



Chicago Arrow Terminal
2926 E. 126th St
Chicago IL 60633

Variance Request to the City of Chicago: Department of Public Health

Article II. Air Pollution Control Rules and Regulations
For Control of Emissions from the Handling and Storage of Bulk Material Piles

Chicago Arrow Terminal

2926 E. 126th Street

Chicago, IL 60633

Terminal Manager: Steven Caudle

773-646-8000

June 11, 2014

Executive Summary:

Chicago Arrow Terminal is requesting six (6) variances and a stay, for the duration of the variance submittal, review and final decision process, from Article II. Air Pollution Control Rules and Regulations; For Control of Emissions from the Handling and Storage of Bulk Material Piles promulgated by the City of Chicago – Department of Public Health on March 13, 2014. This document, combined with the Chicago Arrow Terminal Fugitive Dust Control Plan, create the framework for how Chicago Arrow Terminal will operate to remain in compliance with the above noted regulations. Also see, *Appendix A: Chicago Arrow Terminal – Incremental Control Procedures and Decision Tree* where the Chicago Arrow Terminal has developed specific control procedures based on local wind speeds.

Chicago Arrow Terminal is located at 2926 E. 126th Street, Chicago, IL 60633 and encompasses approximately 40 acres. The facility is a specialty warehousing and marine loading/unloading terminal that receives, stores, and loads dry-bulk material for the iron and steel industry. The products handled by Chicago Arrow Terminal can be grouped into three main categories: 1. Packaged Materials; 2. Finished Steel Products; 3. Bulk Products. Specifics on these three product categories, including photographs, can be found below in *Paragraph c: Quantity and Types of Materials Handled*. Neither packaged materials nor finished steel products have the potential to create fugitive dust. All three categories of products handled by Chicago Arrow Terminal are received inbound via barge, truck, and/or rail. Approximately eighty (80) percent of the products handled by Chicago Arrow Terminal are moisture sensitive and after offloading are immediately transferred to indoor storage. Chicago Arrow Terminal has 351,607 square feet of indoor storage space, or seventy five (75) percent of our total storage area of 464,407 square feet, if at full capacity. Specifics on these calculations can be found in *Appendix B: Storage Calculations*.

Chicago Arrow Terminal subsequently loads products for outbound shipment from the Terminal via barge, truck or rail as requested by clients. All processing operations including, crushing, screening, packaging and bagging of customer products are performed in enclosed areas and utilize dust collection system, thereby effectively eliminating the potential for fugitive dust. Further, approximately ninety (90) percent of the roads at the facility are paved as shown in *Appendix C: Chicago Arrow Terminal – General Facility Site Arrangement Diagram*.

Chicago Arrow Terminal was first opened in 1985 as Arrow Terminal. The facility was purchased by Global Materials in 1997 and acquired by Kinder Morgan Arrow Terminals, LP (“Kinder Morgan”) in 2004. Kinder Morgan has invested over \$6,500,000 into environmental and infrastructure upgrades at this Terminal, including but not limited to:

1. Repaved most surfaces - 2005-2006
2. Increased indoor storage by 100,000 square feet with 90 individual poured concrete storage bins – 2008
3. Installed Packaging Department Dust Collector - 2010
4. Installed Concrete Dock Surface – 2011. (Previously a slag surface.)
5. Installed Crusher Dust Collector – 2011
6. Installed Screener Dust Collector – 2011
7. Paved roads between outdoor Pig Iron storage pads – 2012.
8. Paved roads in front of packaging building – 2012.
9. Purchased Water Truck - 2013
10. Street Sweeper – 2014 minimum of four hours per day

11. Street Sweeper - <2014 Weekly
12. Employee Training (Continuous)

Neither Chicago Arrow Terminal nor Kinder Morgan own any of the products handled within the facility. Rather the terminal is a custodian of the products and responsible for ensuring the products are not cross contaminated and no product is lost or damaged. The industry standard for acceptable loss is 0.5%; Chicago Arrow Terminal operates well below this standard. Chicago Arrow Terminal is recognized as an industry leader in the handling of customer products and goes through extensive measures to make sure that the same amount and quality of product that enters the facility also leaves the facility.

An overview of the six (6) variances and a brief description of the alternate methods are listed below. A complete description is set forth in Sections one (1) through six (6) of this document.

1. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0 Operating and Maintenance Practices / Subpart 2 Fugitive Dust – Prohibited / paragraph (c) Measurement of Opacity.
 - a. Variance Request: Utilize US EPA Method 9 and 22 as opposed to Method 22 alone.
 - b. Alternate Methods: Utilize US EPA Method 22 for visible emissions (fugitive dust) and US EPA Method 9 for opacity measurements. Method 22 requires formal training, certification and requalification every six (6) months.

2. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0 Operating and Maintenance Practices / Subpart 4 Fugitive Dust Monitoring.
 - a. Variance Request: Two (2) year extension to 11 June 2016. During this time, Chicago Arrow Terminal will add additional dust controls and demonstrate that fugitive dust will not leave the property, so a complete variance will be justified under the regulations.
 - b. Alternate Methods: Install additional dust collectors, complete paving roadways, refine procedures in order to eliminate the potential for fugitive dust and the requirement for a PM 10 monitoring system.

3. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0 Operating and Maintenance Practices / Subpart 5 Wind Monitoring.
 - a. Variance Request: Alternate method to monitor wind speed with a combined change to the definition of a high wind event (reference variance #5)
 - b. Alternate Methods: Utilize aviation windsocks, rated at 15 Knots to visually identify a high wind event and immediately implement controls.

4. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0 Operating and Maintenance Practices / Subpart 7 Transfer Points.
 - a. Variance Request: Exemption from required methods to regulate fugitive dust and opacity.
 - b. Alternate Methods: Chicago Arrow Terminal has improved existing procedures to reduce the exposure of products and reduce the potential for fugitive dust. This includes, but is not limited to, loading outbound trucks indoors, utilizing a street sweeper, limiting the number of times a product is handled outdoors and spraying outdoor storage piles prior to disturbing.

5. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0 Outdoor Bulk Solid Material Storage / Subpart 4 High Wind Events.

- a. Variance Request: Change the threshold of a “High Wind Event” from 15 Miles Per Hour (MPH) to 15 Nautical Miles Per Hour (Knots). 15 Knots equates to approximately 17.3 MPH. When wind speeds exceed threshold of 15 Knots, the Terminal will continue operations in compliance with section 5.4 of the regulations and in accordance with *Appendix A: Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products* in order to manage fugitive dust.
 - b. Alternate Methods: This change will allow Chicago Arrow Terminal to utilize aviation-rated windsocks in order to visually identify a “High Wind Event” and immediately implement increased control measures. Aviation-rated windsocks are calibrated based on knots rather than miles per hour, which is the reason Chicago Arrow Terminal seeks to change the threshold of a “High Wind Event.”
6. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0 Outdoor Bulk Solid Material Storage / Subpart 5 Dust Suppressant System / paragraph (b).
- a. Variance Request: Remove the requirement to utilize chemical additives or a heating system when temperatures fall below 32° Fahrenheit. The facility will continue to use water as a dust suppressant when temperatures are above 32° Fahrenheit.
 - b. Alternate Methods: The nature of the products stored outdoors at Chicago Arrow Terminal do not readily become airborne. The Pig Iron stored outdoors at Chicago Arrow cannot handle the addition of chemical additives in order to preserve the material.

Please note that paragraph c - Quantity and Types of Materials Handled and paragraph h – Responsible Personnel are common among all six (6) variances. Paragraph d – Impact of Requested Variance on the Surrounding Area and paragraph f- Proposed Methods to Achieve Compliance are common among variances two (2) through six (6). As such, these paragraphs are stated in either section one (1) or two (2) but are incorporated by reference in the other sections for the ease of the reader.

Table of Contents

1. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 2: Fugitive Dust – Prohibited / paragraph (c) Measurement of Opacity.....	6
2. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 4: Fugitive Dust Monitoring.....	11
3. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 5: Wind Monitoring.....	21
4. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 7: Transfer Points.....	24
5. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 4: High Wind Events.....	27
6. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 5: Dust Suppressant System.....	29

Appendices

Appendix A:	Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products.....	31
Appendix B:	Storage Calculations.....	33
Appendix C:	Chicago Arrow Terminal – General Facility Site Arrangement Diagram.....	34
Appendix D:	Daily Street Sweeper / Water Truck Log.....	35
Appendix E:	Driver Pick-Up Ticket.....	36
Appendix F:	Dust Collector Daily Inspection Log.....	37
Appendix G:	Method 9 Observation Record.....	41
Appendix H:	Method 22 Observation Record.....	42
Appendix I:	Supervisors Shift Log-Sample (Wind Speed Monitoring).....	43
Appendix J:	Fugitive Dust / Opacity Limit Excursions.....	47
Appendix K:	Quarterly Fugitive Dust / Opacity Testing.....	48

1. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 2: Fugitive Dust – Prohibited / paragraph (c) Measurement of Opacity

- A. Regulation** - Part B: Bulk Solid Material Facilities / Section 3.0: Operating and Maintenance Practices / Subpart 2: Fugitive Dust – Prohibited / paragraph (c) Measurement of Opacity. This section provides: “Opacity shall be determined based on a visual reading on accordance with the measurement method specified in 35 Ill. Adm. Code 212.107.”

Please note that the following sections of the Illinois Administrative Code apply for visible emission and opacity readings:

“35 Ill. Adm. Code 212.107: Measurement Method for Visible Emissions:

For both fugitive and nonfugitive particulate matter emissions, a determination as to the presence or absence of visible emissions from emission units shall be conducted in accordance with Method 22, 40 CFR Part 60, Appendix A, incorporated by reference in Section 212.113 of this Subpart, except that the length of the observing period shall be at the discretion of the observer, but not less than one minute. This Subpart shall not apply to Section 212.301 of this Part.”

“35 Ill. Adm. Code 212.109: Measurement Methods for Opacity:

Except as otherwise provided in this Part, and except for the methods of data reduction when applied to Sections 212.122 and 212.123 of this Part, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR Part 60, Appendix A, and the procedures in 40 CFR 60.675(c) and (d), if applicable, incorporated by reference in Section 212.113 of this Subpart, except that for roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the roadway or parking area. After four vehicles have passed, the 12 readings will be averaged.”

- B. Variance Requested** - Chicago Arrow Terminal is requesting a variance to separate the methods for testing visible emissions (fugitive dust) and opacity in order to comply with state requirements. Chicago Arrow Terminal requests to conduct visible emissions testing at the boundaries of the facility in accordance with EPA Method 22, 40 CFR Part 60, Appendix A, and 35 Ill. Adm. Code 212.107. And we are requesting that opacity testing within the facility boundaries be conducted in accordance with EPA Method 9, 40 CFR Part 60, Appendix A, and 35 Ill. Adm. Code 212.109. This request is consistent with state regulations and testing requirements.

Chicago Arrow Terminal is located at: 2926 E. 126th Street; Chicago, IL. 60633. The 60633 Zip Code encompasses a total area of 12.33 square miles of those 1.94 square miles of water front and the remaining 10.27 square miles of land. The 60633 zip code has a population of 12,927 according to the 2010 census resulting in a population density of 1,259 people per square mile which is substantially below the 2010 US Census estimate for Chicago of 11,841 people per square mile. Within the 60633 area code are 5,182 housing units of which 4,746 are reported as occupied. This information was

captured from the following websites: <http://www.unitedstateszipcodes.org/> and <http://quickfacts.census.gov/qfd/states/17/1714000.html>.

Chicago Arrow Terminal is bordered on the North by the Calumet River, on the East by a commercial warehouse, on the South by E. 126th Street and on the West by an open lot currently used by Ford Motor Company to store new vehicles. *Appendix C: Chicago Arrow Terminal – General Facility Site Arrangement Diagram*, provides a graphical depiction of the facility including outdoor storage pads, indoor storage buildings, facility roadways and property lines. To the South of the Terminal are the closest residential dwellings. The closest dwelling is 150 yards south of the main entrance gate to Chicago Arrow. This dwelling is also approximately 150 yards south of our outdoor storage area. The closest residential area is approximately 200 yards south, south-west of our outdoor storage area.

C. Quantity and Types of Materials Handled - Chicago Arrow Terminal does not handle coal or petcoke, and is not subject to Part C (Coke or Coal Bulk Material Facilities) of Article II. The Terminal handles on average 650,000 Net Tons of steel, alloy and associated materials on an annual basis. The amount of material and space required to handle the material fluctuates throughout the year. However, the majority of products are stored indoors within 3-sided bins. This indoor storage coupled with 3-sided bins, reduces the possibility of any product being spilled and becoming airborne to create dust. Indoor storage is a requirement for approximately 80% of the products we store. These products must remain dry or they will create an explosion hazard when introduced into the steel mills. Products handled at the Chicago Arrow Terminal can be placed into the three categories: (1) Packaged Materials; (2) Finished Steel Products; and (3) Bulk Products.

I. **Packaged Materials** – Packaged materials handled at Chicago Arrow Terminal include a variety of alloy and carbon products such as graphite. These products are delivered in “Super Sacks” that are weather resistant, and are made from nylon or similar synthetic materials that prevent the leaking of materials. The sealed construction of the “Super Sacks” (*Image 1*) prevents the possibility of potential fugitive dust inside or outside of the Chicago Arrow Terminal. These materials can be transported inbound or outbound via barge, railcar or truck and are generally handled with a crane or forklift.



Image 1: Unloading of “Super Sacks” from barge. Due to the density of the products handled, such as the Magnesite contained within these “Super Sacks” the barges we handle appear to be barely full and are not traveling with product above the side walls of the barge.

- II. **Finished Steel Products** – Finished Steel Products handled at Chicago Arrow Terminal include steel coils (*Image 2*), plates, ingots and related products. These products do not create fugitive dust inside or outside of the Chicago Arrow Terminal. These materials can be transported inbound or outbound via barge, railcar or truck and are generally handled with a crane or forklift.



Image 2: Steel Coils awaiting unloading from a barge. Material arrives banded and covered to prevent damage, no fugitive dust associated with this product category. Note the cleanliness of the barge.

- III. **Bulk Products** – Bulk products can be separated according to indoor storage or outdoor storage. Both indoor and outdoor storage bulk products can be transported inbound or outbound via barge, railcar or truck and are generally handled with an excavator, crane, front end loader or conveyor. Without proper precautions, a potential for creating fugitive dust exists when handling certain bulk products. Chicago Arrow Terminal has implemented numerous measures to further control fugitive dust emissions. Specific risk and mitigation procedures are discussed below (Paragraphs f (*Proposed Methods to Achieve Compliance*) and g (*Alternate Methods and Variance Request*) as well as *Appendix A: Chicago Arrow Terminal – Incremental Control Procedures and Decision Tree for Bulk Products*. *Image 3* shows a full barge that has arrived at Chicago Arrow Terminal. The amount of material loaded into a barge depends on the density of the material and weight. Therefore barges are rarely filled to the top of the barge.



Image 3: Full barge, dockside at Chicago Arrow Terminal. No product has been unloaded. Note the individual piles within the barge and the small bucket used for unloading.

- a. **Indoor Storage** – Indoor Storage is required for the majority of products handled at Chicago Arrow Terminal because these commodities must remain dry in order to maintain their value. The addition of moisture to products destined for the steel and/or alloy mills creates an explosion hazard when introduced to the high temperature furnaces. Furthermore, from a fiscal perspective, the addition of moisture creates inconsistent weights (billing and accounting) of the product. All products stored indoors are also loaded indoors when outbound shipment occurs via truck. When outbound shipment occurs via barge or rail car, loading operations occur outside utilizing a combination of front end loaders, excavators and conveyors. *Image 4* shows the segregated bins within Building F. The operations at Chicago Arrow Terminal depend on careful accounting and storage of material to prevent loss and/or cross contamination.



Image 4: Building F with individual 3-sided storage bins to prevent loss or cross contamination of products.

- b. **Outdoor Storage** – Iron (*Image 6*) and Aggregates are in the Outdoor Storage category. These products are not moisture sensitive and can be exposed to the elements. As discussed below (paragraph d *Impact of Requested Variance on the Surrounding Area*), Pig Iron and Aggregates are dense and heavy and, as such, they are not as susceptible to

becoming airborne as a result of a “High Wind Event”. We have also taken numerous measures to control emissions from these commodities. *Image 5* shows the outdoor storage piles, 3-sided bins and paved road ways used to access these products.



Image 5: Outdoor storage piles, 3-sided bins and paved roadways.
Note the outbound truck is covered prior to scaling out.

- D. Impact of Requested Variance on the Surrounding Area:** - A variance to the prescribed method to measure visual emissions (fugitive dust) and opacity will have no impact on the surrounding area. This is an administrative request in order to be consistent with state law found at 35 Ill. Adm. Code 212.107 and 212.109.
- E. Variance Justification** - The variance will allow Chicago Arrow Terminal to utilize US EPA Method 22 for the measurement of visible emissions (fugitive) dust in accordance with 35 Ill. Adm. Code 212.107. It will also allow Chicago Arrow Terminal to utilize US EPA Method 9 for the measurement of opacity in accordance with 35 Ill. Adm. Code 212.109. US EPA Method 9 is a more stringent method that requires formal training, certification and renewal every six months. Method 9 is designed to measure percent opacity. Method 22 is designed to measure visible emissions (fugitive dust). Readings will be completed using *Appendix G: Method 9 Observation Record* and *Appendix H – Method 22 observation Record*. Fugitive dust and opacity testing will occur at least quarterly and be recorded using *Appendix K: Quarterly Fugitive Dust and Opacity Testing*. Any excursions will be noted using *Appendix J: Fugitive Dust / Opacity Limit Excursions*.
- F. Proposed Methods to Achieve Compliance** – Chicago Arrow Terminal will remain in compliance with local, state and federal regulations by utilizing US EPA Method 9 for measurements of opacity within the facility boundaries, and US EPA Method 22 for visible emissions at the terminal boundary lines.
- G. Alternate Methods of Compliance** - Chicago Arrow Terminal will utilize EPA Method 22 to measure visible emissions (fugitive dust) at the boundaries of the facility and utilize EPA Method 9 to measure opacity within the boundaries of the facility.
- H. Responsible Personnel** - Steven Caudle is the Terminal Manager for Chicago Arrow Terminal.

2. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 4: Fugitive Dust Monitoring

- A. Regulation** - Part B: Bulk Solid Material Facilities / Section 3.0: Operating and Maintenance Practices / Subpart 4: Fugitive Dust Monitoring. This section provides: “Unless, pursuant to the Variance procedure set forth in 8.0 below, the Facility Owner or Operator establishes that the Facility’s operations do not result in off-site fugitive dust emissions, the Facility Owner or Operator must install, operate, and maintain, according to manufacturer’s specifications, permanent, continuous Federal Equivalent Method (FEM) real-time PM10 monitors around the perimeter of the Facility in accordance with the requirements specified below (Reference Part B / Section 3.0 / Subpart 4 / Paragraphs a – e of Article II).”
- B. Variance Requested** - Chicago Arrow Terminal seeks a variance from the requirement to install a PM10 monitoring system because based on the nature of the operations, the products handled, and the control measures that have been implemented to date, that fugitive dust emissions do not leave the property as a result of operational activities at the site. Recognizing the difficulty of proving that that no fugitive dust leaves the property, we request a variance in the form of a timeline extension of two (2) years to June 11, 2016. During this time, Chicago Arrow Terminal will continue to evaluate fugitive dust at the Terminal and implement additional measures that are designed to further eliminate off-site fugitive dust emissions. As is indicated in our Fugitive Dust Plan, the facility’s standard operating procedures, Best Management Practices and incremental controls combine to create an environment that virtually reduces off-site fugitive emissions. The two year extension will allow Chicago Arrow Terminal to complete implementation of various administrative and engineering controls that will further reduce fugitive dust emissions. Some of the control measures we expect to implement include paving the remaining portions of the facility, installing additional dust collectors and moving pig iron piles away from the perimeter of the facility.
- C. Quantity and Types of Materials Handled** - Reference Section 1, paragraph C.
- D. Impact of Requested Variance on the Surrounding Area:-** A timeline extension for Chicago Arrow Terminal for the implementation of Part B: Bulk Solid Material Facilities / Section 3.0 Operating and Maintenance Practices / Subpart 4 Fugitive Dust Monitoring would not create a public nuisance or adversely impact the surrounding area. Chicago Arrow Terminal must still comply with appropriate federal, state and local regulations pertaining to environmental compliance. Chicago Arrow will monitor and record wind speeds, visible emissions, opacity, street sweeping and any excursions as well as dust collection and transport operations using the following forms:
- *Appendix D: Daily Street Sweeper / Water Truck Log*
 - *Appendix E: Driver Pick-Up Ticket*
 - *Appendix F: Dust Collector Daily Inspection Log*
 - *Appendix G: Method 9 Observation Record*
 - *Appendix H: Method 22 Observation Record*
 - *Appendix I: Supervisors Shift Log – Sample (Wind Speed Monitoring)*
 - *Appendix J: Fugitive Dust / Opacity Limit Excursions*
 - *Appendix K: Quarterly Fugitive Dust / Opacity Testing*

The processes and procedures already in place at Chicago Arrow Terminal reduce the risk of off-site fugitive dust emissions. The two-year extension will allow for physical improvements to be made, processes to be refined and an opportunity to reduce the potential for off-site fugitive dust emissions.

The properties of the products handled at the Chicago Arrow Terminal are the primary reason why the facility does not create the amount of fugitive dust as compared to Pet Coke and/or coal facilities. For example, pig iron (*Image 6*) weighs 4.32 grams per cubic centimeter, which is anywhere from 2.05 to 3.60 times more than various forms of Pet Coke. This increased weight greatly reduces the potential for fugitive dust. The potential for fugitive dust will only occur when physically handling the product and controls are currently in place to address that process. The following images provide some scale to the size of the bulk products handled at Chicago Arrow Terminal. The orange cards within the images are approximately 3" (inches) square. The individual cutouts represent $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ inches square. *Image 7* is a picture of 75% Ferro Silicon; individual pieces are approximately a $\frac{1}{2}$ inch square. *Image 8* is Silicon Manganese; individual pieces are 3 inches square and up.



Image 6: Outdoor Pig Iron Storage.



Image 7: 75% Ferro Silicon, $\frac{1}{2}$ " square, stored indoors.



Image 8: Silicon Manganese, minimum of 3" square, stored indoors.

- i. **Packaged Materials** – Packaged materials are contained and protected when they arrive or depart the Chicago Arrow Terminal. The packaging prevents exposure to the elements, prevents leaking of material and the potential of fugitive dust. The nature of packaged material does not create the potential of fugitive dust that could impact the facility or the surrounding area.
- ii. **Finished Steel Products** – Finished steel products handled at Chicago Arrow Terminal, include but are not limited to, steel plates, coils, rebar and ingots. A single steel coil may weigh upwards of 50,000 lbs. and is generally delivered on a spool with a protective outer covering. These products are often used within the automotive industry and require delicate handling and indoor storage. Damage to these coils results in loss of revenue to the facility. Steel plates are often used in the construction industry and are often loaded one piece at a time. This methodical process not only ensures the product is not damaged; it essentially eliminates the potential of fugitive dust. Steel coils generally arrive via barge as depicted in *Image 2 (above)*. The nature of the material and method for handling does not result in the potential of fugitive dust that could impact the facility or the surrounding area.
- iii. **Bulk Products** – Certain bulk products have a potential for fugitive dust, if adequate controls are not implemented. Specific risks to the facility and the surrounding area are listed below:
 1. **Barge Bulk Loading and Unloading** – Bulk barge operations are conducted utilizing Best Management Practices (BMPs) that greatly minimize the potential for fugitive dust. Most barges that arrive at Chicago Arrow Terminal contain moisture sensitive material and arrive covered, with stackable fiberglass lids, stackable metal lids or sliding metal lids. These lids are left on as long as possible. When under a “High Wind Event,” Chicago Arrow Terminal will limit the number of barge lids removed at any one time, in accordance with the procedures listed in *Appendix A*. The dock is routinely cleaned with a street sweeper to minimize dust and no storage of material occurs within fifty (50) feet of the waterway. *Image 9* shows the dock, crane, excavator and a single barge (200’ in length) covered with all 9 fiberglass lids. The concrete dock surface was installed in 2011. The BMPs discussed in paragraphs (f) and (g) virtually eliminate the impacts to the facility and surrounding area.



Image 9: Chicago Arrow Terminal dock area, single 200' barge covered with 9 stackable fiberglass lids. Note that all travel surfaces are paved.

- a. **Unloading** – Bulk Barge unloading is conducted utilizing an excavator. The operator does not utilize the full capacity of the bucket or scoop. Instead the operator reduces the amount of product handled, per bucket or scoop, and the speed at which it is handled. This practice is utilized to prevent waste. By eliminating waste, this process also controls dust and spills.
 - b. **Loading** – On average Chicago Arrow Terminal will only load one to two outbound barges per year. In 2013, we loaded no outbound barges. On the rare occasion that we load an outbound barge, BMPs are utilized to minimize any potential impacts. The process is conducted utilizing an excavator and/or front end loader.
2. **Rail Car Bulk Loading and Unloading** – Chicago Arrow Terminal has a single rail siding that is used to handle all rail operations. This single spur has room for approximately 16 rail cars, but generally there are no more than 12 rail cars at a time. On average, we handle only 14 rail cars per month or 168 rail cars per year. In 2013, we handled 155 rail cars, of which 56 (36%) were enclosed box cars that contained dust free products such as packaged or finished steel products.
- a. **Unloading** – Bulk rail cars are unloaded into a 3-sided rail pit, which is below grade level. The unloading of material creates the potential for fugitive dust. Once the bulk material is in the rail pit, a front end loader may transfer product directly to the appropriate storage pile, to internal trucks or outbound customer trucks. During periods of low humidity and/or high winds all loading of trucks, both internal and external, is conducted indoors. By loading trucks indoors, we reduce the number of times we handle the product outside from 3 to 2 times. This administrative control reduces the chance to create fugitive dust by one third (1/3). During warmer weather water may be applied to open top rail cars, prior to unloading, to further reduce potential fugitive dust.

- b. **Loading** – Bulk rail cars are loaded using a combination of front end loaders and/or conveyors. Open top rail cars are loaded with a front end loader. *Image 9* shows Pig Iron being loaded into a gondola style rail car. During periods of increased winds, the quantity of product handled per loader scoop is reduced which then reduces the amount of product potentially spilled. During warmer weather, water may be applied to open top rail cars to further reduce potential fugitive dust. For closed top rail cars and products that can be transferred via conveyor, we utilize a conveyor with a chute to reduce the potential of fugitive dust. The conveyor and chute are lowered as far as possible to minimize material drop and the potential to create fugitive dust (*Images 10 and 11*). The rail car siding and rail pit are located approximately 150 yards North of our nearest residential neighbor. The limited number of rail cars handled per year and BMPs that are in place minimize the potential for any nuisance fugitive dust.



Image 9: Loading an open gondola rail car with Pig Iron. Note the front end loader is operating on a concrete pad and no fugitive dust is present. The Pig Iron was sprayed with water prior to handling.



Image 10: Loading proppants sand into a covered hopper rail car. Note the conveyor chute is lowered inside of the rail car, limiting exposure.



Image 11: Loading proppants sand into a covered rail car no visible emissions noted.

3. **Truck Bulk Unloading and Loading** – Bulk truck unloading and loading is conducted indoors to the maximum extent possible.
 - a. **Unloading** – Bulk material typically arrives at Chicago Arrow Terminal via over-road dump trucks. The size of certain trucks, particularly tractor trailer style trucks, prohibits safely unloading directly into an indoor storage bin. The height of the beds of these trucks when dumping does not provide adequate clearance to dump inside of all buildings. When this situation arises the product is offloaded onto an outdoor transfer pad. The material is then immediately transferred with a front end loader and/or internal truck to the appropriate indoor storage bin. The transfer pad is cleaned utilizing a combination of a skid steer, shovels and brooms. Cleaning is a critical portion of the process as we must account for the total quantity of all of our customers' products and prevent cross contamination.
 - b. **Loading** –Loading of bulk material that is stored indoors at Chicago Arrow Terminal is conducted indoors thereby, reducing fugitive dust. *Image 12* (below) shows the breezeway located within Building F where all indoor loading operations are conducted. Loading of bulk material stored outdoors at Chicago Arrow Terminal can occur indoors or outdoors. Outdoor loading only occurs when sufficient moisture is present to prevent any visible dust and/or wind speeds are less than 15 Nautical Miles Per Hour (Knots). By loading products in a manner that reduces the possibility of potential fugitive dust, we have reduced impacts to the surrounding community.



Image 12: Chicago Arrow Terminal, Building F – Breezeway indoor truck loading.

4. **Outdoor Bulk Storage Piles** – Outdoor Storage Piles at Chicago Arrow Terminal present virtually no risk for fugitive dust because the piles consist of Pig Iron and Aggregates. During weather periods of high moisture and low wind speeds (<15Knots) the possibility for fugitive dust is reduced even further. During periods of low humidity, high temperatures and increased wind speeds (≥ 15 Knots) Chicago Arrow Terminal adds water to the face of the pile, weather permitting, prior to disturbing the pile (*Images 13 and 14*). If moisture has not been added and the pile is disturbed and subsequent dust is noted, the operator will cease operations until water can be applied, wind speed decreases or other suitable measures are utilized. The exemption to this practice is during the winter months when temperatures are at or below freezing. During such conditions the operator will continue to reduce the speed at which the product is handled and/or load indoors. Our outdoor storage piles are approximately 150 yards north of the nearest residential neighbor. These BMPs reduce the chance of Chicago Arrow Terminal operations impacting the surrounding community.



Image 13: Water truck applying water to Pig Iron pile prior to disturbing.



Image 14: Watering Pig Iron pile. Note the difference in color between the pile that is being sprayed and the dry pile in the background.

E. Variance Justification - A two-year extension will allow us adequate time to make appropriate physical improvements, and other processes to be refined as well as to give us an opportunity to demonstrate that we do not have the potential for off-site fugitive dust. Some of the improvements include, but are not limited to:

- Completing paving of all roads at the facility (90% of the internal roads are already paved, and we will pave the remaining 10%)
- Moving Pig Iron storage away from the perimeter of the Terminal
- Installing additional dust collectors for truck loading operations
- Continuing to refine the procedures in *Appendix A: Chicago Arrow Terminal – Incremental Control Procedures and Decision Tree for Bulk Products*
- Increased training, awareness and sensitivity to identifying, monitoring and controlling fugitive dust

In addition to the reasons already stated, compliance with PM10 monitoring system is not feasible within the 90 day limit set by Article II. Chicago Arrow has reached out to qualified vendors regarding the cost to purchase, install, maintain and set up a data logging system. The initial costs are estimated to be \$250,000, which is a major capital expenditure that cannot be accomplished within 90 days. The extension to June 11, 2016 will allow the Terminal to install and implement additional controls and demonstrate that there are no off-site fugitive dust emissions.

F. Proposed Methods to Achieve Compliance - Currently, Chicago Arrow Terminal has modified operating procedures for handling bulk products in order to minimize potential opacity and fugitive dust issues, and to maintain compliance with applicable regulations. These BMPs include but are not limited to:

- While discharging barges, the operator minimizes the amount of product handled per scoop or bucket, and the bucket is never overfilled.
- The operator must lower the excavator bucket into the dump box well within the sidewalls, and then slowly curls the buckets outward gently placing the material into the dump truck.
- All vehicular traffic is required to adhere to an 8 mph posted speed limit within the terminal.

- Pig iron, which is the major commodity stored outside is contained within 3 sided bins, constructed of concrete blocks/jersey barriers, approximately six (6) feet tall.
- When loading or unloading non-moisture sensitive products the material is sprayed with water, weather permitting.
- Material spillage of any kind is cleaned immediately because of the value (\$), the weight (very dense) and to prevent cross contamination of products.
- Cleanup utilizing a combination of equipment and hand tools (shovels and/or brooms) is used after every transfer to account for all material and prevent cross contamination.

In addition to BMPs, Chicago Arrow Terminal has implemented a series of controls, procedures and practices for individual emission units. These controls are identified below and also are found in the Fugitive Dust Control Plan for Chicago Arrow Terminal, dated 11 June 2014. The Terminal has made the following adjustments for the handling of bulk materials that further improve dust control:

- Barge Bulk Unloading and Loading** – Barge bulk unloading and loading has been adjusted to reduce the possibility of fugitive dust. Changes include utilizing a small excavator bucket. By utilizing a small bucket we accomplish several things. We disturb less product with each motion and thereby reduce the potential for fugitive dust. Also, the smaller bucket can be lowered inside the bed rails of a dump truck. This provides two benefits, one it reduces the distance the product is dropped and it provides protection against exposure to the wind. As wind speeds increase Chicago Arrow Terminal personnel have been authorized and expected to slow the rate of work, as needed, and wait until all dust has settled before handling additional product. When wind speeds are ≥ 15 Knots the number of barge lids removed are reduced. Previously all barge lids were removed during loading or unloading operations, leaving an entire barge (approximately 200') exposed. Today when winds are ≥ 15 Knots only 3 to 5 barge lids (depending on lid type) will be removed at one time, limiting exposure to approximately 1/3 of the barge. Of note, three lids is the minimum that can be removed at one time due to the nature of how the fiberglass barge lids stack and to provide enough space to work safely. This number increases to 5 for metal barge lids as a result of the reduced size of these lids, in order to provide enough room to safely work. These BMPs have reduced the rate at which we can handle products but have provided a reduction in the potential for fugitive dust. Specifics for Barge Bulk Unloading and Loading can be found in Appendix A: *Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products*. This flow diagram covers wind speeds below and above 15 Knots (High Wind Event) and applies administrative controls to minimize the potential for any opacity or fugitive dust related concerns.
- Rail Car Bulk Unloading and Loading** – Rail car bulk unloading previously involved dumping the product from the rail car into a rail pit, creating the first possibility for fugitive dust. It then involved a front end loader picking up the product, creating the second possibility for fugitive dust. The third step was the front end loader dumping the product into a dump truck (outdoors) for transport into an indoor storage bin, creating a third possibility for fugitive dust. Today we transfer the material with the front end loader directly to the indoor storage pile. By removing the third step of the old procedure we have reduced the potential for creating fugitive dust by one third (1/3). Furthermore, when loading or unloading open top rail cars, water is used to control fugitive dust weather permitting. The number of lids or ports removed during rail car loading is now controlled based on wind speeds. Also, the conveyor used to load covered rail cars is scheduled to be covered by July 15, 2014 to further reduce the potential for

emissions. Specifics for Rail Car Bulk Unloading and Loading can be found in Appendix A: *Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products*. This flow diagram covers wind speeds below and above 15 Knots (High Wind Event) and applies administrative controls to minimize the potential for any opacity or fugitive dust related concerns.

- iii. **Truck Bulk Unloading and Loading** – Currently, all outbound trucks are loaded inside of Building (Bldg.) F, reducing fugitive dust emissions. The only exception to this is in the case of outdoor storage piles as noted out in paragraph iv (*Outdoor Bulk Storage*), below. Specifics for Truck Bulk Unloading and Loading can be found in Appendix A: *Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products*. This flow diagram covers wind speeds below and above 15 Knots (High Wind Event) and applies administrative controls to minimize the potential for any opacity or fugitive dust related concerns.
- iv. **Outdoor Bulk Storage** - Outdoor bulk storage piles at Chicago Arrow Terminal includes Pig Iron and Aggregates. During periods of high moisture and low wind speeds (<15 Knots) the possibility for fugitive dust is reduced even further. During periods of low humidity, high temperatures and increased wind speeds (≥ 15 Knots) Chicago Arrow Terminal adds water to the face of the pile, weather permitting, prior to disturbing the face of the pile. If moisture has not been added and the pile is disturbed and subsequent dust is noted the operator will cease operations until water can be applied, wind speeds decrease or another acceptable control can be put in place. The exemption to this practice is during the winter when temperatures are at or below freezing. During such conditions the operator will continue to reduce the speed at which the product is handled and/or load indoors. When weather conditions force us to load outdoor products indoors we reduce the chance of fugitive. Specifics for Outdoor Bulk Storage Piles can be found in Appendix A: *Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products*. This flow diagram covers wind speeds below and above 15 Knots (High Wind Event) and applies administrative controls to minimize the potential for any opacity or fugitive dust related concerns.

Chicago Arrow Terminal will continue look for ways to actively reduce the potential for fugitive dust through both administrative and engineering controls. We will continue to implement all procedures and practices set forth in our Fugitive Dust Control Plan (dated 11 June 2014).

G. Alternate Methods of Compliance - The BMPs and other methods of eliminating the potential of off-site fugitive dust emissions noted in previous sections are our intended alternate methods of compliance.

H. Responsible Personnel - Reference Section 1, paragraph H.

3. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 5: Wind Monitoring

- A. Regulation** - Part B: Bulk Solid Material Facilities / Section 3.0: Operating and Maintenance Practices / Subpart 5: Wind Monitoring. This section provides: “The Facility Owner or Operator shall install, operate and maintain, according to manufacturer’s specifications, a weather station or other permanent device to monitor and log wind speed and wind direction at the Facility at an unobstructed, unsheltered area, centrally positioned in relation to the storage piles, and at a minimum height of 10 meters above ground level, unless another height is appropriate pursuant to applicable U.S. Environmental Protection Agency protocols and guidance.”
- B. Variance Requested** - Chicago Arrow Terminal is requesting a variance in the form of an alternate method of measuring and recording wind speed and direction. This variance request is consistent with our variance request to modify the meaning of a “High Wind Event” at our facility from 15 MPH to 15 Knots (*See Variance Request 5*). In this variance, Chicago Arrow Terminal requests to utilize aviation-rated windsocks throughout the facility as visual indicators of wind speed rather than an electronic monitoring system. Aviation windsocks are rated to 15 knots (~17.3 MPH) and become fully extended at or above the stated wind speeds. This method of measuring wind speed is preferable for our operations, because it would allow any employee anywhere on the property to immediately assess the wind conditions and determine whether it is necessary to utilize heightened control measures. As soon as employees observe that the aviation-rated wind socks are fully extended, they would know that there is a “High Wind Event” which requires that additional dust control measures be taken. *See Appendix A: Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products*. By following this procedure, Chicago Arrow Terminal would not need to wait for two subsequent five minute periods with sustained winds over the limit. Therefore, under this variance request, Chicago Arrow Terminal agrees to adopt measures that are more stringent than the City’s regulations require. Furthermore, wind speed monitoring shall be logged at a minimum of once every 4 hours by a competent person, in accordance with *Appendix I: Supervisors Shift Log – Sample (Wind Speed Monitoring)*. If wind speeds are indicated above limits between the 4 hour readings, action must be taken immediately and an entry in the log shall be made consistent with the recording requirements. In addition, wind speeds above allowable limits shall be communicated as soon as safely possible via internal radio communications. Moreover, under our proposed procedures, once a High Wind Event is recorded, it will remain in effect for a minimum of one hour. After one hour, the wind may be checked to determine if a High Wind Event is still occurring. If the High Wind Event remains in effect, another hour must pass before the all clear can be sounded. If any windsock within the terminal indicates sustained winds ≥ 15 Knots, a “High Wind Event” will be set for the entire terminal. All windsocks in the terminal must indicate < 15 Knots in order to sound the all clear. This practice will shorten the response time for employing additional controls as prescribed in *Appendix A: Incremental Dust Control Procedures and Decision Tree for Bulk Products*.
- C. Quantity and Types of Materials Handled** - Reference Section 1, paragraph C.

- D. Impact of Requested Variance on the Surrounding Area** - A variance in the form of an alternate method of measuring and recording wind speed and direction for Chicago Arrow Terminal will not create a public nuisance or adversely impact the surrounding area. Reference Section 2, paragraph D.
- E. Variance Justification** – This variance request provides greater protection to the environment than the City’s regulations. Under the variance, Chicago Arrow Terminal would immediately implement additional dust control measures for a High Wind Event; the facility would not have to wait for two subsequent five-minute intervals. Furthermore, aviation-rated wind socks would be located throughout the facility, so employees will be able to immediately monitor wind conditions. Electronic wind monitors do not provide this same level of protection. Furthermore, the adherence to Part B: Bulk Solid Material Facilities / Section 3.0 Operating and Maintenance Practices / Subpart 5 Wind Monitoring, if combined with PM-10 monitors, is cost prohibitive. Chicago Arrow Terminal has consulted with vendors and found that the initial cost estimates for a combined PM 10 and Wind Monitoring unit are approximately \$250,000. Chicago Arrow Terminal intends to spend more than \$250,000 to implement additional controls that will further reduce the potential for fugitive dust, such as but not limited to:
- Complete paving of facility
 - Move Pig Iron storage further away from the perimeter of the facility
 - Install additional dust collectors for loading operations
 - Continue to refine the procedures in *Appendix A: Chicago Arrow Terminal – Incremental Control Procedures and Decision Tree*
- F. Proposed Methods to Achieve Compliance** - Chicago Arrow Terminal will utilize aviation-rated 15 Knot windsocks to monitor wind speeds and determine if a “High Wind Event” has been set. Wind speeds will be recorded by the supervisor on shift, at a minimum of once every four (4) hours. These readings will be recorded according to *Appendix I: Supervisors Shift Log – Sample (Wind Speed Monitoring)*. Whenever wind speeds exceed allowable limits, all personnel will be notified, via internal radio, and corrective actions will be taken in accordance with *Appendix A: Chicago Arrow Terminal – Incremental Control Procedures and Decision Tree for Bulk Products*. Once a “High Wind Event” is set, it will cover the entire terminal (outdoors) and be valid for a minimum of one (1) hour. After one (1) hour has elapsed, a reading may be taken to determine if the “High Wind Event” can be cancelled. If the “High Wind Event” continues, then another hour must elapse before the next reading is taken. Reference section 2, paragraph F.
- G. Alternate Methods of Compliance** - Chicago Arrow Terminal personnel are not only trained to adjust and/or stop operations as necessary when excess fugitive dust is noted, they are expected to make necessary changes to prevent a possible problem before it occurs. Chicago Arrow Terminal currently has four (4) windsocks located across the property that can be used to approximate wind speed and direction. Under the variance, Chicago Arrow Terminal will replace all windsocks with aviation-rated windsocks. Under the BMPs, Chicago Arrow Terminal will also replace all windsocks as recommended by the manufacturer to ensure integrity. As an additional level of control, a wind speed and direction monitor is also located in the superintendents office in order to reference real time wind data. This system, however, does not have the capability for data logging or indicating that a “High Wind Event” is occurring. Chicago Arrow Terminal installed this monitor as a BMP prior to the City’s implementation of Article II and the facility will continue to utilize it as a BMP. These controls combined with previously

stated best management practices are effective and will provide protection to the environment and surrounding areas.

H. Responsible Personnel - Reference Section 1, paragraph H.

4. Variance to Part B: BULK SOLID MATERIAL FACILITIES / Section 3.0: Operating and Maintenance Practices / Subpart 7: Transfer Points

- A. Regulation** - Part B: Bulk Solid Material Facilities / Section 3.0: Operating and Maintenance Practices / Subpart 7: Transfer Points. This section provides: “The Facility Owner or Operator shall maintain all material transfer points in compliance with one of the following measures in order to ensure compliance with the opacity limits set forth in 3.0 (2) (b):
- I. Total Enclosure;
 - II. Water spray system sufficient to control Fugitive Dust emissions during operations;
 - III. Vented to air pollution control equipment which is in full operation and permitted by the Commissioner; or
 - IV. Transfer only Moist Material and conduct such transfer in a manner that minimizes exposed drop.”
- B. Variance Requested** - Chicago Arrow Terminal is requesting a variance to Part B / Section 3.0 / Subpart 7 Transfer Points in the form of an exemption from all aspects of Subpart 7 Transfer Points. Given the nature of the products handled and the configuration of the Terminal, we cannot comply with Subpart 7. However, as set forth below, we are instituting alternative measures to control fugitive emissions from Transfer Points and to ensure that opacity remains within allowable limits. The dense nature of the products we handle combined with administrative and engineering controls will allow us to mitigate the possibility of fugitive dust without having to adhere to Subpart 7.
- C. Quantity and Types of Materials Handled** – Reference Section 1, paragraph C.
- D. Impact of Requested Variance on the Surrounding Area** - Reference Section 2, paragraph D.
- E. Variance Justification** - The adherence to Subpart 7 Transfer Points is neither technically feasible nor economically reasonable given the nature of operations and the products handled. The preliminary capital outlay estimates to adhere to Subpart 7 range from \$8-25 million, and the facility still could not comply. We address each option set forth in Subpart 7 and each Transfer Point as follows:
- I. **Total Enclosure**: It is neither economically reasonable nor technically feasible to totally enclose each Transfer Point. It is also unnecessary, as Chicago Arrow Terminal has implemented numerous BMPs to control fugitive dust at each Transfer Point.
 - a. **Barge Transfer Points** - We know of no operation that has an indoor barge loading and/or unloading facility. Such a facility would have to be of sufficient size to effectively handle 2 or more barges, plus equipment such as an excavator and crane as well as the barge tug. A facility would effectively have to build a boathouse that could cover 2 barges plus the tug, including appropriate vacuum and ventilation. This would require years of planning, permitting across multiple agencies and construction. The cost of such construction would cost well into the tens of millions of dollars. Total enclosure of the barge operation is not realistic.
 - b. **Rail Car Transfer Points** – The complete enclosure of rail car loading and unloading is also technically infeasible and economically unreasonable. At a minimum, we would need to construct a separate building complete with a new rail siding that would allow

us to place an entire unit train indoors. In order to utilize a smaller building that only encompasses a single rail car at a time would require the purchase or long term lease of a tender locomotive. Again this is something that would require substantial time to plan, permit, engineer and budget for capital and expenses. A construction project of this magnitude would result in a business that is not financially viable. Total enclosure of rail car transfer points is not realistic.

- c. **Truck Transfer Points** – All products stored indoors within the Chicago Arrow Terminal are currently loaded inside of Building F, which eliminates the potential for fugitive dust. Products stored outdoors (Pig Iron and Aggregates) can be safely loaded outdoors during periods of high humidity and low wind speeds. Chicago Arrow Terminal has implemented numerous BMPs. For example, during periods of high temperatures, low humidity and/or high winds, water will be applied to the face of the outdoor storage pile to control fugitive dust. If these conditions cannot be met, the product can be picked up with a front end loader and loaded in Building F. It is cost prohibitive and technically infeasible to construct an indoor facility to store the Pig Iron and Aggregates. It is estimated that it would cost \$5,000,000 to transfer our 111,000 square feet of outdoor storage indoors, which is a cost that cannot be added back into the storage costs of the commodities that are stored outdoors.

II. **Water spray systems sufficient to control fugitive dust emissions during operations** – Water spray systems are not technically feasible given the nature of the products that Chicago Arrow Terminal handles. Approximately 80% of the materials handled at Chicago Arrow Terminal are sensitive to exposure to water. The addition of water, or water-based products, to these products results in a safety hazard. If these products are introduced into the steel mills with residual moisture, the possibility of a catastrophic explosion exists when introduced to the high temperatures required to melt the products. The only commodities that can handle the addition of water are Pig Iron and Aggregates that are currently stored outdoors. These piles do not create fugitive dust from high wind conditions alone. We have implemented controls for the commodities stored outdoors, including water suppressant when weather conditions are appropriate. Chicago Arrow Terminal adds water to the face of the pile, as needed, prior to disturbing the pile. If subsequent dust is noted, the operator will cease operations. However, we cannot utilize chemical stabilizers given the nature and future use of the product. During the winter when temperatures are at or below freezing, the operator will continue to reduce the speed at which the product is handled and/or load indoors. Given the nature of these products, these storage piles do not need to be sprayed constantly to eliminate fugitive dust. During the winter months, a water spray system would become ineffective.

III. **Vented to air pollution control equipment which is in full operation and permitted by the Commissioner** – Installation of dust collection systems at Transfer Points, including barge, rail and truck, are not technically feasible or economically reasonable. For the same reasons that total enclosure is not feasible or reasonable, dust collection systems cannot be installed at the Transfer Points. The configuration of the barge loading/unloading area and the rail loading/unloading area do not allow for dust collection within any kind of reasonable framework. As stated, however, Chicago Arrow Terminal has implemented numerous BMPs to address operations at each Transfer Point.

IV. **Transfer only moist material and conduct such transfer in a manner that minimizes the exposed drop** - As stated, the application of water to 80% of our products is not possible; it would create a direct safety hazard. The Pig Iron and Aggregates that we handle can have water applied just prior to handling, but it is a solid piece of steel and will not hold moisture. Again this method will become ineffective during the winter. We cannot add chemical stabilizers to these products.

F. **Proposed Methods to Achieve Compliance** - Reference Section 2, paragraph F.

G. **Alternate Methods of Compliance** - The best management practices listed in paragraph f are in place and allow Chicago Arrow Terminal to operate within the spirit of Article II. Dated 13 March 2014.

H. **Responsible Personnel** - Reference Section 1, paragraph H.

5. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 4: High Wind Events

- A. Regulation** - Part D: Outdoor Storage of Bulk Solid Materials Other Than Coke or Coal / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 4: High Wind Events. This section provides: “Disturbance of outdoor Bulk Solid Material piles, including but not limited to outdoor loading, unloading, and any other Processing, shall be suspended during High Wind Conditions, as detected by wind monitoring required under 3.0 (5), unless alternate measures are implemented to effectively control dust in accordance with the approved Fugitive Dust Control Plan.”
- B. Variance Requested** - Chicago Arrow Terminal has submitted a comprehensive Fugitive Dust Control Plan to the City for approval. In the Plan, Chicago Arrow Terminal has set forth numerous BMPs that will be implemented in the event wind conditions exceed 15 knots. Chicago Arrow Terminal is requesting a variance to Part D / Section 5.0 / Subpart 4 High Wind Events. Chicago Arrow Terminal is seeking to modify “High Wind Event” at our facility from 15 Miles Per Hour (MPH) to 15 Nautical Miles Per Hour (Knots) or ~17.3 MPH. This variance request is consistent with Variance Request 3, above. As stated in Variance Request 2, Chicago Arrow Terminal seeks to utilize aviation-rated windscreens that are rated for 15 Knots. This variance request is necessary because aviation-rated windscreens are rated and measured by Knots rather than MPH. As stated, at wind speeds at or above 15 Knots (~17.3 MPH), the windscreens will be fully extended and provide an easily identifiable visual indication of a High Wind Event. Instead of waiting for two subsequent five minute intervals of wind speeds in excess of 15 MPH, Chicago Arrow Terminal will react to any sustained wind ≥ 15 knots in one of two ways: 1. We can postpone work until the wind subsides, or 2. We can utilize the control procedures listed in *Appendix A: Incremental Dust Control Procedures and Decision Tree for Bulk Products*. Consistent with section 5.4 of the regulations, the Terminal will not suspend outdoor operations when a “High Wind Event” occurs. Rather we will use additional controls to manage fugitive and comply with the Decision Tree set forth in Appendix A. Chicago Terminal believes that this method is more effective and allows employees to immediately make the decision to utilize increased control measures to reduce the potential for fugitive dust. As set forth below, we are instituting other measures to control fugitive emissions associated with High Wind Events. Upon approval of the Fugitive Dust Plan, this request for a Variance may no longer be required.
- C. Quantity and Types of Materials Handled** – Reference Section 1, paragraph C.
- D. Impact of Requested Variance on the Surrounding Area** - The exemption of Chicago Arrow Terminal from Subpart 4 High Wind Events would not create a public nuisance or adversely impact the surrounding area. Reference Section 2, paragraph D.
- E. Variance Justification** - By granting a variance to Chicago Arrow Terminal that recognizes a “High Wind Event” at our facility as 15 Knots will not impact on the surrounding area. The terminal already has four (4) windscreens located on site. The current windscreens will be replaced, with the approval of this variance, with windscreens aviation-rated for 15 Knots and placed in the vicinity of areas used for outdoor transfer, handling or processing of bulk materials. This change will increase the wind speed limit but result in increased controls being implemented earlier, thus reducing the potential of fugitive dust.

- F. **Proposed Methods to Achieve Compliance** - Reference Section 2, paragraph F.

- G. **Alternate Methods of Compliance** - The best management practices listed in paragraph f are in place and allow Chicago Arrow Terminal to operate within the spirit of Article II. Dated 13 March 2014.

- H. **Responsible Personnel** - Reference Section 1, paragraph H.

6. Variance to Part D: OUTDOOR STORAGE OF BULK SOLID MATERIALS OTHER THAN COKE OR COAL / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 5: Dust Suppressant System / paragraph (b)

- A. Regulation** - Part D: Outdoor Storage of Bulk Solid Materials Other Than Coke or Coal / Section 5.0: Outdoor Bulk Solid Material Storage / Subpart 5: Dust Suppressant System. This section provides: “The Facility Owner or Operator must apply Chemical Stabilizers and/or maintain and operate water spray bars, a misting system, water spray system and/or water trucks to prevent Fugitive Dust emissions in violation of 3.0 (2) in accordance with the following requirements:
- a. Except pursuant to 5.0 (5) (c) below, the dust suppressant system shall be operable and able to dispense water, water-based solutions, and/or Chemical Stabilizers at all times unless all bulk storage material piles are covered.
 - b. When the temperature falls below 32 degrees Fahrenheit, the Facility must use Chemical Stabilizers and/or water heating systems to ensure that dust suppression continues.
 - c. If any part of the dust suppressant system is undergoing maintenance or otherwise becomes inoperable, the Facility Owner or Operator must suspend disturbance of Bulk Material piles that would be controlled by the inoperable portion of the dust suppressant system until such time as the system becomes operable again.”
- B. Variance Requested** - Chicago Arrow Terminal is requesting a variance to Part D / Section 5.0 / Subpart 5: Dust Suppressant System / paragraph (b) in the form of an exemption. Chicago Arrow Terminal primarily handles products that are used in the steel and alloy business. Pig Iron, stored outdoors, is one of the few items that can safely handle the addition of water. It cannot handle the addition of chemical additives which can compromise the product and/or create a health issue when burned inside of a steel mill. Beyond this safety issue the dense nature of the products handled combined with administrative and engineering controls allow us mitigate the possibility of fugitive dust without having to adhere to Subpart 5 / paragraph (b).
- C. Quantity and Types of Materials Handled** - Reference Section 1, paragraph C.
- D. Impact of Requested Variance on the Surrounding Area** - The exemption of Chicago Arrow Terminal from Subpart 5: Dust Suppressant System / paragraph (b) would not create a public nuisance or adversely impact the surrounding area. Reference Section 2, paragraph D.
- E. Variance Justification** - The adherence to Part D: Outdoor Storage of Bulk Solid Materials Other Than Coke or Coal / Section 5.0 Outdoor Bulk Solid Material Storage / Subpart 5 Dust Suppressant System is not feasible. Pig Iron and Aggregates, which are stored outdoors, are the only items that can handle the addition of water as a suppressant. During the winter months the application of water as a suppressant would create a potential safety hazard to our operators and third party truck drivers coming on site due to the creation of ice and subsequent reduction in traction. Chemical additives cannot be used for items destined for steel mills, as it can compromise the product and create health hazards when introduced to the mill. Any outdoor water or water-based system would require major changes to our infrastructure, including diverting water to the city water district, building a boiler/steam room in in order to heat the

pipes during the winter and applying for new permits in order to handle water potentially contaminated with chemicals to reduce the freezing point. This boiler/steam room would have to be powered and run 24/7 throughout the winter creating noise pollution combined with increased consumption of fossil fuels.

- F. **Proposed Methods to Achieve Compliance** – Chicago Arrow Terminal will utilize a water truck to spray outdoor storage piles in order to minimize fugitive dust during periods of warmer temperatures. Reference Section 2, paragraph F.

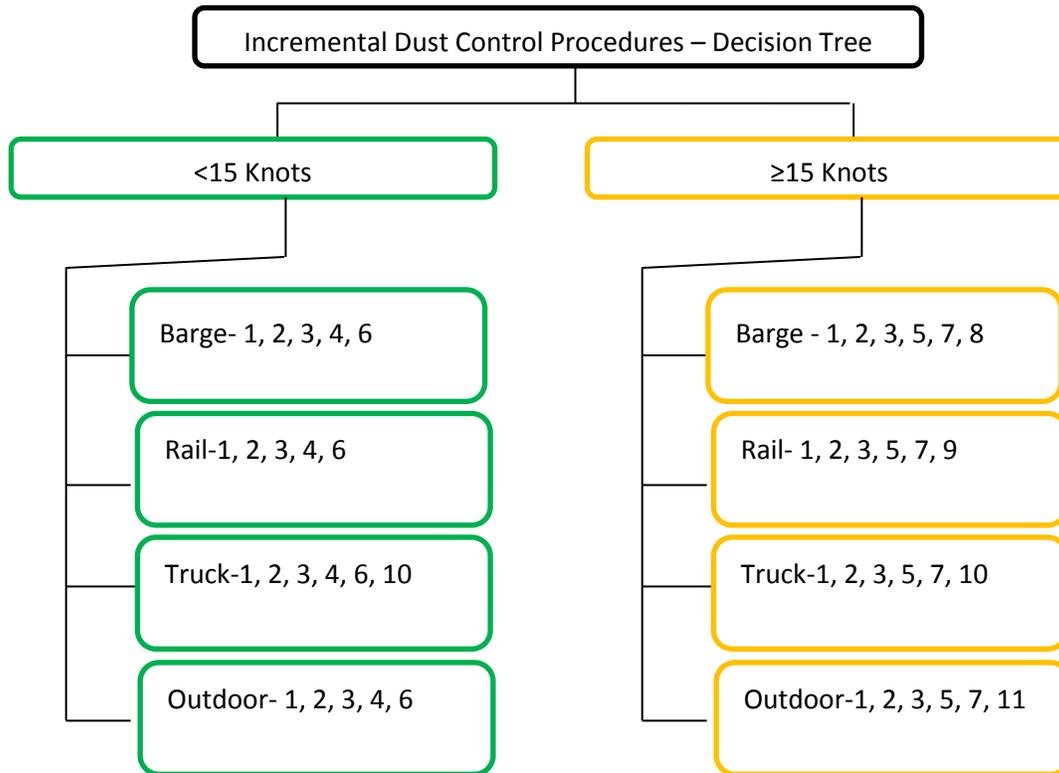
- G. **Alternate Methods and Variance Request** - The best management practices listed in paragraph f are in place and allow Chicago Arrow Terminal to operate within the spirit of Article II. Dated 13 March 2014.

- H. **Responsible Personnel** - Reference Section 1, paragraph H.

Appendix A: Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products

Four bulk product categories

1. Barge Bulk Loading or Unloading (Barge)
2. Rail Car Bulk Loading or Unloading (Rail)
3. Truck Bulk Loading or Unloading (Truck)
4. Outdoor storage piles; Pig Iron, Aggregates and other non-moisture sensitive products. (Outdoor)



Control Procedures

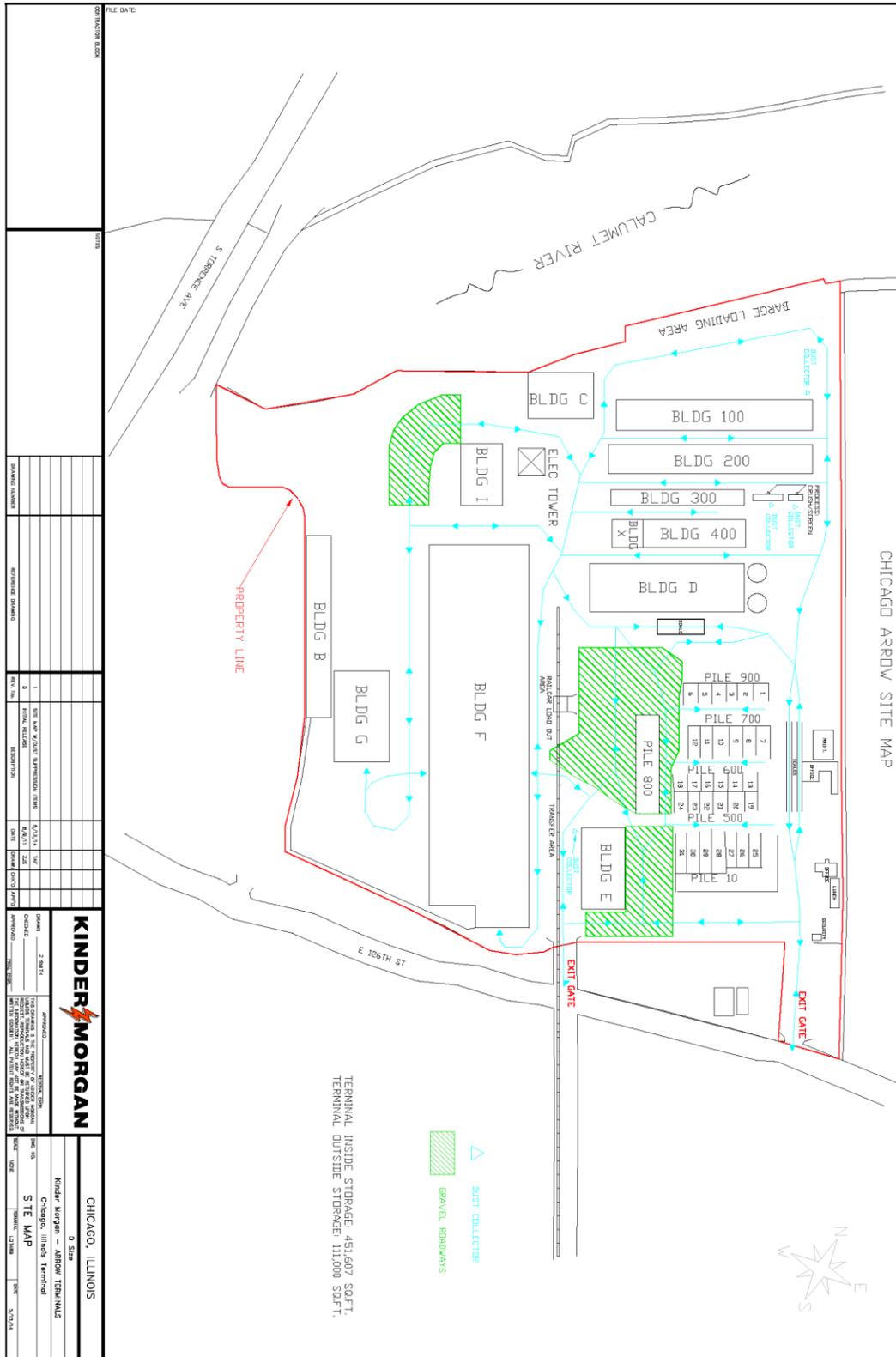
1. Follow Best Management Practices
2. Utilize “You Can Stop” when visible emissions and/or opacity are in question.
3. Any transfer point will cease operation if opacity or visible emission limits are reached and/or in question, until corrective actions are taken.
4. Apply water to non-moisture sensitive products (Ex. Pig iron and aggregates) as needed and weather (temperature) permitting.
5. Apply water to non-moisture sensitive products (Ex. Pig iron and aggregates), weather (temperature) permitting.
6. Personnel on call who can measure opacity and/or visible emissions; according to EPA Method 9 and/or 22.
7. Personnel on site who can measure opacity and/or visible emissions; according to EPA Method 9 and/or 22.
8. Limit the number of barge lids removed from a covered barge at a time, as follows:
 - a. Fiberglass Stacking Barge Lids – 3.
 - b. Metal Rolling/Sliding Barge Lids - 3
 - c. Metal Stacking Barge Lids - 5.
9. Open and load or unload rail cars through one access point at a time.

10. Load outbound trucks (from indoor storage) indoors.
11. Load outbound trucks (from indoor or outdoor storage) indoors.

Appendix B: Storage Calculations

Chicago Arrow Terminal												
2926 126th Street												
Chicago, IL 60633												
Storage Capacity Calculations:												
Inside Storage												
Storage Locations	Length, ft	Width, ft.	Total Sq. Feet Area	Approximate Height	Maximum Heights	Total # of Bays or Bins	Maximum Density, lb/cu feet	Normal Storage Tons/ Bin	Total Normal Storage, Tons	Total Area, Cubic feet	Maximum Average Storage At 20 feet	Comments
Building B	401	53	21153	N/A	30	0	N/A	0	0	75360	10550	Plug material not bulk
Building C (decide Coal Bldg)	120	100	12000	20	30	12	280	800	9600	471000	65940	
Building D (Clearspan)	300	100	30000	20	30	24	280	833	19992	471000	65940	
Building E (Packaging Building)	180	80	14400	N/A	N/A	0	N/A	0	0	0	0	No Storage only Packaging
Building F (90 Bins)	840	200	168000	20	30	90	280	1500	135000	3692640	516970	
Building G	200	100	20000	20	30	18	280	740	13320	209333	29307	
Building H (Bagging Room)	95	64	6080	N/A	N/A	0	N/A	0	0	0	0	No Storage only Packaging
Building I	120	100	12000	20	30	10	280	800	8000	75360	10550	
Building X	75	60	4500	N/A	N/A	0	N/A	0	0	0	0	No Bulk Material in Building
100 Bin Building	285	64	18240	20	30	32	280	570	18240	425078	59511	
200 Bin Building	400	64	25600	20	30	40	280	640	25600	837333	117227	
300 Small Lot Bin Building	265	30	7950	20	30	34	280	200	6800	367511	51452	
400 Bin Building	181	64	11584	20	30	18	280	644	11592	171449	24003	
			Total Square Feet					Total Inside Storage	248144		885309	
Outside Storage												
Storage Locations	Length, ft	Width, ft.	Total Sq. Feet Area	Approximate Height	Maximum Heights	Total # of Bays or Bins	Maximum Density, lb/cu feet	Normal Storage Tons/ Bin	Total Normal Storage, Tons			Comments
500 Pads	200	100	20000	20	30	7	280	1429	10003	209333	29307	Pig Iron
600 Pads	200	100	20000	20	30	12	280	1111	13332	209333	29307	Pig Iron
700 Pads	200	100	20000	20	30	14	280	952	13328	209333	29307	Pig Iron
800 Pads	220	50	11000	20	30	1	120	13200	13200	253293	15198	Aggregate Storage
900 Pads	200	100	20000	20	30	8	280	1250	10000	209333	29307	Pig Iron
10 Pads	200	100	20000	20	30	1	280	1250	1250	209333	29307	Pig Iron
			Total Square Feet					Total Outside Storage, Tons	61113		161731	

Appendix C: Chicago Arrow Terminal –General Facility Site Arrangement Diagram



Appendix E: Driver Pick-Up Ticket

**KINDER MORGAN
FERRO TERMINALS**

DRIVER PICK-UP TICKET

Pick-Up # _____

Consignee Name: _____

Consignee City: _____ State: _____

Pick-Up Date: _____

Delivery Date: _____

Trucking Co.: _____

Brokered By: _____
(If applicable)

Truck #: _____ Trailer #: _____

Container # (If applicable): _____

Weight Desired: _____

Type of Truck: Van: _____ FB _____

Framed Dump _____

Frameless Dump _____

Control-Flow Dump _____

Driver Has KM Safety Sticker _____ Year _____

Driver Name (Printed) _____

By initialing below, I insure that truck is capable of holding material without leak and to tarp and/or secure load before leaving terminal.

Initials

ATC 21

Appendix F: Dust Collector Daily Inspection Log

Building E Dust Collector #1 Packaging Operation: Daily Inspection Log

Manufacturer: Camfil Farr

Model #:

Serial #:

Notify Maintenance any time system does not check OK or there are visible emissions present

Always run system in automatic blow down mode NOT continuous

Normal Differential Pressure: 1-6" w.c.

Normal Air Pressure 90-120 PSIG

Check Mark each inspection step Note: If the system is not used write N/A in the Date Box

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure (.5-6)	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure (100)	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

West Crusher Dust Collector #2 Daily Operations Inspection Log

Manufacturer: Camfil Farr

Model #:

Serial #:

Notify Maintenance any time system does not check OK or there are visible emissions present

Always run system in automatic blow down mode NOT continuous

Normal Differential Pressure: 1-6" w.c.

Normal Air Pressure 90-120 PSIG

Check Mark each Inspection step Note: If the system is not used write N/A in the Date Box

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure (.5-6)	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure (100)	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

EAST CRUSHER DUST Collector #3: Daily Operations Inspection Log

Manufacturer: Camfil Farr

Model #:

Serial #:

Notify Maintenance any time system does not check OK or there are visible emissions present

Always run system in automatic blow down mode NOT continuous

Normal Differential Pressure: 1-5" w.c.

Normal Air Pressure 90-120 PSIG

Check Mark each inspection step Note: If the system is not used write N/A in the Date Box

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure (.5-5)	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure (100)	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

Date	Mon	Tues	Wed	Thur	Fri
Inspector Initials					
Daily					
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y/N	Y/N	Y/N	Y/N	Y/N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y/N	Y/N	Y/N	Y/N	Y/N

Building H Dust Collector #4 Bagging Operation: Daily Inspection Log

Manufacturer:

Model #:

Serial #:

Notify Maintenance any time system does not check OK or there are visible emissions present

Always run system in automatic blow down mode NOT continuous

Normal Differential Pressure: 1-6" w.c.

Normal Air Pressure 90-120 PSIG

Check Mark each inspection step Note: If the system is not used write N/A in the Date Box

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure (.5-6)	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure (100)	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

Date					
Inspector Initials					
Daily	Mon	Tues	Wed	Thur	Fri
Check if Waste Drum is Full					
Was Waste Drum Changed?	Y / N	Y / N	Y / N	Y / N	Y / N
Check that Hopper is Empty					
Turn on Air Compressor System					
Turn on Dust Collector System					
Listen and look for Abnormal Operation					
Record Differential Pressure	"w.c.	"w.c.	"w.c.	"w.c.	"w.c.
Record Compressed Air Pressure	PSIG	PSIG	PSIG	PSIG	PSIG
Are there Visible Stack Emissions?	Y / N	Y / N	Y / N	Y / N	Y / N

Appendix G: Method 9 Observation Record

EPA METHOD 9 VISIBLE EMISSIONS OBSERVATION FORM

CLIENT _____ **W.O.#** _____
SOURCE _____ **DATE** _____
SOURCE ADDRESS _____

Control Device, Process Equipment, Operating Mode: _____
Emission Point Description: _____
 Source Height: _____ ft Height Relative to Observer: _____ ft
 Distance from Observer: _____ ft Direction from Observer: Start: _____ End: _____
 Plume Type: (Continuous, Fugitive, or Intermittent) Start: _____ End: _____
 Description of Emission: (Coning, Fanning, Looping, Lofting, or Fumigating) Start: _____ End: _____
 Plume Color: Start: _____ End: _____
 Water Droplets Present: (Y/N) _____ Plume: (Attached, Detached, or N/A) _____
 Plume Background Description: Start: _____ End: _____ Background Color: _____
 Point in Plume Where Opacity was Determined: _____ from stack exit
 Sky Conditions: Start: _____ End: _____ Ambient Temperature: Start: _____ F° End: _____ F°
 Wind Direction: Start: _____ End: _____ Wind Speed: Start: _____ mph End: _____ mph
 Relative Humidity: Start: _____ End: _____ Wet Bulb Temp: Start: _____ F° End: _____ F°

Min.	0	15	30	45	Avg	Min.	0	15	30	45	Avg
0						30					
1						31					
2						32					
3						33					
4						34					
5						35					
6						36					
7						37					
8						38					
9						39					
10						40					
11						41					
12						42					
13						43					
14						44					
15						45					
16						46					
17						47					
18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

SOURCE SKETCH LAYOUT

Emission Point: North Arrow:
 Plume: Sun:
 Wind: Sun Direction Line: _____
 140°

Highest six minute average: _____
 A six minute average greater than 20% opacity occurred _____ times.
 A six minute average greater than 40% opacity occurred _____ times.
 Opacity Time: Start: _____ End: _____
 60-Minute Average: _____
 Observer's Name: _____
 Certified By: _____
 Certification #: _____ Exp. Date: _____
 Signature: _____ Date: _____

Appendix H: Method 22 Observation Record

FUGITIVE OR SMOKE EMISSION INSPECTION OUTSIDE LOCATION – METHOD 22				
Company		Observer		
Location		Affiliation		
Company Rep.		Date		
Sky Conditions		Wind Direction		
Precipitation		Wind Speed		
Industry		Process Unit		
<p>Sketch Process Unit: Indicate observer position relative to source; indicate potential emission points and/or actual emission points.</p> <div style="display: flex; justify-content: space-around; font-size: small;"> Location 1 Location 2 Location 3 Location 4 Location 5 </div>				
OBSERVATIONS				
Location	Clock Time	Observation Period Duration (min:sec)	Actual Emission Time (min:sec)	
Location 1: Start				
Location 1: Stop				
Location 2: Start				
Location 2: Stop				
Location 3: Start				
Location 3: Stop				
Location 4: Start				
Location 4: Stop				
Location 5: Start				
Location 5: Stop				
		Total Sample Time: Total Emission Time: Emission Frequency: (Total Emission Time/Total Sample Time) x 100%		

Appendix I: Supervisors Shift Log – Sample (Wind Speed Monitoring)



Chicago Arrow Terminal
2926 E. 126th St
Chicago IL 60633

Shift Report

Supervisor _____
Shift 1st
Date _____

SAFETY

Safety / Job Briefing: _____

JHA's / Daily Safety Contacts :

- 1) _____

- 2) _____

- 3) _____

QUALITY

Were boxing scales tested, charted, and in control?
YES _____ NO _____

TIME	WEIGHT	WEIGHT	WEIGHT
AM			
PM			

Audits:

Outbound Loads (Check at least 2-Outbound Loads per shift: Bulk or Package)

Dump Trucks	1		2		3	
NAME						
Location						
B/L Number						
Procedure followed	Yes	No	Yes	No	Yes	No

Details _____

Package Trucks	1		2		3	
NAME						
Location						
B/L Number						
Procedure followed	Yes	No	Yes	No	Yes	No

Details _____

In House Movements (Check at least 2-of each per shift)

Dump Trucks	1		2		3	
NAME						
W/O # / BARGE #						
Procedure Followed	Yes	No	Yes	No	Yes	No

Transfer Sheets	1		2		3	
NAME						
? Bin to ? Bin						
Procedure Followed	Yes	No	Yes	No	Yes	No

SHIFT AWARENESS

Bin Moves Completed

	1	2	3	4	5	6	7	8	9
From Bin									
into Bin									

Processing (List all Jaw & Box Screen Orders being worked during shift)

	1		2		3		4	
W/O #								
Material								
Amount								
Screen Sizes								

Package Orders (List all Package Orders being worked during shift)

	1	2	3	4	5	6	7	8
W/O #								
Customer								
Material								
Amount								

Bagging Orders (List all Bagging Orders being worked during shift)

	1	2	3	4
W/O#				
Hopper				
Material				
Amount				

Barges Worked (List all Barges worked during shift)

	1	2	3	4
Barge #				
Customer				
Product				

Rail Cars (List all Rail Cars being worked during shift)

	1	2	3	4
Rail Car #				
Type of Car				
Material				
Amount				

SHIFT REMINDERS

- 1) Are Building's Secured (Alarm's Set)?

Yes	No
-----	----

 Comments: _____

- 2) Are All Bin Doors Secured?

Yes	No
-----	----

 Comments: _____

- 3) Have I Checked a Pre-Shift Equipment Report Today?

Yes	No
-----	----

 Comments: _____

- 4) Are All Building's and Gates Closed / Locked?

Yes	No
-----	----

 Comments: _____

- 5) Any visable leaks on fuel tanks or containment areas?

Yes	No
-----	----

 Comments: _____

- 6) Has All Dock Rigging Been Returned to Storage?

Yes	No
-----	----

 Comments: _____

- 7) Did I Check the Condition/Take Pictures of Barge Today?

Yes	No
-----	----

 Comments: _____

- 8) Has De-Roller & Blue Flag Been Removed?

Yes	No
-----	----

 Comments: _____

- 9) Are All Tools I Handed Out Returned?

Yes	No
-----	----

 Comments: _____

- 10) Any Weather Issues Today? What?

Yes	No
-----	----

 Comments: _____

List Clean Up Areas That Need Attention: _____

General Comments: _____

Supervisor Wind Speed Monitoring

	Time	Elapsed Time	Wind Speed	Wind Direction	In Limits (Y/N)	(N) Corrective Actions Taken
Pre Shift		0+00				
Mid Shift 1		4+00				
Mid Shift 2		8+00				
End Shift		12+00				

Appendix K: Quarterly Fugitive Dust / Opacity Testing

 <p>Chicago Arrow Terminal 2926 E. 126th St Chicago IL 60633</p> <p style="text-align: center;">Quarterly Fugitive Dust / Opacity Testing</p>											
Fugitive Dust (Y/N)											
Quarter (1/2/3/4)	Date	Employee Name	Employee ID #	South Entrance	East Fence Line	West Fence Line					
1											
2											
3											
4											
Percent (%) Opacity / Method 9											
Quarter (1/2/3/4)	Date	Employee Name	Employee ID #	Roads	Parking	Storage Piles	Barge Operations	Rail Operations	Truck Operations	Processing Operations	
1											
2											
3											
4											