Statement of Basis

Title V Air Quality Operating Permit Renewal

South Dakota Soybean Processors
Volga, South Dakota

South Dakota Department of Environment and Natural Resources

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1.0 BACKGROUND

On August 29, 1995, the South Dakota Department of Environment and Natural Resources (DENR) issued a Prevention of Significant Deterioration (PSD) air quality permit to South Dakota Soybean Processors (SD Soybean) for a soybean processing plant near Volga, South Dakota. On July 19, 1999, DENR issued a PSD air quality permit to SD Soybean to allow the facility to increase its process capacity from 2,000 to 2,700 tons per day, which was considered a major modification under the PSD program.

On July 19, 1999, DENR issued a Title V air quality permit to SD Soybean for the operation of the soybean processing plant near Volga, South Dakota. In September 1999, January 2001, April 2001, April 2002, February 2006, and January 2007, DENR amended and/or modified SD Soybean' Title V air quality operating permit to allow for the installation and operation of a pellet mill, a flake expander system, storage tanks, an additive system, burning of biodiesel, and adding biodiesel production equipment. None of these revisions were considered major modifications under the PSD program.

On February 9, 2009, DENR issued SD Soybean a renewed Title V air quality operating permit. On October 25, 2012, DENR issued SD Soybean a modification to their permit to add the deodorizing step to remove odoriferous compounds from the refined oil that was permitted under air quality construction permit #28.0501-06-01C.

On June 3, 2013, SD Soybean was issued an air quality construction permit #28.0501-06-02C for the addition of two storage bins. On February 18, 2014, DENR issued SD Soybean an air quality construction permit #28.0501-06-03C for a M9 Fabric Filter Replacement and Conveyor Direct Aspiration. On August 18, 2014, DENR issued SD Soybean an air quality construction permit #28.0501-06-04C to modify the meal load out.

On September 6, 2013, DENR received an application from SD Soybean to renew their Title V air quality operating permit. Not all equipment applications were submitted with the 2013 application; therefore, the application was considered incomplete. The additional applications to complete the application were received June 2, 2014. The Title V renewal application was considered complete on June 2, 2014.

On September 2, 2014, DENR received an application to incorporate the equipment permitted in construction permit #28.0501-06-03C. The modification will be included with the Title V renewal review. Additionally, DENR will incorporate equipment permitted in construction permits #28.0501-06-02C and #28.0501-06-04C as initial startup notifications were received on July 25, 2014 and December 19, 2014, respectively.

1.1 Existing Equipment

Table 1-1 displays a description of the existing permitted units as identified in SD Soybean Processors Title V operating permit issued October 25, 2012.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#1	EP-#1 – Truck and railcar soybean receiving system consists of two truck receiving pits, a rail car receiving pit, and an underground belt conveyor system.	2,700 tons per hour	Baghouse (R10)
#2	EP-#2 – Soybean handling, storage, and cleaning process consists of a scalper, de-stoner, hammer mill, and the transfer of soybeans to storage bins. The transfer system consists of the transfer of soybeans from the pre-cleaning building to storage bins, storage bins to dryer, and dryer to day tanks.	150 tons per hour or 5,000 bushels per hour	Baghouse (R11)
#3	EP-#3 – 1995 Berico soybean dryer system fired with natural gas.	Process rate = 126 tons per hour and heat input = 20.4 million Btus per hour	Cyclone – emits indoors
#4	EP-#4 – Soybean screened and cleaned with aspiration, each with a separate process cyclone.	2,662 tons per day 111 tons per hour	Baghouse (P4: Bean Cleaning Aspirator), (P7: Screens Aspirator), (P31&P32: Drags)
#5	EP-#5 – Soybean cracking process consists of four Roskamp cracking mills, transportation system, and a process cyclone.	2,636 tons per day 110 tons per hour	Baghouse (P42), (P12A & P12B: Cracked Bean Conveyors), (P2: Whole Beans Leg), (P3: Rotex Screener), (P6: Screening Sifter), (P9: Whole Bean Surge Hopper)
#6	EP-#6 – Primary soybean de-huller operation with aspirators and a process cyclone.	2,535 tons per day 105 tons per hour	Baghouse (P17)
#18	EP-#7 – Coarse soybean de-huller operation with aspiration and a process cyclone.	270 tons per day 11 tons per hour	Baghouse (P20)
#47	EP-#8 – Fines soybean de-huller operation with aspiration.	149 tons per day 6 tons per hour	Baghouse (P21)
#8	EP-#9 –Six 1995 Roskamp and two 1999 Roskamp flakers.	2,511 tons per day 105 tons per hour	Cyclone (P36)
#21	EP-#10 – Flake expanding process. The process consists of flakes and fines exposed to steam and pressure to form a collet and transportation to the extraction process. A Cyclone (P65) collects the	1,399 tons per day 58 tons per hour	Not applicable

Unit	Description	Maximum Operating Rate	Control Device
	product		
#14a	EP-#12 – Desolventizer, toaster, dryer, and cooler system.	2,551 tons per day 106 tons per hour	Kice single cyclone (E14A)
#14b			Kice single cyclone (E14B)
#14c			Kice single cyclone (E14C)
#14d			Kice single cyclone (E14D)
#9	EP-#13 – 1995 Roskamp Champion meal sizing process. The meal sizing process involves two grinders and two sifters.	2,000 tons per day 83 tons per hour	Baghouse (M9)
#12	EP-#14 – Meal handling and storage consisting of conveyors, blenders, and storage tanks.	2,295 tons per day 96 tons per hour	Baghouse (L7)
#10	EP-#15 – Two 1995 Champion hull grinders and a process cyclone used to convey hull to storage tanks.	147 tons per day 6 tons per hour	Baghouse (HP1)
#20	EP-#16 – Hull pelletizer and cooler	180 tons per day 8 tons per hour	Cyclone (HP5).
#13a	EP-#17 – Pneumatic transfer of ground hulls from receiving and hull grinding to two hull storage bins.	205 tons per day 9 tons per hour	Baghouse (P300 & P301)
#13b	EP-#17 – Pneumatic transfer of ground hulls from receiving and hull grinding to two hull storage bins.	9 tons per hour	Baghouse (P34 – D2)
#11	EP-#18 – Meal and hull load out using one truck load out and one railcar load out. Both loadout areas have a cover.	2,146 tons per day 89 tons per hour	Baghouse (L26)
#22	EP-#19 – Refining additive system. Clay, trycil and diatomatious earth delivered in bulk material bags and is gravimetrically feed to the feed bins.	1.5 tons per hour	Baghouse (DC 487)
#15	EP-#20a – Boiler A, 1996 Nebraska boiler fueled with natural gas, distillate oil, and biodiesel.	70 million Btus per hour heat input or 50,000 pounds of steam per hour heat output	Not applicable
	EP-#20b – Boiler B, 1996 Nebraska boiler fueled with natural gas, distillate oil, and biodiesel.	70 million Btus per hour heat input or 50,000 pounds of steam per hour heat output	
#17	EP-#21 – Cooling tower.	Not applicable	Not applicable
#48	Mineral oil and miscella exchanger system; waste water extractor system; and a second stage evaporator, oil stripper, and evaporator and stripper	Not applicable	Mineral oil scrubber

Unit	Description	Maximum Operating Rate	Control Device
	condensers.		
#49	Cooling tower for deodorizing process	2,500 gallons per minute	Not applicable
#50	High pressure steam generator	5.17 million Btus per hour heat input	Not applicable

1.2 Additional Equipment

SD Soybean also operates the following equipment that will be reviewed:

1. Unit #51: 1996 Detroit Diesel, Model Number: DDFP06FA, compression ignition, diesel fired, emergency fire pump with a maximum operating rate of 368 horsepower; and
2. Unit #52: 1996 Cummins, Model number 4BT3.9-G2, compression ignition, diesel fired, emergency generator with a maximum operating rate of 102 horsepower.

Table 1-2 lists the equipment permitted in construction permits #28.0501-05-02C (Unit #2), #28.0501-05-03C (Unit #9), and #28.0501-05-04C (Unit #11) that will be included in this Title V renewal.

Table 1-2 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#2	EP-#2 – Soybean handling, storage, and cleaning process consists of a scalper, de-stoner, hammer mill, and the transfer of soybeans to storage bins. The transfer system consists of the transfer of soybeans from the pre-cleaning building to storage bins, storage bins to dryer, and dryer to day tanks.	150 tons per hour or 5,000 bushels per hour	Baghouse (R11)
#9	EP-#13 – 1995 Roskamp Champion meal sizing process. The meal sizing process involves two grinders, two sifters, and three meal conveyors.	83 tons per hour	Baghouse (M9)
#11	EP-#18 – Meal and hull load out using one truck load out and one railcar load out. Both loadout areas have a cover.	500 tons per hour	Baghouse (L26)

The change to Unit #2 added additional storage bins with the capacity to hold 292,759 and 414,416 bushels of beans. Each storage bin has a new drag conveyor and outflow conveyor. Each drag has a capacity of 20,000 bushels per hour; however, the drags are limited by the existing feed conveyors, which can only operate at a rate of 15,000 bushels per hour. On July 25, 2014, DENR received notification of initial startup of the permitted change to Unit #2 in accordance with ARSD 74:36:20:15(10). The equipment permitted as part of Unit #2 will be included in the Title V renewal.

The change to Unit #9 increased airflow to 15,000 actual cubic feet per minute and the three existing meal handling conveyors (M10, M11, and M12) are directly aspirated to the new M9 Fabric Filter as a new stack was constructed. The allowable emissions increased since the M9 stack has existing BACT emission limits (0.01 grains per dry standard cubic foot) for PM_{10} based on airflow. Although the changes increased the airflow rate, the changes did not change the maximum operating rate; therefore, Unit #9's maximum operating rate remained at 83 tons per hour. Construction of the project permitted in construction permit #38.0501-05-03C began on March 12, 2014 and operation of Unit #9 with changes began on May 4, 2014. Therefore, in accordance with ARSD 74:36:20:20, SD Soybean was required to submit an operating permit application within twelve months after the initial startup of the new M9 fabric filter. Therefore, the changes to Unit #9 will be included in the Title V renewal.

The change to Unit #11 was to replace the existing baghouse, L26 and modify the meal load out by the addition of a second load out conveyance line to allow for the two trucks to load out simultaneously, or one truck and one railcar to load out at the same time. The second conveyance line is rated at 225 tons per hour to feed the load out area. Therefore, the maximum operating capacity of Unit #11 increased from 200 tons per hour to 500 tons per hour. The additional conveyance line was routed to the L26 baghouse and increased airflow from 30,672 actual cubic feet per minute to 40,000 actual cubic feet per minute. SD Soybean stated that there would not be an increase in production or the amount of product loaded out annually. The allowable emissions increased since the L26 stack has existing BACT emission limits (0.01 grains per dry standard cubic foot) for PM_{10} based on airflow. On December 19, 2014, DENR received notification of initial startup of the permitted change to Unit #11 in accordance with ARSD 74:36:20:15(10). The proposed equipment will be permitted as part of Unit #11 and included in the Title V renewal.

2.0 New Source Performance Standards

DENR reviewed the New Source Performance Standards and determined the following need to be reviewed in more detail to determine if they are applicable to SD Soybean's operations.

2.1 Standards Applicable to Storage Tanks: Subpart K

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and

3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

SD Soybean operates thirty-four tanks. The first two subparts are not applicable because SD Soybean commenced construction of its' storage tanks after July 23, 1984. Subpart Kb does not apply to the following storage tanks:

- Storage tanks with a capacity greater than or equal to 151 cubic meters storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals;
- Storage tanks with a capacity greater than or equal to 75 cubic meters but less than 151 cubic meters storing a liquid less than 15.0 kilopascals; or
- Storage tanks with a capacity less than 75 cubic meters.

Table 2-1 lists the tanks, the capacity of the tanks, the maximum true vapor pressure of the tanks, and applicability with reasoning.

Table 2-1 – Tank Applicability Requirements

Tank Description	Capacity Cubic Meters	Max True Vapor Pressure Kilopascals	Applicable	Applicable Notes
Tank ID #1 –hexane solvent	57	-	No	< 75 cubic meters
Tank ID #2 –hexane solvent	57	-	No	< 75 cubic meters
Tank ID #3 –hexane solvent	57	-	No	< 75 cubic meters
Tank ID #4 –hexane solvent	57	-	No	< 75 cubic meters
Tank ID #5 –crude soy oil	140	< 0.1	No	< 15 kilopascals
Tank ID #6 –crude soy oil	140	< 0.1	No	< 15 kilopascals
Tank ID #7 –crude soy oil	140	< 0.1	No	< 15 kilopascals
Tank ID #8 –crude soy oil	140	< 0.1	No	< 15 kilopascals
Tank ID #9 –crude soy oil	56,781	< 0.1	No	< 3.5 kilopascals
Tank ID #10 –crude soy oil	5,644	< 0.1	No	< 3.5 kilopascals
Tank ID #11 –crude soy oil	5,644	< 0.1	No	< 3.5 kilopascals
Tank ID #12 –crude soy oil	5,644	< 0.1	No	< 3.5 kilopascals
Tank ID #13 –crude soy oil	30,970	< 0.1	No	< 3.5 kilopascals
Tank ID #14 –soy oil	102	< 0.1	No	< 15 kilopascals
Tank ID #15 –soy oil	102	< 0.1	No	< 15 kilopascals
Tank ID #16 –soy oil	102	< 0.1	No	< 15 kilopascals
Tank ID #17 –soy oil	102	< 0.1	No	< 15 kilopascals
Tank ID #18 –crude soy oil	115	< 0.1	No	< 15 kilopascals
Tank ID #19 –de-gummed oil	115	< 0.1	No	< 15 kilopascals
Tank ID #20 –de-gummed oil	115	< 0.1	No	< 15 kilopascals
Tank ID #21 –de-gummed oil	115	< 0.1	No	< 15 kilopascals
Tank ID #22 –bleached oil	1,654	< 0.1	No	< 3.5 kilopascals
Tank ID #23 –bleached oil	115	< 0.1	No	< 15 kilopascals

Tank Description	Capacity Cubic Meters	Max True Vapor Pressure Kilopascals	Applicable	Applicable Notes
Tank ID #24 –bleached oil	115	< 0.1	No	< 15 kilopascals
Tank ID #25 –off spec oil	115	< 0.1	No	< 15 kilopascals
Tank ID #26 –off spec oil	115	< 0.1	No	< 15 kilopascals
Tank ID #27 –#2 diesel oil	45	-	No	< 75 cubic meters
Tank ID #28 –#2 diesel oil	45	-	No	< 75 cubic meters
Tank ID #29 –soap stock	58	-	No	< 75 cubic meters
Tank ID #30 – sodium hydroxide	26	-	No	Not organic liquid
Tank #504 – soybean oil	775	<0.1	No	<3.5 kilopascals
Tank #505 – soybean oil	775	<0.1	No	<3.5 kilopascals
Tank #506 – soybean oil	775	<0.1	No	<3.5 kilopascals
Tank #847 – distillate oil	36	<0.1	No	<3.5 kilopascals

No tanks located at SD Soybean are applicable to the New Source Performance Standard, Subparts K, Ka, or Kb.

2.2 Standards Applicable to Boilers: Subparts D, Db, and Dc

There are three New Source Performance Standards for fossil fuel-fired steam generators. The three standards are applicable to the following steam generators:

1. 40 CFR Part 60, Subpart D: applicable to a steam generator with a maximum operating rate of 250 million Btus per hour or more and commenced construction after August 17, 1971;
2. 40 CFR Part 60, Subpart Db: applicable to a steam generator with a maximum operating rate of 100 million Btus per hour or more and commenced construction after June 19, 1984; and
3. 40 CFR Part 60, Subpart Dc: applicable to a steam generator with a minimum design heat input capacity equal to or greater than 10 million Btus per hour but less than or equal to 100 million Btus per hour and commenced construction after June 9, 1989.

The boilers permitted as Unit #15 are each rated at 70 million Btus per hour heat input which is greater than 10 million Btus per hour, but less than 100 million Btus per hour and both boilers commenced construction after June 9, 1989. Therefore, both boilers permitted as Unit #15 are applicable to New Source Performance Standard, Subpart Dc.

Unit #50 is rated at 5.17 million Btus per hour heat input which is less than 10 million Btus per hour and commenced construction after June 9, 1989. Therefore, Unit #50 is not applicable to New Source Performance Standard Subparts D, Db, or Dc.

The sulfur dioxide emission limit for the boilers is 0.5 pounds per million Btus heat input and/or the distillate oil shall contain less than or equal to 0.5 weight percent sulfur. Subpart Dc does not have a sulfur dioxide limit for boilers burning natural gas or biodiesel. Since biodiesel may

contain distillate oil in the blend, biodiesel will be required to meet the same applicable sulfur dioxide limit as distillate oil.

2.3 Standards for Synthetic Organic Chemical Manufacturing: Subpart VV

There are two New Source Performance Standards for synthetic organic chemical manufacturing industries. The two standards are applicable to the following:

1. 40 CFR Part 60, Subpart VV is applicable to affected facilities in the synthetic organic chemical manufacturing industry, of which ethanol is included; and commence construction, reconstruction or modification after January 5, 1981, but before November 8, 2006 and the capacity of the plant is more than 1,000 megagrams per year of ethanol; and
2. 40 CFR Part 60, Subpart VVa is applicable to affected facilities in the synthetic organic chemical manufacturing industry that commence construction, reconstruction, or modification after November 7, 2006 and the capacity of the plant is more than 1,000 megagrams per year of ethanol.

SD Soybean's production facility (vegetable oil production facility) does not produce one of the chemicals listed in the subpart. Therefore, SD Soybean is not applicable to this subpart.

2.4 Standards for Synthetic Organic Chemical Manufacturing: Subpart NNN

This subpart establishes standard of performance for volatile organic compound emissions from synthetic organic chemical manufacturing industry distillation operations. The provisions of this subpart are applicable to an affected facility that produces any of the chemicals listed in 40 CFR §60.667 as a product, co-product, by-product, or intermediate for which construction, modification, or reconstruction commenced after December 30, 1983 and one of the following is applicable:

1. Each distillation unit not discharging its vent stream into a recovery system;
2. Each combination of distillation unit and recovery system into which its vent stream is discharged; or
3. Each combination of two or more distillation units and the common recovery system into which its vent stream is discharged.

SD Soybean's facility (vegetable oil production facility) does not produce one of the chemicals listed in the subpart. Therefore, SD Soybean is not applicable to this subpart.

2.5 Standards for Synthetic Organic Chemical Manufacturing: Subpart RRR

This subpart establishes standard of performance for volatile organic compound emissions from synthetic organic chemical manufacturing industry reactor processes. The provisions of this subpart are applicable to each affected facility that is part of a process unit that produces any of the chemicals listed in 40 CFR §60.707 as a product, co-product, by-product, or intermediate and

is any of the following for which construction, modification, or reconstruction commenced after June 29, 1990:

1. Each reactor process not discharging its vent stream into a recovery system;
2. Each combination of a reactor process and the recovery system into which its vent stream is discharged; or
3. Each combination of two or more reactor processes and the common recovery system into which its vent streams are discharged.

SD Soybean's facility (vegetable oil production facility) does not produce one of the chemicals listed in the subpart. Therefore, SD Soybean is not applicable to this subpart.

2.6 Standards for Stationary Internal Combustion Engines: Subpart IIII

This subpart establishes standard of performance for stationary compression ignition internal combustion engines. The provision of the New Source Performance Standard is applicable to the owner or operator of a stationary compression ignition internal combustion engine that commences construction after July 11, 2005, the stationary compression ignition combustion engine is manufactured after April 1, 2006, and the engine is not a fire pump engine.

Units #51 and #52 were both manufactured prior to April 1, 2006. Therefore, this subpart is not applicable to either unit.

2.7 Standard for Stationary Spark Engines: Subpart JJJJ

Subpart JJJJ is applicable to owners and operators of stationary spark ignition (SI) internal combustion engines (ICE) that commence construction after June 12, 2006, where the stationary SI ICE are manufactured:

1. On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 horsepower (except lean burn engines with a maximum engine power greater than or equal to 500 horsepower and less than 1,350 horsepower);
2. On or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 horsepower and less than 1,350 horsepower;
3. On or after July 1, 2008, for engines with a maximum engine power less than 500 horsepower;
4. On or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 kilowatts (25 horsepower); or
5. Owners and operators of stationary SI ICE that commence modification or reconstruction after June 12, 2006.

Unit #51 is a spark ignition engine with a maximum engine power less than 500 horsepower and was constructed prior to June 12, 2006. Therefore, Unit #51 is not subject to Subpart JJJJ.

2.8 Standards for Grain Elevators: Subpart DD

This subpart establishes standard of performance for grain elevators. The provisions of this subpart are applicable to the following operations:

1. The provisions of this subpart are applicable to any grain storage elevator, which has a permanent grain storage capacity of 1,000,000 bushels. A grain storage elevator means any grain elevator located at any wheat flour mill, wet corn mill, dry corn mill, rice mill, or soybean oil extraction plant; and
2. Commences construction, modification, or reconstruction after August 3, 1978.

The permanent grain storage capacity for this plant is greater than 1,000,000 bushels; therefore, the SD Soybean must comply with this New Source Performance Standard. In accordance with 40 CFR §60.300(a), the affected operations at the soybean processing facility are each unloading, loading, grain dryer, and all grain handling operations. The standard applies to the equipment that processes the whole soybean not a portion of the soybean. This affects the following units:

- Unit #1 – Receiving;
- Unit #2 – Transportation and precleaning;
- Unit #3 – Dryer; and
- Unit #4 – Cleaning.

The soybean reclaim conveyor associated with the bean storage pile was originally determined not to be applicable to this subpart. However, the soybean reclaim conveyor does load into trucks and is considered a loading station. Therefore, this process will be subject to the fugitive opacity limits in 40 CFR §60.302(c)(3). The visible emissions from a truck loading station is less than or equal to 10 percent opacity.

Equipment that alters the soybean so that the material is no longer a grain and equipment that handles the altered material, is not applicable to this subpart. Therefore, the meal and hull loadout (Unit #11), process meal leg, meal leg to blending, and hull leg to blending (Unit #12), and the pneumatic transfer of ground scalps from receiving and ground hulls from process to two hull bins (Unit #13) are not applicable to this subpart. In addition, the truck and railcar loading stations are not applicable to the fugitive visibility limits in this subpart.

2.9 Other Applicable New Source Performance Standards

DENR reviewed the other New Source Performance Standards and determined that there are no other standards applicable to SD Soybean.

3.0 New Source Performance Review

The ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. SD Soybean is located near Volga, South Dakota, which is in

attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, SD Soybean is not subject to NSR review.

4.0 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated pollutant. The following is a list of regulated pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate matter with a diameter less than or equal to 10 microns (PM10);
3. Particulate matter with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO_2);
5. Nitrogen oxides (NO_x);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Greenhouse gases (carbon dioxide, nitrous oxide, methane, etc.)
10. Fluorides;
11. Sulfuric acid mist;
12. Hydrogen sulfide;
13. Reduced sulfur compounds; and
14. Total reduced sulfur.

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the "Tailoring Rule."

On May 13, 2010, EPA issued the final version of the "Tailoring Rule" for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;

2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

On June 24, 2014, the Supreme Court decided greenhouse gases may not be regulated under the PSD program unless the facility requires a PSD permit for the other regulated air pollutants.

4.1 Potential Emissions

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

4.1.1 Potential Emissions

SD Soybean submitted calculations for nearly all of the permitted units with the application. DENR reviewed the calculations and emission factors and agrees with the methods SD Soybean used to determine potential emissions unless otherwise noted. All calculated emissions used the maximum operating rate and maximum number of operational hours. Potential emissions for the entire facility are summarized in Table 4-4.

Emissions for Unit #1 were calculated using stack test results from April 1997 for PM_{10} and AP-42, Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-81, (11/95). The emission factor is based upon no control device; however, the calculation submitted with the application uses a baghouse control efficiency of 99.9%. Since stack test emissions are available, that data will be used for the potential emissions calculations for Unit #1 as opposed to AP-42 emission factors.

Unit #2 emissions were calculated using AP-42, Section 9.9.1.1, Table 9.9.1-1, (5/03). Emissions for both controlled and uncontrolled emission estimates were submitted; therefore, worst case scenario emissions were used as summarized in Table 4-4.

Emissions for Unit #3 were calculated using natural gas emission factors from AP-42, Section 1.4, Table 1.4-1, Table 1.4-2, (7/98), and Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-81, (11/95). Control efficiency for Unit #3 was estimated to be at 90%. No emission factor was given in AP-42 for PM_{10} handling; therefore, the assumed percentage factor was 20% of PM was equivalent to the amount of potential PM_{10}.

Unit #4 calculations were completed using stack test results from April 1997 and AP-42 Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-81, (11/95) with a control efficiency of 99.9%. There was not an AP-42 emission factor for PM_{10}; therefore, the "receiving factor" was assumed percentage factor was 50% PM being equivalent to the amount of potential PM_{10}. Since stack test results were available, that data will be used to calculate the potential emissions as summarized in Table 4-4.

Units #5, #18, and #47 used emission factors from AP-42, Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-85, (11/95) with a control efficiency of 99.9%. For Unit #5, the "cracking/dehulling" factor is assumed to be represented by all the PM being PM_{10}. For Units #18 and #47, it was assumed that 100% of the potential PM is PM_{10} as there was not an AP-42 emission factor.

Emissions from Unit #6 were calculated using AP-42, Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-86, (11/95) emission factors with a control efficiency of 99.9%. It is assumed that all PM is PM_{10} as there was not an AP-42 emission factor available for PM_{10}.

Emissions for Unit #8 were calculated using AP-42, Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-81, (11/95). Control efficiency for Unit #8 was estimated to be at 90%. There was not an AP-42 emission factor for PM_{10}; therefore, PM was assumed to contain 20% PM_{10}.

Unit #21 used AP-42, Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-88, (11/95) emission factors for calculations with control efficiency of 50%. Calculations for Unit #21 assumed PM contains 20% of PM_{10}.

Units #14a, #14b, #14c, and #14d used an emission factor based upon industry experience and the facility experience that determined that emission factor would be based upon the measured emissions divided by the design capacity. The emission factor was determined to be 2.07 pounds per hour divided by the design capacity.

Emissions for Unit #9 submitted in the renewal application were calculated using AP-42 Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-93, (11/95) with a cyclone control efficiency of 90% of material. PM for Unit #9 is assumed to contain 20% PM_{10}. On September 2, 2014, DENR received an application to incorporate equipment changes as permitted in construction permit #28.0501-06-03C. Therefore, calculations submitted in the modification application will be used to estimate potential emissions which were calculated using the AP-42 data listed above.

Unit #12 uses AP-42 Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-93, (11/95) emission factors with a control efficiency of 99.9%. Although the emission factor includes a cyclone, no cyclones are in the handling system. Therefore, the storage tank will be assumed to stimulate a cyclone. Unit #12 assumes the PM contains 20% PM_{10}.

Emissions from Unit #10 were calculated with a control efficiency of 99.9% and using PM emission factor from AP-42 Section 9.11.1, Table 9.11.1-1, SCC 3-02-007-86, (11/95). The emission factor included a cyclone; however, there are no cyclones on the grinding system so the emission factor was adjusted by 0.20 pounds per ton by 0.1 since the cyclone removes 90% of

material. There is no AP-42 emission factor for PM_{10}; therefore, PM is assumed to be 20% of PM_{10}.

Unit #20 emission calculations were done using 90% control efficiency and AP-42 Section 9.9.1, Table 9.9.1-2, SCC 3-02-008-16, (5/03). There is not an AP-42 emission factor for PM_{10}; therefore, PM_{10} is assumed to be 100% of PM.

Emissions for both Unit #13a and #13b were calculated using 99.9% control efficiency and AP-42 Section 9.9.11.1, Table 9.11.1-1, SCC 3-02-007-91, (11/95). There is no AP-42 emission factor for PM_{10}; therefore, PM_{10} is assumed to be 20% of PM.

Unit #11 emissions were calculated using a control efficiency of 99.9% and AP-42 Section 9.9.11.1, Table 9.11.1-1, SCC 3-02-007-91, November 1995 as well as stack test results from April 1997. There is no AP-42 emission factor for PM_{10}; therefore, PM is assumed to be 20% of PM_{10}. Since stack test results were provided, the emission based upon stack test results and is summarized in Table 4-4.

Emissions from Unit #22 were calculated using AP-42 emission factors from AP-42 and a control efficiency of 99.9%. Emissions were based on 4,347 tons per year and maximum number of operational hours of 3,120 hours.

Unit #15 uses emission factors from AP-42 Section 1.4-2, Table 1.4-1 and Table 1.4-2, (7/98) for PM, PM_{10}, SO_2, CO, and VOC. The NOx emission factor was based upon test results. The boilers are permitted to burn natural gas, diesel fuel, and biodiesel. SD Soybean calculated the potential emissions from all three fuel types and summarized the worst case scenario in the application (see Table 4-4).

Unit #17 did not included updated emission calculations, but did note that they are the same as included in the last renewal. DENR agrees with the calculations included in the renewal from October 25, 2012 for Unit #17.

Emissions for Unit #49 were derived from Joel Reisman and Gordon Frisbie paper: “Calculating Realistic PM10 Emissions from Cooling Towers” A&WMA, Abstract No. 216, Session No. AM-1b. The potential emissions are calculated (see Equation 4-1) based on the potential cooling tower throughput, Q, (2,500 gallon per minute), the water used in the cooling tower’s total dissolved solids (TDS) of 1,700 parts per million (ppm), and a manufacturer drift loss, D, (0.005%). PM_{10} emissions were assumed to be 94.5 % of total particulate emissions.

Unit #50 emissions were calculated using emission factors for the combustion of natural gas found in AP-42 Section 1.4-2, Table 1.4-1 through Table 1.4-4, (7/98). It was assumed that the heat content of natural gas was 1,020 million Btu per million cubic feet.

Emissions for the emergency generator (Unit #51) were calculated using emission factors for the combustion of diesel found in AP-42, Section 3.3, Table 3.3-1, G (10/96). Calculations were based upon 500 operational hours per year as the unit is classified as emergency-use only, based

on EPA's memo from John S. Seitz to the directors of EPA's regional offices, dated September 6, 1995 (See calculations in Section 4.1.3).

Emissions data for the emergency fire pump (Unit #52) are from Clarke Detroit Diesel-Allison, May 1995 and were submitted with the application. DENR used emission factors from AP-42, Section 3.1, Table 3.3-1, (10/96) (See calculations in Section 4.1.3).

4.1.2 Aboveground Storage Tanks

Potential emissions from the aboveground storage tanks were calculated using EPA's TANKS Program, Version 4.09d. A summary of how the emissions were calculated is summarized in the application and a summary of the results may be viewed in Table 4-5. DENR reviewed the inputs and agrees with the results.

Table 4-1 – Potential VOC Emissions from Aboveground Storage Tanks

Tank	VOC
Tank ID #1 –hexane solvent	818 tons/year[1]
Tank ID #2 –hexane solvent	
Tank ID #3 –hexane solvent	
Tank ID #4 –hexane solvent	
Tank ID #5 –crude soy oil	0.02 tons/year
Tank ID #6 –crude soy oil	0.02 tons/year
Tank ID #7 –crude soy oil	0.02 tons/year
Tank ID #8 –crude soy oil	0.02 tons/year
Tank ID #9 –crude soy oil	2.3 tons/year
Tank ID #10 –crude soy oil	0.2 tons/year
Tank ID #11 –crude soy oil	0.2 tons/year
Tank ID #12 –crude soy oil	0.3 tons/year
Tank ID #13 –crude soy oil	0.9 tons/year
Tank ID #14 –soy oil	0.003 tons/year
Tank ID #15 –soy oil	0.003 tons/year
Tank ID #16 –soy oil	0.003 tons/year
Tank ID #17 –soy oil	0.003 tons/year
Tank ID #18 –crude soy oil	0.03 tons/year
Tank ID #19 –de-gummed oil	0.05 tons/year
Tank ID #20 –de-gummed oil	0.05 tons/year
Tank ID #21 –de-gummed oil	0.05 tons/year
Tank ID #22 –bleached oil	0.2 tons/year
Tank ID #23 –bleached oil	0.04 tons/year
Tank ID #24 –bleached oil	0.04 tons/year
Tank ID #25 –off spec oil	0.003 tons/year
Tank ID #26 –off spec oil	0.003 tons/year
Tank ID #27 –#2 diesel oil	-
Tank ID #28 –#2 diesel oil	-
Tank ID #29 –soap stock	-

Tank	VOC
Tank ID #30 – sodium hydroxide	-
Tank #504 – soybean oil	0.07 tons/year
Tank #505 – soybean oil	0.07 tons/year
Tank #506 – soybean oil	0.07 tons/year
Tank #847 – distillate oil	0.004 tons/year
Total	**822 tons per year**

1-Hexane losses for Tank #1- #4 have potential emissions included in all extraction/hexane loss emissions.

The potential volatile organic compounds for Tanks #1 - #4 that store hexane solvent have substantial potential emissions. Hexane emissions are regulated under the PSD permit and are in the existing Title V air quality operating permit; therefore, those permit conditions will be placed in this Title V permit renewal.

4.1.3 Potential Emissions for Emergency Units

Uncontrolled emission factors for each applicable pollutant are derived from the Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1). The factors for the generators fired by distillate oil were derived from Section 3.1, Table 3.3-1 (10/96). The emission factors for the generators are summarized in Table 4-2.

Table 4-2 – Uncontrolled Emission Factors for Generators (pounds per million Btu)

Pollutant	TSP	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Distillate Oil[1]	0.31	0.31	0.31	0.29	4.41	0.95	0.35

Neither Unit #51 nor Unit #52 have a control device; therefore, uncontrolled emission factors will be used for all emergency unit calculations.

Unit #51 (emergency generator) and Unit #52 (emergency fire pump) have heat outputs 102 horsepower and 368 horsepower, respectively. In order to calculate potential emissions using the AP-42's million Btu emission factor, the heat input capacity of the unit was calculated based on its capacity in kilowatts listed in the application. DENR assumes generators have an operational efficiency of 35%. Equation 4-1 converts the maximum design operating rate from kilowatts (output) to million Btus per hour (heat input) using a conversion factor of 3,413 BTU per hour-kilowatt.

Equation 4-1 – Converting Heat Output to Heat Input

$$Max\ Capacity_{heat\ input}\left[\frac{MMBtu}{hr}\right] = (\frac{1}{0.746}\left[\frac{hP}{kW}\right] \times \frac{heat\ output}{efficiency}[kW] \times 3{,}413\ \left[\frac{Btu}{hr-kW}\right] \times \frac{MMBtus}{10^6\ Btus}$$

The maximum capacity heat input for Unit #51 is 1.3 MMBtu per hour and Unit #52 is 4.81 MMBtus per hour.

Equation 4-2, Table 4-2, heat input, and a conversion factor of 2,000 pounds per ton were used to calculate the potential emissions from the emergency units fueled by distillate oil. SD Soybean

indicated in the application that the emergency units that were fueled with distillate oil had a sulfur content of 0.05 percent weight sulfur.

Equation 4-3 - Uncontrolled Emission Calculations for Distillate Oil

$$Uncontrolled\ Emissions\left[\frac{tons}{year}\right]=\left(\frac{Emission\ Factor\left[\frac{pounds}{MMBtu}\right]*Annual\ Operations\left[\frac{hrs}{year}\right]*Heat\ Input\left[\frac{MMBtu}{hr}\right]}{2000\left[\frac{pounds}{tons}\right]}\right)$$

Equation 4-3 above, 8,760 hours for annual operations, heat input and a conversion factor of 2,000 pounds per ton was used to calculate the potential to emit. Table 4-3 summarizes the total uncontrolled emissions Units #51 and #52. Both units are fueled with distillate oil with a weight percent of 0.5 and limited to 500 operational hours per 12-month rolling period.

Table 4-3 – Total Uncontrolled Emissions for Generators

Potential Emissions (tons per year)							
Unit	**TSP**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_x**	**CO**	**VOC**
#51	0.10	0.10	0.10	0.08	1.14	0.31	0.09
#52	0.37	0.37	0.37	0.35	5.30	1.14	0.42

4.1.4 Potential Emissions Summary

Table 4-4 summarizes the controlled total potential emissions for SD Soybean unless otherwise noted.

Table 4-4 – Summary of Total Potential Emissions (tons per year)

Unit	TSP	PM_{10}	$PM_{2.5}$	SO_2	NOx	CO	VOC
#1	1.85	1.85	1.85				
#2	16.43	4.14	0.72				
#3	147.62	29.52	29.52[2]	0.01	8.91	7.49	0.49
#4	0.30	0.30	0.30[2]				
#5	0.17	0.17	0.17[2]				
#6	0.17	0.17	0.17[2]				
#18	0.02	0.02	0.02[2]				
#47	0.01	0.01	0.01[2]				
#8	1.70	0.34	0.34[2]				
#21	4.72	0.94	0.94[2]				
#14a	0.91	0.91	0.91				
#14b							
#14c							
#14d							
#9	5.63	5.63	5.63				
#12	0.13	0.03	0.03[2]				
#10	0.05	0.01	0.01[2]				
#20	1.18	1.18	1.18[2]				

#13a	0.01	0.002	0.002[2]				
#13b	0.01	0.002	0.002[2]				
#11	4.41	4.41	4.41[2]				
#22	0.02	0.00	0.00[2]				
#15a	4.66	4.66	4.66	0.37	21.46	51.51	3.37
#15b	4.66	4.66	4.66	0.37	21.46	51.51	3.37
#17	0.47	0.44	0.44				
#48							[3]
#49	0.47	0.44	0.44				
#50	0.17	0.17	0.17	0.01	2.22	1.87	0.12
#51[1]	0.10	0.10	0.10[2]	0.08	1.14	0.31	0.09
#52[1]	0.37	0.37	0.37[2]	0.35	5.30	1.14	0.42
Tanks/Hexane Extraction							822.0
Total	**196**	**61**	**57**	**1**	**61**	**114**	**829**

1- Uncontrolled;

2- No $PM_{2.5}$ value, so PM_{10} value was used; and

3- Included with fugitive hexane extraction losses.

SD Soybean is considered a major source under the PSD program. SD Soybean obtained a PSD permit for its initial construction and triggered a PSD review for particulate matter and volatile organic compounds. At that time, SD Soybean did not requested enforceable limits to forgo a PSD review for sulfur dioxide, nitrogen oxide and carbon monoxide. Since SD Soybean was considered a major source, any changes since the initial construction were evaluated to determine if the proposed changes would be considered a major modification. Historically, SD Soybean's proposed changes since the initial construction has not triggered a PSD review because the potential emissions without controls did not exceed the PSD thresholds or SD Soybean requested enforceable conditions to maintain the controlled emissions less than PSD thresholds.

4.1.5 PSD Requirements

In the original application review, it was determined that the potential emissions from SD Soybean's operations were greater than the major source threshold under the PSD program for particulate matter, sulfur dioxide, nitrogen oxide, and volatile organic compounds. SD Soybean accepted operational limits which maintain actual emissions of sulfur dioxide and nitrogen oxide below the significant threshold under the PSD program. Therefore, SD Soybean's potential particulate matter and volatile organic compound emissions are greater than the major source threshold under the Title V air quality permit program. The potential emission calculations in the application verify that SD Soybean is still a major source under the PSD program and the Title V air quality permit program for particulate matter and volatile organic compounds. In the 2009 Statement of Basis reviewing SD Soybean's renewal outlined the requirements to forgo a PSD air quality permit; therefore, the PSD permit conditions listed in the 2009 Title V renewal will remain in effect in this Title V renewal application to ensure compliance with Title V threshold and allow SD Soybean to forgo obtaining a PSD air quality operating permit.

SD Soybean did not propose to change any of the existing BACT conditions since the 2009 Title V renewal to forgo a PSD air quality operating permit; therefore, all applicable permit conditions will remain in the renewed Title V air quality operating permit.

In addition, visible emissions will be checked on a periodic basis with the frequency dependent on the results of the visible emission tests for each unit with a particulate matter BACT emission limit. The visible emission tests will also determine if additional stack testing is required.

Due to the recent federal regulations, the emergency units that were previously considered insignificant units will also be permitted units. Therefore, the language for the monthly production records for PSD exemption and the semiannual PSD exemption report will change to reflect unit identifications.

The PSD permit did not specify a Best Available Control Technology particulate matter or the volatile organic compound emission limit for the boilers. DENR considers proper combustion practices while burning natural gas and distillate oil in accordance with the applicable New Source Performance Standard to be the BACT for the boilers permitted as Unit #15.

Table 4-5 represents the requirements in the existing Title V air quality operating permit to forgo a PSD permit; therefore, these permit conditions will also be included in this Title V air quality permit.

Table 4-5 – Existing Requirements to Forgo a PSD Review

Permit Condition #	Condition
13.1	**Sulfur content limit for Unit #15.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not burn distillate oil or biodiesel oil with a sulfur content greater than 0.05 percent sulfur by weight in the two boilers associated with Unit #15.
13.2	**Fuel limit.** In accordance with ARSD 74:36:05:16.01(8), the amount of natural gas, distillate oil and biodiesel shall be limited based on use that maintains the owner or operator's nitrogen oxide emissions less than 38 tons per 12-month period from Unit #3 and #15. The monthly nitrogen oxide emissions shall be calculated using Equation 13-1…
13.3	**Unit #22 particulate matter limit.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not allow the emissions of particulate matter 10 microns in diameter or less (PM10) from Unit #22 in excess of 0.01 grains per dry standard cubic foot…
13.4	**Monitoring sulfur content of distillate oil and biodiesel.** In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall obtain a fuel supplier certification for each load of distillate oil and biodiesel purchased or received. The fuel supplier certification shall include the following information…

13.5	**<u>Monthly production records for PSD exemptions.</u>** In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall calculate the following each month: 1. Total amount of natural gas, in million cubic feet; distillate oil, in gallons; and biodiesel, in gallons fired in Unit #3, the two boilers associated with Unit #15, and from insignificant activities such as the fire pump engine and emergency generator; and 2. A 12-month rolling total of the nitrogen oxide emissions using that month's value and the previous 11 months' values from Unit #3, the two boilers associated with Unit #15, and from insignificant activities such as the fire pump engine and emergency generator.
13.6	**<u>Semiannual PSD exemption report.</u>** In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall submit a semiannual report to the Secretary by the end of each calendar half. The semiannual report shall contain the following information:… 2.The amount of nitrogen oxide emitted during each month and each 12-month rolling total in the reporting period for Unit #3, the two boilers associated with Unit #15, and from insignificant activities such as the fire pump engine and emergency generator; and 3.A copy of the results of any distillate oil and/or biodiesel analysis required in permit condition 13.5 and conducted during the reporting period…
13.7	**<u>Exempt from PSD review.</u>** In accordance with ARSD 74:36:05:16.01(8), the owner or operator is exempt from a prevention of significant deterioration review for sulfur dioxide and nitrogen oxide emissions. The exemption is due to operational limits in Chapter 13.0 of this permit. Any relaxation in the operational limits that increases the sulfur dioxide or nitrogen oxide emissions equal to or greater than 38 tons per 12-month period will require a full prevention of significant deterioration review for that pollutant as though construction had not commenced.
13.8	**<u>Unit #22 exempt from PSD review.</u>** In accordance with ARSD 74:36:05:16.01(8), the owner or operator is exempt from a prevention of significant deterioration review for Unit #22. The exemption is due to operational limits in Chapter 13.0 of this permit. Any relaxation in the operational limits that increases particulate matter (10 microns in diameter or less) emissions from Unit #22 equal to or greater than 14.3 tons per 12-month period will require a full prevention of significant deterioration review as though construction had not commenced.
14.1	**<u>BACT limit for hexane solvent loss.</u>** In accordance with ARSD 74:36:09:02, as referenced to 40 CFR §52.21, the total amount of hexane solvent lost to the ambient air shall not exceed 0.30 gallons of solvent per ton of soybeans processed. Compliance with this limit shall be determined on a 12-month rolling average.
14.2	**<u>BACT limits for particulate matter.</u>** In accordance with ARSD 74:36:09:02, as referenced to 40 CFR § 52.21(j)(3), the owner or operator shall not allow the emissions of particulate matter 10 microns in diameter or less (PM10) in excess of the emission limits specified in Table 14-1 for the appropriate permitted unit, operation, and process…
14.3	**<u>BACT limits for volatile organic compounds.</u>** In accordance with ARSD 74:36:09:02, as referenced to 40 CFR § 52.21(j)(3), the owner or operator shall not allow the emissions of volatile organic compounds in excess of the emission specified limits in Table 14-2 for the appropriate permitted units, operations, and processes…

14.4	**Monthly production records for BACT limits.** In accordance with ARSD 74:36:09:02, as referenced to ARSD 74:36:05:16.01(9), the owner or operator shall calculate the following each month: 1. Total amount of hexane solvent that is released into the ambient air, in gallons; 2. Total amount of soybeans processed through the plant, in tons; and 3. A 12-month rolling total of the amount of hexane solvent lost, in gallons, per soybeans processed, in tons.
14.5	**Hexane solvent leak detection plan.** In accordance with ARSD 74:36:09:02, as referenced to 40 CFR §52.21, the owner or operator shall develop, implement, and maintain a-hexane solvent leak detection plan. The hexane solvent leak detection plan shall contain an overall description of the hexane solvent leak detection plan, a time frame for conducting periodic leak checks, timeline for repairing leaks, and other pertinent information that demonstrates hexane solvent emissions caused by leaks will be minimized.
14.6	**Semiannual production report.** In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall submit a semiannual production report to the Secretary by the end of each calendar half. The semiannual report shall contain the following information:… 2. The 12-month rolling average of the amount of hexane solvent lost, in gallons, per soybeans processed, in tons, for each month in the reporting period using that month's value and the previous 11 months' values…

Table 4-6 provides a comparison of the potential emissions for the facility to the significant threshold in the PSD program under 40 CFR § 52.21(b)(23).

Table 4-6 – Comparison of Potential Emissions to Significant Thresholds

Source	Potential Emissions	Significant Threshold	PSD Applicable
Particulate Matter	5 tons/year	25 tons/year	No
PM_{10}	5 tons/year	15 tons/year	No
$PM_{2.5}$	5 tons/year	10 tons/year	No
Sulfur Dioxide	2 tons/year	40 tons/year	No
Nitrogen oxide	7 tons/year	40 tons/year	No
Carbon Monoxide	4 tons/year	100 tons/year	No
Volatile Organic Compounds	1 tons/year	40 tons/year	No
Lead	0 tons/year	0.6 tons/year	No
Fluorides	0 tons/year	3 tons/year	No
Sulfuric Acid Mist	0 tons/year	7 tons/year	No
Hydrogen sulfide	0 tons/year	10 tons/year	No
Reduced sulfur compounds	0 tons/year	10 tons/year	No

4.2. Potential to Emit for Greenhouse Gases

Greenhouse gases did not become a regulated pollutant until May 2010. Therefore, SD Soybean was not required to conduct a review of the greenhouse gases when it was issued its PSD permits in 1995 and 1999. In addition, none the proposed changes since the initial PSD permits were

issued have triggered a PSD review. Therefore, based on the timelines and the Supreme Court of the United States decision, SD Soybean is not required to conduct a review of greenhouse gases. Therefore, greenhouse gases will not be reviewed at this time.

5.0 National Emission Standards for Hazardous Air Pollutants

DENR reviewed the National Emission Standards for Hazardous Air Pollutants and determined that SD Soybean is not applicable to any standards under 40 CFR Part 61.

6.0 Maximum Achievable Control Technology Standards

6.1 Potential HAP Emissions

The Federal Maximum Achievable Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of hazardous air pollutants is defined as having the potential to emit 10 tons or more per year of a single hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

6.1.1 Potential Hazardous Air Pollutant Emissions

Unit #3's HAP emissions are calculated using Chapter 1.4, Table 1.4-3 for the HAPs emitted in the greatest amount, hexane – 1.8 pounds per million standard cubic foot using Equation 6-1.

Equation 6-1 – Dryer Potential Emissions

$$Potential\ throughput = 20.4\frac{MMBtu}{hour} \times 8{,}760\ \frac{hours}{year} \div 1{,}000\frac{Btu}{cu\ ft} = 178.7\frac{MMCF}{year}$$

$$Potential\ Emissions = \ 178.7\frac{MMCF}{year}\ \times 1.8\ \frac{pounds}{MMCF} \div 2{,}000\frac{pounds}{ton} = 0.2\frac{tons}{year}$$

Unit #15 is permitted to burn natural gas, diesel fuel, and biodiesel. SD Soybean calculated the potential emissions from all three fuel types and summarized the worst case scenario in the application submitted March 19, 2012 and no changes have been made since that time.

SD Soybean submitted HAPs emission estimates with the application for Unit #50. DENR has reviewed the HAPs calculations for Unit #50 and agrees with those submitted by SD Soybean.

SD Soybean installed a high pressure steam generating boiler fired with natural gas and is rated at 5.17 million Btus per hour. It was assumed that the heat content of natural gas was 1,020 million Btu per million cubic feet. The emission factor for HAP's for the combustion of natural gas found in AP-42, Table 1.4-1 through Table 1.4-4 (7/98) is 1.889 pounds per million cubic feet. Using Equation 4-2, DENR calculated the total potential emissions for the high pressure steam boiler to be 0.1 tons per year.

For Unit #51 and Unit #52, DENR uses emission factors from AP-42, Table 3.3-2, (10/96), list the hazardous air pollutants emission factor as 0.00118 pounds per million Btus for stationary compression ignition engines fired with diesel. Using Equation 4-8, the hazardous air pollutant emission factor, the heat input, and assuming 500 hours of operation per year per the potential hazardous air pollutant emissions for each emergency unit is calculated. All HAPs emissions are summarized in Table 6-1.

Table 6-1 – Summary of Total Potential HAPs Emissions (tons per year)

Unit	HAPs
#3	0.2
#15a	0.1
#15b	
#50	0.1
#51	0.0
#52	0.1
Tanks/Hexane Extraction Losses[1]	818
Total	**819**

1 – All tanks at facility.

Based upon the HAPs emission summarized in Table 6-1, SD Soybean is considered a major source for hazardous air pollutants. SD Soybean accepted a hexane solvent loss limit of 0.30 gallons of solvent per ton of soybeans processed and recording keeping and reporting requirements ensure SD Soybean hexane losses remain below the limit set by PSD permit.

6.2 MACT Standards

DENR reviewed the Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63 and determined the following need to be reviewed further to determine if they are applicable.

6.3 Standards for Industrial Cooling Towers: Subpart Q

This subpart establishes national emission standards for hazardous air pollutants for industrial cooling towers. The MACT standard for industrial process cooling towers applies to both existing and new industrial process cooling towers. The MACT standard prohibits the use of chromium based water treatment chemicals on or after September 8, 1994. SD Soybean will be required to meet the requirements in this subpart for the two cooling towers.

In accordance with ARSD 74:36:05:04.01(8), a unit cannot be considered insignificant if a state or federal limit is applicable to the unit. The prohibition of chromium based water treatment chemicals is a limit. Therefore, the industrial process cooling towers cannot be considered an insignificant activity and shall be included in the permit.

6.4 Standards for Solvent Extraction: Subpart GGGG

This subpart establishes national emission standards for hazardous air pollutants for solvent extraction for vegetable oil production. The provisions of this subpart apply to each new and existing vegetable oil production process that is a major source under the Title V air quality permit program of hazardous air pollutants and removes oil from soybeans. SD Soybean is a major source of hazardous air pollutants under the Title V air quality permit program. Therefore, this subpart is applicable.

A vegetable oil production process means the equipment comprising a continuous process for producing crude vegetable oil and meal products, including specialty soybean products, in which oil is removed from listed oilseeds through direct contact with an organic solvent. Process equipment typically includes the following components:

1. Oilseed preparation operations (including conditioning, drying, de-hulling, and cracking);
2. Solvent extractors;
3. Desolventizer toasters;
4. Meal dryers, coolers, and meal conveyor systems;
5. Oil distillation units;
6. Solvent evaporators and condensers;
7. Solvent recovery system (also referred to as a mineral oil absorption system);
8. Vessels storing solvent-laden materials; and
9. Crude meal packaging and storage vessels.

A vegetable oil production process does not include vegetable oil refining operations (including operations such as bleaching, hydrogenation, and deodorizing) and operations that engage in additional chemical treatment of crude soybean meals produced in specialty desolventizer units (including operations such as soybean isolate production).

6.5 National Emissions Standard for Major Sources: Subpart DDDDD

EPA finalized the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters (Subpart DDDDD) on January 21, 2013.

This subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAPs) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAPs. Facilities are subject to this subpart if they own or operate a new, reconstructed or existing industrial, commercial, or institutional boiler or process heater meets the definitions outlined in 40 CFR §63.7575.

Existing sources are those which commenced construction or reconstruction before June 4, 2010 with a compliance date of January 31, 2016. New sources are those that commenced construction after June 4, 2010 with a compliance date of January 31, 2013, or upon startup, whichever is later.

SD Soybean operates two 1996 boilers fired on natural gas, distillate oil, and biodiesel with a maximum operating rate of 70 million Btus per hour of each input for each unit.

SD Soybean also operates a 5.17 million BTU boiler, Unit #50, manufactured in August 2010 that is fired with natural gas only, which is considered a new, gaseous fuel boiler under this subpart because it was constructed after June 4, 2010, and has a capacity that is less than 10 MMBtu, and fired with natural gas. Therefore, Units #15 and #50 are subject to this subpart.

6.6 Standards for Stationary Engines: Subpart ZZZZ

Subpart ZZZZ is applicable to any existing, new, or reconstructed stationary reciprocating internal combustion engines located at a major or area source of hazardous air pollutant emissions, excluding stationary reciprocating internal combustion engines being tested at a stationary reciprocating internal combustion engines test cell/stand.

The emergency units are applicable to a federal regulation. Both emergency units were constructed prior to 2006 and have the following applicability's:

1. Major source;
2. Existing emergency engine;
3. Spark ignition;
4. Not contractually obligated;
5. Not an emergency engine at an institution, commercial, or residential; and
6. Does not meet the emission standards for a non-emergency engine.

6.7 MACT Standards: Subparts G, U, SS, and UU

These subparts establish national emission standards for hazardous air pollutants for synthetic organic chemical manufacturing industry for process vents, storage vessels, transfer operations, and wastewater; group 1 polymers and resins; closed vent systems, control devices, recovery devices, and routing to a fuel gas system or process; and equipment leaks, control level 2 standards. The requirements in these subparts are not applicable unless a subpart in 40 CFR Part 63 specifically references the subpart. The subparts in 40 CFR Part 63 applicable to SD Soybean do not reference these subparts.

6.8 Standards for Organic Chemical Manufacturing: Subpart FFFF

This subpart establishes national emission standards for hazardous air pollutants for miscellaneous organic chemical manufacturing. Soy oil production operations (vegetable oil production) are applicable to 40 CFR Part 63, Subpart FFFF. However, as noted 40 CFR § 63.2435(b)(3), if the process units are covered by another subpart under 40 CFR Part 63, then

those units are not applicable to this subpart. SD Soybean's vegetable oil production operation is subject to 40 CFR Part 63, Subpart GGGG. Therefore, SD Soybean's vegetable oil production operation is not applicable to this subpart.

6.9 Other MACT Standards

DENR has reviewed all potentially applicable MACT Standards and determined that no other are applicable to SD Soybean at this time.

7.0 State Requirements

Any source operating in South Dakota that meets the definition of a major source for any criteria pollutant is required to obtain a Title V air quality operating permit. A major source is defined as having the potential to emit greater than 100 tons per year of a criteria pollutant or greater than or equal to 10 tons per year of a single hazardous air pollutant, or greater than or equal to 25 tons per year of a combination of hazardous air pollutants. In addition, sources subject to federal New Source Performance Standards or national emission standards for hazardous air pollutants must obtain a Title V air quality operating permit, unless otherwise noted in the state or federal rule.

SD Soybean is a major source under the Title V air quality permit program for particulate matter, volatile organic compounds, and hazardous air pollutants and is also subject federal new source performance standards and maximum achievable control technology standards. Therefore, SD Soybean requires a Title V air quality operating permit.

7.1 Insignificant Activities

Insignificant activities are defined under ARSD 74:36:05:04.01(7) and meet one or more of the following requirements:

1. One or more incinerators of less than 100 pounds per hour combined burning capacity that combust municipal or household waste;
2. A mobile internal combustion engine, including engines in autos, trucks, tractors, airplanes, locomotives, and boats;
3. Laboratory equipment used exclusively for chemical or physical analysis;
4. A unit that has a heat input capability of not more than 3,500,000 Btus per hour, except for units fueled with wood or coal;
5. An air conditioning or ventilating system not designed to remove air pollutants from equipment;
6. Routine housekeeping or plant upkeep activities such as painting buildings, retarring roofs, or paving parking lots;
7. A unit that has the potential to emit two tons or less per year of any criteria pollutant before the application of control equipment. However, the criteria pollutant emissions from the unit must be included in determining whether the source is a major source; and

8. A unit that has the potential to emit two tons or less per year of any hazardous air pollutant. However, the hazardous air pollutant emissions from the unit must be included in determining whether the source is a major source.

A unit may not be considered insignificant if a state or federal limit is applicable to the unit.

The following equipment is considered to be an insignificant activity at SD Soybean because it meets one of the eight criteria and are not applicable to a federal or state limit:

1. Secondary de-hulling process rated at 149 tons of material per hour. The aspiration and process cyclone is a closed loop system with no emission point to the ambient air;
2. Bean condition process rated at 270 tons of beans per hour. No outlet to the ambient air except in an emergency to prevent over-heating of the system;
3. Tank ID #5 – Tank #S400, 30,778 gallon aboveground storage tank for crude soy oil;
4. Tank ID #6 – Tank #S401, 30,778 gallon aboveground storage tank for crude soy oil;
5. Tank ID #7 – Tank #S402, 30,778 gallon aboveground storage tank for crude soy oil;
6. Tank ID #8 – Tank #S403, 30,778 gallon aboveground storage tank for crude soy oil;
7. Tank ID #9– Tank #B100, 15,000,000 gallon aboveground storage tank for crude soy oil;
8. Tank ID #10 – Tank #S500, 1,500,000 gallon aboveground storage tank for crude soy oil;
9. Tank ID #11 – Tank #S501, 1,500,000 gallon aboveground storage tank for crude soy oil;
10. Tank ID #12 – Tank #S502, 1,500,000 gallon aboveground storage tank for crude soy oil;
11. Tank ID #13– Tank #B101, 8,200,000 gallon aboveground storage tank for crude soy oil;
12. Tank ID #14 – Tank #S601, 27,000 gallon aboveground storage tank for soy oil;
13. Tank ID #15 – Tank #S602, 27,000 gallon aboveground storage tank for soy oil;
14. Tank ID #16 – Tank #S603, 27,000 gallon aboveground storage tank for soy oil;
15. Tank ID #17 – Tank #S604, 27,000 gallon aboveground storage tank for soy oil;
16. Tank ID #18 – Tank #T408, 30,455 gallon aboveground storage tank for crude soy oil;
17. Tank ID #19 – Tank #T841, 30,455 gallon aboveground storage tank for de-gummed oil;
18. Tank ID #20 – Tank #T842, 30,455 gallon aboveground storage tank for de-gummed oil;
19. Tank ID #21 – Tank #T843, 30,455 gallon aboveground storage tank for de-gummed oil;
20. Tank ID #22– Tank #R&B, 436,926 gallon aboveground storage tank for refined and bleached oil;
21. Tank ID #23 – Tank #T845, 30,455 gallon aboveground storage tank for refined and bleached oil;
22. Tank ID #24 – Tank #T846, 30,455 gallon aboveground storage tank for refined and bleached oil;
23. Tank ID #25 – Tank #RW100, 30,455 gallon aboveground storage tank for off specification oil;
24. Tank ID #26 – Tank #RW101, 30,455 gallon aboveground storage tank for off specification oil;
25. Tank ID #27 – Tank #H500, 12,000 gallon aboveground storage tank for #2 diesel;
26. Tank ID #28 – Tank #H501, 12,000 gallon aboveground storage tank for #2 diesel;
27. Tank ID #29 – Tank #T835, 15,220 gallon aboveground storage tank for soap stock;
28. Tank ID #30 – Tank #T1101, 7,000 gallon aboveground storage tank for ammonia solution;

29. Tank #T-504, 204,718 gallon aboveground storage tank for refined, bleached and deodorized oil;
30. Tank #T-505, 204,718 gallon aboveground storage tank for refined, bleached and deodorized oil;
31. Tank #T-506, 204,718 gallon aboveground storage tank for refined, bleached and deodorized oil; and
32. Tank #T-847, 9,399 gallon aboveground storage tank for refined, bleached and deodorized distillate oil.

7.2 State Limits

As noted in ARSD 74:36:06:01, a unit that is required to meet a particulate matter or sulfur dioxide standard under a New Source Performance Standard (NSPS), National Emission Standard for Hazardous Air Pollutants (MACT) and/or the PSD program is not required to meet South Dakota's particulate matter or sulfur dioxide standard.

Table 7-1 lists the units that do not have to meet South Dakota's particulate matter and/or sulfur dioxide limit and the reasoning for the exclusion.

Table 7-1 –Not Applicable to State Particulate Matter and/or Sulfur Dioxide Limits

Unit	Description	Reason
#1	EP-#1 – Soybean receiving system.	PSD particulate matter limit Does not emit sulfur dioxide
#2	EP-#2 – Soybean handling	PSD particulate matter limit Does not emit sulfur dioxide
#3	EP-#3 – Soybean dryer system.	NSPS particulate matter limit
#4	EP-#4 – Soybean screened and cleaned	PSD particulate matter limit Does not emit sulfur dioxide
#5	EP-#5 – Soybean cracking process.	PSD particulate matter limit Does not emit sulfur dioxide
#6	EP-#6 – Primary soybean de-huller	PSD particulate matter limit Does not emit sulfur dioxide
#18	EP-#7 – Coarse soybean de-huller	PSD particulate matter limit Does not emit sulfur dioxide
#47	EP-#8 – Fines soybean de-huller operation.	PSD particulate matter limit Does not emit sulfur dioxide
#8	EP-#9 – Eight flakers.	PSD particulate matter limit Does not emit sulfur dioxide
#21	EP- #10- Flake expander system.	PSD particulate matter limit Does not emit sulfur dioixde
#14	EP-#12 – Desolventizer, toaster, dryer, and cooler system.	PSD particulate matter limit Does not emit sulfur dioxide
#12	EP-#14 – Meal handling and storage.	PSD particulate matter limit Does not emit sulfur dioxide
#10	EP-#15 – Two hull grinders.	PSD particulate matter limit Does not emit sulfur dioxide

Unit	Description	Reason
#13a	EP-#17 – Pneumatic transfer.	PSD particulate matter limit Does not emit sulfur dioxide
#13b	EP-#17 – Pneumatic transfer.	PSD particulate matter limit Does not emit sulfur dioxide
#11	EP-#18 – Meal and hull load out.	PSD particulate matter limit Does not emit sulfur dioxide
#15	EP-#20a – Boiler A	PSD particulate matter limit NSPS particulate matter and sulfur dioxide limit
	EP-#20b – Boiler B	PSD particulate matter limit NSPS particulate matter and sulfur dioxide limit
#17	Cooling tower	Not fuel burning or process unit
#48	Exchanging, extracting, evaporating, and stripping systems.	Not fuel burning or process unit
#49	Cooling tower	Not fuel burning or process unit
#51	Emergency generator	MACT particulate matter and sulfur dioxide limit
#52	Emergency fire pump	MACT particulate matter and sulfur dioxide limit

7.3 Particulate Matter Emission Limits

In accordance with ARSD 74:36:06:02(1)(a), a fuel burning unit with heat input value less than 10 million Btus per hour may not exceed the total suspended particulate matter emission limit of 0.6 pounds per million Btus of heat input. The heat input rate for Unit #50 is 5.17 million Btus per hour.

Equation 7-1, taken from ARSD 74:36:06:03(1)(b), is used to calculate the state limit of allowable particulate emissions for each process unit with operating rates greater than 30 tons per hour (Unit #9).

Equation 7-1 – State Particulate Emission Limit for Process Units > 30 tons per hour

$$E_{TSP} = (55.0 \times P^{0.11}) - 40$$

Where:

- E_{TSP} = Emission limit for total suspended particulate matter, in pounds per hour; and
- P = Design process rate, in tons per hour.

The particulate emission limits for process units are derived from ARSD 74:36:06:03(1). Equation 7-2, taken from ARSD 74:36:06:03(1)(a), is used to calculate the state limit of particulate emissions for each process unit with operating rates less than or equal to 30 tons per hour (Units #47, #20, and #22).

Equation 7-2 – State Particulate Emission Limit for Process Units ≤ 30 tons per hour

$$E_{TSP} = 4.10 \times P^{0.67}$$

Where:

- E_{TSP} = Emission limit for total suspended particulate matter, in pounds per hour; and
- P = Design process rate, in tons per hour.

Table 7-2 compares the allowable emission limits to the potential emission rates for particulate matter. The potential emission rates are from Table 4-2.

Table 7-2 – Comparison of Allowable Emissions to Potential Emissions

Unit	Allowable Emissions	Potential Emissions	In Compliance
#47	13.6 pounds per hour	0.0 pounds per hour	Yes
#20	16.5 pounds per hour	0.0 pounds per hour	Yes
#22	4.3 pounds per hour	1.0 pounds per hour	Yes
#50	0.6 pounds per million Btu heat input	0.0 pounds per million Btu heat input	Yes

SD Soybean was required to stack test Unit #22 as outlined in the 2009 renewed Title V air quality permit and indicated compliance as seen in Table 7-3.

Table 7-3 - Stack Test Result and Limit Comparison

Unit	PM_{10} Emission Limit	July 2009 Result PM_{10}	In Compliance
#22 (EP #19)	0.01 grains per dry standard cubic foot	0.029 grains per dry standard cubic foot	Yes

7.4 Sulfur Dioxide Emission Limits

In accordance with ARSD 74:36:06:02(1)(a), a fuel burning unit with heat input value less than 10 million Btus per hour may not exceed 3.0 pounds of sulfur dioxide per million Btus of heat input to the unit based on a three-hour rolling average. The heat input rate for Unit #50 is 5.17 million Btus per hour.

Units #47, #21, #9, #20, and #22 do not emit sulfur dioxide and are not applicable to the state sulfur dioxide limit. Table 7-4 summarizes the unit applicable to the state sulfur dioxide limit.

Table 7-4 – Comparison of Allowable Emissions to Potential Emissions

Unit	Allowable Emissions	Potential Emissions
#50	3.0 pounds per million Btu heat input	0.0004 pounds per million Btu heat input

7.5 Visibility Limits

In addition to the particulate matter emission limit, each unit is subject to the visibility limit in ARSD Chapter 74:36:12. The visibility limit for each unit is less than 20 percent opacity. However, under 40 CFR Part 60, Subpart DD, Unit #1, #2, #3, and #4 are required to meet opacity limits that are more stringent than the state's opacity limit. Therefore, these units will not be required to meet the state's opacity limit in the permit.

Unit #15 is also subject to an opacity limit in 40 CFR Part 60, Subpart Dc. However, the opacity limit has some exceptions that are not allowed in the state's opacity limit. Therefore, Unit #15 will be subject to both in the permit.

Units #47, #21, #9, #20, #22, and #50 are not applicable to a federal standard and are required to meet the state opacity limit.

Unit #51 and Unit #52 are applicable to 40 CFR Part 62, Subpart ZZZZ which does not contain an opacity limit. Therefore, Unit #51 and Unit #52 will be required to meet the state opacity limit.

7.6 Compliance Assurance Monitoring

Compliance assurance monitoring is applicable to any unit at major sources applying for a Title V air quality operating permit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

SD Soybean potentially has six operations (dryer, bean cracking (Unit #5), primary dehulling (Unit #6), meal grinding (Unit #9), meal handling (Unit #12), and meal loadout (Unit #11)) that meet all three criteria and are applicable to the compliance assurance monitoring requirements.

The dryer is not applicable to compliance assurance monitoring since it is located within a building and is not a permitted unit.

In the past, SD Soybean requested that compliance assurance monitoring be visible emission readings. Visible emissions reading will continue to be SD Soybean's method of compliance assurance monitoring. The indicator range will be no visible emissions.

7.7 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to the Title V air quality operating permit program. The permitted units at this facility are required to meet opacity, particulate matter, sulfur dioxide, nitrogen oxide, volatile organic compound, hazardous air pollutants and limits applicable to the New Source Performance Standards and Maximum Achievable Control Technology Standards. Periodic monitoring will be based on the following:

1. Periodic monitoring for opacity will be based on periodic visible emission readings or evaluations. Periodic monitoring of particulate matter emissions will consist of visible emission readings and proper operation and maintenance of all pollution control devices.
2. Periodic monitoring of sulfur dioxide emissions for units burning natural gas is not required based on the sulfur content in pipeline quality natural gas.
3. Periodic monitoring of the nitrogen oxide emission limit for Unit #3, #15, and #50 will be based on recordkeeping and reporting.

4. Periodic monitoring of volatile organic compound emission limits will be based on recordkeeping, reporting, and leak checks in accordance with the New Source Performance Standards.

SD Soybean is required to meet New Source Performance Standards and Maximum Achievable Control Technology Standards for certain units. The monitoring requirements specified in the federal standards will be required and satisfy periodic monitoring requirements.

7.8 Performance Tests

Table 7-5 shows recent stack testing conducted at SD Soybean compared to the proposed short term limits.

Table 7-5 – Comparison of Stack Test Results to Short Term Limits

Unit	Pollutant	Short Term	Stack Test		Percentage of Short Term
			Date	Results	
#15	PM	1.06 pounds per hour	11/27/05	0.21 pounds per hour	19.8 %
	CO	11.76 pounds per hour		0.6 pounds per hour	5.1 %
#8	PM_{10}	2.3 pounds per hour	06/02/09	0.196 pounds per hour	8.5%
#14a	PM_{10}	0.279 pounds per hour		1.4 pounds per hour	19.9%
#22	PM_{10}	0.01 grain per dry standard cubic foot		0.0026 grain per dry standard cubic foot	26.0%
#15	NOx	0.5 pounds per million Btu	06/28/11	0.022 pounds per million Btu	4.4%

At this time, DENR is not recommending any additional performance tests for demonstrating compliance with state emission limits with the exception of the initial performance test for Unit #11 as permitted in construction permit #28.0501-06-04C since recent performance tests demonstrate compliance well under the threshold limits. Although, the permit will contain language that allows DENR to require a performance test at any time if DENR determines it is warranted.

7.9 Air Fees

Sources subject to the Title V air quality operating permit program are subject to an annual air quality fee. The fee consists of an administrative fee and a per ton fee based on the actual tons per year of pollutant emitted. The pollutants charged for are particulate matter, sulfur dioxides, nitrogen oxides, volatile organic compounds, and hazardous air pollutants. The actual emissions are calculated by DENR based on operational information provided by the source.

8.0 Recommendation

SD Soybean will be required to operate within the requirements stipulated in the following regulations:

- ARSD 74:36:05 – Operating Permits for Part 70 Sources;
- ARSD 74:36:06 – Regulated Air Pollutant Emissions;
- ARSD 74:36:07 – New Source Performance Standards;
- ARSD 74:36:08 – National Emission Standards for Hazardous Air Pollutants;
- ARSD 74:36:09 – Prevention of Significant Deterioration;
- ARSD 74:36:11 – Performance Testing;
- ARSD 74:36:12 – Control of Visible Emissions;
- ARSD 74:36:13 – Continuous Emission Monitoring Systems; and
- ARSD 74:37:01 – Air Emission Fees.

Based on the above findings and the information submitted in the air quality permit application, the department recommends approval of the renewal of South Dakota Soybean Processor's Title V air quality operating permit. Questions regarding this permit review should be directed to Ashley Brakke, Engineer II, Air Quality Program.