TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit 22-3556
Air Discharge Permit Application CO-1061

Issued: December 21, 2022

Kalama Export Company, LLC

SWCAA ID – 1124

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Air Quality Engineer I
Southwest Clean Air Agency

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ABBREVIATIONS

List of Acronyms

ADP .... Air Discharge Permit

AP-42 .... Compilation of Emission Factors, AP-42, 5th Edition, Volume 1, Stationary Point and Area Sources – published by EPA

ASIL............. Acceptable Source Impact Level

BACT........... Best available control technology

BART .... Best Available Retrofit Technology

CAM .... Compliance Assurance Monitoring

CAS#............ Chemical Abstracts Service registry number

CFR.............. Code of Federal Regulations

EPA.............. U.S. Environmental Protection Agency

EU .... Emission Unit

LAER........... Lowest achievable emission rate

mfr................ Manufacturer

NESHAP...... National Emission Standards for Hazardous Air Pollutants

NOV............. Notice of Violation/

NSPS............ New Source Performance Standard

PSD.............. Prevention of Significant Deterioration

RACT........... Reasonably Available Control Technology

RCW .... Revised Code of Washington

SCC.............. Source Classification Code

SDS .... Safety Data Sheet

SQER .... Small Quantity Emission Rate listed in WAC 173-460

Standard .... Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)

SWCAA....... Southwest Clean Air Agency

T-BACT....... Best Available Control Technology for toxic air pollutants

WAC .... Washington Administrative Code

List of Units and Measures

µg/m³............ Micrograms per cubic meter

µm .... Micrometer (10^{-6} meter)

acfm .... Actual cubic foot per minute

dscfm............ Dry Standard cubic foot per minute

g/dscm.......... Grams per dry Standard cubic meter

gpm .... Gallon per minute

gr/dscf .... Grain per dry standard cubic foot

hp .... Horsepower

hp-hr............. Horsepower-hour

kW................ Kilowatt

MMBtu ....Million British thermal unit

MMcf............Million cubic feet

ppm ....Parts per million

ppmv.............Parts per million by volume

ppmvd...........Parts per million by volume, dry

ppmw............Parts per million by weight

psig ....Pounds per square inch, gauge

rpm................Revolution per minute

scfm ....Standard cubic foot per minute

tph.................Ton per hour

tpy.................Tons per year

List of Chemical Symbols, Formulas, and Pollutants

HAP .... Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act

NO_2 .... Nitrogen dioxide

NO_x .... Nitrogen oxides

O_2 .... Oxygen

O_3 .... Ozone

PM............... Particulate Matter with an aerodynamic diameter 100 µm or less

PM_{10}............. PM with an aerodynamic diameter 10 µm or less

$PM_{2.5}$ .... PM with an aerodynamic diameter 2.5 µm or less

TAP.............. Toxic air pollutant pursuant to Chapter 173-460 WAC

TSP .... Total Suspended Particulate

VOC............. Volatile organic compound

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name:	Kalama Export Company, LLC
Applicant Address:	2211 North Hendrickson Drive, Kalama, WA 98625
Facility Name:	Kalama Export Company, LLC
Facility Address:	2211 North Hendrickson Drive, Kalama, WA 98625
SWCAA Identification:	1124
Contact Person:	Mike Leeper, Safety Manager
Primary Process:	Grain Terminal Elevator
SIC/NAICS Code:	5153: SIC Grain and Field Beans (agents and brokers) 425120: Wholesale Trade Agents and Brokers
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

Kalama Export Company (Kalama Export) is an export grain terminal at the Port of Kalama. The facility has a maximum throughput of 502,333,333 bu/yr (15,070,000 tpy) based on the number of ships that can be loaded in a year. Grains accepted by the facility include wheat, corn, soybeans, barley, and milo. Grain is received by rail and barge, screened, cleaned as applicable, stored, and loaded into ocean-going ships. Less frequently, grain may be loaded into trucks.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit (ADP) application number CO-1061 dated October 28, 2022. Kalama Export Company LLC submitted ADP application CO-1061 requesting the following:

- Approval to operate an existing housekeeping Vacuum Collector System

ADP 22-3556 will supersede ADP 18-3290 in its entirety.

4. PROCESS DESCRIPTION

4.a. General Facility. Kalama Export is a marine export grain terminal that receives grain – wheat (60 lb/bu), corn (56 lb/bu), soybeans (60 lb/bu), barley (56 lb/bu), and milo/sorghum (56 lb/bu) – by railcar and barge, and then loads the grain into ocean-going ships for export. A small percentage of the grain may be shipped out via trucks. The facility originally included two railcar receiving pits, two dust load out systems, one screenings load out system, storage and shipping silos, a weigh house and laboratory, a barge unloading system, four ship loading spouts, various conveyors, and several baghouses and bin vents for dust control. In 2001, an expansion added four baghouses, two bin vent filters, two dust load out stations, additional grain storage silos, a wheat cleaning system, and a new barge sampling, weighing, and distribution system. In a previous permitting action in 2010, an additional wheat cleaner, eight baghouses and bin vents for dust control, eight shipping silos, and various new conveyors and other equipment were permitted, and the total storage capacity of the facility increased 4,860,000 bu. The stated storage capacity does take into account the U.S. Department of Agriculture (USDA) "pack factor."

4.b. Railcar Receiving. Grain is delivered by unit trains to the rail receiving area; one unit train is typically 110 unit cars, with each car having a capacity of 4,000–5,150 ft^3. The rail receiving area is enclosed by two walls and a roof and is roughly two railcars in length and extends across two parallel tracks. Each track has a receiving pit with an exposed area of approximately 204 ft^2 (51 ft by 4 ft). The rail receiving pits have the capacity to receive 50,000 bu/hr (1,500 tph[1]), each. As the railcars move into the rail receiving area, the railcar hoppers (3–6 hoppers per railcar) are opened manually by a powered wrench and the grain flows into the pit. When the hopper is empty, the hopper gate is closed and the incoming railcar hopper gate is opened. The speed of the railcars is adjusted so that the railcar is empty by the time it exits the receiving area. The grain flows through grates into the receiving pit, which is aspirated to baghouses DC-1 and DC-2. As grain initially fills the pit, the free fall distance from the bottom of the hopper to the top of the pile decreases until the top of the pile intersects the grain flowing from the railcar, resulting in choked flow (Fig. 1). Choked flow reduces the amount of dust created. In addition, as the pile height increases, the exposed area of the grate decreases, thus increasing the face velocity across the exposed area of the grate. The increased face velocity provides additional fugitive dust control, such as the dust created as the grain flows down the sides of the pile. Aspiration air is continuously drawn during the entire unloading process. The unloading rate of the pit conveyors is adjusted to maintain choked flow between the railcar and the grain pile in the pit. After the grain is conveyed from the rail receiving pits, mineral oil is sprayed on to the grain as a dust suppressant. The mineral oil is sprayed onto the grain from above and below the grain stream as the grain is transferred from the receiving belt to the transfer belt. Approximately ⅔ of the oil is applied at the rail receiving belts (belts D-6 or D-7) prior to cleaning, with the remaining portion of the oil applied to the grain at the shipping belt prior to shipping. In most cases, the oil is applied prior to cleaning. The minimum oil rate is 3 qt/1,000 bu, although higher application rates are often used, the USDA has established a maximum of 0.02% (~7 qt/1,000 bu) application rate for grain

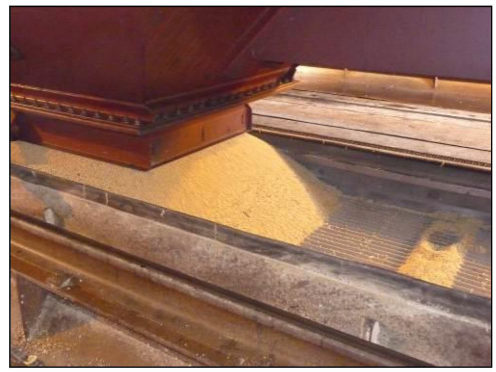

Figure 1. Railcar receiving choke flow

[1] Since the conversion from volume (bu) to mass (lb or ton) varies according to grain type, unless otherwise noted, wheat is used for conversions of this type with an assumed bulk density of 60 lb/bu.

(21 CFR 172.878). There is a small quantity of grain that is unoiled depending upon the customer requirements, but in most cases the majority of the grain is oiled. A literature review has been performed as part of previous permitting actions to establish dust suppression efficiency for the mineral oil. As a result, SWCAA has established the oil dust suppression efficiency to be 70% for corn[2], 73% for wheat[3], 60% for soybeans[4], 65% for milo and barley[5]; the oil control efficiency for other grains has not been established.

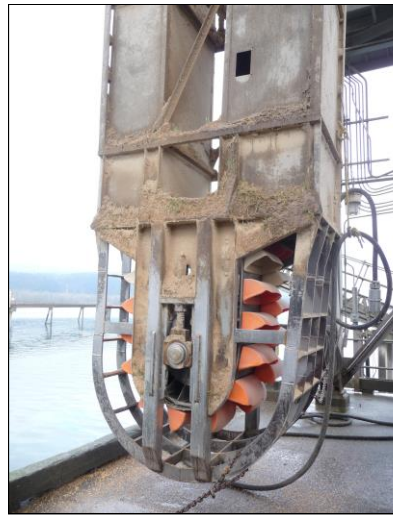

Figure 2.Marine Leg

4.c. Barge Receiving. Grain arriving by Columbia River barge is unloaded using a marine leg. The marine leg is a split casing bucket elevator attached to an arm that extends the leg into the barge (Fig. 2). The barge has a center sump cap that covers an opening approximately 12' by 12'. The cap is removed, and the marine leg is inserted into the hold. The marine leg buckets dig into the grain and elevate it out of the barge and once the marine leg reaches the bottom of the hold, screw augers in the base of the barge move the grain towards the center of the barge to the marine leg. The leg is aspirated to baghouse DC-11 at 7,700 acfm. Grain can be unloaded at 30,000 bu/hr (900 tph), maximum rate. Kalama Export will be attaching tarps to the deck of the barge to narrow the opening between the sides of the marine leg and the sump cap during unloading. After the marine leg is placed into the sump cap opening and the tarps are fastened over the sump opening, the buckets begin to dig into the barge hold which creates fugitive emissions due to mechanical action of the buckets on the grain. As the marine leg digs deeper into the hold, a conical airspace is hollowed out within the hold with the sides of the pile at the angle of repose for the particular grain being unloaded. Grain rolling down the sides of the pile towards the marine leg may also create PM emissions.

Approximately ⅔ of the mineral oil is applied at the barge receiving belts (belts B-16 or B-17) prior to cleaning, with the remaining portion of the oil applied to the grain at the

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2 Experimental design applied mineral oil at 0.02% (approximately 7 qt/1,000 bu) and achieved a dust control efficiency of 69.7%, which was rounded to 70% (F. S. Lai, et al., *Examining the Use of Additives to Control Grain Dust*, Final Report to the National Grain and Feed Association, Washington, DC, June 1982).

3 Control efficiencies of 78% and 68% were achieved during two tests performed at two separate facilities. These values were averaged to 73% (*Emission Factors for Grain Elevators*, Final Report to National Grain and Feed Foundation, Midwest Research Institute (MRI), Kansas City, Missouri, January, 1997).

4 In the above MRI reference above, the tests using mineral oil on soybeans were inconclusive. However, the reference stated that "oil addition systems can typically achieve control efficiencies between 60% and 80%." Lacking any better information, SWCAA assumes that the control effectiveness of mineral oil on soybeans is a minimum of 60%.

5 In two tests performed with milo at a single facility, control efficiencies of 61% and 65% were determined at an oil application rate of 0.16 qt/minute. SWCAA and Kalama Export have agreed upon a value of 65% control efficiency for both milo and barley based upon this test (*Tests of Oil Suppression of PM-10 at Grain Elevators*, Test Report, MRI, Kansas City, MO, November 1994).

shipping belts (belts B-1, B-2, or B-3) prior to shipping. Similar to the configuration of the mineral oil application system for rail receiving, mineral oil is sprayed onto the grain from the top and the bottom of the grain stream as the grain transfers between the receiving belt and the transfer belt.

4.d. Internal Grain Handling, Weigh House, Sampling, and Distribution. As a general practice, all grain is oiled prior to distribution to weigh belts at the scale house. PM emissions from the weighing process are controlled by baghouses DC-4 and DC-5. The barge weighing, sampling, and distribution system is controlled by baghouse DC-15. Mineral oil may also be applied at the weigh house prior to storage or shipping (belts B-16 and B-17).

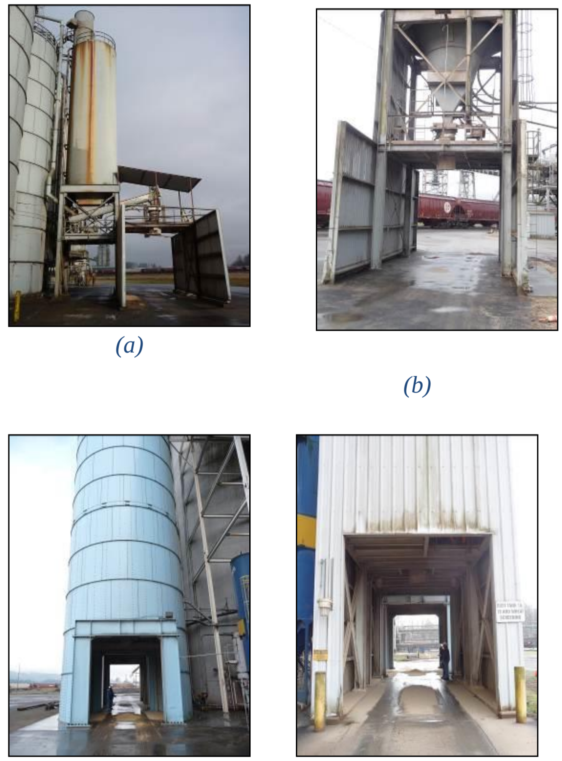
4.e. Grain Cleaning. The facility has the ability to clean wheat, corn, and soybeans. This process removes debris or foreign material, large and/or small particles that are unwanted, and light or low density material. All grain has been oiled prior to cleaning. The older wheat cleaning system can process 20,000 bu/hr (600 tph); PM emissions from this system are controlled by baghouses DC-15, DC-17, and DC-20. The system is composed of two Cimbria Mega 168 cleaners. Six Cimbria Indented Cylinder Separator cleaners further clean the discards from the other cleaners (approximately 10% of the volume). The wheat cleaning system can process 80,000 bu/hr (2,400 tph). The system includes eight Mega 168 cleaners and 12 Cimbria Indented Cylinder Separator cleaners. Grain can be weighed, cleaned, and then returned to the scale house for re-weighing.

4.f. Dust and Screenings Loadout. Screenings and dust from the cleaning systems and baghouse catches are collected for off-site purposes via four truck loadout stations. All of the truck loadouts are equipped with aspirated, telescoping Midwest spouts. The truck loadout near the scale house is enclosed by two walls but does not contain a roof (Fig. 3a). This loadout location is equipped with a Midwest MC-22 aspirated retractable bulk loading spout and is controlled by Bin Vent DC-12. The dust tank loadout near the shipping belts is enclosed by two walls (14' high by 35' wide) and a roof (Fig 3b); the dust tank is immediately above the loadout and is controlled by baghouse DC-13. The screenings loadouts near the existing cleaning system are housed in two structures. One is a cylindrical tank, where the baghouse catch for baghouses DC-14, DC-15, and DC-17 is stored (Fig. 3c), and the other is a square building (Figs. 3d); both structures have a drive-through, are enclosed by two walls and a roof, and are controlled by Bin Vent Filters DC-18 and DC-19. Dust is loaded into trucks using a Paragon series Midwest model MC22-EV-OV aspirated, retractable bulk loading spout.

4.g. Grain Storage and Transfer. The facility was originally constructed with vertically oriented, Battery 1 storage bins (21 silos, numbered 311 through 434), Battery 2 storage bins (17 silos, numbered 111 through 233), and Battery 2 shipping bins (numbered 001 through 004); some storage bins (e.g. 111 and 131) can also be used as shipping bins. These silos have a combined storage capacity of 2,340,000 bu, which includes the storage capacity of the interstitial spaces. In the 2000–2001 expansion (OA 00-2325), the total grain storage capacity at the facility was increased by 1,500,000 bu to 3,840,000 bu with the addition of 15 new storage silos and shipping bins (500/600 Series, numbered 511 through 631). In 2010, the permitting action included an increase in the storage capacity by 800,000 bu to

4,640,000 bu total with the addition of eight more shipping bins (SB Series, numbered SB11 through SB33).

Grain is delivered to the silos through several turnheads that distribute the grain to individual silos. The turnheads are completely enclosed. Silos are controlled both at the top of the bin during loading and at the bottom of the bin during conveying. PM emissions from Batteries 1 and 2 are controlled by baghouses DC-6 and DC-7 at the top and DC-8 at the bottom. The silos (500/600 Series) are controlled by baghouse DC-16 at the top and DC-14 at the bottom. Although the silos do contain bin vents, the bin vents are opened only when removing grain from the silos in order to allow air to move into the silos. The bin vents are closed during filling and there are no emissions. The SB Series shipping bins are controlled by DC-24 at the top and DC-25, DC-26, and DC-27 at the bottom.



(a) *(b)* *(c)* *(d)*

Figure 3.Truck loadout stations for dust and screening, controlled by (clockwise from top right) DC-12,DC-13, and DC18/19 (bottom two)

All of the conveyor surfaces actively carrying grain are completely enclosed and are not exposed to ambient air. The belt returns and belt take-ups are not enclosed. There have been no observances of fugitive dust from either the return portion of the belts or the belt take-ups. The belts are roller belt-type, and conveyor air is discharged to baghouses DC-3 and DC-13.

4.h. <u>Truck Loading</u>. A small quantity of grain may be loaded onto trucks via the five vertical side taps. Grain delivered to trucks has been oiled with approximately ⅔ of the total quantity of mineral oil; there are no other controls. Kalama Export is limited to a maximum of 2,000,000 bu/yr (60,000 tpy) loadout to truck.

4.i. Ship Loading. Grain is transferred from the silos or storage bins via enclosed conveyors to the ship dock. Approximately ⅔ of the mineral oil has already been applied to the grain prior to shipping. When grain is removed from storage, the final ⅓ of the mineral oil is applied prior to the grain being sent to the scale house, the shipping bins, and finally loaded onto the ship. At the dock, grain is delivered to the ship through any or all of the four sloped grain spouts. The spouts can be angled from vertical to about 60° from vertical and can be extended from 95–140 ft. The ends of the spouts are equipped with fabricated deadboxes at the end of the spouts and spring-loaded gates, which maintain a solid column of grain prior to exiting the spout (Fig. 4). The deadboxes are equipped with two internal baffle plates and a hinged resistance plate at the end that opens in response to the grain flowing out the spout. Dust is pneumatically evacuated from the deadbox between the two internal baffle plates and drawn through a duct parallel to the spout to baghouses DC-9 and DC-10. These baghouses draw about 5,000 acfm from each spout as well as from conveyor transfer points in the shipping towers. Valves installed in the ducts leading to the ship loading spouts divert air from unused spouts to the baghouses. Transfer of pneumatic air occurs when either spout 1 or 2 is not in use or when either spout 3 or 4 is not used. The air normally drawn through the two spouts is made available to the single operating spout.

Fig. 4. Ship loading spout. The square "box" is the deadbox and the spring loaded gate is located approximately halfway from the deadbox to the end of the spout.

A single spout has a maximum loading capacity of 50,000 bu/hr (1,500 tpy), however, prior to 2010, the single shipping belt did not have the capacity to deliver grain to all four spouts at the maximum rate. At the maximum belt rate, if all four spouts were being used, they operated at a reduced delivery rate. In 2010, the addition of a second belt allowed an additional 100,000 bu/hr (3,000 tpy) of grain to be delivered to the shipping dock and allowed all spouts to be operated at maximum capacity (200,000 bu/hr, combined). In addition, during periods of rain, grain can be routed to the shipping bins until the rain stops and ship loading can occur at the maximum rate.

4.j. Paved and Unpaved Roads. The majority of the truck traffic is due to dust and screenings loadout from the four loadout stations and a small contribution from the delivery of grain to trucks.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

Railcar Receiving

5.a. Railcar Receiving, Railcar Pit #1 (*existing*). Baghouse DC-1 (Fig. 5) controls the emissions from Railcar Pit #1 through pickups along the edge of the pit and various drop points for belts B-7 and B-11 and drag conveyor D-5.

Fig. 1: Baghouse DC-1

Year Installed:	1983
Make:	Carter Day
Model:	376-RF-8
Airflow:	32,500 acfm
Air-to-Cloth Ratio:	8.5 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	376 bags, 96" in length
Filter Area:	3,840 ft² (from Donaldson)
Stack Height:	13 feet
Stack Diameter:	43.75"
NSPS Applicable:	No. The railcar pit and its associated control were installed prior to the date when the NSPS became applicable to the facility.

5.b. Railcar Receiving, Railcar Pit #2 (*existing*). Baghouse DC-2 (Fig 6) controls the emissions from Railcar Pit #2 through pickups along the edge of the pit and various drop points for belts B-6 and B-10 and drag conveyor D-4.

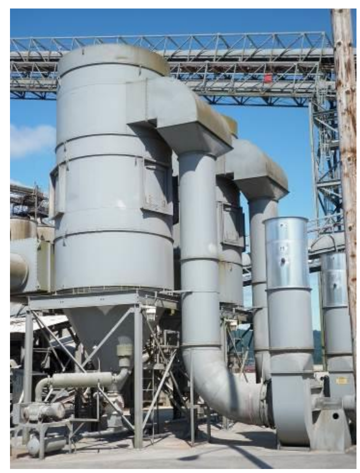


Fig. 2: Baghouse DC-2

Year Installed:	1983
Make:	Carter Day
Model:	376-RF-8
Airflow:	32,500 acfm
Air-to-Cloth Ratio:	8.5 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	376 bags, 96" in length
Filter Area:	3,840 ft² (from Donaldson)
Stack Height:	13 ft
Stack Diameter:	43.75"
NSPS Applicable:	No. The railcar pit and its associated control were installed prior to the date when the NSPS became applicable to the facility.

5.c. Railcar Receiving, Fugitive Emissions (*existing*). Any particulate matter (PM) that is not captured by the rail receiving building and aspirated pit or controlled by the baghouse is released as fugitive PM, PM_{10}, and $PM_{2.5}$. Fugitive emissions from the railcar pits are not subject to the NSPS since the pits were installed prior to the date when the NSPS became applicable.

Barge Receiving

5.d. Barge Receiving System (*existing*). Baghouse DC-11 (Fig. 7) controls emissions from the marine leg, belt BC #9, and a surge bin.

Year Installed:	1983
Make:	Carter Day
Model:	72-RF-10
Airflow:	9,500 acfm
Air-to-Cloth Ratio:	8.4 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	72 bags, 120" in length
Filter Area:	915 ft² (from Donaldson)
Stack Height:	23 ft
Stack Diameter:	10.5"
NSPS Applicable:	No. The barge receiving system and its associated control were installed prior to the date when the NSPS became applicable to the facility.

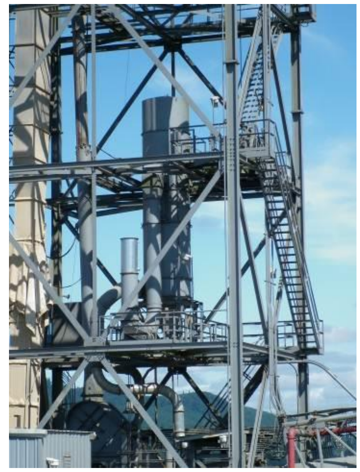


Fig. 3: Baghouse DC-11

5.e. Barge Receiving System, Fugitive Emissions (*existing*). Any PM that is not captured by the aspirated marine leg and controlled by the filter is released as fugitive PM, PM_{10}, and $PM_{2.5}$. Fugitive emissions from the barge receiving system are not subject to the NSPS since the pits were installed prior to the date when the NSPS became applicable.

Internal Grain Handling: Weigh House, Sampling, and Distribution

5.f. Grain Transfer System (*existing*). Baghouse DC-3 (Fig. 8) is used to control PM emissions from conveyor transfer points within the internal handling system, including belts B-10, B-11, B-12, and B-13.

Year Installed:	1983
Make:	Carter Day
Model:	124-RF-10
Airflow:	15,600 acfm
Air-to-Cloth Ratio:	6.7 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	124 bags, 120" in length
Filter Area:	1,580 ft² (from Donaldson)
Stack Height:	10.5 ft
Stack Diameter:	26"
NSPS Applicable:	No. The transfer system and its associated control were installed prior to the date when the NSPS became applicable to the facility.

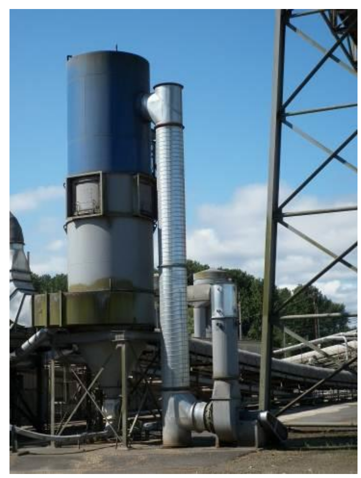


Fig. 4: Baghouse DC-3

5.g. <u>Weigh House Receiving (*existing*)</u>. Baghouse DC-4 (Fig. 9) is used to control PM emissions from the weigh house where the grain is weighed on scales after receiving or prior to shipping. There are dust pickups on bulk weigher #W-2 and #W-3 and belts B-12, B-13, B-16, and B-17.

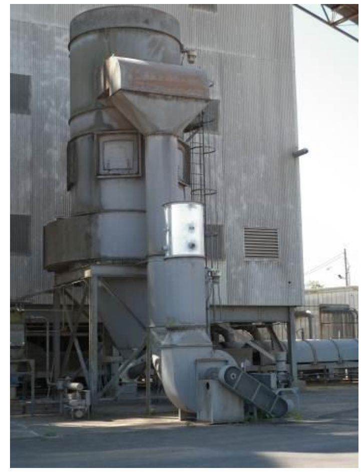


Fig. 5: Baghouse DC-4

Year Installed:	1983
Make:	Carter Day
Model:	232-RF-8
Airflow:	19,600 acfm
Air-to-Cloth Ratio:	8.4 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	232 bags, 96" in length
Filter Area:	2,320 ft² (from Donaldson)
Stack Height:	11.5 ft
Stack Diameter:	33.5"
NSPS Applicable:	No. The weigh house receiving system and its associated control were installed prior to the date when the NSPS became applicable to the facility.

5.h. <u>Weigh House Shipping (*existing*)</u>. Baghouse DC-5 (Fig. 10) is also used to control PM emissions from the weigh house shipping system where the grain is weighed on scales after receiving or prior to shipping. There are dust pickups on bulk weigher #W-1, grain cleaner C-1, belt B-14, belt B-15, screw conveyor SC-24, and leg L-23.

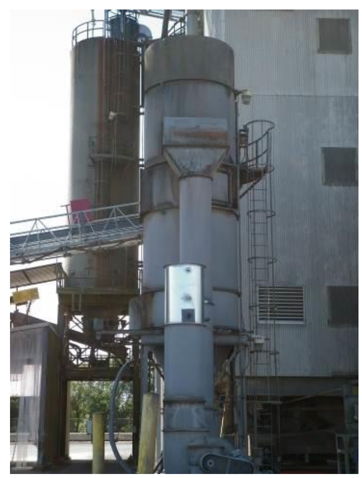


Fig. 6: Baghouse DC-5

Year Installed:	1983
Make:	Carter Day
Model:	156-RF-10
Airflow:	17,300 acfm
Air-to-Cloth Ratio:	8.0 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	156 bags, 120" in length
Filter Area:	1,990 ft² (from Donaldson)
Stack Height:	11.5 ft
Stack Diameter:	32"
NSPS Applicable:	No. The weigh house shipping system and its associated control were installed prior to the date when the NSPS became applicable to the facility.

5.i. <u>Sampling, Weighing, and Distribution System (*existing*)</u>. Baghouse DC-15 (Fig. 11) controls dust PM emissions from the sampling weighing and distribution system. There are dust pickups for the upper garner, weigh hopper, lower garner, and belt B-35.

Fig. 7: Baghouses DC-15 (left) and DC-17 (right)

Year Installed:	2000
Make:	Donaldson Torit
Model:	124-RFW-10
Airflow:	15,600 acfm
Air-to-Cloth Ratio:	9.6 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	124 bags, 120" in length
Filter Area:	1,613 ft²
Stack Height:	43 ft
Stack Diameter:	30"
NSPS Applicable:	Yes. The sampling weighing and distribution system and its associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

Grain Cleaning

5.j. <u>Wheat Cleaning System #1 (*existing*)</u>. Baghouse DC-17 controls PM emissions from the wheat cleaning system. There are dust pickups for two 10,000 bph Cimbra 160 Delta cleaners, three Cimbra HEID length separators, upper surge bin SB-1, screenings bin SCB1, lower surge bin SB-2, screw conveyors SC-43 and SC-44, drag conveyors D-40 and D-41, and leg L-38.

Year Installed:	2000
Make:	Donaldson Torit
Model:	124-RFW-10
Airflow:	16,900 acfm
Air-to-Cloth Ratio:	7.7 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	124 bags, 120" in length
Filter Area:	1,613 ft²
Stack Height:	43 ft
Stack Diameter:	28.5"
NSPS Applicable:	Yes. The wheat cleaning system, bins, leg, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.k. <u>Wheat Cleaning System #2 (*existing*)</u>. Baghouse DC-20 (Fig. 12) helps to reduce the amount of dust in the grain and wheat cleaning area when offloading barges. There are dust pickups for two surge hoppers, four cleaners (Cleaners 1-4), two indents (LS-1 and LS-2), a screenings bin, and drag conveyors D-42 and D-44.

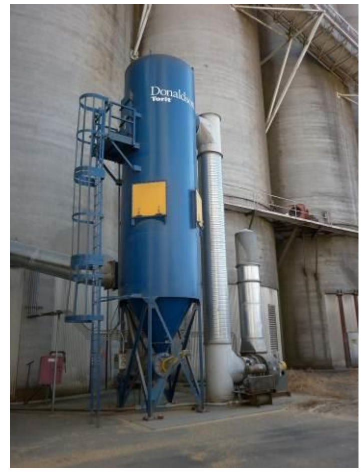


Fig. 8: Baghouse DC-20

Year Installed:	2006
Make:	Donaldson Torit
Model:	156-RFW-10
Airflow:	16,600 acfm
Air-to-Cloth Ratio:	6.9 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	156 bags, 120" in length
Filter Area:	2,029 ft^2
Stack Height:	15 ft
Stack Diameter:	31.75"
NSPS Applicable:	Yes. The cleaning system, belts, surge bins, leg, and the associated control produce emissions that are subject to NSPS and the control was added after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.l. <u>Wheat Cleaning Systems #3 through #6 (*existing*)</u>. Baghouse DC-21 (Fig. 13) for this wheat cleaning system. There are dust pickups for surge bin SB-10, three 1,600 bu cleaner surge bins (SB-11, SB-12, and SB-13), four 80,000 bph Cimbra 168 Mega cleaners (C-10, C-12, and C-14), grader surge bin SB-16, a 2,500 bph Cimbra 116 corn reclaim cleaner (C-17), belts B-70, B-71, and B-75, and leg L-73.


Fig. 9: Baghouse DC-21

Year Installed:	2010
Make:	Donaldson
Model:	376 RFWP 10 KD
Airflow:	36,500 acfm
Air-to-Cloth Ratio:	7.2 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	376 bags, 120" in length
Filter Area:	4,892 ft^2
Stack Diameter:	40.75"
NSPS Applicable:	Yes. The cleaning system, belts, surge bins, leg, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.m. <u>Wheat Cleaning Systems #7 through #10 (*existing*)</u>. Baghouse DC-22 (Fig. 14) controls processes associated with the wheat cleaning system, conveyors, elevators, and the dust and screenings bins. There are dust pickups for four 80,000 bph Cimbra 168 Mega cleaners (C-11, C-13, and C-15), a 3,000 bph Cimbra 168 grader (C-16), two indent surge bins (SB-14 and SB-15), a corn reclaim surge bin (SB-17), surge bin SB-18, drag conveyors D-72, D-76, D-78, D-79, D-82, D-84, and D-85, legs L-74, L-77, L-81 (screenings), and L-83, and dust bin SC-87 (and the associated aspirated, telescoping spout), and screenings bin SC-86 (and the associated aspirated, telescoping spout).

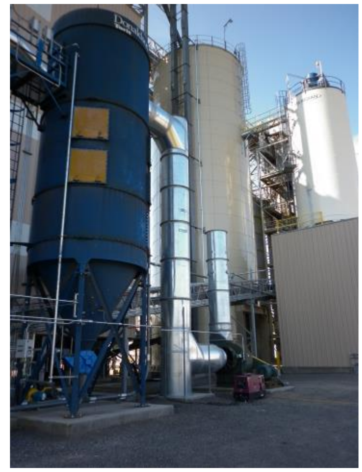


Fig. 10: Baghouse DC-22

Year Installed:	2010
Make:	Donaldson
Model:	376 RFWP 10 KD
Airflow:	35,300 acfm
Air-to-Cloth Ratio:	7.2 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	376 bags, 120" in length
Filter Area:	4,892 ft²
Stack Diameter:	40.25"
NSPS Applicable:	Yes. The cleaning system, belts, surge bins, legs, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

Dust and Screenings Loadout

5.n. <u>Dust Bin #12 (*existing*)</u>. Bin Vent Filter DC-12 (Fig. 15) controls PM emissions at the truck load-out for the dust tank. While unloading screenings to trucks, emissions are controlled by Bin Vent Filter DC-12. The original Carter Day 48-RF-6 baghouse was replaced in 2010 in order to accommodate the new shipping belts; airflow was not altered. The baghouse has been modified to accommodate fewer bags.

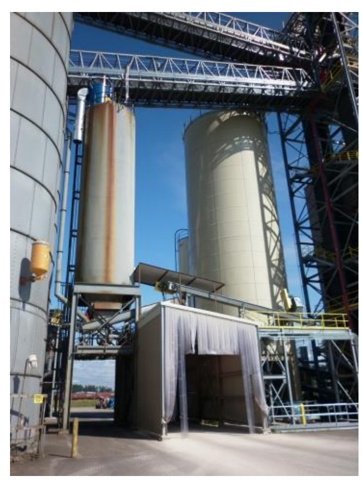


Fig. 11: Bin Vent Filter DC-12 (top left)

Year Installed:	1983
Year Modified	2010
Make:	Donaldson
Model:	72-RFT-6
Airflow:	2,800 acfm
Air-to-Cloth Ratio:	7.5 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	48 bags, 72" in length
Filter Area:	366 ft²
Stack Diameter:	33"
NSPS Applicable:	No. Not an affected facility; does not control emissions from grain.

5.o. Dust Bin #13 (*existing*). Baghouse catch from baghouses DC-6 through DC-10 are collected in the dust tank (volume of 6100 ft³). Bin Vent Filter DC-13 (Fig. 16) controls dust from the dust tank truck loadout. Dust is loaded into trucks using a Midwest retractable (travel distance approximately 10'), aspirated spout (m/n MC-22-OV).

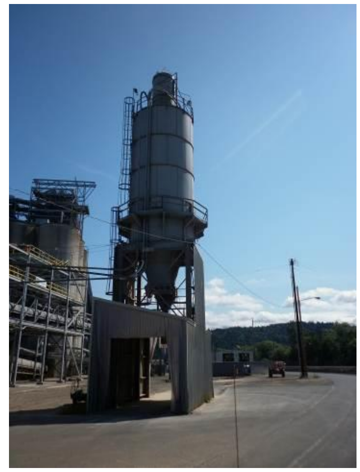


Fig. 12: Bin Vent Filter DC-13

Year Installed:	1990
Make:	MAC
Model:	72-MWP-40
Airflow:	1,500 acfm
Air-to-Cloth Ratio:	3.9 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	48 bags, 72" in length
Filter Area:	375 ft²
Stack Height:	58 ft, discharges vertically downward
Stack Diameter:	33"
NSPS Applicable:	No. Not an affected facility; does not control emissions from grain.

5.p. Dust Bin #18 (*existing*). Bin Vent Filter DC-18 (Fig. 17) controls PM emissions at the screenings truck loadout for the dust collection hoppers of DC-17. Material is pneumatically conveyed to the bin at 440 acfm. This unit works on positive pressure. Dust is loaded through a common screw conveyor with Dust Bin #19 to an aspirated, telescoping spout. When the spout is being aspirated, it pulls an additional 500 acfm.


Fig. 13: Bin Vent Filter DC-18

Year Installed:	2003
Make:	Camcorp
Model:	6PRT7LP
Airflow:	940 acfm
Air-to-Cloth Ratio:	6.3 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	7 bags, 72" in length
Filter Area:	67 ft²
Stack Height:	65 ft, discharges vertically downward
Stack Diameter:	7"
NSPS Applicable:	No. Not an affected facility; does not control emissions from grain.

5.q. Dust Bin #19 (*existing*). Baghouse DC-19 (Fig. 18) controls the dust truck loadout point for collection hoppers of baghouses DC-14, DC-15, DC-16, and DC-20 (added in 2007). Material is pneumatically conveyed to the bin at 320 acfm. This unit works on positive pressure. Dust is loaded through a common screw conveyor with Dust Tank #DC-19A to an aspirated, telescoping spout. When the spout is being aspirated, it pulls an additional 500 acfm.

Fig. 14: Bin Vent Filter DC-19

Year Installed:	2003
Make:	Camcorp
Model:	6PRT4LP
Airflow:	820 acfm
Air-to-Cloth Ratio:	5.5 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	4 bags, 72" in length
Filter Area:	38 ft²
Stack Height:	65 ft, discharges vertically downward
Stack Diameter:	6"
NSPS Applicable:	No. Not an affected facility; does not control emissions from grain.

5.r. Dust Bin #23 (*existing*). Bin Vent Filter DC-23 (Fig. 19) controls dust from the dust bin (volume 3,000 bu) truck loadout. Material from Dust Bin #23 is loaded out through the Dust Bin #12 truck loadout spout.

Fig. 15: Bin Vent Filter DC-23

Year Installed:	2010
Make:	MAC
Model:	54AVS16
Airflow:	400 acfm
Air-to-Cloth Ratio:	3.4 to 1
Filter Media:	16 oz felt singed, circular (6" diameter)
Number of Bags:	16 bags, 54" in length
Filter Area:	107 ft²
Stack Diameter:	10", discharges horizontally
NSPS Applicable:	No. Not an affected facility; does not control emissions from grain.

5.s. Dust and Screenings Loadout to Truck, Fugitive Emissions (*existing*). Dust and screenings are loaded into truck via aspirated, telescoping spouts; however, the loadout areas are not completely enclosed and fugitive emissions can occur. Any PM that is not contained within the truck during loadout or within the building is released as fugitive PM, PM_{10}, and $PM_{2.5}$.

Grain Storage and Transfer

5.t. <u>Storage and Shipping Bins (Batteries 1 and 2) Tops (*existing*)</u>. Baghouse DC-6 (Fig. 20) controls PM emissions from the transfer of grain to and from the battery 1 and 2 storage bins (through bin loading vents). There are dust pickups for belts B-18 and B-19, and distributors TH-1, TH-2, TH-3, and TH-4.

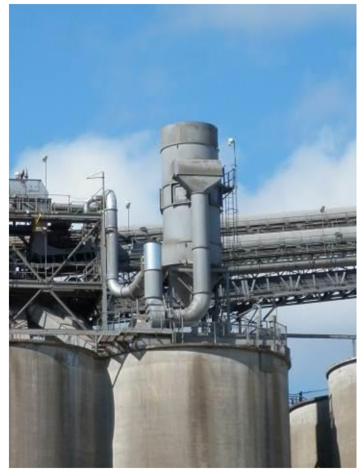


Fig. 16: Baghouse DC-6

Year Installed:	1983
Make:	Carter Day
Model:	232-RF-10
Airflow:	28,100 acfm
Air-to-Cloth Ratio:	8.5 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	232 bags, 120" in length
Filter Area:	2,960 ft²
Stack Height:	123 ft
Stack Diameter:	37.75"
NSPS Applicable:	No. The storage bins, belts, and distributors, and the associated control were installed prior to the date when the NSPS became applicable to the facility.

5.u. <u>Shipping Bins (Battery 1) Tops (*existing*)</u>. Baghouse DC-7 (Fig. 21) is used for the control of PM emissions through the shipping bin loading vents from the transfer of grain to and from battery 1 and 2 storage. There are dust pickups for the four shipping bins B-001, B-002, B-003, and B-004, and drop points for belts B-15, B-16, B-17, B-18, and B-19.

Fig. 17: Baghouse DC-7

Year Installed:	1983
Make:	Carter Day
Model:	232-RF-10
Airflow:	28,700 acfm
Air-to-Cloth Ratio:	7.4 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	232 bags, 120" in length
Filter Area:	2,960 ft²
Stack Height:	123 ft
Stack Diameter:	38"
NSPS Applicable:	No. The shipping bins, belts, and the associated control were installed prior to the date when the NSPS became applicable to the facility.

5.v. <u>Storage and Shipping Bins (Batteries 1 and 2) Bottoms (*existing*)</u>. Baghouse DC-8 (Fig. 22) controls emissions caused by grain removal from the storage and shipping bin bottoms. There are dust pickups for belts B-1, B-2, B-3, B-9, B-11, B-14, B-20, B-21.

Fig. 18: Baghouse DC-8

Year Installed:	1983
Make:	Carter Day
Model:	376-RF-10
Airflow:	42,100 acfm
Air-to-Cloth Ratio:	8.3 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	376 bags, 120" in length
Filter Area:	4,800 ft²
Stack Height:	13 ft
Stack Diameter:	46.57"
NSPS Applicable:	No. The storage and shipping bins bottoms belts and the associated control were installed prior to the date when the NSPS became applicable to the facility.

5.w. <u>Storage Bins (500/600 series) Bottoms (*existing*)</u>. Baghouse DC-14 (Fig. 23) controls PM emissions from the grain conveyor belts moving grain from the bottoms of the concrete storage bins (500 and 600 series bins). There are dust pickups for the drops from the bins onto belts B-31, B-32, and B-33 and for belts B-1, B-2, and B-3.

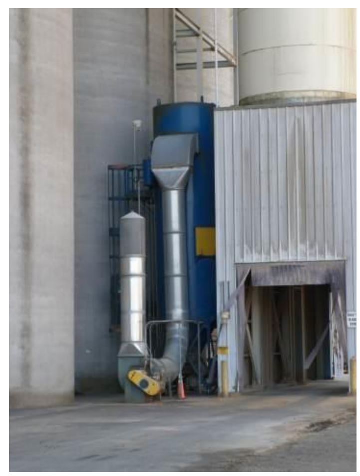


Fig. 19: Baghouse DC-14

Year Installed:	2000
Make:	Donaldson
Model:	156-RFW-10
Airflow:	20,000 acfm
Air-to-Cloth Ratio:	9.9 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	156 bags, 120" in length
Filter Area:	2,030 ft²
Stack Height:	16 ft
Stack Diameter:	31.75"
NSPS Applicable:	Yes. The storage bins, conveyors, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.x. Storage Bins (500/600 Series) Tops (*existing*). Baghouse DC-16 (Fig. 24) controls PM emissions from the conveyors and grain distributors at the tops of the newer storage bins. There are dust pickups for turnheads TH-5 and TH-6, and belts B-28 and B-29.

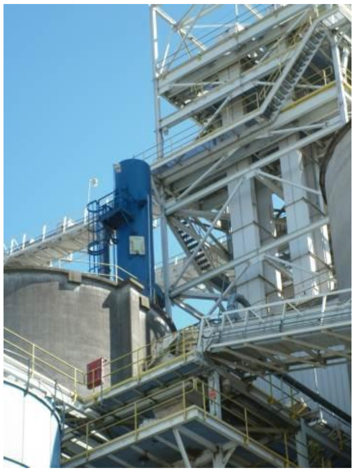


Fig. 20: Baghouse DC-16

Year Installed:	2000
Make:	Donaldson
Model:	72-RFW-10
Airflow:	8,400 acfm
Air-to-Cloth Ratio:	9.0 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	72 bags, 120" in length
Filter Area:	937 ft²
Stack Height:	123 ft
Stack Diameter:	25"
NSPS Applicable:	Yes. The storage bins, turnheads, conveyors, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.y. Shipping Bins (SB Series) Tops (*existing*). Baghouse DC-24 (Fig. 25) controls dust PM emissions from the shipping silo fill system. Dust collected from this filter will be transported to the existing dust bin on the east side of the shipping bins via pneumatic transfer. There are dust pickups on turnhead TH-7, which delivers grain to shipping bins SB-11 through SB-33, and belts B-97 and B-98.

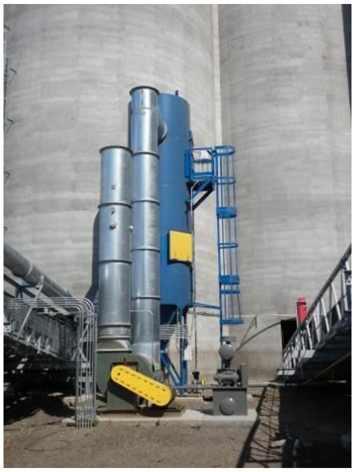


Fig. 21: Baghouse DC-24

Year Installed:	2010
Make:	Donaldson Torit
Model:	124-RFW-10
Airflow:	9,900 acfm
Air-to-Cloth Ratio:	6.2 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	124 bags, 120" in length
Filter Area:	1,613 ft²
Stack Diameter:	30.25"
NSPS Applicable:	Yes. The turnhead, conveyors, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.z. <u>Shipping Bins SB-11, SB-12, and SB-13 Bottoms (*existing*)</u>. Baghouse DC-25 controls dust PM emissions from the shipping bin transfer system. There are dust pickups on shipping bins SB-11, SB-12, and SB-13 where the bins discharge to belt B-91, and on belts B-9, B-20, B-92, and B-99.

Year Installed:	2010
Make:	Donaldson Torit
Model:	156-RFW-10
Airflow:	18,600 acfm
Air-to-Cloth Ratio:	7.6 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	156 bags, 120" in length
Filter Area:	2,030 ft²
Stack Diameter:	30.75"
NSPS Applicable:	Yes. The storage bins, conveyors, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.aa. <u>Shipping Bins SB-21 and SB-22 Bottoms (*existing*)</u>. Baghouse DC-26 (Fig. 26) controls dust PM emissions from the shipping bin transfer system. There are dust pickups on shipping bins SB-21 and SB-22, where the bins discharge to belt B-93, and on belts B-9, B-20, B-94, and B-99.

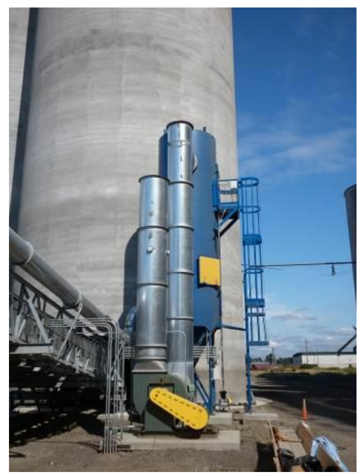


Fig. 22: Baghouse DC-26

Year Installed:	2010
Make:	Donaldson Torit
Model:	124-RFW-10
Airflow:	12,400 acfm
Air-to-Cloth Ratio:	7.7 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	124 bags, 120" in length
Filter Area:	1,613 ft²
Stack Diameter:	30.75"
NSPS Applicable:	Yes. The storage bins, conveyors, and the associated control were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.bb. <u>Shipping Bins SB-31, SB-32, and SB-33 Bottoms (*existing*)</u>. Baghouse DC-27 (Fig. 27) controls dust PM emissions from the shipping silo (SB series) system. There are dust pickups on shipping bins SB-31, SB-32, and SB-33, where the bins discharge to belt B-95, and on belts B-9, B-20, B-96, and B-99.

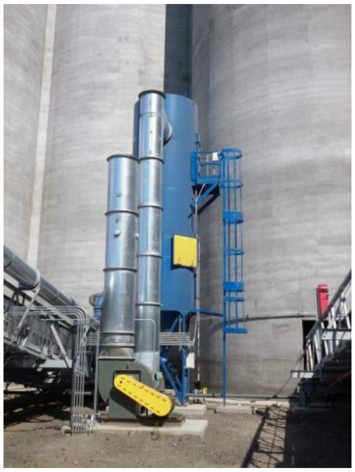


Fig. 23: Baghouse DC-27

Year Installed:	2010
Make:	Donaldson Torit
Model:	156-RFW-10
Airflow:	18,300 acfm
Air-to-Cloth Ratio:	7.6 to 1
Filter Media:	16 oz felt singed, oval (3" x 6")
Number of Bags:	156 bags, 120" in length
Filter Area:	2,030 ft²
Stack Diameter:	30.625"
NSPS Applicable:	Yes. The conveyors were installed after the facility added additional storage capacity causing the NSPS to become applicable to the facility.

5.cc. <u>Housekeeping Vacuum Collector System (*new*)</u>. Baghouse DC-28 controls dust PM emissions from the vacuum collector system in the cleaner building.

Make:	Donaldson Torit
Model:	TD-573
Serial No.:	15004500
Manufactured:	December 2020
Airflow:	1,100 acfm
Filter Media:	Fibra-Web Cartridge (26" x 12.74")
Number of Bags:	3 bags
Filter Area:	678 ft²
Stack Height:	139.7 inches
Stack Diameter:	~8", discharges into building
Performance:	Merv 14 filters
NSPS Applicable:	No.

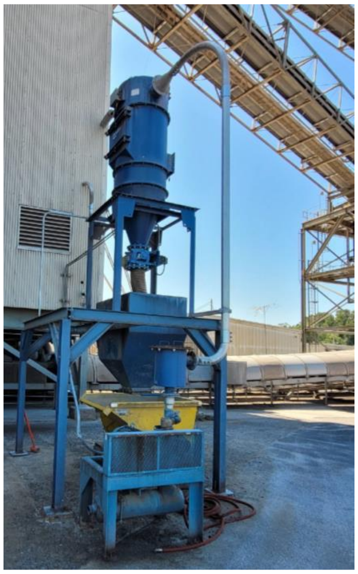


Fig. 28: Baghouse DC-28

Truck Loading

5.dd. Truck Loading, Fugitive Emissions (*existing*). Emissions from the five truck loading spouts (Fig. 29) two sets of two spouts on the NE and SW sides of the silos and one on the north end – are not controlled, although the majority of the grain transferred through the spouts is oiled with at least 2 qt/1000 bu. Any PM that is not contained within the truck during loadout or within the building is released as fugitive PM, PM_{10}, and $PM_{2.5}$. Fugitive emissions from the truck loading operation are not subject to the NSPS since the truck loaders were installed in 1983, prior to the date when the NSPS became applicable.

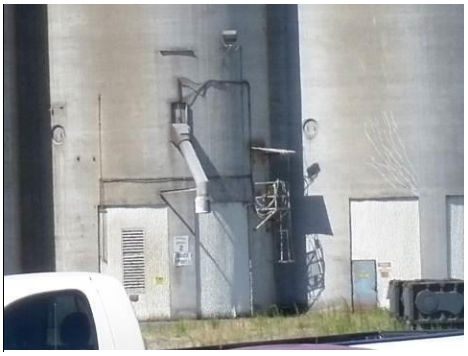


Fig. 29: Truck Loading Spout

Ship Loading

5.ee. Ship Loading Towers #1 and #2 (*existing*). Baghouse DC-9 (Fig. 30) is used to control PM emissions from ship loading spouts #1 and #2 and pickups on belts B-21 and B-22. When either of the loading spouts is not in use, a gate valve diverts air to the operating spout.

Year Installed:	2018
Make:	Donaldson Torit
Model:	232RFW-10AW
Airflow:	24,600 acfm
Air-to-Cloth Ratio:	8.2 to 1
Filter Media:	10.5 oz Duralife polyester, oval (3" x 6")
Number of Bags:	232 bags, 120" in length
Filter Area:	3,018 ft²
Stack Height:	35 ft
Stack Diameter:	37.5"
NSPS Applicable:	No.

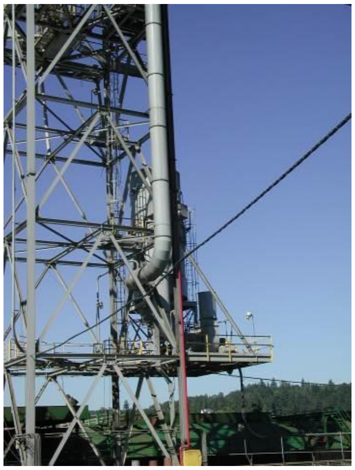


Fig.30: Baghouse DC-9

5.ff. Ship Loading Towers #3 and #4 (*existing*). Baghouse DC-10 (Fig. 31) is used to control PM emissions from ship loading spouts #3 and #4 and pickups on belt B-22. When either of the loading spouts is not in use, a gate valve diverts air to the operating spout.

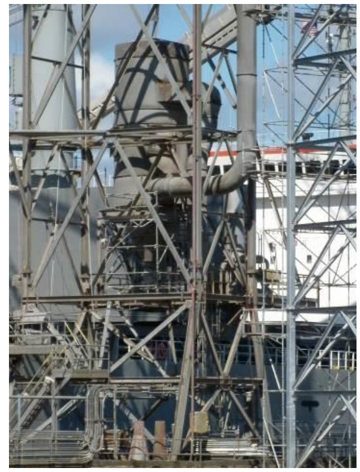


Fig. 31: Baghouse DC-10

Year Installed: 2018
Make: Donaldson Torit
Model: 232RF-8AW
Airflow: 19,600 acfm
Air-to-Cloth Ratio: 8.1 to 1
Filter Media: 10.5 oz duralife polyester, oval (3" x 6")
Number of Bags: 232 bags, 96" in length
Filter Area: 2,414 ft^2
Stack Height: 35 ft
Stack Diameter: 34"
NSPS Applicable: Yes. The ship loader was modified after the date when the NSPS became applicable to the facility.

5.gg. Emergency Fire Pump Engine. The facility utilizes/maintains a diesel powered fire suppression system for the ship grain loading and barge unloading leg.
Engine Make/Model: Cummins / N-855-F
Engine S/N: 48437
Engine Rating: 240 hp
Year Built: March 1981
Fuel Usage: 12 gallons per hour
Location: Dock

5.hh. Ship Loading, Fugitive Emissions (*existing*). Any PM that is not captured by the pneumatic draw on the four grain loading spouts is released as fugitive PM, PM_{10}, and $PM_{2.5}$. Fugitive emissions from the ship loading system are subject to the NSPS since the ship loading spouts were modified after the date when the NSPS became applicable.

5.ii. Paved and Unpaved Roads, Fugitive Emissions (*existing*). Fugitive PM emissions are caused by vehicle traffic, mostly trucks carrying screenings loadout, on paved roads and unpaved roads.

5.jj. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Railcar Receiving, Railcar Pit #1	Baghouse DC-1
2	Railcar Receiving, Railcar Pit #2	Baghouse DC-2
3	Railcar Receiving, Fugitive Emissions	None
4	Barge Receiving System	Marine Leg and Baghouse DC-11

ID No.	Equipment/Activity	Control Equipment/Measure
5	Barge Receiving, Fugitive Emissions	None
6	Grain Transfer System	Baghouse DC-3
7	Weigh House Receiving	Baghouse DC-4
8	Weigh House Shipping	Baghouse DC-5
9	Sampling, Weighing, and Distribution System	Baghouse DC-15
10	Wheat Cleaning System #1	Baghouse DC-17
11	Wheat Cleaning System #2	Baghouse DC-20
12	Wheat Cleaning Systems #3 through #6	Baghouse DC-21
13	Wheat Cleaning Systems #7 through #10	Baghouse DC-22
14	Dust Bin #12	Bin Vent Filter DC-12
15	Dust Bin #13	Bin Vent Filter DC-13
16	Dust Bin #18	Bin Vent Filter DC-18
17	Dust Bin #19	Bin Vent Filter DC-19
18	Dust Bin #23	Bin Vent Filter DC-23
19	Dust and Screenings Loadout to Truck, Fugitive Emissions	Mineral Oil Application, Aspirated Telescoping Spout, Partial Enclosure
20	Storage and Shipping Bins (Batteries 1 and 2) Tops	Baghouse DC-6
21	Shipping Bins (Battery 1) Tops	Baghouse DC-7
22	Storage and Shipping Bins (Batteries 1 and 2) Bottoms	Baghouse DC-8
23	Storage Bins (500/600 Series) Bottoms	Baghouse DC-14
24	Storage Bins (500/600 Series) Tops	Baghouse DC-16
25	Shipping Bins (SB Series) Tops	Baghouse DC-24
26	Shipping Bins SB-11, SB-12, and SB-13 Bottoms	Baghouse DC-25
27	Shipping Bins SB-21 and SB-22 Bottoms	Baghouse DC-26
28	Shipping Bins SB-31, SB-32, and SB-33 Bottoms	Baghouse DC-27
29	Housekeeping Vacuum Cleaner System	Baghouse DC-28
30	Truck Loading, Fugitive Emissions	Mineral Oil Application
31	Ship Loading Towers #1 and #2	Loading Spout Deadbox, Mineral Oil Application, and Baghouse DC-9
32	Ship Loading Towers #3 and #4	Loading Spout Deadbox, Mineral Oil Application, and Baghouse DC-10
33	Ship Loading, Fugitive Emissions	Mineral Oil Application

ID No.	Equipment/Activity	Control Equipment/Measure
34	Paved and Unpaved Roads, Fugitive Emissions	None
35	Emergency Fire Pump Engine	Ultra-Low Sulfur Fuel (<15 ppm S diesel)

6. EMISSIONS DETERMINATION

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:

(a) Continuous emissions monitoring system (CEMS) data;
(b) Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD.

6.a. Baghouse and Bin Vent Filter Emissions. The baghouses, powered and unpowered bin vents, and cartridge bin vent filters are point sources of PM emissions. Maximum potential emissions can be calculated assuming the maximum hours of operation (8,760 hr/yr), a maximum grain loading for PM, PM_{10}, and $PM_{2.5}$, and the rated maximum flow rate.

Unit	Air Flow Rate (acfm)	Hours of Operation (hr/yr)	PM/PM_{10} Emission Rate (gr/dscf)*	$PM_{2.5}$ Emission Rate (gr/dscf)†	PM/PM_{10} Emission Rate (lb/hr)‡	$PM_{2.5}$ Emission Rate (lb/hr)‡
Railcar Receiving						
Baghouse DC-1	32,500	8,760	0.0020	3.4×10^{-4}	0.56	0.095
Baghouse DC-2	32,500	8,760	0.0020	3.4×10^{-4}	0.56	0.095
Barge Receiving						
Baghouse DC-11	9,500	8,760	0.0020	3.4×10^{-4}	0.16	0.028
Grain Transfer System						
Baghouse DC-3	15,600	8,760	0.0020	3.4×10^{-4}	0.27	0.045
Weigh House Shipping, Sampling, Weighing, and Distribution System						
Baghouse DC-4	19,600	8,760	0.0020	3.4×10^{-4}	0.34	0.057
Baghouse DC-5	17,300	8,760	0.0020	3.4×10^{-4}	0.30	0.050
Baghouse DC-15	15,600	8,760	0.0020	3.4×10^{-4}	0.27	0.045
Grain Cleaning						
Baghouse DC-17	16,900	8,760	0.0020	3.4×10^{-4}	0.29	0.049
Baghouse DC-20	16,600	8,760	0.0020	3.4×10^{-4}	0.28	0.048

Unit	Air Flow Rate (acfm)	Hours of Operation (hr/yr)	PM/PM_{10} Emission Rate (gr/dscf)*	$PM_{2.5}$ Emission Rate (gr/dscf)†	PM/PM_{10} Emission Rate (lb/hr) ‡	$PM_{2.5}$ Emission Rate (lb/hr) ‡
Baghouse DC-21	36,500	8,760	0.0020	$3.4{\times}10^{-4}$	0.63	0.11
Baghouse DC-22	35,300	8,760	0.0020	$3.4{\times}10^{-4}$	0.61	0.10
Dust and Screenings Loadout to Truck						
Bin Vent Filter DC-12	2,800	8,760	0.0020	$3.4{\times}10^{-4}$	0.048	0.008
Bin Vent Filter DC-13	1,500	8,760	0.005	$8.5{\times}10^{-4}$	0.064	0.011
Bin Vent Filter DC-18	940	8,760	0.005	$8.5{\times}10^{-4}$	0.040	0.007
Bin Vent Filter DC-19	820	8,760	0.005	$8.5{\times}10^{-4}$	0.035	0.006
Bin Vent Filter DC-23	400	8,760	0.0020	$3.4{\times}10^{-4}$	0.007	0.001
Grain Storage and Transfer						
Baghouse DC-6	28,100	8,760	0.0020	$3.4{\times}10^{-4}$	0.48	0.082
Baghouse DC-7	28,700	8,760	0.0020	$3.4{\times}10^{-4}$	0.49	0.084
Baghouse DC-8	42,100	8,760	0.0020	$3.4{\times}10^{-4}$	0.72	0.12
Baghouse DC-14	20,000	8,760	0.0020	$3.4{\times}10^{-4}$	0.34	0.058
Baghouse DC-16	8,400	8,760	0.0020	$3.4{\times}10^{-4}$	0.14	0.024
Baghouse DC-24	9,900	8,760	0.0020	$3.4{\times}10^{-4}$	0.17	0.029
Baghouse DC-25	18,600	8,760	0.0020	$3.4{\times}10^{-4}$	0.32	0.054
Baghouse DC-26	12,400	8,760	0.0020	$3.4{\times}10^{-4}$	0.21	0.036
Baghouse DC-27	18,300	8,760	0.0020	$3.4{\times}10^{-4}$	0.31	0.053
Ship Loading						
Baghouse DC-9	24,600	8,760	0.0020	$3.4{\times}10^{-4}$	0.42	0.072
Baghouse DC-10	19,600	8,760	0.0020	$3.4{\times}10^{-4}$	0.34	0.057
Vacuum Collector System						
Baghouse DC-28	1,100	8,760	0.0020	$3.4{\times}10^{-4}$	0.02	0.003

* PM and PM_{10} emission rates are assumed to be equal.

† $PM_{2.5}$ emissions are assumed to be 17% of the PM_{10} emissions, which is consistent with AP-42, Section 9.9.1, Table 9.9.1-1 (March 2003)

‡ Hourly emission rates are determined assuming the grain loading limit and the larger of the permit application flow or the most recent source test flow for each unit, rounded to the nearest 100 acfm.

Emissions must be determined by the total number of hours of operation for each baghouse or filter multiplied by the emission factors above unless new emission factors are developed through source testing. Any alternate emission calculation methodologies are accepted or specified by SWCAA.

<u>ADP Application CO-1061.</u> The new emission unit and corresponding baghouses DC-28 will be subject to the same emission concentration limit as the existing units (0.0020 gr/dscf).

6.b. <u>Fugitive Emissions</u>.

Railcar Receiving
Most of the facilities within SWCAA's jurisdiction have, at minimum, a 3-sided enclosure and either aspirated pits or an aspirated building. Kalama Export employs a 3-sided enclosed building, grain delivery under choked flow conditions, and aspirated pits. SWCAA believes that the combination of control technologies will achieve a minimum of 99% capture/control efficiency. It is assumed that the aspiration air is being applied during the entire unloading process. If aspiration air is not applied during the entire unloading process, the capture efficiency is reduced.

It is feasible that Kalama Export could receive all the grain by railcar and no grain by barge. This would represent one of two scenarios for grain receipt, the other being maximum receipt by barge with the remainder by railcar. This second scenario is discussed in the *Receiving Grain by Barge* section.

Using the AP-42 Sec. 9.9.1 (March 2003) emission factors for railcar unloading and a capture efficiency of 99%, the following emission factors for PM, PM_{10}, and $PM_{2.5}$ can be determined:

Pollutant	Uncontrolled Emission Factor (lb/ton)	Capture Efficiency	Controlled Emission Factor (lb/ton)
PM	0.032	99%	3.2×10^{-4}
PM_{10}	0.0078	99%	7.8×10^{-5}
$PM_{2.5}$	0.0013	99%	1.3×10^{-5}

The cited emission factors and capture efficiency above for railcar receiving shall be used for annual emissions determinations.

Barge Receiving
The marine leg has a much lower receipt rate than railcar unloading. A maximum of 30,000 bu/hr (900 tph) of grain can be unloaded by the marine leg. The aspiration of the marine leg will induce some negative pressure under the installed tarps. SWCAA believes that the physical barrier in conjunction with the aspirated marine leg should be sufficient to capture at least 98% of the fugitive PM emissions.

Using the AP-42 Sec. 9.9.1 (March 2003) emission factors for barge unloading, and a capture efficiency of 98%, the following emission factors for PM, PM_{10}, and $PM_{2.5}$ can be determined:

Pollutant	Uncontrolled Emission Factor (lb/ton)	Capture Efficiency	Controlled Emission Factor (lb/ton)
PM	0.15	98%	0.0030
PM_{10}	0.038	98%	7.6×10^{-4}
$PM_{2.5}$	0.0050	98%	1.0×10^{-4}

The cited emission factors and capture efficiency above for barge receiving shall be used for annual emissions determinations. When calculating emissions for annual emission inventory, the emission factors for both barge unloading and railcar unloading shall be used as appropriate. The emissions from the additional grain received by railcar would be calculated as described in the previous section and maximum emissions would be calculated using this assumption.

Dust and Screenings Loadout to Truck

Kalama Export operates two dust tank loadouts and three screenings loadouts where the baghouse catch and unwanted material from the cleaning operations are stored and loaded into trucks for disposal. The loadout areas are generally partial enclosures (two walls and a roof) with a telescoping, aspirated spout. Based upon review of other grain handling facilities within the SWCAA jurisdiction, the amount of dust and screenings loaded out ranges from 0.15% to 0.30% of the total weight of grain processed. This determination is based on the total amount of screenings loadout reported by the facility to SWCAA and by the total amount of grain processed by the facility. SWCAA has determined that using the highest determined value of 0.30% is the most conservative assumption. Since the material in the screenings loadout is expected to be dustier than grain itself because it is comprised mostly of the dirt and fine material removed during cleaning and screening, SWCAA has multiplied the AP-42 §9.9.1 (March 2003) for grain by 10, which is consistent with previous permitting actions. SWCAA has assumed a maximum of 50% capture efficiency for the combination of the aspirated spouts and the partial enclosure. Using the assumptions above, the emission factors for PM, PM_{10}, and $PM_{2.5}$ can be determined:

Dust and Screenings Loadout Fugitive Emission Factors			
Pollutant	Uncontrolled Emission Factor (lb/ton)	Capture/Control Efficiency	Controlled Emission Factor (lb/ton)
PM	0.86	50%	0.43
PM_{10}	0.29	50%	0.15
$PM_{2.5}$	0.049	50%	0.025

The cited emission factors above for dust and screenings loadout by truck shall be used for annual emissions determinations.

Truck Loading

The facility has the capability of loading large amounts of grain into trucks via the side taps; however, the facility has requested a maximum limit of 2,000,000 bu/yr (60,000 tpy). This method of loading is not controlled, other than the mineral oil that was applied during grain receipt. The majority of grain loaded into trucks is corn, with smaller amounts of the other grains. Using AP-42 Sec. 9.9.1 (March 2003) and the oil control efficiency, the following emission factors for PM, PM_{10}, and $PM_{2.5}$ can be determined:

Truck Loading Fugitive Emission Factors			
Grain and Pollutant	**Uncontrolled Emission Factor (lb/ton)**	**Oil Control Efficiency**	**Controlled Emission Factor (lb/ton)**
Corn (oiled)			
PM	0.086	70%	0.026
PM_{10}	0.029	70%	0.0087
$PM_{2.5}$	0.0049	70%	0.0015
Wheat (oiled)			
PM	0.086	73%	0.023
PM_{10}	0.029	73%	0.0078
$PM_{2.5}$	0.0049	73%	0.0013
Soybeans (oiled)			
PM	0.086	60%	0.034
PM_{10}	0.029	60%	0.012
$PM_{2.5}$	0.0049	60%	0.0020
Barley and Milo (oiled)			
PM	0.086	65%	0.030
PM_{10}	0.029	65%	0.010
$PM_{2.5}$	0.0049	65%	0.0017

When loading grain into trucks, the truck travels approximately 1.25 miles roundtrip to and from the loading spout on paved roads. For approximately 0.5 miles the truck is empty and 0.75 miles, the truck is loaded with grain. The same emission factors as determined below are applicable to truck loadout of grain for paved road emissions.

Ship Loading

Although the ship loading spouts are aspirated, there is a considerable drop between the end of the spout and the ship's hold. Grain that has been oiled prior to being handled has an additional control efficiency based on the type of grain that is applied to the emission factor. Up to 10% of the maximum throughput is approved to be unoiled. Using AP-42

Sec. 9.9.1 (March 2003) emission factors for ship loading and the applicable oil control efficiency, the following emission factors for PM, PM_{10}, and $PM_{2.5}$ can be determined:

Ship Loading Emission Factors				
Grain and Pollutant	**Uncontrolled Emission Factor (lb/ton)**	**Oil Control Efficiency**	**Deadbox Capture Efficiency***	**Controlled Emission Factor (lb/ton)**
Corn (oiled)				
PM	0.048	70%	70%/65%	0.0043
PM_{10}	0.012	70%	70%/65%	0.0013
$PM_{2.5}$	0.0020	70%	70%/65%	2.1×10^{-4}
Corn (un-oiled)				
PM	0.048	0%	70%/65%	0.014
PM_{10}	0.012	0%	70%/65%	0.0042
$PM_{2.5}$	0.0020	0%	70%/65%	7.0×10^{-4}
Wheat (oiled)				
PM	0.048	73%	70%/65%	0.0039
PM_{10}	0.012	73%	70%/65%	0.0011
$PM_{2.5}$	0.0020	73%	70%/65%	1.9×10^{-4}
Wheat (un-oiled)				
PM	0.048	0%	70%/65%	0.014
PM_{10}	0.012	0%	70%/65%	0.0042
$PM_{2.5}$	0.0020	0%	70%/65%	7.0×10^{-4}
Soybeans / Dried Peas (oiled)				
PM	0.048	60%	70%/65%	0.0058
PM_{10}	0.012	60%	70%/65%	0.0017
$PM_{2.5}$	0.0020	60%	70%/65%	2.8×10^{-4}
Soybeans / Dried Peas (un-oiled)				
PM	0.048	0%	70%/65%	0.014
PM_{10}	0.012	0%	70%/65%	0.0042
$PM_{2.5}$	0.0020	0%	70%/65%	7.0×10^{-4}
Barley / Milo / Canola (oiled)				
PM	0.048	65%	70%/65%	0.005
PM_{10}	0.012	65%	70%/65%	0.0015
$PM_{2.5}$	0.0020	65%	70%/65%	2.5×10^{-4}

Ship Loading Emission Factors				
Grain and Pollutant	**Uncontrolled Emission Factor (lb/ton)**	**Oil Control Efficiency**	**Deadbox Capture Efficiency***	**Controlled Emission Factor (lb/ton)**
Barley / Milo / Canola (un-oiled)				
PM	0.048	0%	70%/65%	0.014
PM_{10}	0.012	0%	70%/65%	0.0042
$PM_{2.5}$	0.0020	0%	70%/65%	7.0×10^{-4}
* Deadbox control efficiency has been established by SWCAA at 70% for PM and 65% for PM_{10} and $PM_{2.5}$.				

The cited emission factors above for ship loading shall be used for annual emissions determinations.

Paved and Unpaved Roads
Emissions factors for PM, PM_{10}, and $PM_{2.5}$ from the operation of trucks on paved and unpaved roads are determined using equation 2 from AP-42 Section 13.2.1 (January 2011) and equations 1a and 2 from AP-42 Section 13.2.2 (November 2006), respectively:

Paved Road Equation	Unpaved Road Equation
$E = \left[k\,(sL)^{0.91}\;(W)^{1.02}\right]\left(1-\frac{P}{4N}\right)$	$E = k\left(\frac{s}{12}\right)^{a}\cdot\left(\frac{W}{3}\right)^{b}\cdot\left(\frac{365-P}{365}\right)$
Where: E = pounds of pollutant per VMT* k = particle size multiplier (lb/VMT); k is 0.011 lb/VMT for PM, k is 0.0022 lb/VMT for PM_{10}, and k is 0.00054 lb/VMT for $PM_{2.5}$ sL = road surface silt loading (g/m^2); sL is 0.6 g/m^2, from AP-42 §13.2 W = average vehicle weight (tons); 15 tons empty and 40 tons full P = average # of wet days (>0.01") in time period; 175 day/yr (WRCC: Longview, 1931–2006 data) N = number of days in the averaging period; 365 days	Where: E = pounds of pollutant per VMT† k = particle size multiplier (lb/VMT); k is 4.9 lb/VMT for PM, k is 1.5 lb/VMT for PM_{10}, and k is 0.15 lb/VMT for $PM_{2.5}$ s = surface silt loading (g/m^2); s is 4.2%, from AP-42 §13.2.2 a = constant (unitless); a is 0.7 for PM and a is 0.9 for PM_{10} and $PM_{2.5}$. W = average vehicle weight (tons); 15 tons empty and 40 tons full b = constant (unitless); b is 0.45 P = average # of wet days (>0.01") in time period; 175 day/yr (WRCC: Longview, 1931–2006 data)
* Paved road emissions are assumed to be from an "industrial" site per §13.2.1	

Paved Road Equation	Unpaved Road Equation
† SWCAA did not subtract out the emissions from exhaust, brake wear, and tire wear since they are generally considered to be insignificant.	

Based on the above equations and assumption, the following emissions factors were determined:

Pollutant	Paved Haul Roads Fugitive Emission Factors (lb/VMT)		Unpaved Haul Roads Fugitive Emission Factors (lb/VMT)	
	Empty Truck	Full Truck	Empty Truck	Full Truck
PM	0.096	0.26	2.5	3.9
PM_{10}	0.019	0.052	1.2	1.9
$PM_{2.5}$	0.0047	0.013	0.12	0.18

Kalama Export has provided SWCAA with driving distances to various truck loadout locations at the facility (grain loadout distance estimated by SWCAA):

Location	Distance on Paved Road (ft)		Distance on Unpaved Road (ft)	
	Empty Truck	Full Truck	Empty Truck	Full Truck
DC-12	3,700	4,750	0	0
DC-13	4,750	2,200	0	0
DC-18/DC-19	3,200	2,200	800	0
Grain Loadout	4,000	2,200	0	0

For purposes of calculating maximum emissions, it is assumed that all the dust and screenings loadout occurs at the location with the highest emission rate (i.e. DC-18/DC-19). Annual emissions may be calculated using this assumption, or if Kalama Export provides the quantities of dust and screenings loaded out from each location, the individual emission rates can be used.

Emissions must be determined by multiplied by the emission factors by the total throughput or miles above unless new emission factors are developed through source testing. Any alternate emission calculation methodologies are accepted or specified by SWCAA.

6.c. Fugitive and Filtered Particulate Emissions Summary. The calculation of the maximum emissions has some inherent variation due to the different emission factors for each grain, the multiple methods of receipt and shipping, and the realistic constraints of the number of railcars, barges, and ships that can be handled. According to various grain handling facilities, a Panamax ship can be loaded in 28–36 hours. Assuming that ship loading is the main constraint to throughput, the maximum number of Panamax ships that could be loaded is 274 ships in a year (8760 hr/yr divided by 32 hr/ship). A Panamax ship can hold between 50,000 to 60,000 tons of grain, which based on the above assumptions equates, on average, to 422,100,000 bu/yr (12,663,000 tpy) of wheat.

Although the facility can receive many different types of grain, wheat is the most common grain received. The maximum emissions from the facility are determined below using the following assumptions:

- The total throughput of the facility is 12,663,000 ton of wheat only;
- 90% of the throughput is oiled (11,342,700 ton) and 10% is unoiled (1,266,300 ton);
- All of the wheat is cleaned;
- Throughput is maximized through receipt by barges (10,512,000 ton) with the remainder received by railcars (2,151,000 ton);
- 60,000 ton loaded to trucks and 12,816,000 ton loaded to ships;
- Dust and screenings loadout is assumed to be 0.3% of total throughput (37,989 ton) and loaded out entirely from DC-18/DC-19.

Source	**PM (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Point Emission Sources			
Baghouses	36.871	36.871	6.268
Fugitive Emission Sources			
Receiving Grain by Railcar	0.344	0.0840	0.014
Receiving Grain by Barge	15.768	3.995	0.526
Grain Loading to Ship, Oiled and Un-Oiled Grain	30.941	8.885	1.519
Grain Loading to Truck, Oiled Grain	0.690	0.234	0.039
Dust and Screenings Loadout	8.168	2.849	0.475
Paved and Unpaved Roads, Dust and Screenings	0.415	0.164	0.020
Paved and Unpaved Roads, Oiled Grain	0.218	0.044	0.011
TOTAL	**93.41**	**53.12**	**8.87**

6.d. <u>Emergency Fire Pump Engine.</u> Potential annual emissions from the combustion of ultra-low sulfur diesel (≤0.0015% sulfur by weight) were calculated with the assumption that the equipment will operate at full load for up to 200 hours per year.

Emergency Fire Pump Engine						
Hours of Operation =		200	hours			
Power Output =		240	horsepower			
Diesel Density =		7.206	pounds per gallon			
Fuel Sulfur Content =		0.0015	% by weight			
Fuel Consumption Rate =		12.0	gal/hr			
Fuel Heat Content =		0.138	MMBtu/gal (for use with GHG factors from 40 CFR 98)			
Pollutant	Emission Factor lb/hp-hr	Emissions lb/hr	Emissions tpy	Emission Factor Source		
NO_X	0.031	7.44	0.74	AP-42 Table 3.3-1 (10/96)		
CO	0.00668	1.60	0.16	AP-42 Table 3.3-1 (10/96)		
VOC	0.0025141	0.60	0.060	AP-42 Table 3.3-1 (10/96)		
SO_X as SO_2		0.0026	0.00026	Mass Balance		
PM	0.0022	0.53	0.053	AP-42 Table 3.3-1 (10/96)		
PM_{10}	0.0022	0.53	0.053	AP-42 Table 3.3-1 (10/96)		
$PM_{2.5}$	0.0022	0.53	0.053	AP-42 Table 3.3-1 (10/96)		
Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/gallon	tpy, CO_2e	
CO_2	73.96	1	163.05	23	27	40 CFR 98
CH_4	0.003	21	0.139	0.019	0.02	40 CFR 98
N_2O	0.0006	310	0.410	0.057	0.07	40 CFR 98
Total GHG - CO_2e	73.9636		163.603	23	27	

Emissions must be determined by the fuel usage or total number of hours of operation multiplied by the emission factors above unless new emission factors are developed through source testing. Any alternate emission calculation methodologies must be accepted or specified by SWCAA.

6.e. Emissions Summary

Air Pollutant	Potential to Emit (tpy)	Project Impact (tpy)
NO_x	0.74	+0.74
CO	0.16	+0.16
VOC	0.06	+0.06
PM	93.47	+0.14
PM_{10}	53.18	+0.14
$PM_{2.5}$	8.92	+0.06

7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities. More stringent limits are established in this Permit consistent with implementation of Best Available Control Technology (BACT):

7.a. 40 CFR 51.166(c) "Ambient air increments" requires approved State Implementation Plans to contain emission limitations and other measures as may be necessary to assure that increases in pollutant concentration over the baseline concentration in areas designated as Class I, II, or III must not exceed the incremental limits contained in 40 CFR 51.166(c).

7.b. 40 CFR 52.21 "Prevention of significant deterioration of air quality" requires facilities within certain source categories and/or emitting regulated pollutants (potential to emit) above 100 tpy or 250 tpy, depending upon the category, to apply for and obtain a Prevention of Significant Deterioration (PSD) permit. Grain terminals are not defined as a 100 tpy PSD major source under §52.21(b)(1)(i)(*a*). Therefore, they are defined as a 250 tpy PSD major source under §52.21(b)(1)(*b*). In addition, under §52.21(b)(1)(iii)(*aa*) fugitive emissions are required to be included in the emissions determination for PSD applicability since 40 CFR 60 Subpart DD was promulgated prior to August 7, 1980. Based on the calculations made using the belt capacity at this facility, the potential to emit for Kalama Export is less than 250 tpy, including fugitive emissions. Therefore, this regulation does not apply to this permitting action.

7.c. 40 CFR 60.300 et seq. (Subpart DD) "Standards of Performance for Grain Elevators" applies to each "affected facility" at a grain terminal elevator — defined as "any grain elevator with permanent storage capacity of more than 2.5 million bushels" — that commences construction, modification, or reconstruction after August 3, 1978. An affected facility is defined as each:

- truck unloading station;
- truck loading station;
- barge and ship unloading station;
- barge and ship loading station;
- railcar loading station;
- railcar unloading station;
- grain dryer; and
- all grain handling operations, which includes bucket elevators or legs (excluding legs used to unload barges or ships), scale hoppers and surge bins (garners), turn heads, scalpers, cleaners, trippers, and the headhouse and any other such structures.

Emission units such as loading and unloading stations, grain dryers, and grain handling operations, and any associated capture systems constructed prior to the promulgation date are not affected facilities; however, the status of the unit changes if it is modified[6] or reconstructed[7], whereby the "new" affected facility and the associated control become subject to the NSPS. Modification, replacement, or removal of the control equipment does not change the status of the unit [per §60.14(e)(5)], although, the associated control equipment (but not the emissions unit) does become subject to the NSPS if the use of the control equipment is altered (e.g. using an existing control on a new affected facility). EPA Applicability Determination Index (ADI) Control Number 0700052, relates to questions regarding malt (not subject to the NSPS) and barley (subject to the NSPS) and whether equipment which handles these products and the emissions from these products are subject to the NSPS. The ADI states "emissions from a baghouse that is controlling dust from grain and malt handling within the malt house are subject to NSPS Subpart DD, because the commingled emissions include grain handling emissions that are subject to NSPS Subpart DD." SWCAA concludes that emissions from a baghouse that previously was not subject to the NSPS becomes subject to the NSPS once "grain handling emissions that are subject to the NSPS" become comingled. It does not cause the original "affected facility" to become subject to the NSPS. Regardless, any new affected facility at a grain terminal elevator is subject to the NSPS.

Although conveyors are not specifically called out in the NSPS as affected facilities, EPA ADI Control Number 0700052 clearly states the intent that conveyors would be subject to the NSPS; the ADI states that "conveyors located inside the malt house that are used to move unmalted barley are subject to Subpart DD." SWCAA concludes that any conveyor that is constructed, modified, or reconstructed after August 8, 1978, is subject to the NSPS and, if the emissions from the conveyor are controlled, then the capture system would also be subject to the NSPS.

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[6] The term "modification" is defined under §60.14 in conjunction with §60.304. Generally, an affected facility is only modified under Subpart DD if the physical change or change in method of operation resulted in an increase in the maximum hourly capacity to emit filterable particulate matter.

[7] The term "reconstruction" is defined under §60.15.

Subpart DD is not applicable to the dust or screenings handling, storage, or truck loadout systems because the material being handled is grain dust, chaff, and other grain waste. Since it is not grain that is being handled, stored, or loaded into the trucks, the Subpart does not apply. A determination for a similar facility was made by EPA Region 6 for the grain waste bins at an Arkansas Rice Mill. In that determination (#0000016 in EPA's Applicability Determination Index) the statement is made that "the supporting background information document for Subpart DD describes an affected facility in greater detail without suggesting that grain elevators would include anything other than whole grains."

The Kalama Export facility was originally constructed in 1983 with a permanent storage capacity of 2,340,000 bu[8]. Although the facility was constructed after the promulgation date of August 3, 1978, it did not meet the definition of "grain terminal elevator." The original facility included the railcar unloading station, the barge unloading station, the ship loading station, the truck loading station, and various grain handling operations. In 2000, the facility expansion added an additional 1,500,000 bu of storage, which caused the facility to meet the definition of "grain terminal elevator" and therefore all new construction, modifications, and reconstructions after that date would potentially be subject to Subpart DD. Several new affected facilities were established as part of the expansion, including cleaners, weigh hoppers, and conveyors, along with associated control equipment. In 1999 and later in 2010, modification to the ship loader spouts and an increase in the hourly emissions from ship loading caused the ship loading operation to become subject to Subpart DD. Later additions and modifications in 2003, 2007, and 2010 added additional affected facilities and storage capacity; the current permanent storage capacity is 4,860,000 bu.

7.d. 40 CFR 60.8 "Performance Tests" requires that emission tests be conducted according to test methods approved in advance by the permitting authority and a copy of the results be submitted to the permitting authority.

7.e. 40 CFR 63 Subpart ZZZZ [§63.6580 *et seq*] "National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines" establishes national emission limitations and operating limitations for HAP emitted from stationary reciprocating internal combustion engines located at major and area sources of HAP emissions. The existing Emergency Generator Engine is located at an area source of HAP and used in emergency situations; therefore, this regulation applies to the existing engine.

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[8] This value does not include the USDA "pack factor", which can be up to 9.5% depending upon the type of grain being stored, and adjusts for the additional storage capacity available as the grain at the bottom of the silos is compacted. The effect of the factor is that the amount of grain that can be stored at the facility is greater than the design capacity. In a March 29, 2000 letter to SWCAA, EPA made an applicability determination that the pack factor is not applicable when determining the applicability of Subpart DD.

(existing, area, <500 hp, emergency)For existing emergency engines at an area source, the owner or operator is required to:

- Change oil and filter every 500 hours of operation or annually, whichever comes first except as allowed by 40 CFR 63.6625(i) [Table 2d(4)(a)];
- Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first [Table 2d(4)(b)];
- Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary [Table 2d(4)(c)];
- Install a non-resettable hour meter if one is not already installed. [§ 63.6625(f)]
- Report each instance in which the owner did not meet each operating limitation [§ 63.6640(b)];
- Limit operation of the engine to emergency use and maintenance checks and readiness testing. Operation for maintenance checks and readiness testing may be conducted only to the extent that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Operation for maintenance checks and readiness testing is limited to 100 hours per year [§ 63.6640(f)(2)(i)];
- Record the occurrence and duration of each malfunction of operation (i.e., process equipment) [§ 63.6655(a)(2)];
- Record maintenance conducted on the engine in order to demonstrate that the engine was operated and maintained according to the applicable maintenance plan [§ 63.6655(e)]; and
- Record the hours of operation of the engine by use of a non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation [§ 63.6655(f)].

There may be other requirements under the Subpart that apply to the facility that are not specified above. SWCAA has not yet taken delegation of this regulation; therefore, at this time, EPA is the Administrator of this regulation and the facility must communicate directly with EPA regarding compliance demonstrations and/or reporting required by this rule.

For purposes of this Subpart, "diesel fuel" also includes any non-distillate fuel with comparable physical and chemical properties (e.g., biodiesel) that is suitable for use in compression ignition engines per §63.6675.

7.f. 40 CFR 70 "State Operating Permit Programs" requires facilities with site emissions of any regulated air pollutant greater than 100 tpy, any single hazardous air pollutant greater than 10 tpy, or any aggregate combination of hazardous air pollutants greater than 25 tpy to obtain a Title V permit. The facility does not emit any criteria pollutants or HAP above any of these thresholds; therefore, this regulation does not apply to the facility.

7.g. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an ADP for installation and establishment of an air contaminant source.

7.h. WAC 173-401 "Operating Permit Regulation" requires all major sources and other sources as defined in WAC 173-401-300 to obtain an operating permit. This regulation is not applicable because this source is not a potential major source and does not meet the applicability criteria set forth in WAC 173-401-300. The facility does not emit any criteria pollutants or HAP above major thresholds; therefore, this regulation does not apply to the facility.

7.i. WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires BACT for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety.

The facility does not emit TAPS; therefore, this regulation does not apply to the facility.

7.j. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, SO_2, NO_x, ozone, and CO in the ambient air, which must not be exceeded. The facility emits PM_{10}, $PM_{2.5}$, SO_x, NO_x, and CO; therefore, certain sections of this regulation apply. The facility does not emit lead; therefore, the lead regulation section does not apply.

7.k. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, SO_2, concealment and masking, and fugitive dust. This regulation applies to the facility.

7.l. SWCAA 400-040(1) "Visible Emissions" requires that emissions of an air contaminant from any emissions unit must not exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point. This regulation applies to the facility.

7.m. SWCAA 400-040(2) "Fallout" requires that emissions of PM from any source must not be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited. This regulation applies to the facility.

7.n. SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere. This regulation applies to the facility.

7.o. SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum. This source must be managed properly to maintain compliance with this regulation. This regulation applies to the facility.

7.p. SWCAA 400-040(6) "Sulfur Dioxide" requires that no person is allowed to emit a gas containing in excess of 1,000 ppmd of SO_2, corrected to 7% O_2 or 12% CO_2 as required by the applicable emission standard for combustion sources.

The facility does not emit SO_2; therefore, this regulation does not apply to the facility.

7.q. SWCAA 400-040(8) "Fugitive Dust Sources" requires that reasonable precautions be taken to prevent fugitive dust from becoming airborne, and minimize emissions. This regulation applies to the facility.

7.r. SWCAA 400-060 "Emission Standards for General Process Units" requires that all new and existing general process units do not emit PM in excess of 0.23 g/Nm^3_{dry} (0.1 gr/dscf) of exhaust gas. The facility has general process units; therefore, this regulation applies to the facility.

7.s. SWCAA 400-091 "Voluntary Limits on Emissions" allows sources to request voluntary limits on emissions and potential to emit by submittal of an ADP application as provided in SWCAA 400-109. The facility has accepted federally enforceable emission limits as part of this or previous permitting actions to limit the facility's PTE below major thresholds; therefore, this regulation applies to the facility.

7.t. SWCAA 400-109 "Air Discharge Permit Applications" requires that an ADP application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an ADP application to request such changes. An ADP must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits. This regulation applies to the facility.

7.u. SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source will be granted unless it is evidenced that:
(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) BACT will be employed for all air contaminants to be emitted by the proposed equipment;
(3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

The facility is located in an area that is in attainment for (PM, NO_x, CO, SO_2, O_3); therefore, this regulation applies to the facility.

8. RACT/BACT/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate BACT for the types and amounts of air contaminants emitted by the processes as described below:

8.a. BACT Determination – Housekeeping Vacuum Collector System. A PM limit of 0.002 gr/dscf is more stringent than the limit required under SWCAA 400-101 (3). The baghouse is therefore considered BACT.

8.b. Prevention of Significant Deterioration (PSD) Applicability Determination. 40 CFR 52.21(b)(50)(ii) states that a regulated pollutant means "Any pollutant that is subject to any standard promulgated under Section 111 of the Act;" Section 111 of the FCAA is the NSPS Section. 40 CFR 60.302 (Subpart DD), promulgated August 3, 1978, contains standards for particulate matter and 40 CFR 60.303 is the test method section (Method 5). Both these sections use PM thus; PM is subject to regulation under the NSPS and PSD. SWCAA is not delegated PSD authority by EPA. Therefore, all PSD determinations and permits are issued by the WA State Department of Ecology (WDOE).

Kalama Export is not a listed facility type under 40 CFR 51.21(b)(1)(i)(*a*) and is subject to the 250 tpy threshold. Fugitive emissions must be included in all determinations with respect to the 250 tpy threshold per §52.21(b)(1)(iii)(*aa*). The facility has a maximum potential to emit below 250 tpy; therefore, this regulation does not apply to this permitting action.

8.c. BACT Determination – Diesel Engine. Available control measures for diesel engines include low sulfur fuel and add-on control equipment such as selective catalytic reduction units. Add-on control equipment is not economically or technically feasible because the engine will be operated only for short periods of time for testing, maintenance, and to provide emergency electricity and will not achieve the stable operating temperature required for operation of add-on control equipment.

8.d. Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.e. Compliance Assurance Monitoring (CAM) Applicability Determination. With some exceptions, CAM is applicable to any emissions unit with the potential to emit (pre-controlled) 100 tons per year or more of any criteria air pollutant for which an emission standard (limit) applies, and that utilizes a control device to maintain compliance with the emission standard. None of the emission units at this facility have the potential to emit, prior to controls, 100 tons per year or more of any criteria air pollutant for which an emission standard applies. Therefore, the requirements of the CAM program are not applicable.

9. AMBIENT IMPACT ANALYSIS

9.a. Criteria Air Pollutant Review. PM is emitted at levels where no adverse ambient air quality impact is anticipated.

9.b. Toxic Air Pollutant Review. This facility does not emit any TAPs.

9.c. Emergency Generator: The emergency generator will operate no more than 100 hr/yr for testing, maintenance, and as necessary to supply power during an emergency, therefore, the ambient impact of this source is not likely to be significant.

Conclusions

9.d. Operation of a Housekeeping Vacuum Collector System, as proposed in ADP application CO-1061, will not cause the ambient air quality requirements of 40 CFR 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.e. Operation of a Housekeeping Vacuum Collector System, as proposed in ADP application CO-1061, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.f. Operation of a Housekeeping Vacuum Collector System, as proposed in ADP application CO-1061, will not violate emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 22-3556 in response to ADP application CO-1061. ADP 22-3556 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 22-3556 supersedes ADP 18-3290 in its entirety. Compliance will be determined under this ADP, not previously superseded ADPs. Existing approval conditions for units not affected by this project have been carried forward unchanged.

10.b. Emission Limits - Facilitywide. Based on the maximum belt capacity of the facility, emissions are limited to 93.41 tpy PM, 53.12 tpy PM_{10}, and 8.87 tpy $PM_{2.5}$.

10.c. Emission Limits – Baghouse and Bin Vents. All baghouses and bin vents are subject to a 0.002 gr/dscf limit, with the exception of Bin Vent Filters DC-13, DC-18, and DC-19 which are subject to a 0.005 gr/dscf limit. The emission rates for existing baghouses and bin vents have not changed. Baghouse DC-28 will have an emission limit consistent with other baghouses.

10.d. Emission Limits – Visible Emissions. Visible emission limits, with the exception of truck loading, are unchanged from previous permitting actions. The truck loading operation is not subject to Subpart DD; however, SWCAA believes that a visible emissions limit is appropriate for this source and has established the limit at 20% opacity.

10.e. Operational Limits and Requirements. Operating limits to ensure compliance with the emission limits and other requirements under the ADP have been included.

Grain types have been limited to the grains typically handled by the facility. New grains will need to be evaluated as to the appropriate oiling effectiveness as necessary.

Oil application rates are established at a minimum of 3 qt/1,000 bu. This value represents the minimum quantity of mineral oil that, when applied to grain, had documented control effectiveness for PM. Although Kalama Export frequently applies more than this minimum quantity, a literature review did not indicate that there was a corresponding increase in control effectiveness with an increase in oil application rate.

Daily throughput limits for railcar and barge unloading and ship loading have been established to be consistent with other grain handling facilities within SWCAA's jurisdiction.

Emergency Generator. As requested by the source, approval conditions are based on limited service (100 hr/yr) for actual power interruptions. Compliance with these requirements will be demonstrated based on manufacturer's emission factors and annual operation as recorded and reported by the source. BACT requirements for this unit include the use of low sulfur diesel (sulfur content not to exceed 0.0015% by weight). Visible emission limits have been established consistent with proper operation of the Cummins diesel engine. Due to the technical limitations of the engine, the limit of 5% opacity does not apply during periods of start-up and shutdown.

10.f. Monitoring and Recordkeeping Requirements. ADP 22-3556 establishes monitoring and recordkeeping requirements sufficient to document compliance with applicable emission limits, ensure proper operation of approved equipment and provide for compliance with generally applicable requirements.

A requirement for a monthly "visual survey" of baghouse and bin vent exhausts has been established to provide a mechanism for the facility to maintain the equipment in good order and in compliance with the applicable opacity limits.

10.g. Reporting Requirements. ADP 22-3556 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for hours of operation and material throughput. Reports are to be submitted on an annual basis.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations must take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA will include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

To SWCAA's knowledge, this facility can comply with all applicable standards during startup and shutdown.

11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the approval conditions.

11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

12.a. Emission Testing Requirements. Baghouses and bin vents at this facility are subject to periodic emission testing requirements in accordance with ADP 22-3556 Appendix A. Fugitive emission sources are subject to periodic emission testing in accordance with ADP 22-3556 Appendix B.

Bin vents that are used to control emissions from the dust tanks and screenings bins (Bin Vent Filters DC-12, DC-13, DC-18, DC-19, DC-23, and DC-28) are not required to conduct a Method 5 PM test since they are not subject to Subpart DD and do not typically generate any measurable, consistent flow. A periodic visible emissions test is expected to provide adequate demonstration of compliance.

13. FACILITY HISTORY

13.a. General History. The grain export terminal was constructed at the Port of Kalama in 1983 by the Minnesota based Peavy Company. The original facility was permitted under OA 83-699 and included railcar unloading, marine leg, ship loading, and baghouses DC-1 through DC-12. The facility storage capacity was approximately 2,340,000 bu. In 1990, the dust tank bin along with the associated truck loadout system and baghouse DC-13 were constructed (OA 90-1230). The catches of Baghouses DC-6 through DC-10 were routed to the new dust collection system. Redesigned deadboxes for the ship loading spouts as well as installation of the mineral oil system were permitted under OA 99-2183. OA 00-2325 also approved a storage capacity increase to 3,840,000 bu, a wheat cleaning system, a barge sampling, weighing, and distribution system, and installation of baghouses DC-14, DC-15, DC-16, and DC-17. In 2003, a determination was made that the facility could exceed Title V permitting thresholds and a voluntary emission limit was imposed at 80.0 tpy of PM_{10} in ADP 03-2447. Modifications to the facility in 2007 and 2010 added additional equipment and storage capacity.

13.b. Previous Permitting Actions. The following past permitting actions have been taken by SWCAA for this facility:

Permit	Application	Date Issued	Description
18-3290	CO-997	June 28, 2018	Replace existing Dust Collectors DC-9 and DC-10 with similar units. Baghouse and bin vent testing requirements were changed from five years to ten years.
12-3027	CO-915	Jul 19, 2012	Modification of permit conditions to incorporate EPA equivalency determination for barge unloading, update loading rates and baghouse operational requirements, modify testing schedule for several baghouses.
10-2949	CO-891	Nov 15, 2010	Installation of additional baghouses DC-21, DC-22, DC-24, DC-25, DC-26, DC-27, wheat cleaner, and dust loadout baghouse DC-23.
07-2713	CO-824	May 23, 2007	Installation of additional baghouse DC-20 to be able to run barge unloading and wheat cleaners at the same time.
03-2447	CO-742 and CO-739	Feb 13, 2003	Approval to use new AP-42 emission factors for barge unloading and ship loading operations and to implement voluntary emission limits for the facility.
00-2325	CO-663	Jun 29, 2001	Approval of addition of grain storage capacity, a wheat cleaning system, and a barge sampling, weighing, and distribution system; also approves the installation of baghouses DC-14, DC-15, DC-16, and DC-17.
99-2183	CO-566	Mar 5, 1999	Approval of new dust suppression system, modification of existing visible emission limits, and installation of modified spout

Permit	Application	Date Issued	Description
			dead boxes for ship loading. SWCAA 99-2183 superseded all other existing permits.
Letter	N/A	May 12, 1993	Installed water spray system to control dust.
90-1230	CO-410	Jul 2, 1990	Approval for dust storage bin and associated truck load-out system.
90-1184	CO-400	Mar 16, 1990	Approval for increase in throughput up to one million bu/yr soybeans, one million bu/yr barley and 12 million bu/yr sorghum.
Letter	N/A	Apr 21, 1987	Approval to use oil as dust suppression in lieu of operating dust control systems 9 and 10.
83-699	CO-285	Jul 22, 1983	Approval for grain loading operations with a storage capacity of 2.3 million bushels.

13.c. Compliance History. The following compliance issues have been identified for this facility:

NOV	Date	Violation
10625	7/14/2022	Installation of baghouse for scale house upkeeping without submitting an ADP application.
10603	8/6/2021	Exceeded 10% opacity limit during mid-hold ship holding.

14. PUBLIC INVOLVEMENT OPPORTUNITY

14.a. Public Notice for ADP Application CO-1061. Public notice for ADP application CO-1061 was published on the SWCAA website for a minimum of fifteen (15) days beginning on November 3, 2022.

14.b. Public/Applicant Comment for ADP Application CO-1061. SWCAA did not receive specific comments, a comment period request, or any other inquiry from the public or the applicant regarding ADP application CO-1061. Therefore no public comment period was provided for this permitting action.

14.c. State Environmental Policy Act. This project is exempt from SEPA requirements pursuant to WAC 197-11-800(3) since it only involves repair and/or maintenance of existing structures, equipment or facilities, and will not involve material expansions or changes in use. SWCAA issued a Determination of SEPA Exempt (SWCAA 22-043) concurrent with issuance of ADP 22-3556.