationary Sources (3745-17-07)

The material handling activities include stationary sources of particulate matter. Stationary sources are subject to Chapter 3745-17-07(A)(1)(a) which limits visible particulate emissions to less than 20% opacity as a six-minute average. Chapter 3745-17-07(A)(1)(b) further states that the 20% opacity limit may not be exceeded for more than six consecutive minutes in any sixty minutes and never shall the opacity exceed 60% as a six-minute average.

3.1.2 Visible Particulate Emissions Limitations for Fugitive Dust (3745-17-07(B))

Material handling areas will be sources of fugitive dust emissions. Sources of fugitive dust are subject to Chapter 3745-17-07(B)(1) which limits visible particulate emissions to less than 20% opacity as a three-minute average.

3.1.3 Restriction of Emission of Fugitive Dust (3745-17-08)

Chapter 3745-17-08(B) will apply because of the proposed location in Columbiana County. This rule requires that ORCF apply reasonably available control measures (RACM) to prevent fugitive dust from becoming airborne. Relative to material handling, the rule states that the following measures must be taken or installed to prevent fugitive dust from becoming airborne:

- The periodic application of water of other suitable dust suppression chemicals on surfaces which can cause emissions of fugitive dust;
- The installation and use of hoods, fans, and other equipment to adequately enclose, contain, capture, vent and control the fugitive dust; and
- The covering, at all times, of open-bodied vehicles when transporting materials likely to become airborne.

3.1.4 Restrictions on Particulate Emissions from Industrial Processes (3745-17-11)

Operations, processes, and activities which release or may release particulate emissions into the ambient air, with certain exceptions including fuel combustion which is addressed above, are subject to this rule. Allowable particulate emission rates are determined on the basis of process weight at maximum capacity. The following table summarizes allowable emissions for the processes included in Module 4.

Table 3.1.4
Summary of Allowable Process Weight and Particulate Emission Rate Limits

Source	Process Weight (tph)	Allowable Particulate Emission Rate (lb/hr)
Intermediate Ash Storage Vents	16	26.3
Fly Ash Storage Silos	16	26.3
Slag Dewatering Silo Vents	43	43.2

3.1.5 Permits to Install New Sources (3745-31)

The feedstock storage area contains emission units that will generate fugitive particulate matter. These emission units are part of a major stationary source. Because the major stationary source is located within an attainment area for all criteria pollutants, according to 3745-31-12(A), each emissions unit is subject to an evaluation of best available control technology (BACT). The BACT analysis for these emission units is provided in Section 4.

In accordance with 3745-31-05(A)(3), sources are also required to employ best available technology (BAT). Because all sources and pollutants are addressed in the BACT analysis, BAT is assumed to have been achieved for affected emission units.

3.2 Federal Regulations

No federal regulations have been identified that regulate fugitive dust emissions from material handling activities. The non-metallic mineral processing NSPS (Subpart OOO) does not apply to the proposed ORCF activities because fly ash and slag are not identified as non-metallic minerals (see 40 CFR 60.671).

4.0 BACT ANALYSIS

Particulate emissions will occur from the transfer of fly ash and slag from the six gasifiers to their respective storage locations and subsequent truck loading for offsite transfer. Point sources of emissions include the intermediate ash storage vents, the fly ash storage silo vents, and the slag dewatering silo vents. Fugitive emission sources include transfers from the slag dewatering silos to conveyors, from conveyors to the slag storage pile, and from the storage pile to trucks. Fugitive particulate emissions will also be generated by wind erosion of the slag storage pile. This BACT analysis addresses both point and fugitive emission sources of particulate matter.

4.1 Available Control Technologies

Intermediate Ash Storage Vents and Fly Ash Storage Silo Vents

BACT determinations for particulate matter emissions from fly ash handling operations were located during a search of the RACT/BACT/LAER Clearinghouse (RBLC) database. The search of RBLC for Process Type 99.120 – ash storage, handling disposal, located BACT determinations for particulate matter as follows:

- Fabric filters (Baghouse)
- Enclosures, vented to baghouse
- Scrubber
- Dust suppression – water sprays
- Pneumatic transfer and baghouse or vent filter
- Covered conveyors

Slag Dewatering Silo Vents

The RBLC database was searched for BACT determinations for particulate matter emissions from slag handling operations. The search of RBLC for Process Types 81.20 – other steel manufacturing processes, 81.38 – scrap handling & preparation processes, and 81.30 – other steel foundry processes, did not identify BACT determinations for point source emissions from slag handling operation. However, traditional particulate matter control technologies as listed above are considered for particulate matter emissions from the slag dewatering silo vent.

Slag Handling and Load-out – Fugitive Emissions

The RBLC database was searched for BACT determinations for particulate matter emissions from fugitive slag handling operations (Process Type 81.53 – fugitive dust sources). BACT determinations for fugitive particulate matter included:

- Limited throughput
- Limited drop heights
- Wet suppression
- Enclosure
- Covered truck beds
- High moisture content
- Fabric filters (Baghouse)

Slag Storage Pile Wind Erosion

- Complete Enclosure
- Chemical suppression
- Partial enclosures
- Partial enclosures with chemical suppression
- Watering

4.2 Technically Infeasible Options

Intermediate Ash Storage Vents and Fly Ash Storage Silo Vents

All of the above-listed technologies are believed to be technically feasible for this application with the exception of the liquid-based technologies. Wet scrubbers and water sprays are not technically feasible for use to control particulate from passive silo bin vents or bin vents associated with the pneumatic conveyance of fly ash to the intermediate storage vessels.

Slag Dewatering Silo Vents

Slag dewatering silos are not traditionally equipped with add-on controls for particulate matter due to the high moisture content of the slag and the negligible air emission potential. No examples of BACT determinations for particulate matter control from these sources have been located. Therefore, it is determined that add-on control technologies for particulate matter emissions from dewatering silos are not technically feasible, or necessary due to the nature of the material.

Slag Handling and Load-out – Fugitive Emissions

All of the above-listed technologies are believed to be technically feasible for this application with the exception of limiting material throughout.

Slag Storage Pile Wind Erosion

All of the above-listed technologies are believed to be technically feasible for this application.

4.3 Technology Ranking

Intermediate Ash Storage Vents and Fly Ash Storage Silo Vents

An evaluation of control technology effectiveness for fly ash handling is shown in the following table.

Table 4.3-A
Technology Ranking – Storage Vents

Technology	Estimated Control Efficiency (%)	Basis
Pneumatic transfer and baghouse or vent filter	99	OEPA RACM Table 2.4-2
Enclosures vented to baghouse	99	OEPA RACM Table 2.4-2
Covered conveyors	99	OEPA RACM Table 2.1.3-3
Enclosure (silo)	97.5 (95-100)	OEPA RACM Table 2.1.2-8

Slag Dewatering Silo Vents

The only technically feasible strategy for control of particulate emissions from the slag dewatering silo vents is to maintain a high moisture content thereby reducing the potential for particulate emissions.

Slag Handling and Load-out – Fugitive Emissions

An evaluation of control technology effectiveness for slag handling is shown in the following table.

Table 4.3-B
Technology Ranking – Slag Handling and Load-out

Technology	Estimated Control Efficiency (%)	Basis
Wet suppression systems and enclosures, vented to baghouse	99	OEPA RACM Table 2.4-2
Covered conveyors	99	OEPA RACM Table 2.1.3-3
Enclosure (silo)	97.5 (95-100)	OEPA RACM Table 2.1.2-8
Wet Suppression alone	75 (50-100)	OEPA RACM Table 2.4-2
Minimize freefall distances	No estimate	OEPA RACM Table 2.4-2

Slag Storage Pile Wind Erosion

Based on a review of the RBLC database, the OEPA RACM guidance for aggregate storage piles, and other literature, technologies for control of particulate from storage piles are ranked as follows from most to least effective control efficiency:

Table 4.3-C
Technology Ranking – Slag Storage Pile

Technology	Estimated Control Efficiency (%)	Basis
Total enclosure	97 (95-99)	OEPA RACM Table 2.2.2-2 (wind erosion - slag storage)
Partial enclosure with crusting agent and dust suppression at transfers	98	Emission estimates based on a combination of silt reduction and wind speed reduction.
Wet suppression (chemical crusting agent only)	90	OEPA RACM Table 2.2.2-2 (wind erosion - slag storage)
Partial enclosure only (e.g., wind fence)	82	Emission estimates based on reduced wind exposure.
Dust Control Program (watering as necessary)	50	OEPA RACM Table 2.2.2-2 (wind erosion - slag storage)

4.4 Evaluate Most Effective Controls

Intermediate Ash Storage Vents and Fly Ash Storage Silo Vents

The most effective technology for controlling particulate matter emissions from transfer of fly ash is determined to be pneumatic transfer with vent filter control. Enclosed pneumatic transfer systems controlled via bin vent filters will be used to control dust emitted from the intermediate storage vessels vents as well as from the ash silo vents during loading and unloading.

Slag Dewatering Silo Vents

Slag moisture content will remain high, thereby reducing the potential for entrainment of particulate matter in the silo vent exhaust.

Slag Handling and Load-out – Fugitive Emissions

The most effective technology for controlling fugitive particulate matter emissions from transfer of slag to storage and then to trucks is determined to be use of an enclosure with baghouse. However, as discussed below, total or partial enclosures of the slag storage pile are not cost-effective solutions for control of particulate matter from the slag pile. That is still the case if the

0.39 tpy of potential particulate emissions from slag load-out activities are included in the cost evaluations. Costs associated with installation and operation of a baghouse in addition to the enclosure would cause the option to be even more costly per ton removed.

The combination of covered conveyors used to transport slag to the storage pile and limited drop heights onto the pile are expected to reduce particulate emissions. Emissions are expected to be further reduced since the slag will have a moisture content of 10 to 20%. Water will be applied to the slag pile as discussed below relative to wind erosion so load-out fugitive emissions will be reduced as well. As an additional control measure to be incorporated into the facility dust control program, the haul truck beds will be covered before exiting the slag storage area.

Slag Storage Pile Wind Erosion

Total Enclosure

Total enclosure of the slag storage pile within a building is believed to be the most effective technology for control of particulate emissions from wind erosion of the slag pile. Total annual costs for such a control system are a combination of direct and indirect capital costs, direct and indirect annual costs, and recovery credits, as discussed below.

Direct capital costs would include the building itself and a dust collection system, plus tax and freight. Based on the ORCF slag production rate of 6,130 tons per day and a 12 to 14-day storage capacity, it is assumed that the storage capacity requirement will be 2.4×10^6 cubic feet. Allowing for free space around the perimeter and ceiling, it is assumed that a building with dimensions equivalent to 300 feet by 300 feet and 40-feet tall, will be necessary. According to vendor estimates, capital costs for a building of this size would be approximately $792,000.

Indirect capital costs would include engineering and supervision, construction and field expenses, start-up and performance tests, and contingencies for an additional $415,000. The total capital investment therefore is estimated to exceed $1,428,000. The capital recovery cost, therefore, would be the product of the investment ($1,428,000) and the capital recovery factor (CRF). The CRF is calculated according to the following equation:

$$CRF = i\,(1 + i)^n / [\,(1 + i)^n - 1\,]$$

Where:

CRF= capital recovery factor
i = interest rate (assumed at 7 percent)
n = equipment life (assumed 10 years for the equipment)

According to this equation, the CRF is 0.1424 and the resulting capital recovery cost would be about $203,347.

In addition to the direct and indirect capital costs, there would be direct annual costs associated with operating the building. These costs would include operating labor, maintenance labor, materials, utilities, and replacement parts. While it is believed that the costs to operate the building would be greater than the cost to operate the outdoor pile, detailed cost estimates have not been developed at this time. Therefore annual costs are assumed to be equivalent.

Recovery credits reflect the credit and/or profit realized from the recovery of materials and/or energy as a result of implementing the BACT option. In this case, control of fugitive emissions at 97% efficiency would save approximately 3 tons per year of slag that would otherwise be lost to wind erosion. However, slag is typically treated as a waste product that must be disposed at cost of $6 to $12 per ton. Because slag is typically treated as a waste that must be disposed for a fee, there will be no economic advantage to recovering slag for eventual off-site shipping. Use of a building to contain the slag pile is not expected to significantly affect operating costs because loaders would still be needed to manage the pile.

Combining the capital recovery cost ($203,347), the total annual costs (assumed to be equivalent), and the recovery credits (not applicable), the total annualized cost is estimated to be $203,347.

If it is assumed that the building results in a 97% control of the potential emissions from wind erosion of the 1.2-acre slag storage pile, (see Case E of Attachment 4B), an estimated 5.5 tons per year of particulate would be removed. The cost effectiveness of this BACT alternative is therefore estimated to be:

$203,347 / 5.5 tons = $36,972 per ton.

Based on the high cost per ton for the most effective BACT option, ORCF has also evaluated the next most effective control option: a partial enclosure with use of crusting agents.

Partial Enclosure with Application of Crusting Agents

Partial enclosure of the slag storage pile using wind fences in combination with crusting agents is believed to be the next most effective technology for control of particulate emissions from wind erosion of the slag pile. A wind fence will reduce the frequency of winds with sufficient velocity to cause erosion of silt-sized particles and crusting agents will make less silt-sized material available for wind erosion.

Primary direct capital costs would include the wind fence material and support poles (e.g., telephone poles) as well as the crusting agent and application equipment, plus tax and freight. Based on the assumed storage capacity requirement of 2.4 x 10^6 cubic feet and a maximum 25-foot tall pile (to allow for use of standard telephone poles and a 30-foot tall fence), it is assumed that a fenced area equivalent to 400 feet by 400 feet, will be necessary (actual pile area is assumed to be 96,100 ft^2 – about 2.2 acres). According to vendor estimates, the installed cost for a fence of that size would be approximately $275,000. It is assumed that indirect capital costs such as engineering, supervision, construction and field expenses, and contingencies are included in that total. Costs for the crusting agent application equipment consisting of sufficient piping, nozzles, pumps, and storage tank required to service a 250' x 400' area (100,000 ft^2) are estimated at $125,000 installed. The total capital investment therefore is estimated to equal approximately $400,000. The capital recovery cost, based on the CRF discussed above would be $56,960.

In addition to the direct and indirect capital costs, there would be direct annual costs associated with application of crusting agent. For purposes of this analysis, a calcium chloride crusting agent has been assumed. The estimated annual operating expense for application of calcium chloride at a vendor-recommended rate of once every five days is $1.90/$ft^2$. Based on the assumed pile surface area of 96,100 ft^2, the operating cost would be about $182,590 per year (additional operating expenses are expected to be associated with maintenance and operation of the system, but they have not been included here).

As discussed above, because slag is typically treated as a waste that must be disposed for a fee, there will be no economic advantage to recovering slag for eventual off-site shipping. Use of fencing around the slag pile is not expected to significantly affect operating costs because loaders would still be needed to manage the pile.

Combining the capital recovery cost ($56,960), the total annual costs ($182,590), and the recovery credits ($0), the total annualized cost is estimated to be $239,550.

Emission estimates indicate that the combination of wind fence and crusting agent will result in a control efficiency of 98.2% and eliminate 5.6 tons per year of particulate emissions (see Case D of Attachment 4B). Note that the emissions associated with the 2.2-acre pile would be greater than a taller, conical pile with a 1.2 acre footprint. The cost effectiveness of this BACT alternative is therefore estimated to be:

$239,550 / 5.6 tons = $42,777 per ton

Based on the high cost per ton for this BACT option, ORCF has also evaluated the next most effective control option: use of crusting agents alone.

Crusting Agents

Application of crusting agents alone involves installation of equipment needed to distribute a chemical agent onto the slag pile. Equipment would include a pump or pumps, piping, and nozzle(s) and a storage tank for the chemical additive. Costs for the crusting agent application equipment are estimated at $125,000 installed, as discussed above. The capital recovery cost would therefore be $17,800.

As discussed above, the annual operating expense is estimated at $1.90/ft^2 based on the application of calcium chloride and the assumed pile surface area of 96,100 ft^2. Therefore, the annual operating cost would be about $182,590 per year. Combining the capital recovery cost ($17,800), the total annual costs ($182,590), and the recovery credits ($0), the total annualized cost is estimated to be $200,390.

Emission estimates indicate that the chemical agents alone will result in a control efficiency of 90% and eliminate 5.1 tons per year of particulate emissions (see Case B of Attachment 4B). The cost effectiveness of this BACT alternative is therefore estimated to be:

$200,390 / 5.1 tons = $39,292 per ton

Based on the high cost per ton for this BACT alternative, ORCF has also evaluated the next most effective control option: dust control program with watering as necessary.

Partial Enclosure

The partial enclosure alone option is identical to the alternative presented above with the following exceptions:

- No capital cost for crusting agent application equipment
- No annual operating expenses for crusting agent
- Reduced control efficiency due to use of wind fence alone.

Capital expenses for the wind fence alone are estimated to be $275,000. The associated capital recovery cost is therefore $39,160. Because annual costs are assumed to be zero, the total annualized cost is estimated to be $39,160.

Emission estimates indicate that the wind fence will result in a control efficiency of 82% and eliminate 4.66 tons per year of particulate emissions (see Case C of Attachment 4B). (Note that the emissions associated with the 2.2-acre pile would be greater than the taller pile envisioned for the total enclosure which results in a higher emission rate.) The cost effectiveness of this BACT alternative is therefore estimated to be:

$39,160 / 4.66 tons = $8,403 per ton

Based on the high cost per ton for this BACT alternative, ORCF has also evaluated the next most effective control option: use of a dust control program with watering as necessary.

Watering

Application of water alone involves installation of equipment needed to distribute water onto the slag pile. Equipment would include a pump or pumps, piping, and nozzle(s) and a storage tank for the water. Costs for the water application equipment are estimated at $125,000 installed. The capital recovery cost would therefore be $17,800.

In addition to the direct and indirect capital costs, there would be direct annual costs associated with watering. For purposes of this analysis, the cost of water has been estimated at $0.0035/gal. The estimated annual operating expense for watering of the pile every five days is $0.029/ft^2. Based on the assumed pile surface area of 96,100 ft^2, the annual operating cost would be about $2,728 per year (additional operating expenses are expected to be associated with maintenance and operation of the system, but they have not been included here). Combining the capital recovery cost ($17,800), the total annual costs ($2,728), and the recovery credits ($0), the total annualized cost is estimated to be $20,528.

Emission estimates indicate that the watering alone will result in a control efficiency of 50% and eliminate 2.83 tons per year of particulate emissions (see Case G of Attachment 4B). The cost effectiveness of this BACT alternative is therefore estimated to be:

$20,528 / 2.83 tons = $7,254 per ton

Based on the high cost per ton for this BACT alternative, ORCF proposes to incorporate into its fugitive dust control program, provisions for the use water trucks and/or fire hoses as needed to reduce fugitive emissions from wind erosion of the 260-foot diameter conical slag storage pile. This option eliminates the expenses associated with installation of dedicated water distribution equipment while still controlling fugitive emissions as necessary. As shown in Case F of Attachment 4B, actual emissions from the smaller conical pile with 50% control achieved by the dust control program (1.55 tpy) will be lower than those achieved by installation of a dust suppression system on a pile with a larger rectangular configuration of the same volume.

4.5 Proposed BACT Limits and Control Options

The following BACT limits are proposed for particulate matter emissions from material handling operations.

<u>Fly Ash Point Source Emission Limits</u>

- Intermediate Ash Storage Vent = 0.005 gr/dscf
- Fly Ash Silo Vent (per vent) = 0.005 gr/dscf

Slag Point Source Emission Limits

- Slag Dewatering Silo (per silo) = 0.01 lb/hr

Slag Fugitive Emissions

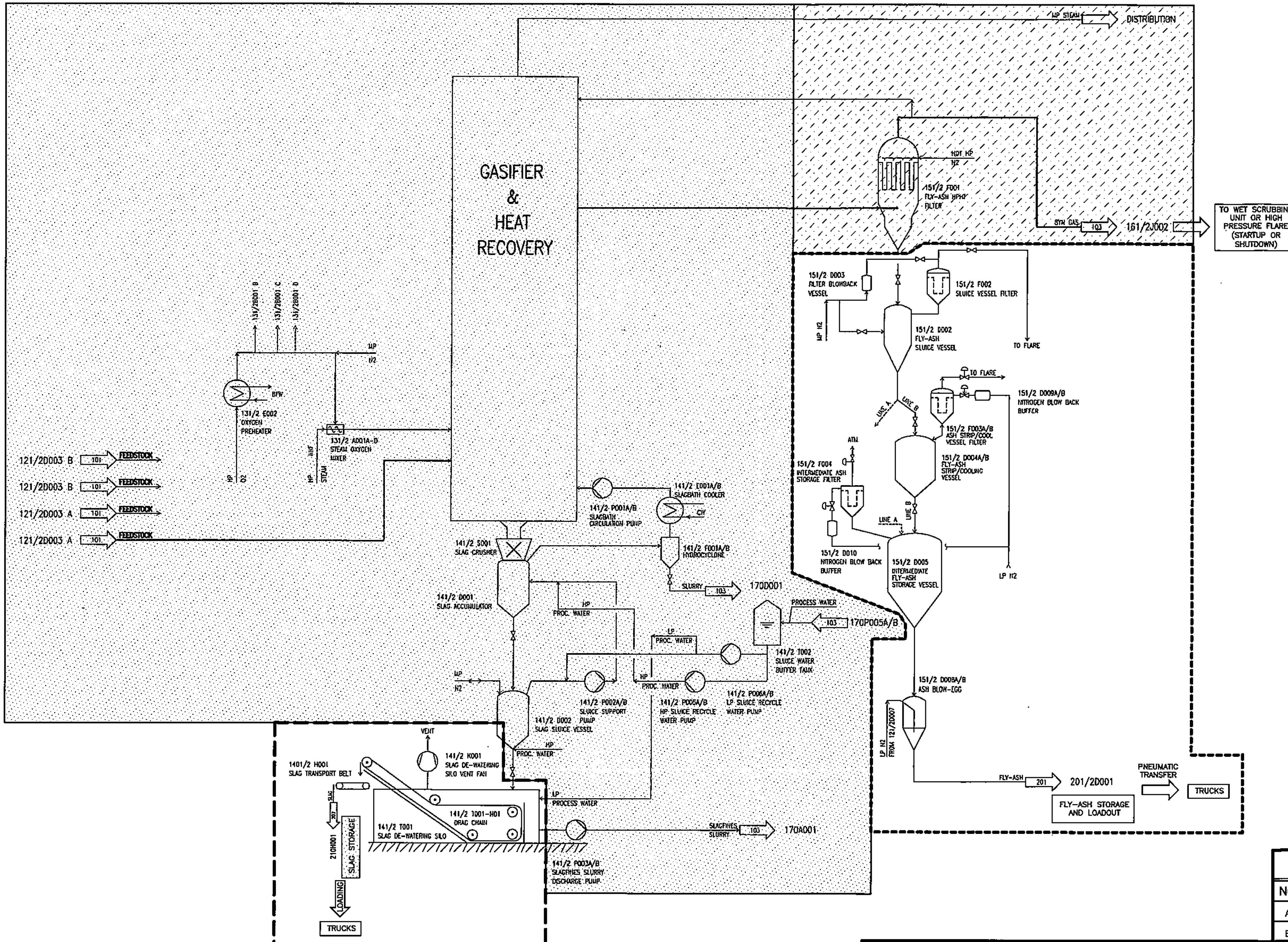
Slag Handling and Load-out

Particulate matter emission rate limits are not proposed as part of this BACT determination for fugitive emissions from slag handling activities. Instead, ORCF proposes to implement a dust control program that includes use of covered conveyors, reduced drop heights, maintenance of high moisture content and other good management practices. Fugitive dust emissions from all activities will be limited to 20% opacity for a 3-minute averaging time.

Slag Storage Pile

Particulate matter emission rate limits are not proposed as part of this BACT determination for fugitive emissions from the slag pile. Instead, ORCF proposes to implement a dust control program that includes watering of the storage pile when necessary. Fugitive dust emissions will be subject to 20% opacity for a 3-minute averaging time.

ATTACHMENT 4A
MODULE 4
FIGURES



LEGEND

- MODULE 4 (SLAG HANDLING)
- MODULE 4 (FLY ASH HANDLING)
- MODULE 3
- MODULE 5

REFERENCE:

COMPANY: UHDE CORPORATION OF AMERICA
DWG NAME: PROCESS FLOW DIAGRAM NO. 102
GASIFICATION SLAG REMOVAL DRY SOLIDS REMOVAL
DATE: 5/4/06
DRWN BY: LIADIS

SUBMITTAL & REVISION RECORD

NO	DATE	DESCRIPTION
A	07/11/07	DRAFT SUBMISSION
B	12/17/07	AIR PERMIT APPLICATION

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OHIO RIVER CLEAN FUELS, LLC
PROPOSED COAL TO LIQUID FUEL PLANT
COLUMBIANA AND JEFFERSON COUNTY
WELLSVILLE, OHIO

MODULE 4
MATERIAL HANDLING

APPROVED:	Kaur		PROJECT NO:	061-933.0002	FIGURE NO: 11
DRAWN BY: DWD/LKC	CHKD BY: DJL	DWG SCALE: N.T.S.	DATE:	12/12/07	

ATTACHMENT 4B
MODULE 4
SUPPORTING CALCULATIONS

Supporting Calculations

Point Source Particulate Emissions from Fly Ash Handling

Source	Air Flow (acfm)	Air Flow (scfm)	PE/PM10 Emission Rate (gr/dscf)	Actual (Controlled) PE/PM10 (lb/hr)	Actual (Controlled) PE/PM10 (tpy)	Potential (Uncontrolled) PE/PM10 (lb/hr)	Potential (Uncontrolled) PE/PM10 (tpy)
Intermediate Ash Storage Vent 1	438	344	0.005	0.01	0.06	3.18	14
Intermediate Ash Storage Vent 2	438	344	0.005	0.01	0.06	3.18	14
Intermediate Ash Storage Vent 3	438	344	0.005	0.01	0.06	3.18	14
Intermediate Ash Storage Vent 4	438	344	0.005	0.01	0.06	3.18	14
Intermediate Ash Storage Vent 5	438	344	0.005	0.01	0.06	3.18	14
Intermediate Ash Storage Vent 6	438	344	0.005	0.01	0.06	3.18	14
		Subtotal		**0.09**	**0.39**	**19.1**	**83.6**
Fly Ash Storage Silo Vent 1 (loading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 2 (loading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 3 (loading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 4 (loading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 5 (loading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 6 (loading)	438	344	0.005	0.01	0.06	3.18	14
		Subtotal		**0.09**	**0.39**	**19.1**	**83.6**
Fly Ash Storage Silo Vent 1 (unloading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 2 (unloading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 3 (unloading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 4 (unloading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 5 (unloading)	438	344	0.005	0.01	0.06	3.18	14
Fly Ash Storage Silo Vent 6 (unloading)	438	344	0.005	0.01	0.06	3.18	14
		Subtotal		**0.09**	**0.39**	**19.1**	**83.6**
		Total PE/PM10/PM2.5		**0.27**	**1.16**	**57.3**	**250.8**

Assumptions for Fly Ash Vent Calculations

Six parallel trains will handle equal portions of fly ash.

Each train processes 381.7 tons/day = 530 lb/min

Cooled fly ash is pneumatically conveyed in dense-phase.

Assumed ratio of air: fly ash in dense-phase transport is 25:1

Fly ash density =	32	lb/cf		
Fly ash volume transported =	16.8	acfm		
Gas flow volume therefore =	420.7	acfm		
Combined flow rate =	438	acfm	344	scfm
Temperature of transported feedstock =		100	C	

Fly ash is dry, therefore moisture correction from acfm to scfm is negligible.

Potential emissions are based on the OEPA RACM (Table 2.19-2) emission rate of 0.2 lb/ton for transfer/conveying.

Fly ash transfer rates are based on rated capacities of equipment for PTE calculations.

Supporting Calculations

Part 1: Point Source Emissions from Slag Dewatering Silo Vents

E=(S)(Ef)

E: total particulate emissions (PE/PM10/PM2.5)
S: amount of slag handled per unit time
Ef: emission factor per RACM Table 2.2.2-1
C: estimated control efficiency

Assumptions

255.0 tph - facility slag generation
42.5 (S) tph - slag generation per process train (6 total)
0.02 (Ef) lb/ton slag
8,760 hpy operation
0.50 (C) 50% control efficiency for high moisture content - assumed equivalent to watering (OEPA RACM Table 2.2.2-2)

Total Point Source Particulate Emissions:

	E=(S)(Ef)(C)		E=(S)(Ef)	
	Actual (Controlled)		Potential	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Individual train	0.4	1.9	0.9	3.7
Facility total (6 vents)	2.6	11.2	5.1	22.3

Part 2: Fugitive Emissions from Slag Dewatering Silo Transfers to Storage Conveyors

E=(S)(Ef)

E: total fugitive particulate emissions (PE/PM10/PM2.5)
S: amount of slag handled per unit time
Ef: emission factor per RACM Table 2.2.2-1
C: estimated control efficiency

Assumptions

255.42 tph - facility slag generation
42.57 (S) tph - slag generation per process train (6 total)
0.02 (Ef) lb/ton slag
8,760 hpy operation
0.01 (C) 99% control efficiency - covered conveyor (OEPA RACM Table 2.1.3-3)
0.50 (C2) 50% control efficiency for high moisture content - assumed equivalent to watering (OEPA RACM Table 2.2.2-2)

Total Fugitive Particulate Emissions

	E=(S)(Ef)(C)(C2)		E=(S)(Ef)	
	Actual (Controlled)		Potential	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Individual train	0.004	0.019	0.851	3.729
Facility total	0.03	0.11	5.11	22.37

Part 3: Fugitive Emissions from Transfering Slag to Storage Area

E=(S)(Ef)

E: total fugitive particulate emissions (PE/PM10/PM2.5)
S: amount of slag handled per unit time
Ef: emission factor per RACM Table 2.2.2-1
C: estimated control efficiency

Assumptions

255.42 tph - facility slag generation
42.57 (S) tph - slag generation per process train (6 total)
0.02 (Ef) lb/ton slag
8,760 hpy operation
0.50 (C) 50% control efficiency for high moisture content - assumed equivalent to watering (OEPA RACM Table 2.2.2-2)

Total Fugitive Particulate Emissions

	E=(S)(Ef)(C)		E=(S)(Ef)	
	Actual (Controlled)		Potential	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Individual train	0.43	1.86	0.85	3.73
Facility total	2.55	11.19	5.11	22.37

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case A - Uncontrolled Emissions from a Conical Slag Storage Pile

Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1 (potential emissions).
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data
1.2 acres - slag pile area (assumes conical pile of ~ 260' diameter and 130' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 1.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (28/15)

E	14.13	lb/d/acre
	16.96	lb/d
Potential	0.71	lb/hr
	3.09	tpy

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (28/15)

E	7.06	lb/d/acre
	8.48	lb/d
	0.35	lb/hr
	1.5	tpy

Supporting Calculations

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case B - Rectangular Slag Storage Pile Controlled via Chemical Suppressant

Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1 (potential emissions).
90 % - control efficiency of chemical suppressant OEPA RACM Table 2.2.2-2 wind erosion from slag storage (actual emissions).
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data
2.2 acres - slag pile area (assumes rectangular pile with a 250' x 400' area and 30' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 2.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (28/15)

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (28/15)

	PE	PM10
E	14.13 lb/d/acre	7.06 lb/d/acre
	31.08 lb/d	15.54 lb/d
Potential	1.30 lb/hr	0.65 lb/hr
	5.67 tpy	2.8 tpy
Actual	0.13 lb/hr	0.06 lb/hr
	0.57 tpy	0.3 tpy

Supporting Calculations

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case C - Rectangular Slag Storage Pile Controlled via Partial Enclosure
Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1.
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data (potential emissions).
5 % time (f) based on OEPA review of PTI Application 02-22500 (Buckeye Industrial Mining) (actual emissions).
82.1 % - control efficiency of partial enclosure based on reduced wind exposure.
2.2 acres - slag pile area (assumes rectangular pile with a 310' x 310' area and a 25' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 2.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (5/15)

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (5/15)

	PE		PM10	
E	14.13	lb/d/acre	7.06	lb/d/acre
	31.08	lb/d	15.54	lb/d
Potential	1.30	lb/hr	0.65	lb/hr
	5.67	tpy	2.8	tpy
Actual	0.23	lb/hr	0.12	lb/hr
	1.01	tpy	0.5	tpy

Supporting Calculations

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case D - Rectangular Slag Storage Pile Controlled via Partial Enclosure & Chemical Suppressant
Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1.
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data (potential emissions).
5 % time (f) based on OEPA review of PTI Application 02-22500 (Buckeye Industrial Mining) (actual emissions).
82.1 % - control efficiency of partial enclosure based on reduced wind exposure to the pile.
90 % - control efficiency of chemical suppressant OEPA RACM Table 2.2.2-2 wind erosion from slag storage.
98.2 % - total control efficiency of partial enclosure and chemical suppressant combined (actual emissions).
2.2 acres - slag pile area (assumes rectangular pile with a 310' x 310' area and a 25' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 2.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (28/15)

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (28/15)

	PE		PM10
E	14.13 lb/d/acre	E	7.06 lb/d/acre
	31.08 lb/d		15.54 lb/d
Potential	1.30 lb/hr		0.65 lb/hr
	5.67 tpy		2.8 tpy
Actual	0.02 lb/hr		0.01 lb/hr
	0.10 tpy		0.1 tpy

Supporting Calculations

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case E - Total Enclosure of the Slag Storage Pile

Assumptions

97 % - control efficiency of enclosure OEPA RACM Table 2.2.2-2 wind erosion from slag storage.

Total enclosure of slag storage is estimated to require a 300' x 300' x 40' building to accommodate a 30' tall pile.

As a conservative estimate, the potential emissions calculated for the rectangular piles in cases B, C, and D have been used to determine worst-case fugitive emissions from enclosing the slag pile in a building (see below).

	PE	PM10
Potential	1.30 lb/hr	0.65 lb/hr
	5.67 tpy	2.8 tpy
Actual	0.04 lb/hr	0.02 lb/hr
	0.17 tpy	0.09 tpy

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case F - Slag Pile Dust Control Program (Watering) - Conical Storage Pile

Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1 (potential emissions).
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data
50 % - control efficiency of watering OEPA RACM Table 2.2.2-2 wind erosion from slag storage.
1.2 acres - slag pile area (assumes conical pile of ~ 260' diameter and 130' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 1.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (28/15)

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (28/15)

	PE		PM10
E	14.13 lb/d/acre	E	7.06 lb/d/acre
	16.96 lb/d		8.48 lb/d
Potential	0.71 lb/hr		0.35 lb/hr
	3.09 tpy		1.5 tpy
Actual	0.35 lb/hr		0.18 lb/hr
	1.55 tpy		0.77 tpy

Supporting Calculations

Part 4: Fugitive Emissions from Wind Erosion of Slag Storage Pile

Case G - Slag Pile Dust Control Program (Watering) - Rectangular Storage Pile

Emission Factor Derivation using EPA's Control of Open Fugitive Dust Sources (EPA-450/3-88-008), Section 4.1.3 – Wind Emissions From Continuously Active Piles (September 1988).

E= k (s/1.5) ((365-p)/235) (f/15)

E: particulate matter emission factor (lb/d/acre)
k: 1.7 for PE and 0.85 for PM10
s: silt content of slag (%)
p: number of days with ≥0.01 inch of precipitation per year
f: percentage of time that unobstructed wind speed exceeds 5.4 m/s (12 mph) at mean pile height

Assumptions

7.3 % (s) slag silt content per AP-42 Table 13.2.4-1 (potential emissions).
150 days (p) - AP-42 Figure 13.2.2-1
28 % time (f) based on review of Youngstown wind data
50 % - control efficiency of watering OEPA RACM Table 2.2.2-2 wind erosion from slag storage.
2.2 acres - slag pile area (assumes rectangular pile with a 250' x 400' area and 30' height)
Entire surface area is assumed to be continuously active and represent potential (uncontrolled) emissions. Actual emissions are expected to be lower due to the conservative assumption that the entire 2.2-acre pile is continuously active. Although that may not occur.
Assume PM2.5 is 7.5% of PE (AP-42 Section 13.2.5)

Particulate Emissions (PE) Equation:
E= 1.7 (7.3 / 1.5) ((365-150)/235) (28/15)

PM10 Equation:
E= 0.85 (7.3 / 1.5) ((365-150)/235) (28/15)

	PE		PM10	
E	14.13	lb/d/acre	7.06	lb/d/acre
	31.08	lb/d	15.54	lb/d
Potential	1.30	lb/hr	0.65	lb/hr
	5.67	tpy	2.8	tpy
Actual	0.65	lb/hr	0.32	lb/hr
	2.84	tpy	1.4	tpy

Part 5: Fugitive Emissions from Loading Slag onto Trucks

E=k(0.0032)(((U/5)^1.3)/((M/2)^1.4))

E: total fugitive particulate emissions
k: particle size multiplier (dimensionless)
U: mean wind speed, miles per hour (mph)
M: material moisture content (%)

Assumptions

0.35 PM10 (k1) - particle size multiplier per AP-42 Section 13.2.4.3
0.74 PE (k2) - particle size multiplier per AP-42 Section 13.2.4.3
0.053 PM2.5 (k3) - particle size multiplier per AP-42 Section 13.2.4.3
10.0 mph (U) (Youngstown, Ohio per OEPA Form 3112 Instructions)
15 % (M)
255.42 tph slag generation
8,760 hpy operation

Emission Factor Derivation using AP-42 Section 13.2.4.3

Total Fugitive Particulate Emission Factor Equation
E=k(0.0032)(((U/5)^1.3)/((M/2)^1.4))

	PM-10	PE	PM2.5	
E	0.00016	0.00035	0.00002	lb/ton
E	0.0419	0.0887	0.0064	lb/hr
E	0.184	0.388	0.028	tpy

Actual and potential emissions are assumed to be equal.

Supporting Calculations

Summary: Combined Process Particulate Totals: Actual and Potential Slag Handling Emissions

Short-Term (lb/hr)	Actual (Controlled)			Potential (Uncontrolled)		
	PE	PM10	PM2.5	PE	PM10	PM2.5
1. Dewatering Silo Vents (Point Source)	**2.55**	**2.55**	**2.55**	**5.10**	**5.10**	**5.10**
2. De-watering Silos to Conveyors	0.03	0.03	0.03	5.11	5.11	5.11
3. Conveyors to Storage Area	2.55	2.55	2.55	5.11	5.11	5.11
5. Load out to trucks	0.09	0.04	0.01	0.09	0.04	0.01
Fugitive Material Handling Totals:	**2.67**	**2.62**	**2.59**	**10.31**	**10.26**	**10.22**
4. Wind erosion of storage pile (Case F - Slag Pile Dust Control Program (Watering) - Conical Storage Pile)	**0.35**	**0.18**	**0.03**	**0.71**	**0.35**	**0.05**

Long-Term (tpy)	Actual (Controlled)			Potential (Uncontrolled)		
	PE	PM10	PM2.5	PE	PM10	PM2.5
1. Dewatering Silo Vents (Point Source)	**11.17**	**11.17**	**11.17**	**22.34**	**22.34**	**22.34**
2. De-watering Silos to Conveyors	0.11	0.11	0.11	22.37	22.37	22.37
3. Conveyors to Storage Area	11.19	11.19	11.19	22.37	22.37	22.37
5. Load out to trucks	0.39	0.18	0.03	0.39	0.18	0.03
Fugitive Material Handling Totals:	**11.69**	**11.48**	**11.33**	**45.14**	**44.93**	**44.78**
4. Wind erosion of storage pile (Case F - Slag Pile Dust Control Program (Watering) - Conical Storage Pile)	**1.55**	**0.77**	**0.12**	**3.09**	**1.50**	**0.23**

ATTACHMENT 4C
MODULE 4
DOCUMENTATION

LIST OF REFERENCES

- U.S. EPA, *Control of Open Fugitive Dust Sources*, September 1988.
- U.S. EPA, AP-42 Section 13.2.5 – *Industrial Wind Erosion*, November 2006.
- U.S. EPA, RACT/BACT/LAER Clearinghouse (RBLC);
  website: http://cfpub.epa.gov/RBLC
- Ohio EPA, Reasonably Available Control Measures Section 2.1 – *General Fugitive Dust Sources*
  Table 2.1.2-8: *A Summary of the Control Techniques, Efficiencies and Costs for Fugitive Dust Emissions from Aggregate Storage Piles.*
  Table 2.1.3-3: *A Summary of the Control Techniques, Efficiencies and Costs for Fugitive Emissions from Unloading, Conveying, and Transfer Operations.*
- Ohio EPA, Reasonably Available Control Measures Section 2.2 – *Iron and Steel Mills*
  Table 2.2.2-1: *Fugitive Dust Emission Factors for Iron Production.*
  Table 2.2.2-2: *A Summary of the Control Alternatives, Efficiencies and Costs, and the RACM Selections for Fugitive Dust Emissions from Sources in Iron Production.*
- Ohio EPA, Reasonably Available Control Measures Section 2.4 – *Power Plants*
  Table 2.4-2: *A Summary of the Control Alternatives, Efficiencies and Costs, and the RACM Selections for Fugitive Dust Emissions from Sources at Coal-Fired Power Plants (500 MW).*

COST ESTIMATE FOR WINDTAMER® FENCE

Information obtained from discussion with Glen Warrington of Dust Solutions Inc. Bluffton, SC. Phone number 843-846-3700.

Least cost option is to use a 30' fence because a 40' telephone pole installed 10' deep can be used.

Installation cost is assumed at 2.5 to 3 times material cost.

Height of fence x 16 = distance protected. Therefore, a 30' fence protects up to 480' away. (Fence is not installed adjacent to pile)

Assume 25' tall pile, therefore the area of containment is to be:

$$\frac{2.4 \times 10^6 \text{ ft}^3}{25 \text{ ft}} \approx 96{,}100 \text{ ft}^2 \text{ area (310 ft by 310 ft)}$$

Estimate is \$75,000 for material (1,200' at 30' tall) and \$180,000 installed.

$$\frac{\$75{,}000}{1{,}200 \text{ ft} \times 30 \text{ ft}} = \$2.08/\text{ft}^2$$

Assumed height of 25' therefore area needs to be 310' by 310' by 25'
Add 50' per side to allow space for material handling equipment.
Therefore area will be approx. 400' by 400' by 25'

Cost of fencing: \$2.08/ft^2
Assume 400' x 4 x 30' = 48,000 ft^2 x \$2.08 = \$99,840 (\$100,000)
\$100,000 material x (2.5 – 3) is approx \$275,000 installed

Calcium Chloride

$250/metric ton (77% flakes)

$250	Metric ton	2000 lbs	
Metric ton	2205 lbs	ton	= $225 per ton

Given:
Per ton, 77% by weight is approx. 1,540 lbs of flakes and 460 lbs of water (55 gal)
Diluted to 20% by weight would yield 400 lbs of flakes and 1,600 lbs of water.

1,600 lbs H_2O	gallon		192 gallons
ton of material	8.33 lbs	=	ton of material

Per EPA-450/3-88-008 Control of Open Fugitive Dust Sources. Application should average approx. 1 gallon per yd^2.

Assume pile size of 96,100 ft^2

96,100 ft^2	yd^2	1 gallon	ton of material	
	9 ft^2	yd^2	192 gallon	= 56 ton of material

56 tons of material x 0.2 = 11 tons of calcium chloride

56 tons of material x 0.8 = 44.5 tons of water

Assume cost of water at $0.0035/gal

44.5 tons of water	2000 lbs	gallon	$0.0035	
	ton	8.33 lbs	gal	= $37 for water

11 tons of calcium chloride x $225/ton = $2,475/ton

Sum of water and Calcium Chloride = \$2,475 + \$37 = \$2,512 per application

Assume an application rate of every 5-10 days for optimal control

$$\frac{365 \text{ days}}{\text{year}} \cdot \frac{1 \text{ application}}{5 \text{ days}} = 73 \text{ applications per year}$$

73 applications x \$2,512 = \$183,376 per year

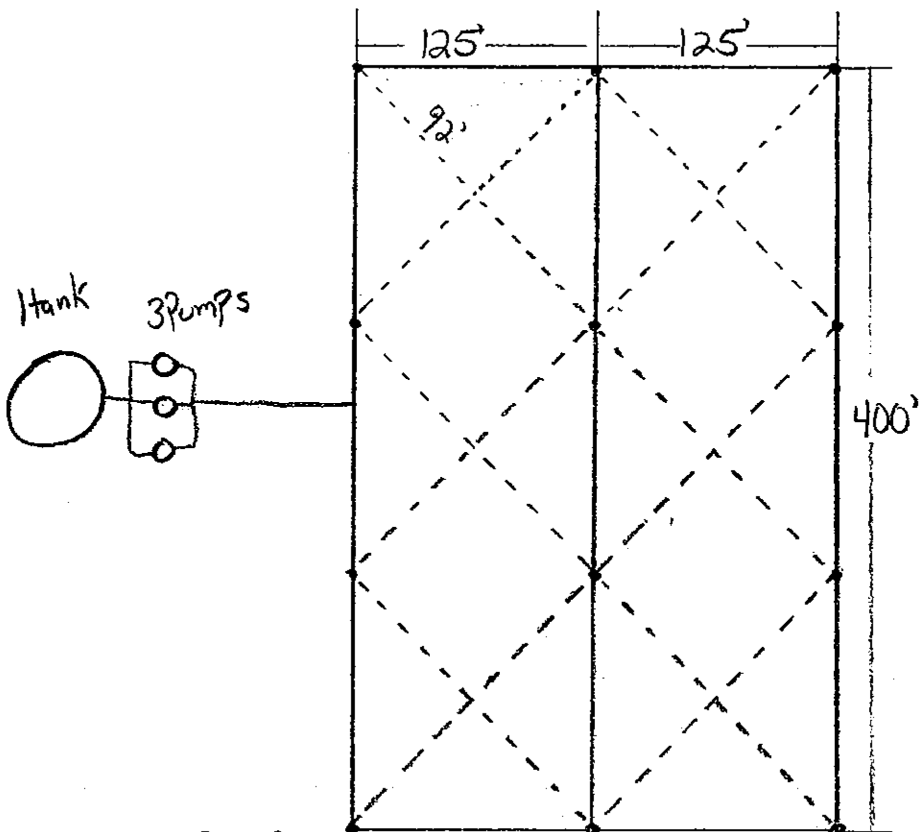
$$\frac{\$183{,}376}{\text{year} \times 96{,}100 \text{ ft}^2} = \$1.90 \text{ per year-ft}^2$$

Civil & Environmental Consultants, Inc.

PROJECT 06¢ - 933 PROJECT NO.

Irrigation Distribution PAGE 1 OF 1

PREPARED BY JGM DATE 8/20/07 CHECKED BY Kum DATE 12/13/07



Spray distance

$\sqrt{\left(\frac{125}{2}\right)^2+\left(\frac{400}{3}\right)^2} = 91.38'$

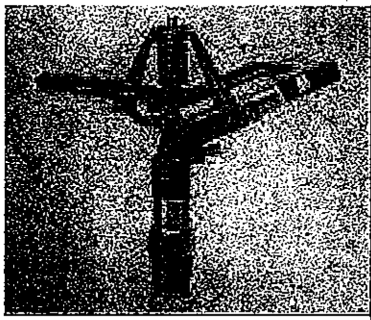
1700 ft of 3" HDPE Pipe
12 - 10 ft section 1" pipe
12 - Nozzles
3 - pumps (@ 100 psi 550 GPM)
1 tank (5-6k Gallons)

Nozzles 92' Rad 45 GPM × 12 = 540 GPM @ $187 / Nozzle ⇒ $2400.00
(Rain Bird)

pumps 750 GPM 100 psi 66 HP 3550 RPM 4" pump (means) $25,250
Domestic water pump 75 HP to 2500 GPM (means) $18,000
1" pipe 120 ft ≈ $9.00 / LF (means) = $1080
3" pipe 1700 ft = $30.00 / LF (Vendor) = 51,000

Pipe total ⇒ 52,000
Pump total ⇒ 20,000 × 3 = 60,000
Nozzles ⇒ 12 × 200 = 2,400
tank ⇒ Estimate $12,000

Total estimate 126,400
Estimate is $125,000



RAIN BIRD

PERFORMANCE DATA — 80E

80E

1 1/4" Full Circle, Brass Impact Sprinkler

Bearing: 1 1/4" Male NPT, Brass
Trajectory Angle: 27°
Operating Range: 25-100 psi
Flow Rate: 17.1-127.7 GPM
Radius: 61-116 ft.

FEATURES

- Heavy duty brass construction
- Internal plastic straightening vane
- Stainless steel springs and fulcrum pin
- Plastic bearing hood
- Chemically resistant washers
- Dual nozzle ports
- Two-year warranty

BENEFITS

- Internal straightening vane increases distance of throw
- Plastic bearing hood protects spring and bearing sleeve from damage
- Corrosion and grit resistant
- Built to last

Straight Bore Nozzle (SBN-5) with Plug (Stream Height: 14 ft.)

	NOZZLE SIZE																			
	11/32"		3/8"		13/32"		7/16"		15/32"		1/2"		17/32"		9/16"		5/8"		11/16"	
PSI @ Nozzle	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	61	17.10	62	20.30	64	23.40	66	26.70	66	30.30	66	33.80	66	37.10	66	42.30	66	51.50	66	61.90
30	64	18.80	65	22.30	68	25.70	69	29.30	72	33.20	73	37.10	73	40.80	73	46.40	73	56.50	73	68.10
35	67	20.30	68	24.10	72	27.80	74	31.70	77	35.90	79	40.10	79	44.10	79	50.20	79	61.10	79	73.80
40	69	21.80	71	25.80	75	29.70	77	33.90	80	38.50	83	42.90	83	47.20	86	53.70	86	65.40	86	79.20
45	71	23.10	73	27.40	77	31.60	79	36.00	82	40.80	85	45.60	88	50.10	90	57.10	92	69.50	92	84.20
50	73	24.40	75	28.90	79	33.30	81	38.00	84	43.10	87	48.10	90	52.90	94	60.20	95	73.30	97	88.90
55	75	25.50	77	30.30	81	34.90	83	39.70	86	45.30	89	50.30	92	55.60	96	63.20	99	77.30	100	93.50
60	77	25.80	79	30.80	83	35.90	86	41.60	88	47.40	91	53.00	94	58.80	97	65.50	101	80.10	104	97.80
65	79	26.90	81	32.00	84	37.40	87	43.30	90	49.90	93	55.30	96	61.20	99	69.40	102	84.40	106	102.00
70	81	28.10	83	33.30	86	38.90	89	45.10	91	51.40	94	57.50	98	63.50	101	72.20	104	87.80	108	106.00
75	82	29.20	84	34.50	87	40.30	90	46.80	93	53.30	96	59.60	99	65.80	102	74.90	105	91.00	109	109.90
80	83	30.40	86	35.70	89	41.80	92	48.40	94	55.10	97	61.60	101	68.10	104	77.50	107	94.10	110	113.70
85	85	31.50	87	37.00	90	43.20	93	50.00	96	56.90	99	63.50	102	70.30	105	80.00	108	97.10	112	117.30
90	86	32.70	89	38.30	92	44.60	95	51.50	97	58.50	100	65.30	104	72.40	106	82.20	110	99.90	113	120.90
95	87	33.90	90	39.50	93	46.00	96	53.00	98	60.00	101	67.10	105	74.40	108	84.30	111	102.60	115	124.30
100	88	34.00	91	40.70	94	47.40	97	54.50	99	61.50	102	68.90	106	76.40	109	87.20	112	105.20	116	127.70

Straight Bore Nozzle (SBN-5) and Spreader (LAN-1-20) (Stream Height: 14 ft.)

	NOZZLE SIZE									
	11/32" x 7/32-20°		3/8" x 7/32-20°		13/32" x 7/32-20°		7/16" x 7/32-20°		15/32" x 7/32-20°	
PSI @ Nozzle	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	61	23.30	62	26.50	64	29.60	66	32.90	66	36.40
30	64	25.60	65	29.10	68	32.40	69	36.10	72	40.00
35	67	27.70	68	31.40	72	35.10	74	39.00	77	43.30
40	69	29.60	71	33.60	75	37.60	77	41.80	80	46.30
45	71	31.50	73	35.70	77	39.90	79	44.40	82	49.20
50	73	33.20	75	37.70	79	42.10	81	46.80	84	51.90
55	75	34.90	77	39.70	81	44.30	83	49.10	86	54.70
60	77	36.50	79	41.40	83	46.60	86	51.50	88	57.20
65	79	38.00	81	43.20	84	48.60	87	53.80	90	59.80
70	81	40.10	83	44.90	86	50.40	89	55.90	91	62.10
75	82	41.00	84	46.70	87	52.40	90	57.90	93	64.30
80	83	42.60	86	48.30	89	54.30	92	60.00	94	66.70
85	85	43.80	87	49.80	90	56.00	93	62.00	96	68.80
90	86	45.70	89	51.40	92	57.90	95	63.90	97	70.70
95	87	46.60	90	53.00	93	59.60	96	65.80	98	72.80
100	88	47.90	91	54.50	94	61.20	97	67.50	99	74.80

PART NUMBERS AND ORDERING INFORMATION

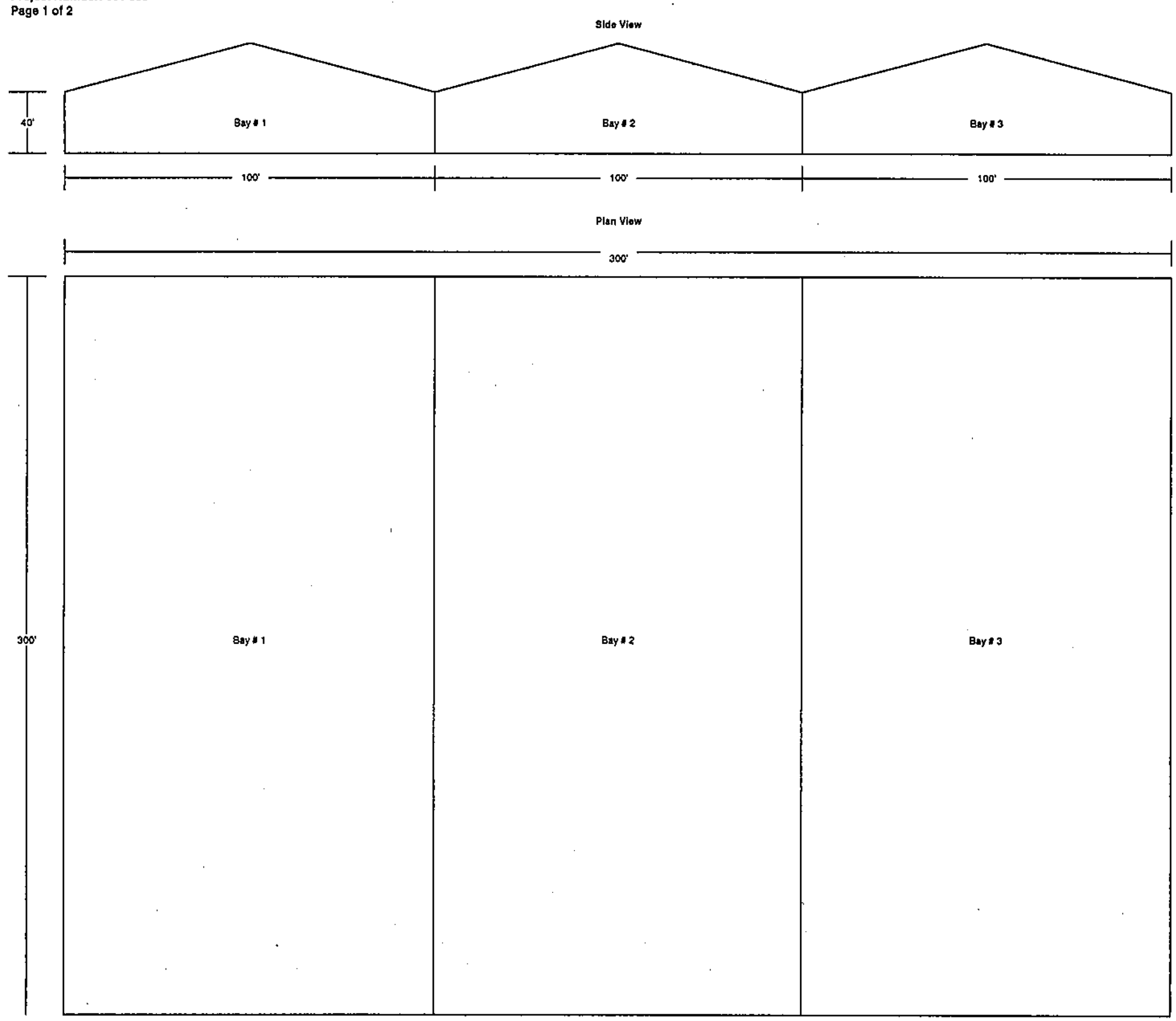
Ordering Example	MAKE YOUR SPRINKLER CHOICE FROM CHART 1	CHOOSE NOZZLE SIZE(S) FROM CHART 2	ADD THEM TOGETHER TO CREATE THE PART NUMBER
To order an 80E sprinkler with a 3/8" Brass Straight Bore Nozzle and an 7/32" Brass 20° Low Angle Spreader Nozzle the part number would be:	A23803- +	24-14	= A23803-24-14

Chart 1	PART NUMBER FIRST HALF
SPRINKLER ONLY	
Sprinkler without Nozzle	A23802-
SPRINKLER WITH SINGLE NOZZLE INSTALLED	
Sprinkler with SBN-5 and Brass Plug	A23813-
Sprinkler with LPN-5 and Brass Plug	A23814-
SPRINKLER WITH COMBINATION NOZZLES INSTALLED	
Sprinkler with SBN-5 and LAN-1-20	A23803-

Chart 2		PART NUMBER: SECOND HALF										
NOZZLE		7/32"	11/32"	3/8"	13/32"	7/16"	15/32"	1/2"	17/32"	9/16"	5/8"	11/16"
Brass Straight Bore Nozzle (103043-)	SBN-5	–	22	24	26	28	30	32	34	36	40	44
Brass Low Pressure Nozzle (108149-)	LPN-5	–	22	24	26	28	30	32	–	–	40	–
Brass 20° Low Angle Spreader Nozzle (100226-)	LAN-1-20	14	–	–	–	–	–	–	–	–	–	–

Rain Bird Agri-Products Co. / 633 W. Foothill Blvd. / Glendora, CA 91741-2469 / Phone: (800) 435-5624 / Fax: (626) 852-7310

Slag/Fly Ash Building
Project Number: 061-933
Page 1 of 2



Site Prep and Grading (RS Means-2006 Heavy Construction Cost Data – G1030115 1450 pg. 370)

Building Size: 300' x 300' x 40' = 90,000 ft^2 for grading (100,000 ft^2)
Assume depth of 1' therefore 100,000 $ft^3 \div 27\ ft^3$ per 1 yd^3 = 3,704 yd^3 x 1.10
3704 yd^3 x 1.10 = 4,074 yd^3

Earth cut and Fill, 80 Hp Dozer & Roller Compacted, 300' haul, 4" lifts & 4 passes
4074 yd^3 x $19.75 per yd^3 = $80,500

Excavation and Foundations (RS Means-2006 Heavy Construction Cost Data – A1020210 4600 pg. 338)

Grade beams, full length of building, 30' span, 40" deep, 18" wide, 8KLF load
Perimeter of building = 1,200 ft x $117/lf = $140,500

Estimated Cost by CECO Buildings (Mike Round):

$16.50/$ft^2$ includes building skin and roof
$16.50 x (300' x 40' x 4 sides) = $792,000

Total Costs

$792,000 – Building
$80,500 – Site Prep & Grading
<u>$140,500 – Foundation</u>
$1,013,000

Contingency (15%) – $152,000
Engineering (3%) – $30,000
Project Management (3%) -- $30,000
<u>Indirect costs (20%) -- $203,000</u>
$415,000

Sum:
$1,013,000
<u>$415,000</u>
$1,428,000

ATTACHMENT 4D
MODULE 4
OEPA APPLICATION FORMS

Section II - Specific Air Contaminant Source Information

NOTE: One copy of this section should be filled out for each air contaminant source covered by this PTI application. See the line by line PTI instructions for additional information.

1. Company identification (name for air contaminant source for which you are applying): FLY ASH HANDLING

2. List all equipment that are part of this air contaminant source: INTERMEDIATE ASH STORAGE VENTS (6), FLY ASH STORAGE SILO VENTS (6)

3. Air Contaminant Source Installation or Modification Schedule (must be completed regardless of date of installation or modification):

   When did/will you begin to install or modify the air contaminant source? (month/year) SECOND QUARTER 2008

   When did/will you begin to operate the air contaminant source? (month/year) THIRD QUARTER 2011 **OR** after issuance of PTI ______________

4. Emissions Information: The following table requests information needed to determine the applicable requirements and the compliance status of this air contaminant source with those requirements. Suggestions for how to estimate emissions may be found in the instructions to the Emissions Activity Category (EAC) forms required with this application. If you need further assistance, contact your Ohio EPA permit representative.

   - If total potential emissions of HAPs or any Air Toxic is greater than 1 ton/yr, fill in the table for that (those) pollutant(s). For all other pollutants, if "Emissions before controls (max), lb/hr" multiplied by 24 hours/day is greater than 10 lb/day, fill in the table for that pollutant.
   - If you have no add-on control equipment, "Emissions before controls= will be the same as "Actual emissions"
   - Annual emissions should be based on operating 8760 hr/yr unless you are requesting operating restrictions to limit emissions in line # 8 or have described inherent limitations below.
   - If you use units other than lb/hr or ton/yr, specify the units used (e.g., gr/dscf, lb/ton charged, lb/MMBtu, ton/12-months).
   - Requested Allowable (ton/yr) is often equivalent to Potential to Emit (PTE) as defined in OAC rule 3745-31-01 and OAC rule 3745-77-01.

Pollutant	Emissions before controls (max) (lb/hr)	Actual emissions (lb/hr)	Actual emissions (ton/year)	Requested Allowable (lb/hr)	Requested Allowable (ton/year)
Particulate emissions (PE) (formerly particulate matter, PM)	57.3	0.3	1.2	0.3	1.2
PM_{10} (PM < 10 microns in diameter)	57.3	0.3	1.2	0.3	1.2
Sulfur dioxide (SO_2)	0	0	0	0	0
Nitrogen oxides (NO_x)	0	0	0	0	0
Carbon monoxide (CO)	0	0	0	0	0
Organic compounds (OC)	0	0	0	0	0
Volatile organic compounds (VOC)	0	0	0	0	0
Total HAPs	0	0	0	0	0
Highest single HAP:	0	0	0	0	0
Air Toxics (see instructions):	0	0	0	0	0

Section II - Specific Air Contaminant Source Information

Provide your calculations as an attachment and explain how all process variables and emission factors were selected. Note the emissions factor(s) employed and document the origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

5. **Does this air contaminant source employ emissions control equipment?**

☒ **Yes** - fill out the applicable information below.

☐ **No** - proceed to item # 6.

Note: Pollutant abbreviations used below: Particulates = PE; Organic compounds = OC; Sulfur dioxide = SO_2; Nitrogen oxides = NOx; Carbon monoxide = CO

☐ **Cyclone/Multiclone**

Manufacturer: ____________ Year installed: ____________

What do you call this control equipment: ____________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________

Estimated capture efficiency (%): ________ Basis for efficiency: ____________

Design control efficiency (%):________ Basis for efficiency: ____________

Type: ☐ Cyclone ☐ Multiclone ☐ Rotoclone ☐ Other ____________

☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

____

☒ **Fabric Filter/Baghouse**

Manufacturer: SELECTION PENDING Year installed: SECOND QUARTER 2008

What do you call this control equipment: FABRIC FILTER/BAGHOUSE

Pollutant(s) controlled: ☒ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☒ Other PM10

Estimated capture efficiency (%):100 Basis for efficiency: ENGINEERING DESIGN

Design control efficiency (%): 99.9 Basis for efficiency: AP-42

Operating pressure drop range (inches of water): Minimum: ________Maximum: ________

Pressure type: ☐ Negative pressure ☐ Positive pressure

Fabric cleaning mechanism: ☐ Reverse air ☐ Pulse jet ☐ Shaker ☐ Other ____________

☐ Lime injection or fabric coating agent used: Type: ________ Feed rate: ________

☒ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Wet Scrubber**

Manufacturer: ____________ Year installed: ____________

What do you call this control equipment: ____________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________

Estimated capture efficiency (%):________ Basis for efficiency: ____________

Design control efficiency (%):________ Basis for efficiency: ____________

Type: ☐ Spray chamber ☐ Packed bed ☐ Impingement ☐ Venturi ☐ Other ____________

Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________

pH range for scrubbing liquid: Minimum: ________ Maximum: ________

Scrubbing liquid flow rate (gal/min): ____________

Is scrubber liquid recirculated? ☐ Yes ☐ No

Water supply pressure (psig): ____________ NOTE: This item for spray chambers only.

☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Electrostatic Precipitator**

Manufacturer: ____________ Year installed: ____________

What do you call this control equipment: ____________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________

Estimated capture efficiency (%):__________ Basis for efficiency: ______________________
Design control efficiency (%):__________ Basis for efficiency: ______________________
Type: ☐ Plate-wire ☐ Flat-plate ☐ Tubular ☐ Wet ☐ Other ____________
Number of operating fields: ____________

☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Concentrator**

Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________________
Design regeneration cycle time (minutes): ____________
Minimum desorption air stream temperature (^oF): _________
Rotational rate (revolutions/hour): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Catalytic Incinerator**

Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________________
Design control efficiency (%):__________ Basis for efficiency: ______________________
Minimum inlet gas temperature (^oF): ____________
Combustion chamber residence time (seconds): ____________
Minimum temperature difference (^oF) across catalyst during air contaminant source operation: _______
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Thermal Incinerator/Thermal Oxidizer**

Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________________
Design control efficiency (%):__________ Basis for efficiency: ______________________
Minimum operating temperature (^oF) and location: ___________________________ (See line by line instructions.)
Combustion chamber residence time (seconds): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Flare**

Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________________
Design control efficiency (%):__________ Basis for efficiency: ______________________
Type: ☐ Enclosed ☐ Elevated (open)
Ignition device: ☐ Electric arc ☐ Pilot flame
Flame presence sensor: ☐ Yes ☐ No
☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Condenser**

Manufacturer: ______________ Year installed: ______________
What do you call this control equipment: ______________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________
Design control efficiency (%):__________ Basis for efficiency: ______________

Type: ☐ Indirect contact ☐ Direct contact
Maximum exhaust gas temperature (°F) during air contaminant source operation: ________
Coolant type: ______________
Design coolant temperature (°F): Minimum __________ Maximum __________
Design coolant flow rate (gpm): ______________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Carbon Absorber**

Manufacturer: ______________ Year installed: ______________
What do you call this control equipment: ______________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________
Design control efficiency (%):__________ Basis for efficiency: ______________
Type: ☐ On-site regenerative ☐ Disposable
Maximum design outlet organic compound concentration (ppmv): ______________
Carbon replacement frequency or regeneration cycle time (specify units): ______________
Maximum temperature of the carbon bed, after regeneration (including any cooling cycle): __________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Dry Scrubber**

Manufacturer: ______________ Year installed: ______________
What do you call this control equipment: ______________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________
Design control efficiency (%):__________ Basis for efficiency: ______________
Reagent(s) used: Type: ______________ Injection rate(s): ______________
Operating pressure drop range (inches of water): Minimum: __________ Maximum: __________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Paint booth filter**

Type: ☐ Paper ☐ Fiberglass ☐ Water curtain ☐ Other ______________
Design control efficiency (%):__________ Basis for efficiency: ______________

☐ **Other**, describe ______________

Manufacturer: ______________ Year installed: ______________
What do you call this control equipment: ______________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):__________ Basis for efficiency: ______________
Design control efficiency (%):__________ Basis for efficiency: ______________
☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

6. Attach a Process or Activity Flow Diagram to this application for each air contaminant source included in the application. The diagram should indicate their relationships to one another. See the line by line PTI instructions for additional information.

7. Emissions egress point(s) information: PTIs which allow total emissions in excess of the thresholds listed below will be subject to an air quality modeling analysis. This analysis is to assure that the impact from the requested project will not exceed Ohio=s Acceptable Incremental Impacts for criteria pollutants and/or Maximum Allowable Ground Level Concentrations (MAGLC) for air toxics. Permit requests that would have unacceptable impacts can not be approved as proposed. See the line by line PTI instructions for additional information.

Complete the tables below if the requested allowable annual emission rate for this PTI exceeds any of the following:

- Particulate Matter (PM10): 10 tons per year
- Sulfur Dioxide (SO2): 25 tons per year
- Nitrogen Oxides (NOx): 25 tons per year
- Carbon Monoxide (CO): 100 tons per year
- Air Toxic: 1 ton per year. An air toxic is any air pollutant for which the American Council of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV).

Complete Table 7-A below for each stack emissions egress point. An egress point is a point at which emissions from an air contaminant source are released into the ambient (outside) air. List each individual egress point on a separate line.

Table 7-A, Stack Egress Point Information

Company Name or ID for the Egress Point (examples: Stack A; Boiler Stack; etc.)	Type Code*	Stack Egress Point Shape and Dimensions (in)(examples: round 10 inch ID; rectangular 14 X 16 inches; etc.)	Stack Egress Point Height from the Ground (ft)	Stack Temp. at Max. Capacity (F)	Stack Flow Rate at Max. Capacity (ACFM)	Minimum Distance to the Property Line (ft)
Intermediate Ash Storage Vents (1-6)	A	Round, 18 inch ID	100	100	438	200
Fly Ash Storage Vents (1-6)	A	Round, 18 inch ID	100	100	438	200

*Type codes for stack egress points:

A. vertical stack (unobstructed): There are no obstructions to upward flow in or on the stack such as a rain cap.
B. vertical stack (obstructed): There are obstructions to the upward flow, such as a rain cap, which prevents or inhibits the air flow in a vertical direction.
C. non-vertical stack: The stack directs the air flow in a direction which is not directly upward.

Complete Table 7-B below for each fugitive emissions egress point. List each individual egress point on a separate line. Refer to the description of the fugitive egress point type codes below the table for use in completing the type code column of the table. For air contaminant sources like roadways and storage piles, only the first 5 columns need to be completed. For an air contaminant source with multiple fugitive emissions egress points, include only the primary egress points.

Section II - Specific Air Contaminant Source Information

Table 7-B, Fugitive Egress Point Information					
Company ID for the Egress Point (examples; Garage Door B, Building C; Roof Monitor; etc.)	Type Code*	Egress Point Description (examples: garage door, 12 X 30 feet, west wall; outside gravel storage piles; etc.)	Fugitive Egress Point Height from the Ground (ft)	Minimum Distance to the Property Line (ft)	Exit Gas Temp. (F)
NA					

*Type codes for fugitive egress point:

D. door or window
E. other opening in the building without a duct
F. no stack and no building enclosing the air contaminant source (e.g., roadways)

Complete Table 7-C below for each Stack Egress Point identified in Table 7-A above. In each case, use the dimensions of the largest nearby building, building segment or structure. List each individual egress point on a separate line. Use the same Company Name or ID for the Egress Point in Table 7-C that was used in Table 7-A. See the line by line PTI instructions for additional information.

Table 7-C, Egress Point Additional Information (Add rows as necessary)			
Company ID or Name for the Egress Point	Building Height (ft)	Building Width (ft)	Building Length (ft)
Intermediate Ash Storage Vents (1-6)	328	108	114
Fly Ash Storage Vents (1-6)	15	80	100

8. Request for Federally Enforceable Limits

As part of this permit application, do you wish to propose voluntary restrictions to limit emissions in order to avoid specific requirements listed below, (i.e., are you requesting federally enforceable limits to obtain synthetic minor status)?

☐ yes
☒ no
☐ not sure - please contact me if this affects me

If yes, why are you requesting federally enforceable limits? Check all that apply.

a. ☐ to avoid being a major source (see OAC rule 3745-77-01)
b. ☐ to avoid being a major MACT source (see OAC rule 3745-31-01)
c. ☐ to avoid being a major modification (see OAC rule 3745-31-01)
d. ☐ to avoid being a major stationary source (see OAC rule 3745-31-01)
e. ☐ to avoid an air dispersion modeling requirement (see Engineering Guide # 69)
f. ☐ to avoid another requirement. Describe: ____________________

If you checked a., b. or d., please attach a facility-wide potential to emit (PTE) analysis (for each pollutant) and synthetic minor strategy to this application. (See line by line instructions for definition of PTE.) If you checked c., please attach a net emission change analysis to this application.

Section II - Specific Air Contaminant Source Information

9. If this air contaminant source utilizes any continuous emissions monitoring equipment for indicating or demonstrating compliance, complete the following table. This does not include continuous parametric monitoring systems.

Company ID for Egress Point	Type of Monitor	Applicable performance specification (40 CFR 60, Appendix B)	Pollutant(s) Monitored
NA			

10. Do you wish to permit this air contaminant source as a portable source, allowing relocation within the state in accordance with OAC rule 3745-31-03 or OAC rule 3745-31-05?

    ☐ yes - Note: notification requirements in rules cited above must be followed.
    ☒ no

11. The appropriate Emissions Activity Category (EAC) form(s) must be completed and attached for each air contaminant source. At least one complete EAC form must be submitted for each air contaminant source for the application to be considered complete. Refer to the list attached to the PTI instructions.

FOR OHIO EPA USE
FACILITY ID:______
EU ID: ______ PTI #·

EMISSIONS ACTIVITY CATEGORY FORM
GENERAL PROCESS OPERATION

This form is to be completed for each process operation when there is no specific emissions activity category (EAC) form applicable. If there is more than one end product for this process, copy and complete this form for each additional product (see instructions). Several State/Federal regulations which may apply to process operations are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

☒ New Permit ☐ Renewal or Modification of Air Permit Number(s) (e.g. P001)______

2. Maximum Operating Schedule: ___24_______hours per day ;______7_____days per year

   If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. ______

3. End product of this process: fly ash pneumatically transferred to storage and then to trucks for shipping offsite.

4. Hourly production rates (indicate appropriate units). Please see the instructions for clarification of "Maximum" and "Average" for new versus existing operations:

Hourly	Rate	Units (e.g., widgets)
Average production	80	tons ash per hour
Maximum production	95.4	tons ash per hour

5. Annual production rates (indicate appropriate units) Please see the instructions for clarification of "Maximum" and "Actual" for new versus existing operations:

Annual	Rate	Units (e.g., widgets)
Actual production	701,000	tons ash per year
Maximum production	836,000	tons ash per year

6. Type of operation (please check one):

☒ Continuous
☐ Batch (please complete items below)

Minimum cycle* time (minutes): __________
Minimum time between cycles (minutes): __________
Maximum number of cycles per daily 24 hour period: __________
(Note: include cycle time and set up/clean up time.)

*"Cycle" refers to the time the equipment is in operation.

7. Materials used in process at maximum hourly production rate (add rows/pages as needed):

Material	Physical State at Standard Conditions	Principle Use	Amount**
none			

** Please indicate the amount **and** rate (e.g., lbs/hr, gallons/hr, lbs/cycle, etc.).

8. Please provide a narrative description of the process below (e.g., coating of metal parts using high VOC content coatings for the manufacture of widgets; emissions controlled by thermal oxidizer...):

Fly ash is generated in 6 identical gasification trains (see Module 3). In each train, fly ash is conveyed pneumatically to an intermediate storage vessel. Each intermediate storage vessel contains a bin vent filter that is a potential source of particulate emissions. From the intermediate storage vessels, fly ash is transferred to one of six identical storage silos. Each silo is also equipped with a bin vent filter that will be a source of particulate emissions during loading and unloading operations.

Section II - Specific Air Contaminant Source Information

NOTE: One copy of this section should be filled out for each air contaminant source covered by this PTI application. See the line by line PTI instructions for additional information.

1. Company identification (name for air contaminant source for which you are applying): SLAG HANDLING

2. List all equipment that are part of this air contaminant source: SLAG DEWATERING SILOS (6)

3. Air Contaminant Source Installation or Modification Schedule (must be completed regardless of date of installation or modification):

   When did/will you begin to install or modify the air contaminant source? (month/year) SECOND QUARTER 2008

   When did/will you begin to operate the air contaminant source? (month/year) THIRD QUARTER 2011 **OR** after issuance of PTI ______________

4. Emissions Information: The following table requests information needed to determine the applicable requirements and the compliance status of this air contaminant source with those requirements. Suggestions for how to estimate emissions may be found in the instructions to the Emissions Activity Category (EAC) forms required with this application. If you need further assistance, contact your Ohio EPA permit representative.

   - If total potential emissions of HAPs or any Air Toxic is greater than 1 ton/yr, fill in the table for that (those) pollutant(s). For all other pollutants, if "Emissions before controls (max), lb/hr" multiplied by 24 hours/day is greater than 10 lb/day, fill in the table for that pollutant.
   - If you have no add-on control equipment, "Emissions before controls= will be the same as "Actual emissions"
   - Annual emissions should be based on operating 8760 hr/yr unless you are requesting operating restrictions to limit emissions in line # 8 or have described inherent limitations below.
   - If you use units other than lb/hr or ton/yr, specify the units used (e.g., gr/dscf, lb/ton charged, lb/MMBtu, ton/12-months).
   - Requested Allowable (ton/yr) is often equivalent to Potential to Emit (PTE) as defined in OAC rule 3745-31-01 and OAC rule 3745-77-01.

Pollutant	Emissions before controls (max) (lb/hr)	Actual emissions (lb/hr)	Actual emissions (ton/year)	Requested Allowable (lb/hr)	Requested Allowable (ton/year)
Particulate emissions (PE) (formerly particulate matter, PM)	5.1	2.6	11.2	2.6	11.2
PM_{10} (PM < 10 microns in diameter)	5.1	2.6	11.2	2.6	11.2
Sulfur dioxide (SO_2)	0	0	0	0	0
Nitrogen oxides (NO_x)	0	0	0	0	0
Carbon monoxide (CO)	0	0	0	0	0
Organic compounds (OC)	0	0	0	0	0
Volatile organic compounds (VOC)	0	0	0	0	0
Total HAPs	0	0	0	0	0
Highest single HAP:	0	0	0	0	0
Air Toxics (see instructions):	0	0	0	0	0

Provide your calculations as an attachment and explain how all process variables and emission factors were selected. Note the emissions factor(s) employed and document the origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

5. **Does this air contaminant source employ emissions control equipment?**

☒ **Yes** - fill out the applicable information below.

☐ **No** - proceed to item # 6.

Note: Pollutant abbreviations used below: Particulates = PE; Organic compounds = OC; Sulfur dioxide = SO_2; Nitrogen oxides = NOx; Carbon monoxide = CO

☐ **Cyclone/Multiclone**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ Cyclone ☐ Multiclone ☐ Rotoclone ☐ Other ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Fabric Filter/Baghouse**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Operating pressure drop range (inches of water): Minimum: ________Maximum: ________
Pressure type: ☐ Negative pressure ☐ Positive pressure
Fabric cleaning mechanism: ☐ Reverse air ☐ Pulse jet ☐ Shaker ☐ Other ____________
☐ Lime injection or fabric coating agent used: Type: ________ Feed rate: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Wet Scrubber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ Spray chamber ☐ Packed bed ☐ Impingement ☐ Venturi ☐ Other ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
pH range for scrubbing liquid: Minimum: ________ Maximum: ________
Scrubbing liquid flow rate (gal/min): ________
Is scrubber liquid recirculated? ☐ Yes ☐ No
Water supply pressure (psig): ________ NOTE: This item for spray chambers only.
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Electrostatic Precipitator**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ Plate-wire ☐ Flat-plate ☐ Tubular ☐ Wet ☐ Other ____________

Section II - Specific Air Contaminant Source Information

Number of operating fields: ____________

☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Concentrator**
Manufacturer: ______________________ Year installed: ______________________
What do you call this control equipment: ______________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: ____________________
Design regeneration cycle time (minutes): ___________
Minimum desorption air stream temperature (°F): ________
Rotational rate (revolutions/hour): ___________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Catalytic Incinerator**
Manufacturer: ______________________ Year installed: ______________________
What do you call this control equipment: ______________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: ____________________
Design control efficiency (%):___________ Basis for efficiency: ____________________
Minimum inlet gas temperature (°F): ___________
Combustion chamber residence time (seconds): ___________
Minimum temperature difference (°F) across catalyst during air contaminant source operation: _______
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Thermal Incinerator/Thermal Oxidizer**
Manufacturer: ______________________ Year installed: ______________________
What do you call this control equipment: ______________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: ____________________
Design control efficiency (%):___________ Basis for efficiency: ____________________
Minimum operating temperature (°F) and location: _________________________ (See line by line instructions.)
Combustion chamber residence time (seconds): ___________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Flare**
Manufacturer: ______________________ Year installed: ______________________
What do you call this control equipment: ______________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: ____________________
Design control efficiency (%):___________ Basis for efficiency: ____________________
Type: ☐ Enclosed ☐ Elevated (open)
Ignition device: ☐ Electric arc ☐ Pilot flame
Flame presence sensor: ☐ Yes ☐ No
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

Section II - Specific Air Contaminant Source Information

☐ **Condenser**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________

Type: ☐ Indirect contact ☐ Direct contact
Maximum exhaust gas temperature (°F) during air contaminant source operation: ________
Coolant type: ____________
Design coolant temperature (°F): Minimum ________ Maximum ________
Design coolant flow rate (gpm): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Carbon Absorber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ On-site regenerative ☐ Disposable
Maximum design outlet organic compound concentration (ppmv): ____________
Carbon replacement frequency or regeneration cycle time (specify units): ____________
Maximum temperature of the carbon bed, after regeneration (including any cooling cycle): ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Dry Scrubber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Reagent(s) used: Type: ____________ Injection rate(s): ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Paint booth filter**

Type: ☐ Paper ☐ Fiberglass ☐ Water curtain ☐ Other ____________
Design control efficiency (%):________ Basis for efficiency: ____________

☒ **Other**, describe: HIGH MOISTURE CONTENT OF SLAG

Manufacturer: NA Year installed: NA
What do you call this control equipment: HIGH MOISTURE CONTENT
Pollutant(s) controlled: ☒ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):100 Basis for efficiency: PROCESS DESIGN
Design control efficiency (%):50 Basis for efficiency: SIMILAR TO WET SUPPRESSION
☒ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

6. Attach a Process or Activity Flow Diagram to this application for each air contaminant source included in the application. The diagram should indicate their relationships to one another. See the line by line PTI instructions for additional information.

7. Emissions egress point(s) information: PTIs which allow total emissions in excess of the thresholds listed below will be subject to an air quality modeling analysis. This analysis is to assure that the impact from the requested project will not exceed Ohio=s Acceptable Incremental Impacts for criteria pollutants and/or Maximum Allowable Ground Level Concentrations (MAGLC) for air toxics. Permit requests that would have unacceptable impacts can not be approved as proposed. See the line by line PTI instructions for additional information.

   Complete the tables below if the requested allowable annual emission rate for this PTI exceeds any of the following:

   - Particulate Matter (PM10): 10 tons per year
   - Sulfur Dioxide (SO2): 25 tons per year
   - Nitrogen Oxides (NOx): 25 tons per year
   - Carbon Monoxide (CO): 100 tons per year
   - Air Toxic: 1 ton per year. An air toxic is any air pollutant for which the American Council of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV).

   Complete Table 7-A below for each stack emissions egress point. An egress point is a point at which emissions from an air contaminant source are released into the ambient (outside) air. List each individual egress point on a separate line.

Table 7-A, Stack Egress Point Information

Company Name or ID for the Egress Point (examples: Stack A; Boiler Stack; etc.)	Type Code*	Stack Egress Point Shape and Dimensions (in)(examples: round 10 inch ID; rectangular 14 X 16 inches; etc.)	Stack Egress Point Height from the Ground (ft)	Stack Temp. at Max. Capacity (F)	Stack Flow Rate at Max. Capacity (ACFM)	Minimum Distance to the Property Line (ft)
SLAG DEWATERING SILO VENT 1	A	ROUND 328-FT ID	200	AMBIENT	166	1,450
SLAG DEWATERING SILO VENT 2	A	ROUND 328-FT ID	200	AMBIENT	166	1,350
SLAG DEWATERING SILO VENT 3	A	ROUND 328-FT ID	200	AMBIENT	166	1,100
SLAG DEWATERING SILO VENT 4	A	ROUND 328-FT ID	200	AMBIENT	166	800
SLAG DEWATERING SILO VENT 5	A	ROUND 328-FT ID	200	AMBIENT	166	600
SLAG DEWATERING SILO VENT 6	A	ROUND 328-FT ID	200	AMBIENT	166	350

*Type codes for stack egress points:

A. vertical stack (unobstructed): There are no obstructions to upward flow in or on the stack such as a rain cap.
B. vertical stack (obstructed): There are obstructions to the upward flow, such as a rain cap, which prevents or inhibits the air flow in a vertical direction.
C. non-vertical stack: The stack directs the air flow in a direction which is not directly upward.

Complete Table 7-B below for each fugitive emissions egress point. List each individual egress point on a separate line. Refer to the description of the fugitive egress point type codes below the table for use in completing the type code column of the table. For air contaminant sources like roadways and storage piles, only the first 5 columns need to be completed. For an air contaminant source with multiple fugitive emissions egress points, include only the primary egress points.

Table 7-B, Fugitive Egress Point Information					
Company ID for the Egress Point (examples; Garage Door B, Building C; Roof Monitor; etc.)	Type Code*	Egress Point Description (examples: garage door, 12 X 30 feet, west wall; outside gravel storage piles; etc.)	Fugitive Egress Point Height from the Ground (ft)	Minimum Distance to the Property Line (ft)	Exit Gas Temp. (F)
NA					

*Type codes for fugitive egress point:

D. door or window
E. other opening in the building without a duct
F. no stack and no building enclosing the air contaminant source (e.g., roadways)

Complete Table 7-C below for each Stack Egress Point identified in Table 7-A above. In each case, use the dimensions of the largest nearby building, building segment or structure. List each individual egress point on a separate line. Use the same Company Name or ID for the Egress Point in Table 7-C that was used in Table 7-A. See the line by line PTI instructions for additional information.

Table 7-C, Egress Point Additional Information (Add rows as necessary)			
Company ID or Name for the Egress Point	Building Height (ft)	Building Width (ft)	Building Length (ft)
SLAG DEWATERING SILO VENT 1	328	108	114
SLAG DEWATERING SILO VENT 2	328	108	114
SLAG DEWATERING SILO VENT 3	328	108	114
SLAG DEWATERING SILO VENT 4	328	108	114
SLAG DEWATERING SILO VENT 5	328	108	114
SLAG DEWATERING SILO VENT 6	328	108	114

8. Request for Federally Enforceable Limits

As part of this permit application, do you wish to propose voluntary restrictions to limit emissions in order to avoid specific requirements listed below, (i.e., are you requesting federally enforceable limits to obtain synthetic minor status)?

☐ yes
☒ no
☐ not sure - please contact me if this affects me

If yes, why are you requesting federally enforceable limits? Check all that apply.

a. ☐ to avoid being a major source (see OAC rule 3745-77-01)
b. ☐ to avoid being a major MACT source (see OAC rule 3745-31-01)
c. ☐ to avoid being a major modification (see OAC rule 3745-31-01)
d. ☐ to avoid being a major stationary source (see OAC rule 3745-31-01)
e. ☐ to avoid an air dispersion modeling requirement (see Engineering Guide # 69)
f. ☐ to avoid another requirement. Describe: ______________________________

If you checked a., b. or d., please attach a facility-wide potential to emit (PTE) analysis (for each pollutant) and synthetic minor strategy to this application. (See line by line instructions for definition of PTE.) If you checked c., please attach a net emission change analysis to this application.

9. If this air contaminant source utilizes any continuous emissions monitoring equipment for indicating or demonstrating compliance, complete the following table. This does not include continuous parametric monitoring systems.

Company ID for Egress Point	Type of Monitor	Applicable performance specification (40 CFR 60, Appendix B)	Pollutant(s) Monitored
NA			

10. Do you wish to permit this air contaminant source as a portable source, allowing relocation within the state in accordance with OAC rule 3745-31-03 or OAC rule 3745-31-05?

☐ yes - Note: notification requirements in rules cited above must be followed.
☒ no

11. The appropriate Emissions Activity Category (EAC) form(s) must be completed and attached for each air contaminant source. At least one complete EAC form must be submitted for each air contaminant source for the application to be considered complete. Refer to the list attached to the PTI instructions.

FOR OHIO EPA USE FACILITY ID:__________________ EU ID: __________ PTI #:

EMISSIONS ACTIVITY CATEGORY FORM
GENERAL PROCESS OPERATION

This form is to be completed for each process operation when there is no specific emissions activity category (EAC) form applicable. If there is more than one end product for this process, copy and complete this form for each additional product (see instructions). Several State/Federal regulations which may apply to process operations are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

☒ New Permit ☐ Renewal or Modification of Air Permit Number(s) (e.g. P001)____________

2. Maximum Operating Schedule: ___24_______hours per day ;______7_____days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. ______________________

3. End product of this process: fly ash pneumatically transferred to storage and then to trucks for shipping offsite.

4. Hourly production rates (indicate appropriate units). Please see the instructions for clarification of "Maximum" and "Average" for new versus existing operations:

Hourly	Rate	Units (e.g., widgets)
Average production	213	tons slag per hour
Maximum production	255	tons slag per hour

5. Annual production rates (indicate appropriate units) Please see the instructions for clarification of "Maximum" and "Actual" for new versus existing operations:

Annual	Rate	Units (e.g., widgets)
Actual production	1.866 million	tons ash per year
Maximum production	2.234 million	tons ash per year

6. Type of operation (please check one):

☒ Continuous
☐ Batch (please complete items below)

Minimum cycle* time (minutes): __________
Minimum time between cycles (minutes): __________
Maximum number of cycles per daily 24 hour period: __________
(Note: include cycle time and set up/clean up time.)

*"Cycle" refers to the time the equipment is in operation.

7. Materials used in process at maximum hourly production rate (add rows/pages as needed):

Material	Physical State at Standard Conditions	Principle Use	Amount**
none			

** Please indicate the amount **and** rate (e.g., lbs/hr, gallons/hr, lbs/cycle, etc.).

8. Please provide a narrative description of the process below (e.g., coating of metal parts using high VOC content coatings for the manufacture of widgets; emissions controlled by thermal oxidizer...):

Slag is generated in 6 identical gasification trains (see Module 3). In each train, slag is transferred to a slag de-watering silo that is equipped with a slag de-watering silo vent. This EAC accounts for process operations associated with particulate emissions from those vents. Additional material handling operations will produce fugitive emissions, as described in the accompanying EAC for material handling.

Section II - Specific Air Contaminant Source Information

NOTE: One copy of this section should be filled out for each air contaminant source covered by this PTI application. See the line by line PTI instructions for additional information.

1. Company identification (name for air contaminant source for which you are applying): SLAG HANDLING (FUGITIVES)

2. List all equipment that are part of this air contaminant source: SLAG CONVEYORS (6), FRONT-END LOADERS

3. Air Contaminant Source Installation or Modification Schedule (must be completed regardless of date of installation or modification):

   When did/will you begin to install or modify the air contaminant source? (month/year) SECOND QUARTER 2008

   When did/will you begin to operate the air contaminant source? (month/year) THIRD QUARTER 2011 **OR** after issuance of PTI ______________

4. Emissions Information: The following table requests information needed to determine the applicable requirements and the compliance status of this air contaminant source with those requirements. Suggestions for how to estimate emissions may be found in the instructions to the Emissions Activity Category (EAC) forms required with this application. If you need further assistance, contact your Ohio EPA permit representative.

   - If total potential emissions of HAPs or any Air Toxic is greater than 1 ton/yr, fill in the table for that (those) pollutant(s). For all other pollutants, if "Emissions before controls (max), lb/hr" multiplied by 24 hours/day is greater than 10 lb/day, fill in the table for that pollutant.
   - If you have no add-on control equipment, "Emissions before controls= will be the same as "Actual emissions"
   - Annual emissions should be based on operating 8760 hr/yr unless you are requesting operating restrictions to limit emissions in line # 8 or have described inherent limitations below.
   - If you use units other than lb/hr or ton/yr, specify the units used (e.g., gr/dscf, lb/ton charged, lb/MMBtu, ton/12-months).
   - Requested Allowable (ton/yr) is often equivalent to Potential to Emit (PTE) as defined in OAC rule 3745-31-01 and OAC rule 3745-77-01.

Pollutant	Emissions before controls (max) (lb/hr)	Actual emissions (lb/hr)	Actual emissions (ton/year)	Requested Allowable (lb/hr)	Requested Allowable (ton/year)
Particulate emissions (PE) (formerly particulate matter, PM)	10.3	2.7	11.7	2.7	11.7
PM_{10} (PM < 10 microns in diameter)	10.3	2.6	11.5	2.6	11.5
Sulfur dioxide (SO_2)	0	0	0	0	0
Nitrogen oxides (NO_x)	0	0	0	0	0
Carbon monoxide (CO)	0	0	0	0	0
Organic compounds (OC)	0	0	0	0	0
Volatile organic compounds (VOC)	0	0	0	0	0
Total HAPs	0	0	0	0	0
Highest single HAP:	0	0	0	0	0
Air Toxics (see instructions):	0	0	0	0	0

Provide your calculations as an attachment and explain how all process variables and emission factors were selected. Note the emissions factor(s) employed and document the origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

Section II - Specific Air Contaminant Source Information

5. **Does this air contaminant source employ emissions control equipment?**

☒ **Yes** - fill out the applicable information below.

☐ **No** - proceed to item # 6.

Note: Pollutant abbreviations used below: Particulates = PE; Organic compounds = OC; Sulfur dioxide = SO_2; Nitrogen oxides = NOx; Carbon monoxide = CO

☐ **Cyclone/Multiclone**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ Cyclone ☐ Multiclone ☐ Rotoclone ☐ Other ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Fabric Filter/Baghouse**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Operating pressure drop range (inches of water): Minimum: ________Maximum: ________
Pressure type: ☐ Negative pressure ☐ Positive pressure
Fabric cleaning mechanism: ☐ Reverse air ☐ Pulse jet ☐ Shaker ☐ Other ____________
☐ Lime injection or fabric coating agent used: Type: ________ Feed rate: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Wet Scrubber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ Spray chamber ☐ Packed bed ☐ Impingement ☐ Venturi ☐ Other ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
pH range for scrubbing liquid: Minimum: ________ Maximum: ________
Scrubbing liquid flow rate (gal/min): ________
Is scrubber liquid recirculated? ☐ Yes ☐ No
Water supply pressure (psig): ________ NOTE: This item for spray chambers only.
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Electrostatic Precipitator**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________

Type: ☐ Plate-wire ☐ Flat-plate ☐ Tubular ☐ Wet ☐ Other ____________
Number of operating fields: ____________

☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Concentrator**
Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _______________
Estimated capture efficiency (%):_________ Basis for efficiency: _____________________
Design regeneration cycle time (minutes): ____________
Minimum desorption air stream temperature (°F): _________
Rotational rate (revolutions/hour): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Catalytic Incinerator**
Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _______________
Estimated capture efficiency (%):_________ Basis for efficiency: _____________________
Design control efficiency (%):____________ Basis for efficiency: _____________________
Minimum inlet gas temperature (°F): ____________
Combustion chamber residence time (seconds): ____________
Minimum temperature difference (°F) across catalyst during air contaminant source operation: _______
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Thermal Incinerator/Thermal Oxidizer**
Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _______________
Estimated capture efficiency (%):_________ Basis for efficiency: _____________________
Design control efficiency (%):____________ Basis for efficiency: _____________________
Minimum operating temperature (°F) and location: ___________________________ (See line by line instructions.)
Combustion chamber residence time (seconds): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Flare**
Manufacturer: ________________________ Year installed: ________________________
What do you call this control equipment: ________________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other _______________
Estimated capture efficiency (%):_________ Basis for efficiency: _____________________
Design control efficiency (%):____________ Basis for efficiency: _____________________
Type: ☐ Enclosed ☐ Elevated (open)
Ignition device: ☐ Electric arc ☐ Pilot flame
Flame presence sensor: ☐ Yes ☐ No
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

☐ **Condenser**

Manufacturer: ________________________ Year installed: ________________________

What do you call this control equipment: ________________________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________

Estimated capture efficiency (%):_________ Basis for efficiency: ____________________

Design control efficiency (%):____________ Basis for efficiency: ____________________

Type: ☐ Indirect contact ☐ Direct contact

Maximum exhaust gas temperature (°F) during air contaminant source operation: _______

Coolant type: ________________________

Design coolant temperature (°F): Minimum ____________ Maximum ____________

Design coolant flow rate (gpm): ________________________

☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

☐ **Carbon Absorber**

Manufacturer: ________________________ Year installed: ________________________

What do you call this control equipment: ________________________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________

Estimated capture efficiency (%):_________ Basis for efficiency: ____________________

Design control efficiency (%):____________ Basis for efficiency: ____________________

Type: ☐ On-site regenerative ☐ Disposable

Maximum design outlet organic compound concentration (ppmv): _______________

Carbon replacement frequency or regeneration cycle time (specify units): _______________

Maximum temperature of the carbon bed, after regeneration (including any cooling cycle): _________

☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

☐ **Dry Scrubber**

Manufacturer: ________________________ Year installed: ________________________

What do you call this control equipment: ________________________

Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________

Estimated capture efficiency (%):_________ Basis for efficiency: ____________________

Design control efficiency (%):____________ Basis for efficiency: ____________________

Reagent(s) used: Type: ________________________ Injection rate(s): ________________________

Operating pressure drop range (inches of water): Minimum: _________ Maximum: _________

☐ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

☐ **Paint booth filter**

Type: ☐ Paper ☐ Fiberglass ☐ Water curtain ☐ Other ________________________________

Design control efficiency (%):____________ Basis for efficiency: ____________________

☒ **Other**, describe COVERED CONVEYORS, HIGH MOISTURE SLAG

Manufacturer: NA Year installed: NA

What do you call this control equipment: FUGITIVE DUST CONTROLS

Pollutant(s) controlled: ☒ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________

Estimated capture efficiency (%): >99 Basis for efficiency: Engineering Estimate

Design control efficiency (%): 50 Basis for efficiency: OEPA RACM Guidance

☒ This is the only control equipment on this air contaminant source

If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List any other air contaminant sources that are also vented to this control equipment:

6. Attach a Process or Activity Flow Diagram to this application for each air contaminant source included in the application. The diagram should indicate their relationships to one another. See the line by line PTI instructions for additional information.

7. Emissions egress point(s) information: PTIs which allow total emissions in excess of the thresholds listed below will be subject to an air quality modeling analysis. This analysis is to assure that the impact from the requested project will not exceed Ohio=s Acceptable Incremental Impacts for criteria pollutants and/or Maximum Allowable Ground Level Concentrations (MAGLC) for air toxics. Permit requests that would have unacceptable impacts can not be approved as proposed. See the line by line PTI instructions for additional information.

   Complete the tables below if the requested allowable annual emission rate for this PTI exceeds any of the following:

   - Particulate Matter (PM10): 10 tons per year
   - Sulfur Dioxide (SO2): 25 tons per year
   - Nitrogen Oxides (NOx): 25 tons per year
   - Carbon Monoxide (CO): 100 tons per year
   - Air Toxic: 1 ton per year. An air toxic is any air pollutant for which the American Council of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV).

   Complete Table 7-A below for each stack emissions egress point. An egress point is a point at which emissions from an air contaminant source are released into the ambient (outside) air. List each individual egress point on a separate line.

Table 7-A, Stack Egress Point Information

Company Name or ID for the Egress Point (examples: Stack A; Boiler Stack; etc.)	Type Code*	Stack Egress Point Shape and Dimensions (in)(examples: round 10 inch ID; rectangular 14 X 16 inches; etc.)	Stack Egress Point Height from the Ground (ft)	Stack Temp. at Max. Capacity (F)	Stack Flow Rate at Max. Capacity (ACFM)	Minimum Distance to the Property Line (ft)
N/A						

*Type codes for stack egress points:

A. vertical stack (unobstructed): There are no obstructions to upward flow in or on the stack such as a rain cap.
B. vertical stack (obstructed): There are obstructions to the upward flow, such as a rain cap, which prevents or inhibits the air flow in a vertical direction.
C. non-vertical stack: The stack directs the air flow in a direction which is not directly upward.

Complete Table 7-B below for each fugitive emissions egress point. List each individual egress point on a separate line. Refer to the description of the fugitive egress point type codes below the table for use in completing the type code column of the table. For air contaminant sources like roadways and storage piles, only the first 5 columns need to be completed. For an air contaminant source with multiple fugitive emissions egress points, include only the primary egress points.

Table 7-B, Fugitive Egress Point Information

Company ID for the Egress Point (examples; Garage Door B, Building C; Roof Monitor; etc.)	Type Code*	Egress Point Description (examples: garage door, 12 X 30 feet, west wall; outside gravel storage piles; etc.)	Fugitive Egress Point Height from the Ground (ft)	Minimum Distance to the Property Line (ft)	Exit Gas Temp. (F)
Slag Transfer 1	F	Dewatering Silo Transfers to Conveyors	10	850	Ambient
Slag Transfer 2	F	Conveyor Transfer to Storage Pile	65	850	Ambient
Slag Transfer 3	F	Batch Loading of Slag to Trucks	10	850	Ambient

*Type codes for fugitive egress point:

D. door or window
E. other opening in the building without a duct
F. no stack and no building enclosing the air contaminant source (e.g., roadways)

Complete Table 7-C below for each Stack Egress Point identified in Table 7-A above. In each case, use the dimensions of the largest nearby building, building segment or structure. List each individual egress point on a separate line. Use the same Company Name or ID for the Egress Point in Table 7-C that was used in Table 7-A. See the line by line PTI instructions for additional information.

Table 7-C, Egress Point Additional Information (Add rows as necessary)

Company ID or Name for the Egress Point	Building Height (ft)	Building Width (ft)	Building Length (ft)
Slag Transfer 1	50 (feedstock Piles)	800	800
Slag Transfer 2	50 (feedstock Piles)	800	800
Slag Transfer 3	50 (feedstock Piles)	800	800

8. Request for Federally Enforceable Limits

As part of this permit application, do you wish to propose voluntary restrictions to limit emissions in order to avoid specific requirements listed below, (i.e., are you requesting federally enforceable limits to obtain synthetic minor status)?

☐ yes
☒ no
☐ not sure - please contact me if this affects me

If yes, why are you requesting federally enforceable limits? Check all that apply.

a. ☐ to avoid being a major source (see OAC rule 3745-77-01)
b. ☐ to avoid being a major MACT source (see OAC rule 3745-31-01)
c. ☐ to avoid being a major modification (see OAC rule 3745-31-01)
d. ☐ to avoid being a major stationary source (see OAC rule 3745-31-01)
e. ☐ to avoid an air dispersion modeling requirement (see Engineering Guide # 69)
f. ☐ to avoid another requirement. Describe: ______________________________

If you checked a., b. or d., please attach a facility-wide potential to emit (PTE) analysis (for each pollutant) and synthetic minor strategy to this application. (See line by line instructions for definition of PTE.) If you checked c., please attach a net emission change analysis to this application.

9. If this air contaminant source utilizes any continuous emissions monitoring equipment for indicating or demonstrating compliance, complete the following table. This does not include continuous parametric monitoring systems.

Company ID for Egress Point	**Type of Monitor**	**Applicable performance specification (40 CFR 60, Appendix B)**	**Pollutant(s) Monitored**
N/A			

10. Do you wish to permit this air contaminant source as a portable source, allowing relocation within the state in accordance with OAC rule 3745-31-03 or OAC rule 3745-31-05?

☐ yes - Note: notification requirements in rules cited above must be followed.
☒ no

11. The appropriate Emissions Activity Category (EAC) form(s) must be completed and attached for each air contaminant source. At least one complete EAC form must be submitted for each air contaminant source for the application to be considered complete. Refer to the list attached to the PTI instructions.

FOR OHIO EPA USE
FACILITY ID:__________
EU ID:________ PTI#:________

EMISSIONS ACTIVITY CATEGORY FORM
MATERIAL HANDLING: FUGITIVE DUST EMISSIONS

This form is to be completed for any material handling operation with fugitive dust emissions. State/Federal regulations which may apply to material handling operations are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

☒ New Permit ☐ Renewal or Modification of Air Permit Number(s) (e.g. F001)________

2. Maximum Operating Schedule: 24 hours per day; 365 days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. ________________

3. What is the material being handled? SLAG

4. Mean wind speed at or near facility 10 miles per hour

5. Complete the following table for all unloading operations.

ID	Type of Unloading (see examples below)	Material Unloaded	Annual Quantity Unloaded (tons/yr)	Hourly Maximum Unloading Rate (tons/hr)	Avg. Moisture Content, as Unloaded (%)
A	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: ________				
B	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: ________				
C	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: ________				

D	Truck: ☐ dump ☐ pneumatic Vessel: ☐ clamshell ☐ bucket ladder Rail car: ☐ side dump ☐ bottom dump ☐ rotary dump ☐ pneumatic Other: ______				

6. Complete the following table for all loading operations.

ID	Type of Loading (see examples below)	Material Loaded	Annual Quantity Loaded (tons/yr)	Hourly Maximum Loading Rate (tons/hr)	Avg. Moisture Content, as Loaded (%)
E	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☒ other: DROP TO HAUL TRUCKS	SLAG	2,237,450	255	15
F	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other:				
G	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other:				
H	☐ front end loader ☐ under pile load out ☐ bucket well reclaimer ☐ rake reclaimer ☐ other: ______				

7. Complete the following table for all transfer operations.

ID	Type of Transfer Point (see examples below)	Number of Such Points	Type of Material Handled	Max: Transfer Rate (tons/hr)
I	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☒ belt conveyor to belt conveyor Other: CONVEYOR FROM DEWATERING SILO TO CONVEYOR TO SLAG STORAGE	6	SLAG	255
J	☒ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other: CONVEYOR TO SLAG STORAGE	6	SLAG	255
K	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:			
L	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:			
M	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:____________________			
N	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:____________________			
O	☐ Load/unload conveyor: ☐ vibrating ☐ belt ☐ screw ☐ bucket elevator ☐ belt conveyor to belt conveyor Other:____________________			

8. Summarize the material handling operations covered in items 5 through 7 above and identify the applicable control method(s) from available options. Complete the remaining table based upon the selected control method(s).

ID	Enclosure, Control Equipment (describe)	Chemical Stabilization	Application Frequency	Overall Control Eff. (%)	Basis for Overall Control Efficiency
A		☐ water ☐ dust suppressant ☐ other: ________			
B		☐ water ☐ dust suppressant ☐ other: ________			
C		☐ water ☐ dust suppressant ☐ other: ________			
D		☐ water ☐ dust suppressant ☐ other: ________			
E	LIMITED DROP HEIGHT, HIGH MOISTURE CONTENT	☐ water ☐ dust suppressant ☒ other: GOOD PRACTICE	CONTINUOUS	50	ENGINEERING ESTIMATE
F		☐ water ☐ dust suppressant ☐ other:			
G		☐ water ☐ dust suppressant ☐ other: ________			
H		☐ water ☐ dust suppressant ☐ other: ________			
I	CONVEYOR FROM DEWATERING SILO TO CONVEYOR TO SLAG STORAGE, MAINTAIN HIGH MOISTURE CONTENT	☐ water ☐ dust suppressant ☒ other: ENCLOSURE	CONTINUOUS	>99	OEPA RACM Table 2.1.3-3 OEPA RACM Table 2.2.2-2
J	CONVEYOR WITH LIMITED DROP HEIGHT FROM DEWATERING SILO TO SLAG STORAGE, MAINTAIN HIGH MOISTURE CONTENT	☐ water ☐ dust suppressant ☒ other: GOOD PRACTICE	CONTINUOUS	50	ENGINEERING ESTIMATE BASED ON OEPA RACM Table 2.2.2-2

K		☐ water ☐ dust suppressant ☐ other:			
L		☐ water ☐ dust suppressant ☐ other:			
M		☐ water ☐ dust suppressant ☐ other: ________			
N		☐ water ☐ dust suppressant ☐ other: ________			
O		☐ water ☐ dust suppressant ☐ other: ________			

Section II - Specific Air Contaminant Source Information

NOTE: One copy of this section should be filled out for each air contaminant source covered by this PTI application. See the line by line PTI instructions for additional information.

1. Company identification (name for air contaminant source for which you are applying): SLAG STORAGE

2. List all equipment that are part of this air contaminant source: SLAG STORAGE PILE

3. Air Contaminant Source Installation or Modification Schedule (must be completed regardless of date of installation or modification):

   When did/will you begin to install or modify the air contaminant source? (month/year) SECOND QUARTER 2008

   When did/will you begin to operate the air contaminant source? (month/year) THIRD QUARTER 2011 **OR** after issuance of PTI ______________

4. Emissions Information: The following table requests information needed to determine the applicable requirements and the compliance status of this air contaminant source with those requirements. Suggestions for how to estimate emissions may be found in the instructions to the Emissions Activity Category (EAC) forms required with this application. If you need further assistance, contact your Ohio EPA permit representative.

   - If total potential emissions of HAPs or any Air Toxic is greater than 1 ton/yr, fill in the table for that (those) pollutant(s). For all other pollutants, if "Emissions before controls (max), lb/hr" multiplied by 24 hours/day is greater than 10 lb/day, fill in the table for that pollutant.
   - If you have no add-on control equipment, "Emissions before controls= will be the same as "Actual emissions"
   - Annual emissions should be based on operating 8760 hr/yr unless you are requesting operating restrictions to limit emissions in line # 8 or have described inherent limitations below.
   - If you use units other than lb/hr or ton/yr, specify the units used (e.g., gr/dscf, lb/ton charged, lb/MMBtu, ton/12-months).
   - Requested Allowable (ton/yr) is often equivalent to Potential to Emit (PTE) as defined in OAC rule 3745-31-01 and OAC rule 3745-77-01.

Pollutant	Emissions before controls (max) (lb/hr)	Actual emissions (lb/hr)	Actual emissions (ton/year)	Requested Allowable (lb/hr)	Requested Allowable (ton/year)
Particulate emissions (PE) (formerly particulate matter, PM)	0.7	0.4	1.6	0.4	1.6
PM_{10} (PM < 10 microns in diameter)	0.4	0.2	0.8	0.2	0.8
Sulfur dioxide (SO_2)	0	0	0	0	0
Nitrogen oxides (NO_x)	0	0	0	0	0
Carbon monoxide (CO)	0	0	0	0	0
Organic compounds (OC)	0	0	0	0	0
Volatile organic compounds (VOC)	0	0	0	0	0
Total HAPs	0	0	0	0	0
Highest single HAP:	0	0	0	0	0
Air Toxics (see instructions):	0	0	0	0	0

Provide your calculations as an attachment and explain how all process variables and emission factors were selected. Note the emissions factor(s) employed and document the origin. Example: AP-42, Table 4.4-3 (8/97); stack test, Method 5, 4/96; mass balance based on MSDS; etc.

5. **Does this air contaminant source employ emissions control equipment?**

☒ **Yes** - fill out the applicable information below.

☐ **No** - proceed to item # 6.

Note: Pollutant abbreviations used below: Particulates = PE; Organic compounds = OC; Sulfur dioxide = SO_2; Nitrogen oxides = NOx; Carbon monoxide = CO

☐ **Cyclone/Multiclone**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%): ________ Basis for efficiency: ____________
Type: ☐ Cyclone ☐ Multiclone ☐ Rotoclone ☐ Other ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Fabric Filter/Baghouse**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%): ________ Basis for efficiency: ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
Pressure type: ☐ Negative pressure ☐ Positive pressure
Fabric cleaning mechanism: ☐ Reverse air ☐ Pulse jet ☐ Shaker ☐ Other ____________
☐ Lime injection or fabric coating agent used: Type: ________ Feed rate: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Wet Scrubber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%): ________ Basis for efficiency: ____________
Type: ☐ Spray chamber ☐ Packed bed ☐ Impingement ☐ Venturi ☐ Other ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
pH range for scrubbing liquid: Minimum: ________ Maximum: ________
Scrubbing liquid flow rate (gal/min): ________
Is scrubber liquid recirculated? ☐ Yes ☐ No
Water supply pressure (psig): ________ NOTE: This item for spray chambers only.
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:
____

☐ **Electrostatic Precipitator**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%): ________ Basis for efficiency: ____________
Design control efficiency (%): ________ Basis for efficiency: ____________

Type: ☐ Plate-wire ☐ Flat-plate ☐ Tubular ☐ Wet ☐ Other ___________
Number of operating fields: ___________

☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Concentrator**
Manufacturer: ____________________ Year installed: ____________________
What do you call this control equipment: ____________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: __________________
Design regeneration cycle time (minutes): ___________
Minimum desorption air stream temperature (°F): _________
Rotational rate (revolutions/hour): ___________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Catalytic Incinerator**
Manufacturer: ____________________ Year installed: ____________________
What do you call this control equipment: ____________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: __________________
Design control efficiency (%):________ Basis for efficiency: __________________
Minimum inlet gas temperature (°F): ___________
Combustion chamber residence time (seconds): ___________
Minimum temperature difference (°F) across catalyst during air contaminant source operation: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Thermal Incinerator/Thermal Oxidizer**
Manufacturer: ____________________ Year installed: ____________________
What do you call this control equipment: ____________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: __________________
Design control efficiency (%):________ Basis for efficiency: __________________
Minimum operating temperature (°F) and location: ______________________ (See line by line instructions.)
Combustion chamber residence time (seconds): ___________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

____

☐ **Flare**
Manufacturer: ____________________ Year installed: ____________________
What do you call this control equipment: ____________________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ______________
Estimated capture efficiency (%):________ Basis for efficiency: __________________
Design control efficiency (%):________ Basis for efficiency: __________________
Type: ☐ Enclosed ☐ Elevated (open)
Ignition device: ☐ Electric arc ☐ Pilot flame
Flame presence sensor: ☐ Yes ☐ No
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

☐ **Condenser**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________

Type: ☐ Indirect contact ☐ Direct contact
Maximum exhaust gas temperature (°F) during air contaminant source operation: ________
Coolant type: ____________
Design coolant temperature (°F): Minimum ________ Maximum ________
Design coolant flow rate (gpm): ____________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

☐ **Carbon Absorber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Type: ☐ On-site regenerative ☐ Disposable
Maximum design outlet organic compound concentration (ppmv): ____________
Carbon replacement frequency or regeneration cycle time (specify units): ____________
Maximum temperature of the carbon bed, after regeneration (including any cooling cycle): ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

☐ **Dry Scrubber**

Manufacturer: ____________ Year installed: ____________
What do you call this control equipment: ____________
Pollutant(s) controlled: ☐ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):________ Basis for efficiency: ____________
Design control efficiency (%):________ Basis for efficiency: ____________
Reagent(s) used: Type: ____________ Injection rate(s): ____________
Operating pressure drop range (inches of water): Minimum: ________ Maximum: ________
☐ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

☐ **Paint booth filter**

Type: ☐ Paper ☐ Fiberglass ☐ Water curtain ☐ Other ____________
Design control efficiency (%):________ Basis for efficiency: ____________

☒ **Other**, describe DUST CONTROL PROGRAM - WATERING

Manufacturer: NA Year installed: NA
What do you call this control equipment: FUGITIVE DUST CONTROL PROGRAM
Pollutant(s) controlled: ☒ PE ☐ OC ☐ SO_2 ☐ NOx ☐ CO ☐ Other ____________
Estimated capture efficiency (%):>99 Basis for efficiency: Engineering Estimate
Design control efficiency (%):50 Basis for efficiency: OEPA RACM TABLE 2.2.2-2
☒ This is the only control equipment on this air contaminant source
If no, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel
List any other air contaminant sources that are also vented to this control equipment:

6. Attach a Process or Activity Flow Diagram to this application for each air contaminant source included in the application. The diagram should indicate their relationships to one another. See the line by line PTI instructions for additional information.

7. Emissions egress point(s) information: PTIs which allow total emissions in excess of the thresholds listed below will be subject to an air quality modeling analysis. This analysis is to assure that the impact from the requested project will not exceed Ohio=s Acceptable Incremental Impacts for criteria pollutants and/or Maximum Allowable Ground Level Concentrations (MAGLC) for air toxics. Permit requests that would have unacceptable impacts can not be approved as proposed. See the line by line PTI instructions for additional information.

   Complete the tables below if the requested allowable annual emission rate for this PTI exceeds any of the following:

   - Particulate Matter (PM10): 10 tons per year
   - Sulfur Dioxide (SO2): 25 tons per year
   - Nitrogen Oxides (NOx): 25 tons per year
   - Carbon Monoxide (CO): 100 tons per year
   - Air Toxic: 1 ton per year. An air toxic is any air pollutant for which the American Council of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV).

   Complete Table 7-A below for each stack emissions egress point. An egress point is a point at which emissions from an air contaminant source are released into the ambient (outside) air. List each individual egress point on a separate line.

Table 7-A, Stack Egress Point Information

Company Name or ID for the Egress Point (examples: Stack A; Boiler Stack; etc.)	Type Code*	Stack Egress Point Shape and Dimensions (in)(examples: round 10 inch ID; rectangular 14 X 16 inches; etc.)	Stack Egress Point Height from the Ground (ft)	Stack Temp. at Max. Capacity (F)	Stack Flow Rate at Max. Capacity (ACFM)	Minimum Distance to the Property Line (ft)
NA						

*Type codes for stack egress points:

A. vertical stack (unobstructed): There are no obstructions to upward flow in or on the stack such as a rain cap.
B. vertical stack (obstructed): There are obstructions to the upward flow, such as a rain cap, which prevents or inhibits the air flow in a vertical direction.
C. non-vertical stack: The stack directs the air flow in a direction which is not directly upward.

Complete Table 7-B below for each fugitive emissions egress point. List each individual egress point on a separate line. Refer to the description of the fugitive egress point type codes below the table for use in completing the type code column of the table. For air contaminant sources like roadways and storage piles, only the first 5 columns need to be completed. For an air contaminant source with multiple fugitive emissions egress points, include only the primary egress points.

Table 7-B, Fugitive Egress Point Information

Company ID for the Egress Point (examples; Garage Door B, Building C; Roof Monitor; etc.)	Type Code*	Egress Point Description (examples: garage door, 12 X 30 feet, west wall; outside gravel storage piles; etc.)	Fugitive Egress Point Height from the Ground (ft)	Minimum Distance to the Property Line (ft)	Exit Gas Temp. (F)
SLAG STORAGE PILE	F	260-FT DIAMETER X 130-FT TALL STORAGE PILE	130	1,600	Ambient

*Type codes for fugitive egress point:

- D. door or window
- E. other opening in the building without a duct
- F. no stack and no building enclosing the air contaminant source (e.g., roadways)

Complete Table 7-C below for each Stack Egress Point identified in Table 7-A above. In each case, use the dimensions of the largest nearby building, building segment or structure. List each individual egress point on a separate line. Use the same Company Name or ID for the Egress Point in Table 7-C that was used in Table 7-A. See the line by line PTI instructions for additional information.

Table 7-C, Egress Point Additional Information (Add rows as necessary)

Company ID or Name for the Egress Point	Building Height (ft)	Building Width (ft)	Building Length (ft)

8. Request for Federally Enforceable Limits

Section II - Specific Air Contaminant Source Information

As part of this permit application, do you wish to propose voluntary restrictions to limit emissions in order to avoid specific requirements listed below, (i.e., are you requesting federally enforceable limits to obtain synthetic minor status)?

☐ yes
☒ no
☐ not sure - please contact me if this affects me

If yes, why are you requesting federally enforceable limits? Check all that apply.

a. ☐ to avoid being a major source (see OAC rule 3745-77-01)
b. ☐ to avoid being a major MACT source (see OAC rule 3745-31-01)
c. ☐ to avoid being a major modification (see OAC rule 3745-31-01)
d. ☐ to avoid being a major stationary source (see OAC rule 3745-31-01)
e. ☐ to avoid an air dispersion modeling requirement (see Engineering Guide # 69)
f. ☐ to avoid another requirement. Describe: ________________________________

If you checked a., b. or d., please attach a facility-wide potential to emit (PTE) analysis (for each pollutant) and synthetic minor strategy to this application. (See line by line instructions for definition of PTE.) If you checked c., please attach a net emission change analysis to this application.

9. If this air contaminant source utilizes any continuous emissions monitoring equipment for indicating or demonstrating compliance, complete the following table. This does not include continuous parametric monitoring systems.

Company ID for Egress Point	Type of Monitor	Applicable performance specification (40 CFR 60, Appendix B)	Pollutant(s) Monitored
N/A			

10. Do you wish to permit this air contaminant source as a portable source, allowing relocation within the state in accordance with OAC rule 3745-31-03 or OAC rule 3745-31-05?

☐ yes - Note: notification requirements in rules cited above must be followed.
☒ no

11. The appropriate Emissions Activity Category (EAC) form(s) must be completed and attached for each air contaminant source. At least one complete EAC form must be submitted for each air contaminant source for the application to be considered complete. Refer to the list attached to the PTI instructions.

FOR OHIO EPA USE
FACILITY ID: ______
EU ID: ______ PTI#: ______

EMISSIONS ACTIVITY CATEGORY FORM
STORAGE PILES

This form is to be completed for each storage pile. State/Federal regulations which may apply to storage piles are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

1. Reason this form is being submitted (Check one)

   ☒ New Permit ☐ Renewal or Modification of Air Permit Number(s) (e.g. F001) ____________

2. Maximum Operating Schedule: __24______hours per day; __365_____days per year

   If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. ______________________________

3. Meteorological data at or near storage pile area:

   a. mean number of days per year in which >0.01 inch of precipitation occurred __150__days
   b. percentage of time wind speed exceeds 12 miles per hour: 5%
   c. mean wind speed: 10 miles per hour
   d. source of meteorological data: (a) AP-42 Figure 13.2.2-1
      (b) OEPA assumption from Buckeye Industrial Mining PTI review
      (c) Youngstown, Ohio per Form 3112 instructions

4. Description of storage pile activities:

ID	Type of Material Stored	Method of Load-in (check one or more)	Method of Load-out (check one or more)
A	SLAG	☒ conveyor/stacker: ☐ front-end loader ☐ other (describe): ________	☐ bucket wheel reclaimer ☐ under pile feed ☐ rake reclaimer ☐ pan scraper ☒ front-end loader ☐ other: ________
B		☐ conveyor/stacker: ☐ front-end loader ☐ other (describe): ________	☐ bucket wheel reclaimer ☐ under pile feed ☐ rake reclaimer ☐ pan scraper ☐ front-end loader ☐ other: ________
C		☐ conveyor/stacker: ☐ front-end loader ☐ other (describe): ________	☐ bucket wheel reclaimer ☐ under pile feed ☐ rake reclaimer ☐ pan scraper ☐ front-end loader ☐ other: ________
D		☐ conveyor/stacker: ☐ front-end loader ☐ other (describe): ________	☐ bucket wheel reclaimer ☐ under pile feed ☐ rake reclaimer ☐ pan scraper ☐ front-end loader ☐ other: ________
E		☐ conveyor/stacker: ☐ front-end loader ☐ other (describe): ________	☐ bucket wheel reclaimer ☐ under pile feed ☐ rake reclaimer ☐ pan scraper ☐ front-end loader ☐ other: ________

5. STORAGE PILE ACTIVITIES:

ID	Number of Separate Piles	Average Silt Content (wt %)	Average Moisture Content (wt %)	Average Pile Surface Area (acres)	Max. Load-in Rate (tons/hr)	Max. Load-in Rate (tons/yr)	Max. Load-out Rate (tons/hr)	Max. Load-out Rate (tons/yr)
A	1	7.3	15	1.22	255.42	2.2 MILLION	255.42	2.2 MILLION
B								
C								
D								
E								

6. WIND EROSION CONTROL METHODS

ID	Enclosure, Covering, and/or Operating Practices (describe)	Chemical Stabilization (check one or more)	Application Frequency	Overall Control Eff. (%)	Basis for Overall Wind Erosion Control Efficiency
A	PARTIAL ENCLOSURE ON THREE SIDES OF PILE PROVIDED BY 4-FOOT WALL	☐ water ☐ crusting agents ☐ other: ____	NA	NA	NA
B	DUST CONTROL PROGRAM (WATERING)	☒ water ☐ crusting agents ☐ other: ____	AS NEEDED	50	OEPA RACM GUIDE TABLE 2.2.2-2
C		☐ water ☐ crusting agents ☐ other: ____			
D		☐ water ☐ crusting agents ☐ other: ____			
E		☐ water ☐ crusting agents ☐ other: ____			

7. LOAD-IN CONTROL METHODS

ID	Enclosure and/or Operating Practices (describe)	Chemical Stabilization	Application Frequency	Overall Control Eff. (%)	Basis for Overall Load-in Control Efficiency
A	LIMITED DROP HEIGHT / MAINTAIN HIGH MOISTURE CONTENT	☒ water ☐ dust suppressant ☐ other: ______	AS NEEDED	50	OEPA RACM GUIDE TABLE 2.2.2-2
B		☐ water ☐ dust suppressant ☐ other: ______			
C		☐ water ☐ dust suppressant ☐ other: ______			
D		☐ water ☐ dust suppressant ☐ other:			
E		☐ water ☐ dust suppressant ☐ other: ______			

8. LOAD-OUT CONTROL METHODS

ID	Enclosure and/or Operating Practices (describe)	Chemical Stabilization	Application Frequency	Overall Control Eff. (%)	Basis for Overall Load-out Control Efficiency
A	LIMITED DROP HEIGHT / MAINTAIN HIGH MOISTURE CONTENT	☒ water ☐ dust suppressant ☐ other:	NA	>90	ENGINEERING ESTIMATE BASED ON USEPA "CONTROL OF OPEN FUGITIVE DUST SOURCES", 9/88.
B		☐ water ☐ dust suppressant ☐ other: ______			
C		☐ water ☐ dust suppressant ☐ other: ______			
D		☐ water ☐ dust suppressant ☐ other: ______			
E		☐ water ☐ dust suppressant ☐ other: ______			